Alma Mater Studiorum · Università di Bologna

DOTTORATO DI RICERCA IN

Diritto e Nuove Tecnologie: Indirizzo Informatica Giuridica e
Diritto dell'Informatica

Ciclo XXIX

Settore Concorsuale di afferenza: 12/H3

Settore Scientifico disciplinare: IUS/20

Digital Technologies for Deliberative Democracies: Models and Applications for Continuous Civic Engagement

Presentata da: Luca Cervone

Coordinatore Dottorato:

Chiar.mo Prof.

GIOVANNI SARTOR

Relatrice:

Chiar.ma Prof.ssa

MONICA PALMIRANI

Correlatore:

Chiar.mo Prof.

FABIO VITALI

Esame finale anno 2017

I fought the law and the law won (❓) . . .

Abstract

In the last fifty years, scholars have widely studied Deliberative Democracy and Deliberative Systems and proposed them as an alternative or integration to Representative and Participatory Democracy. The latter can on one side deal with communication challenges of diverse and pluralist modern Societies by opening Democratic procedures to Citizens and engaging them in Democratic decision-making procedures. On the other side, as like as Representative Democracies, Participatory Democracies do not promote deliberations to foster Citizens to reach a consensus on Societal issues. Indeed, Participatory Democracies are based on intrinsic mechanisms of aggregation of votes, not optimized to fulfil the diverse cognitive characteristics of Citizens, and are usually stand-alone processes that can not be interconnected. Gamified Online Deliberative Systems can fill these gaps. The first research goal of this work is to analyze Democracies, expose different models of them, and investigate from different perspectives the causes of the current crisis of Representative Democracies and the lack of Participatory Democracies models. The second research goal is to analyze the literature on Deliberative Democracies and Deliberative Systems in order to delineate a framework of requirements to implement the features needed for legitimated Deliberative Systems. The framework is then used to analyze a set of online tools for deliberation and cover the third research question: understand if these tools implement legitimacy features of online deliberation and can be connected to Deliberative Systems. The last research goal of this work is to investigate the cognitive characteristics of Citizens involved in deliberations and the motivations that may keep them continuously engaged in Deliberative Systems. After having exposed Gamification theories, this work proposes a fully gamified model for Online Deliberative Systems and describes a practical implementation of the model.

Contents

II Analysis of Online Participation and Deliberation 155

7 Tools for Online Participatory Democracy and for Online Deliberative Democracy 157

III Models of Deliberative Democracy for Continuous Civic Engagement 229

8 Games and Gamified Systems 231

List of Definitions

List of Figures

List of Tables

Chapter 1

Introduction

In 2009 the Members of the Parliament of the United Kingdom were subject to a vast scale scandal related to their expense claims in the previous year. It may seem that there is nothing uniquely worth of notice in the previous statement but, in fact, the causes, motivations and results of that scandal are tremendously related to the work that I have made during my doctoral research, described in this thesis.

Although the scandal itself broke in 2009 the story started in 2005, when the Freedom Of Information Act of the United Kingdom came into effect[1]. Among other rules, the Freedom Of Information Act of the United Kingdom states that the Members of the Parliament shall always supply receipts for their expenses in order to make them publicly available for consultation by Citizens[2]. After many deals among the House Of Commons, the Information Tribunal and the Citizens of the United Kingdom, in June 2009 the expense claims of Members of Parliaments were released in 458,832 documents. One of the most-known newspaper of the United Kingdom, The Guardian, decided

---

[1] A time-line of the circumstances that led to scandal is available on The Telegraph Web site at the following address: http://www.telegraph.co.uk/news/newstopics/mps-expenses/6499657/MPs-expenses-scandal-a-timeline.html

[2] The full text of the Freedom Of Information Act of the UK is publicly available at the following address: http://www.legislation.gov.uk/ukpga/2000/36/pdfs/ukpga_20000036_en.pdf

to create a Web site in which Citizens would be enabled to check these expense claims and highlight the ones that seemed to be unfair. After a week, the Guardian released *Investigate Your MP's expenses*[3], a Web site in which Citizens were enabled to check the expenses of the Members of the Parliament by means of an interface and a process that looked very similar to a game. In the first 80 hours more than 170.000 documents were collaboratively analyzed by 22.440 Citizens. Several unfair receipts were found and published and, as a result, several Members of Parliament were requested to resign[4].

I read the story of Investigate Your MP's Expenses later, in 2013, in the book "*Reality is Broken: Why games make us better and how they can change the world*" by Jane McGonigal, right before reading a statement by Barack Obama, talking about a kind of Democracy called "*Deliberative Democracy*" in which Citizens are involved in continuous deliberations to solve the issues of Society, rather than being involved only in one-shoot and sporadic ballots[5]. I remember I thought: "*Well, why not? After all, in role-playing games deliberations come always before dices*". In that moment, I realized that my mind already made a connection among *Web applications similar to games*, *collaboration*, *deliberation* and *Societal issues*.

Later in the same year I obtained my Master degree and, after an initial personal investigation of Democracy models, I submitted my application to the doctoral program in Legal Informatics with the abstract of this research program, that revolves all around the following research questions:

---

[3]More information about Investigate Your MP's expenses is available in the following article of The Guardian: https://www.theguardian.com/news/datablog/2009/jun/18/mps-expenses-houseofcommons

[4]More information about the design and the statistic on the usage of Investigate Your MP's expenses are available at the following address: http://www.niemanlab.org/2009/06/four-crowdsourcing-lessons-from-the-guardians-spectacular-expenses-scandal-experiment/.

[5]I report the full statement at the very end of chapter 3.

RQ-0: What is Democracy, and on which elements of Society does it rely?

RQ-1: Is Representative Democracy sufficient to fulfil the needs of current diverse and pluralist Societies?

RQ-2: Which Democracy models can replace or integrate Representative Democracies to fill their gaps?

RQ-3: What are the differences among Representative Democracies, Direct Democracies and Participatory Democracies?

RQ-4: What is Deliberative Democracy, and what are Deliberative Systems?

RQ-5: Which legitimacy features must Deliberative Systems have, and what are the requirements to implement them?

RQ-6: Are there Online tools for Deliberative Democracies or for Deliberative Systems that implement the needed legitimacy features?

RQ-7: What are gamified systems, and how can they be used to implement legitimated Online Deliberative Systems?

RQ-8: Is it possible to design a theoretical model of Gamified Online Deliberative Systems and Extensions of Gamified Online Systems?

RQ-9: How to implement Gamified Online Deliberative Systems and Extensions of Gamified Online Systems?

In the three parts of this thesis, I address all the above research questions by studying, analyzing, criticizing and matching literature and my personal explorations in diverse contexts of study: Philosophy, Laws, Legal Informatics, Human Computer Interaction, Game-Design, and Gamification.

Chapter 2 is aimed to address the first one of my research goals and, so, to understand what is Democracy from a philosophical and law perspective, and what are the elements that constitute it. In order to address this research question, firstly I have found different definitions of Democracies and

matched them with definitions of concepts belonging to other contexts. More specifically, I found that the most accepted definitions of Democracy revolve around decision-making procedures aiming to solve conflicting interests of Citizens by involving them in selecting options that they retain proper to satisfy their needs. In these definitions, there is a certain lack of information about the characteristics of options that Citizens can select, and the properties that outcomes of decision-making procedures must have. For these reasons, I propose a definition of Democracy obtained by matching it with the concept of "*interesting choices*" borrowed by game-design theories, and the concept of "*Usability*" from studies on Human Computer Interaction.

The definition of Democracy that I give also highlights one of the concepts on which Democracies must be built: the legitimacy, meaning that regardless of their actual implementations, Democracies can subsist only if they are legitimated. Scholars of Democracies have exposed different modes to evaluate the legitimacy of Democracies. More specifically, the classical theories of legitimacy can be dived into those that evaluate legitimacy by considering the *outcomes of Democracies*, those that evaluate legitimacy by considering the *decision-making procedures* of Democracies, and those that evaluate legitimacy by considering both the procedures and the outcomes.

While from a classical perspective the legitimacy of Democracy is related only on decision-making procedures and the output they produce, new scholars of Democracies introduced another parameter for the evaluation of legitimacy, the *inputs*, theorizing a *three-dimensional framework* for the evaluation of legitimacy. This is particularly needed in those contexts, such as the European Union, in which inputs can be very diverse and plural. However, as I argue in section 2.4, this three-dimensional framework is not enough for a proper evaluation of legitimacy, due to the fact that it does not consider the way inputs enter the democracies, what happen to outcomes after they are produced by means of decision making-procedures, and how deliberation is performed in these decision making procedures. In a nutshell, the three-dimensional-framework does not consider the *Citizens* who create

inputs for the Democracies, the *Institutions* who handle the *Democratic Outcomes* after they have been produced, and the ways the discussions occurs in Democracies.

I conclude chapter 2 describing a set of six components among which the legitimacy of modern Democracies should be evaluated. The components of the framework and, so, of Democracies, are: *Citizens*, *Inputs*, *Decision-Making Procedures*, *Discussions*, *Outputs* and *Institutions*.

In chapter 3, I answer research questions *RQ-1*, *RQ-2* and *RQ-3*, starting by exposing different models of Democracies and explaining how the components that I have previously listed are involved in them. I start from *Representative Democracy* that, nowadays, is the most common model of Democracy used around the world, as I explain in section 3.1. Representative Democracies revolve around the concept that, since it is not possible to involve all the Citizens in Democratic procedures, they must elect delegates on the basis of their skills and by means of ballots based on the majority rule. Although Representative Democracies are proved to be very effective in Societies based on commerce, capitalism and development, they are currently facing a world-wide crisis mostly due to the fact that representatives may not act in transparent ways, causing problems such as the events happened in the United Kingdom in 2009 that I have previously explained.

The current crisis of Representative Democracies is not only related to their legitimacy. On one hand, Citizens are depriving Representative Democracies of their legitimacy because they do not trust anymore representative nor Institutions. On the other hand, Representative Democracies are becoming technically ineffective to Govern globalized Societies. Indeed, the more Citizens and inputs entering Democratic procedures are diverse and plural, the more the system of delegation becomes quite complex to be handled in legitimated ways. For instance, since one of the requirements for the legitimacy of Democracies is a balancing in individuals involved in Political discussions, delegates in Parliaments should match the demography of the nations. And this is unfeasible both because it would be too expensive, and

it would be quite impossible for Institutions based on slow bureaucracy to follow the fast turnover of demography.

Also by leveraging on the crisis of representation, several political movements raised overall the world, claiming the will to be governed by means of new forms of *Direct Democracies*. These Democracies models differ from the ones based on representation because they involve Citizens more frequently into Democratic decision-making processes. As I expose in section 3.2, Direct Democracies can be implemented in different ways, also in combination with systems of representation like in Switzerland, where several *referenda* are issued during a single year. Unfortunately, although Direct Democracies based on referenda are a more transparent and legitimated way to achieve Democratic decisions, they are still affected by the same issues of representative Democracies. For instance, as I have explained in sections 2.1, 3.1, and 3.2, there could be situations in which Citizens create Democratic outcomes by means of a referendum but Institutions do not accept them, causing a loss of trust and legitimacy for both referenda and Institutions.

Another Direct Democracy model is called *Participatory Democracy*, and was originally implemented in South American and European Countries to collaboratively discuss towns' budgets, as I explain in sections 3.2.2 and 3.2.3. Practices of *Participatory Budgeting* are proved to be very effective and trusted by Citizens, so much that they laid the foundation to the idea that Participatory practices could be used for all Democratic decision-making procedures, rather than simply using them for addressing economic issues. Also by leveraging on the dissatisfaction caused by the economic crisis of 2008, several political movements and activist groups started to promote Participatory Democracy as a solution for issues of Representative Democracies.

Unfortunately, as I expose in section 3.4, Participatory Democracy also present issues related to their legitimacy. Firstly, although some populist parties can claim that Citizens are *intrinsically motivated* to be continuously engaged in Participatory Democracies to replace corrupted politicians and

Representatives, as I explain in section 6.4, it is proved that *motivations of human-beings* to remain active in activities are quite complex. Secondly and lastly, although Participatory Democracies involve Citizens in arguing before taking decisions, in the end they are requested to express preferences, meaning that the last word is given to the majority rule. This means that, as I expose in sections 3.1 and 6.5, ballots can be cheated in the same way as in Representative Democracies and, so, by *exploiting traditional and social media* in order to create *biased discussions and ballots.*

Having acknowledged all the issues related to Representative Democracies and Participatory Democracies, in chapter 4, I start answering research question *RQ-4*, by exposing an alternative model of democracy, the Deliberative Democracy, that could solve these issues.

Deliberative Democracy is a kind of Democracy in which Citizens are engaged in *genuine discussions* aimed to reach a *consensus.* Although a very first idea of Deliberative Democracy may be traced back to Aristotele, as I explain in section 4.1, in the last fifty years, starting by theories of Jurgen Habermas, Deliberative Democracies are receiving renewed attention. Several scholars of Democracies models have studied the traits of Deliberative Democracies and delineated *four generations* of theories about it.

The *first and second generations* of scholars of Deliberative Democracies exposed the traits of deliberations from a theoretical perspective, mostly by taking into account the normative and philosophical concepts related to the legitimacy of Deliberative Democracies. While the first generation of scholars focuses on more *generic models of deliberations*, without any concerns on the *demography of individuals* involved in discussions, the second generation strengthens the theories of the first one by demonstrating the feasibility and the legitimacy of Deliberative Democracies also in those Societies characterized by wide *diversity* and *pluralism* of Citizens. Eventually, after having enumerated and deeply investigated several features that deliberation groups must have, scholars of the first two generations of Deliberative Democracies conclude that Citizens are likely to agree if they are properly driven to dis-

cuss.

Classical theories of Deliberative Democracies, that I deeply investigate in section 4.2, , received several *criticisms*, mostly concerning the *Democratic capacities* of Citizens to deliberate, the actual improvements that Deliberative Democracies would bring to the Society and, most important, some critics are concerned by the fact that Deliberative Democracies would actually be *dangerous for the Society*. In other words, since not all the Citizens can have a *proper education* to deliberate about complex topics, deliberations could be flown into *infinite arguing* or, as well as in Representative Democracies, there could be malicious individuals *exploiting biases of human beings* involved in decision-making procedures, which could drive them to achieve *irrational choices*.

Scholars of the third Generation of Deliberative Democracies, mostly Dryzek, by proposing an actual implementation of Deliberative Democracies and studying empirical results of their experiments, demonstrate that the issues raised by critics can be solved by structuring the deliberation and the consensus in specific ways. As I deeply cover in section 4.3, firstly scholars demonstrated that by allowing Citizens to use *diverse modes of communication*, issues related to education and Democratic capacities of Citizens can be overcome. This is due to the fact that individuals would use the communication style that they retain more appropriate to explain their ideas, regardless to their education. Secondly, scholars demonstrated that by considering the *consensus as a form of composed consensus*, also the issues related to infinite deliberations would be addressed. In other words, although Citizens do not reach a *full consensus*, they can agree on *normative*, *epistemic* or *preferential values*, and this can be considered a consensus too.

However, as I explain in sections 4.3.1, 4.3.2, and 4.3.3, scholars of the third generation still exposes empirical results of experiments made on *small sets of Citizens* who deliberate on specific topics as in Participatory Budgeting. For this reason, they receive critics stating that, although Deliberation seems to work better than representation, it could not be applicable on *large*

scale Democracies, such as in whole Countries.

Scholars of the fourth generation of Deliberative Democracies solved this issue by introducing the concept of Deliberative Systems. Very counter-intuitively they expose that, by considering as feasible some of the features exposed by theorists of the first and second generations, Deliberative Democracies could also be effectively used at *local or national level*. More specifically, scholars argue that by allowing *asynchronous deliberations* and *distributing them* among different places, it is possible to create the *Deliberative Systems* and, so, models of Democracies that allow a *continuous deliberations* by means of *interconnected*, *open*, *accessible* and *unobstructed* tools. In Deliberative Systems, although Citizens deliberate on *small issues* related to *restricted areas*, they contribute to the *Democratic needs* of their *larger geographic area*.

In chapter 5, also in order to answer to my research question *RQ-5*, I collect and summarize all the *legitimacy features* that scholars of the fourth generations expose, and that Deliberative Systems must implement. Also, I try to fill a gap in the state of the art of studies on Deliberative Systems. Indeed, by matching the legitimacy features with the proper components of Democracies they belong to, that I expose in section 2.4, I define a framework to evaluate in a more simple way the legitimacy of Deliberative Systems by evaluating legitimacy of their components one by one.

Eventually, to conclude the first part of this thesis, and to fully answer research question *RQ-5*, I discuss a list of requirements to implement the legitimacy features of Deliberative Systems, and I deeply explain how Deliberative Systems deployed on the Internet and the Web can implement asynchronous, continuous, ubiquitous and open deliberations. In section 6.1, to reply to critics of Online Democracies stating that they can not be legitimated because of the *digital divide* and other issues related to the *accessibility of the web*, I expose the requirements for Institutions that want to foster Deliberative Systems in their Countries, and the requirements for the design of *accessible* and *usable Web applications* for deliberations.

Having addressed the requirements to implement ubiquitous and continuous deliberations, I move forward to explain how Deliberative Systems can be interconnected by relying on, and by producing, data and documents serialized by means of common standards for *Linked Open Data*, as I describe in section 6.2. The use of these standards is also a fundamental requirement to implement *traceable*, *transparent* and *reliable* deliberations. Moreover, Linked Open Data allow Citizens to *monitor the outcomes* produced by decision-making procedures in Deliberative Systems, the very first feature that must be implemented to allow Citizens to *change their opinions* about discussed topics.

Standards for Linked Open Data, especially for the markup of laws, are the very first requirement for the implementation of Systems based on *Deliberative Interactions* and *Deliberative Consensus* and aimed to more transparent Democracies, as I expose in section 6.3. For instance, the Freedom Of Information Act of the United Kingdom, that started the story of Investigate Your MP's Expenses, is fully marked-up in *AkomaNtoso*, an OASIS standard that I describe in section 6.2, is publicly available online and, thanks to AkomaNtoso, is readable by both human-beings and machines.

However, on one hand, if the expense claims of Members of the Parliament of the United Kingdom involved in the scandal were serialized with a standard for the Linked Open Data, probably the entire process of finding unfair receipts would be *simpler and faster*. On the other hand, a simplification of the process to find incriminated receipts of British politicians would decrease the *motivation* of British Citizens to thoroughly search the receipts. In section 6.4, I explain what are the *intrinsic and extrinsic motivations* that could move Citizens to participate in Deliberative Systems, and why one of the fundamental requirements of Deliberative Systems is to be designed to *nurture these motivations*. However, when human-beings are involved in decisions-making processes, they are at risk of taking *irrational decisions* because of their *cognitive biases*, largely studied in literature and summarized in section 6.5. This may happen also, and in some situations

more likely, when actions of individuals are *rewarded* to nurture their extrinsic motivation, like in games that constantly reward players with *points* or other stuff. Although cognitive biases are not always dangerous, and in some situations can even be exploited to help Citizens to reach a consensus, a Deliberative System that aims to implement legitimacy features must be designed to properly avoid or exploit these biases.

I conclude the first part of this research work by matching the features for the legitimacy of Deliberative Systems with the requirements that must be respected to implement them and, in section 6.6, I expose a *framework for the evaluation of legitimacy of Deliberative Systems* based on their features and these requirements.

In the second part of this thesis, more specifically in chapter 7, I explore the current state of the art of *Online tools for Deliberative Democracies* in order to answer research question *RQ-6*. In section 7.1, I start the analysis by listing the criteria that I used to select the tools for it and, after a deep description of each of them, I asses their legitimacy by means of the framework defined in section 6.6. Although the analyzed tools can not be considered Deliberative Systems, because Deliberative Systems where firstly introduced in literature very recently, by addressing their legitimacy with my framework I investigate the possibility to *connect these tools* to other eventual Deliberative Systems. The *outcomes of the analysis* show that none of the tools is designed to *avoid or exploit cognitive biases*, and to *nurture intrinsic and extrinsic* motivations of Citizens, with the exception of a system that I describe in section 7.6, which uses a *few sets of games elements* for this purpose.

Games and *games elements*, if used properly, are very effective to drive individuals to perform specific tasks, for training purposes and to satisfy intrinsic and extrinsic motivations of human-beings. In chapter 8.1, I answer research question *RQ-7* by describing how *theories of game-design* gave the birth to theories of *gamification-design*, a brand-new field of study in the area of the *Human Computer Interaction*.

In the last ten years, online games and particularly Massive Online Multiplayer Games, that I define in section 8.1 have significantly improved their usage statistics, also due to the diffusion of mobile devices like smart-phones. Several business companies, non-profit organizations and Institutions started to think of ways to use mechanics of games to engage individuals in contexts not strictly related to games, exactly like The Guardians did during the scandal related to the Members of Parliaments of the United Kingdom. Following this trend, as I explain in section 8.1, scholars introduced in literature the *gamification* and, so, started to theorize and empirically analyze the effects of the introduction of elements borrowed by games in other contexts.

Concepts and *elements of Gamification* were classified and deeply investigated in order to understand how they can be applied to *contexts external to games*, mostly to *software and online platforms*, in order to *engage users* to remain *active on systems* and *drive their behaviours*. In a nutshell, gamified systems are aimed to match *specific elements of games*, that I enumerate in section 8.2, to *different type of users*, the players, in order to *nurture their specific intrinsic and extrinsic motivations* to use software or Web applications, as I explain in section 8.3.

One of the intrinsic motivations driving the humans behaviour, regardless to the characteristics of individuals, is the mastering and, so, the need to improve their own capacity and *master specific tasks and knowledge*. This is particularly important in Deliberative Systems, because Citizens need to have the proper *deliberative capacities* to contribute effectively and efficiently to deliberations. In section 8.4 I explain how the deliberative capacity of Citizens can be enhanced by implementing *mechanisms of progression* through *levels* and *statuses*. Online Deliberative Systems must be designed to include a first phase of *on-boarding*, in which Citizens are *instructed on the basic features of the system* and, as soon as they *improve their skills*, Citizens must be provided with new kind of Deliberative Interactions, by implementing *mechanisms of scaffolding*.

While Citizens are involved in *Deliberative Interactions* aimed to reach

Deliberative Consensuses, their extrinsic motivations and, so, their need to *receive feedback* on their actions and *rewards* for them, must be *constantly feed-up*. The most common elements that gamified systems use for this scope are *points*, *badges* and *leader-boards*, that I extensively define and describe in section 8.5. Although these gamified components can be very effective to drive the behaviour of users, they must be used wisely due to two main reasons. The first one is that points, badges and leader-boards can not be inserted in systems as floating elements felt by Citizens as disconnected from the other parts of systems. The gamification must be designed in order to give *reasoned and meaningful rewards* to Citizens, *according to explicit rules* specified by the system. The second reason is that these elements, if designed improperly, may contribute to *create biased deliberations* and ballots.

During my research period at Stanford University, I developed a *gamified Web application* to manage the *ballot for The Symbol Of The Year*, a yearly ballot held by the Psychology department of the university. In section 8.6 I describe how I have used leader-boards in the ballot structured in specific ways, and how these leader-boards have contributed to drive electors to *change their opinions* about their preferred symbols, and *more naturally agree on winners* of the ballot. Although the system was also designed to *foster deliberation among electors*, it did not serve to this scope and Deliberative Interactions were very scarce during the period of the ballot.

In chapter 9 I explore the literature on Gamification in Online Participatory Democracies and Online Deliberations and, starting by literature and lessons learned with the system for the election of the Symbol Of The Year, I define, design and describe *Gamified Online Deliberative Systems* (hereinafter *GODS*) and *extensions of Gamified Online Deliberative Systems* (hereinafter *eGODS*).

The final goal of Chapter 9 is to answer to my research question *RQ-8* and, so, expose the specifics of *completely gamified Deliberative Systems* called GODS and eGODS that I define in section 9.2. Having acknowledged that gamified systems can foster Deliberative Interactions and Deliberative

Consensus only if their design does not simply rely on points, badges and leader-boards, in sections 9.3 and 9.4 I define the *structure of spaces and dimensions* of eGODS by following *common practices of game-design*, and in sections 8.3 and 9.6, I expose the *different type of players* that can be involved in eGODS and *their goals*.

In order to give Citizens a *feeling of continuity* among the diverse actions that they can perform in one or more eGODS, the gamified sessions must follow *standard guidelines and rules*. More specifically, regardless to the final aim of the Deliberative Systems, they must be designed to *drive Citizens to reach a consensus on three types of values*. The first ones are the *normative values* and, so, the "*whys*" of Citizens needs. The second ones are the *epistemic values* and, so, the "*hows*" Citizens intend to solve their issues. The third ones are the *preferential values* and, so, the "*what*", specific implementations of the solutions that are proposed for Societal issues. By reaching these *three kind of consensus*, and by stepping through the *gamified spaces dedicated to them*, Citizens *progress in the system* and, as a consequence, *improve their Deliberative and Democratic Capacities* by being *continuously engaged in satisfying deliberations*.

I conclude chapter 9 by deeply describing an example of a *complete gamified session* in a eGODS aimed to drive Citizens to *propose*, *discuss*, and *agree on amendments to bills and laws* that they retain useful to solve specific Societal issues. In chapter 10, in order to answer my last research question *RQ-9*, I describe the *interface and functioning of WONSAMU*, an implementation of eGODS for the *process of amendment proposals* that I have explained in the previous statement.

In section 10.1 I describe the current status of the implementation of WONSAMU and list its main features. To implement all the legitimacy features of Deliberative Systems exposed in chapter 5, WONSAMU follows all the requirements listed in chapter 6. Among the others, very worth of notice are the way in which it uses and produces Linked Open Data, and its design completely based on inclusive, responsive and usable standards frameworks.

Also, by being gamified and based on properly designed Deliberative Interactions and mechanisms to reach Deliberative Consensuses, WONSAMU fulfils the requirements needed to nurture the motivation of Citizens and avoid the most common cognitive biases.

As I describe in section 10.2, Citizens are welcomed in WONSAMU by a thorough *on-boarding system*, teaching them the usage of the system and driving them towards the *first levels of the game* aimed to the *exploration of deliberative functions* and areas that WONSAMU supplies. After having acquired basic knowledge of the system, as I describe in section 10.3, Citizens can start to *explore the needs of other Citizens* and express their *negative or positive consensus* on them. In WONSAMU, Citizens can interact with other Citizens by means of *special chats*, defined in section 10.4, that extend classical chats by supplying Citizens functionalities to change their opinion in reply to a message, or to use different *modes of languages like links to bills, laws and videos*. To *avoid digressions* and *implement concepts of games and gamification*, WONSAMU supplies *limited sets of token to Citizens*, called *pencils* and *ink*, and each interaction in WONSAMU has a *cost in terms of these tokens*. By doing so, WONSAMU avoid digressions among Citizens and common cognitive biases, by *fostering Citizens to explore the topics discussed* in the system, while participating only in *deliberations in which they are really interested*.

Gamified sessions in WONSAMU end with discussions of proposals aimed to drive Citizens to collaboratively propose and deliberate on actual amendments to laws that can satisfy their needs. I describe this process in section 10.5, in which I also show that, although WONSAMU implements *balloting phases* based on the *Combined Approval Voting* described in section 8.6 and, so, uses a form of majority rule to discriminate preferences of Citizens, the decision-making procedures expose all the outcomes produced by Citizens and assign to them a *Consensus Power*, that can be used by *Citizens* and *Institutions* to understand the *most preferred and discussed outcomes*.

I conclude this work with section 10.6 and chapter 11, in which I ex-

pose that, provided that Institutions allow GODS and eGODS to enter the Democratic System, WONSAMU implements all the legitimacy features of Deliberative Systems and could be a valid first implementation of Gamified Online Deliberative System. Of course, further work and experimentation, as listed in chapter 11, must be done in order to refine the functioning of WONSAMU, and more generically of eGODS, and systematically use them in Societies as a replacement or an integration of other models of Democracies.

Part I

Democracies and Deliberative Systems

Chapter 2

Structures of Democracies

The aim of this chapter is to describe the concept of Democracy and the other concepts related to it. Firstly, I define Democracies and I highlight the main concepts that characterize Democracies. Secondly, I describe different conceptions of legitimacy of Democracies. Thirdly, and lastly, I expose the essential components of Democracies, and I clarify the reasons behind the importance of analyzing them when assessing legitimacy of Democracies.

2.1 Defining Democracy

The word Democracy derives from the conjunction of the Greek words δῆμος (*dèmos*), meaning the People, and κράτος (*cràtos*), meaning power. The word refers to a system of government characterized by popular sovereignty.

To define more accurately what a Democracy is, I will start by taking into account the most powerful statement about Democracy in the modern history. In the famous Gettysburg Address[1], Abraham Lincoln have referred

---

[1]The Gettysburg Address refers to a speech made in November 1863 by the President of the US Abraham Lincoln, during the dedication ceremony for the National Cemetery of Gettysburg in Pennsylvania, that was the site of one of the most important and bloodiest battles of the Civil War. A full draft of the Gettysburg Address is supplied by the site of the US Library of Congress (https://www.loc.gov/exhibits/gettysburg-address/ext/trans-nicolay-copy.html).

to Democracy as the: "*Government of the People, by the People, for the People*".

The dictum means clearly that Democracies revolve all around the People. In Democratic systems, Citizens can affect the public sphere of their countries by participating in legislative processes directly, and so by taking part in political decision-making, or indirectly, by delegating their power to other people, or to other groups of people.

Although there are many different systems of Democracy, the distinction between direct or indirect involvement of the People in Governmental activities, resolves in the very first classification of Democracy models. Models of *Not-Representative Democracies* are those in which Citizens are designated to Democratic decision-making processes. Models of *Representative Democracies* are those in which Citizens choose who must participate in Democratic decision-making processes [1, p. 1]. Figure 2.1a and Figure 2.1b show a depiction of Not-Representative and Representative Democracies.

Figure 2.1: The People in Not-Representative Democracies and Representative Democracies

(a) Not-Representative Democracy

(b) Representative Democracy
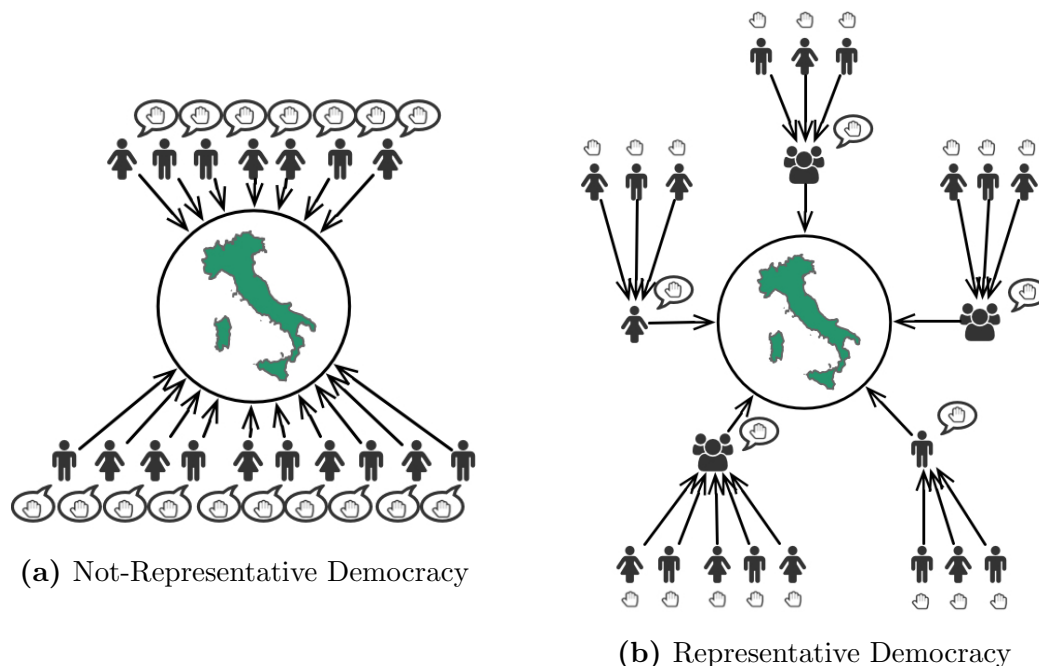
The etymology of the word Democracy, the assertion of Abraham Lincoln about it, and the classification of Democracies in not-representative ones and representative ones, underpin the very first traits of Democracies:

1. Democracies are made by Citizens;

2. Democracies are managed by Citizens, directly or indirectly;

3. Democracies are intended to produce useful outcomes for Citizens.

Of course, social, economic and historical events contributed to decline a plethora of models both of Representative Democracies and Not-Representative Democracies. *Electoral Democracy*, *Parliamentary Democracy*, *Totalitarian Democracy*, *Constitutional Democracy*, and *Internet based Democracies* like, *e-Democracy* and *i-Democracy*, are kinds of Representative Democracies. The list of Not-Representative Democracies includes, as a limited exemplifying set, *Direct Democracy*, *Consensus Democracy*, *Participatory Democracy*, *Deliberative Democracy*, and Not-Representative Democracies based on new technologies, like *Liquid Democracy* and *e-Participation*.

The alternation of different Democracies over time also produced more complex definitions of Democracy rather than the simple definition *"power to the People"*. A good definition of modern Democracies, extracted from famous definitions by Joseph Schumpeter and Max Weber, is the following one by Seymour Martin Lipset [2]:

> *"[A Democracy] is a social mechanism for the resolution of the problem of societal decision-making among conflicting interest groups which permits the largest part possible of the population to influence these decisions through their ability to choose among alternative contenders for political office."*

Despite this is a quite perfect and complete definition, it is more aimed to Representative Democracies rather than Not-Representative ones, due to the fact it involves the necessity to delegate the political office to someone. Also,

it assumes that Citizens, or groups of them, have always conflicting interests. However, the definition emphasizes three more key aspects of Democracies:

4. Democracies revolve their functioning around decision-making procedures that are legitimated by Citizens, and so that are accepted as proper by Citizens;

5. Democracies revolve around individuals or groups of them making choices;

6. Democratic decision-making processes result in one or more outcomes that are useful for the Society, and Democracies may be enhanced by the same outcomes.

By extracting these latter key aspects, and merging them with previous three, the following may be a better definition of Democracy:

> *"A Democracy is a form of Government based on legitimated decision-making processes that produce useful outcomes, for the Society and for the Democracy itself, by allowing Citizens to choose among different alternatives. These processes are, directly or indirectly, designed, enforced, maintained and participated by Citizens."*

Even if the above is a more generic definition that fixes issues in Lipset's one, it still raises certain ambiguities concerning the allowance of Citizens to choose among alternatives. While freedom of choice must be inexorably assumed, the set of alternatives must not contain options not germane to points debated in Democratic decision-making processes. Also, and definitely more important, the statement *"to choose among different alternatives"*, clearly bestows more importance to have a set of defined alternatives, rather than to have alternatives that may be relevant to Citizens. For the purpose to solve these ambiguities, let's just consider for a while Democracies as games[2], and

---

[2]Although it may seem a rash parallelism, the idea of a comparison between systems of Government, or their institutions, and games, is not new in literature. Huizinga in

acknowledge one of the most elegant definition of games by Sid Meir[3]. He defined games as the following [5]:

Definition 1 (Game by Sid Meier). *Games are series of interesting decisions.*

According to Meier [6], interesting decisions, or interesting choices, have the following attributes: (1) they involve some kind of trade-off; (2) they allow deciders to express their personal style; (3) they are situational; (4) they are persistent and affect the system for a period of time; (5) they are informed.

Interesting choices perfectly fit in Democratic decision-making processes. Indeed, when Citizens are demanded to democratically choose a preference in lieu of another one, all the above five attributes must be met or, at least, should be met. Firstly, Citizens must elaborate compromises to select their preferences. Secondly, they should opt for the alternative that best expresses their ideas. Thirdly, Citizens' choices must be circumscribed to the Democratic decision-making process they are taking part to in that moment. Fourthly, Citizens must be informed before being asked to select an alternative. Lastly, as long as Citizens are informed, they must be allowed to make choices continuously and their decisions must have effects on the Society and on the Democracy for a specific amount of time.

The definition of Democracy obtained by introducing the concept of interesting choices, and by reformulating the previous one, is the following:

his work "*Homo Ludens*", introduced for the first time his famous concept of the "*Magic Circle*", while he was underpinning shared features between play contexts and Courts [3, p. 77]. For Huizinga, when Human Beings play, they enter in a Magic Circle, where they acquire temporarily new identities, and differences and social ranks are abolished during the whole playing period. And, for instance, Huizinga identified Courts of Justice as perfect examples of Magic Circles.

[3]Sid Meier is one of the most famous designer and developer of strategy video games. He created, among the others, Pirates!™ and Civilization™. The latter is deemed to be one of the best strategy games ever and it is also the subject of famous studies on education through games [4].

> *"A Democracy is a form of Government based on legitimated decision-making processes that are, directly or indirectly, designed, enforced, maintained and participated by Citizens. A Democracy engages Citizens to achieve interesting choices aimed to produce useful outcomes, for the Society and for the Democracy itself."*

The above interpretation is great to define one of the two sides of Democracies, and so to describe Democratic decision-making processes and all the aspects of involvement of Citizens in them. Nonetheless, the definition still has flaws regarding the other side of Democratic decision-making processes, and so regarding their outcomes. As a matter of fact, the words *"useful outcomes"*, are too much abstract to describe the outcomes that proper Democracies should produce. To address this issue it is possible, again, to borrow a definition from a context external to Democracies. Let's consider the following definition of *"Usability"*, as specified by the ISO standard 9241-11 [7]:

Definition 2 (Usability). *The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use.*

Although it is not a goal of this research to extensively explain what Usability is[4], we can highlight three aspects that are useful for a better description of the outcomes of Democratic decision-making processes: (1) the *"efficacy"*, meaning that an outcome solves an issue; (2) the *"efficiency"*, meaning that an outcome solves an issue in the best possible way; (3) the *"satisfaction"*, meaning that Citizens are satisfied both by the outcome itself, and by the process that drove them to produce the outcome. When talking of these concepts in relation to Democracy, not only they are useful to

---

[4]Usability refers mostly to computer software products and to their interfaces. A software interface is usable if it allows its users to accomplish tasks effectively, efficiently and in satisfying ways. There is a broad literature about Usability. See, for instance, Bevan and Nigel, 2001 [8], to have a good starting point.

give better specifications of the outcomes of Democratic processes, but also introduce an important characteristic of Citizens involved in Democratic processes. In fact, a proper Democratic decision-making process, must aim to be satisfying for participating Citizens, and to produce effective and efficient outcomes for the Society and the Democracy itself. By taking into account all of the above, the definition of Democracies become:

> *"A Democracy is a form of Government based on legitimated decision-making processes that are, directly or indirectly, designed, enforced, maintained and participated by Citizens. A Democracy engages Citizens to achieve interesting choices aimed to produce effective and efficient outcomes, for the Society and for the Democracy itself, while keeping Citizens satisfied."*

Lastly, and very briefly, there is just one more word to add to the definition. Because Democracies are all about Society, and Society is a matter of collaboration, it is a most-wanted requirement that Citizens approach Democratic decision-making processes in a collaborative way. Of course Citizens may have conflicting interests, but this does not mean that they always have to struggle in order to solve them. The more they collaborate, the faster they will find a solution for issues.

Eventually, by adding this very last concept, Democracy is defined as the following:

Definition 3 (Democracy). *A Democracy is a form of Government based on legitimated collaborative decision-making processes that are, directly or indirectly, designed, enforced, maintained and participated by Citizens. In Democracies, Citizens are engaged in creating, discussing, and selecting interesting choices aimed to produce legitimated outcomes, that are effective, efficient, and satisfying for the Society, and for the Democracy itself.*

The above definition 3 includes concepts that deserve further investigation. A Democracy, no matter being a Representative one or a Direct one,

needs to deal with these parameters. Next sections are aimed to more extensively explain these concepts and how to analyze the legitimacy of different models of Democracies by means of them.

2.2 Democracies Concepts

In the previous section, I have derived a definition of Democracies that should be suitable to explain the complexity of Democracies. To achieve it, definition 3 takes into account several concepts.

Firstly, and most important, it is related to the concept of *legitimacy*. Secondly, it addresses a clear separation between Democratic decision-making *procedures*, and Democratic *outcomes*. Lastly, the definition revolves around two concepts related to Democratic outcomes, specifically their *effectiveness* and their *efficiency*.

Different models of Democracies may be analyzed only after having acquired a clear understanding of the above concepts.

The most important concept when talking about Democracy is its legitimacy. The word "legitimacy" derives from the Latin "*legitimatus*" that is the past participle of "*legitimare*", and so "*make lawful, declare to be lawful*"[5].

The relationship between law and legitimacy is still preserved in the current English acceptation of the word. According to the Cambridge British Dictionary[6], "*legitimacy*" refers to:

Definition 4 (Legitimacy in the Cambridge Online Dictionary). *The quality of being legal.*

The above definition 4 is confirmed and extended by the Oxford British Dictionary[7], that defines "*legitimacy*" as follows:

---

[5]Legitimacy in the Online Etymology Dictionary (http://www.etymonline.com/index.php?term=legitimate).

[6]Legitimacy in the Cambridge British Dictionary (http://dictionary.cambridge.org/it/dizionario/inglese/legitimacy).

[7]Legitimacy in the Oxford British Dictionary (https://en.oxforddictionaries.com/definition/legitimacy).

Definition 5 (Legitimacy in the Oxford Online Dictionary). *(1) Conformity to the law or to rules and; (2) Ability to be defended with logic or justification; validity.*

Both the etymology and the two English definitions of the word, revolve around two aspects of legitimacy. On the one side, legitimacy is related to a quality, more specifically, it is related to the quality of being "*legal*" or "*lawful*". This means that products of Democracies must be measurable with specific metrics derived by laws that establish legislative systems of Democratic countries. On the other side, the above definitions also refers to the process of "*making lawful*" or "*justify*" the products of Democracy even "*before*" they become products. In other words, this means that also complex decision-making processes, that eventually result in a Democratic products, must be measured and evaluated in some way.

The following five questions, may address more clearly the need to consider legitimacy both when considering Democratic decision-making procedures, and when considering products of Democracies. Also, the five questions clarify differences between quantitative and qualitative analysis of Democratic products, to the extent they are conceived in relation to the effectiveness and in relation to the efficiency of outcomes.

1. Is the Government system recognized as a true Democracy by the Citizens?

2. Are the Institutions that administrate the Democratic process recognized as Authorities by Citizens?

3. Is the Democratic decision-making process agreed by Citizens taking part, directly or indirectly, in it?

4. How many outcomes does the model produce?

5. Do generated outcomes enhance the Society and the Democratic process itself?

The first three questions are needed to analyze the legitimacy of Democracies. The last two questions are intended to analyze the outcomes of Democracies and their effectiveness and efficiency. A very first assessment of legitimacy of specific Democracies may be achieved by taking into account all the above questions together.

To understand the motivations that underlay the first question, we must go back to Aristotle and to the three kind of possible Government that he enumerated in his work *"Politics"* [9]. He stated that:

> *"The true forms of government ... are those in which the one, or*
> *the few, or the many govern, with a view to the common interest."*

More specifically, he identified three of such true forms of Government: *Monarchy*, *Oligarchy* and *Democracy*[8]. In Monarchies, the ruler is just one person, typically a king or a queen. In Oligarchies, Government is designated to restricted elites of few persons. In Democracies, the power is distributed and divided among everyone. Against this background, by going back to the first of the above questions, it is now clear that a Government system can be legitimated as a Democracy only if Citizens have the clear perception that the power is in their hands, and not in the hands of one or few people. No matter if they are requested to elect someone to take part in the Democratic decision-making process, or if they are requested to directly take part in it. A Democracy is legitimated only if the People, as a whole, is the Government.

The analysis of legitimacy of Democracies by means of questions two and three may be better understood by comparing models of Democracy to games, like I already did in section 2.1.

Under a game perspective of Democracy, while the first of the above questions is intended to legitimate *"the game"* as *"an actual game"*, questions two and three are intended to legitimate the *"arbitrator of the game"*, and the *"rules of the game"*. A Democracy can be legitimated only if judges of

---

[8]Although modern literature defines other true forms of Government, like the Polyarchy by Robert Dahl [10], for the purposes of the explanation of the legitimacy of Democracy, I will focus only on the three Aristotelian forms.

Democratic decision-making processes are the Citizens themselves or they are elected and recognized by the People. Not less important, Citizens must agree on a set of shared rules that drive the decision-making process and these rules must stand for the whole "*gaming period*". Neither judges, nor Citizens, are allowed to change the rules during the game. Rules may be changed only by means of a separated "*gaming phase*", and so by entering in another Democratic decision-making process.

The effectiveness and the efficiency of Democratic decision-making processes can be analyzed by replying to questions four and five above. Not only Democratic processes must be legitimated but their outcomes must be effective and efficient and so they must be evaluated both quantitatively and qualitatively. In a nutshell, the effectiveness and the efficiency of a model of Democracy are instrumental measurements of implemented policies and their quality.

Although they may seem independent concepts, legitimacy, effectiveness and efficiency of outcomes sometimes may overlap. On the one hand, Citizens may think that good results may be generated only by good procedures. So if outcomes are effective and efficient, Citizens may legitimate both outcomes and procedures. On the other hand, Citizens may think that if procedures are legitimated, they must undoubtedly produce legitimated effective and efficient outcomes.

Under a philosophical perspective of legitimacy of Democracies, outcomes and procedures are clearly separated concepts, and, in order to investigate the legitimacy of Democracies, they can be analyzed individually or together.

Next sections are intended to explain different conceptions for the analysis of legitimacy of Democracies.

2.3 Conceptions of Legitimacy

No agreement exists between scholars of Legitimacy of Democracies on whether it is appropriate to legitimate Democracies only in function of their

outcomes, or in function of their decision-making procedures, or in function of the former and the latter simultaneously. Indeed, studies on Legitimacy of Democracies expose two different conceptions, the *monistic* one, and the *non-monistic* one [11].

Monistic views of legitimacy rely only on one parameter. Either they give an instrumental evaluation of outcomes of the Democratic decision-making process, or they legitimate the Democratic decision-making process by taking into account only its procedural features. Non-monistic views legitimate Democracies by referring both to their effectiveness, and so to their outcomes, and to the Democratic decision-making procedural features.

Next sections, mainly based on the work by Fabienne Peter [12], aim to briefly summarize three main streams of conceptions of Legitimacy of Democracy.

2.3.1 Substantial Legitimacy

Instrumental evaluation of outcomes, also referenced in literature as substantial evaluation [13], lays its foundation on the idea that there are ideal outcomes that a Democratic decision-making process must produce, and these ideal outcomes may be summarized as *"maximize rights fulfillment"* [14], and as *"produce the best possible outcomes"*. If a Democratic procedure results in these outcomes, then it is legitimated.

Constraints and issues when legitimating Democracies by evaluating only their outcomes are quite clear. Firstly, this approach may revolve in the unlikable situation to also legitimate non-Democratic regimens and non-fair decisions. For instance, the German Nazi regimen actually maximized the rights fulfillment by granting rights only to the majority of the population, and so to German and Aryan Citizens, that in 1933 were more than the 99.25% of the population[9]. Secondly, when trying to legitimate a Demo-

---

[9]Data of the census of June 16, 1933, according to the United States Holocaust Memorial Museum in the article *"GERMANY: JEWISH POPULATION IN 1933"* (https://www.ushmm.org/wlc/en/article.php?ModuleId=10005276).

cratic regimen, a pure instrumental evaluation of outcomes must primarily define what are the most desirable outcomes. For instance, by being inspired by well-known researches about Democracies effectiveness and so by evaluating the effectiveness in function of economic development [2], now-a-days, it is quite difficult to understand if results of Democratic decision-making processes should foster models of sharing economy, or models of economy based on the property.

Positions in favor of legitimizing Democracy only by produced outcomes, are supported by the *Condorcet jury theorem*. It states that if there are two possible outcomes, a right one and wrong one, and a participant in the decision-making process is more likely to choose the right one, then the majority of participants will choose the correct outcome. Moreover, the theorem states that the more the participants to the decision-making process, as in the case of Democracies based on aggregation of votes, the more outcomes are likely to be fair.

While instrumentalists try to legitimate Democracies by evaluating their outcomes, other scholars claim that Democracies must be legitimated by evaluating their decision-making procedures.

2.3.2 Procedural Legitimacy

The idea laying the ground to legitimate Democracies by considering only Democratic decision-making processes is that, if Democratic procedures are recognized fair *de iure* (by the Law) on the basis of rules recognized moral *de facto* (by the Society), then the outcomes must be recognized fair *de facto* (by the majority of the People), and *de jure* (by Political Systems of Countries). For instance, in those Democracies in which decisions are taken by means of ballots and aggregation of preferences, Democracy may be legitimated when dispositions on ballots: (1) expose clear norms that regulate procedures to acquire preferences of Citizens and; (2) expose clear norms that regulate procedures to aggregate preferences and; (3) expose clear norms and algorithms to compute the will of the majorities [15].

On one side, since the procedure is actually an outcome of other Democratic processes agreed by Citizens, the procedural theory may seem the most fair way to evaluate the legitimacy of Democracies [10]. On the other side, if a Democracy is legitimated by considering only its procedures, there may be situations in which procedures themselves contribute to illegitimate the same Democracy [17, p. 237]. An instance, already exposed in section 2.3.1, is the Germany in 1933, when a chancellor was elected by means of free elections, and his first measure was to issue the "*Decree of the Reich President for the Protection of People and State*"[11], used as a legal basis to suppress the opponents of the same chancellor, so to actually modify the Democratic decision-making procedure.

Against theories of Democratic legitimacy by evaluation of the outcomes, or by legitimacy of the decision-making procedure, other theories propose to legitimate Democracies by taking into account multiple parameters.

2.3.3 Substantial and Procedural Legitimacy

Non-monistic conceptions try to assess if a Democracy is legitimated or not by looking both at the properties of decision-making processes, and the outcomes that they produce. This conception is referenced in literature as "*rational proceduralist*", because of the idea that, in order to be legitimated, Democratic procedures must produce "*rational outcomes*"[12].

The struggle against procedural legitimacy of Democracy is that, even if

---

[10]This is true only by taking it as a premise that there is an egalitarian possibility for each Citizen to prefer a specific Democratic procedure rather than another one, and that the People is enabled to use the procedure preferred by the majority, as stated by famous scholars Bobbio and Kelsen [16, p. 167].

[11]The decree was also called "*Reichstag Fire Decree*", because it gave to Nazis the legal consensus to put the Reichstag building on fire. For more information read the dedicated page of the United States Holocaust Memorial Museum at the following URL: https://www.ushmm.org/learn/timeline-of-events/1933-1938/reichstag-fire-decree.

[12]Further explanations and discussions on rational outcomes will be held later. For now just consider rational outcomes as those ones that are effective and efficient for Citizens.

Democratic procedures are established to be fair, morally and in accordance to law, they could produce non-legitimated or irrational outcomes. Examples of non-legitimated outcomes are the ones exposed in section 2.3.1 and section 2.3.2. Irrational outcomes are those ones that may be effective but not efficient, and so outcomes of very low quality.

Advocates of perfect rational proceduralist conceptions, chiefly scholars of Deliberative Democracy like Habermas and Cohen, state that, assuming that it is possible to outline ideal standards for the outcomes of Democratic procedures, these outcomes can then be achieved by involving Citizens in properly constrained decision-making processes. According to Habermas, (Deliberative) decision-making processes are legitimated because the opinion-formation is discursive and Citizens expect the result of these discursive procedures to have a impartial quality. So if the decision-making process is shaped correctly, it will result in decisions that everyone has reasons to accept. For Habermas only deliberative decision-making procedures are able to create this environment [18].

This contributed to create different branches of rational procedural legitimacy of Democracies. On one hand, there are supporters of *"perfect rational proceduralism"*, like Habermas, stating that only a procedure may lead to rational outcomes. On the other hand, there are supporters of *"imperfect rational proceduralism"*, arguing that it is not possible to both have an infallible single decision-making process, and reach perfect outcomes. So in their opinion, decision-making procedures must be multiple, and each one of them must be aimed to achieve the best approximation of perfect rational outcomes.

In previous sections of this dissertation, and in this latter one, I have exposed a definition of Democracy and the main-stream conceptions about the legitimacy of Democracies. It is now clear that Democracies may be conceived as actual Democracies only to the extent that they may be legitimated and so, only if they are built around specified decision-making procedures that result in effective and efficient outcomes.

Legitimacy, procedures and outcomes are the basic concepts that underlay Democracies. Before explaining different models and applications of Democracies, we need to understand which atomic components eventually give rise, pieced together, to Democratic systems. Next section is aimed to discuss components of Democracies exposed by modern literature scholars.

2.4   Components of Democracies

Classical theories of legitimacy of Democracies attempt to legitimate Democracies by analyzing two parameters: *outcomes* and *procedures*. This leads to a paramount discussion that needs to be addressed.

Consider for a moment computer software. Like Democracies, they are built around a series of procedures that computers run in order to produce outputs. When designing a software, there is another important parameter that must be taken into account, the inputs. Software can produce right outputs only if inputs are compliant to specific and proper formats defined by the software designer. Inputs and procedures are strictly related, meaning that procedures are written in order to deal only with the kind of data that software are intended to process. Also, although software can run without producing any outputs (even if this is a not desirable situation), they can definitely not run without receiving any inputs.

By exporting the latter assertion to the Democratic context, classical conceptions of legitimacy clearly have a certain lack when considering legitimacy of inputs. As a matter of fact, either they completely ignore inputs, or they assume that inputs are parts of Democratic decision-making procedures themselves.

Scholars of new Democracies models argue that inputs must doubtless be taken in consideration. Inputs and procedures of Democracies must be considered as separated concepts and both must be legitimated [19]. By following this conception, inputs are related to the Citizens requests to Governments, and outputs to Governmental decisions. A more participatory

view of input-output legitimacy is the one by Scharpf, addressing inputs to
the participation of Citizens in Democratic decision-making procedures, and
outputs to the efficacy of laws and rules to Democratically solve Societal
issues [20].

However, when addressing legitimacy of Democracies by means of input
and output, procedures are set aside. Democratic decision-making processes
are important to Democracies but, if inputs and outputs are legitimated,
they can be constructed as black boxes that, given specific inputs, produce
specific outputs. After having highlighted the perks of such a legitimization of
Democracies, scholars added a third dimension to input-output frameworks
of legitimacy. More precisely, they introduced the *"throughput"* dimension
[21], that can be defined as *"a performance criterion centered on what goes
inside the black box of the political system"* [22].

In a nutshell, throughput is related to decision-making procedures, and
legitimacy of procedures is addressed by analyzing their efficiency to produce
outcomes. Also, and more important, legitimacy of throughput is concerned
about accountability. Not only it must be possible to evaluate the amount
of work made by Governmental Agencies, but also Citizens must be able to
trace back the outcomes.

The input-throughput-output framework is largely used in literature to
study legitimacy in various contexts [23] [24, p. 235] [25]. Even if the frame-
work was firstly and mainly intended and used to address the legitimacy of
the Democracy model of the European Union, other studies argue that it
can also be used also to legitimate Representative Democracies, by evaluat-
ing, for instance, the quality of the representation (inputs), the transparency
of processes to set the order of the day (throughput), and, of course, the
accountability of decisions (outputs) [26] [27].

On one hand, due to its flexibility, the three-dimensional legitimacy frame-
work is surely the most appropriate one to be applied to both classical
forms of Democracies, like Representative Democracies, and modern hybrid
Democracy models, like Participatory Democracies or the Democracy model

of the European Union. On the other hand, the input-throughput-output framework does not consider yet the legitimacy of important components of Democracies.

As stated before in this section, Democracies may be seen as composed by black boxes, in which decision-making procedures are handled, with entering and exiting pipes. To put it in a graphical way, Democracies are like the box drown in figure 2.2.

Figure 2.2: Democracies as boxes
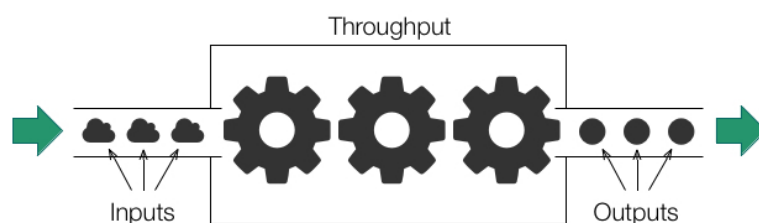
While three-dimensional frameworks address legitimacy of inputs, procedures, and outputs, they do not consider the way how inputs enter Democracies and outputs exit Democracies. To put it simply, *Citizens*, and *Institutions* are took aside from an eventual legitimization. Also, there is no distinction between throughput (the black box), and procedures (the actual decision-making processes).

To understand why Citizens matter and why they must be decoupled from inputs, let's examine "*The Waldo Movement*", the episode three of the second season of the famous anthology television series "*Black Mirror*" [13] [28]. In the episode, a television company creates a political movement to increase its sharing rating during the electoral campaign. The political move-

---

[13] Black Mirror is a anthology television series created by Charlie Brooker. It was first broadcast in UK on channel 4 in 2011. From the very first episode it became a cult series criticized by media and experts of new technologies because of they way the series highlights problems of addiction to new devices and social media. For a complete description of Black Mirror see the article of its author on The Guardian online (https://www.theguardian.com/technology/2011/dec/01/charlie-brooker-dark-side-gadget-addiction-black-mirror).

ment revolved around a blue puppet, named *Waldo*, nominated to legislative elections of UK, and struggled politically against other "human" candidates. Not only Waldo was a puppet, but it also did not have political arguments and used to muzzle its opponents only by means of swear and curse words. Eventually, even after the master of Waldo tried to back down and to warn Citizens to not vote for his puppet, Waldo won the elections, and the Waldo Movement was exported world-wide and won the elections globally[14].

The question is: was Waldo legitimated to participate to the elections and so, was Waldo a legitimated input in the UK Democratic system? It is not a goal of this section to critically answer the question, but this example clearly shows the need for legitimating both inputs of Democracies and Citizens involved in Democracies.

If inputs only must be legitimated, then there is only the necessity to understand if the arguments used by Waldo are compliant to Democratic processes or not. But the problem is also *why*, and *how* Waldo entered the Democratic processes. Firstly, it must be addressed if puppets are Citizens. Secondly, it must be checked if Waldo actually had Democratic intentions or if his speeches were driven by mere economic targets pursued by the television network. Thirdly, if Waldo is considered a Citizen then the way to access Democracy must not discriminate him because he is a puppet.

To summarize, legitimacy of Democracy must be evaluated by means of both the inputs, and ways the inputs access Democracy processes. Legitimacy of inputs is related to *aspects of Citizens Democratic initiatives.*

---

[14]The Waldo Movement must not be acknowledged not giving to much weight to it. The current diffuse support to Populism in Italy, in Europe and in Americas, widely studied in literature [29] [30] [31], in some situations actually started by political figures acting very similarly to Waldo. For instance, in Italy, the *"V-DAY"* laid the foundation to the creation of the Movimento 5 Stelle that currently is one of the largest party of Italy [32], and that is also defined by Carty a *"Franchising Party"* [33]. V-DAY is an abbreviation of *"Vaffanculo-Day"*, that literally can be translated to *"Fuck-Them-All-Day"*, a political initiative that took place on September 8, 2007, in several squares of Italian and European cities.

Legitimacy of Citizens is related to aspects of *creation of inputs* and their *allowance to enter* Democratic processes.

To understand why outputs and Institutions must be both legitimated, let's consider the case of the consultative referendum of the city of Bologna, in Italy, hold on May 26, 2013. The referendum asked Bologna Citizens if the city would continue to economically support, with public funds, private nursery schools as well as public ones. Citizens were asked to choose between "*A*" (use public funds only for public schools), and "*B*" (use public funds also for private schools). Eventually the "A" won but, on July 29, 2013, the town council decided to ignore the outcome of the referendum, and so, the Major and his council decided to publicly found also private schools.

As in the Waldo case, it is not a goal of this research to establish whether this was a right decision, but this is a good example to understand why both outcomes of Democracies, and Institutions of Democracies must be legitimated. The problem is "*what are*" the outcomes, and "*what happen*" to the outcomes of Democratic decisions. Surely, outcomes must be reintroduced in Democratic processes, otherwise the effort spent by Democracies to produce them is useless. But, even if outcomes are blocked, Institutions must be legitimated to do that by means of law[15], or by means of Democratic decisions that were previously agreed. To summarize, if only outputs must be legitimated, then Democracies are legitimated if they *produce* something (quantitative evaluation). If both Institutions and outcomes must be legitimated, then Democracies are legitimated if they produce outcomes that *Institutions can actually, or must actually, process* to fulfill Democratic wills of Citizens (quantitative and qualitative evaluation).

The last separation of components of Democracies that must be addressed is related to the "*throughput*" of Democracies. Classical conceptions of legitimacy, and three-dimensional conceptions of legitimacy, do not make a clear

---

[15]That is exactly what did not happen for the case of Bologna. Indeed the Italian Constitution states that "*Entities and private persons have the right to establish schools and institutions of education, at no cost to the State.*" [34, Art. 33].

distinction between the *decision-making procedures* used to achieve democratic outcomes, and *discussions* among Citizens and Institutions that are performed to achieve them. In other words, while addressing a Democratic need, the focus is only on the procedures to fulfill it. By using again the games metaphor, this means that the focus is on checking if the *rules of the game are legitimated* while deciding, but no attentions are put on *legitimacy of interactions among players* while deciding. This may create despicable situations where actors involved in Democracies change the needs of Societies, while a need is being Democratically addressed.

An example may come in help to better understand the need of considering *legitimacy of discussions* and *legitimacy of decision-making procedures*. On November 30, 2010, the Italian Chamber of Deputies discussed the *"Gelmini's reform"*, a bill aimed to a substantial reform of the Italian University system. The reform was justified by the necessity of adapting the Italian University system to the European Union requirements. Even if it did not serve to its purpose, as demonstrated by recent literature [35], the reform was eventually enforced. However, the point is not to address the efficacy and the efficiency of the reform, but to understand what happened in the meanwhile. In the same day of the discussion of the bill in the Italian Chamber of Deputies, students paralyzed the whole Italy[16]. Students blocked railways, roads and Institutions in the majority of Academic Italian cities, including Rome, Palermo, Bologna, Genoa, Milan, Turin, Brescia, Venice, Florence, Pisa, L'Aquila, Naples, Bari and Catania. There were violent clashes among students and police, and among anarchic students and students belonging to extreme-right movements, and the ones belonging to extreme-left movements. As a consequence, the attention of media moved from what was going on in the Democratic Institution, to what was happening outside the Parliament.

If we consider everything that happened that day as the throughput of

---

[16]The protest was so big that even international media focused on it. See, for instance, the following news: http://www.reuters.com/article/us-italy-protest-idUSTRE6AT4IF20101130

Italian Democracy, because protests are part of Democracies, then the reform and the process of enforcing it is legitimated. But, just for the sake of this explanation, if we assume that protests could be instrumental ones, organized to move the attention from the Chamber of Deputies to the outside, then the reform is not legitimated, because discussions among Citizens and Institutions about the issue, on that day, were not legitimated.

Table 2.1: Components of Democracies

Component	Description
Citizens	Create Democratic needs
Inputs	Democratic needs that access Democracies
Discussions	Communications among Citizens and Infrastructures
Decision-Making Procedures	Democratic decision-making processes
Outputs	Outcomes of Democratic decision-making processes
Institutions	Where outcomes flown to

To conclude, I argue that legitimacy of Democracies must be addressed by means of a six-dimensional framework. Table 2.1 shows the components belonging to the framework. After being created by Society (*Citizens*), and so after being agreed as moral needs, Societal needs (*Inputs*) enter Democracies as unshaped ideas. By means of proper communications (*Discussions*) among Citizens and Institutions, inputs are deconstructed into interesting choices that Citizens can discuss, agree or vote (*Decision-Making Procedures*). After having agreed on the most proper needs and choices, needs are shaped into normative, democratic, or societal tools, like acts, new Democratic tools, or infrastructures (*Outputs*). According to their nature, outputs are driven to the proper place to be handled (*Institutions*). For example, they go to Parliaments if they are bills, or they are flown again into Democratic procedures if they create other needs. Figure 2.3 shows a graphical depiction of such a

kind of Democratic process.

Figure 2.3: A graphical depiction of components and their relations in Democratic processes
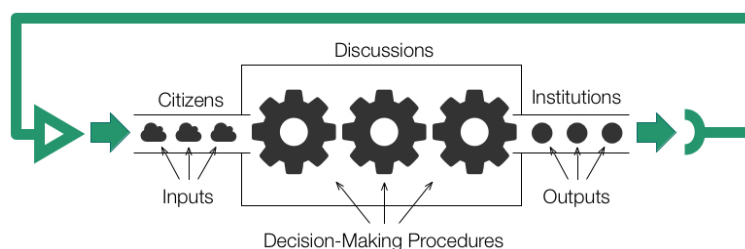
2.5 From Components of Democracies toward Models of Democracies

In this chapter, I have exposed a definition of Democracies, I have enumerated conceptions about legitimacy of Democracies and eventually I have proposed a six-dimensional framework of components that must be considered to address the legitimacy of Democracies. The framework is compliant both to direct models of Democracies, and to representative models of Democracies.

The focus now moves on how to use and to connect components of Democracies to achieve Democracies aimed to be as much legitimated as possible. On one hand, there are models of Representative Democracies, basing their legitimacy on Citizens, discussions, decision-making procedures, and Institutions. On the other hand, there are Not-Representative Democracies, proposing models that aim to create Democracies legitimated in relation to all the components of the framework that I have proposed.

In the next chapter, by discussing literature on various models of Democracies, I expose the roles of components in different models of Democracies. Eventually I will focus on Deliberative Democracies and Deliberative Systems, that are the main topic of my research.

Chapter 3

Models of Democracies

The aim of this chapter is to expose different models of Democracies and to highlight the degree of Citizens' participation and involvement in each of them. In the section 3.1, I will describe Representative Democracies, giving a few hints on the motivations of their current crisis. In section 3.2, I will expose Direct Democracies and Participatory Democracies, showing examples of their implementations, with particular regard to Participatory Budgeting practices. In section 3.3, I will expose how Participatory Budgeting practices have flown into more complex, and more generic, Participatory Democracies practices. Eventually, in section 3.4, I will show ways to discriminate among different models of Democracies by means of the degree of participation that Citizens have in them.

3.1 Representative Democracies

Representative Democracy is a Democracy model that laid its foundations in the American, English, and French revolutions of the eighteenth century [36, p. 1]. Representative Democracies are kinds of Governments where Citizens elect their representatives, usually by means of secret ballots, to discuss their Democratic needs in Institutions.

According to James Madison[1], Representative Democracies are superior political systems aimed to: *"refine and enlarge the public views by passing them through the medium of a chosen body of citizens, whose wisdom may best discern the true interest of their country and whose patriotism and love of justice will be least likely to sacrifice it to temporary or partial considerations"* [39, p. 82]. Madison was strongly convinced that a Government based on representatives would be more able to manage the public good, rather than a Government enacted directly by Citizens [39].

Even if Representative Democracy is stated to be efficient in terms of time and outcomes, because decisions are restricted to a limited set of people deemed to be optimal to solve Democratic issues [40], since its early introduction it has raised doubts among scholars of diverse fields of study, but also among artists, politicians belonging to diverse parties, and religious belonging to diverse religions [41] [42] [43]. Although it is not a task of this research to deeply explore Representative Democracies, and fully examine their critics and supporters, it is important to highlight the main criticisms.

Jean-Jacques Rousseau was among the earliest and strongest attackers to Representative Democracies. In a nutshell, he stated that the English Representative Democracy of the eighteenth century was nothing else than a kind of slavery poorly masked as liberty [36, p. 1]. More specifically, in his work *"The Social Contract Or Principles of Political Right"* he stated that: *"the moment a people allows itself to be represented, it is no longer free: it no longer exists"* [44]. It deserves to be highlighted that Rousseau did not criticize the vote as a tool to express the will of Citizens, that he retains necessary to govern large countries. However, he harshly contrasts the concept of representation because, by combining ballots and representation, Citizens use the vote to elect *who* must deliberate, rather than using it as an

---

[1]Madison was the fourth president of the United States of America. His ideals, and proposals are deemed to be so innovative that Madison is considered the actual *"Father of the Constitution"* [37]. His proposals are still present in the current American Constitution as the "Bill of Rights", and so, the first ten amendments to the American Constitution [38].

efficient deliberative tool.

The concept of voting and votes aggregation is central for the legitimacy of Representative Democracies. Allan Meltzer and Scott Richard [45] argue that in Representative Democracies only few people actually elect representatives because of the *median voter theorem*[2]. Taken alone, this may be a beneficial situation. By definition, outcomes in the mean range should satisfy, at least partially, the wills of the majority of the people. Issues arise when votes aggregation is combined to the current world, mostly driven by financial markets. While representation continues to be an ideal model of Democracy to foster commerce and finance, as in the early time of Democracies Emmanuel Joseph Sieyès stated [47], the middle class may neglect to consider necessities of economically marginalized individuals or groups [48, p. 19]. As a matter of fact, this may flow into an oppression by the majority that may act as a dictatorship [49] [50].

Dangers of Representative Democracies strictly based on the majority rules, are increased by new technologies, television, and social medias, because they may shape political advertising in specific and unfair ways [51]. Human beings are demonstrated to be biased when choosing among preferences[3], as also demonstrated by research of Amos Tversky [52] and the Nobel prized Daniel Kahneman [53]. As a matter of fact, this means that it is not possible that people perform rational choices, especially when choices are related to their economical interests, and when information they have access to are built on the needs of commercials and politicians, rather than Democratic thinking and Democratic deliberation. In other words, I argue here that, people with economical, politic, and financial powers may group in elites, and they may use their powers to control traditional and new medias,

---

[2]The mean voter theorem states that the preference of mean voters beats any other alternative. However, this is true only in one-dimensional contexts of aggregation, and so in ballots in which there is only one issue to vote [46].

[3]I will investigate deeply human beings' biases related to preferences and deliberations in section **??**.

and so to drive the vote of Citizens[4].

The latter statement, plausible or not, leads to the creation of populist groups. Populism, by definition, is the conception that world the population is divided between "*pure people*", and "*corrupted people*" [54], so the feeling of the existence of corrupted elites of people driving Citizens' opinion is a factor for the current large and widely diffused support to populism, that is undermining Representative Democracies on their roots.

The Economist Intelligence Unit's Democracy Index states that, in 2016, the 50.3% of the world population was Governed by means of *full* or *flawed* (Representative) Democracies (Figure 3.1) [55, p. 3]. In the United States, the percentage of Americans that trust in the ability of representatives to govern is decreased from ~70% in 1958, to ~20% in 2015 (Figure 3.2) [55, p. 14]. According to the World Values Survey this attitude seems to be shared all over the world in the last nineteen years [55, p. 18]. Although the seeds of such a crisis of Representative Democracies are quite difficult to analyze and deserve dedicated researches, it seems that the most agreed explanation for the loss of truth in the Government is the financial crash of 2008-09, that revolted in poverty and inequality among Citizens [55, pp. 19-20].

Not only inequality destabilizes the legitimacy of Representative Democracies, but also undermines the legitimacy of new Democracies based on the diversity of people, like the Democracy model of the European Union. On one side, unequal power distribution and unequal power relations among Citizens, are the causes of the current deprivation of legitimacy of Representative Democracies, because there are no precise and explicit standards to check if

---

[4]As medias report, it seems that lately elections in various countries around the world was driven by acting on medias and information. It is reported to be happened in the latest Turkish elections (http://www.al-monitor.com/pulse/originals/2017/02/turkey-referendum-erdogan-tone-policing-backfires.html), in latest elections of various countries of Latin America (https://www.bloomberg.com/features/2016-how-to-hack-an-election/), and last but not least, in the latest Presidential election of the United States of America (https://www.washingtonpost.com/news/monkey-cage/wp/2017/01/12/was-the-2016-u-s-election-democratic-we-see-7-serious-shortfalls/?utm_term=.4b3711acffd6).

Figure 3.1: The diffusion of Democratic Governments around the world
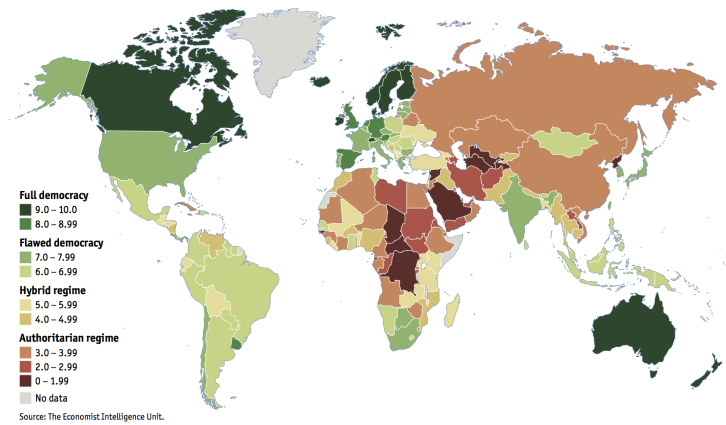
Figure 3.2: The decreasing of trust in the Government of United States of America from 1958 to 2015
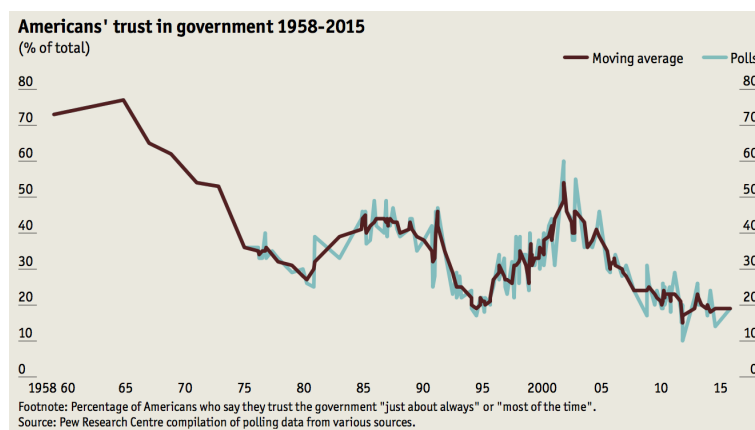
this uneven distribution of power is fair [50]. On the other side, the demand of a more clear distribution of powers may legitimate populist requests of a division of powers based on ethnicity, on nativism, or on other parameters that are not related to the Democratic capacity of individuals [56].

By taking into account the components of Democracies that I have underpinned in section 2.4, it is clear that legitimacy of Representative Democracies revolves all around Citizens. Indeed, in these models of Democracy, Citizens create inputs, so they point out needs and issues of Societies. Needs and issues are then taken care by delegates of Citizens that were previously legitimated to solve problems. Representatives use transparent decision-making procedures to solve issues, and produces outcomes. While representatives are solving issues, Citizens are not enabled to participate in decision-making process, but, after outcomes are produced, Citizens can interact with Institutions to check if Representatives have produced effective and efficient outcomes to fulfil their needs or solve their issues. When Citizens retain that outcomes are not effective or efficient, or when they think they are not proper, they can retire legitimacy of Representatives. This may happen both when outcomes are actually poor, and when Citizens think so due to a mediated, biased and manipulated communication among Citizens and Institutions. As Judith Butler puts it, when people legitimate Government, they still preserve the power to take back the legitimacy and the power. Also, an elected Government can be blocked and replaced by an assembly of people that holds the power to legitimate the exercise of the Democracy [57].

While it is not a goal of this research to endorse or not Representative Democracies, one of my research questions is to understand what are the valid alternatives that may replace Representative Democracies in the current complex globalized and interconnected world. For the purpose of my research, after having accounted all of the above thoughts, I will assume that Representative Democracies need a replacement, and in next sections, I will move forward to describe new models of Democracies that may better replace current Representative Democracies.

3.2 Direct Democracies and Participatory Democracies

Direct Democracies and *Participatory Democracies* are aimed to solve the very issue of Representative Democracies and so, in these models of Democracies, Institutions involve Citizens in Democratic decision-making processes, rather than involving Citizens only in the election of representatives, or in the selection of political personnel [58, p. 17]. Nowadays, I argue here, the two models of Democracies usually overlap, both in dedicated literature, and in informal speaking. For the sake of clarity, and for the sake of my research purposes, in this section, I will firstly address a clear distinction between the two kinds of Democracies, secondly I will define them, thirdly and lastly I will expose examples of both models of Democracies.

Before moving forward and addressing the distinction between Direct Democracies and Participatory Democracies, two clarifications related to Participatory Democracies must be addressed. Firstly, there is a need to understand what is "*participation*" and what are "*Participatory Democracies*". Secondly, there is a need to understand if Participatory Democracies, can be conceived as "*Not-Representative Democracies*" opposed to "*Representative Democracies*", to the extent of the distinction of Not-Representative Democracies and Representative Democracies that I have given in section 2.1, and to the extent of the definition of Representative Democracies that I have given in the previous section 3.1.

Participation, as Carole Pateman defined it, is the "*Citizens' participation in making decisions about collective life*" [59]. If applied to Democracies, participation resolves in transforming them into "*thick*" Participatory Democracies [60]. The concept of "*thick*" Democracies and "*thin*" Democracies is derived from the distinction between Aggregative and Elitist (Representative) Democracies and Participatory Democracies. In the former, the participation of Citizens is peripheral and restricted to vote. This means that Citizens are not involved in everyday Democratic decision-making procedures and so,

these kinds of Democracies are considered thin. In Participatory Democracies, the participation of Citizens is considered fundamental to Democratic decision-making processes. This means that Citizens always have a voice in Democratic decision-making procedures and, so, these kinds of Democracies are considered thick [61].

The above description of Participatory Democracies leads to the other distinction that must be addressed between *Direct Democracies* and *Participatory Democracies*. Both of them are thick Democracies, nevertheless belong to the former those Democracies that use Democratic tools, *regulated by laws or constitutions* (for instance, referenda, recalls, plebiscite, and popular initiatives), to keep the Citizens active players even after they have delegated their Democratic power to representatives [62, pp. 7]. Although these tools are situational, when Citizens of Direct Democracies use them, *de-iure* and *de-facto*, they may get rid of representatives, and they produce Democratic outcomes by themselves.

The Participatory Democracy, while also belonging to Non-Representative Democracies, is longer recognized as an *"evolutionary goal of representative democracy for higher and more effective citizen's participation in government decisions"*[5]. This means that Direct Democracies are, at least some-

---

[5]Here I cite the article "*Direct Democracy Vs. Participatory Democracy*" of Gerardo Martinez-Solanas in the *democraciaparticipativa* blog (https://democraciaparticipativa.net). Very interestingly, the article exposes a doubt on the Indian anti-corruption movement, leaded by Kisan Baburao Hazare [63]. Indeed, one of the proposals of the movement is the "*rejection*" vote. When requested to vote, Citizens can cast the rejection vote, and so they can expressly reject all the candidates. If the number of rejections is higher than the sum of votes for all the candidates, then the ballot is annulled. The members of the movement argue to foster the Participatory Democracy, but also they reclaim a new kind of vote regulated by the law. Because of this, to the author it is not clear if they have confused Direct Democracies with Participatory Democracies. Also, I argue here, it is very interesting that the leader classify the movement as an "*anti-corruption*" movement, that may address the movement as a populist movement to the extent of the definition of populism that I have given in section 3.1. The complete article is publicly available for reading at the following address: https://democraciaparticipativa.net/economia-society/columnistas-

times, models of Democracies where *participation of Citizens has a normative meaning*, and Citizens are allowed by *enacted laws* to produce Democratic outcomes. Whilst, Participatory Democracies must be intended in *parallel to Representative Democracies*, with the only scope to *serve to a better engagement of Citizens in participating in* Democratic decision-making procedures, while *still delegating final decisions* to Institutions (or to representatives).

The firs of the following definitions is my own definition of Direct Democracies. The second one is my own definition of Participatory Democracies, built by matching all the above insights with the definition of Umberto Allegretti [64, p. 156] and the doubts by Luigi Bobbio about Participatory Democracies [65, p. 1]:

Definition 6 (Direct Democracy)**.** *Direct Democracy is a model of Democracy where Citizens are allowed, by enacted laws or by the Constitution, to produce Democratic outcomes directly.*

Definition 7 (Participatory Democracy)**.** *Participatory Democracy is a relationship among Citizens and Institutions, that resolves in a direct engagement of the former in monitoring the actions of the latter, without having any formal and normative power on Democratic decision-making procedures.*

The next sections are aimed to expose the very first example of Direct Democracies, the ancient Athenian Democracy, and to expose instances of Participatory Budgeting, both when they are classifiable as Direct Democracies, and as Participatory Democracies.

3.2.1 The Ancient Athenian Democracy

The idea of enabling Citizens to govern themselves, thus the very first experiment of direct Democracy, has long-standing roots in the ancient history. More specifically, Democracy was born in Athens in 507 B.C., when

---

invitados/4261-direct-democracy-vs-participatory-democracy.html.

Cleisthenes proposed a reform, called "*Demokratia*" [66], that laid the foundations for modern Democracy, because of the way it redistributed the power to the People as it was never done before[67, p. 225].

In the fourth century and fifth B.C., the population of Athens was stated to be between ~30000 and ~60000 people [68, p. 215]. A large cut of the People, around 13295 male Citizens, were involved in Democratic processes. Around 13100 male Citizens were involved voluntarily, or by means of lots, in the four most important Institutions of the Government [31, p. 57].

The assembly of the People, the *Demos* [69], was made up of ~6000 voluntary male Citizens that used to meet in forty *Ecclesia* (meetings of the assembly) per year [70]. They had in charge to vote bills and decrees, and to elect the minority part of the Athenian's Democratic system that was not selected by lots, such as some members of the *Arkhai* (the Civil Judiciary) [71]. During the assembly, votes were cast in show of hands or by ballots [72].

The forty annual Ecclesia were administrated by the Council of the Five Hundreds, the *Boulé* [69]. The Council was also responsible to draft new bills and decrees, and to supervise the work of Magistrates. As suggested by its name, the Boulé counted five hundreds male members, chosen by lot among Citizens that were at least thirty years old. The Council of Five Hundreds also contained committees like, the *Prytaneis* (the executive) and the *Proderoi* [69]. The president of the Council, the *Epistates* changed daily and was elected by lot [73, p. 31]. He was the supreme ruler, and had the duty of chairing and supervising the meetings of the Council for twenty four hours [74].

The *Heliaia*, the Popular Tribunal, was not constituted by legal experts [75], but made of ~6000 male Citizens chosen by lot on the day of the trial [76, p. 70] among Citizens in their thirty or older. Parts of the Heliaia, were the *Nomothetai* and the *Juries*. The Nomothetai had in charge to examine and approve new laws, and to change existing laws. The Juries had the tasks of judging criminal trials, civil trials, and the legality of decrees [76, p. 132].

Only murderers of Athenians Citizens were judged externally of the Heliaia and by legal experts. Homicide trials were managed in the *Areopagos* (the Ancient Tribunal), that was made up of 150 *Areopagites*, Magistrates that used to be members of the Arkhai and that had retired [77, pp. 41-46].

The last of the four fundamental Institutions of the Government was the Civil Judiciary, the *Arkhai*. Around six hundreds Magistrates of the Arkhai were elected by lot among male Citizens that were aged thirty or older [31, p. 57]. Nine Citizens were also elected *Arkhons*, the chief Magistrates of Athens, who had in charge to organize the Athenians celebrations and to preside over the Heliaia [78, pp. 217-218].

Figure 3.3 shows in a simplified and schematic way the Athenians Democratic system and the flow of bills and decrees in the Athenians Democratic process [31, p. 58].

The Athenians Democracy is perhaps, I argue here, the best example of Direct Democracy, because of its wide involvement of Citizens. However, in order to give every male Citizen the autonomy to participate in the Democratic decision-making, the Athenians Democracy relied strongly on three underling conditions [79, p. 27]. First and worst condition, while the Athenian males were engaged in time-consuming Democratic deliberation, they were able to glean labour force from two kinds of slavery. Women were exploited for addressing domestic services, and slaves were exploited for agriculture, industry and mining. This also contributed to create the second condition for the effectiveness of Athenians Direct Democratic because slaves, women and immigrants were not enabled to participate to Democratic processes, and the deliberation was restricted to a small amount of Citizens. The third condition was the dimension of the ancient Athens, a city fitted in a few square kilometers with a large agricultural hinterland.

In other words, the Athenians Democracy worked well because of its restricted set of participants, and because of the dimensions of the land that Democratic outcomes would affect, two conditions on which also some modern models of Direct Democracy rely, as I expose in the next section.

Figure 3.3: The Athenians Democracy System

Bills   **Voted Bills**

Propose   Vote

Boulé

🪄 Powers	ℹ️ Other Info
⚙️ **Administer the Ecclesia**	👥 **~500 Drawned**
✏️ **Draft new Bills and Decrees**	📅 **New President elected daily**
👁️ **Supervise the work of Magistrates**	

Demos

🪄 Powers	ℹ️ Other Info
🕘 **Discuss and Vote Bills and Decrees**	👥 **~6000 Voluntary**
✋ **Elect some member of the Arkhai**	📅 **Forty Ecclesia per year**

Check by Citizens

Citizens

👥 **~30000 up to ~60000**

Check by Magistrates

Arkhai

🪄 Powers	ℹ️ Other Info
🔨 **Preside over the Heliaia in affairs of family and inheritance law**	👥 **~600 Drawned**
🏺 **Organise Celebrations**	

Heliaia

🪄 Powers	ℹ️ Other Info
☑️ **Examine and approve new laws**	👥 **~6000 Drawned**
✏️ **Modify existing laws**	📅 **Elected by lot the day of the trial**
🔨 **Judge criminal and civil trials and decrees' legality**	

Execute   Approve

Laws   **Approved Bills**

3.2.2   Participatory Budgeting in Brazil

Participatory Budgeting is an interesting instance of both Direct Democracies and Participatory Democracies. One of the most studied examples of Participatory Budgeting is the *Participatory City Budgeting in Porto Alegre*, in Brazil [80] [81] [82][6]. *Participatory Balancing* are Participatory policy-making and decision-making processes held in forums, where Citizens can discuss on how to allocate financial resources of their neighborhoods [83]. In 1988, after a long period of instability of the Brazilian Democratic Institutions, a coalition of left parties flew into the Worker's Party (Partido dos Trabalhadores). After having gained the control of the municipal government of Porto Alegre, the party contributed to promulgate the new Constitution of the *Federal Presidential Representative Democratic Republic of Brazil*, whose articles 14 and 29, respectively, grant to the People the opportunity to exercise sovereignty by means of People's initiative, and grant to the People's assembly to participate in organizational processes of Town Councils[7]. The articles leaded also to a measure named the "*Participatory Budgeting*".

Twice per year, each region meets in a regional Plenary Assembly to discuss the budget of the region. Anyone can participate to the Assembly, but the vote is restricted to residents Citizens of the region. During the first meeting, held in March, representatives of the Region show and discuss the budget from previous year. Right after, the assembly elects delegates among the present Citizens. Delegates are then involved in weekly meetings for the following three months to work on regions' budgetary issues and regions' priorities for the following year, and so they discuss options to improve regions' financial stability, but also discuss new projects to improve regions' economy. After three months, the second Plenary Assembly is held,

---

[6]The Participatory City Budgeting in Porto Alegre, is usually cited in literature as an implementation of Participatory Democracy, or it is cited as an implementation of Deliberative Democracy. According to my definitions 6 and 7, I will consider the Participatory City Budgeting of Porto Alegre as an example of Direct Democracy.

[7]The English translation of the Brazilian constitution of 1988, is publicly accessible at the following address: http://english.tse.jus.br/arquivos/federal-constitution.

Figure 3.4: The number of participants of Participatory Budgeting in five Cities of Brazil

Year	Belo Horizonte	Ipatinga	Recife	Porto Alegre	São Paulo
1990	n.a.	630	n.a.	976	n.a.
1991	n.a.	470	n.a.	3,694	n.a.
1992	n.a.	483	n.a.	7,610	n.a.
1993	n.a.	563	n.a.	10,735	n.a.
1994	15,216	572	n.a.	9,638	n.a.
1995	26,823	681	n.a.	11,821	n.a.
1996	36,508	604	30,000	10,148	n.a.
1997	31,795	683	n.a.	11,908	n.a.
1998	19,418	1,533	30,000	13,687	n.a.
1999	21,175	2,136	n.a.	14,776	n.a.
2000	31,369	2,018	30,000	14,408	n.a.
2001	n.a.	5,015	42,800	16,612	34,000
2002	28,124	981	67,100	28,549	55,000
2003	n.a.	2,374	69,500	26,807	80,000

and delegates present a set of possible proposals, voted together with the selection of two delegates that will represent the region in the *Participatory Budget Council*, working in the next five months on citywide budgets to fit them into the one of the Region. The city-level council is composed by sixteen members: two delegates from the Region, ten elected delegates of the five *thematic plenaries* (two delegates for each of them), a delegate from the union of the workers of the City, a delegate from the neighborhood associations, and two delegates from municipal Agencies. The city council meets at least once per week to create a municipal budget compliant to the regional one. On September 30th, councils of Cities submit the budget to mayors, who can accept and promulgate it, or ask the Council to review it. If that is the case, members of the council can accept to amend the budget, or they can override the veto of the Major by voting and reaching a super-majoritan consensus of two thirds of the members.

Nowadays, techniques of Participatory Budgeting are used all over Brazilian regions and Cities with increasing participation rate by Citizens. Figure 3.4 shows the increasing number of participants of Participatory Budgeting in five cities of Brazil from 1990 to 2003. Figure 3.5 shows the frequency of participants of Participatory Budgets in Belo Horizonte and Betim [83].

On the heels of the good results in participation achieved by cities of

Figure 3.5: The frequency of participation of Participatory Budgeting in Belo Horizonte and Betim

Number of times respondent participated	Belo Horizonte		Betim	
	Number of respondents	Percentage of respondents	Number of respondents	Percentage of respondents
Once	526	54.5	92	49.5
Twice	168	17.4	32	17.2
Three times	78	8.1	19	10.2
Four times	70	7.2	13	7.0
More than four times	64	6.6	14	7.5
No response	60	6.2	16	8.6
Total	966	100.0	186	100.0

Figure 3.6: The spread of Participatory Budgeting initiatives around the world at the end of 2012
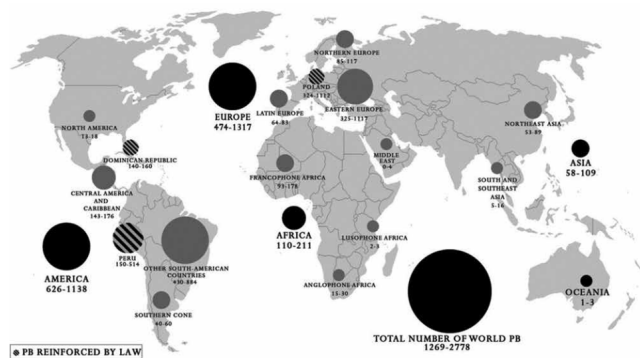
Brazil, Participatory Budgeting techniques have been adopted in various country of the world. Figure 3.6 and Figure 3.7 show the number of participatory initiatives around the world updated to 2012 [84].

Figure 3.7: The number of Participatory Budgeting initiatives around the world at the end of 2012

World region/countries	Number of PBs (min.-max. estimated)
Total	1269–2778
EUROPE	474–1317
Latin Europe	64–83
France	5–10
Italy	18–25
Portugal	16–18
Spain	25–30
Northern Europe	85–117
Germany	70–93
Iceland, Finland	1–3
Norway, Sweden	4–6
United Kingdom	10–15
Eastern Europe	325–1117
Albania	1–2
Bulgaria	0–1
Croatia	0–2
Russia	14-10
Poland	324–1102
AMERICA	626–1138
North America	13–18
Canada	1–1
Mexico	5–10
United States	7–7
South America and Caribbean	613–1120
Southern Cone	40–60
Argentina	25–35
Chile	15–22
Uruguay	0–3
Other South American Countries	430–884
Bolivia e Ecuador	10–15
Brazil	255–330
Colombia	15–25
Peru	150–514

Central America	143–166
Dominican Republic	140–160
Nicaragua, Salvador, Costa Rica	3–6
Other Caribbean countries	0–10
AFRICA	110–211
Francophone Africa	93–178
Benin	1–1
Burkina Faso	3–4
Cameroon	27–57
Congo	10–29
Madagascar	33–59
Senegal	19–28
Anglophone Africa	15–30
Malawi	15–30
South Africa	
Tanzania	
Uganda	
Zambia	
Zimbabwe	
Lusophone Africa	2–3
Mozambique	2–3
ASIA	58–109
Middle East	0–4
Jordan	0–4
South and Southeast Asia	5–16
Indonesia	0–5
Sri Lanka	1–1
Thailand	4–10
Northeast Asia	53–89
China	7–10
Japan	6–9
South Korea	40–70
OCEANIA	1–3
Australia	1–2
New Zealand	0-1

It is also very interesting to discuss, the Participatory Budgeting models adopted by some European countries, due to their shifting from models of Direct Democracies to models of Participatory Democracies. In the next section, I will discuss some of them.

3.2.3 Participatory Budgeting in the European Union

The most interesting models of Participatory Budgeting in the European Union, I argue here, are: the "*Consultations on public Finance*", the so-called "*Proximity Participation*", the "*Community Funds at local and city level*", and the "*Public/Private negotiations table*". All of them are models of Participatory Democracy, either because the Town Council has the actual final word on how to allocate finances, or because finances supplied to Citizens for improving their Cities are not public funds, so funds are provided by private businesses, and Citizens allocate them autonomously without any bounding to local Institutions [85].

France and Germany are the two European countries which mostly use models of Proximity Participation and models of Consultation on Public Finances. Both models are consultative processes, where opinions of Citizens are collected and listened by representatives, or by delegates of Towns Councils, and then Institutions may decide to implement or not ideas brought in public consultations by Citizens [86]. The two models differ in their purposes, and in their origins.

In models of Proximity Participation, mostly used in France, Citizens are involved to discuss about non-financial issues, such as generic ideas on how to improve their Cities. Proximity Participation models are derived from old French models of public consultation based on neighbourhoods [87, p. 70] [88], but they were partially modified by taking inspiration from the model of Participatory Budgeting in Porto Alegre.

Consultation on Public Finances, mostly used in Germany, are intended to make Citizens aware of the financial performances of their Cities. These models were partially influenced by the Participatory Budgeting of Porto Alegre, but they were actually imported in Germany from the New Zealand city of Christchurch [87, p. 83].

Usually, in both models participants are informed by announcements spread by medias, but in some experiments in both French and German cities, participants were invited directly by Majors on the basis of a random selection [86]. Both models involve Citizens in assemblies held twice per year. In Proximity Participation models, while in assemblies, Citizens are supplied with a list of proposals among which they can select their preferred ones. At the end of assemblies, surveys by Citizens are collected and aggregated into one or more proposals that are forwarded to Town Councils.

Community Funds and Public/Private Negotiating tables are mostly adopted in Great Britain and Eastern Europe. The two models are similar to the extent that Citizens are asked to propose ideas to allocate funds supplied by themselves, or by private business or, in some cases, only partially supplied by local public Institutions [85].

For instance, in Public/Private Negotiating Tables, mostly used in Eastern Europe, a part of the funds needed to implement a specific proposal, may be supplied by business, or by Inter-Governmental Agencies like the United Nations. By raising part of the needed funds, third party actors gain the right to influence the final implementation of proposed projects. For example, in Plock in Polonia, an oil company, the local Municipalities and the United Nations funded together the developing program of the City for a total of three-hundreds-thousands euros. Citizens were involved in discussing proposals by means of a Public/Private Negotiating Table, but after the assembly they had no decision power on the advancements of the program [86].

In Community Funds models, mostly used in British cities, funds are raised by Citizens and Business are excluded from the discussion on how to handle them [87, p. 102]. Similarly to the Participatory Budgeting of Porto Alegre, funds are mostly used to mitigate social disadvantages [83].

Practices of Participatory Budgeting, classifiable under the umbrella of Participatory Democracies, are impressively increasing in European Union. Figure 3.8 shows a graphical depiction of the increasing amount of Participatory Budgeting from 2000 to 2005 around Europe [85]. The graph in Figure 3.9, shows the increasing number of Participatory Budgeting practices from 1991 to 2008 in Europe [86].

3.3   Beyond Participatory Budgeting

Nowadays, Participatory Democracies are not only related to collaborative and participatory budgeting practices. There are a plethora of participatory methodology and models used in various initiatives, and in diverse contexts. When searching into their website the keywords "Participatory Practices", the *National Coalition For Dialogue And Deliberation*[8], lists more

---

[8]The National Coalition For Dialogue And Deliberation is a network of more than two-thousands experts and enthusiasts of participatory and deliberative practices. On their website (http://ncdd.org/), they maintain an updated list of tools and practices for participation, manuals, and other resources related to both face-to-face, and online

Figure 3.8: The spread of Participatory Budgeting initiatives around the Europe from 2000 to 2005
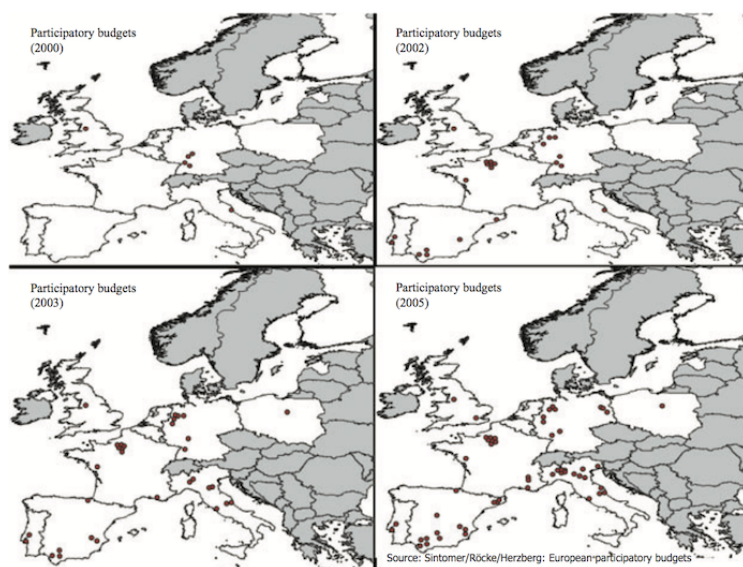
Figure 3.9: The number of Participatory Budgeting initiatives in the Europe from 1991 to 2008
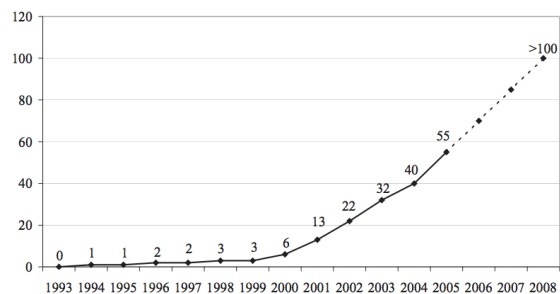
than one-hundred-eighty methods and tools (Figure 3.10).

Figure 3.10: Participatory Methods and Tools listed by the National Coalition For Dialogue And Deliberation
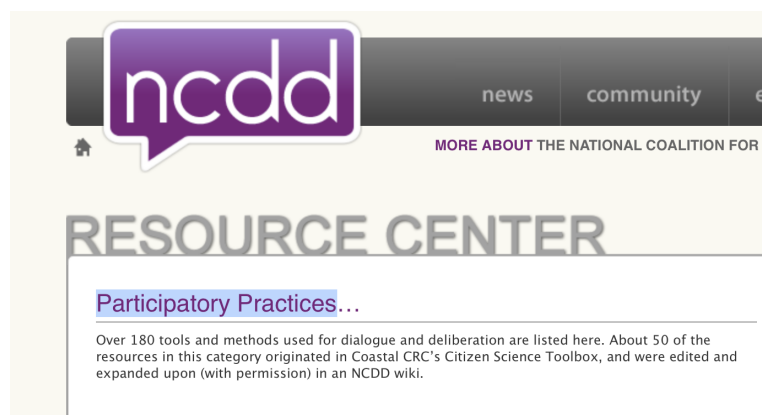
Models of Participatory Democracy to address diverse issues are used by Municipalities, States, and other Organizations at various engagement scales of Citizens. The *Neighborhood governance councils in Chicago*, the *Wisconsin Regional Training Partnership*, the *Habitat Conservation Planning under the Endangered Species Act*, all of them are initiatives using one or more methodologies of Participatory Democracy [80].

More and more, these initiatives are moving from mere consultative Participatory Democracies processes to actual models of Direct Democracies. This particularly happens, I argue here, when Participatory Democracies are promoted and used by social and political movements, or when they claim to do so.

For instance, *Zapatistas movement of Mexico*, and the *Landless Movement of Brazil*, both of them are implementing Participatory Democracies in six areas. In some of these areas, like the *Councils for Good-Government* for the Zapatistas, or the *Management of Land Resources* for the Landless Movement of Brazil, they can claim to use Participatory Democracies [89]. In other areas, like the *Military Management* for both movements, they actually use

---

participation, deliberation, and facilitation.

Direct Democracies practices.

A very peculiar study case is the *Movimento 5 Stelle* in Italy. On one hand, they discuss proposals in their party without any boundary by Institutions, and to this extent they practice a model of Participatory Democracy [90] [91]. On the other hand, as I stated before in section 2.4, the Movimento 5 Stelle is currently the third largest party in Italy. For this reason, they have currently one-hundred-twenty-one representatives in the Parliament. This allows them to discuss in the Italian Parliament the proposals that the party has previously agreed with participatory tools, and so, this revolves in a *hybrid form of Participatory-Representative-Democracy.*

Movements similar the Movimento 5 Stelle, are spreading all over the Europe and, unfortunately, most of them found their political activity on populist (or worst) arguments. As a limited exemplifying set, and worth of note, are the *Indignados* in Spain [92], the *Podemos* party in Spain, the *Front National* in France [93], the *Syriza* movement in Greece [94].

Although one of the causes of the growth of these populist parties is surely the financial crisis of 2008, as well as all the other motivations that I have exposed in section 3.1, leading to a loss of confidence in Representative Democracies, I propose here two additional explanations for the large and increasing endorsement that these movements are achieving. The first explanation, or the bad one, is related to how they use new and traditional medias to spread information, in order to skilfully and despicably exploit human beings' biases, like elites do in Representative Democracies, as I have already touched upon in section 3.1. One of my research questions is to understand which human biases can, and should not, be exploited when participating or deliberating. I will answer this research question in chapter 6. The second explanation, or the good one, is that Citizens want to participate more and more, mostly directly, in the Democratic decision-making processes.

As an evidence to support this conclusion, in Italy, in 2013 the Web site dedicated to initiatives of public participation[9] promoted a survey asking

---

[9]The Italian public Web site for participation (http://partecipa.gov.it), is an initiative

Citizens to specify the public participatory tools that they would prefer to use to improve Democratic and Institutional decision-making processes. The survey lasted from July 8th to October 8th, and a total of 306.259 Citizens filled it in. The results showed that 17.7% of Citizens would like to have more bills proposed by public initiatives, 16,3% of Citizens would like to have more consultative referenda, and 15,3% of Citizens would like to have more online consultations [95, p. 55].

After having acknowledged all the above, the point now moves to the following two issues. Firstly there is a need to understand how to discriminate between "*pseudo*" participation of Citizens, and "*full*" participation of Citizens. Secondly, there is a need to understand which models of Democracies can actually implement these thick and full Participatory Democracies or Direct Democracies in legitimate ways. The next section is aimed to reply to the former of these two questions.

3.4 From Pseudo-Thin Democracies Toward Full-Thick Democracies

As I have stated in the previous section, nowadays, parties or Institutions claiming to use or to be strictly founded on practices of Participatory Democracies, actually rely on hybrid Participatory-Direct-Democracies. Even worst, for the sake of clarity, these hybrid models of Democracies are still interconnected with models of Representative Democracies. For these reasons, it is often quite difficult to understand what is the specific model of Democracy that Citizens and Institutions are dealing with. A first consideration can be made on the degree of involvement of Citizens.

In the famous paper "*A Ladder of Citizen Participation*" [96], Sherry Arnstein enlightens how to evaluate the level of participation of Citizens. She argues that there are three levels of participation and, more specifically,

---

of the Presidency of the Council of Ministers intended to support and to foster public consultations among Citizens, Institutions and Public Administrations.

seven steps to climb the ladder of the full participation, depicted in Figure 3.11.

The first level of participation, the level of *Non-Participation*, includes the "*Manipulation*" and the "*Therapy*" rungs. When manipulated, by means of biased information, Citizens are driven to mass actions. The next rung, the therapy, means that Citizens are "exploited" and involved in fake consultations and decision-making processes, aimed to legitimate specific actions. I claim that this is the level where populist movements (but also dictatorships) operate.

The second level of participation, the level of the *Tokenism*, contains the "*Informing*" rung, the "*Consultation*" rung, and the "*Placation*" rung. This level, I argue here, is a middle one between populist movements, and Direct Democracies and, so, this is the level where Participatory Democracies and Representative Democracies operate. In the first rung, the informing rung, Citizens are supplied with *real* information on public initiatives related to the public good. In the second rung, the consultation rung, Citizens are taken into consideration when discussing new proposals related to the public good. In the third rung, the placation rung, representatives or Citizens are actively involved in decision-making procedures.

The third level of participation, the level of the *Citizen Control*, is the one related to Direct Democracies and Deliberative Democracies, in which Citizens are actually involved in Democratic decision-making procedures, or they actually govern themselves. This level contains the "*Partnership*" rung, the "*Delegated Power*" rung, and the "*Citizen Control*" rung. When there is a partnership, all Citizens are involved into Democratic decision-making processes, and they decide on public good together with Institutions. When in the second rung, Citizens are delegated by Institutions to act on particular issues. In the last rung, Citizens have the complete control on Society, and so they govern themselves.

By matching the ladder of participation with the work of Donald Moynihan [97], the three levels of the ladder can be also conceived as related to

Figure 3.11: The ladder of Citizen Participation by Sherry Arnstein
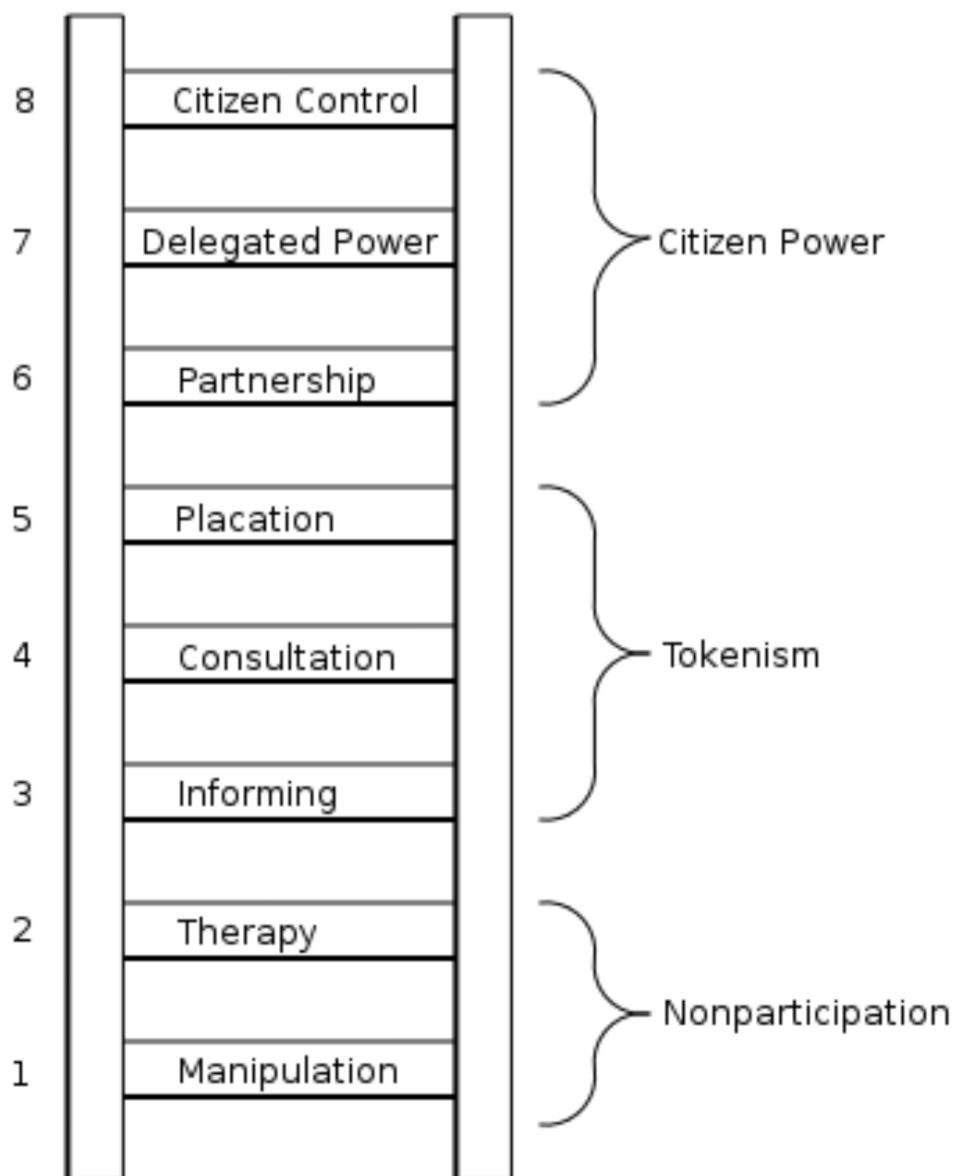
Table 3.1: From Non-Participatory Democracies to full Direct Democracies

Type	Thick	Thin	Level
Full	**Deliberative Democracy**	**Direct Democracy**	
Decisions	Institutions and Citizens take decisions after having agreed by means of discussions	Institutions and selected groups of Citizens take decisions	Citizen Control
Discussions	Large groups of citizens are engaged in discussions with Institutions	Selected groups of Citizens have significant influence, but many citizens are not engaged in discussions	
Partial	**Participatory Democracy**	**Representative Democracy**	
Decisions	Institutions take decisions, and citizens have limited influence	Institutions and elites take decisions, and selected groups of Citizens have limited influence	Tokenism
Discussions	Large groups of Citizens are engaged in limited discussions with Institutions	Selected groups of Citizens have limited influence, but most citizens are not engaged in discussions	
Pseudo	**Populist Representative-Participatory-Democracy**	**Populist Participatory Democracy**	
Decisions	Institutions take decisions	Institutions take decisions in a non-transparent manner	Non-Participation
Discussions	Discussions are symbolic even if they involve large groups of Citizens	Discussions are symbolic, and they involve a small amount of Citizens	

Pseudo Democracies, *Partial Democracies*, and *Full Democracies*. As showed in table 3.1, each one of the levels has a *thin* version and a *thick* version, and each level has a *discussions sub-level*, and a *decisions sub-level*.

Pseudo-thin Democracies are populist Participatory Democracies, and pseudo-thick Democracies are populist Representative-Participatory- Democracies. These two model of Democracies do not allow any participation of Citizens, or Citizens are merely deluded to participate. Representative Democracies belong to partial-thin Democracies, and Participatory Democracies belong to partial-thick Democracies. These two models of Democracies, give to Citizens a small amount of token to participate in discussions and in decisions.

In the last level, there are Direct Democracies that belong to full-thin Democracies, and Deliberative Democracies, that belong to full-thick Democ-

racies. The two models of Democracies, essentially differ in the amount of Citizens involved in discussion and in decisions, but also they differ in the amount of discussions and decisions that must be taken.

Deliberative Democracies and Deliberative Systems are the main research areas of this work. The next chapters of this part are aimed to define Deliberative Democracies, expose their features, and discuss the requirements needed to implement them. Nowadays, studies on the relevance and the feasibility of Deliberative Democracies are quite impressive, so long that even the latest President of the United States of America, Barack Obama, has focused his attention on them. I would like to conclude this chapter with one of his statements [98, p. 92]:

> *"What the framework of our Constitution can do is organize the way in which we argue about our future. All of its elaborate machinery - its separation of powers and checks and balances and federalist principles and Bill of Right - are designed to force us into a conversation, a "deliberative democracy" in which all citizens are required to engage in a process of testing their ideas against an external reality, persuading others of their point of view, and building shifting alliances of consent."*

<div style="text-align: right">Barack Obama, 2006.</div>

Chapter 4

Deliberative Democracies

In this chapter, I will discuss the literature on Deliberative Democracies in order to extract features for their legitimated and effective implementations. Firstly, in section 4.1, I will expose literature on the first two generations of Deliberative Democracies, and in section 4.2 I will expose the main criticism on them. Secondly, in section 4.3 and its subsections, I will expose thoughts of scholars of the third generation of Deliberative Democracies, show methods to evaluate the quality of deliberations, and describe some practical examples of methods for Deliberative Democracies. Thirdly and lastly, in section 4.4, I will analyze the literature on the fourth generation of Deliberative Democracies, and I will characterize Deliberative Systems.

4.1 Theories of Deliberative Democracies

As a very first and unsophisticated statement, the Deliberative Democracy is a kind of Democracy aimed to engage Citizens in genuine discussions rather than in expressing their preferences by means of ballots. In other words, the aggregation of Citizens' discrete needs is made before voting and before creating the choices for the ballot. By doing so, eventually, in an ideal deliberative world, voting would become unnecessary.

An elegant definition in literature is the one by John Parkinson [99, p.

1], who defined the Deliberative Democracy as:

Definition 8 (Deliberative Democracy by Parkinson)**.** *A way of thinking about politics which emphasizes the give and take of public reasoning between Citizens rather than the counting of votes or the authority of representatives.*

Another definition also involving representatives, is the one by Amy Gutmann and Dennis Thompson [50]:

Definition 9 (Deliberative Democracy by Gutmann and Thompson)**.** *A form of government in which free and equal citizens (and their representatives), justify decisions in a process in which they give one another reasons that are mutually acceptable and generally accessible, with the aim of reaching conclusions that are binding in the present on all citizens but open to challenge in the future.*

The two above definitions expose some fundamental traits of Deliberative Democracies. More specifically, Deliberative Democracies involve a certain kind of *reasoning* about *justified* arguments, eventually turning into *conclusion* that can always be *challenged* and *transformed*.

Before stepping forward to a deep investigation of different theories of Deliberative Democracies and other features of them, there is a key point that must be addressed. Due to the maturity of studies on Deliberative Democracies, sometimes also in famous modern literature [100] [101], the distinction between *Deliberative Democracy* and *deliberation* is readily addressed. Although it is not a scope of this research to precisely highlight the differences between the two concepts, and deeply explain what are the traits of the deliberation[1], it is important to understand that *deliberation* is a *"dialogue that bridges differences among participants' diverse ways of speaking and knowing"* [103], whereas Deliberative Democracy, I argue here, is a kind of Democracy whose *first and mandatory component is the deliberation.*

---

[1]I suggest to readers that want to understand better the differences between the two concepts, to take a look to the Ph.D. thesis by Thomas William Flynn [102], that is expressly intended to provide a clear distinction between the two concepts.

Even if the idea of a Democracy built around the concept of the "*rule of reason*" may be traced back to the Aristotelian *Politics* [104], the idea of the Deliberative Democracy in the modern era is accounted to Jurgen Habermas. After having deeply argued that democratic principles and moral principles are separated entities, also by discussing classical literature on Democracies, he concluded that there is still a certain form of competition between governance oriented to moral rights and governance oriented to popular sovereignty [105, p. 94].

Habermas proposed a possible solution to appease this competition. Because laws may only describe the Democratic principles, the proposal of laws must be justified by means of moral principles, on which Citizens should agree by deliberation and by being moved by "*the force of the better argument*" [106, p. 108]. According to Habermas, if communication relies on precise features, more specifically if it is *open*, *unobstructed*, and *intersubjective*, then outcomes of the deliberation will be *moral*, *impartial* and *transcendental* from particular preferences and interests of individuals [107].

To be compliant to the above features and to produce outcomes having the above qualities, current institutions must facilitate the deliberation by supplying common goods, like *free and independent information*, and *public education*. Also, institutions must facilitate the exercise of democratic rights, like the *right to demonstrate*[2].

The most forecasting and fascinating vision of the Habermas' idea of deliberation was about the places where the deliberation should occur. He stated that the deliberation must take place not only in Parliaments, but also in every place that belongs to the public sphere, such as in schools and in media, but also when queuing at the bus stop. In other words, deliberation

---

[2]Features and goals of the deliberation, and features of infrastructure described by Habermas, are well-summarized in the article "*What is a democracy?*", edited by Marthe in the Blog of the "*West London Philosophy School*". It is available for public reading at the following address: https://westlondonphilosophyschool.com/2016/07/03/what-is-a-democracy-04072016/.

must be *ubiquitous* and *continuous*[3].

The latter is both the foundation that laid the ground to the discipline of the Deliberative Democracy in its first generation, and the first requirement of Deliberative Democracies belonging to the fourth generation.

The classification of Deliberative Democracy into four generations, is not conceived as an analytical division based on strict parameters like specific period of times and specific authors. The four generations are related to peculiar and constituent characteristics of models of Deliberative Democracies, and so, authors and concepts of the Deliberative Democracy may overlap among different generations [110].

The first generation revolves around the normative theorizing and the legitimacy of the Deliberative Democracy [18] [105] [107] [111] [112] [113] [114] [115]. The second generation improved theories of the first one by adapting them to integrate new needs of pluralist and multicultural Societies [50] [116] [117] [118] [119] [120] [121] [122] [123].

The key differences between the first generation and the second generation revolve around the consensus, and the communication modes allowed in Deliberative Democracies [102]. While scholars of the first generation assert that a consensus must always be achieved by means of deliberation, scholars of the second generation assert that there are situations where a consensus may not be reached (and sometimes is even not desired[4]), and in these cases

---

[3]Interestingly, Stefano Rodotà used the term "*Continuous Democracy*" to refer to ways we interact with Representative Democracies by means of digital technologies and new media. He stated that these technologies are actually new places of mediation where Democratic discussions are exercised without the needing of representatives [108]. The Continuous Democracy, must not be classified as a form of Direct Democracy; it is a new way to approach current Representative Democracies [109]. For this reason, the Deliberative Democracy, as interpreted by Habermas, may be understood also as a meta-layer referring to, and compliant to, other models of Democracies. Indeed, as Habermas clearly expressed, Deliberative Democracy is a *complex organism*. It must be interpreted as composed by a "*central nucleus*" that opens its "*peripheries*" to productive deliberation [110, p. 143].

[4]Dryzek and Mill give very interesting arguments in support of disagreement. They

decisions must be *made by means of the majority rule.*

The third generation supplied practical and detailed specifications to design and implement deliberation into institutions, and supplied empirical analysis of existing deliberative processes. The fourth generation, by means of a wide-sight on the other three generations, exposed the concept of *Deliberative Systems*[5], so it focuses more on interconnected Deliberative practices, rather than single implementations of Deliberative Democracies.

In this section, I discuss the literature on the first and the second generations and, eventually, I pinpoint a set of ideal features for Deliberative Democracies that are shared among scholars of the first two generations, or that I claim to be strongly necessary for ideal implementation of Deliberative Democracies.

On the heels of Habermas' theories and the features he has exposed for implementing Deliberative Democracy, other scholars proposed concepts and features to enhance the legitimacy of Deliberative Democracies and give insight on specific arguments that must be taken into account when implementing Deliberative Democracies.

The very first controversy in the literature on Deliberative Democracy revolves around *who* must be included in the deliberation. Some scholars argue that there must be certain kinds of control on the inputs of Democratic deliberations. Others, assert that Deliberative Democracy must be broadly open, because of its pluralistic intrinsic nature derived by the conception of deliberation by Habermas.

John Rawls is a supporter of the idea to *limit participants* that must

---

state that disagreement is fundamental in improving individuals' *competences* because, by disagreeing, people may better understand their own position [124].

[5]The term *Deliberative Systems* was coined by Jane Mansbridge in 1999 [125] [110, p. 143]. It refers to a system that allows Citizens to be engaged in a "*everyday talk*". Even if the "talk" is not strictly addressed to Deliberative Democracy, several scholars after Mansbridge have proposed theoretical conceptions and practical solution to shape the everyday talk into a Democratic deliberation [126] [118] [127], and eventually, Deliberative Systems have flown into the very first concept of the fourth generation of Deliberative Democracies. I will expose more deeply Deliberative Systems in the section 4.4

be involved in deliberative decision-making procedures [114]. According to his conception, this kind of discrimination must be performed on a *moral basis*. Like Habermas, Rawls thinks that the first goal of the Deliberative Democracy is to "*forswearing the whole truth*" [128, p. xvii], but he stresses the point that there must be a *preliminary agreement* on what is the *concept of truth*. This can happen only if participants to deliberation *share political values* and *pursue moral values* that are *reasonably accepted by everyone*.

Rawls' conception is counterposed to (among the others) Cohen's one. Cohen argues that, to yearn for legitimated Deliberative Democracies, decision-making procedures should be created on a basis of *epistemic legitimacy of the inputs*. These inputs, by means of deliberations built on specific features, eventually flow into outcomes whose substantial value can be compared with ideal standards of outcomes [115]. In Cohen's conception, a deliberative decision-making procedure, contributes itself to create *informed Citizens* and *new and shared moral values*, because Democratic deliberations are based on cognitive processes that drive Citizens to *form personal and fair judgments* about the *common good* [128, p. xvi]. Cohen also states that, if the deliberation is built to ensure *freedom to participants*, *their equality* and *their autonomy*, and to ensure mechanisms to *avoid participant coercion*, then the deliberation will produce *non objectionable outcomes*. Finally, to evaluate the quality of outcomes, Cohen stated that there must be *publicly acceptable, solid and fair standards*, shared among different cultures. As a matter of fact, the latter assertion reveals the idea of Cohen of a Deliberative Democracy intended as a *cross-Society* model of Democracy.

On the same train of thought is John S. Dryzek. He states that ideal Deliberative Democracies must be *transnational* and *non-anthropocentric* [110, p. 141], and deliberation must be *authentic*, *inclusive* and *consequential* [117, p. 10]. From his perspective, deliberation is: (1) authentic when discussing Citizens are not influenced and coerced when choosing among options; (2) inclusive, if the ones that are affected by decisions also have the opportunity to discuss; (3) and consequential, if participators involved in the deliber-

ation can actually contribute to build democratic outcomes. Interestingly, Dryzek argues that the inclusiveness and the restriction of deliberations to "*mini-publics*" [117, chapter 8] are not mutually exclusive. The coexistence of inclusion and the limitation of participants may be achieved together by limiting the occurrences of deliberation, by limiting the discussion to whomsoever may best discuss about a given issue, and by limiting participators to a restricted set of representatives.

Representation is a key argument for Dryzek. In his conception, *legitimacy* and *representation* are strictly related. Similarly to Cohen's conception, Dryzek argues that Deliberative Democracies must have *normative value of legitimacy* [116]. For this reason, Dryzek argues that deliberation can not subsist without representation because representation is closely related to normative fundamentals of legitimacy [116, p. 43].

Dryzek tries to address a certain kind of transition from Democracies based on representatives to Democracies based on deliberations, while preserving normative legitimacy values given by representation [117, chapter 3]. He proposes to establish the so-called "*chamber of discourses*" [117, p. 43], an institution hosting representative of discourses, rather than representatives of Citizens. The scholar argues that nowadays, also due to the diffusion of technologies that rely on the internet, there are influencing people, who as matter of fact represent discourses, and the chamber of discourse may be both a valid formal and informal option to legitimate these "*representative of discourse*" as democratic inputs.

Dryzek, I argue here, has also farseeing ideas about *communications* and *discourses* in Deliberative Democracies. He sets forth that a discourse is "*a shared way of comprehending the world embedded in language. In this sense, a discourse is a set of concepts, categories and ideas that will always feature particular assumptions, judgments, contentions, dispositions, intentions and capabilities*" [117, p. 31]. Most importantly, also by endorsing theories of other scholars [129], Dryzek is a staunch supporter of the idea that Democracies must allow different modes of communication, rather than the only

reasoning, for instance story-telling, and argues that this is particularly essential to include non-human inputs into deliberation, and to deal with other conceptions of Democracy [116, p. 140].

According to Dryzek, Iris Marion Young also strongly supports the idea that ideal deliberation must allow different modes of communication to the extent that inputs are always *accountable* [120, chapter 4]. In Young's view, there are at least three types of communication that must be taken into account to promote inclusion and diversity [120, pp. 57-77].

The first one is the *"greeting, or public acknowledgement"*, a set of gestures used in communication by means of which *"people acknowledge one another"*. Greetings include interaction based on human language, but also other types of communication like handshaking and hugs. The second one is the *"rhetoric"*, that is *"the way content is conveyed as distinct from the assertive value of the content"* and consists, of course, of human language communications, but also of figurative speeches and nonverbal media. The last one is the *"narrative and situated knowledge"*, that serves to *"foster understanding among members of a polity with very different experience and assumption about what is important"* and, so, to *"giving voice to the kinds of experience which often go unheard in legal discussions and courtroom settings"*. This is particularly useful when there are participants in the discussion not having a proper understanding of arguments, and is useful to achieve *respectful* deliberations.

Also Michael Neblo supports the possibility to allow different modes of communication [130], and points out another interesting argument. Other scholars, like Young [119], O'Neill [131], Remer [132] and Triadafilopoulos [133], question Habermas' because he seems to not allow any room for other forms of communication in Deliberative Democracies, rather than the strong reasoning. Neblo exposes that, actually, Habermas also took in consideration rhetoric and other kinds of communication like *greeting*, *story-telling* and *testimony*. By interpreting his theories, Neblo claims that Habermas allows for other forms of communication providing that their purpose is at least one

of the following three: (1) they provide arguments that can not be exposed with norms; (2) they serve to expose arguments to people that would not get them if exposed in any other way; or (3) they foster the trust, the inclusion, and the respect among participants to the discussion.

After having agreed that ideal Deliberative Democracy must be built on pluralistic and inclusive deliberations, and that it must allow different modes of communication, theorists of the first generation of Deliberative Democracies move on the ways to reach consensus in such kinds of deliberations.

Clearly, pluralistic and inclusive deliberation based on various type of communication, may resolve into disagreements rather than agreements. The most interesting attempt to solve this issue, I argue here, is the one by Dryzek, who delineated a certain kind of composed consensus. He expounded the concept of *"meta-consensus"*, that should foster eventual agreements, without affecting the required trait of openness of Deliberative Democracies [117, p. 101].

The meta consensus is composed by the *normative meta-consensus*, the *epistemic meta-consensus*, and the *preference meta-consensus*. The first one, the normative meta-consensus is related to the legitimacy of discussed values and, so, is an agreement on values that underlay a deliberation. The second one, the epistemic meta-consensus, is related to the belief that specific actions may revolve into specific outcomes, so is an agreement on impacts of outcomes of deliberations. The last one, the preference meta-consensus, is related to the set of options among which deciders are requested to choose and, so, is an agreement on specific things, or actions, that must be performed to resolve an issue [134, pp. 22 and 23].

Scholars of the first two generations of Deliberative Democracies also focus on how to engage people in creating pluralistic discussions, and how to give them the needed knowledge to discuss (or how to understand if they already have it).

Deveaux states that not only the Deliberative Democracy is legitimated only if it takes the *pluralism of inputs* to heart, but also that the delibera-

tion itself feeds the pluralism by contributing to a "*cultural reinvention of traditions*" [135]. Moreover, as also exposed by Amy Gutmann and Dennis Thompson [123], Deveaux thinks that *the more inputs are limited* in deliberation by enforcing rules, *the more powerful and influential groups will benefit* and they may drive the deliberation to achieve their *objectionable desired outcomes*. Deveaux also focuses on deliberation procedures, that must be *transparent* and aimed to the *negotiation* and the *compromise*. Necessary conditions for this kind of deliberation are the *non-domination*, the *political equality of participants*, and the *revisability of outcomes*. Mechanisms to avoid domination are needed to prevent who has social and economic power to coerce the others. Political equality must be intended as the equal opportunity to access the deliberation independently by political ideas. The revisability is to enhance a *dynamic opinion-changing* of participants, aimed to an eventual agreement. Indeed, deliberating people may feel more comfortable to express their opinions if they know that they are able to change them at any time.

For what it concerns the knowledge of Citizens and their (democratic) education, Amy Gutmann and Dennis Thompson pointed out interesting arguments. They argue that to create *Democratic education*, Deliberative Democracies must be reciprocity-oriented [123] [50]. Reciprocity may be claimed only if reasons of arguments of deliberation are *publicly accessible*, *moral*, *respectfully*, and *revisable*.

The above analysis of literature on the first two generations of Deliberative Democracies expose a first list of features of ideal implementation of Deliberative Democracies. The next two sections are aimed to expose the main critics on Deliberative Democracies, and the literature on the third generation and actual implementations of methods of Deliberative Democracies.

4.2 Critics of Deliberative Democracies

Before moving to the analysis of the third generation of Deliberative Democracies, critics of Deliberative Democracies theories surely deserve attention. Indeed, on one hand, scholars of the third generation of Deliberative Democracies expose implementations of Deliberative Democracies to show the actual feasibility of it. On the other hand, and I argue here perhaps their most considerable work, is a kind of reply to critics on first generation of Deliberative Democracies.

Fishkin and Luskin greatly characterize the main critics on Deliberative Democracies into the following three categories [136]: (1) the *defeatists*, who argue that Deliberative Democracies are impossible, because Citizens do not have the Democratic capacity to deliberate, and because it is not possible to achieve a large participation of Citizens while assuring some legitimacy requirements, especially the political equality [17] [137]; (2) the *extenuationists*, who argue that Deliberative Democracies are not necessary, because Institutions are able to approximate discrete needs of Citizens by giving them sets of preferences [138], and this is the most legitimated, effective and efficient way, to govern [139], and; (3) the *alarmists*, who argue that Deliberative Democracies are dangerous. In their opinion, Deliberative Democracies are actually implementable, but a system of Government based on the ability of Citizens to change their opinion by means of reasoning, would result in a worst Democracy, rather than in a better one. This because there are people that by means of their skills, or economical and social power, may be advantaged in deliberation [140]. Alarmists are also concerned that opinions may change not because participants rationally change their mind, but because the initial set of arguments is not balanced, or it is biased in some way [141]. In other words, alarmist doubt that the reasoning or the deliberation based on other modes of communication would resolve in a perfect consensus.

I argue that, with this research work, and with arguments that I have exposed in the previous chapter 3, I have already demonstrated that critics by extenuationists can be set apart. In the rest of this part, I will propose

a reply to the doubts exposed by alarmist and defeatists of Deliberative Democracies. The first critics that must be addressed are the ones related to the possibility to achieve a consensus, the ones related to the political equality of participants, and the ones related to the amount of Citizens who must be involved in Deliberative Democracies decision-making processes.

On one hand, as I have exposed in previous section 4.1, theorists of the first and second generation of Deliberative Democracies state very clearly that Deliberative Democracies are legitimated only if they are both built on legitimated procedures (procedural legitimacy), and designed to foster the production of legitimated outcomes (substantial legitimacy), achieved after a consensus among Citizens. On the other hand, critics of Deliberative Democracies affirm that Deliberative Democracies is a kind of utopia, because legitimate procedures and legitimated outcomes can not coexist [120] [142] [143] [140]. In a nutshell, this means that it is not possible to design deliberative legitimated decision-making procedures by fostering pluralistic and diverse inputs, without jeopardizing the legitimacy of outputs of Deliberative Democracy, achieved only if there is a perfect consensus [144].

To unravel this thorny issue, Dryzek and Niemeyer propose to connect procedures and outcomes at the design level of Deliberative Democracies [145] and, so, they theorized, implemented and experimented the meta-consensus, that I have introduced in previous section 4.1, and I will better expose in the following sections of this work.

According to Dryzek, I argue that meta-consensus, and the mechanisms to allow participators to change their opinion while discussing, are key points for the legitimacy and feasibility of Deliberative Democracies. Indeed, by allowing discussing people to change their preferences, they can change their position according to reasons that they encounter during deliberations, and this can be conceived as a sort of composed and sequential consensus. By implementing it there will still be, of course, situations in which perfect consensus among participators is not reached, but *education* and *democratic capacity* of Citizens will be improved, because they will explore, and eventually

accept, diverse normative and epistemic values[6].

Other critics to Deliberative Democracies, but also to Participatory Democracies and more generically to Direct Democracies, are the ones concerning the *political equality* of participants. Critics of competitive Democracies, the ones based on aggregation of votes, assert that the political equality in these models of Democracy is denied, because the activity of Citizens is restricted to choose among a set of alternatives, and this could create elites that, in fact, control Democratic processes, as I have exposed in section 3.1. So, on one hand, critics of competitive Democracies, especially the supporters of Participatory Democracies and Deliberative Democracies, state that by allowing Citizens to create policy and laws by themselves the issue of political inequality would be solved. On the other hand, Critics of Deliberative Democracies, such as Norman Barry [146], assert that this is an erroneous thought because there are no evidences that a decentralization of power from Institutions to Citizens, would prevent the forming of elites acting as controllers or oppressors of political minorities [147] and, so, there would be not political equality among participators.

Also Robert Dahl [148] and James Fishkin [149, chapter 2] highlighted on issue of political equality, and introduced arguments on *Democratic capacity*. On one side, Dahl states that by assuming *a priori the politic equality of participants*, the more the participants in a decision-making processes, the less the influence each participator has, and this would avoid the creation of controlling elites. Flipping the coin, Fishkin states that political equality can not be assumed a priori in a situation of large inclusion of participants. This happens because, if decision-making processes involve a lot of participators, there would not be enough resources to supply participators the needed information to participate, and in particular information shaped on their *Democratic capacity*.

---

[6]I remand readers to section **??**, were I give further motivations for considering the meta-consensus as a composed consensus, and to part III of this research, were I explain how to actually implement mechanisms to achieve such a kind of consensus.

The latter Fishkin assertion resolves into the very critic to Participatory Democracies, and in one of the most controversial arguments on the behalf of Deliberative Democracies. Participatory Democracies, as Fishkin states with his *democratic reform trilemma*, are biased at their hearts, because only Citizens having enough Democratic capacity and enough time to spend in participation would participate, and this undermines the legitimacy requirement of political equality in participation. To address this issue, a feasible solution is to allow to participate only *random sampling* of Citizens and, so, to allow the participation or the deliberation to *mini-public*, but this jeopardizes the legitimacy requirement of the *openness* of deliberation.

By summarizing, critics on Deliberative Democracies, revolve around the possibility to achieve a consensus, the amount of Citizens who must be involved in the deliberation, and the political equality and the Democratic capacity of Citizens involved in deliberations. Some of these controversies are solved by theorist of the third generation of Deliberative Democracies, by theorizing actual implementations of methods of deliberation, and by empirical evidences in support of Deliberative Democracies, as I expose in the next section.

4.3   Analysis and Examples of Deliberative Democracies

Scholars of the first two generations of Deliberative Democracies neglect to specify how to practically implement them [110, p. 142]. The third generation of Deliberative Democracies, focuses on practical ways to implement methods to deliberate in the public sphere. Scholars of the third generation, also expose empirical studies on methods to evaluate the quality of outcomes of deliberations [150].

Dryzek, is claimed to be the first one to move from theories to practical solutions [151]. As I have already explained in section 4.1, by means of the concept of *meta-consensus*, Dryzek exposes a more feasible and prac-

tically implementable way to achieve consensus among diverse and pluralistic Citizens. Also, in his works on the third generation of Deliberative Democracies [116] [152] [153] [154] [155], Dryzek fosters the concept of *mini-public*. In his opinion, a practical implementation, and a combination of meta-consensus and mini-public are the most suitable ways to implement Deliberative Democracies for the public sphere, and he points out that mini-public is not conflicting with *diversity and pluralism*, to the extent that the two features are *moved from Citizens to discourses* while deliberating [117].

Niemeyer and Dryzek do not focus only on ways to build consensus, but also expose interesting ways to qualitatively evaluate deliberations. In the same work on meta-consensus [145], they define and delineate the *Q-index*. The Q-index is based on the *Q-methodology* by Brown [156], and used to measure the "*inter-subjective rationality*" of individuals. It is performed by asking individuals, before and after a deliberation about a topic, to sort the same set of statements in a quasi-normal distribution from a "most agree" to "most disagree" nine point scale. The *Q-sort* is then analyzed by means of an inverted factor analysis (Centroid extraction and Varimax rotation).

Also belonging to the third generation, and preceding the one of Dryzek and Niemeyer, the study of Marco Steenbergen et al. [157] on the *Deliberative Quality Index* (DQI) exposes another methodology to evaluate empirically the quality of deliberations. The DQI is intended to evaluate the quality of deliberations based on the fact that each deliberation has specific traits, in particular: (1)it must be "*theoretically grounded*" according to one or more deliberation theories of the first two generations; (2) it must be *designed to be empirically observed*; (3) it must be "*general*"; and (4) it should be "*reliable*". The DQI is performed on units that are called "*speeches*". Each speech is analyzed according to seven parameters: (1) the *participation*, that is the capacity of the speaker to participate; (2) the *level of justification*, related to the completeness of justifications given by speakers for their assertions; (3) the *content of justification*, measuring how much justifications are related to the *common-good*; (4) the *respect*, that is the level of respect speakers expose

in their statements; (5) the *respect toward demands of others*; (6) the *respect toward counterarguments*, and; (7) the *constructive-politics*, an indicator on how much the speeches are aimed to build a consensus.

James Fishkin and Robert Luskin, after having listed a set of required features for Deliberative Democracy and designed a practical implementation of Deliberative Democracies, the Deliberative Polling that I describe in section 4.3.1, expose another model for the evaluation of the quality of deliberations [136]. Firstly, they argue that deliberative Institutions must grant the *political equality* and an *equal consideration* to everyone. Secondly, they expose mandatory features of inputs and Citizens of ideal Deliberative Democracies. More specifically, they state that deliberations must be: (1) *informed*, so the arguments must be related to appropriate evidences; (2) *balanced*, meaning that for every exposed argument it also its counterpart must be exposed ; (3) *conscientious*, meaning that participants must be "*willing to participate*", *respectfully* expose their arguments, and respectfully listen the others' participants ones; (4) *substantive*, meaning that arguments must be analyzed by taking into account their content and not their proposers, and; (5) *comprehensive*, meaning that institutions in Deliberative Democracy must take into account the largest possible set of arguments by Citizens.

Fishkin and Luskin highlight a series of interesting results to appease various critics on Deliberative Democracies, derived by their experiments. Firstly they found that, even if they involved a mini-public of high skilled participants, *arguments where quite representative of the whole population*. Secondly, they found that *opinion and vote intentions often change after having deliberated*. Thirdly, they found that *participants gain information after having deliberated*, and that *the gain of information and the change of opinion and vote intentions are related*. Also, they found that the trend of acquiring information and changing preferences and *vote intentions is not related to the actual location of participants*. Fourthly they found that, by means of deliberation the *policy intentions become more predictable*, so policy-makers may use outcomes of deliberations to propose more desirable proposals. Fifthly,

in relation to the *more information acquired by participators, they observed an increase of single-peaks*[7] in Citizens choices, and this is essential to *avoid the possibility of Arrowian preferences*[8] that may undermine the legitimacy of an eventual voting section in case of a consensus is not achieved. Sixthly, they found that *preferences do not always become polarized and homogeneous* among discussing groups. This is important to avoid the domination of arguments, and to avoid that popular arguments are advantaged in deliberation. Lastly, they found that *balanced deliberation promotes balanced learning*, meaning that usually participators do not tend to learn only positions on their own side, but also they significantly consider also positions of the other sides.

Fishkin, together with Bruce Ackerman, also contributed to the third generation of Deliberative Democracies by proposing a theoretical implementation of deliberation called "*The Deliberation Day*" [160], that I will describe in section 4.3.2. With their model, the two scholars expose other arguments against the "*civic privatism*", characterizing Representative Democracies. The scholars also further foster the need of a *renewed Citizenship*, whose first purpose is to get rid of the "*rational ignorance*" among Citizens. Indeed, Fishkin and Ackerman state that, as an effect of the rational ignorance concept introduced by Antony Downs in 1957 [161], Citizens may feel that their choices would not actually affect the result of a particular ballot or deliberation, if a big amount of participants is involved in them. For this reason,

---

[7]Single-peaked preferences are largely studied in Social Choice Theory. A group of individuals have single-peaked preferences among a set of alternatives, when each individual has a preferred option, and the options different from the ideal one are evaluated as less preferred [158].

[8]The Arrow Impossibility Theorem states that preferences of voters can not be ranked, if the process of acquiring preferences is not designed to fulfill three criteria [159]: (1) if a voter prefer an option to another, then the group of voters must prefer that option to the other option; and (2) if the preference of a voter between two alternatives remain unchanged, then the preference of the group among those two alternatives must remain unchanged; and (3) no single voter have the power to choose a preference for the whole group.

Citizens may prefer to remain ignorant and, so, to not acquire any information about the topic of the ballot, or about the topic of the deliberation, because they may retain that the time needed to become informed on the topic is not worth it. By theorizing and practicing Deliberative Pools, and by theorizing The Deliberation Day, Fishkin and Ackerman demonstrated that Citizens feel to have right incentives to acquire information about the discussed topics, so their rational ignorance is marginalized.

Another important contribution to the analysis of implementation and proposals of Deliberative Democracy, and so, an important contribution to the third generation of Deliberative Democracies, is the work of Archon Fung on required features for ideal mini-public [162]. He explores eight dimensions that must be taken into account when designing mini-public. For the sake of my research purposes, four of them are worth a deep description.

Firstly Fung states, as other scholars, that deliberative models must allow only mini-public to be involved into discussions. However, with his contributions, *he characterized mini-public into three types.* The first one is called *"Educative Forum"*: by being involved in this type of mini-public, Citizens acquire information about topics and shape their opinion about them. The second type of mini-public is the *"Participatory Advisory Panel"*, aimed both to help Citizens to improve the *quality* of their opinion, and Institutions to align public policies with preferences of Citizens. The third type of mini-public is the *"Participatory Problem-Solving Collaboration"*, defined by Fung as a *"continuous and symbiotic relationship between the state and public sphere aimed at solving particular collective problems"*.

Secondly, Fung focuses on *how to choose participants* that must be involved in deliberation. Here Fung feeds-up the critics against the possibility to choose participants only on a voluntarism basis because, as stated before, this methodology may jeopardize the balancing in political equality of participants. Indeed, he states that in such a model of voluntarism-centered recruitment, only professional and proper educated Citizens would take part into the deliberation. Fung delineates three options to choose participants.

The first one is *to choose participants on a random basis* in order to select representatives of the demographic diversity of the population. The second one is to *act a recruitment among Citizens* that, differently to the voluntarism, must ensure a balancing in political equality by forcing recruiters to follow specific guidelines to choose participators. The third one is to *involve Citizens on a voluntarism basis, but giving incentives* to participate to Citizens with "*low-statuses*" and "*low-incomes*".

Thirdly, the scholar focuses on what topics must be put into deliberations, and he exposes that there are essentially two big categories of topics that can be discussed. There are *topics that require high skills and a proper education* to be understood and discussed, and *topics that can be discussed in a more generic way*. The *mini-public and the deliberation process must be shaped in different ways* according to the level of expertise required by the topics that are going to be discussed.

Fourthly, and lastly, Fung exposes the need of mini-public and deliberations of being *monitored*. Both Institutions must monitor and back-off deliberations, and the mini-public must monitor actions undertaken by Institutions after the deliberations have taken place. In this way, mini-public can contribute to the accountability of any initiative of public policy.

Summarizing, in this section I have analyzed the literature on the third generation of Deliberative Democracies, exposing other features of Deliberative Democracies and empirical founding on practical implementations of methods of Deliberative Democracies. In the next sections, I will describe some examples of methods of Deliberative Democracies.

4.3.1   Deliberative Polling

The Deliberative Polling was invented by James Fishkin, and revolves around a very simple idea [163, p. 162] [162]. The idea is to poll a sample of people on a specific questions after giving them the opportunity to speak, and to questions experts about that issue.

The organizers of Deliberative Pools select, on a random basis, several

hundreds of participators from all over a Country that is going to face an electoral ballot. The organizers prepare a balanced set of materials on the issue, reporting all the views of different candidates about the same issue. Participators are separated in smaller groups and involved in intensive discussions with the opportunity, if requested, to ask clarifications about the issue to highly skilled personnel, or to politicians who have submitted a specific proposal in the political campaign. At the end of several days of discussion, participators are requested to fill-in a survey, that is then forwarded to Institutions or political parties. Fishkin argues that, by aggregating the received surveys, politicians and Institutions would have the view of the entire country if all Citizens would be involved in a similar deliberative process.

The design of Deliberative Pools deals well with the issue of political equality, and partially satisfies the requirements of having Citizens properly informed to discussed issues. However, the methodology can not be considered an ideal one for Deliberative Democracies, firstly because it is not continuous, and Citizens are only involved in a one-shoot deliberation, secondly because it does not give actual actual incentives to Citizens to became deeply informed about the issue [162]. Indeed, even if Citizens have the opportunity to question and discuss with experts, this can work only if discussed issues are generic, because in case of very technical issues Citizens would not have enough time to acquire a proper understanding of discussed issues. The other problem of Deliberative Pools is that they do not formally connect Citizens, Institutions and politics, so they are not useful to increase the accountability of policies, or their efficacy.

To fill some of the above gaps, Fishkin also proposed another theoretical method of deliberation, that I expose in the next section.

4.3.2   The Deliberation Day

The Deliberation Day is a theoretical implementation of Deliberative Democracy [160], proposed by Fishking and Ackerman, that can be practical implemented by Institutions at local level. The aim of the Deliberation

Day is to supply the Citizens with more, and more precise, information about political candidates of any election and about the proposals that candidates foster in their political campaign. The deliberative process is held one week before any national election, and registered voters are called together in a neighbourhood meeting place.

The Deliberation Day is supposed to be implemented in the United States of America, and is simultaneously held in different places through the whole country. Two weeks before the event, participators are asked to think and reply to the following question: *"what are the two most important issue presently confronting the nation?"*. While deliberating, Citizens are firstly divided in small groups of fifteen Citizens and, at a later time, in larger groups of five-hundreds people, to discuss the central issues raised by the campaign. Each participator gets 150$ for participating in the meeting and, during the day of the meeting, any other work, except the most essential ones is forbidden by law. The day of the event is divided into four segments of deliberation.

In the first segment, participators arrive to the meeting place, and are welcomed between 8 am. and 9 am. Citizens are divided in groups of fifteen people, and they sit together to watch a live television show on the principal national candidates. Each party competing in the election day prepares an informative and commercial ad (infomercial) to drive the discussion. For the creation of the infomercial, parties can use a fixed amount of words and time. The first segment ends at 10:15 pm, and between 10:15 and 10:30 there is a coffee break.

The second segment starts at 10:30. Groups have to elect a foreman by majority of vote. The main task of groups, in the second segment, is to prepare their contribution for the larger group of five-hundreds people that will take place after lunch. During this discussion nobody is obliged to talk, but whomever wants to talk has an allocated time slot of five minutes. When someone starts to talk the foreman starts a timer and she or he stops the timer when speakers finish their intervention. The foreman can not allow

to talk Citizens who have already consumed their time slot. The final goal of each participator, in the second segment, is to formulate a question for candidates of the election. At the end of the session, the foreman collects all the questions and Citizens are requested to vote each one of them by casting a secret yes or no vote. The second segment finishes at 12:15, and Citizens have one hour and forty-five minutes for lunch.

During lunch time, moderators get the list of all the questions submitted by each small group. In a first step, all moderators together try to group similar questions. In a second step, each moderator selects fifteen questions that will serve as a basis for the afternoon discussion. Moderators are Citizens already proven to be able and skilled at moderating, like local judges. They are selected before the event, and their number is related to the amount of participators, in order to assure that each large group of five-hundreds people has a moderator.

The third section starts at 2 pm. At that time, moderators welcome Citizens and representatives of the local party. Each question is submitted to representatives, and each one of them has two minutes to reply. After all the questions are submitted, each representative is granted with a five minutes slot to summarize the reply to Citizens.

The fourth segment starts at 4 pm, and in this segment Citizens return to their morning small groups. By following the same five minutes protocol as in the morning session, but not casting votes in this section, participators share their reactions to the answers received from representatives during large group session. After the fourth section, the Deliberation Day ends.

While solving some of the problems of Deliberative Polls, the deliberation day still receive some criticisms. Firstly, if the Deliberation Day must be spread all over the United States of America, the reward of 150$ for Citizens, may resolve in a very high expense for Institutions. Secondly, the monetary incentive may encourage Citizens to take part to the event, even if they do not have an actual purpose of participating in the deliberation activity. Thirdly and most important, Fishkin and Ackerman assume that, by simply limiting

the time to argue, and by involving moderators and foremen to assure that speakers do not exceed their allocated time, the deliberation would be fair. However, this can not be proven, because struggles among participators could even happen, and reasoning could be overtaken by passion and by emotions.

4.3.3 21st Century Town Meeting

Carolyn Lukensmeyer proposes a methodology for Deliberative Democracies called the "*21st Century Town Meeting*" [164]. Differently to Deliberative Polls and the Deliberation Day, 21st Century Town Meetings rely on new communication technologies.

Participants to the 21st Century Town Meetings are chosen in order to demographically represent the population, and they are supplied with free meals, transportation, and even translations in order to avoid issues related to cultural differences. As the very first step of the event, Citizens reply to a survey with a voting keyboard. Results are analyzed in real-time to measure the demographics of participants and to compare it with the expected one.

Before deliberations start, participants are divided in smaller groups of ten or twelve Citizens sitting over round tables. A facilitator and a scribe are assigned to each group. Scribes have are charge of writing transcripts of the group discussions. Facilitators are in charge of helping participators to discuss in civil ways, and helping discussions in those situations in which participators have similar arguments, viewpoints, and ideas, but expose them differently. Each small group has to follow the same agenda for discussions, and deliberations are made in parallel on each table. At the end of this phase all tables are linked, and the deliberation is performed on a large scale of thousands of people. The deliberation in this step is facilitated and hosted by a single person, that typically is a well-known famous person, or a person very skilled to manage large public, such as a local politician or a television anchor woman/man. While discussing in the large group, Citizens are supplied with a voting keyboard, and they are requested to vote periodically on specific issues. All voting sessions are collected and processed

instantly, and results are showed to participants in real-time.

By means of specific software, facilitators and scribes collect all discussions and viewpoints that emerge from deliberating tables, and try to aggregate them in order to summarize the main viewpoints and positions of participators. Before the end of the 21st Century Town Meeting, organizers create a report containing results and other information about the meeting. The report is distributed to participators, to media, and to Institutional decision-makers[9].

21st Century Town Meetings have several benefits on Citizens and deliberation. Firstly, meetings contribute to create informed Citizens, by means of material that is carefully created and balanced on the basis of the demography of participants. Secondly, the results of deliberations, but also the Citizens during events, are linked with Authorities and Institutional decision-makers. By doing so, on one hand, Institutions can have an instant feedback on policies needed or desired by Citizens. On the other hand, Citizens can feel more connected with Institutions and, so, they can feel to actually have a voice in Democratic decision-making processes. The latter may solve problems related to the rational ignorance of Citizens, and may contribute to improve their Democratic capacities.

Thee problems with 21st Century Town Meetings, I argue here, are essentially three. The first one is related to the amount of Citizens involved in deliberations, the second one is related to facilitators, the third one is related to the continuity of the event. Firstly, even if these meetings can involve up to five-thousands Citizens, and even if Citizens are chosen on a demographic basis, problems of political inequality may still arise, because checks on participants are made only on their demographics, and there is no check on their skills or political ideas. Secondly, organizers of meetings suppose that facilitators are super-partes, and so that they can drive discussions to convergent

---

[9]A more detailed description of 21st Century Town Meetings, is the one by Archon Fung, that is publicly available at the following address: http://participedia.net/en/methods/21st-century-town-meeting.

and shared viewpoints, without affecting the diversity and the plurality of deliberations. Also, they have in charge to collect all the viewpoints, and all facilitators together have in charge to analyze and summarize all viewpoints shared among tables. As a matter of fact, facilitators may be seen as representatives, and this can flow into the same issues of Representative Democracies.

Thirdly and lastly, like others methods of Deliberative Democracies that I have exposed in the previous sections, 21st Century Town Meetings are one-shoot events. Neither they foster Citizens to continue deliberating after meetings, nor these meetings are connected with other similar events. Scholars of the fourth generation of Deliberative Democracies and, so, of Deliberative Systems, try to address these issues. In the next section, I expose the main literature and main conceptions, on the fourth generation of Deliberative Democracies.

4.4 From Deliberative Democracies Towards Deliberative Systems

Nowadays, literature on the first three generations of Deliberative Democracies is quite humongous. After what I have exposed in the previous sections of this chapter, it is quite safe to assert that we have enough information to extract features for ideal and legitimated Deliberative Democracies processes, and these features can be used to design deliberative processes solidly grounded on theoretical thesis.

However, as I have shown in section 4.3, practical examples and theoretical methods for Deliberative Democracies, still fail to implement certain features, and neglect to consider certain humans-related and technologies-related aspects that, if present while deliberating, may resolve in a loss of legitimacy of deliberative methods or, even worse, drive the deliberation out of its purposes. Also, I argue here, there is still a certain lack of clarity on what are common shared features among all theories of Deliberative Democ-

racies. One of my research questions, is to address these latter issues, and I will expose further on this in the next chapters of this work. But literature and scholars of the first three generations of Deliberative Democracies also focus on stand-alone deliberative processes and, I argue here, as a point of facts, this means that they set apart any consideration on how to implement eventual *ubiquitous* and *continuous* Deliberative Democracies. The fourth generation of Deliberative Democracies, while still very young as Stephen Elstub asserts [151, p. 114], addresses a first analysis of required features to achieve this kind of "*wide*" Deliberative Democracies. This section is aimed to expose the main literature and conceptions on the fourth generation of Deliberative Democracies.

To expose a definition of Deliberative Systems, there is firstly the need to expose a clear and generic definition of Deliberative Democracies. After having acknowledged concepts of the first three generations of Deliberative Democracies, and by including them in definition 3 of Democracies that I have given in section 2.1, I argue that the following one is a good definition of Deliberative Democracies:

Definition 10 (Deliberative Democracy). *A Deliberative Democracy is a form of Government based on legitimated deliberative and Democratic decision-making processes that are designed, enforced, maintained and participated by mini-public of Citizens and by Institutions. In Deliberative Democracies, mini-public of Citizens and Institutions are directly and equally engaged in improving their Democratic capacities, and in creating legitimated inputs for the deliberation. The purpose of the deliberation is to make interesting choices that can produce legitimated, effective, efficient, and satisfying outcomes, aimed to improve the community, and aimed to improve the deliberation itself.*

When speaking of Deliberative Systems, the word "*system*" has a very technical acceptation, close to the acceptation of the word "*system*" in software contexts. So, as exposed by Jane Mansbridge et al. [127], a systems is: "*a set of distinguishable, differentiated, but to some degree interdependent*

parts, often with distributed functions and a division of labour, connected in such a way as to form a complex whole. It requires both differentiation and integration among the parts. It requires some functional division of labour, so that some parts do work that others cannot do as well. And it requires some relational interdependence, so that a change in one component will bring about changes in some others".

By merging the above definition of systems, and the definition 10 of Deliberative Democracies, I propose the following definition of Deliberative Systems:

Definition 11 (Deliberative System). *A Deliberative System is a form of Government based on legitimated interdependent, interconnected and distributed deliberative decision-making processes that are designed, enforced, maintained and participated by Citizens and by Institutions. In Deliberative Systems, Citizens and Institutions are directly, equally, continuously, and ubiquitously involved to improve their deliberative capacities, and they are motivated to create legitimated inputs for the deliberation. The purpose of the deliberation is to make interesting choices that can produce legitimated, effective, efficient, and satisfying outcomes, aimed to improve the community, and aimed to improve the Deliberative System itself.*

The absence of the word *mini-public*, and the absence of the word *Democracy*, in the above definition 11, surely deserve more in-depth explanations.

While scholars of the first generation of Deliberative Democracies, particularly Habermas, have strongly supported the conception that Deliberative Democracies must be open to the largest possible group of participants, scholars of the second and third generation of Deliberative Democracies, have mostly supported the idea that deliberation must be restricted to random set of Citizens or to Institutions and, so, to mini-public. In other words, there is a distinction between micro and macro approaches of Deliberative Democracies [165].

Micro approaches of Deliberative Democracy refer to face-to-face *synchronous deliberations* regarding the *public sphere* and so the Institutions

[105] [116] [151, p. 109] [165] [166], whilst *macro approaches* of Deliberative Democracies, and so Deliberative Systems, refer to an *Institutionalization* of *asynchronous deliberations* [151, p. 109] [165] [166] and, so, I argue here, to deliberations that could be, if required or wanted, *continuous* and *ubiquitous*.

The shift from a micro approach to a macro one, also justifies the absence of the word Democracy in the definition 11 of Deliberative Systems that I propose. Indeed, Deliberative Systems may include elements that are not governed by means of a Democratic approach, without imperiling the whole Democratic legitimacy of the Deliberative System. For instance, Mansbridge et al. [127] assert that there are three elements that must be allowed to enter in Deliberative Systems: *experts*, *medias*, and *protests*.

Medias, as the scholars state, must be absolutely included in Deliberative Systems, because they serve as c*onnectors among Citizens and Institutions*, and allow Citizens and Institutions to communicate in asynchronous ways. However, I claim, medias could rely on their internal model of governance that could also not be Democratic, while still being compliant to Democratic Systems, to the extent that their specific Government system does not jeopardize others required features of Deliberative Systems, like the political equality of participants, or the respectfulness of participants. In the same work, Mansbridge and her colleagues also highlight important considerations about the involvement of experts in Deliberative Systems, and about risks of including protests in them.

Protests must be allowed in Deliberative Systems because they are intrinsically part of Democracies. However, protests must be accepted to the extent that protesters use *persuasive arguments*, rather than pressuring ones. Mansbridge is a strong supporter of the importance of *persuasion* in deliberations, that she retains fundamental to achieve an eventual consensus. Also experts must be involved in Deliberative Systems, firstly because they are necessary to improve the *deliberative capacities* of other Citizens, secondly because they are necessary to address issues requiring high education to be addressed, and thirdly because by deliberating with other not-expert Cit-

izens, skilled persons may better master their area of expertise. However, inclusion of experts must resolve in a *not-hierarchical* structure, otherwise there could arise situations of *social domination*. Mansbride and her colleagues also expose other features of ideal Deliberative Systems, more specifically they state that Institutions must be *not-dominant* and *not-bounding*, and they assert that Deliberative Systems must not allow to enter *rooted partisanship*, because they can undermine the political equality on which ideal Deliberative Systems must rely.

Even if there are still few studies on Deliberative Systems in literature, as I have stated at the very start of this section, they expose interesting features for the creation of both legitimated and effective methods of Deliberative Democracies, and legitimated and effective Deliberative Systems. By merging these latter features with the ones derived by studies on the other three generations of Deliberative Democracies, it is possible to delineate a framework of features, grounded on solid theoretical arguments, to implement Deliberative Systems. In order to create this framework, in the next chapter I summarize all the features exposed by the four generations of Deliberative Democracies, and I match all of them with their proper components in Deliberative Systems.

Chapter 5

Features of Deliberative Systems

In this chapter, I will expose all the features that ideal and legitimated Deliberative Systems must implement. Firstly, in section 5.1, I will list the components of Deliberative Systems, and their relations. Secondly, I will list all the features that each component of Deliberative Systems must implement, by showing their references in literature. Lastly, in section 5.8, I will summarize all the features of Deliberative Systems in a schematic way.

5.1 Components of Deliberative Systems

The wide literature on the four generations of Deliberative Democracies that I have exposed in previous chapter 4 is useful to delineate a list of features needed by ideal and legitimated implementations of Deliberative Democracies. However, before doing this, there is still something to be addressed. When theorizing on deliberation, and on Deliberative Democracies, or when theorizing on Deliberative Systems, scholars expose ideal features without clearly expressing to what these features are related. For example, when speaking about *diversity* and *pluralism*, perhaps the two most shared concepts of deliberation among all scholars, it is not clear if diversity and

pluralism must be addressed at the Citizens level, or at the arguments or discourses level.

Among others, my research work has two purposes. The first one is to delineate the components of Deliberative Systems by extending the set of components of Democracies I have defined in section 2.4. The second one is to match each feature of ideal Deliberative Systems to its appropriate component. To this extent, in section 2.4, I have explained that Democracies are composed by: *citizen*, *inputs*, *discussion*, *procedures*, *outputs*, *institutions*. I claim, that the components of ideal models of Deliberative Democracies are slightly different. Indeed, they are: the *Deliberation*, the *Citizens*, the *Inputs*, the *Decision-Making Procedures*, the *Outputs*, and the *Institutions*.

The shift from discussions to deliberations is justified by three arguments. Firstly, and obviously, as I have stated in section 4.1, deliberation is the very first feature of Deliberative Democracies. Secondly, as I have stated before in sections 4.1 and 4.3, one of the purposes of discussions in Deliberative Democracies is to reach a consensus, and the first requirement to reach a consensus is to deliberate, rather than to discuss. The concept of deliberation, unlike the concept of discussion, also inherently brings other features, like education, learning and so on, as I have exposed in chapter 4. For this reason, in Deliberative Democracies, discussions must always be intended as deliberations. Thirdly and lastly, unlike Representative Democracies, Participatory Democracies, and other models of Direct Democracies, in which discussion is among Citizens and Institutions, in Deliberative Democracies deliberation must surround every part of the model, at any time.

Figure 5.1: Components of Deliberative Democracies
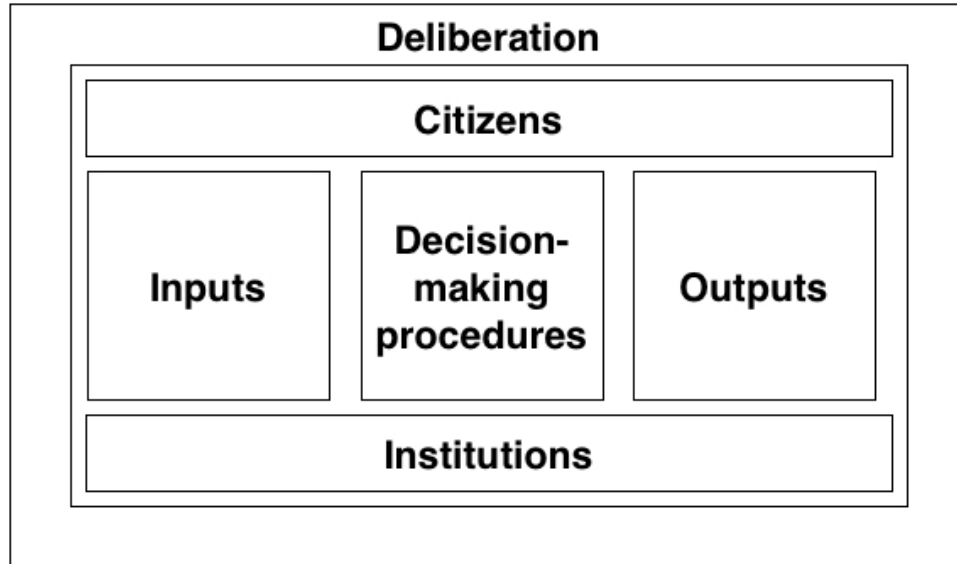
Figure 5.1 shows the components of Deliberative Democracies and their relations. In models of Deliberative Democracies, the *Deliberation* is a kind of "umbrella" component that must be present at any level, and used to handle any of the other components of the model. In Deliberative Democracies there are *Citizens* and *Institutions*, that are separated entities but are always linked by means of Deliberation. Citizens and Institutions, together and at a different level, control, check, and create *Inputs*, *Decision-Making Procedures*, and *Outputs*, always be means of Deliberation. Diverse models and diverse implementations of Deliberative Democracies can be connected together to create Deliberative Systems. Figure 5.2 shows a depiction of Deliberative Systems[1].

---

[1]As I have stated in section 4.4, Deliberative Systems may accept also components that are not designed as deliberative tools, or that are not designed according to models of Deliberative Democracies. For my purpose researches, I will consider Deliberative Systems formed only by models of Deliberative Democracies.

Figure 5.2: A Deliberative System
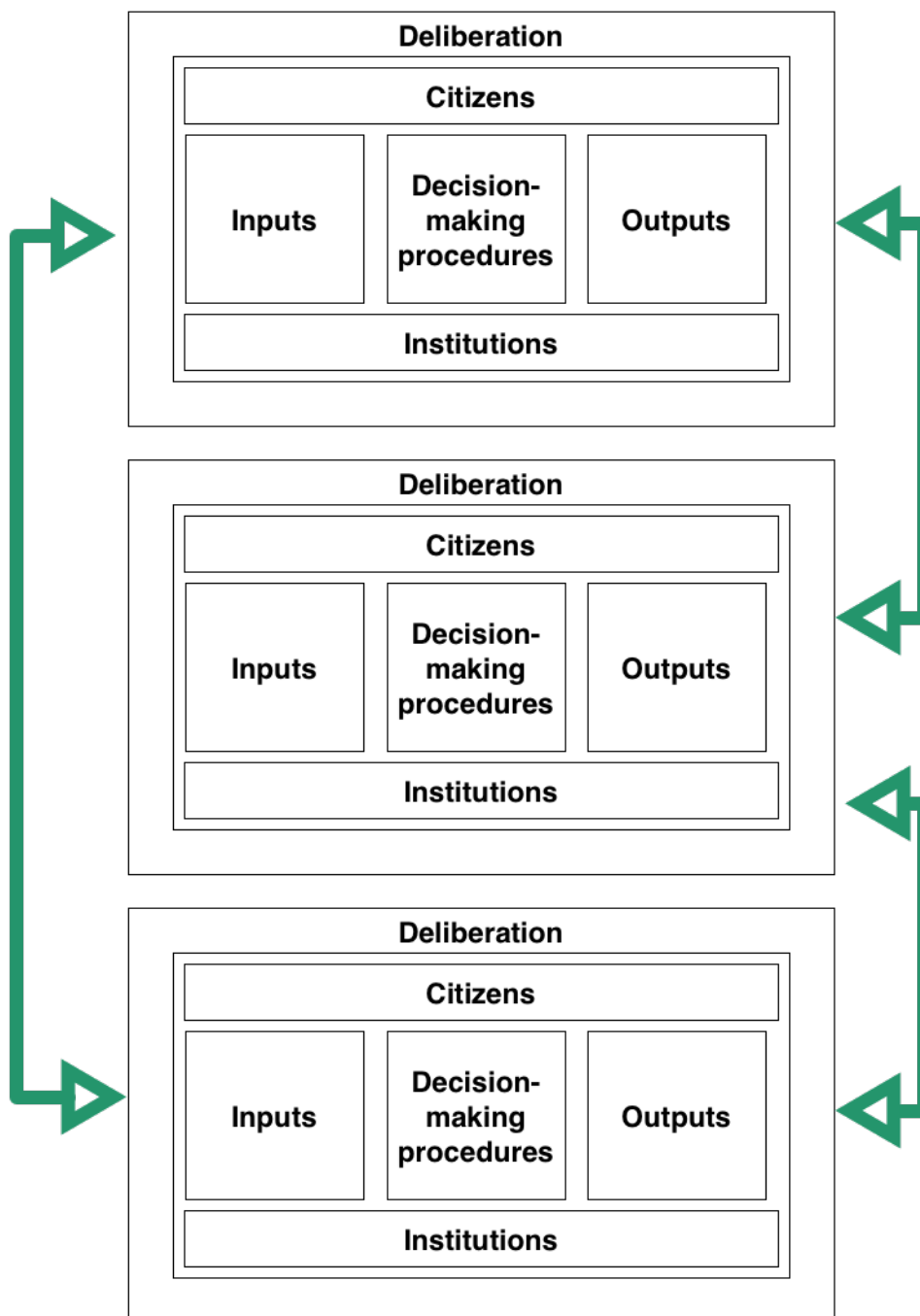
In the next sections, I summarize all the features of Deliberative Democracies, matching each of them with its proper component.

5.2 Features of Deliberations

The following list exposes the features of deliberation in ideal and legitimated models of Deliberative Democracies. They are classified in terms of *"must-be"* features, and *"could-be"* features. Must-be features are mandatory: if a model of Deliberative Democracy does not implement them, the legitimacy may be affected. Could-be features are optional, but should be implemented in any model of Deliberative Democracy to ease its entering into Deliberative Systems.

D-MUST-1 - Accessible: the deliberation must be publicly accessible by every Citizen, including Citizens having different physical abilities.

D-MUST-2 - Open: the deliberation must be open to everyone and to everything. There must not be any restrictions on the amount of Citizens, Institutions, or other things, such as technologies, that want to enter the deliberation.

D-MUST-3 - Reliable: the deliberation must be reliable. Citizens must always be able to rely on the deliberation to address societal needs, or to solve societal issues.

D-MUST-4 - Traceable: the deliberation must be traceable. Every interaction performed by actors involved in the deliberation must be recorded.

D-MUST-5 - Transparent: the deliberation must be transparent. Every mechanism, tool or technology, on which the deliberation relies, must be verifiable by Citizens or Institutions.

D-MUST-6 - Unobstructed: the deliberation must be open to everyone and to everything. There must be no barriers to enter the deliberation both for human beings and technologies.

D-COULD-1 - Asynchronous: the deliberation could be asynchronous. However, asynchronous communication does not exclude synchronous modes of communication.

D-COULD-2 - Continuous: the deliberation could be continuous. Even if Citizens and Institutions can be involved in one-shoot events to deliberate, they must be allowed to continue deliberating whenever they want they need.

D-COULD-3 - Distributed: the deliberation could be distributed over diverse places and platforms.

D-COULD-4 - Interconnected: the deliberation could be interconnected to other deliberations. Deliberations must allow to refer to, or to link to, arguments exposed in other deliberations.

D-COULD-5 - Interdependent: the deliberation could be interdependent with other deliberations. Arguments of a deliberation can depend on arguments exposed in other deliberations.

D-COULD-6 - Ubiquitous: the deliberation could be performed in any place by means of proper technologies.

Table 5.1, lists in a schematic manner the mandatory and optional features of deliberation. The table also reports a sample set of references in literature for each feature. If the feature is not exposed by literature on the four generations of Deliberative Democracies, the table reports the word "*author*", meaning that I have inserted the feature on the basis of personal examinations.

Table **5.1:** The features of the deliberation

Name	Code	References In Literature
Accessible	D-MUST-1	[50] [123]
Asynchronous	D-COULD-1	[151] [165] [166]
Continuous	D-COULD-2	[105] [108] [109] [162] *Author*
Distributed	D-COULD-3	[127]
Interconnected	D-COULD-4	[127]
Interdependent	D-COULD-5	[127]
Open	D-MUST-2	[106] [110] [117]
Reliable	D-MUST-3	[157]
Traceable	D-MUST-4	*Author*
Transparent	D-MUST-5	[135]
Ubiquitous	D-COULD-6	[105] [108] [109] [135] [162] *Author*
Unobstructed	D-MUST-6	[106]

5.3   Features of Citizens

The following list, exposes the features of Citizens who access Deliberative Democracies. They shall be intended as "*must-be*" features, meaning that they are mandatory. If Citizens lack one or more of them, the legitimacy of the model of Deliberative Democracy may be affected.

C-MUST-1 - Capable: Citizens accessing the deliberation must be Democratically capable, and they must have accepted a priori some basic understanding of concepts of Democracies, like the freedom and the right to speak.

C-MUST-2 - Conscientious: Citizens must be conscientious of their participation in deliberations, and they must be conscientious of pros and cons of their actions when deliberating.

C-MUST-3 - Educated: Citizens must have the basic education to deliberate, like the necessary education to write and read, and the necessary education to use any technology on which models of Deliberative Democracies may rely on.

C-MUST-4 - Motivated: the motivations moving Citizens to deliberate must not be different to deliberating in a Democratic way, and to producing Democratic outcomes.

C-MUST-5 - Purposed: Citizens who deliberate must have specific purposes to do it, and they must not deliberate just for effect.

C-MUST-6 - Respectful: Citizens must be respectful when deliberating. For instance, Citizens must not use course, swear, racial and sexist arguments when deliberating.

Table 5.2 lists in a schematic manner the features of Citizens accessing Deliberative Democracies, and their related references in literature. If the feature is not exposed by literature on the four generations of Deliberative Democracies, the table reports the word "*author*", meaning that I have inserted the feature on the basis of personal examinations.

Table 5.2: Features of Citizens accessing Deliberative Democracies

Name	Code	References In Literature
Capable	C-MUST-1	[50] [136] [145] [148] [149]
Conscientious	C-MUST-2	[136]
Educated	C-MUST-3	[50] [107] [127] [123] [145] [162]
Motivated	C-MUST-4	*Author*
Purposed	C-MUST-5	*Author*
Respectful	C-MUST-6	[50] [120] [123] [136]

5.4   Features of Inputs

The following list, exposes the features of inputs that access Deliberative Democracies. They shall be intended as "*must-be*" features, meaning that they are mandatory. If Citizens lack in one or more of them, the legitimacy of the model of Deliberative Democracy may be affected.

I-MUST-1 - Balanced: the inputs entering the deliberation must be balanced. When an input enters the deliberation, also its counterpart must enter the deliberation.

I-MUST-2 - Diverse: the inputs entering the deliberation must be diversified as much as possible, in order to meet all the interests of Citizens and Institutions that deliberate. Also, the deliberation must not foster some inputs more than others, independently by their popularity or by their degree of agreement.

I-MUST-3 - Informed: the inputs entering the deliberation must be matched with a proper set of information, in order to make Citizens and Institutions able to deliberate on them.

I-MUST-4 - Interesting: the inputs entering the deliberation must be interesting, in the sense of interesting choice in the games context, as explained in section 2.1.

I-MUST-5 - Justified: the inputs entering the deliberation must be matched with a proper set of justifications, in order to explain to Citizens and Institutions their importance for the deliberation.

I-MUST-6 - Pluralistic: the inputs entering the deliberation must be as pluralistic as possible, in order to meet the needs of different cultures and traditions of Citizens involved into deliberations.

Table 5.3: Features of inputs accessing deliberations

Name	Code	References In Literature
Balanced	I-MUST-1	[136] [141]
Diverse	I-MUST-2	[18] [50] [102] [105] [107] [111] [112] [113] [115] [114] [116] [117] [118] [119] [120] [121] [122] [123]
Informed	I-MUST-3	[107] [115] [136] [160] [162] [149] [162]
Interesting	I-MUST-4	*Author*
Justified	I-MUST-5	[50] [99] [106]
Pluralistic	I-MUST-6	[18] [50] [102] [105] [107] [111] [112] [113] [115] [114] [116] [117] [118] [119] [120] [121] [122] [123]

Table 5.3 lists in a schematic manner the features of inputs accessing Deliberative Democracies, and their related references in literature. If the

feature is not exposed by literature on the four generations of Deliberative Democracies, the table reports the word "*author*", meaning that I have inserted the feature on the basis of personal examinations.

5.5   Features of Decision-Making Procedures

The following list exposes the features of decision-making procedures of ideal and legitimated models of Deliberative Democracies. They are classified into "*must-allow*", "*must-avoid*", "*must-foster*", and "*must-grant*" features. All of them are mandatory, independently to which of the four above class they belong to. If a model of Deliberative Democracy does not implement one of them, the legitimacy of the model may be affected.

DMP-ALLOW-1 - Mind Changing: the decision-making procedure must allow Citizens to change their mind and opinion on issues. In order to make it possible, the decision-making process must not involve Citizens or Institutions in one-shoot voting sessions.

DMP-ALLOW-2 - Majority Rule: the decision-making procedure must allow voting sessions based on the majority rule, but only if a consensus is not reached after a specified period of time.

DMP-AVOID-1 - Social Domination: the decision-making procedure must not rely its functioning on mechanisms that may create social domination by individuals or groups of them. For instance, Citizens with high skills because of their education must not be allowed to group together in order to dominate deliberations by means of their ability to discuss.

DMP-AVOID-2 - Hierarchies: the decision-making procedure must not rely on any mechanism of hierarchies among Citizens and Institutions. Citizens that have high deliberative capacities, high Democratic capacities, or highly skilled in some field, must be acknowledged of their

capacity, but must not have more decision-making power than other Citizens.

DMP-FOSTER-1 - Learning: the decision-making procedure must foster the learning of Citizens about deliberated issues, by providing them information while they are involved in the procedures. Information must be properly structured as teaching material.

DMP-FOSTER-2 - Mastering: the decision-making procedure must be designed to foster Citizens to continuously improve their knowledge on specific topics in order to master them.

DMP-FOSTER-3 - Persuasion: the decision-making procedure must be designed to foster deliberative interactions among Citizens and Institutions aimed to be persuasive, rather than pressuring.

DMP-GRANT-1 - Anonymity: the decision-making procedure must grant the anonymity of Citizens involved in deliberations.

DMP-GRANT-2 - Egalitarianism: the decision-making procedure must grant the egalitarianism of Citizens involved in deliberations, and must not give to any deliberation more relevance than the others.

Table 5.4 lists in a schematic manner the features of decision-making procedures in Deliberative Democracies and their related references in literature. If the feature is not exposed by literature on the four generations of Deliberative Democracies, the table reports the word "*author*", meaning that I have inserted the feature on the basis of personal examinations.

Table 5.4: Features of decision-making procedures in deliberations

Name	Code	References In Literature
Mind Changing	DMP-ALLOW-1	[135]
Majority Rule	DMP-ALLOW-2	[124]
Social Domination	DMP-AVOID-1	[127]
Hierarchies	DMP-AVOID-2	[127]
Learning	DMP-FOSTER-1	[50] [123] [107] [127] [136] [145] [162]
Mastering	DMP-FOSTER-2	[127] *Author*
Persuasion	DMP-FOSTER-3	[127]
Anonymity	DMP-GRANT-1	*Author*
Egalitarianism	DMP-GRANT-2	[18] [50] [102] [105] [107] [111] [112] [113] [115] [114] [116] [117] [118] [119] [120] [121] [122] [123]

5.6 Features of Outputs

The following list exposes the features of outputs exiting Deliberative Democracies. They are classified *"must-be"*, and *"should-be"* features. Must-be features are mandatory: if a model of Deliberative Democracy does not implement them, the legitimacy of the model may be affected. Should-be features are optional, but should be implemented in any model of Deliberative Democracy to improve the functioning of the model.

O-MUST-1 - Accountable: the outputs of deliberation must be ascribable to one or more decision-making processes which have produced the output, and in which Citizens and Institutions were involved in some way.

O-MUST-2 - Effective: the outputs of deliberation must serve to solve a Democratic issue, or to meet a Democratic need of Citizens or Institutions.

O-MUST-3 - Monitored: the outputs of deliberation must be monitored in order to check if they are used to serve their purpose and, so, they solve they societal need or the societal issue that the were intended to solve.

O-MUST-4 - Revisable: Citizens and Institutions must be always able to modify a specific output of deliberation in order to adapt it to solve new incoming needs and incoming issues.

O-SHOULD-1 - Efficient: the outputs of deliberation should serve to solve a Democratic issue in the best possible way, or to meet a Democratic need of Citizens or Institutions in the best possible way.

O-SHOULD-2 - Satisfying: the outputs of deliberation should be satisfying, to the extent that all Citizens and Institutions must feel comfortable when using that output to handle societal needs.

Table 5.5 lists in a schematic manner the features of outputs produced by Deliberative Democracies and their related references in literature. If the feature is not exposed by literature on the four generations of Deliberative Democracies the table reports the word "*author*", meaning that I have inserted the feature on the basis of personal examinations.

Table 5.5: Features of outputs created by deliberations

Name	Code	References In Literature
Accountable	O-MUST-1	[120] [162]
Effective	O-MUST-2	[115]
Monitored	O-MUST-3	[162]
Revisable	O-MUST-4	[50] [123]
Efficient	O-SHOULD-1	*Author*
Satisfying	O-SHOULD-2	*Author*

5.7 Features of Institutions

The following list exposes the features of Institutions involved in Deliberative Democracies. They are classified "*must-avoid*", and "*must-grant*" features. All of them are mandatory: if a model of Deliberative Democracy does not implement them, the legitimacy of the model may be affected.

IN-AVOID-1 - Domination: Institutions must avoid any domination on Citizens and on deliberation, and must have equal power as Citizens in decision-making procedures.

IN-AVOID-2 - Rooted Partisanship: Institutions must avoid rooted partisanship to enter the deliberation.

IN-AVOID-3 - Tightness: Institutions must avoid in any way to bound the deliberation and the decision-making procedures. More specifically, the latter means that Citizens must be allowed to deliberate even if Institutions are not involved in deliberations.

IN-GRANT-1 - Authority To Deliberations: Institutions must grant authority to deliberations. For instance, a deliberation must have the same authority that representatives may have in Representative Democracies.

IN-GRANT-2 - Egalitarianism To Participants: Institutions must grant equal consideration to each Citizen involved in deliberations.

IN-GRANT-3 - Freedom To Deliberate: Institutions must grant each Citizen the freedom to deliberate.

IN-GRANT-4 - Incentives To Deliberate: Institutions must grant incentives to deliberate. Incentives must not necessarily be intended as monetary incentives.

IN-GRANT-5 - Political Equality: Institutions must grant the same consideration to any political view of Citizens involved in deliberations.

Table 5.6 lists in a schematic manner the features of Institutions involved in Deliberative Democracies and their related references in literature. If the feature is not exposed by literature on the four generations of Deliberative Democracies the table reports the word "*author*", meaning that I have inserted the feature on the basis of personal examinations.

Table 5.6: Features of Institutions involved in deliberations

Name	Code	References In Literature
Domination	IN-AVOID-1	[135] [136] [127]
Rooted Partisanship	IN-AVOID-2	[127]
Tightness	IN-AVOID-3	[127]
Authority To Deliberations	IN-GRANT-1	[117]
Egalitarianism To Participants	IN-GRANT-2	[18] [50] [102] [105] [107] [111] [112] [113] [115] [114] [116] [117] [118] [119] [120] [121] [122] [123]
Freedom To Deliberate	IN-GRANT-3	*Author*
Incentives To Deliberate	IN-GRANT-4	[136] *Author*
Political Equality	IN-GRANT-5	[18] [50] [102] [105] [107] [111] [112] [113] [115] [114] [116] [117] [118] [119] [120] [121] [122] [123]

5.8   Toward a Framework for Deliberative Systems

Table 5.7 lists all the features that ideal and legitimate Deliberative Systems must implement. Features are grouped by components and, as described in the previous sections of this chapter, classified into must-be, could-be, must-allow, must-avoid, must-foster, must-grant and should-be features.

In following chapter 6, I will expose the requirements to implement Online Deliberative Systems including all the features exposed in this chapter.

Table 5.7: Features of Deliberative Systems

Deliberation		Citizens	Inputs	Decision-Making Procedures				Outputs		Institutions	
Must Be	Could Be	Must Be	Must Be	Must Allow	Must Avoid	Must Foster	Must Grant	Must Be	Should Be	Must Avoid	Must Grant
Accessible	Asynchronous	Capable	Balanced	Mind Changing	Social Domination	Learning	Anonymity	Accountable	Efficient	Domination	Authority To Deliberations
Open	Continuous	Conscientious	Diverse	Majority Rule	Hierarchies	Mastering	Egalitarianism	Effective	Satisfying	Rooted Partisanship	Egalitarianism To Participants
Reliable	Distributed	Educated	Informed			Persuasion		Monitored		Tightness	Freedom To Deliberate
Traceable	Interconnected	Motivated	Interesting					Revisable			Incentives To Deliberate
Transparent	Interdependent	Purposed	Justified								Political Equality To Citizens
Unobstructed	Ubiquitous	Respectful	Pluralistic								

Chapter 6

Requirements of Online Deliberative Systems

In this chapter I expose all the proper requirements to implement online Deliberative Systems with all the legitimacy features exposed in previous chapter 5. Firstly, in section 6.1, I expose the normative and technological requirements for Institutions and deliberations involved in Deliberative Systems. Secondly, in section 6.2, I expose the normative and technological requirements needed for the legitimacy of outputs of online Deliberative Systems. Thirdly, in section 6.3, I cover the requirements needed for legitimated decision-making procedures of online Deliberative Systems. Fourthly, in sections 6.4 and 6.5, I expose the requirements for the legitimacy of Citizens and inputs accessing online Deliberative Systems. Eventually, in section 6.6, I expose a framework of features and requirements for online Deliberative Systems.

6.1 Institutions, Web Design, and Deliberative Systems

Starting from the early years of the XXI century, scholars of Democracies have exposed benefits and hopes of moving Democratic processes online [167]

[168] [169], but also concerns about the possibility of implementing full online Democracies [170] [171].

On one hand, scholars argue that the Internet and the web would improve Democracy, by providing to Citizens an *open*, *universal* and *unobstructed* access to the public sphere. Indeed, by leveraging on the architecture of the Internet, and on its open standards and open protocols [172] [172] [173] [174], Citizens could be supplied with a medium for *asynchronous* or *synchronous* communications that is *free*, *egalitarian*, and *not tighten* by any central and *hierarchical authority* [175]. All the previous benefits are strengthened by the principle of *net neutrality*, that grants a *nondiscriminatory* and *universal* access to the net [176].

On the other hand, the usage of the Internet and the Web as primary platforms for delivering Democracy could arise issues that may threaten the legitimacy of online Deliberative Systems. Scholars are mostly concerned about the *digital divide*, that may lead to a *digital inequality*, to the extent that Citizens do not have equal opportunities to access the Internet [177] [175]. Other scholars are concerned about the security issues that may arise in contexts of full online Democratic participation, and may flow into untrusted models of Democracies [178]. Last but not least, scholars of online deliberation expose that the demographic equality of participators in deliberations, in some situations can be affected when moving the deliberation from offline contexts to online contexts [179].

I argue that, for a legitimate implementation of Deliberative Systems, the previous issues must be addressed from two perspectives. The first one is the *regulatory and normative perspective*, meaning that Institutions must enact laws or regulations aimed to ensure to diverse Citizens the access to the Internet and so, by inheritance, to allow all Citizens to access online Deliberative Systems. The second one is the *Web Design perspective*, meaning that online Deliberative Systems must be designed by means of proper web technologies to be accessible and usable.

By enacting regulation and legislation to avoid the digital divide and to

boost the usage of online Democracies, Institutions may assess a very first legitimacy of online Deliberative Systems. For what concerns the digital divide, Institutions of Democratic countries are already addressing the issues by means of effective regulations.

In order to bridge the digital divide on a world-wide level the United Nations, more specifically their Department of Human Rights, has proposed in the resolution *A/HRC/RES/32/13*[1] to solve the issue from a human rights perspective. The department has produced a report defining a complete framework of regulations that Countries around the world should implement to get rid of the digital divide on a regional level[2].

The European Commission has enacted the Digital Agenda for Europe [180]], whose regulatory proposals, as showed in figure 6.2 and in figure 6.1, have considerably helped to solve the digital divide issue in Europe[3]. The actions of the European Commission are mostly aimed to reduce the costs related to accessing high-speed Internet, review the European telecommunication regulations, and engage designers of tools for online Democracy to adopt the international accessibility standards[4].

A good example of how to bridge the digital divide on a Country level is the Italian one. On June 22nd, 2012, the Italian Parliament has approved an act titled *"Compelling actions for the growth of the Country"*[5]. The act gave the birth to the *"Agency for the Digital Italy"* with the purpose,

---

[1]The resolution A/HRC/RES/32/13 is publicly available for reading at the following address: http://ap.ohchr.org/documents/dpage_e.aspx?si=A/HRC/RES/32/13.

[2]The report A/HRC/35/9 is publicly available for reading at the following address: http://www.ohchr.org/Documents/Issues/Women/WRGS/A_HRC_35_9_AEV.docx.

[3]The full report on the effects of the European Digital Agenda is publicly available for reading at the following address: http://www.europarl.europa.eu/RegData/etudes/ BRIE/ 2015/ 573884/ EPRS_BRI(2015)573884_EN.pdf.

[4]The international accessibility standards are promoted by the World Wide Web Consortium, in order to define standard and guidelines to implement web applications that are internationally accessible (https://www.w3.org/TR/tr-technology-stds).

[5]The act number 83 of July 22nd, 2012 is publicly available for reading at the following address: http://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legge:2012-06-22;83.

Figure 6.1: The use of Internet in European Countries in 2005 and 2014, according to the age of Citizens
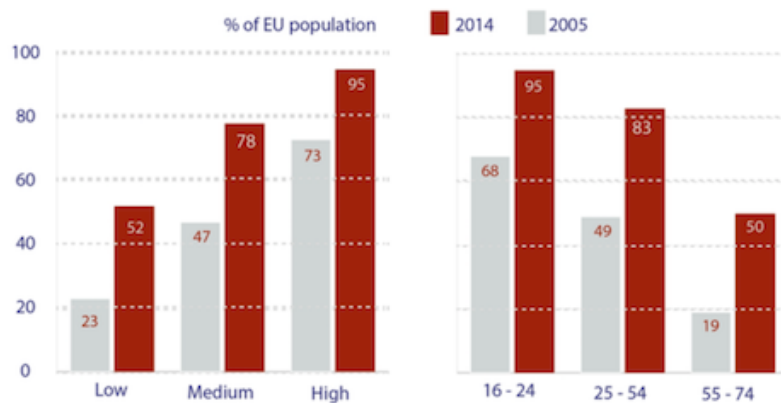
Figure 6.2: The use of Internet in European Countries in 2005 and 2014
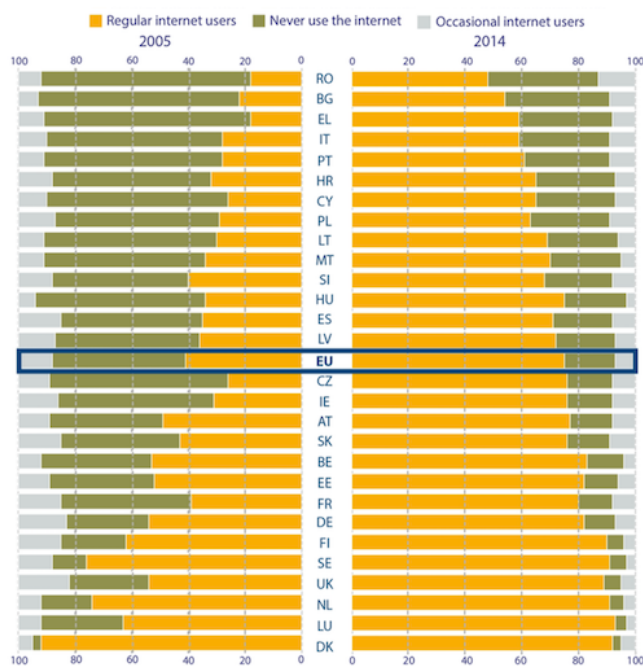
among others, to drastically reduce the digital divide related to accessing the Internet in the disadvantaged areas of the country [181]. After the approval of act number 83 on July 22nd, 2012, the Italian Parliament enacted a series of other acts aimed to regulate the scopes and the purposes of the Agency[6]. The Agency promoted a series of actions and specific acts aimed to reduce the digital divide [181].]. Very worth a note is also *act number 33 on March 14th, 2013*, , proposed by the Agency to reform the regulations related to the publication and transparency of the information supplied by the public administrations[7] [8]. Another important proposal in Italy is Stefano Rodotà's one, who proposed to include an article 21-bis in the Italian Constitution, in order to recognize the access to the Internet as an universal right[9]. By approving the proposal, the digital divide in Italy would be addressed at a Constitutional level and this, I argue here, would lend legitimacy to online Deliberative Systems at national level, at least to the extent of legitimacy features that could be jeopardized by issues related to the digital divide.

By summarizing all previous arguments the Internet infrastructure, with its open and neutral standards and protocols in conjunction with proper regulations enacted by Institutions, ensures by default some of the legitimacy features of online Deliberative Systems. More specifically, I argue that by granting at Institutional level the access to the Internet, online Deliberative Systems would have by inheritance and by default the following features: (1) they are *open*; (2) they are *reliable*; (3) they are *unobstructed*; (4) they are *asynchronous*; and (5) they are *distributed*. Institutions granting by means

---

[6]All the acts related to the functioning of the Agency for the Digital Italy are available for public reading on the Web site of the Agency (http://www.agid.gov.it/agid/quadro-normativo).

[7]More information about the act, and the link to the original act, are available on the Web site of the Agency (http://trasparenza.agid.gov.it).

[8]I will expose the importance of public and open data for the legitimacy of Deliberative Systems in the next section 6.2.

[9]The proposal is currently under discussion in the Italian Parliament. The last report on the proposal is publicly available for reading on the Web site of the Italian Chamber of Deputies (http://www.camera.it).

of regulations the previous list of characteristics are also automatically legitimate by the following points of view: (1) *avoid domination* of the deliberation by granting the right to access the Internet and, inherently, the access to deliberate; (2) *avoid to bound* online Deliberative Systems that, for the nature of the Internet are free and neutral;(3) *grant egalitarianism, political equality and freedom* participants by equally allowing them to access the Internet and Deliberative Systems.

The second perspective, from which the requirements to implement legitimacy features of Deliberative Systems must be analyzed, is the technological one. Because Deliberative Systems must be hosted by the Web[10], there is the need to define what are the proper methodologies to design usable and accessible Web applications.

For what concerns accessibility, firstly, there is a need to strictly follow the international accessibility standards that I have already introduced previously in this section. Secondly, it is possible to follow well-known and well-studied design practices, like the *inclusive design*, the *responsive design*, and the *material design*. . The Inclusive design is a methodology to design Web applications by starting from the sensor, motor and cognitive capabilities of individuals [182] [183].]. As showed in figure 6.3, extracted from the Inclusive Designed Toolkit of the University of Cambridge [184], if the disability of individuals is evaluated by means of the latter three-dimensional framework, there is a large amount of population that may have difficulties to use not properly designed web applications. By following the inclusive design principles, Deliberative Systems should satisfy the legitimacy feature of a widest possible *accessibility*.

In order to implement ubiquitous and continuous Deliberative Systems, it

---

[10]Sometimes, also in literature that is not strictly related to Computer Science, the term Internet and term Web overlap. However, there is a clear distinction between them. The Internet, is the infrastructure on which diverse services are hosted, on of them is the Web, that is a service that supplies connected and univocally identified resources. More information on the differences between the Internet and the Web are available on the Web site of the World Wide Web Consortium (https://www.w3.org/Help/#webinternet).

Figure 6.3: The pyramid of diversity of population capabilities. Courtesy of the University of Cambridge (http://www.inclusivedesigntoolkit.com/whatis/whatis.html).
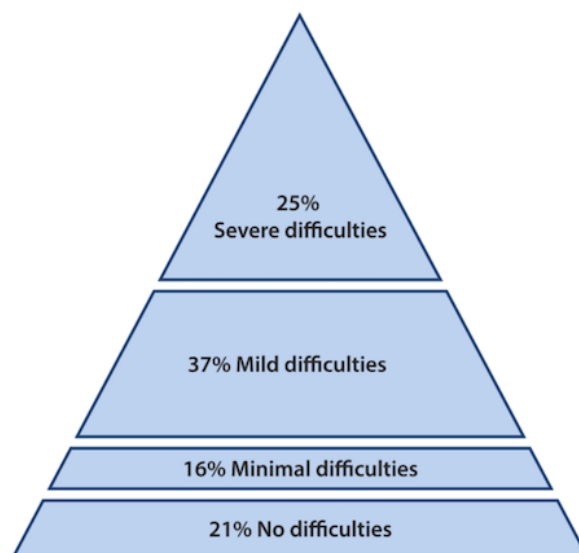
is possible to use techniques of Responsive Design. The responsive design is a design methodology allowing web designers to create web applications that, by relying on common web standards like *HTML5*[11] and *CSS3*[12], are able to detect the resolution capabilities of digital devices and to adapt themselves to small or large screens [186]]. As showed in figure 6.4, a research by com-Score *comScore*[13] on the use of mobile and desktop devices for accessing the Internet [187]] has found that in 2014 mobile devices have overcome desktop

---

[11]HTML5 is the last version of the Hyper Text Markup Language, developed by the World Wide Consortium and aimed to supply a *"full programming environment for cross-platform applications with access to device capabilities; video and animations; graphics; style, typography, and other tools for digital publishing; extensive network capabilities "* [185].

[12]CSS3 is the latest version of the Cascading Style Sheets language that is used for describing the presentation aspects of Web pages and of web applications. More information about the CSS3 language are available on the Web site of the World Wide Web Consortium (https://www.w3.org/standards/webdesign/htmlcss).

[13]The comScore is a company that provides independent data and analysis on the use of internet devices (https://www.comscore.com/).

Figure 6.4: Percentage of time spent online with mobile devices in nine countries in the world. Courtesy of SmartInsights (http://www.smartinsights.com)
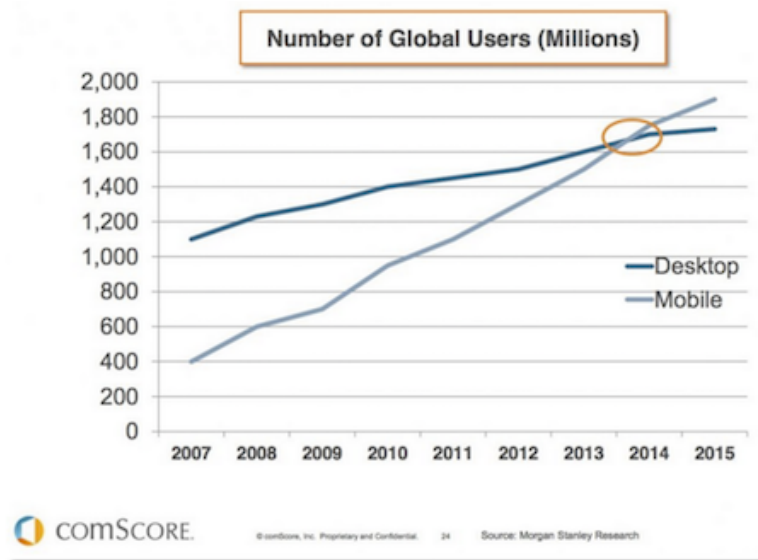
devices in terms of number of users, and the time spent online with mobile devices is higher than the time spent online by means of desktop devices (figure 6.5)). As a matter of fact this means that, by following best practices of responsive design, it is possible to design Deliberative Systems allowing *ubiquitous* and *continuous* deliberations, deliberations, to the extent that online deliberations could be accessed by all the Citizens with all types of devices.

The Material Design defines a set of standards, guidelines and a language to design software aimed to rich user experiences. It was created by Google in 2014[14]. While Inclusive Design is necessary for the accessibility of Deliberative Systems and Responsive Design is necessary for the implementation of ubiquitous Deliberative Systems, Material Design is necessary to implement Online Deliberative Systems usable on every device. As I have exposed in 2.1 and in definition 2, usability is an ISO standard to assess the effi-

---

[14]The guidelines, the standard and other information about the Material Design can be found on the Web site of Material Design (https://material.io/guidelines/).

Figure 6.5: The number of desktop and mobile users around the world from 2007 until 2015. Courtesy of SmartInsights (http://www.smartinsights.com)
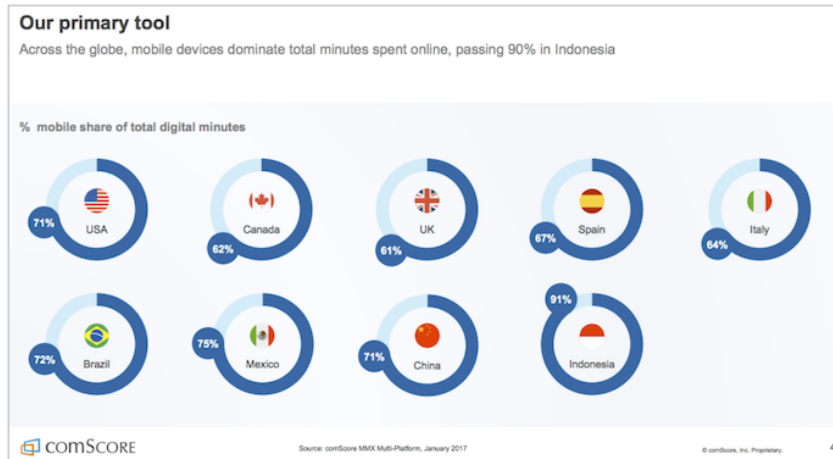
cacy and efficiency of software, and to grant users satisfactory experiences when using software. On one hand, the usability of Deliberative Systems strengthens their legitimacy from the accessibility, continuity and ubiquity perspectives. On the other hand, usability is the very first requirement to implement engaging Deliberative Systems.

Institutional regulations to grant access to internet, and the use of proper design methodologies to implement some of the required legitimacy features of Deliberative Systems, are not enough to implement Deliberative Systems with all the needed features to be legitimated. The other perspective that must be analyzed is the one related to the data used or produced by Deliberative Systems. In next section 6.2, I expose the requirements for data.

6.2 Data, Documents and Deliberative Systems

By ensuringCitizens the access to the Internet and to Deliberative Systems, as I have stated in previous section 6.1, online Deliberative Systems gain by inheritance some of the needed features for their legitimacy. How-

ever, there is something still missing: more specifically, even if Deliberative Systems are implemented online, deliberations could still be not *not transparent*, *not traceable*, and *not interoperable*, meaning that they are *not interconnected*, and *not interdependent*[15].

Interoperability is a term used in Information Technology to "*define an ideal way for computers and other electronic devices to relate to each other*"[16]. In software for electronic Government, or in software for participation and deliberation, the term refers to the property of software to communicate in three directions [188, p. 370]. The first one is the *bottom-up communication.* For instance, in the European Community it refers to the ways the software of single Countries communicate with the central software of the Community. The second one is horizontal communication, and in the European Community may refer to the way software of various Countries communicate among themselves. The third one is top-down communication, that in the European Community refers to the ways the central software of the Community communicate with software of the single Countries.

In the context of electronic Government and in Deliberative Systems, interoperability must be granted among both software and data and documents produced by deliberations [188, p. 371]]. This can be achieved by using Open Source software[17], by using standard technologies and software, by giving the

---

[15]For the purpose of my research, I will refer to the interoperability as a umbrella term to define systems that are also interconnected and interdependent. The concept of the interconnection, refers to the ability of Deliberative Systems to connect and to communicate with other Deliberative Systems. The concept of the interdependence, refers to the ability of Deliberative Systems to work independently or in conjunction with other software. I claim that they need the same requirements of the interoperability to be enabled. For this reason, and for simplicity of reading, in this section I expose the requirements to enable the interoperability of Deliberative Systems.

[16]A more detailed explanation of the term can be found on the Web site of the Network Centric Operations Industry Consortium (http://www.ncoic.org/what-is-interoperability).

[17]Open source software is software that is available in source code form and that is often developed in a public collaborative manner [189].

freedom to choose the technologies that may best fit the deliberative needs, and by publishing and documenting the software used for deliberations, and the data that deliberations produce.

The latter, and so the need of Deliberative Systems to *rely on open data*, and their ability to *produce open data*, is a mandatory requirement for the legitimacy of online Deliberative Systems. In online Deliberative Systems, the concept of open data refers to *data which is available online without any restrictions on its usage or distribution* [190]. As stated by the United Nations E-Government Survey of 2016, by publishing open data local Governments can improve the *transparency* of their Democratic processes, and ensure higher levels of accountability of their Democratic outcomes *accountability* of their Democratic outcomes [191, p. 3]. Moreover, a proper use of open data may ensure the *traceability* of deliberations, and allow Citizens and Institutions to *monitor* the outcomes of deliberations.

As for the strategies to reduce the Digital Divide, that I have exposed in previous section 6.1, open data should be fostered from two perspectives too. The first one is the *normative and regulatory perspective*, the second one is the *technological perspective*.

For what it concerns the law and regulations, as stated by the United Nations [191, p. 17], at national and local level Institutions should enact regulations aimed to the following: (1) ensure Citizens the right to access the information; (2) regulate data sharing and decide what data must be openly provided; (3) adopt their own policy for data; (4) promote standards for data aimed to improve the effectiveness of their sharing; (5) develop the data analysis capabilities of public employers; (6) transform the nation statistical agency into providers of data; (7) encourage developers and suppliers of data to use different, and linked, sets of data. As showed in figure 6.6, the United Nations E-Government Survey of 2016 shows that o105 Nations, out of the 193 belonging to the United Nations, have adopted to some extent this kind of regulations [191, p. 37].

Also the European Community has adopted legislation to foster the use

Figure 6.6: Number of Countries that have enacted legislation related to Governmental open data in 2016
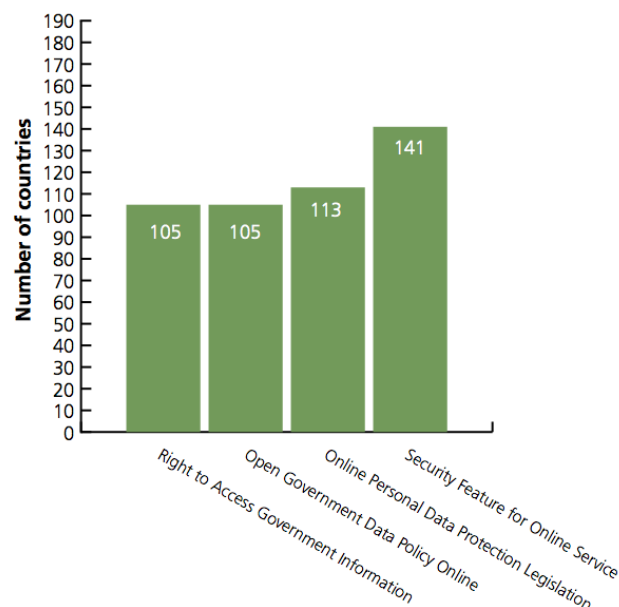
of Open Data. More specifically, the European Community has enacted the *Public Sector Information Directive* (*Directive 2003/98/EC*) [192, p. 7][18], that has the main purposes to ensure equal treatments to all re-users of data supplied by public administrations, and engage Public Administrations to supply raw data in diverse formats [193]. In 2014, Directive 2003/98/EC was amended by *Directive 2013/37/EU*[19], that introduces general principles to engage the Countries belonging to the European Community to produce data that is already structured to be supplied as open data [192, p. 7]and, so,

---

[18]The full text of the directive 2003/98/EC is available on the Eur-Lex web site of the European Community (http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:345:0090:0096:en:PDF). The Eur-Lex is a good example of portal aimed to share open data. It supplies all the legislation of the European Community in ways that are accessible both by human beings and by computers.

[19]The full text of the Directive 2013/37/EU is available for public access on the Eur-lex Web site (http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32013L0037).

Figure 6.7: European Community Countries that supply portals to share their open data

2009	2010	2011	2012	2013	2014	2015	≥2016
Spain	Slovenia	Belgium		Austria	Bulgaria	Croatia	Iceland
	UK	Estonia		Denmark	Cyprus	Czech Republic	Latvia
		France		Germany	Finland	Hungary	Liechtenstein
		Italy		Greece	Ireland	Lithuania	Luxembourg
		Netherlands		Romania	Poland		Malta
		Norway		Slovakia			
		Portugal		Sweden			
				Switzerland			

avoid the publication of raw data and encourage the publication of structured data. As stated by the European Commission, these directives have flown into a harmonization of the national regulations of Public Sector Information [192, p. 20]. Figure 6.7 shows the European Community Countries that have implemented portals to share their open data since 2009 [192, p. 43].

In 2005, Italy has adopted the *Digital Administration Code, Legislative Decree n. 82/2005*[20]. One of the purposes of the Code is to enable the Agency for Digital Italy, that I have already introduced previously, to implement regulations and guidelines to enhance the use of Governmental Open Data. The Agency has produced a full set of guidelines [194] to help the Italian Regions to produce data compliant to the *European Interoperability Framework*[21] [195]. Figures 6.8 and 6.9 show, respectively, the number of open data sets supplied by the Italian Regions in 2016, and their impact on the regional Gross Domestic Product.

---

[20]The full text of the Digital Administration Code is available on the Web site of the Agency for the Digital Italy (http://archivio.digitpa.gov.it/amministrazione-digitale/CAD-testo-vigente).

[21]The European Interoperability Framework defines a set of technologies, of strategies, and of standards, that European Public Administration must use in order to improve the interoperability among the Countries of the European Community. The framework is publicly available on the Web site of the European Community (https://ec.europa.eu/isa2/eif_en).

Figure 6.8: Number of open data sets supplied by Italian Regions on January 2016. Regions with darken columns are both producers of open data and aggregators of other public data sets. Courtesy of LinxLab (http://www.lynxlab.com/it/content/gli-open-data-delle-regioni-italiane).
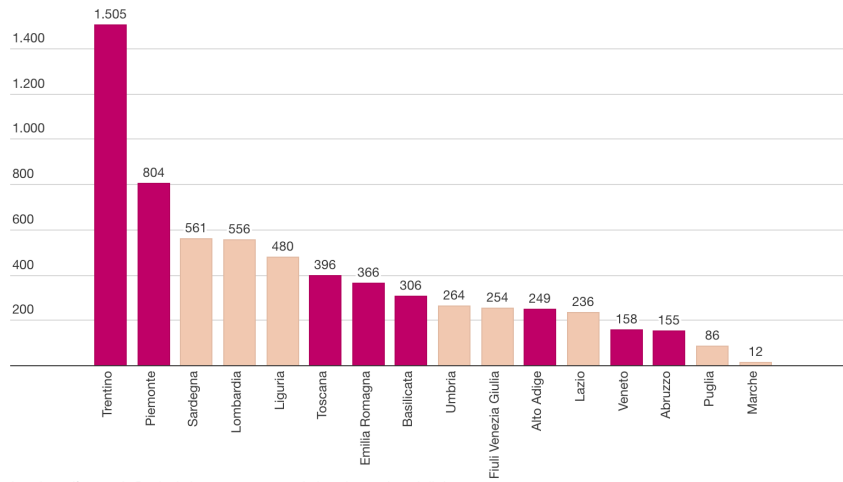
Figure 6.9: The impact of open data sets on the regional Gross Domestic Product on January 2016. Region with darken columns are both producers of open data and aggregators of other public data sets. Courtesy of LinxLab (http://www.lynxlab.com/it/content/gli-open-data-delle-regioni-italiane).
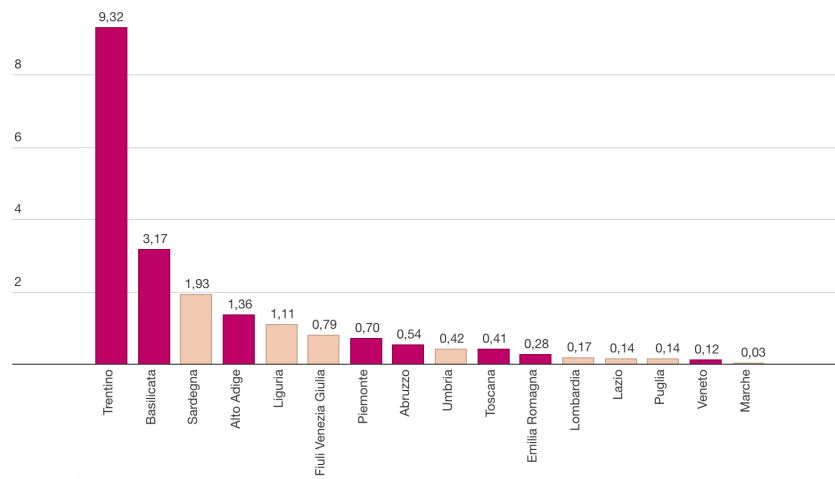
The guidelines of the Agency for Digital Italy are not only aimed to foster the production of open data. Most importantly, they are also aimed to

improve the *semantic interoperability* by helping the Italian Public Administrations to produce *Linked Open Data*. The use of Linked Open Data is a fundamental requirement to implement some of the needed features for the legitimacy of online Deliberative Systems. By analyzing the concepts related to Linked Open Data, it is possible to address the requirements of data and documents related to Deliberative Systems from a technological perspective.

The Linked Open Data is a project of the World Wide Web Consortium, which aims at extending the Web by publishing free and open data sets created by means of the *Extensible Markup Language*, and linking data stored in different places by means of the *Resource Description Framework* [196]. So, the very first concepts behind the Linked Open Data are the Extensible Markup Language, and the Resource Description Framework.

The Extensible Markup Language (hereinafter XML), is a flexible descriptive markup language defining a set of rules to produce human-readable and machine-readable resources [197, p. 23]]. The XML is the most suitable technology for the markup of both legal resources [198] and resources related to Deliberative Systems [199] [200]. Indeed, the XML is a meta-language that allows for the creation of specific dialects to properly markup documents of specific contexts [197, p. 28].

AkomaNtoso is a XML dialect, and an OASIS standard[22], for the markup of legislative resources and other resources not belonging to the legislative context [201] [202].]. Due to its design, particularly aimed to flexibility [197, pp. 41-45], AkomaNtoso is currently used by a large set of both Governmental and Inter-Governmental Institutions, and also for not Governmental initiatives[23]. For the aim of this research, it is particularly worth of note

---

[22]The OASIS is an online authority for the standardization of technologies (https://www.oasis-open.org). Because of the OASIS naming convention for standards, AkomaNtoso is also known with the LegalDocumentML and LegalDocML names. The full specifications of the language are available on the Web site of OASIS (https://www.oasis-open.org/committees/tc_home.php?wg_abbrev=legaldocml).

[23]A full list of Institutions that are using AkomaNtoso, and of other initiatives related to AkomaNtoso, is available on the Web site of AkomaNtoso (http://www.akomantoso.org/).

that AkomaNtoso is already used to markup the legal resources and delib-
erative processes of the FAO[24]. Another initiative related to AkomaNtoso,
worth of notice for the purposes of this research, is the markup of William
Shakespeare's "*The Tempest*" by means of AkomaNtoso[25]. The latter shows
that AkomaNtoso can be easily used to also markup speeches that do not
revolve only on strict rhetoric or political language since, as I have stated
in chapter 4, theorists of Deliberative Democracies claim that, in order to
be legitimated, deliberations must allow diverse language modes. For all the
previous reasons, XML dialects for the markup of legal resources are an im-
portant requirement for the legitimacy of online Deliberative Systems, and
AkomaNtoso could be a valid choice among these dialects.

Another requirement of Linked Open Data is to give a unique name to
each resource that must be supplied on the Web, and could be linked to other
resources. For this reason, also for the data and documents produced by on-
line Deliberative Systems and online deliberations, there is a need to find a
proper naming convention. Although the Web already supplies mechanisms
to univocally identify online resources, such as the *Universal Resource Iden-
tifiers* (hereinafter URI)[26]26 , there is a need to understand how to create
proper URIs that can identify deliberations. AkomaNtoso may come in help
of online Deliberative Systems also for what concerns the URIs for specific

---

[24]The FAO is the Food And Agricultural Organization of the United Nations
(http://www.fao.org/home/en/). More information about how AkomaNtoso is used
for the markup of deliberative processes of the FAO, is available on the Web site
of the FAO (http://aims.fao.org/activity/blog/introduction-xml-schema-"akoma-ntoso"-
structure-workflow-fao-normative-and-governing).

[25]The opera marked up with AkomaNtoso is publicly available on the Web site of SayIt
(http://shakespeare.sayit.mysociety.org/the-tempest.an). SayIt is a online software devel-
oped by MySociety (https://www.mysociety.org), that is aimed to facilitate the creation
of transcripts in order to supply them on the Web (http://sayit.mysociety.org).

[26]The URI is a technology that is used to give unique names to resources stored on
the Web, and that is used to enable interactions among resources over the Web. More
information about URIs can be found on the Web site of the World Wide Consortium
(https://www.w3.org/wiki/URI).

deliberations. Indeed, by following the AkomaNtoso naming convention[27], resources marked up with AkomaNtoso may be identified by means of the *Functional Requirements for Bibliographic Records* [203] (hereinafter FRBR), a conceptual model to assign hierarchical names to resources and navigate their versions [197, p. 69].

The *Resource Description Framework* (hereinafter RDF)) is the last technology that must be used to implement Linked Open Data. Indeed, while the XML is useful to structure legal documents and discussions in online Deliberative Systems, it does not supply mechanism to give meaning to resources and, most important, does not supply any mechanism to highlight how resources are connected among themselves. RDF is a data model that, by means of triples of the form subject-predicate-object, allows producer of linked open data to give meaning to both resources and the connections among them [204].

All the regulations and technologies previously exposed in this section are mandatory requirements for the implementation of Deliberative Systems whose deliberations aim to be interconnected, interdependent, transparent and traceable. But regulations and technologies to implement Linked Open Data in Deliberative Systems automatically also flow into the implementation of required features of the outcomes of Deliberative Systems. Indeed, as I have stated in section 5.6, the outcomes of deliberations must be *accountable*, *effective*, *monitored*, and *revisable*, and they should be *efficient* and *satisfying* for Citizens.The accountability, revisability and monitorability of the outcomes are automatically activated by using Linked Open Data and by enacting proper regulations. The efficacy and efficiency of outcomes may be automatically computed by algorithms that take advantage of the property of Linked Data of being computer readable. For instance it is possible to automatically compute the complexity of a legislation and the effects

---

[27]More information about the AkomaNtoso naming convention may be found in the specification of the AkomaNtoso standard, that are available on the Web site of OASIS (http://docs.oasis-open.org/legaldocml/akn-nc/v1.0/akn-nc-v1.0.html).

that amendments on laws may have on it [205]. It is also possible to compare outcomes of deliberations with regulations enacted by Countries for the normative and technical analysis of laws[28]. Lastly, I argue here, it is possible to create algorithms to compare outcomes of deliberations with Linked Open Data created by other Public Administrations, for example by statistical offices of Countries, in order to check if the quality of life of Citizens is improved after specific outcomes are created, and this could be used to evaluate the satisfaction of Citizens governing themselves by means of Deliberative Systems.

However the satisfaction of Citizens must also be granted during the whole process of deliberations and during decision-making procedures. In this section and in previous section 6.1, I have exposed the regulations and technologies needed to implement features for the legitimacy of deliberations, Institutions and outcomes of Deliberative Systems. In the next section I expose the ways decision-making procedures of Deliberative Systems must be shaped.

6.3   Deliberative Interaction, Deliberative Consensus and Deliberative Systems

In the previous sections 6.1 and 6.2, I have exposed regulations and technologies required to implement the legitimacy features of deliberations, Institutions and outcomes of Deliberative Systems. However, these requirements are not enough to implement fully legitimated online Deliberative Systems, because they neither give any hint on how to ensure that Citizens and inputs have the proper features to enter deliberations, nor on how to implement legitimated decision-making procedures aimed to help Citizens to choose ideal outcomes among different options they have. In this section, I expose the

---

[28]An example of regulation to analyze the normative and the technical quality of laws is the Italian one, that can be found on the Web site of the Italian Presidency of the Council of Ministers (http://presidenza.governo.it/DAGL/uff_studi/ATN.html).

requirements to implement *ideal and legitimated decision-making procedures* in online Deliberative Systems.

As stated by the theories of Deliberative Democracy that I have largely exposed in chapter 4, the final aim of deliberations and their decision making procedures, should be a consensus among Citizens. However, in some situations, the consensus could not be achieved, or is not desirable because there could be different options that may satisfy different Citizens. To match both these eventualities, decision-making procedures of Deliberative Systems must supply to Citizens the opportunity to both change their mind if they reach an agreement on shared solutions, and simply vote their preferred options in those situations in which a shared solution can not be found. Decision-making procedures must always aim to the former situation, rather than the latter one, by fostering Citizens to persuade other Citizens, learn about issues and motivations of other Citizens, and master mechanisms of deliberations and decision-making procedures to improve *deliberative capabilities*.

I argue that all the previous features of decision-making procedures can be enabled together by introducing the concepts of *Deliberative Interaction*, and the concept of *Deliberative Consensus*. Both concepts are based on personal examinations derived by theories of Democracies that I have exposed in the previous chapters of this work.

Deliberative Interaction must be intended as a composite interaction including different modes of communication that may also rely on not-humans languages, to the extent that they are *persuasive*, and useful to *learn* and *master* deliberative capacities. This means that Citizens can interact by means of human language and rhetoric, or share stories, or use narratives, or share videos, music and comics, or simply push buttons of online Deliberative Systems to interact with other Citizens. In other words, Deliberative Interaction can be defined as follows:

Definition 12 (Deliberative Interaction). *Deliberative Interaction is an inclusive kind of interaction that allows participants of deliberations to argue by means of any mode of communication that they may prefer. When de-*

liberations are performed by means of software, Deliberative Interaction also includes interactions among participators and the software, both if these interactions are performed by Citizens to accomplish their individual tasks and are performed with the final purpose to communicate with other Citizens. Deliberative Interaction is always based on persuasion, and its main purposes are the learning and mastering of deliberative capacities.

Deliberative Systems that allow Deliberative Interaction should by default be able to avoid *social domination* and *hierarchies*, and ensure *egalitarianism* among Citizens and their *anonymity* anonymity. This can only be achieved if Deliberative Interaction is used together with Deliberative Consensus, that I expose later in this section, and if Deliberative Systems are designed to enhance motivations of human-beings and avoid biases of human-beings that I explore later in this chapter.

Deliberative Consensus is a kind of consensus based on the meta-consensus theorized by Dryzek *meta-consensus* theorized by Dryzek [117, p. 101],], that I have defined in section 4.1, and on the concept of *interesting choices* by Sid Meier, that I have exposed in the section 2.1. In order to nurture Deliberative Consensus among Citizens, decision-making procedures of Deliberative Systems must supply Citizens facilitation to share their values and their beliefs. After all values and beliefs of Citizens are collected by means of Deliberative Interactions, decision-making procedures must engage Citizens in the creation of a set of *interesting options* to satisfy all their values and beliefs. If the necessity of an option is not shared among all Citizens involved in the decision-making procedure, it must involve Citizens in ballots based on the *majority rule*, while continuing to engage them in Deliberative Interactions to allow them to *change their mind* about votes they have cast. Deliberative Consensus is defined as follows:

Definition 13 (Deliberative Consensus). *Deliberative Consensus is a form of full or partial consensus on values and beliefs among Citizens. It is reached when participators in a decision-making process support, at least partially, values and belief of other participants, or after ballots based on the majority*

rule aimed to choose among interesting options, allowing Citizens to change their preference in any moment.

Similarly to games, in the context of Deliberative Consensus options are interesting if: (1) involve some kind of trade-off; (2) allow Citizens to express their personal values or beliefs; (3) are relative to specific decision-making procedures; (4) affect Deliberative System, Citizens and decision-making procedures for a period of time; and (5) are informed.

In this section I have exposed my personal definition of Deliberative Interaction and Deliberative Consensus, and I have argued that they are mandatory requirements to implement the legitimacy features of decision-making procedures of Deliberative Systems. On one hand, I claim that these two concepts can be simply implemented in online Deliberative Systems by using the technologies and web design methodologies that I have exposed in sections 6.1 and 6.2. On the other hand, only proper design and proper technologies are not enough to ensure legitimacy of Citizens and inputs that access deliberations. In the following sections 6.4 and 6.5, I expose how physiological and cognitive characteristics of human beings can be exploited or controlled to aim to legitimated deliberations.

6.4   Motivations of Human Beings and Deliberative Systems

In ideal and legitimated Deliberative Systems, Citizens must be continuously engaged in deliberations and, so, Deliberative Systems must be designed to keep Citizens active in deliberation and satisfied while deliberating. Citizens satisfaction can be improved by providing incentives to increase their motivations to deliberate.

As I have exposed in section 4.3 and its subsections, scholars of Deliberative Democracies have theorized models of deliberations in which Citizens are engaged to participate by means of monetary incentives supplied by institu-

tions. However, critics of Deliberative Democracies have exposed that monetary incentives may result in unaffordable expenses for Institutions [162]. Moreover studies on monetary incentives have found that, although money can be a good incentive in the private sphere and improve the quantity of outcomes when performing a job [206], it does not have any effects on the quality of produced outcomes and, even worse, could be counterproductive when related to Social activities [207].

In order to solve the above issues, one of the purposes of this research is to find alternative incentives to monetary ones. This may be addressed by exploring the human intrinsic and extrinsic motivations. *Extrinsic motivations* motivations, to which also monetary ones belong, are related to *behavioral attitudes* of human beings, and so to behaviorism theories [208]]. Very briefly, behaviorism is a psychological theory claiming that human beings are describable by simply observing their behavior and their response to specific stimuli. Thus, a proper distribution of rewards should drive individuals to act in specific ways. *Intrinsic motivations* are related to *cognitivist theories* [209], stating that thoughts happen before the behavior, so a certain behavior is the result of a specific thinking process, meaning that actions of individuals are also driven by their personality and *"forma mentis"*. Rephrasing the latter assertion, extrinsic motivations are related to the *brain of individuals*, whilst intrinsic ones are related to the *minds of individuals*.

Literature on extrinsic motivations expose four neurotransmitters that can be stimulated by means of rewards and physical incentives, in order to keep individuals satisfied. They are: the *Dopamine*, the *Oxytocin*, the *Serotonin*, and the *Endorphin* [210, p. 13] [211, pp. 176-182]. Figures 6.10, 6.11, 6.12, and 6.13 show, respectively, the chemical composition of these four neurotransmitters.

The Dopamine is an *appetitive reinforcement* that is released when individuals perform actions supposed to result in one or more rewards [212]. Moreover, the Dopamine is strictly *related to learning*, to the extent that brains of human beings create powerful relation between actions and re-

Figure 6.10: The chemical composition of Dopamine. Courtesy of Wikepedia (https://en.wikipedia.org/wiki/Dopamine)
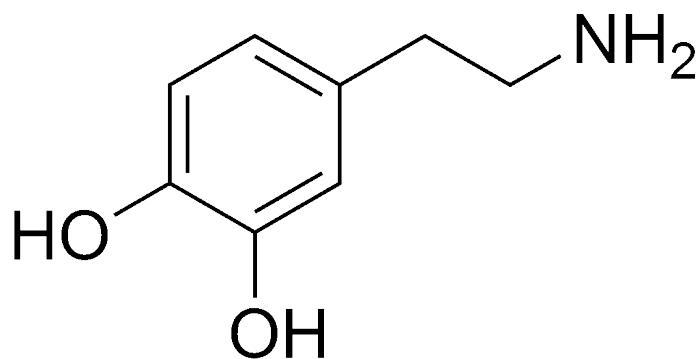
wards when Dopamine is released, resulting in positive effects on learning capabilities for individuals predisposed to *actions-rewards* learning [213].

The Oxytocin is released by brains of human beings when they are involved in *social physical interactions* [214] and in interactions with other human beings *mediated by technologies*[29], but also when human beings *read compelling narratives* [215].]. Oxytocin has powerful anti-stress effects [214] and is deemed to be effective to increase altruism [211, p. 178], generosity [216] and trust in other humans [217].

The Serotonin is related to the way human beings act when they are involved in decision-making procedures and to the *mood of human beings* when receiving feedback or rewards [211, p. 180]. In other words, the more the Serotonin, the more human beings react positively to negative feedback, and vice-versa [218]. Also, Serotonin is involved in *impulsivity*, meaning that individuals with low level of Serotonin tend to choose options that supply instant rewards, rather than options that may resolve in delayed but more

---

[29]For more information about the release of Oxytocin when using social webs read the article "*The Top 10 Ways to Boost Good Feelings*" by Paul J. Zak. The article is public available for reading on the PsychologyToday site (https://www.psychologytoday.com/blog/the-moral-molecule/201311/the-top-10-ways-boost-good-feelings).

Figure 6.11: The chemical composition of Oxytocin. Courtesy of Wikepedia (https://en.wikipedia.org/wiki/Oxytocin)
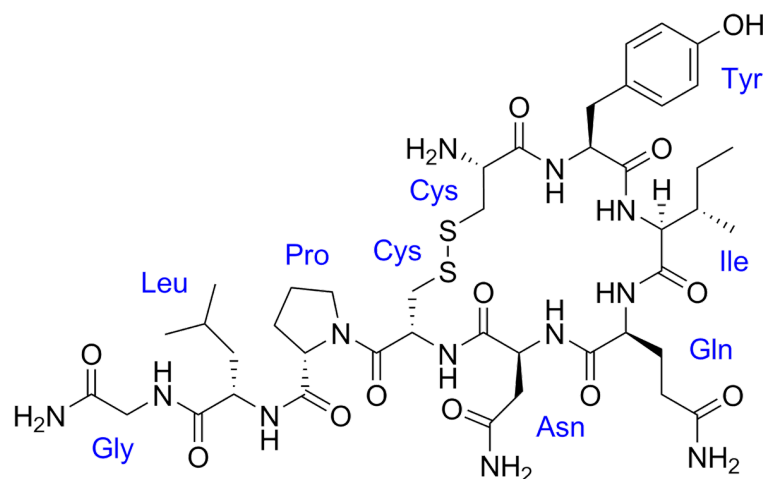
profitable rewards [219].

The Endorphin is an opiate similar to morphine, that brains of human beings produce naturally [211, p. 181]. While low levels of Endorphin are connected to addiction to gambling [220], balanced levels of Endorphin increase the sense of power and control of human beings, and increase their overall wellness [221, p. 47].

In methods of deliberations and in Deliberative Systems, the four neurotransmitters must be controlled and exploited to implement some of the features of ideal and legitimate Deliberative Democracies.

On one hand, methods of deliberation must be built to control the release of the four neurotransmitters in order to not jeopardize the legitimacy of deliberations. As a matter of fact, as I have exposed before, Endorphin and Dopamine may create states of addiction in Citizens and, for this reason, they may perform irrational choices by being driven by the mere need of achieving rewards. Oxytocin, in extreme situations, may shift Citizens from a feeling of trust to a feeling of anger towards other Citizens[211, p. 178]. I also argue here that in anonymous contexts, moved by high levels of Oxytocine, Citizens may over-trust other Citizens that actually have malicious purposes. For what concerns Serotonin, I claim that high levels of it may be

Figure 6.12: The chemical composition of Serotonin. Courtesy of Wikepedia (https://en.wikipedia.org/wiki/Serotonin)
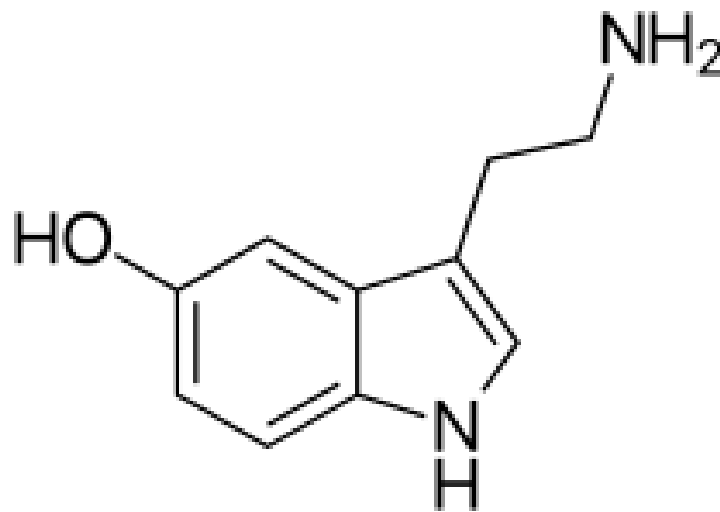
Figure 6.13: The chemical composition of Endorphin. Courtesy of Wikepedia (https://en.wikipedia.org/wiki/Endorphins)
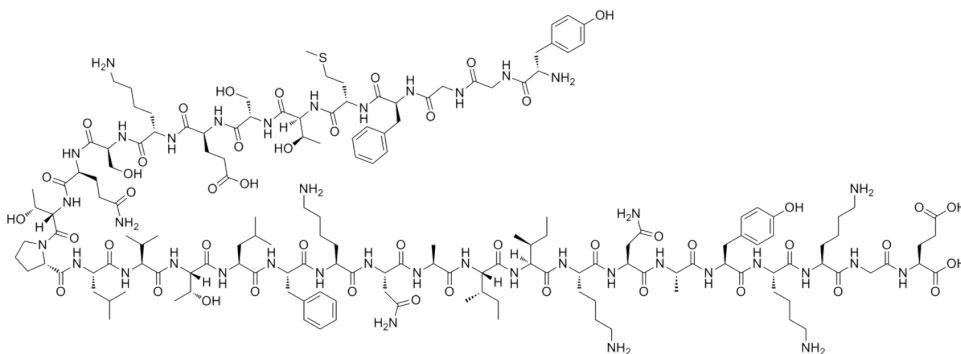
dangerous to the extent that they may influence Citizens in underestimate the consequences of negative feedback.

On the other hand, the four neurotransmitters can be exploited to drive Citizens to deliberate in legitimated and ideal ways. Firstly, Dopamine may be controlled to give Citizens motivations to enter deliberations and remain engaged in them. Also, Dopamine may be useful to give Citizens incentives to improve their Deliberative capacities and learn the required information needed to deliberate on complex issues. Secondly, Oxytocin may be used to improve the respectfulness of Citizens, their sense of community , and to create trust. Thirdly, by increasing the level of Serotonin of Citizens, it is possible to drive them to deliberate in order to reach a consensus on best options for the community in the long run, rather than to impulsively choose options that may have only short-term beneficial effects. Fourthly and lastly, by implementing mechanism to foster the release of Endorphin while Citizens are deliberating, it is possible to improve their sense of satisfaction with outcomes of deliberations. In part III, I will expose practical examples of strategies that can be used to increase the production of these neurotransmitters, when designing online Deliberative Systems.

While extrinsic motivations are related to the functioning of brains of human beings, intrinsic motivations are related to their personality and their innate psychological needs, more specifically the needs of *competence* (or *mastery*), *autonomy* and *relatedness* [222]. The mastery is the need of human beings to *learn activities* and to *master specific areas* of expertise as much as they can [223, p. 56]. The autonomy is the innate need of human beings to *feel in control* of their life and to have the freedom to *choose according to their personality* [223, p. 57]. The relatedness is the innate need of human beings to *interact with the others*, *create social connections*, and to work together *with foresight purposes*, like *improving the community* or *improving the world* [223, p. 57]. According to literature on motivations, the purpose may be seen as a different motivation than relatedness[30]. The purpose is

---

[30]The four-dimensional framework of intrinsic motivation was proposed by Andrzej Mar-

related to the intrinsic need of human beings to contribute to the creation of big or epic things that can improve the world or the community. For example, people involved in the creation of wikipedia may feel to be driven by the great purpose of creating the largest encyclopedia of the history of human beings [211, p. 63].

As well as extrinsic motivations, intrinsic motivations of Citizens can be fed-up in order to keep them active in Deliberative Systems. In part III of this work, I will describe strategies and practical implementations for the design of Online Deliberative Systems aimed to leverage on intrinsic motivations of Citizens. However, when considering pluralistic and diverse sets of Citizens involved in deliberations, motivations could be slightly different among participators [224]. The relatedness, conceived as the need to belong to a community, is recognized in literature to be a powerful motivator, but seems to not be a universal motivator for Citizens belonging to different cultures [225] [226], and the same seems to happen with the intrinsic need of mastering [222] [227]]. Last but not least, when designing Deliberative Systems, the need of autonomy of Citizens surely deserves deep attention. While scholars have found that the need of autonomy does not have any correlation with negative individualism of human-beings [224]], other scholars have found that, depending on cultures and traditions of Citizens, in some situations the need of autonomy may lead to a lack of cohesion in communities [228]. Other scholars have also highlighted that autonomy could be a "*western motivation*", because in some eastern cultures Citizens feel better when they are submitted to controlling authorities [229].

Previously in this section, I have stated that there is a distinction on where intrinsic motivations and extrinsic motivations are processed by humans beings. I argued that intrinsic motivations are processed by the mind, whilst extrinsic ones are processed by the brain. This means that, by using a

---

czewski. It is based on the Self-Determination theory, and it adds the "*purpose*" motivation to the theory. Usually, the four-dimensional framework is referenced in literature as the RAMP framework [211, pp. 59-63].

rough analogy between human beings and computers, extrinsic motivations are processed by the hardware of human beings, and intrinsic motivations are processed by their software, resulting in a faster processing of the former compared to the latter. However, as showed in figure 6.14, last century literature on the way human beings think also exposes that the mind of human beings is divided into a "*fast-system*" and a "*slow-system*" for processing information. Both of them could be biased when involved in deliberations especially, I argue here, when decision-making procedures of Deliberative Systems are designed to foster intrinsic and extrinsic motivations of Citizens. In the next section 6.5, I will expose the main biases that must be avoided to implement legitimate Deliberative Systems, or could be exploited to improve deliberations in Deliberative Systems.

Figure 6.14: The effects of intrinsic and extrinsic motivations on thoughts of human beings. Adaption of the graphic posted on Pinterest (https://www.pinterest.com) by NeuroPowergroup (http://www.neuropowergroup.com) and by MixResearch (http://www.mixresearch.co.uk).
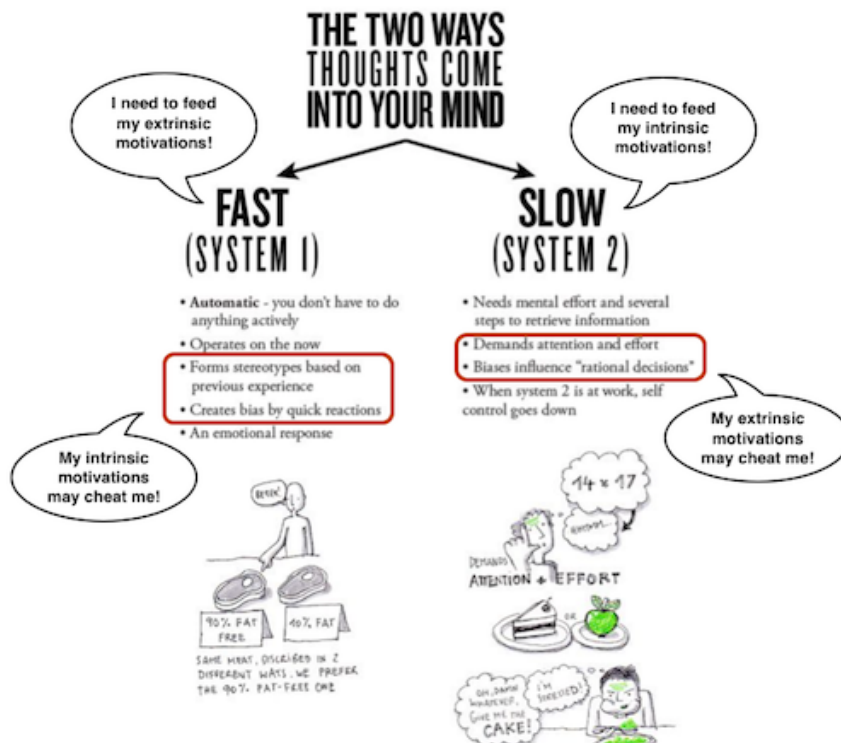
6.5 Biases of Human Beings and Deliberative Systems

Starting from the second half of the twentieth Century, scholars have found that human beings do not act rationally [53]. When individuals are involved in decision-making procedures, they usually leverage on heuristics, and decide by using their past experiences. However, these heuristics usually flow into bad decisions, because individuals tend to apply them in different contexts from the ones in which heuristics were originally elaborated. In online Deliberative Systems these errors, also known as "*biases*", could be avoided at design level of deliberations.

Scholars of Deliberative Democracies have largely exposed arguments on the necessity to avoid some bias related to deliberation and mini-public in order to achieve legitimated Deliberative Democracies. For instance, Fung [162] [230] [231], French [232] and Navarro [233] have exposed issues related to the Participation Bias, related to situations in which participators are not representative of the community [234], because they do not carry plural and diverse arguments or because they are not equally distributed in terms of politic ideals. Other scholars, like Nyemeyer and Spash [235], have exposed issues related to self-selection bias, that may arise in mini-public when participants are locally selected, because of the risk to only involve Citizens that are already used to public deliberations and, so, people that have the time and the proper skills to participate [236].

However, scholars of Deliberative Democracies and Deliberative Systems neglect to analyze biases that could affect decisions of individuals while they are involved in deliberations in both offline and in online contexts. I argue that these biases must be analyzed to avoid those that could jeopardize the legitimacy of Deliberative Systems, but also that some of these biases can be wisely exploited to improve deliberative capacities of Citizens. Figure 6.15 shows the most common biases that can affect decisions.

Figure 6.15: Twenty biases that can affect individuals involved in decision-making processes, as reported by Samantha Lee and Shana Lebowitz on BusinessInsider (http://www.businessinsider.com/cognitive-biases-that-affect-decisions-2015-8?IR=T)

1. Anchoring bias.

People are **over-reliant** on the first piece of information they hear. In a salary negotiation, whoever makes the first offer establishes a range of reasonable possibilities in each person's mind.

2. Availability heuristic.

People **overestimate the importance** of information that is available to them. A person might argue that smoking is not unhealthy because they know someone who lived to 100 and smoked three packs a day.

3. Bandwagon effect.

The probability of one person adopting a belief increases based on the number of people who hold that belief. This is a powerful form of **groupthink** and is reason why meetings are often unproductive.

4. Blind-spot bias.

Failing to recognize your own cognitive biases is a bias in itself. People notice cognitive and motivational biases much more in others than in themselves.

5. Choice-supportive bias.

When you choose something, you tend to feel positive about it, even if that **choice has flaws**. Like how you think your dog is awesome — even if it bites people every once in a while.

6. Clustering illusion.

This is the tendency to **see patterns in random events**. It is key to various gambling fallacies, like the idea that red is more or less likely to turn up on a roulette table after a string of reds.

7. Confirmation bias.

We tend to listen only to information that confirms our **preconceptions** — one of the many reasons it's so hard to have an intelligent conversation about climate change.

8. Conservatism bias.

Where people favor prior evidence over new evidence or information that has emerged. People were **slow to accept** that the Earth was round because they maintained their earlier understanding that the planet was flat.

9. Information bias.

The tendency to **seek information when it does not affect action**. More information is not always better. With less information, people can often make more accurate predictions.

10. Ostrich effect.

The decision to **ignore dangerous or negative information** by "burying" one's head in the sand, like an ostrich. Research suggests that investors check the value of their holdings significantly less often during bad markets.

11. Outcome bias.

Judging a decision based on the **outcome** — rather than how exactly the decision was made in the moment. Just because you won a lot in Vegas doesn't mean gambling your money was a smart decision.

12. Overconfidence.

Some of us are **too confident about our abilities**, and this causes us to take greater risks in our daily lives. Experts are more prone to this bias than laypeople, since they are more convinced that they are right.

13. Placebo effect.

When **simply believing** that something will have a certain effect on you causes it to have that effect. In medicine, people given fake pills often experience the same physiological effects as people given the real thing.

14. Pro-innovation bias.

When a proponent of an innovation tends to **overvalue its usefulness** and undervalue its limitations. Sound familiar, Silicon Valley?

15. Recency.

The tendency to weigh the **latest information** more heavily than older data. Investors often think the market will always look the way it looks today and make unwise decisions.

16. Salience.

Our tendency to focus on the **most easily recognizable features** of a person or concept. When you think about dying, you might worry about being mauled by a lion, as opposed to what is statistically more likely, like dying in a car accident.

17. Selective perception.

Allowing our expectations to **influence how we perceive** the world. An experiment involving a football game between students from two universities showed that one team saw the opposing team commit more infractions.

18. Stereotyping.

Expecting a group or person to have certain qualities without having real information about the person. It allows us to quickly identify strangers as friends or enemies, but people tend to **overuse and abuse** it.

19. Survivorship bias.

An error that comes from focusing only on surviving examples, causing us to **misjudge a situation**. For instance, we might think that being an entrepreneur is easy because we haven't heard of all those who failed.

20. Zero-risk bias.

Sociologists have found that **we love certainty** — even if it's counterproductive. Eliminating risk entirely means there is no chance of harm being caused.

Deliberative Systems that aim to fair and legitimate deliberations should implement checks on all the twenty biases exposed in figure 6.15. However, for the purpose of my research, in this section I will deeply expose other biases that are related to new online social media and, so, could also affect Deliberative Systems. More specifically, the biases that I will analyze for the purposes of my research are: the *online firestorm effect*, the *rumours effect*, the *filter bubble effect*, the *echo chamber effect*, the *authority bias*, and the *Lucifer effect*.

The *online firestorm effect* when a large amount of negative word-of-mount messages or despicable behaviors against a person, or a group of persons, are spread all around the web [237]. In offline contexts, firestorm effect is comparable to (negative) *rumors*, that are unproved beliefs or bad assertions on a person, or a group of persons, scattered among people of a community by means of word-of-mouth [238].

In Deliberative Democracies and in Deliberative Systems online firestorm effect and rumours, if verified, may seriously jeopardize the legitimacy and the functioning of deliberations. Firstly, the two effects may signify either a lack of *respectfulness* of one or more participant in deliberations, or may be related to an attempt of one person or a group of persons to benefit by discrediting someone else, meaning that deliberations are not driven by moral *purposes*. Secondly, if online firestorms or rumours happen, they may cause exclusion from the discussion of the targeted person or group of persons, and undermine the *balancing*, *diversity*, and *pluralism* of arguments. Also, Citizens previously excluded from discussions because they were the target of the two effects may encounter difficulties when trying to deliberate, and this affects the required feature of deliberations of being *unobstructed*.

Pfeffer and Carley highlighted that online firestorm effects and rumours are caused by seven factors [237]. I claim that four of them are strictly related to deliberations and decision-making procedures. More specifically, they are the *filter bubble effect* and the *echo chamber*, the *binary choices*, and the *cross-media dynamics*.

Decision-making procedures built on *binary choices* [239] are those in which decisions are limited to just one action, that deciders may perform or not. For instance, in some modern social media, decisions are limited to like or not like particular topics, or share or not share them. In offline contexts, the same happens for instance when Citizens are requested to vote for a referendum. If they participate to the ballot, usually they are asked to choose between a yes or a no about a specific issue. This may flow into the undesirable situation where deciders, biased by *the speed of the information flow* [240], do not have the time to *build a rational opinion on arguments*[31], but choose to like or to share topics because people in their network or community have created a topic, or have already liked or shared a topic, as highlighted by studies on *network clusters* [241].

Binary choices are not necessarily incompatible with legitimated deliberations in Deliberative Systems. Indeed, they can be used in order to avoid *digressions*, and can be controlled to avoid irrational choices by participants. This may be achieved by means of a wise implementation of mechanisms to reach Deliberative Consensus and balance Deliberative Interaction.

Other dynamics that must be controlled for the sake of the legitimacy of deliberations are *cross-media dynamics*, which can also be exploited to engage more Citizens in deliberations. Cross-media dynamics are those situations in which social medias initially expose an argument, and other traditional medias give more resonance to the same argument by sharing it. This means that greater online activity in Deliberative Systems may result in greater

---

[31]Although referenda may seem neutral to this issue, because they must be disclosed a certain amount of time before the ballot (that depends by the legislative system of countries), communication speed bias may still verify because institutions and traditional medias may start to spread information about referenda only when the country approaches the date of the ballot. This can be particularly dangerous when referenda are related to very complex issues, like the Constitutional referendum held in Italy on December 4, 2016 (https://constitution-unit.com/2016/10/13/all-you-need-to-know-about-the-italian-constitutional-referendum/), or in those countries governed by mixed Direct and Representative Democracies, like the Switzerland that had 180 referenda in the last twenty years (https://inews.co.uk/explainers/iq/switzerland-held-9-referendums-already-2016).

external or offline actions [237] [242]]. On one side, these situations may increase an eventual on-going online firestorm effect and, so, affect the legitimacy of deliberation processes. On the other side, cross-media dynamics must surely be exploited in order to create Deliberative Systems, built on *ubiquitous* and *continuous* deliberations, and on more *informed* inputs.

The needed features for the legitimacy of deliberative decision-making procedures to allow Citizens to deliberate *anonymously*, may also came in help to avoid online firestorm effects, and all their related effects. Indeed, anonymity can be used by Citizens to protect themselves from libels and, so, malicious discussants should avoid to create rumours and online firestorm effect because they are useless. Anonymity has other beneficial effects on discussions, and is indeed proved to be effective in engaging people in "risky discussions" that they would not engage in non-anonymous contexts, to help the construction of individual identity, and to help individuals to create different identities according to different roles needed in specific situations [243].]. All of these effects of anonymity are useful in Deliberative Systems because they can result in more *balanced*, *diverse*, *informed*, and *pluralistic* inputs.

Anonymity is also useful to avoid the *Authority Bias*, related to the tendency of individuals to trust more in arguments exposed by authoritative or famous people and, so, to be more influenced by these arguments even if they are not *properly justified* or *properly informed* [244].]. Moreover, this can also feed-up the *confirmation bias* in individuals that is, as showed in figure 6.15, the tendency to take in consideration only arguments that confirm their preconceptions [245]. In Deliberative Systems, the authority bias can be avoided by allowing Citizens to discuss in anonymous way and, I argue here, this can also help Citizens to focus more on the contents of deliberations, rather than the people involved in them, thus improving the *conscientiousness* of Citizens involved in deliberations.

However, anonymity may contribute to create another dangerous effect that may result in biased deliberations. Studies have exposed that people become more aggressive and use incivility when they interact anonymously

[246]]. This is also related to the Lucifer Effect exposed by Philip Zimbardo [247], stating that people have both "good" and "evil" personalities and in some situations bad personality may easily arise, which seems to happen more readily in online and anonymous contexts [248] [243]. The Lucifer Effect could seriously threaten the respectfulness of Citizens, that is required for the legitimacy of deliberations.

The *Filter Bubble* effect [249] is related to how *information*, topics and arguments are perceived as important by people involved in decision-making procedures. People using online systems that try to predict their preferences by means of algorithms, especially online recommendation systems, are potentially exposed to effects of filter bubbles, because algorithms may propose to individuals only items that are not diverse from their preferences [250].]. In deliberative decision-making procedures, this means that individuals may be isolated in "bubbles", containing only arguments and positions close to their own ones. This can affect the legitimacy of deliberations because Citizens could listen only to a small set of arguments that, moreover, are aligned with their positions. However, in "sound contexts" the filter bubble effect can improve quality of decisions because it lowers the cognitive effort that Citizens must use to select the information needed to decide [251].

The *Echo chamber* effect is related to the tendency of individuals to create and affiliate to groups sharing their position on specific arguments. While the Filter Bubble effect is related to arguments and inputs involved in deliberations, the Echo Chamber effect is related to individuals involved in deliberations, but can result in the same issues as filter bubbles. Indeed in Deliberative Systems, especially if they implement mechanisms of "*reciprocated followers*", the echo chamber effect may contribute to create groups of Citizens characterized by political homophily, that could avoid to listen different positions from their ones [252].

All the biases that I have exposed in this section can be controlled in two ways. The first one is to implement a *technological and preventive control*, the second one is to design and implement Deliberative Systems that help

Citizens to individuate unfair deliberations and disadvantage Citizens that contributed to create these conditions of unfairness.

Technological checks can be made by implementing fair algorithms using Linked Open Data, exposed in section 6.2, in order to find attempts by individuals, or by groups of them, to create these effects. For instance, the filtering bubble can be prevented by sorting and randomly presenting to Citizens the arguments of deliberations. The firestorm effect and the negative rumours can be prevented by "muting" for short periods of time those Citizens that seem to be using only bad arguments against the same Citizen in the latest period.

However, these technological controls can have effects on the trust that Citizens have on online Deliberative Systems. Indeed, even if algorithms are *transparent* and *reliable*, Citizens that are not properly educated to understand them may challenge the fairness of algorithms themselves.

I argue that a proper web design, based on the mechanism to give intrinsic and extrinsic motivation to Citizens to deliberate, and to also give them motivations to detect unfair behaviors, could be a more suitable option to implement legitimated online Deliberative Systems. In the next section 6.6, I will summarize all the requirements to create Deliberative Systems implementing all the features to be legitimated. In part III, I will expose the proper strategies and web design to implement online Deliberative Systems that rely and foster intrinsic and extrinsic motivations of Citizens.

6.6 A Framework for Online Deliberative Systems

In the previous sections of this chapter, I have exposed all the requirements to implement Deliberative Systems supporting all the legitimacy features that I have listed in chapter 5. Table 6.1 shows a summary of all the requirements matched with the components and features of ideal and legitimated Deliberative Systems. The requirements are grouped in the following

categories:

Regulations, Laws or Constitutions: this category includes all the regulations, laws or Constitutional articles that Institutions must enact in order to implement one or more features of legitimated Deliberative Systems.

Internet Technologies: this category includes all Internet technologies and protocols that are useful to implement one or more features of legitimated Deliberative Systems.

Web Technologies: this category includes all Web technologies and protocols that are useful to implement one or more features of legitimated Deliberative Systems.

Linked Open Data Technologies: this category includes all Linked Open Data technologies that are useful to implement one or more features of legitimated Deliberative Systems.

Design For Inclusiveness: this category includes all the strategies and design methodologies to implement one or more features of legitimated Online Deliberative Systems related to inclusiveness.

Design For Responsiveness: this category includes all the strategies and design methodologies to implement one or more features of legitimated Online Deliberative Systems related to responsiveness.

Design For Usability: this category includes all the strategies and design methodologies to implement one or more features of legitimated Online Deliberative Systems related to usability.

Design For Deliberative Interaction: this category includes all the strategies and design methodologies to implement legitimate online Deliberative Systems that support Deliberative Interactions.

Design For Deliberative Consensus: this category includes all the strategies and design methodologies to implement legitimate online Deliberative Systems that support Deliberative Consensus.

Design For Intrinsic and Extrinsic Motivations: this category includes all the strategies and design methodologies to implement legitimate online Deliberative Systems aimed to nurture the intrinsic and extrinsic motivations of Citizens involved in deliberations.

Design to Avoid/Exploit Biases: this category includes all the strategies and design methodologies to implement legitimate online Deliberative Systems whose deliberations are properly designed to avoid biases that can jeopardize their legitimacy, or to exploit biases that can improve deliberations.

Table 6.1 provides the answer to one of my research questions, the requirements of ideal and legitimated Online Deliberative Systems. In the next parts of this research, I will answer the other main research question of this work, and expose the proper technologies, methodologies and strategies to keep citizens active and continuously engaged in deliberations.

Table 6.1: The requirements to implement legitimated online Deliberative Systems

Column legend:
1. Regulations, Laws or Constitutions
2. Internet Technologies
3. Web Technologies
4. Linked Open Data Technologies
5. Design For Inclusiveness
6. Design For Responsiveness
7. Design For Usability
8. Design For Deliberative Interaction
9. Design For Deliberative Consensus
10. Design For Intrinsic and Extrinsic Motivations
11. Design To Avoid/Exploit Biases

DELIBERATIONS

CODE	DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11
D-MUST-1	Must be accessible	✓				✓	✓	✓				
D-MUST-2	Must be open	✓	✓	✓		✓	✓	✓				
D-MUST-3	Must be reliable		✓	✓	✓	✓	✓	✓				✓
D-MUST-4	Must be traceable			✓	✓							
D-MUST-5	Must be transparent				✓							
D-MUST-6	Must be unobstructed	✓	✓	✓		✓	✓	✓				✓
D-COULD-1	Could be asynchronous		✓	✓								
D-COULD-2	Could be continuous		✓	✓		✓	✓	✓				
D-COULD-3	Could be distributed		✓	✓								
D-COULD-4	Could be interconnected				✓							
D-COULD-5	Could be interdependent				✓							
D-COULD-6	Could be ubiquitous		✓	✓		✓	✓	✓				

CITIZENS

CODE	DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11
C-MUST-1	Must be capable	✓							✓	✓	✓	✓
C-MUST-2	Must be conscientious								✓	✓	✓	✓
C-MUST-3	Must be educated	✓							✓	✓	✓	✓
C-MUST-4	Must be motivated	✓							✓	✓	✓	✓
C-MUST-5	Must be purposed								✓	✓	✓	✓
C-MUST-6	Must be respectful								✓	✓	✓	✓

INPUTS

CODE	DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11
I-MUST-1	Must be balanced		✓	✓	✓	✓	✓	✓				✓
I-MUST-2	Must be diverse		✓	✓	✓	✓	✓	✓				✓
I-MUST-3	Must be informed				✓							✓
I-MUST-4	Must be interesting				✓						✓	✓
I-MUST-5	Must be justified				✓							✓
I-MUST-6	Must be pluralistic		✓	✓	✓	✓	✓	✓				✓

DECISION-MAKING PROCEDURES

CODE	DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11
DMP-ALLOW-1	Must allow mind changing								✓	✓		
DMP-ALLOW-2	Must allow majority rule								✓	✓		
DMP-AVOID-1	Must avoid social domination		✓	✓					✓	✓	✓	✓
DMP-AVOID-2	Must avoid hierarchies		✓	✓					✓	✓	✓	✓
DMP-FOSTER-1	Must foster learning					✓	✓	✓	✓	✓	✓	
DMP-FOSTER-2	Must foster mastering					✓	✓	✓	✓	✓	✓	
DMP-FOSTER-3	Must foster persuasion								✓	✓	✓	
DMP-GRANT-1	Must grant anonymity	✓	✓	✓					✓	✓	✓	✓
DMP-GRANT-2	Must grant egalitarianism	✓	✓	✓					✓	✓	✓	✓

OUTPUTS

CODE	DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11
O-MUST-1	Must be accountable			✓	✓							
O-MUST-2	Must be effective				✓	✓	✓	✓				✓
O-MUST-3	Must be monitored			✓	✓							
O-MUST-4	Must be revisable			✓	✓							
O-SHOULD-1	Should be efficient				✓	✓	✓	✓				✓
O-SHOULD-2	Should be satisfying				✓	✓	✓	✓			✓	✓

INSTITUTIONS

CODE	DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11
IN-AVOID-1	Must avoid domination	✓			✓	✓	✓	✓	✓	✓	✓	✓
IN-AVOID-2	Must avoid rooted partisanship	✓			✓							
IN-AVOID-3	Must avoid tightness	✓			✓							
IN-GRANT-1	Must grant authority to deliberations	✓										
IN-GRANT-2	Must grant egalitarianism to participants	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
IN-GRANT-3	Must grant freedom to deliberate	✓	✓	✓		✓	✓	✓	✓	✓	✓	
IN-GRANT-4	Must grant incentives to deliberate	✓							✓	✓	✓	
IN-GRANT-5	Must grant political equality to citizens	✓	✓	✓								

Part II

Analysis of Online
Participation and Deliberation

Chapter 7

Tools for Online Participatory Democracy and for Online Deliberative Democracy

In this chapter, I describe the design and the functioning of a set of deliberation and participation tools that I have selected by following specific criteria, that I describe in the following sections 7.1. Each one of the following sections 7.2, 7.3, 7.4, 7.5, 7.6, 7.7 and 7.8, is aimed to describe the functionality and the design of a specific system, and to analyze the legitimacy requirements of Deliberative Systems that it implements, as I have exposed in the section 5. Eventually, in the section 7.9, I expose a brief summary of the analysis and I conclude by introducing the motivations on the behalf of a new kind of Online Democracy Systems that I expose in the part III of this work.

7.1 Selection of the Tools for the Analysis

One of the goals of my research is to analyze the most-known tools for online participation and online deliberation, in order to understand if they implement the requirements needed to be legitimated, exposed in section 6.

Although my research work is focused on online Deliberative Systems, I chose to also analyze tools for online participation and online deliberation for two reasons. The first one is that, since theories and studies on Deliberative Systems are still very young, at the moment of writing there are no implementations of tools specifically classified as online Deliberative Systems. This is also true for tools for Deliberative Democracy that, at the moment of writing, are very scarce. The second reason for which I have also analyzed a set of tools for online Participatory Democracy (or simply Online Democracy) is that, since there is still a certain lack of knowledge on the differences between Deliberative Democracies and Participatory Democracies, in some situations the online tools for online Participatory Democracy or, more generically, the tools for online Democracy, actually implement features of Deliberative Democracy or Deliberative Systems.

Besides the two previous reasons, according to the goals of my research, I have restricted my analysis on tools that have two specific characteristics.

Firstly, tools were selected among the ones classified as tools for online participation and online deliberation, meaning that I have selected only tools that can be used on the Web, regardless of the specific way to actual connect to them. In other words, I have selected tools that can be accessed by means of Web Browsers, or applications for mobile phones connected to the Internet, whilst I have excluded from the analysis those tools that can be used in offline mode. This was necessary to be sure that the tools already implement some of the requirements for their legitimacy. More specifically, online tools deployed on the web already implement the requirements related to Internet and Web technologies that I have exposed in section 6.6.

Secondly, I have preferred tools whose final aim is to foster Citizens to discuss Bills or Laws, by supplying them mechanisms specifically intended to cite Laws or Bills. This selection criterion has two main motivations. The first one is that, due to my research interests on Legal Informatics and technologies for law-making, I was interested in analyzing how online Participatory Democracies and online Deliberative Democracies can be exploited

to allow Citizens to discuss and to design Bills by their own. The second one is that, as I have exposed in section 6.2, one of the requirements for the legitimacy of online Deliberative Systems is that they must use Open Data and rely on them. Since transparency and public availability of Laws and Bills is the main requirement for the legitimacy of Representative Democracies, Countries are more likely to expose their Legislation in Open Data before any other type of document. The previous statement also means that the selected tools already implement the requirements for legitimacy related to Laws or Constitutions, as I have exposed in section 6.6. However, because of the scarcity of tools specifically aimed to discuss laws or bills, I enlarged the set of analyzed tools by including also other one supplying public access in order to be examined, and in which it is possible to link Laws or Bills in discussions.

In order to select the tools for the analysis, I started from the ParticipateDB Web site[1],, and the most-known search engines available on the web. In all of them I performed researches by means of a combination of the following words: Online Deliberative Democracy, Online Participatory Democracy, Online Deliberative Systems, e-Participation, e-Deliberation, e-Democracy, Tools, Mobile Application.

I ended up with 29 results partially meeting the requirements that I have previously listed in this section. Starting by this set I have selected all the tools that, at the moment of writing, satisfy the following criteria: (1) the tool must be available online; (2) the tool must not be broken and its database must not be empty; (3) the tool must supply a Web or a Mobile version; and (4) the tool must grant public access, or at least it must grant access to a demo. Table 7.1 shows the results of the research.

In the following sections of this chapter I will describe the software that follows the requirements that I have described in previously in this section, in order to check if they implements the requirements needed for their le-

---

[1] The aim of the ParticipateDB is to collect participation and deliberation methodologies and tools used around the world (http://www.participatedb.com).

Table 7.1: A list of tools for Online Participatory Democracy and Online Deliberative Democracy

Name of the tool	Web Site	Broken, not available or empty	Web or Mobile Version	Public Access or Demo Available	Allows to Discuss on Bills or Laws
Agora	https://the-agora.squarespace.com	NO	YES	YES	NO
Airesis	https://www.airesis.eu	YES	YES	YES	NO
CivicEvolution	https://whatdowethink.com	NO	YES	NO	?
Common Ground for Action	http://findcommonground.org	NO	YES	NO	?
Deebase	http://deeba.se	NO	YES	NO	?
Demagora	https://plone.org/demagora	YES	?	?	?
Deme	http://deme.stanford.edu	NO	YES	NO	?
DemocracyOS	http://democracyos.org	NO	YES	YES	YES
discourse-machine	http://www.binary-objects.de	NO	YES	NO	?
dito	https://www.ontopica.de	NO	YES	NO	?
e-Deliberation	http://www.e-deliberation.com	YES	?	?	?
e-dialogos	http://www.edialogos.gr	YES	?	?	?
e-Liberate	http://publicsphereproject.org	NO	?	NO	?
Gov2DemOSS	http://www.gov2u.org	NO	?	NO	?
GovTrack	https://www.govtrack.us	NO	YES	YES	YES
OnlineTownhalls	http://www.onlinetownhalls.com	YES	?	?	?
Open Assembly	http://www.openassembly.org	YES	?	?	?
OurSpace	http://www.joinourspace.eu	NO	YES	YES	YES
Parelon	http://www.parelon.it/	NO	YES	YES	YES
Parmenides	http://cgi.csc.liv.ac.uk	YES	?	NO	?
PerlNomic	http://www.nomic.net	YES	?	?	?
PICOLA (Delibera 2.0)	http://virtualagora.org	YES	?	?	?
PICOLA-lite	http://caae.phil.cmu.edu	NO	YES	NO	NO
PrioritySpend	http://www.priorityspend.org	YES	?	?	?
Puzzled by Policy	http://puzzledbypolicy.moonfruit.com	YES	?	?	?
Unchat	http://unchat.com	YES	?	?	?
YourConsensus	http://yourconsensus.org	YES	?	?	?
Zilino	http://beta.zilino.com	NO	YES	NO	NO
Wikilegis	https://edemocracia.camara.leg.br	NO	YES	YES	YES

gitimacy that I have listed in the section 6.6. As I have stated previously, some of the requirements must be considered implemented by default. For this reason, the following analysis is aimed to understand if the tools uses Linked Open Data technologies, if they, if they are designed for inclusiveness, responsiveness and usability, if they supplies mechanisms for Deliberative Interactions and Deliberative Consensus, and if the tools are designed to foster intrinsic and extrinsic motivations of Citizens and to avoid common biases of human beings involved in decision-making processes.

7.2 Agora Townhall

Agora[2] is a project created at Cambridge by the Agora Townhall Inc, originally designed to share ideas inside company teams in order to find new business projects. The project was then adjusted to host ideas of Citizens about their Cities, and to discuss on them in participatory ways. The version of Agora for managing this kind of civic participation is called Agora Townhall[3].

The Agora Townhall is public accessible by all Citizens regardless of their geographical position. The system can be accessed with the credentials of the most-common social web platforms (figure 7.1), that means that it is not possible to access it in anonymous way. After users log-in, the system shows to them a set of communities in which they can enter to share their ideas. When users choose a community, they can see a summary of the people subscribed to that community, they can browse the chat rooms open in that community, or they can browse the ideas proposed in the chat rooms of the community (figure 7.2).

---

[2]The Agora project is available at the following address: https://agora.co/.

[3]A public demo of the Agora Townhall is available at the following address: https://the-agora.squarespace.com/#about.

Figure 7.2: The home page of the Agora project
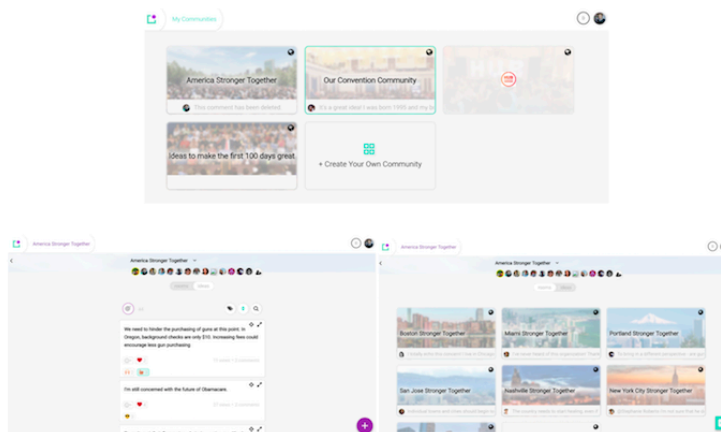
Figure 7.1: The log-in page of the Agora project
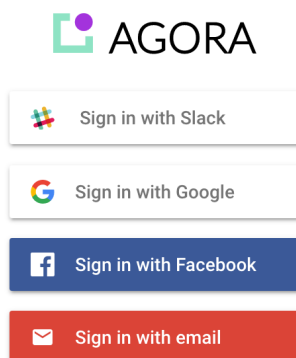
The design of Agora Townhall is partially compliant with the guidelines for inclusiveness, responsiveness and usability that I have exposed in section 6.1. Indeed, although the design of the system relies on Material Design, granting standards for inclusiveness, responsiveness and usability, the chat rooms seems to be broken when displayed on small screens, causing serious difficulties to read messages of other Citizens (figure 7.3).

The Agora project partially implements the requirements on linked open data, as exposed in section 6.2.. Both chat rooms and ideas have their own URI that can be used to link them in other software (figure 7.4). However, the

Figure 7.3: The visualization of the Agora project on small screens
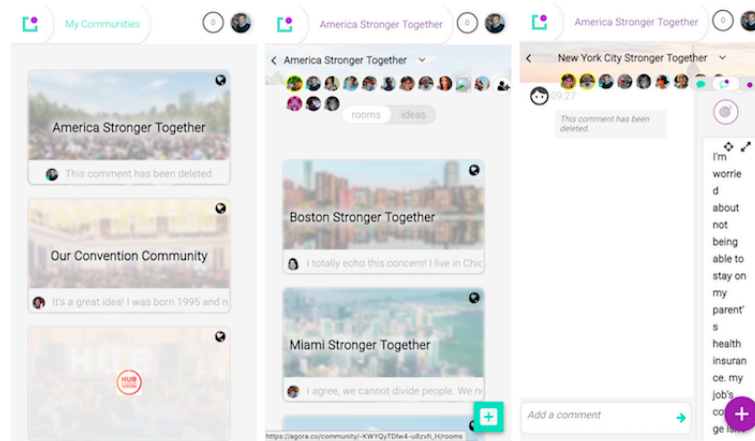
resources can only be accessed by means of browsers, meaning that resources are not machine-readable, as requested by standards of linked open data. Figure 7.5 shows the replies to a CURL query[4] by the Agora system.

Deliberative Interactions in the Agora system are limited to chat messages and to the creation of new ideas. Although it is possible to link every kind of content in messages, such as videos and images, it is not possible to classify them in order to deal with them in different ways according to their nature (figure 7.6). As I have exposed in sections 6.2 and 6.3, this is necessary for the requirements of both linked open data and properly designed Deliberative Interactions.

The Agora system supplies a certain kind of composed consensus, but it is not designed as a Deliberative Consensus, as I have exposed in section 6.3. As showed in figure 7.6, when users create inputs for deliberations, they can insert a generic description of the input, the information about the issues that users want to solve, the pros and the cons of their ideas, the required steps to implement the idea, a set of tags to classify the idea, and generic comments on the idea. However, users can cast their vote on the whole idea

---

[4]CURL is a command line command used to transfer and sharing machine-readable data among software applications. More information about the CURL command are public accessible at the following address: https://curl.haxx.se.

Figure 7.4: The reply to a CURL query by the Agora system
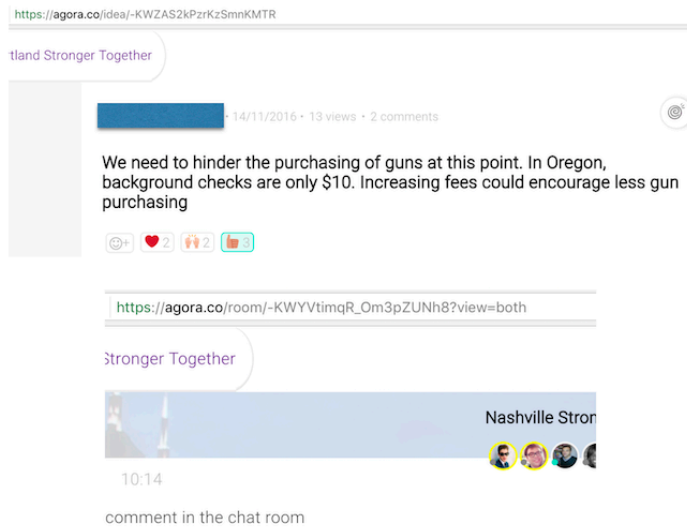
Figure 7.5: The response of a query to the Agora project

Figure 7.6: A comment with a link in the Agora project
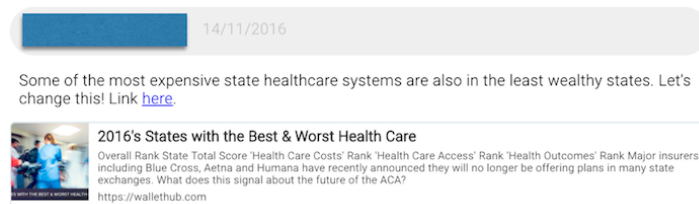
Figure 7.7: The creation of an input in the Agora project
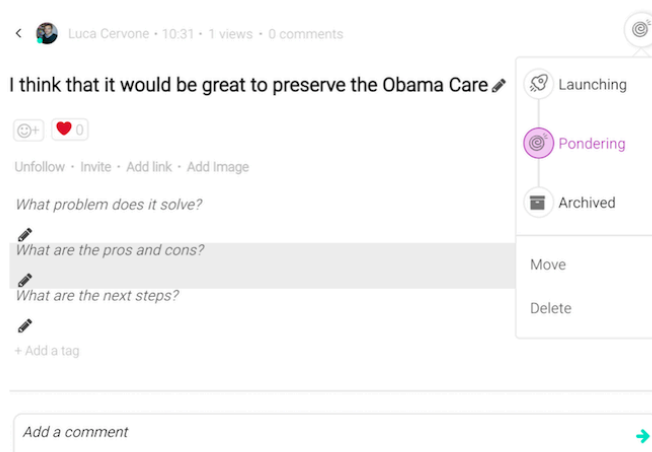
and they are not able to cast votes on other sections of it, as showed in figure 7.8.

Figure 7.8 also shows the voting system of the Agora project, that is based on emoticons. Users can express eleven different emotions on ideas and all the votes that ideas receive are grouped by emotions. After having explored all the Web pages related to the project, I did not find any statement on how this kind of voting mechanism is used to understand the consensus that ideas have reached among users.

The system does not implement any feature to nurture intrinsic and extrinsic motivations of users in order to keep them active in deliberations. Inputs are simply collected and presented to the users without any adjustment to make them more interesting for deliberations. Finally, as showed in figure 7.9, , Agora does not implement any feature to prevent the raising of biases of Citizens involved in discussions. By default, ideas proposed by Citizens are sorted by updating time, and users can choose to sort them in six different ways. Among the other options, users can select to sort ideas by trends and by reactions, but the Agora project does not specify how ideas are classified as trends, and how the amount of reactions on ideas is computed.

Figure 7.8: The voting system in the Agora project
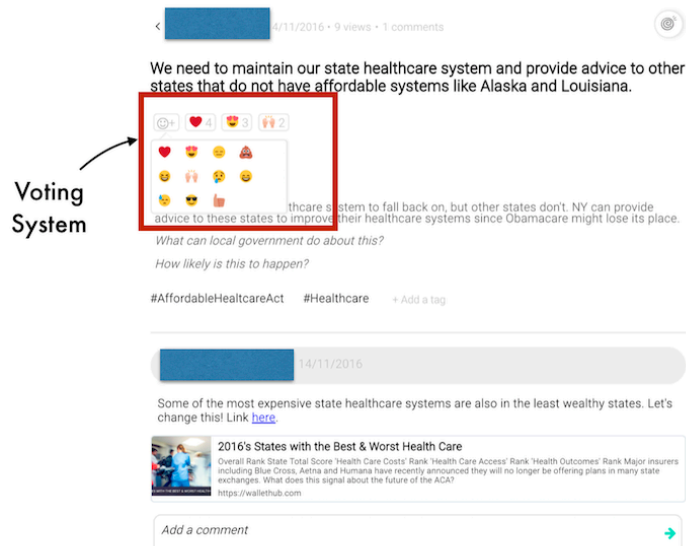
As I have exposed in section 6.5, this can lead to the production of the filter bubble effect, the bandwagon effect and other common biases related to decision-making procedures.

Table 7.2 and the following list expose a summary of the legitimacy features implemented by Agora Townhall in relation to the requirements for their implementation that I have exposed in chapter 6.

Linked Open Data Technologies : the system implements only mechanisms to univocally identify chats and ideas and nether relies on, nor produces, any data by means of Linked Open Data technologies. For this reason, all the legitimacy features related to this requirement are not implemented.

Inclusiveness, Responsiveness, and Usability : by relying on the Material Design, the interface of the system can be considered by default, at least partially, inclusive, responsive and usable. All the legitimacy features related to these requirements must be considered implemented by inheritance, with the exception of the accessibility of deliberations,

Figure 7.9: The sorting of ideas in the Agora project
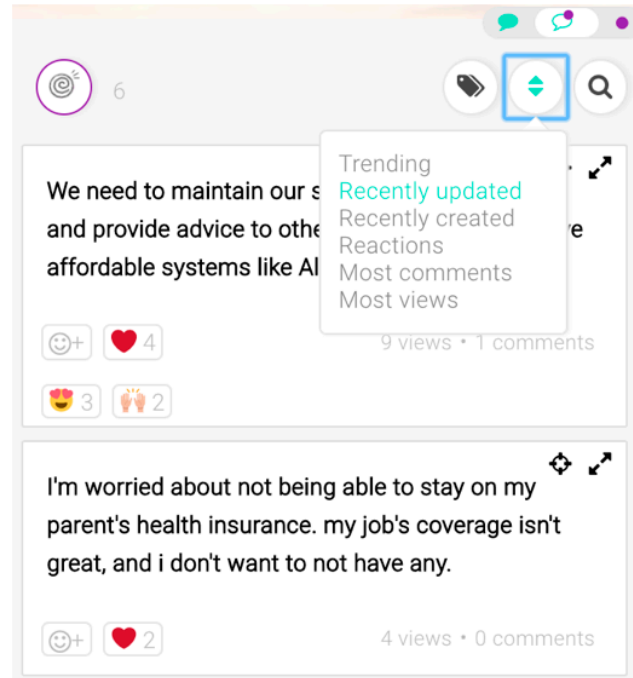
that must be considered not implemented because the chat session is broken on small screens.

Deliberative Interaction and Deliberative Consensus : the system implements mechanisms to allow Citizens to change their preferences, and does not implement any mechanism to discriminate among different users and, so, avoid hierarchies and grant egalitarianism to Citizens. Although the chat does not allow a variety of communication modes, it is structured as a free textual chat and, for this reason, can be used to persuade users. However, the mechanisms to reach a consensus do not grant the anonymity of Citizens, nor implement any mechanisms to avoid social domination and foster the learning and mastering of deliberative capacities. Lastly, the system does not implement any mechanism of majority rule to select most voted options in the eventuality that Citizens do not reach a Consensus.

Nurture Intrinsic and Extrinsic Motivations : the system does not im-
plement any feature to nurture intrinsic and extrinsic motivations of
Citizens. For this reason, all the legitimacy features related to this
requirement are not implemented.

Avoid/Exploit Biases : the system does not implement any feature to
nurture intrinsic and extrinsic motivations of Citizens. For this reason,
all the legitimacy features related to this requirement are not imple-
mented.

7.3 Airesis

Airesis is an open-source Social Network for Online Democracy, Online
Participation, and Online Deliberation developed by a team of Italian de-
velopers[5]. Airesis supplies a browser version and a mobile app version, as
showed in the figure 7.10, and the browser version is developed by following
standards of responsivity (figure 7.11).

Figure 7.10: Browser and mobile version of Airesis
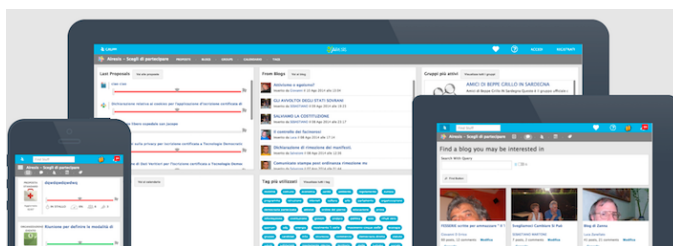
Users can sign-in in Airesis by creating a dedicated account or by using
accounts of the most-known Social Web, as showed in figure 7.12. When users
sign-in for the first time in Airesis, they are welcomed by an on-boarding
system[6] that exposes the main features of the system and the main areas of

---

[5]More information about the Airesis project are available at the following address:
https://www.airesis.eu/.

[6]For more information about on-boarding systems read the chapter 8.1.

Table 7.2: The legitimacy features implemented by Agora Townhall

DELIBERATIONS

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
D-MUST-1	Must be accessible	✓				×	×	×				
D-MUST-2	Must be open	✓	✓	✓		✓	✓	✓				
D-MUST-3	Must be reliable		✓	✓	×	✓	✓	✓				×
D-MUST-4	Must be traceable				✓	×						
D-MUST-5	Must be transparent				×							
D-MUST-6	Must be unobstructed	✓	✓	✓		✓	✓	✓				×
D-COULD-1	Could be asynchronous		✓	✓								
D-COULD-2	Could be continuous		✓	✓		✓	✓	✓				
D-COULD-3	Could be distributed		✓	✓								
D-COULD-4	Could be interconnected					×						
D-COULD-5	Could be interdependent					×						
D-COULD-6	Could be ubiquitous		✓	✓		✓	✓	✓				

CITIZENS

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
C-MUST-1	Must be capable	✓							×	×	×	×
C-MUST-2	Must be conscientious								×	×	×	×
C-MUST-3	Must be educated	✓							×	×	×	×
C-MUST-4	Must be motivated	✓							×	×	×	×
C-MUST-5	Must be purposed								×	×	×	×
C-MUST-6	Must be respectful								×	×	×	×

INPUTS

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
I-MUST-1	Must be balanced		✓	✓	×	✓	✓	✓				×
I-MUST-2	Must be diverse		✓	✓	×	✓	✓	✓				×
I-MUST-3	Must be informed				×							×
I-MUST-4	Must be interesting				×						×	×
I-MUST-5	Must be justified				×							×
I-MUST-6	Must be pluralistic		✓	✓	×	✓	✓	✓				×

DECISION-MAKING PROCEDURES

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
DMP-ALLOW-1	Must allow mind changing								✓	✓		
DMP-ALLOW-2	Must allow majority rule								×	×		
DMP-AVOID-1	Must avoid social domination		✓	✓					×	×	×	×
DMP-AVOID-2	Must avoid hierarchies		✓	✓					✓	✓	×	×
DMP-FOSTER-1	Must foster learning					✓	✓	✓	×	×	×	
DMP-FOSTER-2	Must foster mastering					✓	✓	✓	×	×	×	
DMP-FOSTER-3	Must foster persuasion								×	×	×	×
DMP-GRANT-1	Must grant anonymity	✓	✓	✓					×	×	×	×
DMP-GRANT-2	Must grant egalitarianism	✓	✓	✓					✓	✓	×	×

OUTPUTS

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
O-MUST-1	Must be accountable				✓	×						
O-MUST-2	Must be effective					×	✓	✓	✓			×
O-MUST-3	Must be monitored				✓	×						
O-MUST-4	Must be revisable				✓	×						
O-SHOULD-1	Should be efficient					×	✓	✓	✓			×
O-SHOULD-2	Should be satisfying					×	✓	✓	✓		×	×

INSTITUTIONS

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
IN-AVOID-1	Must avoid domination	✓			×	✓	✓	✓	×	×	×	×
IN-AVOID-2	Must avoid rooted partisanship	✓			×							
IN-AVOID-3	Must avoid tightness	✓			×							
IN-GRANT-1	Must grant authority to deliberations	✓										
IN-GRANT-2	Must grant egalitarianism to participants	✓	✓	✓		✓	✓	✓	✓	✓	×	×
IN-GRANT-3	Must grant freedom to deliberate	✓	✓	✓		✓	✓	✓	✓	✓	×	
IN-GRANT-4	Must grant incentives to deliberate	✓							×	×	×	
IN-GRANT-5	Must grant political equality to citizens	✓	✓	✓								

Figure 7.11: A responsive page in Airesis

its start page (figure 7.13). At the moment of writing, the system is down
for maintenance, for this reason all of the following information are extracted
from the Web site of the Airesis project, and from video guides supplied by
the Airesis developers.

Airesis supplies two main spaces for the Deliberation, the common space
and the group space. The common space is divided into two areas (figure
7.14), the proposals section in which users can proposes their ideas and vote
the ones of other Citizens, and the calendar section in which users can see
the scheduling of public events, like weekly meetings and public elections.
In the group space (figure 7.15), users can access to the deliberation groups
to which they belong, and each one of them contains a dedicated blog, a
proposals section, and a calendar section.

In both the groups and the common space of Airesis it is possible to
create proposals or to support proposals made to other Citizens. Proposals
are composed by an issue to be solved, a goal to be reached and a generic text
describing the proposal, and can be supported by single persons or by groups

Figure 7.12: The sign-in page of Airesis
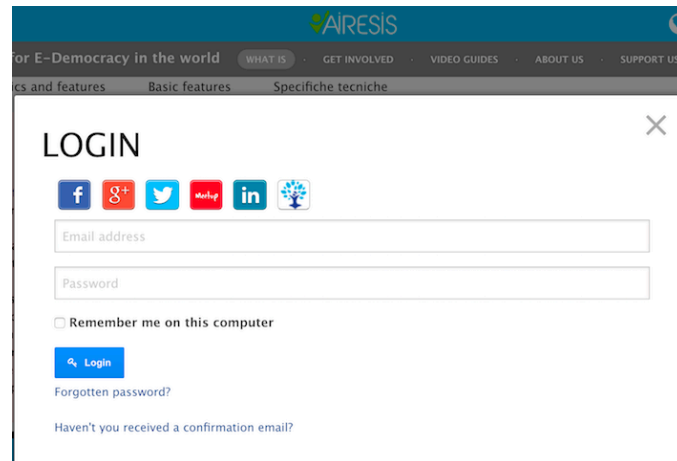
Figure 7.13: The on-boarding system of Airesis
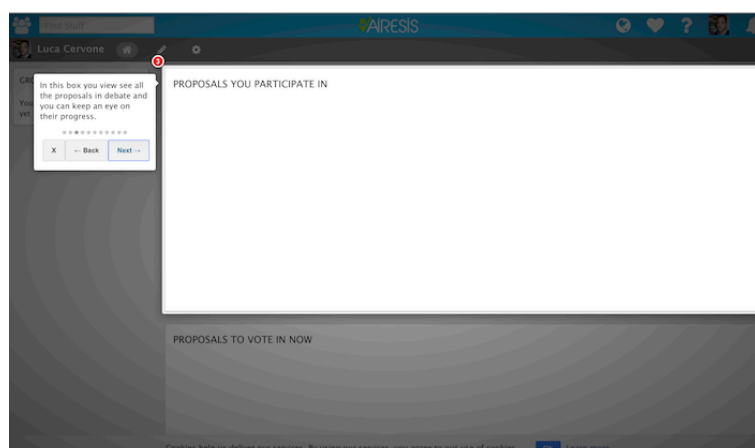
Figure 7.14: The common space of Airesis
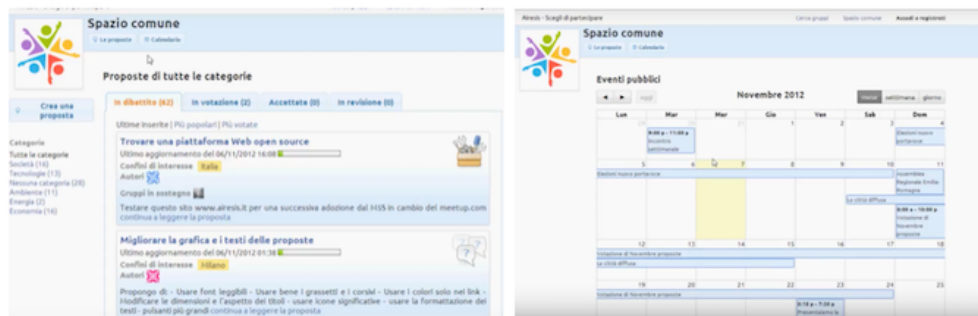
Figure 7.15: The groups space of Airesis

Figure 7.16: Creation of proposals, ranks and comments in Airesis

(7.16). As showed in figure 7.16, proposals in Airesis have a rank and a score, and after users have created the proposal their goal becomes to increase its score and rank. In order to do so, Airesis supplies a ranked commenting system: Citizens can comment proposals and rank the comments that other Citizens have made on proposals. Authors of proposals must follow the discussion, must select the most ranked comments and, if they agree with them, they can modify their proposals according to received comments (figure 7.16).

When users create proposals they have to choose a quorum that the proposal must receive in order to pass to the ballot phase. Users can choose among four different types of quorum, the fast quorum, the long quorum, the good score quorum, and the standard quorum[7]. Creators of deliberation groups can chose a default quorum for proposals discussed in the group, and create custom types of quorum (figure 7.17).

As I have previously stated in this section, proposals have a rank and

---

[7]More information about the differences among the four type of quorums are available on the Web page of the Airesis project (https://www.airesis.eu/).

Figure 7.17: A custom type of quorum in Airesis

Figure 7.18: The history of the modifies of proposals in Airesis

a score (figure 7.16). The score is the amount of positive consensus that proposals receive, the rank is the total amount of votes that proposals receive. Users can evaluate proposals by giving their positive or negative consensus to them, and evaluate comments by giving a positive, negative or neutral consensus to them. Users are always allowed to change their preference on a proposal or a comment and, if the authors modify their proposals, users can access to the modification history in order to check them (figure 7.18).

In Airesis, deliberations on proposals can be made in anonymous way, so the author of proposals or the administrator of deliberative groups can chose to allow Citizen to comment proposals anonymously. However, when the deliberation phases end, all comments are collected in reports and matched in them with their author in a transparent and non-anonymous way.

When proposals reach the needed quorum, authors of them must create a ballot event in the calendar, in which they must specify a period for the voting of the proposal (figure 7.19).). Although at the moment of writing it is not possible to access ballots in order to describe them, the authors of Airesis state on the project Web site that ballots are managed by means of

Figure 7.19: A list of proposals that reached the voting phase in Airesis

Schulze evaluation[8].

Table 7.7 and the following list expose a summary of the legitimacy features implemented by the Airesis project in relation to the requirements for their implementation that I have exposed in chapter 6.

Linked Open Data Technologies: the Web page of the project dedicated to its features does not provide any statement on the availability of the produced reports in any format compliant to the Linked Open Data standards. Also, after having explored the system, due to its functional issues at the moment of writing, I have not found any way to univocally identify the proposals under discussion.

Responsiveness: the system design is responsive and a mobile application is provided. For this reason all the features related to the requirement of the responsive design are implemented.

Inclusiveness and Usability: although the system is responsive, it does not use any framework that follows by default standards and guide-

---

[8]More information about the Schulze method are available at the following Web page: (https://en.wikipedia.org/wiki/Schulze_method).

lines of usability and inclusiveness. For this reason, all of the features granted by these two requirements must be considered as not implemented.

Deliberative Interaction and Deliberative Consensus : Although different communication modes are not enhanced, the deliberation is structured as a forum and, for this reason, there are no limitations on the types of contents that users can introduce in deliberations.

Although different communication modes are not enhanced, the deliberation is structured as a forum and, for this reason, there are no limitations on the types of contents that users can introduce in deliberations.

Airesis includes a small app tour at the first sign-in, and this can be considered as an attempt to foster the learning of the platform. However, the system does not implement any mechanism to drive user to master the system.

For what concerns the voting mechanisms, Airesis allows Citizens to change their mind at any moment, and the final computation of approved proposals is made by means of different methods based on the majority rule.

Nurture Intrinsic and Extrinsic Motivations: with the exception of the initial app tour provided to users to learn the system, Airesis does not implement any feature to nurture intrinsic and extrinsic motivations of Citizens. For this reason, all the legitimacy features related to this requirement are not implemented.

Avoid/Exploit Biases: Airesis allows Citizens to discuss in a temporary anonymous mode and, for this reason, avoids the authority bias effect and the lucifer effect related to social domination that I have exposed in section 6.5. The system does not implement any other features to avoid or exploit other biases related to decision-making procedures.

Table 7.3: The legitimacy features implemented by Airesis

Column legend:
- C1 = Regulations, Laws or Constitutions
- C2 = Internet Technologies
- C3 = Web Technologies
- C4 = Linked Open Data Technologies
- C5 = Design For Inclusiveness
- C6 = Design For Responsiveness
- C7 = Design For Usability
- C8 = Design For Deliberative Interaction
- C9 = Design For Deliberative Consensus
- C10 = Design For Intrinsic and Extrinsic Motivations
- C11 = Design To Avoid/Exploit Biases

DELIBERATIONS

CODE	DESCRIPTION	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
D-MUST-1	Must be accessible	✓				×	×	×				
D-MUST-2	Must be open	✓	✓	✓		×	✓	×				
D-MUST-3	Must be reliable		✓	✓	×	×	✓	×				×
D-MUST-4	Must be traceable				✓	×						
D-MUST-5	Must be transparent				×							
D-MUST-6	Must be unobstructed	✓	✓	✓		×	✓	×				×
D-COULD-1	Could be asynchronous		✓	✓								
D-COULD-2	Could be continuous		✓	✓		×	✓	×				
D-COULD-3	Could be distributed		✓	✓								
D-COULD-4	Could be interconnected				×							
D-COULD-5	Could be interdependent				×							
D-COULD-6	Could be ubiquitous		✓	✓		×	✓	×				

CITIZENS

CODE	DESCRIPTION	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
C-MUST-1	Must be capable	✓							×	×	×	×
C-MUST-2	Must be conscientious								×	×	×	×
C-MUST-3	Must be educated	✓							×	×	×	×
C-MUST-4	Must be motivated	✓							×	×	×	×
C-MUST-5	Must be purposed								×	×	×	×
C-MUST-6	Must be respectful								×	×	×	×

INPUTS

CODE	DESCRIPTION	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
I-MUST-1	Must be balanced		✓	✓	×	×	✓	×				×
I-MUST-2	Must be diverse		✓	✓	×	×	✓	×				×
I-MUST-3	Must be informed				×							×
I-MUST-4	Must be interesting				×						×	×
I-MUST-5	Must be justified				×							×
I-MUST-6	Must be pluralistic		✓	✓	×	×	✓	×				×

DECISION-MAKING PROCEDURES

CODE	DESCRIPTION	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
DMP-ALLOW-1	Must allow mind changing								✓	✓		
DMP-ALLOW-2	Must allow majority rule								✓	✓		
DMP-AVOID-1	Must avoid social domination		✓	✓					×	×	×	×
DMP-AVOID-2	Must avoid hierarchies		✓	✓					✓	✓	×	×
DMP-FOSTER-1	Must foster learning					×	✓	×	×	×	✓	
DMP-FOSTER-2	Must foster mastering					×	✓	×	×	×		×
DMP-FOSTER-3	Must foster persuasion								✓	✓	×	×
DMP-GRANT-1	Must grant anonymity	✓	✓	✓					✓	✓	×	✓
DMP-GRANT-2	Must grant egalitarianism	✓	✓	✓					✓	✓	×	×

OUTPUTS

CODE	DESCRIPTION	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
O-MUST-1	Must be accountable				✓	×						
O-MUST-2	Must be effective					×	×	✓	×			×
O-MUST-3	Must be monitored				✓	×						
O-MUST-4	Must be revisable				✓	×						
O-SHOULD-1	Should be efficient					×	×	✓	×			×
O-SHOULD-2	Should be satisfying					×	×	✓	×		×	×

INSTITUTIONS

CODE	DESCRIPTION	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
IN-AVOID-1	Must avoid domination	✓				×	×	✓	×	✓	×	✓
IN-AVOID-2	Must avoid rooted partisanship	✓			×							
IN-AVOID-3	Must avoid tightness	✓			×							
IN-GRANT-1	Must grant authority to deliberations	✓										
IN-GRANT-2	Must grant egalitarianism to participants	✓	✓	✓		×	✓	×	✓	✓	×	✓
IN-GRANT-3	Must grant freedom to deliberate	✓	✓	✓		×	✓	×	✓	✓	×	
IN-GRANT-4	Must grant incentives to deliberate	✓							×	×	×	
IN-GRANT-5	Must grant political equality to citizens	✓	✓	✓								

7.4 DemocracyOS

DemocracyOS is a web and mobile open-source software for deliberating and voting democratic proposals[9]. The software was developed by DemocraciaEnRed, a foundation aimed to produce software for improving Democratic systems[10]. DemocracyOS is currently used by several institutions, like the Open Knowledge Foundation of Brasil and the City of Paris[11].

Figure 7.20: A screen-shoot of DemocracyOS in different devices. Courtesy of DemocracyOS

The DemocracyOS application is designed to properly work in browsers and in the most-known mobile devices (figure 7.20), and relies on modern web technologies like React, Node.JS and MongoDB[12]. The design follows common standards of inclusiveness, responsiveness and usability, and adapts to the screen by following directives similar to the ones proposed by the Material Design. Figure 7.21 shows the home page of DemocracyOS in a Web browser with small size.

---

[9]More information about DemocracyOS are available on DemocracyOS Web site (http://democracyos.org/).

[10]More information about the DemocraciaEnRed foundation are available on the foundation Web site (http://democraciaenred.org/en/).

[11]A full list of the Institution that are using DemocracyOS is available on the GitHub page of the project (https://github.com/DemocracyOS/democracyos).

[12]For more information about the listed technologies read the chapter 10.

Figure 7.21: A screen-shoot of the home page of DemocracyOS
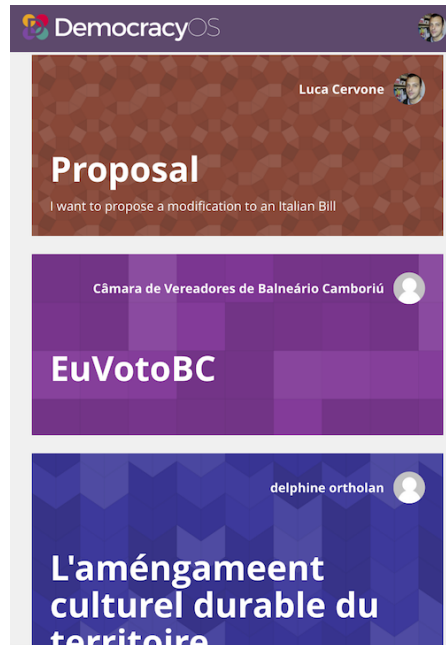
Figure 7.22: A screen-shoot of an argument proposed in DemocracyOS
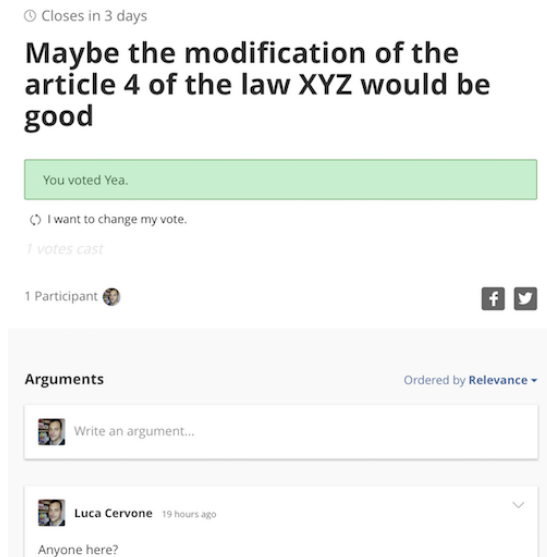
The access to the software is granted by providing an e-mail address and the user first name and surname. Although it is possible to provide a fake e-mail and a fake name, all the interactions made in the application and all

Figure 7.23: The form for the creation of arguments in DemocracyOS

Figure 7.24: An argument in DemocracyOS

the arguments proposed for discussion are clearly addressed to their authors, as showed in figures 7.21 and 7.22.

Users of the system can create arguments for deliberation called "Democracies", and it is possible to assign an URI, a title, a summary and a cover image to the created Democracies (figure 7.23). When users complete the creation of arguments, they enter the system and can be seen and discussed by other users (figure 7.24).

Although users can assign a URI to their democracies, the arguments are not accessible in machine-readable ways and, for this reason, the inputs of

DemocracyOS can be used only by the system and not by other software. An exception is the list of comments made by users on topics related to democracies. Indeed, they can be downloaded in CSV format[13] and thus used as input for other software, but the download must be done manually by users, meaning that software can not connect and download automatically the comments on topics. .

As previously stated, users can create topics on Democracies by filling a form in which they provide several information, as showed in figures 7.25, 7.26 and 7.27. The topics can be structured as generic discussions, voting sessions or polling sessions. According to the typology of topic, users have different ways to express their opinion. If topics are structured as polls, users can vote by choosing among the options provided by the topic creator, as showed in figures 7.28 and 7.29. If topics are structured as ballots, users can choose to vote "Yea", "Nay" or "Abstain", as showed in figure 7.30. In both the types of topics users are allowed to change their preference at any moment, as showed in figures 7.31, and 7.28, and when the time allocated to the voting sessions ends, the results are computed and all users can see them (figure 7.28 and reffig:demOS-13)). Until topics are opened, users can discuss by using a commenting system placed in the bottom of the topic's page. As showed in figure 7.33, users can send comments, reply to comments of other users, and give a "plus one" or a "minus one" to comments of other users.

---

[13]The Comma Separated Value is a textual file format for representing data contained in database or in spreadsheets (http://edoceo.com/utilitas/csv-file-format).

Figure 7.25: The creation of a topic in DemocracyOS - part 1

Figure 7.26: The creation of a topic in DemocracyOS - part 2

Figure 7.27: The creation of a topic in DemocracyOS - part 3

Figure 7.28: A pool in DemocracyOS

🕐 Closes in a minute

Do you think that a referendum would be a good solution for this argument?
Author: Paolino Paperino

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

yes
no
I don't know

0 Participants

Arguments   Ordered by **Relevance** ▾

Write an argument...

Figure 7.29: The votes on a pool in DemocracyOS

Do you think that a referendum would be a good solution for this argument?
Author: Paolino Paperino

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

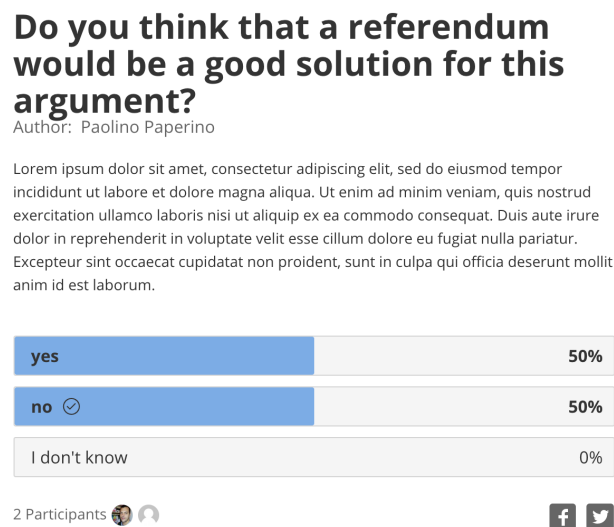| **yes**	**50%**
no ⊘	**50%**
I don't know	0%

2 Participants

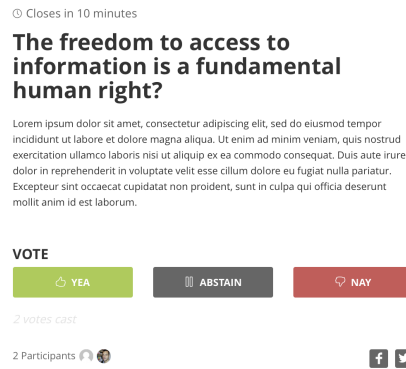**Figure 7.30:** A ballot in DemocracyOS

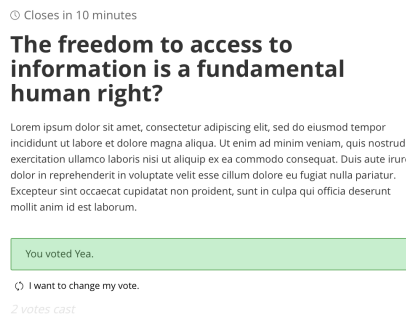**Figure 7.31:** The votes on a ballot in DemocracyOS

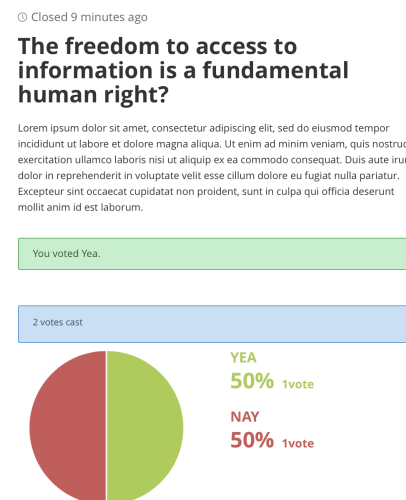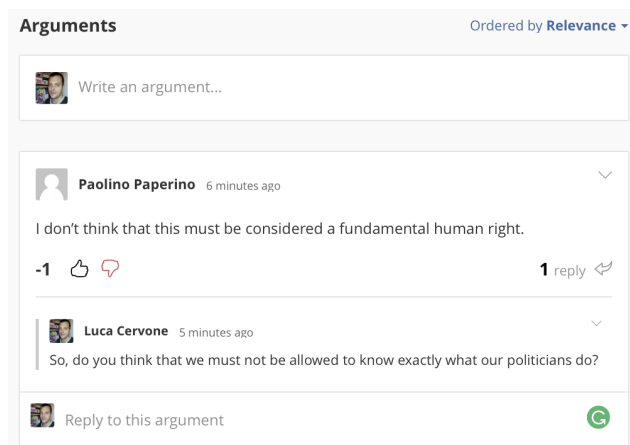**Figure 7.32:** A closed ballot in DemocracyOS

Figure 7.33: The commenting system in DemocracyOS

Table 7.4 and the following list expose a summary of the legitimacy features implemented by DemocracyOS in relation to the requirements for their implementation that I have exposed in chapter 6.

Linked Open Data Technologies: the system only implements mechanisms to univocally identify arguments and topics. The system produces only CSV files of the comments that topics receive, but the files can not be automatically downloaded by other software. For this reason, all the legitimacy features related to this requirement are not implemented.

Inclusiveness, Responsiveness, and Usability: by relying on guidelines similar to the ones proposed by Material Design, the interface of the system can be considered by default, at least partially, inclusive, responsive and usable. All the legitimacy features related to these requirements must be considered implemented by inheritance.

Deliberative Interaction and Deliberative Consensus: the system implements mechanisms to allow Citizens to change their preferences, and does not implement any mechanism to discriminate among different users, and so avoid hierarchies and grant egalitarianism to Citizens.

The commenting system does not foster the use of other communication modes than simple text, but is structured as a free forum and, so, can be used to persuade users. Although the comments do not grant the anonymity of Citizens, votes and preferences can be cast in anonymous way and, so, the system avoids social domination. However, DemocracyOS does not supply any mechanism to foster the learning and mastering of the system and of deliberative capacities of Citizens. For what concerns the computation of the results of ballots, DemocracyOS implements the mechanisms based on the Combined Approval Voting exposed in section 8.6 and, so, relies on a certain kind of majority rule.

Nurture Intrinsic and Extrinsic Motivations: the system does not implement any feature to nurture intrinsic and extrinsic motivations of Citizens. For this reason, all the legitimacy features related to this requirement are not implemented.

Avoid/Exploit Biases: the system does not implement any feature to avoid or exploit biases related to decision-making procedures. For this reason, all the legitimacy features related to this requirement are not implemented.

Table 7.4: The legimitacy features implemented by DemocracyOS

DELIBERATIONS

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
D-MUST-1	Must be accessible	✓				✓	✓	✓				
D-MUST-2	Must be open	✓	✓	✓		✓	✓	✓				
D-MUST-3	Must be reliable		✓	✓	×	✓	✓	✓				×
D-MUST-4	Must be traceable				✓	×						
D-MUST-5	Must be transparent				×							
D-MUST-6	Must be unobstructed	✓	✓	✓		✓	✓	✓				×
D-COULD-1	Could be asynchronous		✓	✓								
D-COULD-2	Could be continuous		✓	✓		✓	✓	✓				
D-COULD-3	Could be distributed	✓	✓									
D-COULD-4	Could be interconnected				×							
D-COULD-5	Could be interdependent				×							
D-COULD-6	Could be ubiquitous		✓	✓		✓	✓	✓				

CITIZENS

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
C-MUST-1	Must be capable	✓							×	×	×	×
C-MUST-2	Must be conscientious								×	×	×	×
C-MUST-3	Must be educated	✓							×	×	×	×
C-MUST-4	Must be motivated	✓							×	×	×	×
C-MUST-5	Must be purposed								×	×	×	×
C-MUST-6	Must be respectful								×	×	×	×

INPUTS

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
I-MUST-1	Must be balanced		✓	✓	×	✓	✓	✓				×
I-MUST-2	Must be diverse		✓	✓	×	✓	✓	✓				×
I-MUST-3	Must be informed				×							×
I-MUST-4	Must be interesting				×						×	×
I-MUST-5	Must be justified				×							×
I-MUST-6	Must be pluralistic		✓	✓	×	✓	✓	✓				×

DECISION-MAKING PROCEDURES

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
DMP-ALLOW-1	Must allow mind changing								✓	✓		
DMP-ALLOW-2	Must allow majority rule								✓	✓		
DMP-AVOID-1	Must avoid social domination		✓	✓					×	✓	×	×
DMP-AVOID-2	Must avoid hierarchies		✓	✓					✓	✓	×	×
DMP-FOSTER-1	Must foster learning					✓	✓	✓	×	×	×	
DMP-FOSTER-2	Must foster mastering					✓	✓	✓	×	×	×	×
DMP-FOSTER-3	Must foster persuasion								×	×	×	×
DMP-GRANT-1	Must grant anonymity	✓	✓	✓					×	✓	×	×
DMP-GRANT-2	Must grant egalitarianism	✓	✓	✓					✓	✓	×	×

OUTPUTS

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
O-MUST-1	Must be accountable				✓	×						
O-MUST-2	Must be effective				×	✓	✓	✓				×
O-MUST-3	Must be monitored			✓	×							
O-MUST-4	Must be revisable			✓	×							
O-SHOULD-1	Should be efficient				×	✓	✓	✓				×
O-SHOULD-2	Should be satisfying				×	✓	✓	✓			×	×

INSTITUTIONS

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
IN-AVOID-1	Must avoid domination	✓			×	✓	✓	✓	×	✓	×	×
IN-AVOID-2	Must avoid rooted partisanship	✓			×							
IN-AVOID-3	Must avoid tightness	✓			×							
IN-GRANT-1	Must grant authority to deliberations	✓										
IN-GRANT-2	Must grant egalitarianism to participants	✓	✓	✓		✓	✓	✓	✓	✓	×	×
IN-GRANT-3	Must grant freedom to deliberate	✓	✓	✓		✓	✓	✓	✓	✓	×	
IN-GRANT-4	Must grant incentives to deliberate	✓							×	×	×	
IN-GRANT-5	Must grant political equality to citizens	✓	✓	✓								

7.5   GovTrack

GovTrack is a project developed by Civic Impulse[14], aimed to allow Citizens to track their preferred bills for updates, and support or not them by expressing their sentiment on bills by means of emoticons and by sharing the bill status on the most-known social web [15].

Figure 7.34: The home page of GovTrack
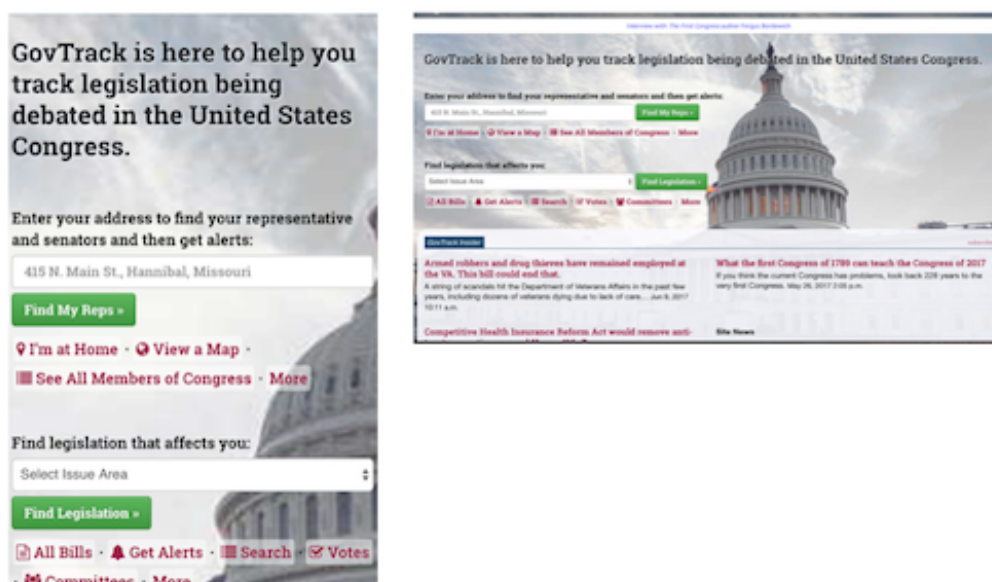
GovTrack is designed to be responsive but does not rely on any standard framework to enhance its usability and inclusiveness. The system can be accessed by using social web accounts or by creating a dedicated account (figure 7.35)). When users access GovTrack they can create "trackers" by using the top menu bar (figure 7.36); these are tools to follow the legislative procedures and the Democratic procedures of the United States.

---

[14]More information about Civic Impulse are available at the following address: https://civicimpulse.com/

[15]More information about GovTrack are available on the project Web site (https://www.govtrack.us/about).

Figure 7.35: The log-in page of GovTrack

Figure 7.36: The menu bar of GovTrack
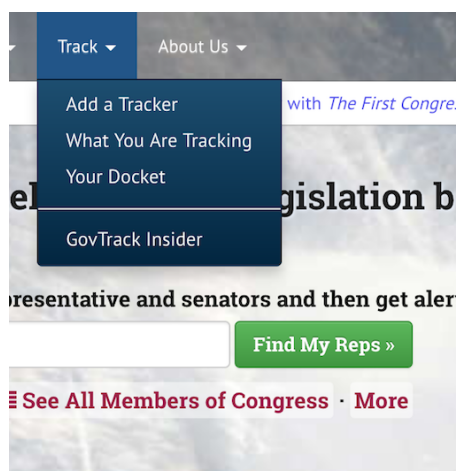
Trackers can be created on the Members of Congress, Bills and Resolutions, Voting Records and Committees, as showed in figure 7.37. Although the resources that can be tracked are different the creation of trackers is identical for each type or resource. When users enter a section, GovTrack lists a set of resources that can be tracked; as an example, figure 7.38 shows the list of the "hot bills".

Figure 7.37: The resources that can be tracked in GovTrack

Figure 7.38: The list of hot bills in GovTrack

Users can select Bills and see useful information about them, for instance the date of introduction of the bill (figure 7.39), or they can see the complete work-flow of Bills, with specific information for each step of its process towards an eventual enactment (figure 7.40)). Another important information that users can see, as showed in figure 7.40, is the probability that Bills have of being enacted.

Figure 7.39: Generic information of Bills in GovTrack

Users of GovTrack have a very limited set of actions that they can perform. More specifically they can create trackers, share bills on social web sites, call the congress, and express their feelings on the bill by using a set of emoticons displayed on the top of the page (figure 7.39). When users create new tracks, they can choose to receive daily or weekly updates about the status of the bill they want to track, as showed in figure 7.41.

Figure 7.40: The work-flow of Bills in GovTrack

Figure 7.41: The creation of a tracker in GovTrack

By clicking on the "call congress" button, users can insert their address and request to call the congress to support or oppose bills, as showed in figure 7.42, and the system supplies them useful information on how to contact the Congress and the Senators related to bills they are tracking, as showed in figure 7.43.

Figure 7.42: A call to Congress in GovTrack

GovTrack strongly relies on Linked Open Data. Every resource that can be tracked in GovTrack, or data that GovTrack produces, is marked-up in XML. For instance, as showed in figure 7.44, the bills are retrieved from the U.S. Government Public Office[16], and all the resources produced by

---

[16]The U.S. Government Public Office is the authority of the United States that has in charge to publish and distributing all the documents related to Democratic procedures of the U.S. (https://www.gpo.gov/about/).

Figure 7.43: Instructions to call the Congress supplied by GovTrack
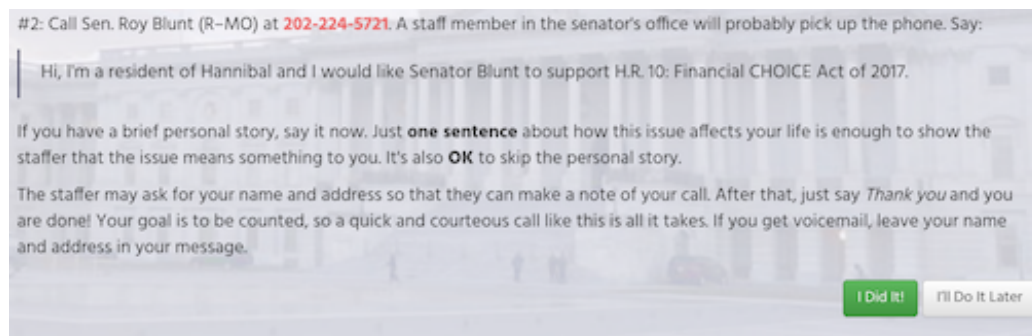
Figure 7.44: The link to the U.S. Government Public Office in GovTrack
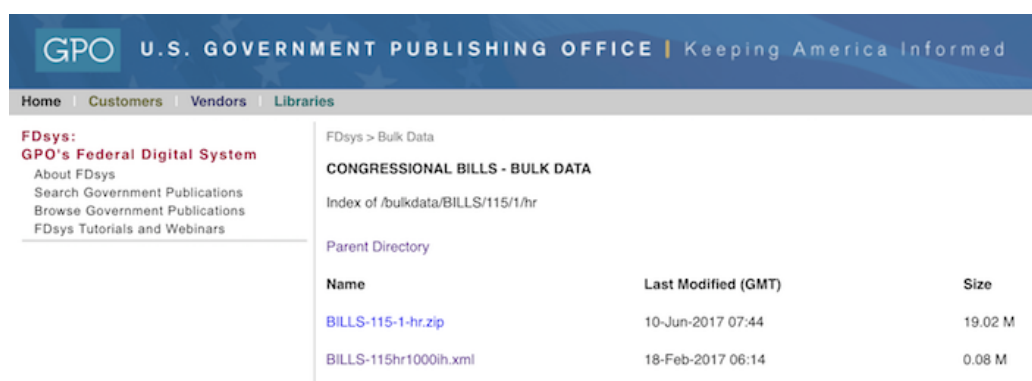
GovTrack can be accessed by means of APIs exposed in the developers page of the project[17].

Table 7.5 and the following list expose a summary of the legitimacy features implemented by GovTrack in relation to the requirements for their implementation that I have exposed in chapter 6.

Linked Open Data Technologies: the system strongly relies on Linked Open Data and produces Linked Open Data. For this reason, all the legitimacy features related to this requirement are implemented.

---

[17]More information about the APIs exposed by GovTrak are available in the developers documentation of GovTrack (https://www.govtrack.us/developers).

Responsiveness: the design of the system is responsive and can be properly accessed by mobile devices. For this reason all the features related to the responsive design requirement are implemented.

Inclusiveness and Usability: although the system is responsive, it does not use any framework that follows by default standards and guidelines of usability and inclusiveness. For this reason, all of the features granted by these two requirements must be considered as not implemented.

Deliberative Interaction and Deliberative Consensus: Deliberative Interactions are very limited in GovTrack and can not be performed in anonymous ways. However, emoticons and resource sharing can be used in a certain way to persuade other Citizens to support Bills. Emoticons can also be considered as a form of Deliberative Consensus, indeed the system allows Citizens to change their minds and feelings about resources and, although the algorithms used are not transparent, to the system computes the hot and most trending bills.

Nurture Intrinsic and Extrinsic Motivations: GovTrack does not implement any feature to nurture intrinsic and extrinsic motivations of Citizens. For this reason, all the legitimacy features related to this requirement are not implemented.

Avoid/Exploit Biases : GovTrack is not designed to avoid biases of human-beings, neither to exploit the ones that can enhance the deliberation. Indeed, resources are sorted by the support they receive among Citizens and the probability of them of being enacted. As I have exposed in section 6.5, this can cause several issues, preventing the system to implement all the legitimacy features related to Deliberations, Citizens, Inputs, Decision Making Procedures, Outputs and Institutions that I have exposed in chapter 5.

Table 7.5: The legitimacy features implemented by GovTrack

Column legend (left to right):
1. Regulations, Laws or Constitutions
2. Internet Technologies
3. Web Technologies
4. Linked Open Data Technologies
5. Design For Inclusiveness
6. Design For Responsiveness
7. Design For Usability
8. Design For Deliberative Interaction
9. Design For Deliberative Consensus
10. Design For Intrinsic and Extrinsic Motivations
11. Design To Avoid/Exploit Biases

DELIBERATIONS

CODE	DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11
D-MUST-1	Must be accessible	✓				×	✓	×				
D-MUST-2	Must be open	✓	✓	✓		×	✓	×				
D-MUST-3	Must be reliable		✓	✓		×	✓	×				×
D-MUST-4	Must be traceable				✓	✓						
D-MUST-5	Must be transparent				✓							
D-MUST-6	Must be unobstructed	✓	✓	✓		×	✓	×				×
D-COULD-1	Could be asynchronous		✓	✓								
D-COULD-2	Could be continuous		✓	✓		×	✓	×				
D-COULD-3	Could be distributed		✓	✓								
D-COULD-4	Could be interconnected				✓							
D-COULD-5	Could be interdependent				✓							
D-COULD-6	Could be ubiquitous		✓	✓		×	✓	×				

CITIZENS

CODE	DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11
C-MUST-1	Must be capable	✓							×	×	×	×
C-MUST-2	Must be conscientious								×	×	×	×
C-MUST-3	Must be educated	✓							×	×	×	×
C-MUST-4	Must be motivated	✓							×	×	×	×
C-MUST-5	Must be purposed								×	×	×	×
C-MUST-6	Must be respectful								×	×	×	×

INPUTS

CODE	DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11
I-MUST-1	Must be balanced		✓	✓	✓	×	✓	×				×
I-MUST-2	Must be diverse		✓	✓	✓	×	✓	×				×
I-MUST-3	Must be informed				✓							×
I-MUST-4	Must be interesting				✓						×	×
I-MUST-5	Must be justified				✓							×
I-MUST-6	Must be pluralistic		✓	✓	✓	×	✓	×				×

DECISION-MAKING PROCEDURES

CODE	DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11
DMP-ALLOW-1	Must allow mind changing								✓	✓		
DMP-ALLOW-2	Must allow majority rule								×	×		
DMP-AVOID-1	Must avoid social domination		✓	✓					×	×	×	×
DMP-AVOID-2	Must avoid hierarchies		✓	✓					✓	✓	×	×
DMP-FOSTER-1	Must foster learning					×	✓	×	×	×	×	×
DMP-FOSTER-2	Must foster mastering					×	✓	×	×	×	×	×
DMP-FOSTER-3	Must foster persuasion								✓	✓	×	×
DMP-GRANT-1	Must grant anonymity	✓	✓	✓					×	×	×	×
DMP-GRANT-2	Must grant egalitarianism	✓	✓	✓					✓	✓	×	×

OUTPUTS

CODE	DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11
O-MUST-1	Must be accountable			✓	✓							
O-MUST-2	Must be effective				✓	×	✓	×				×
O-MUST-3	Must be monitored			✓	✓							
O-MUST-4	Must be revisable			✓	✓							
O-SHOULD-1	Should be efficient				✓	×	✓	×				×
O-SHOULD-2	Should be satisfying				✓	×	✓	×			×	×

INSTITUTIONS

CODE	DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11
IN-AVOID-1	Must avoid domination	✓			✓	×	✓	×	✓	✓	×	×
IN-AVOID-2	Must avoid rooted partisanship	✓			✓							
IN-AVOID-3	Must avoid tightness	✓			✓							
IN-GRANT-1	Must grant authority to deliberations	✓										
IN-GRANT-2	Must grant egalitarianism to participants	✓	✓	✓		×	✓	×	✓	✓	×	×
IN-GRANT-3	Must grant freedom to deliberate	✓	✓	✓		×	✓	×	✓	✓	×	
IN-GRANT-4	Must grant incentives to deliberate	✓							×	×	×	
IN-GRANT-5	Must grant political equality to citizens	✓	✓	✓								

7.6   OurSpace

OurSpace is an open-source project co-funded by the European Commission under the ICT Policy Support Programme[18], aimed to connect large group of deliberations with young people. As the developer of the project states, OurSpace is a participation platform designed for the engagement of young people in decision-making procedures, at both national and European Level[19]. As showed in figure 7.45, OurSpace can be used as a stand-alone web platform, a Facebook app, an iGoogle Gadget or a mobile Android application.

Figure 7.45: The design of OurSpace for different platforms. Courtesy of OurSpace

Although OurSpace is supplied in different version for different browsers, its design is not responsive, and the software does not rely on any standard for inclusiveness and usability. This causes several issues related to its accessibility and usage on devices with small-size screens.

Users can log-in OurSpace by creating an account or by using their Facebook accounts, as showed in figure 7.46. In both cases, all their interactions

---

[18]More information about the ICT Policy Support Programme are available at the following address: http://ec.europa.eu/cip/ict-psp/index_en.htm

[19]More information about the goals of OurSpace are available on the project Web site (http://ep-ourspace.eu/Home.aspx).

with other users are not anonymous, with the exception of the voting phase. Users in OurSpace can be of two typologies: normal users, who are Citizens that want to participate in decision-making processes, and collaborators, who are special users with permission to evaluate proposals, accept or reject them.

Figure 7.46: The log-in page of OurSpace

The main section of OurSpace lists the proposals that Citizens have made, as showed in figure 7.47. The decision-making process is divided into four phases: the first one in which users suggest topics, the second one in which they propose solutions to topics, the third one in which they vote solutions, and the fourth one in which the results of voting are computed and displayed to users (figure 7.47).

In the proposals phase Citizens can create topics and collaborators can choose to approve or reject them. As showed in figure 7.48, users can create topics at national or European level, and assign to topics a thematic area, a title and a description. Users can also choose to attach external files to the

Figure 7.47: The main page of OurSpace
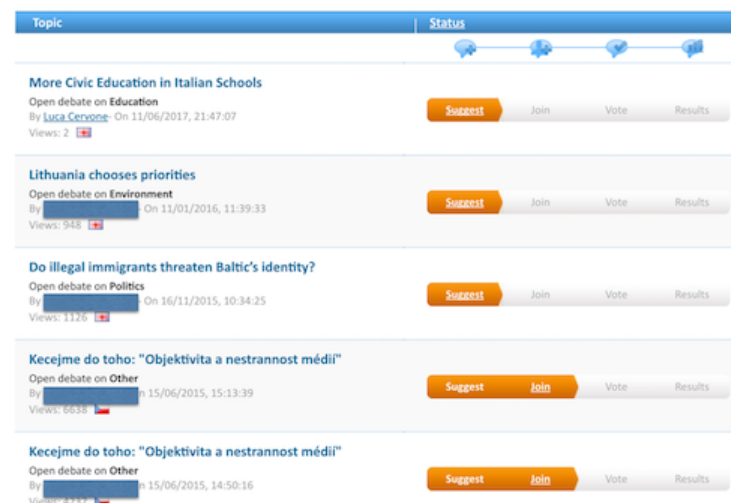
proposal in order to better argument their proposals. To move to the next phase of deliberation, the proposal must receive six likes by other users, or it must be pushed forward by a collaborator. Figure 7.49 shows the list of proposals created by users and the ways in which they can be sorted. Citizens can click on proposals to see more information about them, and to like or dislike the proposal, as showed in figure 7.50. In all phases users can vote items just once, meaning that they are not allowed to change their opinions and votes.

In the second phase of the debate, Citizens can propose solutions to the debated topics, and collaborators can moderate the discussions about proposed solutions. Figures 7.51 and 7.52 show, respectively, the form for the creation of a solution and the list of solutions that a proposal received.

The third and fourth phase are aimed, respectively, to vote proposals and to elect winners of ballots, as showed in figure 7.53. The fourth phase is a passive phase in which all users are simply enabled to read the results, whilst in the third phase Citizens can vote solutions by giving their agreement and disagreement. A very severe issue of OurSpace is that, in this phase, collaborators decide when solutions have received a sufficient amount of votes,

Figure 7.48: The creation of a topic in OurSpace

Figure 7.49: The creation of a topic in OurSpace

Figure 7.50: Information about a proposal in OurSpace

Figure 7.51: The creation of a solution in OurSpace

Figure 7.52: The solutions proposed for a topic in OurSpace
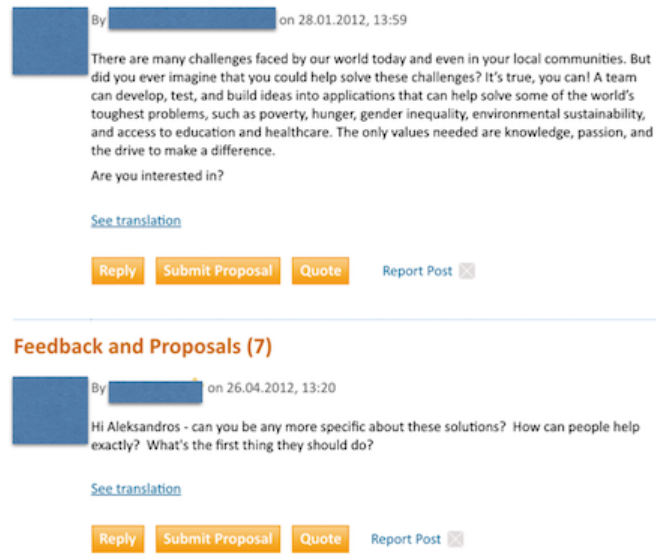
so when to close the ballot, as showed in figure 7.54. As a matter of fact, this creates formal hierarchies in the system, and can contribute to create mechanisms of social domination and non-egalitarianism among Citizens.

Figure 7.54: The admin button to close a ballot in OurSpace
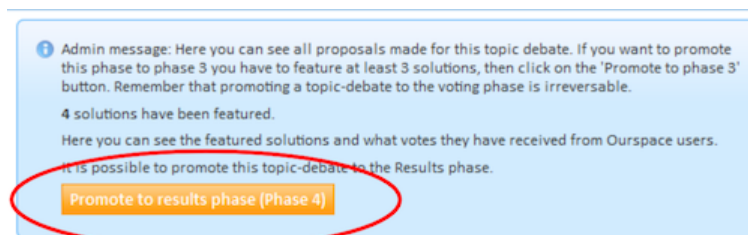
An interesting feature of OurSpace is that it supplies a system of points and levels for users, and introduces a leader-board in which users can check who are the Citizens that are contributing more in deliberations (figures 7.55 and 7.56). For this reason, OurSpace introduces mechanisms of gamification that can be used to nurture the intrinsic and extrinsic motivations of Citizens to participate in deliberations, as I expose in part III of this work. However,

Figure 7.53: A ballot phase in OurSpace

the leader-board is structured as a classical one, as I expose in sections 8.5 and 8.6, and this can contribute to the raise of biases in Citizens involved in decision-making procedures.

Eventually, for what concerns the data produced by the system, OurSpace does not rely on any standard for Linked Open Data and the results produced by deliberations are not downloadable neither manually by human-beings, nor in automatic way by machines or other software. Table 7.6 and the following list expose a summary of the legitimacy features implemented by the OurSpace project in relation to the requirements for their implementation that I have exposed in chapter 6.

Linked Open Data Technologies: the system does not rely on any standard for Linked Open Data and does not produce any data in Linked Open Data form. For this reason, all the features related to this requirement are not implemented.

Figure 7.55: The points and levels of users in OurSpace

Figure 7.56: The leader-board in OurSpace

Inclusiveness, Responsiveness and Usability: although the system can be accessed by means of a mobile application, its design is not responsive and does not rely on any standard for inclusiveness and usability. For these reasons, all the features related to these requirements are not implemented.

Deliberative Interaction and Deliberative Consensus: the deliberation in OurSpace is structured as a free forum in which users can send their messages, allowing Citizens to persuade other users with different communication modes. However, the system allows Citizens to vote any argument just once, and for this reason they can not change their opinion about arguments. Also, discussions can not be made anonymously and special users, called contributors, have a final word on ballots This can create mechanisms of hierarchies and social domination that seriously affect the legitimacy of deliberations.

Nurture Intrinsic and Extrinsic Motivations: OurSpace introduces a system of points and levels and a leader-board that can contribute to foster Citizens to learn and master both the deliberation and the system. However, although gamified components are introduced, their gamification design is not properly structured as I expose in part III, and for this reason it only partially contributes to the implementation of the legitimacy features related to this aspect.

Avoid/Exploit Biases: OurSpace is not designed to avoid or exploit biases of Citizens involved in decision-making processes, and the classical leader-board that it introduces can contribute to the raise of the authority bias, the Lucifer effect, and the confirmation bias, that I have exposed in section 6.5.

Table 7.6: The legitimacy features implemented by OurSpace

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
DELIBERATIONS												
D-MUST-1	Must be accessible	✓				×	×	×				
D-MUST-2	Must be open	✓	✓	✓		×	×	×				
D-MUST-3	Must be reliable		✓	✓		×	×	×				×
D-MUST-4	Must be traceable				✓	×						
D-MUST-5	Must be transparent				×							
D-MUST-6	Must be unobstructed	✓	✓	✓		×	×	×				×
D-COULD-1	Could be asynchronous		✓	✓								
D-COULD-2	Could be continuous		✓	✓		×	×	×				
D-COULD-3	Could be distributed		✓	✓								
D-COULD-4	Could be interconnected					×						
D-COULD-5	Could be interdependent					×						
D-COULD-6	Could be ubiquitous		✓	✓		×	×	×				
CITIZENS												
C-MUST-1	Must be capable	✓							×	×	×	×
C-MUST-2	Must be conscientious								×	×	×	×
C-MUST-3	Must be educated	✓							×	×	×	×
C-MUST-4	Must be motivated	✓							×	×	×	×
C-MUST-5	Must be purposed								×	×	×	×
C-MUST-6	Must be respectful								×	×	×	×
INPUTS												
I-MUST-1	Must be balanced		✓	✓	×	×	×	×				×
I-MUST-2	Must be diverse		✓	✓	×	×	×	×				×
I-MUST-3	Must be informed				×							×
I-MUST-4	Must be interesting				×						×	×
I-MUST-5	Must be justified				×							×
I-MUST-6	Must be pluralistic		✓	✓	×	×	×	×				×
DECISION-MAKING PROCEDURES												
DMP-ALLOW-1	Must allow mind changing								×	×		
DMP-ALLOW-2	Must allow majority rule								✓	✓		
DMP-AVOID-1	Must avoid social domination		✓	✓					×	×	×	×
DMP-AVOID-2	Must avoid hierarchies		×	×					×	×	×	×
DMP-FOSTER-1	Must foster learning					×	×	×	×	×	✓	
DMP-FOSTER-2	Must foster mastering					×	×	×	×	×	✓	×
DMP-FOSTER-3	Must foster persuasion								✓	✓	×	×
DMP-GRANT-1	Must grant anonymity	✓	✓	✓					×	×	×	×
DMP-GRANT-2	Must grant egalitarianism	✓	✓	✓					×	×	×	×
OUTPUTS												
O-MUST-1	Must be accountable				✓	×						
O-MUST-2	Must be effective					×	×	×	×			×
O-MUST-3	Must be monitored				✓	×						
O-MUST-4	Must be revisable				✓							
O-SHOULD-1	Should be efficient					×	×	×	×			×
O-SHOULD-2	Should be satisfying					×	×	×	×		×	×
INSTITUTIONS												
IN-AVOID-1	Must avoid domination	✓				×	×	×	×	×	×	×
IN-AVOID-2	Must avoid rooted partisanship	✓				×						
IN-AVOID-3	Must avoid tightness	✓				×						
IN-GRANT-1	Must grant authority to deliberations	✓										
IN-GRANT-2	Must grant egalitarianism to participants	✓	✓	✓		×	×	×	×	×	×	×
IN-GRANT-3	Must grant freedom to deliberate	✓	✓	✓		×	×	×	✓	✓	×	
IN-GRANT-4	Must grant incentives to deliberate	✓							×	×	×	
IN-GRANT-5	Must grant political equality to citizens	✓	✓	✓								

7.7 WikiLegis

WikiLegis is an open-source project developed by the Hacker Laboratory[20] of the Brazilian Chamber of Deputies. The software can be used by different Institutions and it is aimed to allow Citizens to deliberate on generic issues, to propose bills or amendments, and to send questions to Deputies. The software works in Web browsers and, although its design is responsive, it does not relies on any standard framework for the usability and the inclusiveness. The figure 7.57 shows a screen-shoot of the main page of the instance of WikiLegis dedicated to deliberations among Brazilian Citizens.

Figure 7.57: The main page of WikiLegis for the Brazilian Chamber of Deputies

Although the issues discussed in WikiLegis have their dedicated URI (figure 7.58)), and although it is possible to manually create and download a report of events that happen during deliberations (figure 7.59), the project documentation does not provide any hint on the data that it uses for deliberations, nor on how the data produced during deliberations is serialized.

---

[20]More information about the Hacker Laboratory of the Brazilian Chamber of Deputies are available at the following address: http://labhackercd.net/

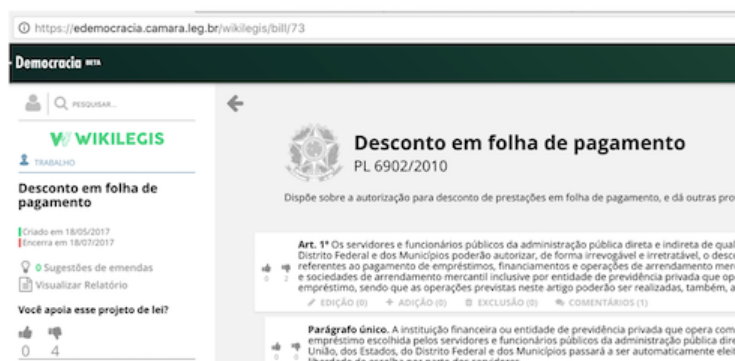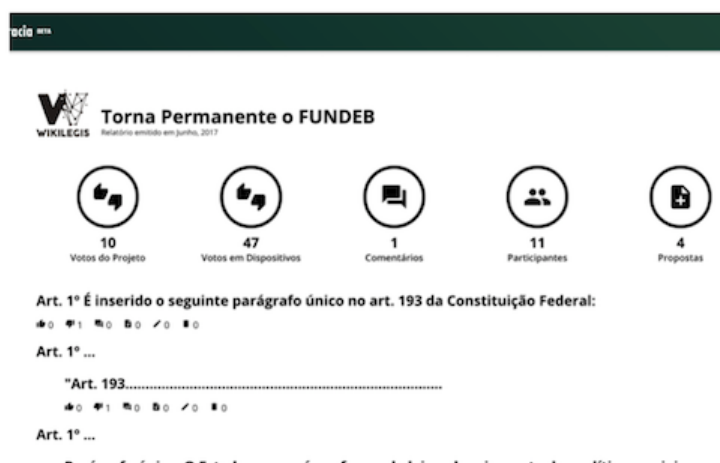**Figure 7.58:** The URI of a document in WikiLegis

Figure 7.59: A report of a deliberation in WikiLegis

Users of WikiLegis can access the system by creating an account, and the name they supply is showed in every discussion in which they are involved. Users are allowed to edit their name and provide fake names. For this reason, although users can be linked to their emails, they are allowed to discuss anonymously. WikiLegis allows users to deliberate on three typologies of resources, as showed in figure 7.60. Users can discuss and edit collaboratively bills, discuss on generic issues, and participate to scheduled interviews to Deputies and ask questions to them.

Figure 7.60: The three sections of deliberation in WikiLegis

As showed in figure 7.61 in the section dedicated to discussions on bills users can see a list of bills that are currently under discussion and a list of discussions already closed. The resources under discussions are sorted by date and users are not allowed to change the sorting. In this section of the system, users can not create new items and, after having explored the software and project documentation , it is not clear how bills enter the deliberation, and who creates them. However, as showed in figure 7.62, Citizens are allowed to give positive or negative votes to whole bills and to partitions of bills, and they are allowed to change their opinion at any time. Also, users can propose modification to partitions of bills and the insertion of new partitions, as showed in figure 7.63. If they do so, their proposal enters the deliberation and other Citizens can express their preference on it. Users are also allowed to send comments on modification proposals by means of commenting areas dedicated to each modification proposal (figure 7.63). When the time allocated to the discussion of proposals ends, the report is created and it can be then used by Institutions according to their needs (figure 7.59).

In the section dedicated to generic discussion, users can see a list of topics under deliberation and sort them in different ways, as showed in figure 7.64. As opposed to the section dedicated to deliberations on bills, in this section

Figure 7.61: The list of bills under discussion in WikiLegis

Figure 7.62: The vote of a bill in WikiLegis

Figure 7.63: The creation of a modification proposal in WikiLegis
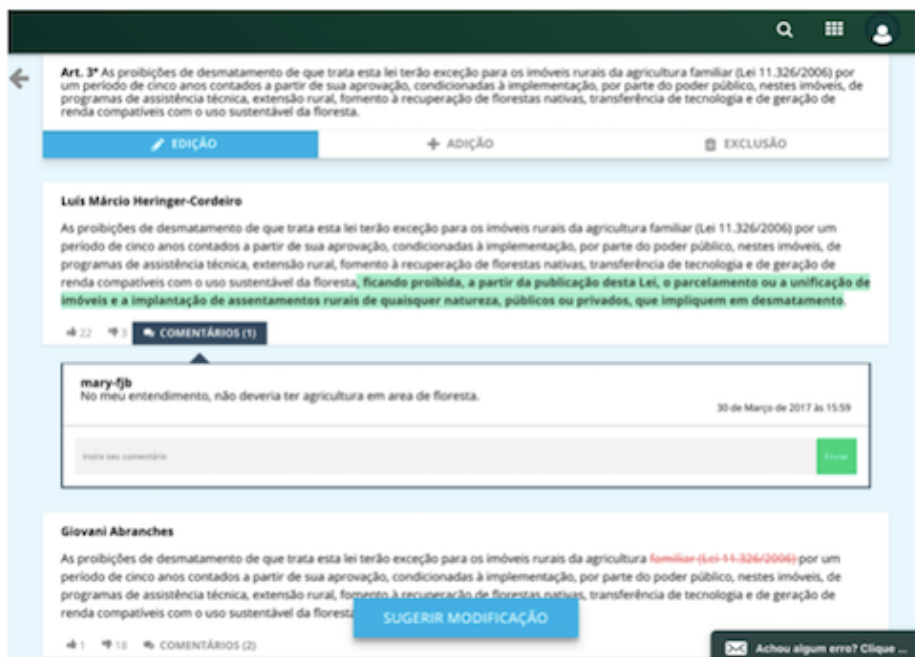
users can simply and freely create new topics by clicking on the button in the top bar menu (figure 7.64)). If they do so, a form appears at the bottom of the page, and they can fill it by inserting a title and a description of the topic, and selecting a category for it (figure 7.65). As showed in figure 7.66, the discussion of topics is structured as a generic form, in which users can reply to comments of other users, and express their agreement on comments by clicking on an heart icon situated under each message.

The last section of WikiLegis is an innovative section dedicated to stream interactive interviews to politicians. As showed in figure 7.67, when users access this section, they can see a list of scheduled interviews and choose to participate in one or more of them. When users participate to an interview, they can interactively send question to Deputies, and other Citizens can vote the questions (figure 7.68). If Deputies reply to the question at any moment during the interview, the question is marked as "replied" and the system creates a link to the specific part of the video in which the reply is given.

Figure 7.64: The list of topics discussed in WikiLegis

Figure 7.65: The creation of a topic in WikiLegis

Figure 7.66: The discussion on topics in WikiLegis

Figure 7.67: The list of interviews in WikiLegis
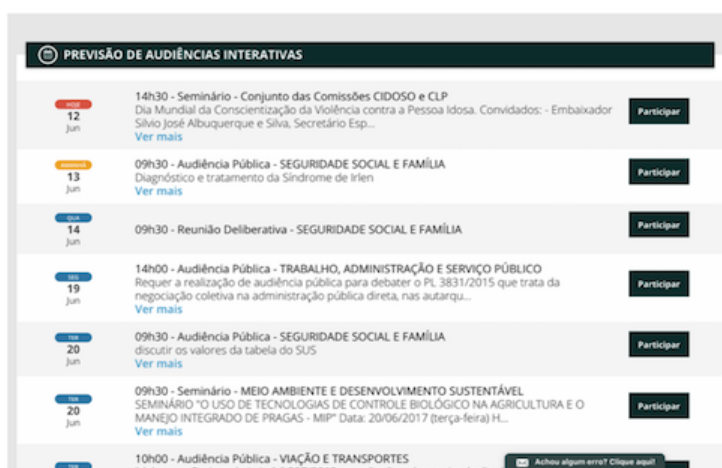
Figure 7.68: An interactive interview in WikiLegis

Table **??** and the following list expose a summary of the legitimacy features implemented by the WikiLegis project in relation to the requirements for their implementation that I have exposed in chapter 6.

Linked Open Data Technologies: the system does not rely on any standard for Linked Open Data and does not produce any data in Linked Open Data form. For this reason, all the features related to this requirement are not implemented.

Responsiveness: the design of the system is responsive and, for this reason, all the features related to the responsive design requirement are implemented.

Inclusiveness and Usability : although the system is responsive, WikiLegis does not use any framework that follows by default standards and guidelines of usability and inclusiveness. For this reason, all the features granted by these two requirements must be considered as not implemented.

Deliberative Interaction and Deliberative Consensus : Although different communications modes are not enhanced, the deliberation is structured as a free forum and, for this reason, there are no limitations on the types of contents that users can introduce in deliberations.

WikiLegis allows users to use fake names when they are involved in discussions and, for this reason, the system avoids the formation of hierarchies, grants egalitarianism and anonymity to Citizens, and can be considered as a system designed for fostering the persuasion.

The voting system of WikiLegis allows Citizens to express their preference on all the issues under discussion and to change their preference at any moment. When ballots end WikiLegis does not elect winners, but arguments in the final report are sorted by the number of positive consensus they receive; for this reason the voting system of WikiLegis can be considered as based on the majority rule.

Nurture Intrinsic and Extrinsic Motivations: WikiLegis does not implement any feature to nurture intrinsic and extrinsic motivations of Citizens. For this reason, all the legitimacy features related to this requirement are not implemented.

Avoid/Exploit Biases : WikiLegis allows Citizens to discuss by using a fake name and, for this reason, avoids the authority bias effect and the Lucifer effect related to the social domination that I have exposed in section 6.5. However, the system does not implement any feature to avoid or exploit other biases related to decision-making procedures.

Table 7.7: The legitimacy features implemented by WikiLegis

DELIBERATIONS

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
D-MUST-1	Must be accessible	✓				×	✓	×				
D-MUST-2	Must be open	✓	✓	✓		×	✓	×				
D-MUST-3	Must be reliable		✓	✓	×	×	✓	×				×
D-MUST-4	Must be traceable				✓	×						
D-MUST-5	Must be transparent				×							
D-MUST-6	Must be unobstructed	✓	✓	✓		×	✓	×				×
D-COULD-1	Could be asynchronous		✓	✓								
D-COULD-2	Could be continuous		✓	✓		×	✓	×				
D-COULD-3	Could be distributed		✓	✓								
D-COULD-4	Could be interconnected					×						
D-COULD-5	Could be interdependent					×						
D-COULD-6	Could be ubiquitous		✓	✓		×	✓	×				

CITIZENS

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
C-MUST-1	Must be capable	✓							×	×	×	×
C-MUST-2	Must be conscientious								×	×	×	×
C-MUST-3	Must be educated	✓							×	×	×	×
C-MUST-4	Must be motivated	✓							×	×	×	×
C-MUST-5	Must be purposed								×	×	×	×
C-MUST-6	Must be respectful								×	×	×	×

INPUTS

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
I-MUST-1	Must be balanced		✓	✓	×	×	✓	×				×
I-MUST-2	Must be diverse		✓	✓	×	×	✓	×				×
I-MUST-3	Must be informed				×							×
I-MUST-4	Must be interesting				×						×	×
I-MUST-5	Must be justified				×							×
I-MUST-6	Must be pluralistic		✓	✓	×	×	✓	×				×

DECISION-MAKING PROCEDURES

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
DMP-ALLOW-1	Must allow mind changing								✓	✓		
DMP-ALLOW-2	Must allow majority rule								✓	✓		
DMP-AVOID-1	Must avoid social domination		✓	✓					×	×	×	×
DMP-AVOID-2	Must avoid hierarchies		✓	✓					✓	✓	×	×
DMP-FOSTER-1	Must foster learning					×	✓	×	×	×	×	×
DMP-FOSTER-2	Must foster mastering					×	✓	×	×	×	×	×
DMP-FOSTER-3	Must foster persuasion								✓	✓	×	×
DMP-GRANT-1	Must grant anonymity	✓	✓	✓					✓	✓	×	✓
DMP-GRANT-2	Must grant egalitarianism	✓	✓	✓					✓	✓	×	×

OUTPUTS

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
O-MUST-1	Must be accountable				✓	×						
O-MUST-2	Must be effective					×	×	✓	×			×
O-MUST-3	Must be monitored				✓	×						
O-MUST-4	Must be revisable				✓	×						
O-SHOULD-1	Should be efficient					×	×	✓	×			×
O-SHOULD-2	Should be satisfying					×	×	✓	×		×	×

INSTITUTIONS

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
IN-AVOID-1	Must avoid domination	✓			×	×	✓	×	✓	✓	×	✓
IN-AVOID-2	Must avoid rooted partisanship	✓				×						
IN-AVOID-3	Must avoid tightness	✓				×						
IN-GRANT-1	Must grant authority to deliberations	✓										
IN-GRANT-2	Must grant egalitarianism to participants	✓	✓	✓		×	✓	×	✓	✓	×	✓
IN-GRANT-3	Must grant freedom to deliberate	✓	✓	✓		×	✓	×	✓	✓	×	
IN-GRANT-4	Must grant incentives to deliberate	✓							×	×	×	
IN-GRANT-5	Must grant political equality to citizens	✓	✓	✓								

7.8   Parelon

Parelon is a software developed by an International Non-Profit Organization originally started by members of the Italian Movimento 5 Stelle belonging to the Italian Lazio region[21]. Parelon is aimed to allow Citizens to propose and discuss generic issues, bills and amendments in specific thematic fields or territorial areas. At the moment of writing, the open demo supplied by Parelon's developers is down for maintenance, for this reason the following analysis is based on tutorials and documentations provided by the developers.

In order to register to Parelon, users must fill-in a form in which they must specify a set of data for their identification, like their first name and surname, and their Italian Fiscal Code (figure 7.69)). After having filled the form, users are requested to complete two further steps for their identification. Firstly they must schedule a web-chat, during which they will be requested to demonstrate their identity by showing their ID in the web-cam. After the chat, users will receive a physical token by means of which they can eventually access the system and start to deliberate. On one hand, this complex access mechanisms does not affect the requirement of anonymity of deliberating Citizens, because they are allowed to change the public name that will be displayed during deliberations (figure 7.70). On the other hand, the registration procedure of Parelon is bounded by Institutions of Countries, because Citizens must provide an ID to enter, and this affects some of the legitimacy features of the system.

Although Parelon does not provide a version for mobile devices, and although there are no specifications related to its inclusiveness in the documentation, the design of Parelon is responsive and, as stated by its developers, Parelon is designed to follow standards of usability (figure 7.71).

For what concerns the Linked Open Data technologies, the system relies and produces AkomaNtoso documents, that I have introduced in section 6.2,

---

[21]More information about the Parelon Organization and about the Parelon software are available at the following address: https://www.parelon.com/.

Figure 7.69: The registration page in Parelon. Courtesy of Parelon.it

Figure 7.70: The user profile page of Parelon. Courtesy of Parelon.it

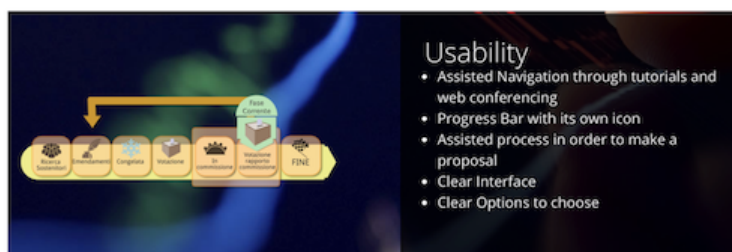**Figure 7.71:** Features of Parelon and their usability. Courtesy of Parelon.it

Figure 7.72: The download of the Parelon database. Courtesy of Parelon.it

and they are edited by means of the LIME editor[22]. Users are also allowed to download the whole Parelon database, as showed in figure 7.72.

Users in Parelon can deliberate in different assemblies, public and internal, as showed in figure 7.73. The first ones are aimed to discuss public issues and are publicly accessible. The second ones are for group of deliberations that may have internal issues to be discussed and solved.

In Parelon, the deliberation is dived into two macro areas, the first dedicated to the proposal of topics or issues to discuss, the second to the proposal

---

[22]More information about the LIME editor [197] are available at the following address: http://lime.cirsfid.unibo.it/.

Figure 7.73: Public and internal assemblies in Parelon. Courtesy of Parelon.it

Figure 7.74: The creation of an issue in Parelon. Courtesy of Parelon.it
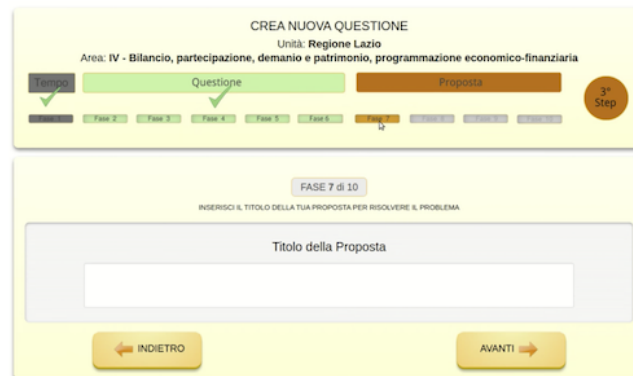
of solutions to the issues raised by Citizens. When users raise issues, they must supply generic information and justifications of the issue, and a first possible solution, as showed in figure 7.74. For both the proposal and the solution users can supply several information, like the name, description, and links to external resources related to the proposal. It is also possible to link videos stored on YouTube in order to help Citizens to better understand the issue. When users create topics, or when they propose solutions, they can request the involvement of a technical commission, as depicted in figure 7.75. Technical commissions are aimed to verify the feasibility of solutions proposed by Citizens and other issues related to the legal feasibility of solutions.

After proposals have been created they enter the deliberation, and must

Figure 7.75: The request of a technical commission in Parelon. Courtesy of Parelon.it

Figure 7.76: The steps of deliberations in Parelon. Courtesy of Parelon.it

pass through several phases before being closed or accepted, as showed in figure 7.76. During these phases Citizens can deliberate about topics and proposed solutions and perform other actions, like sharing the issue on social webs (figure 7.76)) or propose other solutions to the issue (figure 7.77)). Citizens can access solutions and give their support to them in order to push them towards an eventual approval, as showed in figure 7.78, but they are allowed to retire their approval if they change opinion.

After the generic deliberations about topics and solutions end, users are allowed to discuss and vote amendments on bills proposed by solutions (figure

Figure 7.77: The list of proposed solution for an issue in Parelon. Courtesy of Parelon.it

Figure 7.78: A supporter of a solution in Parelon. Courtesy of Parelon.it

Figure 7.79: The vote of an amendment in Parelon. Courtesy of Parelon.it
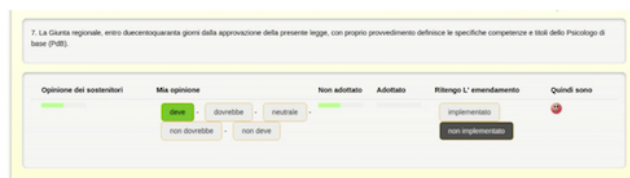
7.79)). Citizens can discuss and vote individual amendments and, after the time allocated for the discussion of amendments ends, by means of a mechanism based on the majority rule the system computes the amendment that has won the ballot, as showed in figure 7.76. During all the deliberation and voting phases users are allowed to communicate by means of a commenting system structured as an open forum.

Table 7.8 and the following list expose a summary of the legitimacy features implemented by Parelon in relation to the requirements for their implementation that I have exposed in chapter 6.

Linked Open Data Technologies: as stated by the system documentation, Parelon relies on standards for Linked Open Data and produces open and downloadable data. For this reason, all the features related to this requirement are considered as implemented.

Inclusiveness: the system documentation does not provide any statement relative to the inclusiveness of the design of the system. For this reason, all the legitimacy features related to this requirement are considered not implemented.

Responsiveness, and Usability: as stated by the system documentation, Parelon is designed to be usable and responsive. All the legitimacy features related to these requirements must be considered implemented by inheritance.

Deliberative Interaction and Deliberative Consensus: the system implements mechanisms to allow Citizens to change their preferences, does

not implement any mechanism to discriminate among different users, and grants egalitarianism to Citizens. However, the access is strictly bounded by institutions and this creates issues with the legitimacy of deliberations. Users can use fake names in deliberations and, so, the system avoids social domination. For what concerns the computation of the results of ballots, Parelon implements mechanisms based on the majority rule.

Nurture Intrinsic and Extrinsic Motivations: the system does not implement any feature to nurture intrinsic and extrinsic motivations of Citizens. For this reason, all the legitimacy features related to this requirement are not implemented.

Avoid/Exploit Biases: the system does not implement any feature to avoid or exploit biases related to decision-making procedures. For this reason, all the legitimacy features related to this requirement are not implemented.

Table 7.8: The legitimacy features implemented by Parelon

Column headers (left to right): Regulations, Laws or Constitutions · Internet Technologies · Web Technologies · Linked Open Data Technologies · Design For Inclusiveness · Design For Responsiveness · Design For Usability · Design For Deliberative Interaction · Design For Deliberative Consensus · Design For Intrinsic and Extrinsic Motivations · Design To Avoid/Exploit Biases

DELIBERATIONS

CODE	DESCRIPTION	Reg	Internet	Web	LOD	Inclus	Respons	Usabil	Delib Interact	Delib Consens	Motiv	Biases
D-MUST-1	Must be accessible	✓				×	✓	✓				
D-MUST-2	Must be open	✓	✓	✓		×	✓	✓				
D-MUST-3	Must be reliable		✓	✓	✓	×	✓	✓				×
D-MUST-4	Must be traceable				✓	✓						
D-MUST-5	Must be transparent				✓							
D-MUST-6	Must be unobstructed	✓	✓	✓		×	✓	✓				×
D-COULD-1	Could be asynchronous		✓	✓								
D-COULD-2	Could be continuous		✓	✓		×	✓	✓				
D-COULD-3	Could be distributed		✓	✓								
D-COULD-4	Could be interconnected				✓							
D-COULD-5	Could be interdependent				✓							
D-COULD-6	Could be ubiquitous		✓	✓		×	✓	✓				

CITIZENS

CODE	DESCRIPTION	Reg	Internet	Web	LOD	Inclus	Respons	Usabil	Delib Interact	Delib Consens	Motiv	Biases
C-MUST-1	Must be capable	✓							×	×	×	×
C-MUST-2	Must be conscientious								×	×	×	×
C-MUST-3	Must be educated	✓							×	×	×	×
C-MUST-4	Must be motivated	✓							×	×	×	×
C-MUST-5	Must be purposed								×	×	×	×
C-MUST-6	Must be respectful								×	×	×	×

INPUTS

CODE	DESCRIPTION	Reg	Internet	Web	LOD	Inclus	Respons	Usabil	Delib Interact	Delib Consens	Motiv	Biases
I-MUST-1	Must be balanced		✓	✓	✓	×	✓	✓				×
I-MUST-2	Must be diverse		✓	✓	✓	×	✓	✓				×
I-MUST-3	Must be informed				✓							×
I-MUST-4	Must be interesting				✓						×	×
I-MUST-5	Must be justified				✓							×
I-MUST-6	Must be pluralistic		✓	✓	✓	×	✓	✓				×

DECISION-MAKING PROCEDURES

CODE	DESCRIPTION	Reg	Internet	Web	LOD	Inclus	Respons	Usabil	Delib Interact	Delib Consens	Motiv	Biases
DMP-ALLOW-1	Must allow mind changing								✓	✓		
DMP-ALLOW-2	Must allow majority rule								✓	✓		
DMP-AVOID-1	Must avoid social domination		✓	✓					✓	✓	×	×
DMP-AVOID-2	Must avoid hierarchies		✓	✓					✓	✓	×	×
DMP-FOSTER-1	Must foster learning					×	✓	✓	×	×	×	
DMP-FOSTER-2	Must foster mastering					×	✓	✓	×	×	×	×
DMP-FOSTER-3	Must foster persuasion								×	×	×	×
DMP-GRANT-1	Must grant anonymity	✓	✓	✓					✓	×	×	×
DMP-GRANT-2	Must grant egalitarianism	✓	✓	✓					✓	✓	×	×

OUTPUTS

CODE	DESCRIPTION	Reg	Internet	Web	LOD	Inclus	Respons	Usabil	Delib Interact	Delib Consens	Motiv	Biases
O-MUST-1	Must be accountable				✓	✓						
O-MUST-2	Must be effective				✓	×	✓	✓				×
O-MUST-3	Must be monitored				✓	✓						
O-MUST-4	Must be revisable				✓	✓						
O-SHOULD-1	Should be efficient				✓	×	✓	✓				×
O-SHOULD-2	Should be satisfying				✓	×	✓	✓			×	×

INSTITUTIONS

CODE	DESCRIPTION	Reg	Internet	Web	LOD	Inclus	Respons	Usabil	Delib Interact	Delib Consens	Motiv	Biases
IN-AVOID-1	Must avoid domination	✓			✓	×	✓	✓	✓	✓	×	×
IN-AVOID-2	Must avoid rooted partisanship	✓			✓							
IN-AVOID-3	Must avoid tightness	✓			✓							
IN-GRANT-1	Must grant authority to deliberations	✓										
IN-GRANT-2	Must grant egalitarianism to participants	✓	✓	✓		×	✓	✓	✓	✓	×	×
IN-GRANT-3	Must grant freedom to deliberate	✓	✓	✓		×	✓	✓	✓	✓	×	
IN-GRANT-4	Must grant incentives to deliberate	✓							×	×	×	
IN-GRANT-5	Must grant political equality to citizens	✓	✓	✓								

7.9 Summary of the Analysis

In the previous sections of this chapter, I have found a set of tools that meet specific characteristics enumerated in section 7,, and I have described them in order to investigate if they follow the requirements needed to implement the legitimacy feature that I have exposed in section 5.

Seven tools were analyzed and their design and functionality was compared with the requirements that I have exposed in section 6. Two of them, DemocracyOS and Parelon, described respectively in sections 7.4 and 7.8, rely on or produce Linked Open Data and, so, implement the legitimacy features related to this requirement.

The design of two of the analyzed systems, Agora and DemocracyOS, exposed respectively in sections 7.2 and 7.4follows the requirements of inclusiveness. All the systems, with the exception of OurSpace, described in section 7.6, follow the requirements of responsiveness, and three systems, Agora, DemocracyOS, and Parelon, follow the requirements of usability by using standard usable frameworks or designs.

All the systems are designed to rely on some kind of Deliberative Interaction and Deliberative Consensus and, so, implement at least partially the requirements related to Deliberative Interactions and Deliberative Consensus.

Very critically, none of the analyzed systems is designed to avoid or exploit biases of human beings involved in decision-making procedures, with the exception of those system that allow to deliberate anonymously or by means of fake names. However this single feature, if implemented alone, is negligible in order to address an eventual implementation of legitimacy features related to biased deliberations.

Most importantly, none of the systems is designed to nurture intrinsic and extrinsic motivation of users, with the exception of OurSpace, that implements points, levels and leader-boards. Although these game elements, used alone, are not enough to properly motivate Citizens to deliberate and to drive Citizens to reach a consensus, they are the most used components

in a brand-new field of study of the Human Computer Interaction called
"Gamification".

In the next part III of this work, I expose the concepts and the literature
on gamification, and I describe how gamification can be used to address my
research goals and so, to design Online Deliberative System aimed to moti-
vate Citizens to deliberate, and to design system that can, at least partially,
avoid or exploit the most common biases that can arise in deliberations.

Part III

Models of Deliberative Democracy for Continuous Civic Engagement

Chapter 8

Games and Gamified Systems

The aim of this chapter is to expose the concepts of games and gamification, and give a first hint on how to use gamificaiton in contexts of online Democracies. Firstly, in section 8.1, I expose the relation between games and gamification, and in section 8.2 the concepts at the heart of games and gamification. Secondly, in sections 8.3 and 8.4, I expose how to use gamification techniques to satisfy motivations of different typologies of individuals that can be involved in gamified processes. Thirdly, by introducing a software designed and implemented for my doctoral research, in sections 8.5 and 8.6I explain how a small set of gamified components can be used to improve the design of online ballots. Eventually, in section 8.7, I briefly introduce the use of gamification in Online Deliberative Systems.

8.1   Games and Gamified Systems

In part II of this work, I have exposed the theories behind Deliberative Democracies and Deliberative Systems, and I have addressed my first research question, listing a set of features of legitimated Deliberative Systems and enumerating the guidelines and requirements to implement these features. In a nutshell, I have found that legitimated online Deliberative Systems can actually be implemented and that these systems, if properly

implemented, can solve the issues related to Representative Democracies and Participatory Democracies. More specifically, by involving Citizens in genuine deliberations before voting, or throughout ballots, Deliberative Systems can solve all the issues related to the aggregation of votes that I have exposed in chapter 3 of this work.

Two of the concepts at the heart of online Deliberative Systems are the Deliberative Interaction and the Deliberative Consensus that I have exposed in section *Deliberative Interaction* and the *Deliberative Consensus*. By engaging Citizens in Deliberative Interactions, they should eventually reach a Deliberative Consensus and, so, agree at least on a shared set of normative and epistemic values. In other words, after a sufficient amount of Deliberative Interactions Citizens will share, or at least accept, diverse and plural values and beliefs.

based on deliberations is a complex societal issue. It is not realistic to think that this societal and disruptive change can be achieved by simply supplying to Citizens ways to deliberate interactively, or by simply facilitating Citizens to reach a Deliberative Consensus. This societal change must be achieved step-by-step. Firstly, Institutions must accept the need of this change, and they must enact every action needed to move forward to Democracies based on deliberations. Secondly, several *"tools"* that can be connected to Deliberative Systems must be designed and implemented to allow Citizens to exercise their Democratic and deliberative Rights. Last but definitely not least, Institutions and Citizens must be educated to the Deliberative Capacities needed to be engaged in this kind of *"every-day"* Democracies. And education needs motivations.

By using a metaphor by Simon Sinek[1] [253]], while Deliberative Systems,

---

[1]The *what-how-why* framework by Simon Sinek states that usually human beings start by the *"what they want"* and then they focus on *"how to reach things they want"*. Firstly, by doing so, it would be very difficult for individuals to reach their targets because they do not have any deep motivation that move them, and so, they may surrender readily when difficulties arise. Secondly, even if individuals reach their targets by starting by the what, the lack of initial motivations could make them unsatisfied by their achievements. By

Deliberative Interactions, the Deliberative Consensus, and Deliberative Capacities are the "*what*" and the "*how*" to implement the transition from Democracies based on aggregation to Democracies based on deliberation, there is still a certain lack on the "*why*" and, so, the motivations that would stimulate Citizens and Institutions to be continuously engaged in deliberations.

As I have exposed in section 6.4, the actions of human beings are always moved by the need to satisfy their intrinsic and extrinsic motivations. Games are proved to be very effective to nurture intrinsic and extrinsic motivations of individuals, and this seems to happen in every kind of game, for instance in sports [254] [255] and in other contexts, for instance when using board-games and computer-games in education [256] [257] [258].

The core research hypothesis of this work is to understand if games can be used to supply to Citizens motivations for: (1) improving their engagement in online Democracies and online Deliberative Systems; (2) improving their Democratic Capacities and their ability to deliberate interactively; and (3) reaching a Deliberative Consensus.

In order to address a reply to this hypothesis, I will focus on Computer-Games and on Online-Games, and more specifically on Massive Multiplayer Online Games that are defined as follows [259]:

Definition 14 (Massive Multiplayer Online Games by Constance Steinkuehler).
Massively multiplayer online games (MMOGs) are highly graphical 2- or 3-D videogames played online, allowing individuals, through their self-created digital characters or "avatars," to interact not only with the gaming software (the designed environment of the game and the computer-controlled characters within it) but with other players' avatars as well. These virtual worlds are persistent social and material worlds, loosely structured by open-ended (fantasy) narratives, where players are largely free to do as they please – slay ogres, siege castles, barter goods in town, or shake the fruit out of trees.

---

starting by "*the why*", human beings should be more motivated to achieve their targets, and so, they would reach their targets more easily and in more satisfying ways.

Before moving to investigate the possibility to use games for addressing the hypothesis of my research, it is sure worth of notice to provide some statistic on Computer-Games, Online Games, and Massive Multiplayer Online Games. Belonging to these categories are, as a very exemplifying set, *Super Mario Bros*, *Angry Birds* and *World of Warcraft*.

Super Mario Bros is a platform game[2] game in which players are engaged to drive the main characters of the game, the two Italian plumbers Mario and Luigi, to find Princess Peach who was kidnapped by Bowser, the villain of the game [260, pp. 271-277]. Figure 8.1 shows a screen-shoot of the famous first world of Super Mario Bros. Super Mario is deemed to be the most famous Computer-Game of the history and very worth of notice is the number of sold units of the game (in any of its versions) around the world, which in 2016 was stated to be over three-hundred-millions[3].

Angry Birds is a *Reverse Tower Defense* Video Game genre[4] created in 2009 by Rovio Entertainment[5], in which players impersonate coloured birds that must save their eggs from the attack of green birds. Since its first release in 2009, three-hundred-millions of copies of the game were downloaded and, as showed in Figure 8.2[6], as of today Angry Birds has around two millions of

---

[2]Platform games are kinds of Video Games in which players are mostly engaged in guiding characters to jump among suspended platforms. Super Mario Bros is deemed to be the defining game of the genre (http://gaming.wikia.com/wiki/Platform_video_games).

[3]The full statistics on the sold units of Super Mario, grouped by its versions, are publicly available on the Video Game Sales Wiki Web site (http://vgsales.wikia.com/wiki/Mario).

[4]In *Tower Defense Video Games* players must attempt to stop enemies before they invade their area on the game space. In *Reverse Tower Defense Video Games* players must attack towers built by their enemies on their areas of the game space. The first Reverse Tower Defense game is deemed to be Bokosuka Wars, created by the Japanese company ASCII in 1983 (http://gaming.wikia.com/wiki/Bokosuka_Wars), whilst Angry Birds is an adaption of Crush The Castle (https://en.wikipedia.org/wiki/Crush_the_Castle).

[5]Rovio Entertainment is a Finnish entertainment company that develops, publish and distributes Video Games. It is mostly focused on the casual Video Games market for mobile smart phones (http://www.rovio.com).

[6]The complete info-graphic and statistics about the playing rate of Angry Birds is available on the Web site of Atym (https://aytm.com/blog/research-junction/angry-birds-

Figure 8.1: A screen-shoot of the famous first world of Super Mario Bros. Extracted by *Vintage games: An insider look at the history of Grand Theft Auto, Super Mario, and the most influential games of all time*, p. 271

hours of daily playing, meaning around three-hundred-eighty years of playing every day.

World of Warcraft is a *Massive Multiplayer Online Role-Playing Game*[7] [263], created by the Blizzard Entertainment[8] and released in 2004. In 2011, the Video Games scholar Jane McGonigal found that the total number of hours played to World Of Warcraft until 2011 was around six millions years, that is more than the time Human Beings have spent to evolve from humanoid

---

addiction/).

[7]Massive Multiplayer Online Role-Playing Game are a combination if MMOGs, that I have defined previously in the definition 14, and role playing games. MMORGs are widely studied in literature due to their beneficial effects on learning [261], and of the interesting social dynamics that arise in the world of the game [262].

[8]Blizzard Entertainment (http://www.blizzard.com/) is a Californian Video Games developers and distributor that have developed some of the most famous strategy games series in the history of Video Games, including the StarCraft series that is one of the best Real Time Shooters Video Games ever [264, p. 47].

Figure 8.2: The number of minutes played to Angry Birds every day. Courtesy of Aytm (https://aytm.com/blog/research-junction/angry-birds-addiction/)
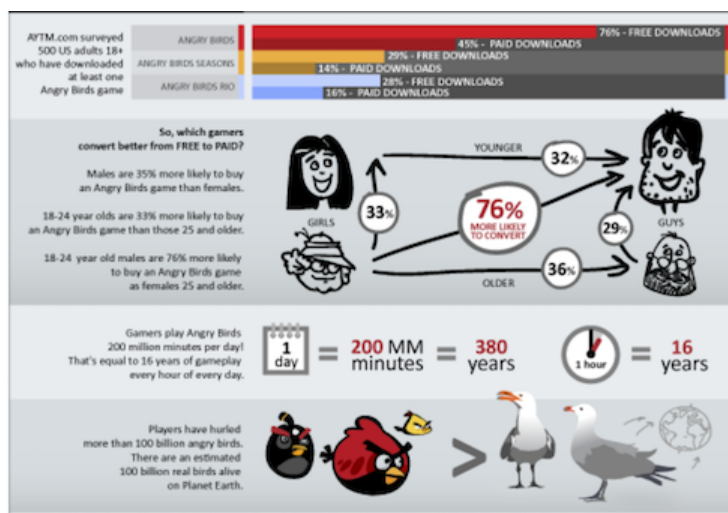
to humans[9]. Another interesting fact found by McGonigal is that in 2011, all over the world, people have spent around three billion hours to play online Video Games every week [221, chapter 2]], and the number of Video Games players is increasing every year, with them not being a media used only by teenagers anymore. As showed in figure 8.3, in 2017 the Entertainment Software Association[10] found that sixty-seven percent of all households own a device to play Video Games, the average age of players is thirty-five years, and fifty-three percent of them mostly play MMOGs [265, p. 4].

One of the research questions of this work is to understand if all the time spent to play Video Games can in some way be exploited to improve the Civic Engagement of Citizens. Although Video Games are proved to be very effective to improve Civic Engagement of both teenagers and older people, it seems that when players exit the *Magic Circle* of games they lose their motivations to remain active in civic activities [266] [267] [268] [269]

---

[9]For more information take a loot to the interview to Jane McGonigal on Youtube (https://www.youtube.com/watch?v=IiE2czrG0MI).

[10]The Entertainment Software Association is an association of developers, publishers and distributors of software for engagement (http://www.theesa.com).

Figure 8.3: Facts about the Video Games market in 2017 extracted by the annual report of the Entertainment Software Association
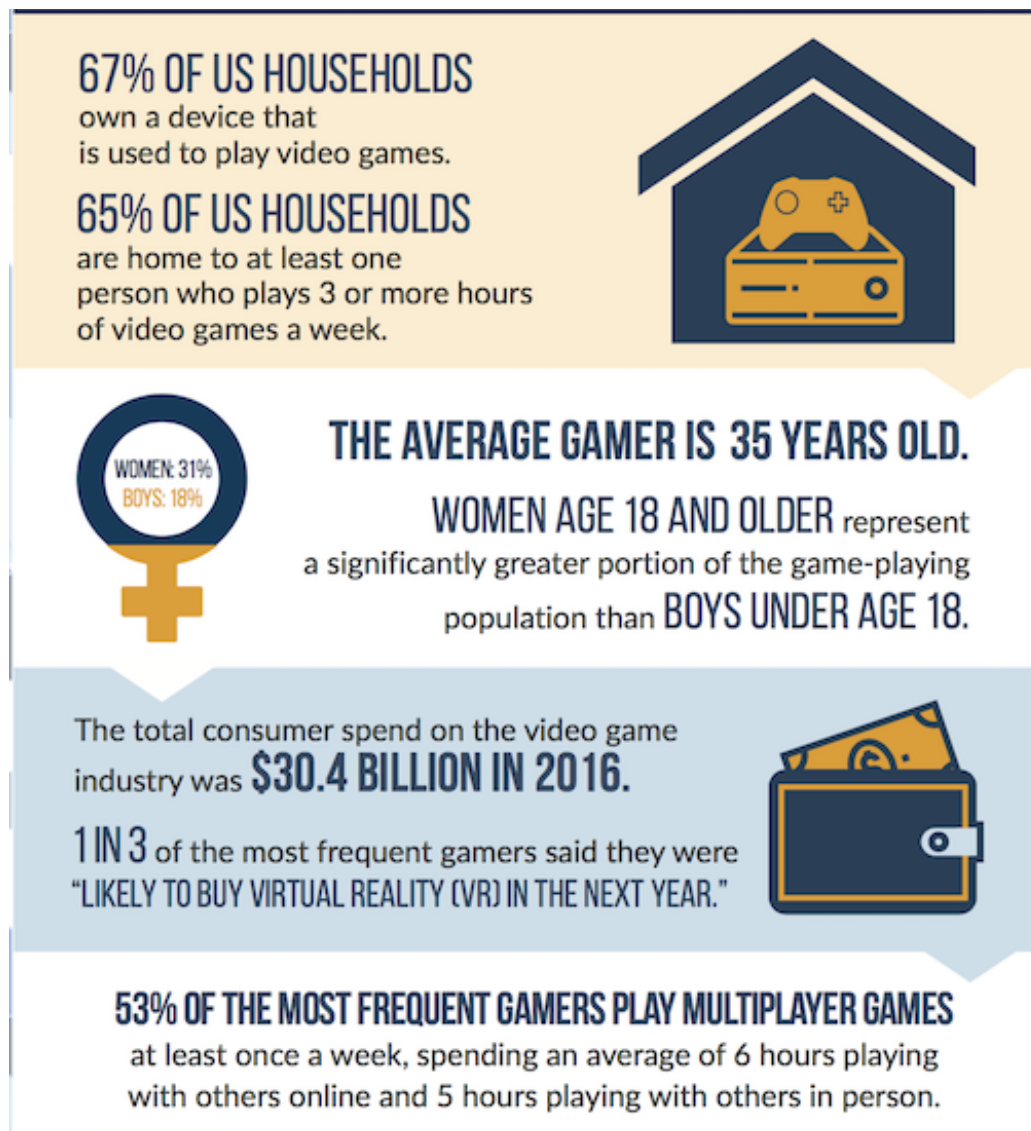
[270] [271]. The same studies also expose that Citizens have difficulties to apply what they have learned in the Game worlds to the real world and, thus, although Video Games are very effective to teach complex activities, the new skills acquired by players seem to not be spendable in the real world.

To try to address this issue, scholars of games have studied a special category called *Serious Games*. Serious games are created for a main purpose different from the mere entertainment, that usually is a teaching or training one [272] [273] [274]]. Serious games are used for training in various and diverse contexts. As a very limited set of examples, *EVACuation* is a Serious Game used to improve skills of hospitals' personnel in evacuation situations [275], the *Microsoft Flight Simulator* is a Video Game also used as a Serious Game to teach flight bases to inexperienced airline pilots [276], and FoldIt is a Serious Game used to teach how to fold proteins [277].

Although Serious Games are more oriented to the real life, they still have three issues. Firstly, they are still games, meaning that even if players are not completely in the Magic Circle, they are on the border of it. For this reason players could still have problem to apply what they learned in the game to the real world. Secondly, they are oriented to training, meaning that, when players finish to play, they must repeat into the real world what they have done in the game. Lastly, and most important, Serious Games are actually *complete games*, thus they must be designed from scratch and it is not possible to create a game on an existing process.

In Democracies and in deliberations contexts, Games, Video Games and Serious Games can surely be used for training purposes and can therefore be effective, for instance, to tech Citizens how to deliberate. However, as I have previously stated in this section, one of the purposes of this research is to investigate the possibility to integrate Games into Online Deliberative Systems, in order to create deliberations that are able to keep Citizens active and drive them to reach a Deliberative Consensus. In other words, the purpose of this research is to make deliberations engaging as games are, and not to design games that simulate Deliberative Systems.

Gamification may come in help to address this research question. Gamification is, in the software context, a brand-new branch of the *Human Computer Interaction* [278] introduced in literature by Sebastian Deterding et Al. in 2011. It is defined as follows [279]:

Definition 15 (Gamification by Sebastian Deterding et Al.). *The use of game design elements in non-game contexts.*

Although Gamification has several definitions in literature [280, p. XIV] [223, pp. 25-28] [211, Chapter 1], for the purposes of this research I will refer to the previous definition 15, due to its simplicity and flexibility. Indeed, definition 15 exposes very clearly what Gamification is, where to use it and, so, the application of game design techniques and the use of games elementsin contexts that are external to games. And this perfectly matches with Online Deliberative Systems.

Since its introduction in literature, gamification has found approvals and criticisms by scholars. On one hand, scholars argue that gamification is effective for improving users experience, and that it can be used in every context. A recent literature survey in 2015 exposes that, at that time, there were more than seven-hundred literature entries involving gamification studies in a variety of diverse contexts, like *education, online communities* and *social networks, health and wellness, crowdsourcing, sustainability, orientation, computer science and engineering, research, marketing,* and *computer-supported cooperative work* [281].

On the other hand critics of gamification, mostly scholars of Games and Video Games, argue that it is an over-simplification of games that relies only on points, badges and leader-boards, used in applications without any competence on games, or without any effective Game Design [281] [282] [283] [284] [285]]. Even worse, scholars argue that gamification is a mere attempt of business companies to "exploit" their employers and their customers, by giving them false incentives to work more than they have to do, or to buy things that they do not need [286] [287].

Although the criticisms on gamification are very reasonable, I argue that gamification can be effective, especially when used in delicate contexts like online Democracies and online Deliberative Systems. Indeed, since these contexts are very complex, it is unthinkable to create gamified applications that simply rely only on points, badges and leader-boards. Gamified tools for Online Deliberative Systems must rely on solid game designs, also involving rules already inherited by the Democratic traditions of Agencies or Institutions that supply Deliberative Systems, thus giving to deliberative processes solid games structures. Also, if the design of Online Deliberative Systems is based on legitimacy features of Deliberative Systems, and they are implemented to avoid issues related to biases of human beings, there can not be situation of exploitation of people involved in deliberations.

In the next sections of this chapter I expose the main concepts behind Gamification, and in the next chapter I expose how to use them to design a Gamified Online Deliberative System.

8.2 Concepts of Gamification

The classical game design identifies three principal elements in games: *mechanics*, *dynamics* and *aesthetics* [288]. Mechanics are the very basic elements of games, conceivable as the main gear wheels of a clock. For instance, the rules of the game, the numbers of players, the ways the players interact among each other are all mechanics. The dynamics describe how the game works when the mechanics are used by the players. Dynamics are not written rules but they are deducted by the players starting by the rules. For instance, trying to conquer Oceania when playing *Risk*[11], preferring to collect swamps rather than mountains when playing *Magic: The Gathering*[12], , or

---

[11]Risk is a strategy board game that involves players in diplomacy and conflicts (https://en.wikipedia.org/wiki/Risk_(game)).

[12]Magic: The Gathering is a card trading game that involves players to act the part of magicians. In 2015, Magic was stated to be one of the most famous games of the history, and it was stated to have around twenty millions

choosing to cast scissors rather than paper when playing rock-paper-scissors, are all examples of dynamics. The aesthetics are the ways through which games make sure that players have fun. Based on the mechanics used by the game and the dynamics activated by that game, certain emotions are induced into players, for instance *challenge* in *American Board-Games*, *collection* of resources in *European Board-Games*[13], and *fantasy* in *Role Playing Games*. Figure 8.4 shows a depiction of mechanics, dynamics, and aesthetics. Games designers must start the design of games by mechanics, whilst aesthetics are the first incentives for players to start a game.

Figure 8.4: The MDA framework in game design
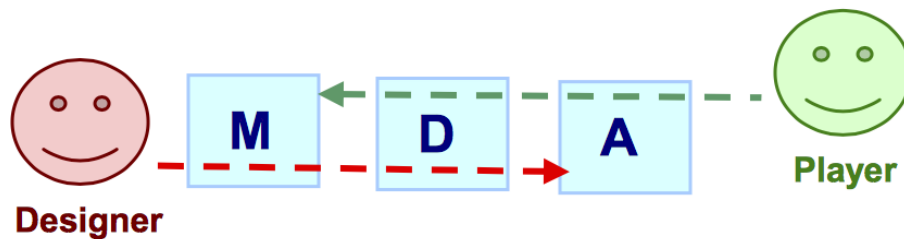
Starting from the MDA framework, scholars of gamification have theorized a set of key concepts that must be took in consideration when designing gamified systems. Kevin Werbach and Dan Hunter [223, p. 82]] proposed the set of concepts exposed in the following figure 8.5.

---

of players (https://www.theguardian.com/technology/2015/jul/10/magic-the-gathering-pop-culture-hit-where-next?CMP=fb_gu).

[13]American style board-games are mostly focused on conflicts among players whose outcomes are defined by rolling dices. In European style board-games players are mostly engaged in collecting resources and using them in the best way possible to win the match [289] [290].

Figure 8.5: The hierarchy of gamification concepts
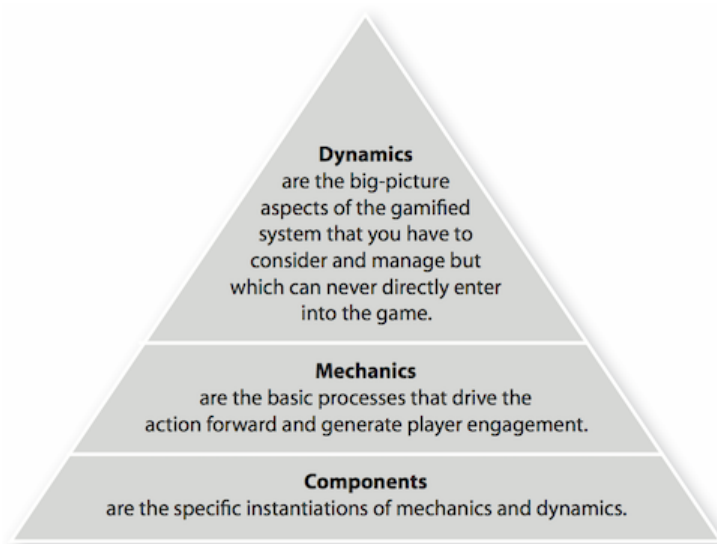
Dynamics is the most abstract level in a gamified system. It is the starting point of the design of gamified systems, and is related to the emotions that the system must activate in users such as, for instance, constraints like limitations or forced behavior, progression like sequential levels to improve users skills, or social connections aimed to altruism or to a sense of belonging. Mechanics is the process of gamified systems that keeps users active on systems or drive users to specific behaviors. Each mechanics activates one or more dynamics, for instance: *challenges* activate *progression* and *social interaction*, *cooperation* activates *social interaction*, and *rewards* activate the *curiosity and progression of users*. Components in gamified systems are the artefacts that can be used in order to create mechanics and to activate dynamics. Like mechanics in the classical game design, components in gamification are the very basic elements used to implement the gamified system. Examples of components are: *avatars*, *badges*, *points*, *leader-boards*, and *levels*. Figure 8.6, shows a complete list of dynamics, mechanics, components, and their relations in gamified systems.

Figure 8.6: List of mechanics, dynamics and components in gamified systems. Courtesy of StarOverSky.com (http://staroversky.com)
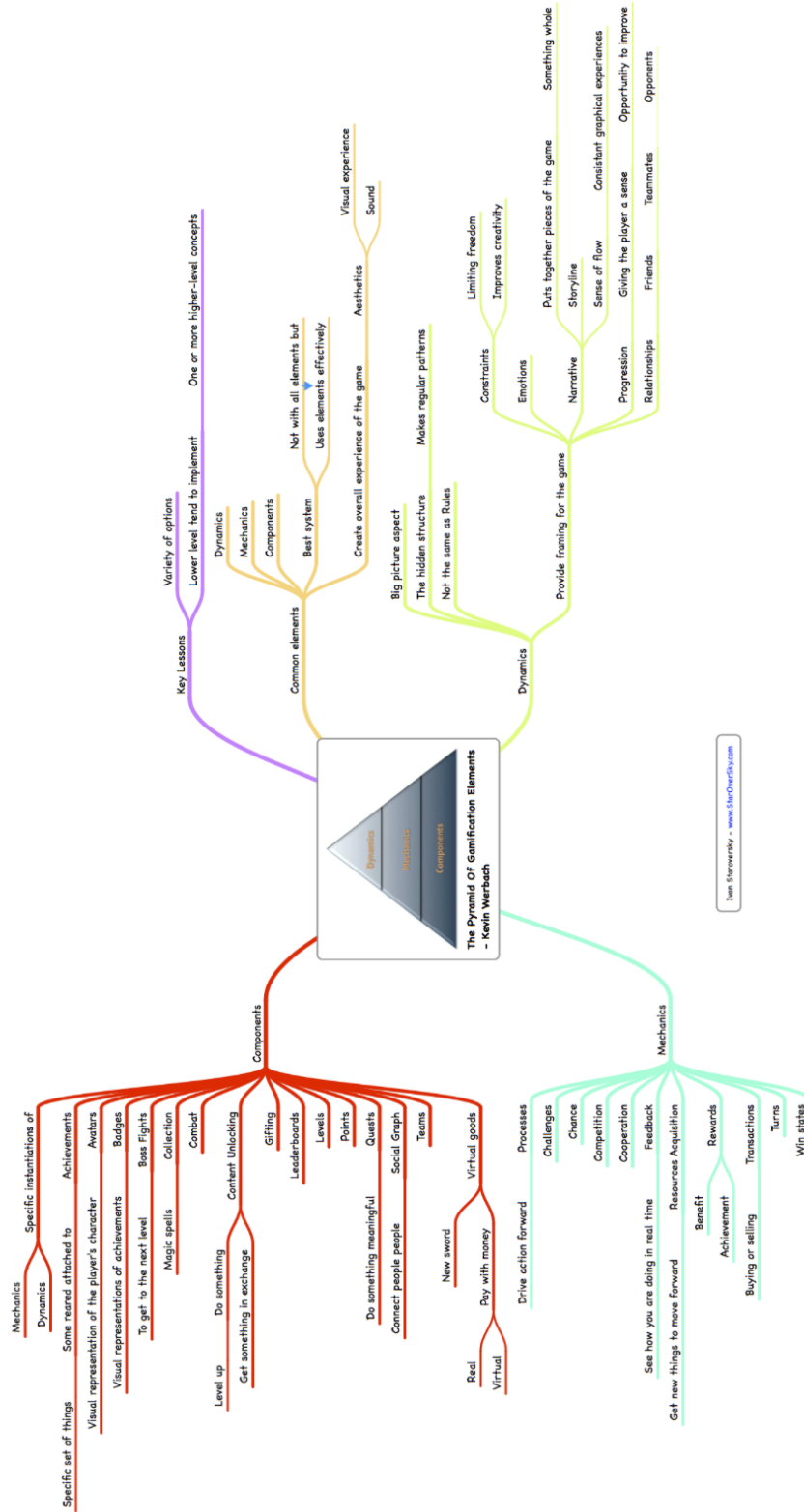
In order to connect gamified systems concepts and players that may be involved in them, Andrzej Marczewski theorized an expansion of the MDA framework [211]]. In Marczewski's view, there are seven concepts between systems and users in gamified contexts as depicted in figure 8.7. *Mechanics* are defined by designers and are the rules of gamified systems. *Schedules* define how and when changes in the system happen, like the transition of users to new levels. *Dynamics* are connections among users and mechanics, and are defined by designers. *Feedback* is the way in which gamified systems shows users their results or achievements. *Tokens* are the virtual items supplied to users to show their achievements. In other words, while feedback represents the "concept" of notifications that must be given to users, tokens are the actual "implementation" of feedback. *Interactions* are physical connections among users and gamified systems, like gestures to act on mobile applications. *Aesthetics* are emotions that users feel when they interact with gamified systems.

Figure 8.7: Concepts of gamification between systems and users
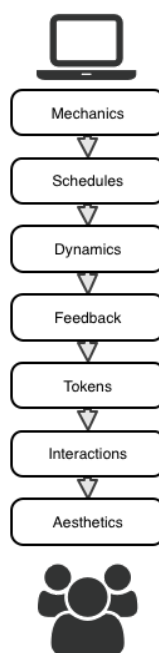
In gamified systems, in the same way as games, there are different kind

of players that the system should satisfy by means of a wise implementation of all the above concepts. In the next section, I expose the main types of players.

8.3 Players and Motivations in Gamification

Scholars of traditional game design have identified four typologies of players [291]. The first type are the achievers, who spend most of their time by collecting points and trophies. The second type are the explorers, who prefer to explore the system and the world of the game. The third type are the killers, who have fun when interfere with the experience of other users. The fourth and last type are the socialisers, whose main purpose is to create links with other players by interacting with them in various ways. As shown in figure 8.8, to motivate Achievers games must supply them a variety of actions to act on the world of the game, while Explorers are satisfied by allowing them to interact with the world of the game. On the other side of the graph in figure 8.8 there are Killers and Socialisers, who are motivated by supplying them, respectively, mechanisms to act on other players and to interact with other players.

Figure 8.8: Types of players in classical game design
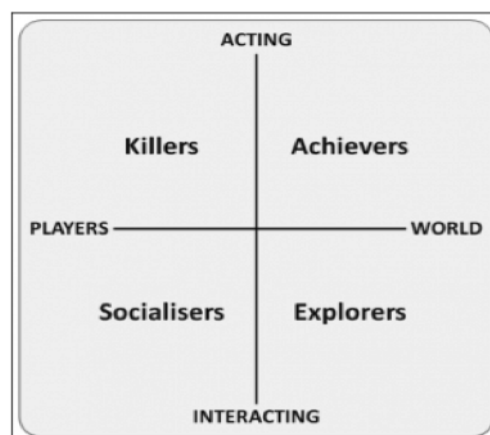
Although the four types of players exposed by Bartle are a good abstraction of the possible categories of players that good games must satisfy, the literature on types of players in games is very wide. Juho Hamari and Janne Tuunanen, in their work [292] provide a synthesis of them, summarized in figure 8.9.

Figure 8.9: A synthesis of literature on types of players. Courtesy of Hamari and Tuunanen (http://todigra.org)

Author(s)	Year	Basis	Methods	Presented player types	Games in the study
Whang Chang	2004	Psychographic	Quantitative – factor analyses	Single-oriented player, Community-oriented player, Off-real world player	Lineage (MMO)
Tseng	2010	Psychographic	Quantitative – factor analyses	Aggressive gamer, Social gamer, Inactive gamer	Online games in general
Yee	2006, 2007, 2012	Psychographic	Quantitative – factor analyses	Achievement, Social, Immersion (+subconstructs)	EverQuest, Dark Age of Camelot, Ultima Online, and Star Wars Galaxies (MMOs)
Zackariasson et al.	2010	Psychographic	Conceptual-analytical	Progress & provocation, Power & domination, Helping & support, Friends & collaboration, Exploration & fantasy, Story & escapism	World of Warcraft (MMO)
Stewart	2011	Behavioral Psychographic	Conceptual-analytical	Guardian/Achiever, Rational/Explorer, Idealist/Socialiser, Artisan/Killer, Conqueror, Wanderer, Manager, Participant, Hardcore, Casual	The same ones as in the previous studies that it combines
Bartle	1996	Behavioral	Qualitative observations & Conceptual-analytical	Achiever, Explorer, Socialiser, Killer	MUDs
Lazzaro	2004	Behavioral	Conceptual-analytical	Easy fun, Hard fun, Altered states, The people factor	Non-exclusive
Drachen et al.	2009	Behavioral	Quantitative - clustering of gameplay data	Veteran, Solver, Pacifist, Runner	Tomb Raider: Underworld
Ip Jacobs	2005	Behavioral	Quantitative – factor analyses	Hardcore gamer, Casual gamer	Non-exclusive
Kallio et al.	2011	Behavioral	Triangulation of quantitative and qualitative data	Social mentalities, Casual mentalities, Committed mentalitie:	Non-exclusive
Hamari Lehdonvirta	2010	Behavioral	Conceptual-analytical combination of qualitative observations and marketing theory	For example character levels and classes	EverQuest, Habbo, Puzzle Pirates, World of Warcraft... (Online games)
Williams et al.	2006	In-game demographic	Triangulation of quantitative and qualitative data	Group centrality, Size of the guild, Type of server, Faction	World of Warcraft (MMO)

When moving from games to gamification, the types of users must be investigated from a different perspective. As I have stated in the previous section 8.1, Gamified systems revolve all around giving users motivations to

use systems that are not games, in order to keep them satisfied. To match users, intrinsic motivations and extrinsic motivations of human beings, that I have exposed in chapter 6, Marczewski exposes six types of players in gamified contexts [211, pp. 67-80], as showed in figure 8.10. The six type of players are: the *achievers*, the *disruptors*, the *free spirits*, the *philanthropists*, the *players*, and the *socializers*.

Figure 8.10: The hexad of players and motivations by Andrzej Marczewski

© Andrzej Marczewski 2016
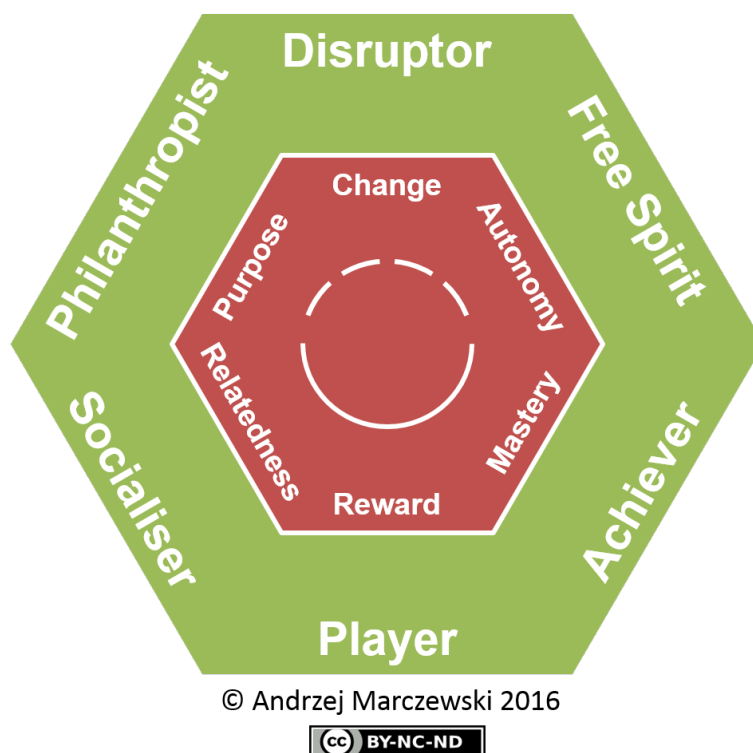
In 2016, a group of scholars asked to one hundred and thirty-three graduate and undergraduate students to fill a survey, in order to discover the specific components of gamification that can be used to motivate each type of players exposed by Marczewski [293]. The result was matched with the Big Five Personality Traits framework [294], and the scholars found that four of the six types of players, the achievers, free spirits, philanthropists and socialisers, are mostly moved by intrinsic motivations, whilst disruptors and players are mostly moved by extrinsic motivations (table 6.1 and figure

8.11).

Figure 8.11: Gamified Components, mechanics and dynamics for each type of player. Courtesy of the HCI Games Group (https://medium.com/@hcigamesgroup/the-gamification-user-types-hexad-scale-a6d8727d201e)
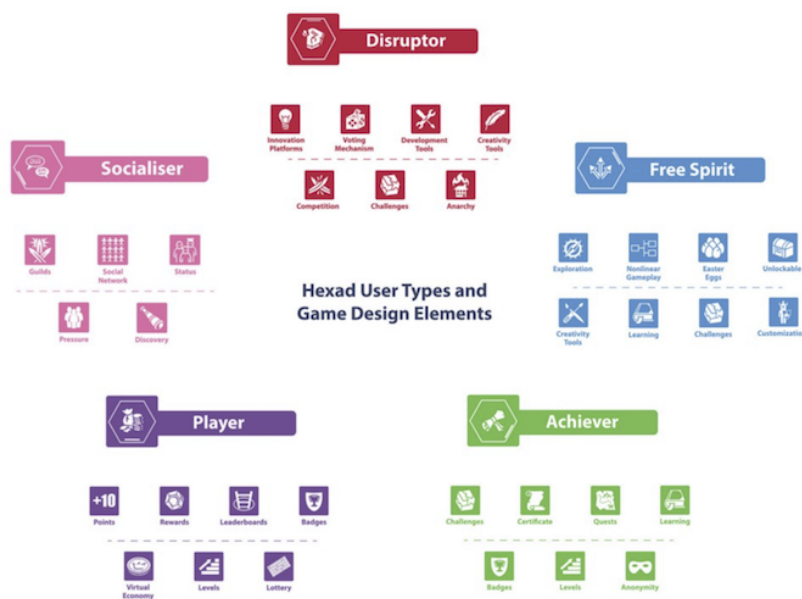
By using the proper dynamics, mechanics and components, gamified systems can drive different types of individuals in improving their capacity within the context for which the gamified system is developed, as I expose in the next section 8.4.

8.4   Self Improvement and Gamified Systems

In the previous section 8.3, I have shown that there are a variety of components, dynamics and mechanics that can be used to nurture the motivation of different types of players, in order to keep them active in gamified systems. Although the range of concepts on which gamification relies is very wide, there are two frameworks that must be used when starting the design of gamified systems.

Table 8.1: Gamified Components, mechanics and dynamics for each type of player

User Type	Gamification Components, Mechanics and Dynamics
Philanthropist	Collection and Trading Gifting Knowledge Sharing Administrative Roles
Socialiser	Guilds or Teams Social Networks Social Comparision Social Competition Social Discovery
Free Spirit	Exploratory Tasks Nonlinear Gameplay Easter Eggs Unlockable Content Learning Anonymity Anarchic Gameplay Customization Challenges Creativity Tools
Achiever	Challenges Certificates Quests Anonymity Learning Badges Levels Progression
Disruptor	Innovation Platforms Voting Mechanisms Development Tools Creativity Tools Social Competition Anarchic Gameplay Challenges
Player	Points Rewards or prizes Leaderboards Badges Virtual Economy Levels Progression Collection Trading Social Comparision Social Competition Social Discovery Anonymity Challenges Certificates Quests

Figure 8.12: The SAPS framework
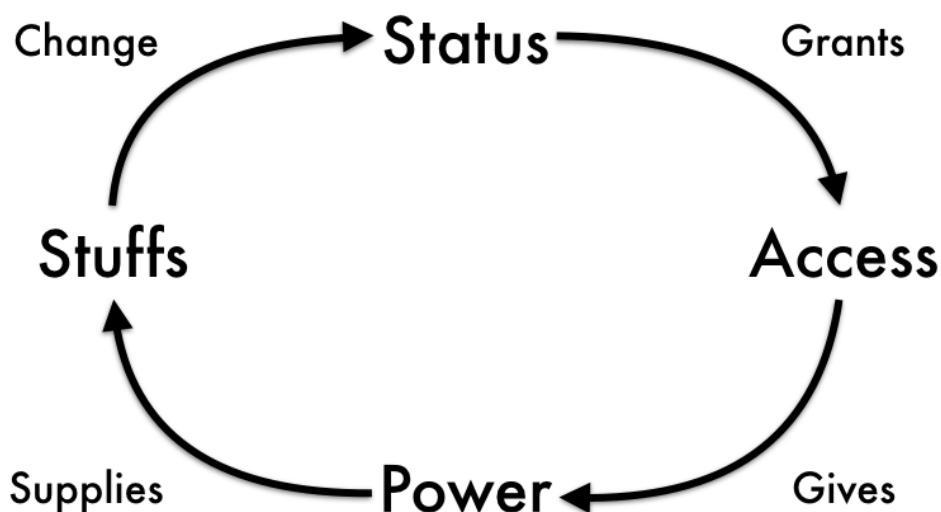
The first framework is the *Status*, *Access*, *Power* and *Stuffs* framework (SAPS) [280, p. 10]. All these aspects are related to the intrinsic motivations of individuals. More specifically, the status is about relatedness, and it is the position of individuals in relation to others. Human beings compare their status with the status of other human beings in order to understand their position in the Society, since specific statuses give access to specific positions in the Society. According to their position, individuals can have the power to control parts of the society, or to acquire stuffs. Eventually, human beings can use their stuff to try to conquer new and better statuses in the Society.

A good strategy, when designing gamified systems, is to keep players active in a kind of cycle (Figure 8.12)) to improve their status, by acquiring access to positions that give them power to gain new stuffs. In other words, gamified systems must implement mechanics, dynamics and components to create a positive flow in their users, that is defined as: "*The mental state of operating in which a person in an activity is fully immersed in the feeling of energized focus, full involvement and the success in the process of the*

Figure   8.13:   Gamified   Components,   mechanics   and   dy-
namics   for   each   type   of   player.   Courtesy   of   Gamasutra
(hhttp://www.gamasutra.com/view/feature/168230/gamification_dynamics_flow_and_art.php)
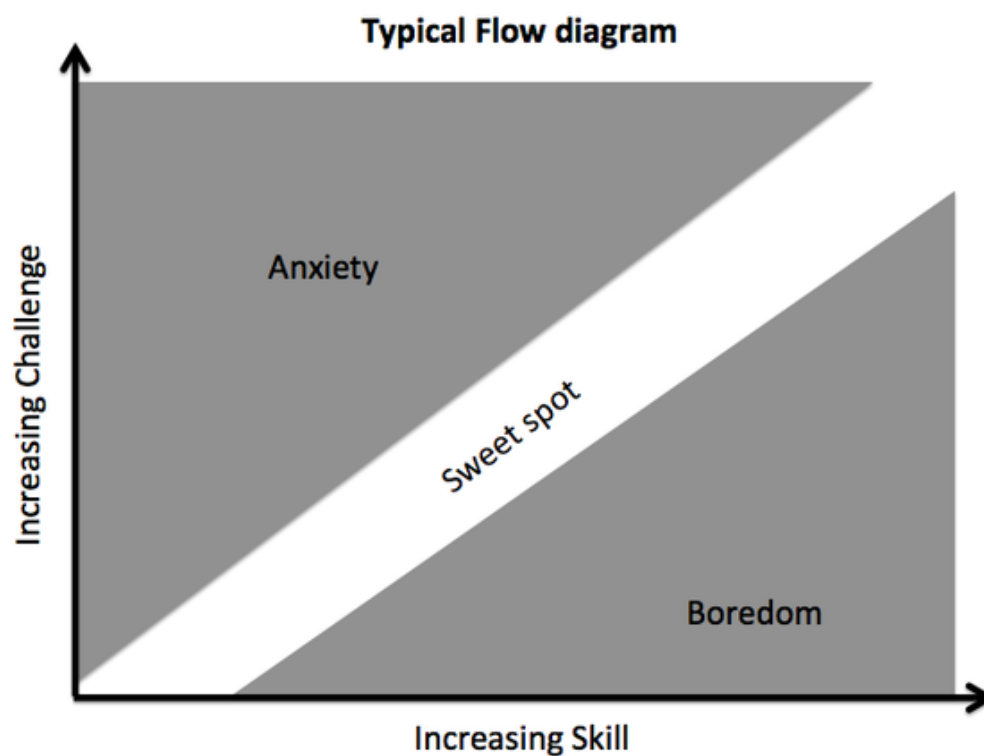
activity" [295]. When users of systems are in the flow, they are proved to be
more productive and more predisposed to learn and improve their capacities
[296] [297]. However, as exposed in figure 8.13, in order to create the flow
status and, so, productive activity loops, gamified systems must be designed
to balance the difficulties of the challenges that they give to users with their
actual capacity [211, pp. 135-142].

For the sake of balancing between challenges and skills of players, gamified
systems must implement proper progression mechanisms to master all the
gamified tools that they offer. On one hand the user progress must not be
linear, to not cause in them frustration or anxiety. On the other hand it
must not be too simple, to not bore users. In the first steps the system must

Figure 8.14: The progression to mastery in gamified systems
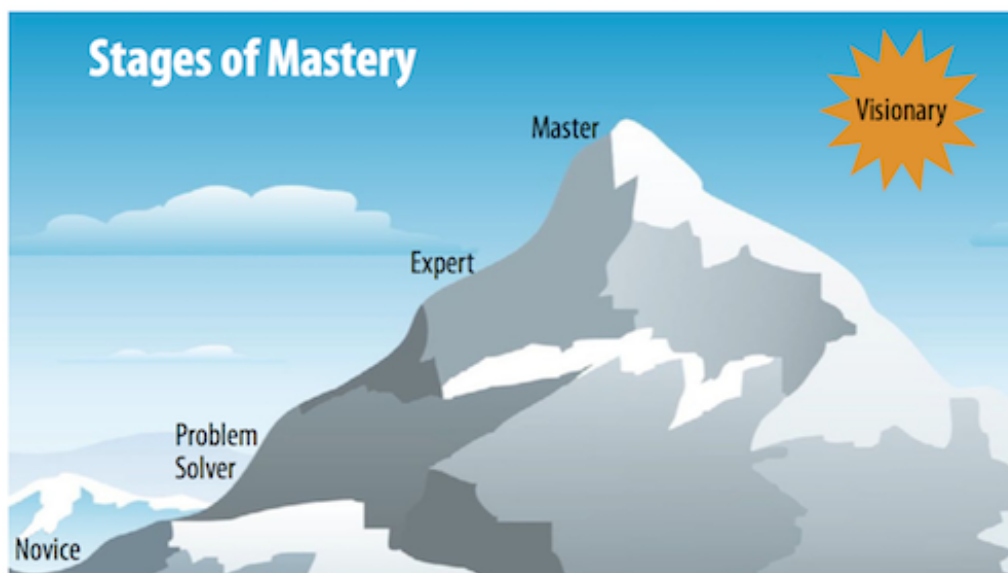
be simple to learn and, as soon as users progress, must supply to them new contingencies, options and challenges. This process is called the *progression to mastery* [280, p. 30], as showed in Figure 8.14.

In order to welcome players in the first steps of their progression to mastery, gamified systems must implement *on-boarding mechanisms* [223, p. 97] [280, p. 61], that are processes to orient new users to the system [281]. Thus, the very first interactions allowed to users must be intended to teach them the functioning of the system, and in this step users must be allowed to not do mistakes that could irreparably damage their experience. As soon as users learn the basic features of the system, they must be supplied with new options, and the system must explain to users the functioning of them. This process of adding new features step by step is called *scaffolding*, and it is proved to be effective to both teach complex activities [283] [298]] and engage users in remaining active into systems [295]. Figures 8.15 and 8.16 show, respectively, the on-boarding system and the scaffolding system of Plants Vs.

Figure 8.15: The on-boarding system of Plants Vs. Zombies

Zombies[14].

On-boarding and scaffolding systems, especially in systems aimed to communication and discussion like online Deliberative Systems, in some situations could have the opposite effect and, so, contribute to drive users to abandon the system in the very first moments they approach it. This can happen because on-boarding and scaffolding systems are usually designed as layers on the top of systems and not as integrated parts of them, and this causes too much friction. Also, and most important, on-boarding and scaffolding systems are usually not based on the behavior of users, but they are designed in generic ways that try to accommodate all new users. A good on-boarding and scaffolding strategy in systems aimed to communications can be the so called Batman on-boarding *Batman on-boarding*[15]. With *Batman on-boarding* and scaffolding methodologies, it is possible to teach users the

---

[14]Plants vs. Zombies is a series of tower defense games developed by PopCap Games (http://plantsvszombies.wikia.com/wiki/Plants_vs._Zombies).

[15]The full article on the Batman on-boarding is publicly available for reading on the Medium Web Page of Jan König (https://medium.com/welcome-aboard/batman-onboarding-999d19f0cab9).

Figure 8.16: The scaffolding system of Plants Vs. Zombies
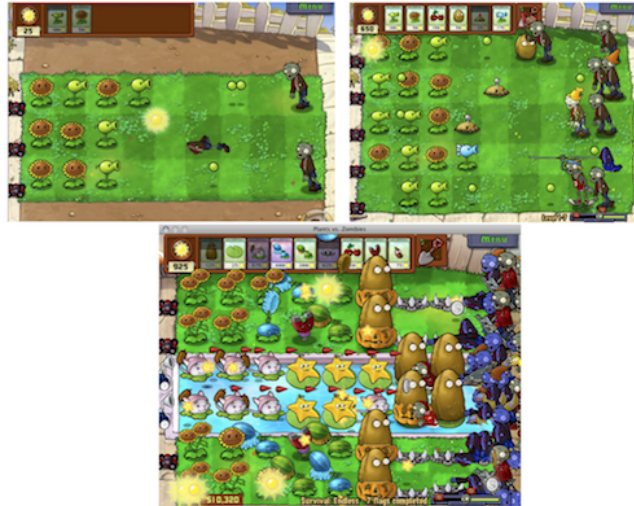
Figure 8.17: The Batman On-boarding System in Slack. Extracted by the Medium Web Page of Jan König (https://medium.com/welcome-aboard/batman-onboarding-999d19f0cab9)
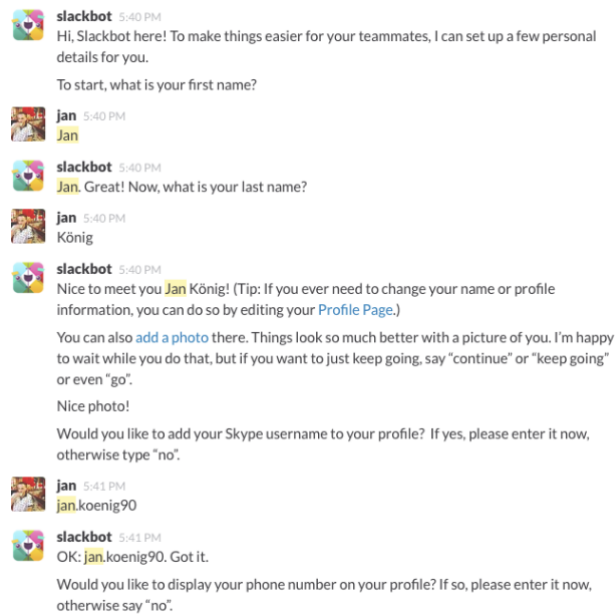
basic features of systems, as well as the new features added step by step, by means of non-intrusive and non-blocking interactive graphical widgets, for instance by means of chat robots. Figure 8.17 shows an example of Batman on-boarding system in the Slack Chat application.

As I have exposed in the previous section 8.3, when users are involved in their process toward the mastery of gamified systems, their motivation must be nurtured by proper dynamics, mechanics and components according to the type of players they belong to, and to specific purposes of gamified systems. While progressing, users must always have feedback on the results of their actions in the system. The *points/badges/leader-boards* framework, that I expose in the next section 8.5, supplies the very first set of components to give feedback to users on their actions.

8.5 Points, Badges and Leader-boards in Gamification

The *Points/Badges/Leader-boards* (PBL) triad is the most used set of components to reward users of gamified systems, and give them feedback on the results of their interactions with gamified systems [223, p. 70-86] [280, pp. 36-50], [211, pp. 81-98].

Points are the most common, and the simplest, form of reward and can be used for a variety of purposes, such as display the score of players, or determine the victory or defeat of players. In gamified systems players can earn different types of points according to their engagement in the system and to the ways they interact with it [299]]. Scholars of gamification expose five different types of points: *Experience Points*, *Redeemable Points*, *Skill Points*, *Karma Points* and *Reputation Points* [280, pp. 38-39].

Experience Points (usually called XP) represent the experience level of the user in the system. In gamified systems, in addition to being efficient rewards, Experience Points are useful to give a prompt feedback in response to each action of the user. Redeemable points are used in a lot of situations,

for instance as virtual coins in virtual economies, or to foster interactions among users. Redeemable points can also be used to buy objects useful to the game or in contexts external to the game. Karma points are used in systems that want to emphasize altruism. The system periodically creates a specific amount of karma points and dispatches them to the users according to well-defined algorithms. Usually, users have no advantage in receiving karma points but only in redistributing their karma points to the other users. Skill Points, together with the Experience Points, are the most common type of points used in role playing games, used to determine the level of a user in a specific skill. In a gamified system, skills points are useful when there is the need to give different roles and permissions to the users. Reputation points are used to create trusting systems. Like Karma Points, they are distributed by players to other players but, unlike Karma Points, they are infinite and the system does not assign to the user a specific amount of Reputation Points. However, they must be perceived by users as very precious resources and, so, gamified systems must teach users the correct ways to use reputation points.

Badges are used in gamification to show users specific and special achievements [280, pp. 55-59]. They are an effective way to display the progress of users toward mastery and are usually used together with level progression mechanisms [223, p. 74-76]. Levels are used to show users their overall progression inside the system, whilst badges are used to display the status of users in gamified experiences. Sometimes, badges can be used as a replacement of levels, but in most situations it is better to use both of them separately.

While points and badges are used to show the individual status of players, leader-boards are used to display relations of users based on their scores, levels and statuses. Leader-boards are defined in literature as [300]:

Definition 16 (Leader-Board). *A game element that displays the performances of players in comparison to other players. It lists the players in order of the points they have achieved in the game.*

Leader-boards are proved to be very effective to drive users to perform

Figure 8.18: The use of Points, Badges and Leader-boards in SalesForce (https://www.salesforce.com)

tasks [301] [302] and to foster social connections and collaboration [303]. Figures 8.18, 8.19, and 8.20 show the use of Points, Badges and Leader-boards in three well-known and successful gamified application, respectively *SalesForce*[16], *CodeCademy*[17], and *Samsung Nation*[18].

A very critical point when implementing gamified systems for online Democracies is the use of Leader-boards. Indeed, although it is possible to use different kinds of leader-boards in different systems to produce different effects in users [304]], such as *absolute*, *relative* and *non-competitive* leader-boards[211, pp. 88-91], there is a need to investigate proper leader-boards that do not harm the legitimacy of online Democracies by producing biases in users. Especially in ballots, Citizens could be driven to change their opinion not on the basis of rational reasoning, but simply because of

---

[16]SalesForce is a gamified web application for Customer Relationships Management (https://www.salesforce.com).

[17]CodeCademy is a gamified web application aimed to teach software development to novices of computer science (https://www.codecademy.com).

[18]Samsung Nation is a web application for the community of users of Samsung's products (https://www.samsung.com).

Figure 8.19:　The use of Points, Badges and Leader-boards in CodeCademy (https://www.codecademy.com)
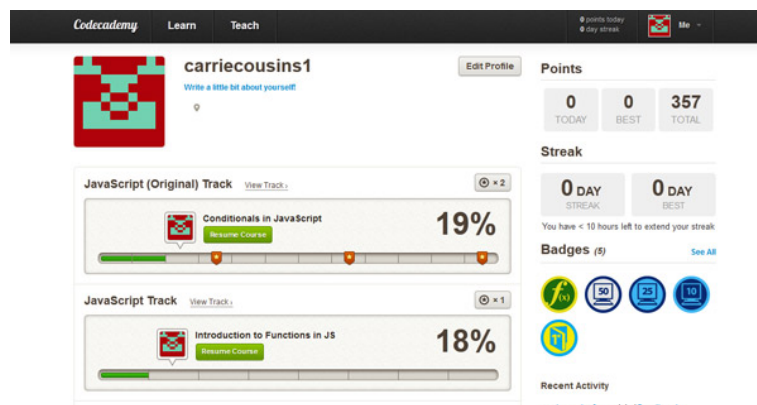
Figure 8.20:　The use of Points, Badges and Leader-boards in Samsung Nation (https://www.samsung.com)
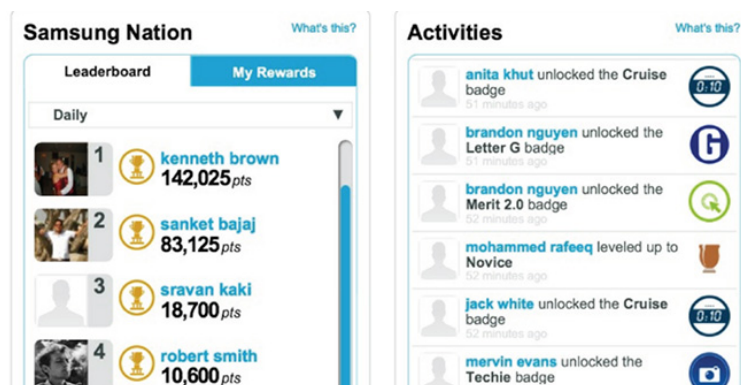
the "power of leader-boards". For instance, the rational reasoning of voters can be distorted by means of a Bandwagon Effect (hereinafter BE) [305], so people may choose to vote for an option not because they like it, but simply because the majority of people has already voted for it. Also, due to the Goal Gradient Hypothesis (hereinafter GGH), people can modify their preferences when they see that an argument is likely to win the ballot [306].

In the next section 8.6, I define a type of leader-board that can be used in online ballots and, so, in online Democracies and Deliberative Systems, and I show how leader-boards and some of the other gamified components that I have exposed in this chapter can be used in the design and implementation of online ballots.

8.6   Using Leader-Boards in Online Ballots

In this section, I expose a gamified software for managing the ballot for the Symbol Of The Year, that I have designed and implemented at the Stanford University to investigate one of the research question of this research, and so, to investigate if gamified components may affect biases of human beings involved in online Democracies.

The Symbol Of The Year (hereinafter SOTY) ballot[19] has been held by the Symbolic Systems Program (hereinafter SYMSYS) [20] since 2012. Each year, alumnae/i, students and faculty of Stanford's SYMSYS vote for a SOTY and for Other Notable Symbol (hereafter ONS). In a first phase of the ballot, a set of eligible users are requested to propose their favorite symbols. They can specify if the symbol is proposed for SOTY or for ONS, and the category of the symbol. After this first phase, users are requested to vote symbols by selecting one of the four allowed votes: NN (Not Notable symbol), ABST (abstained), ONS (Other Notable Symbol) or SOTY (Symbol Of The

---

[19]See https://symsys.stanford.edu/SOTY for more information about the Symbol Of The Year ballot.

[20]See https://symsys.stanford.edu for more information about the Symbolic Systems Program.

Year). The algorithm to designate the SOTY and ONS is a variant of combined approval voting [307]. It allows for the expression of positive, negative and neutral sentiments on each nominated symbols, and on the distinction between the worthiness of nomination for a SOTY and for a ONS.

Until 2014, the ballot was managed by using a third party online software for surveys. For ballot of 2015, I have developed, in the context of my doctoral research, a dedicated software to manage the SOTY ballot[21], to investigate effects of the introduction of gamified components, random presentation order, and discussion components in the voting system, and to analyze the effects of displaying other users' votes and the number of voters before the ending of a ballot.

Ballots are already intrinsically structured as games. Indeed, they have games' and gamified components, like points (votes) and scores (the algorithms used to compute the ballots' winners), and game's mechanics, like the rules of ballot. Moreover, ballots can be defined as democratic only if they rely on two of the essential characteristics of games: voluntariness and voters' intrinsic motivation to participate [223, p. 41].

Voting systems based on Combined Approval Voting, like SOTY, add even more rules to ballots and so even more gamified elements. In SOTY, voters can change their preference at any time, and they can choose among four different types of vote to express negative, positive and neutral sentiments on each nominated symbol. Symbols themselves in SOTY can be seen as game's components because, even if they are the subjects of scores and points, they do not interact directly with the system, so they are not identifiable as players. Also, the deliberative election of the SOTY and ONS is designed to activate two games' dynamics. Firstly, because in the end only one symbol must be designated as SOTY, we want our voters to compete for the election of the SOTY. Secondly, we want them to cooperate to elect one of more ONS. The reason behind this second dynamic is that there is no need not to elect a symbol as ONS, if it is already near ONS' election threshold.

---

[21]The SOTY's ballot software is available at this address: http://soty.stanford.edu

In order to enact a gamified system for SOTY, two more things were needed. The first one, obviously, was to render the gamified components and mechanics in a more gameful way. This means making users feel the system as a gamified one, and presenting the online voting system through a graphical and modern web-styled user interface. The second one was to find a gamified component to display the scores of the symbols, while the SOTY ballot is running. The most suitable gamified component for this purpose is a leader-board, as I have exposed in the previous section 8.5.

By starting from the above definition of leader-boards that I have exposed in the previous section 8.5, it is possible to define a new kind of leader-board more suitable for ballots that rely on combined approval voting. The motivations on behalf of the definition of a new leader-board is that players in ballot do not directly achieve points. As I have stated before, symbols can not be considered as players, and the actual players (the voters) are requested to choose the symbols they want to support; this means that they are requested to assign points to the symbols. The name of the new kind of leaderboard is *sticked leader-board* and it is defined as the following:

Definition 17 (Sticked Leader-Board). *A sticked leaderboard is a randomly-sorted visual representation of score-related relationships among the participants in competitive or collaborative processes.*

The Figure 8.21 shows a fragment of the sticked leader-board used in the SOTY online ballot.

In order to give SOTY voters a proper feedback about rules and deadlines of the on-going ballot, and the perception of the number of other players, two other gamified components were used. The first one, is a reminder of the ballot's deadlines and a display of participants, updated in real-time. These were positioned at the top of those pages where users could perform vote-related actions. The last gamified element involved is a set of alerts that was sent to voters by email in specific time points of the ballot.

Eventually, the following is the list of the gamified elements on which our experiment on online SOTY ballot relies:
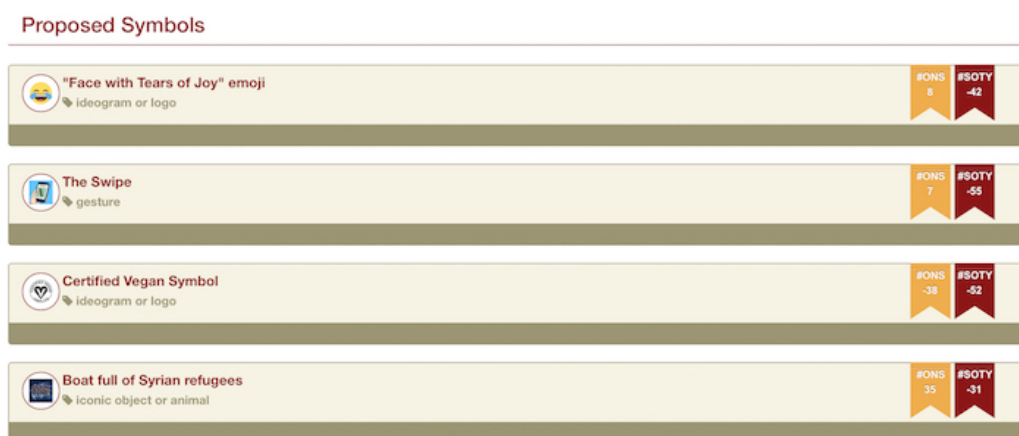
Figure 8.21: Example of sticked leader-board.

Gamified components : symbols, vote types, points, scores, sticked leader-
  board, deadlines reminders, display of voters and email reminders;

Gamified mechanics : specific rules for voting;

Gamified dynamics : competition for election of SOTY, collaboration for
  election of ONS.

The whole ballot process started on December 18th, 2015 and ended
on January 1st, 2016. The ballot was not public and voters and nominators
were selected from a list of eligible users, supplied by SYMSYS center. Voters
were divided into two categories; one category was allowed to deliberate on
nominations and the ballot, the other was only able to cast its vote without
seeing, nor participating in the discussion. All users had the same user
interface with the exception of log-in page and, of course, with the exception
of the forum section. In the first stage of SOTY ballot, starting on December
18th, 2015 and ending on December 25th, 2015, users were asked to nominate
their preferred symbols. Users were allowed to specify a category for symbols
they have proposed and if they were competing for SOTY or ONS.

Even if users were allowed to indicate a specific ballot type (SOTY or
ONS), proposed symbols run for both the ballots. The proposers' name
and affiliation were showed only during the symbols nomination phase. The

Figure 8.22: The dedicated section of a symbol proposed for SOTY.
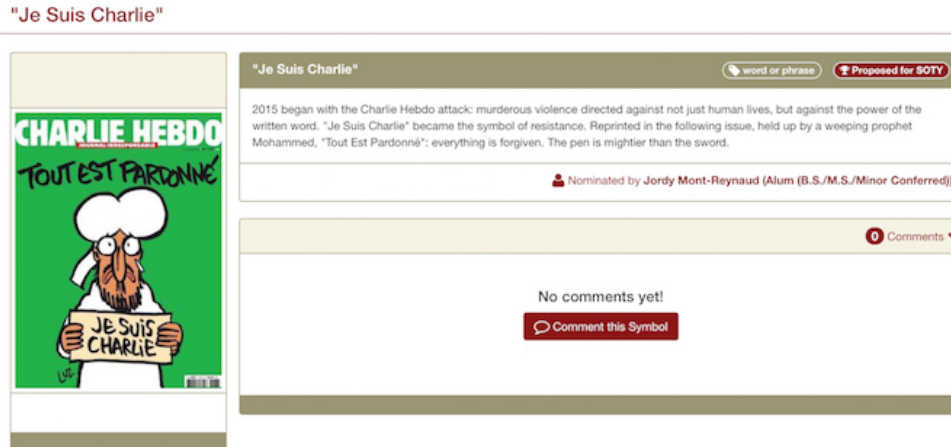
system computed for each user a random order for listing symbols. The sorting was recorded and it changed only if other symbols were proposed during the nomination phase. Figure 8.22 and 8.23 show, respectively, the section related to a specific proposed symbol, and a fragment of the page dedicated to the discussion on nominated symbols.

The actual ballot started on December 26th, 2015 and ended on January 1st, 2016. In this phase eligible users were asked to cast their votes on symbols. When this phase started, a first email was sent to users, in order to remind them that the ballot had started. Users could express neutral, positive and negative preference on each symbol. They were enabled to change their preference at any time and they could choose among four types of vote, NN (Non Notable), ABST (Abstained), ONS (Other Notable Symbol) and SOTY (Symbol Of The Year). Default votes of every user on every symbol were set up to be ABST until users cast their first vote. Users that were allowed to deliberate could choose to cast their vote without discussion, or after having replied to a comment in the discussion about the symbol they were going to vote. In this phase, the names of symbols' proposers were hidden and we activated another section in the discussion forum dedicated to the discussions on the voting phase. Figures 8.24 and 8.25 display the in-

Figure 8.23: The page dedicated to discussion on nominations.
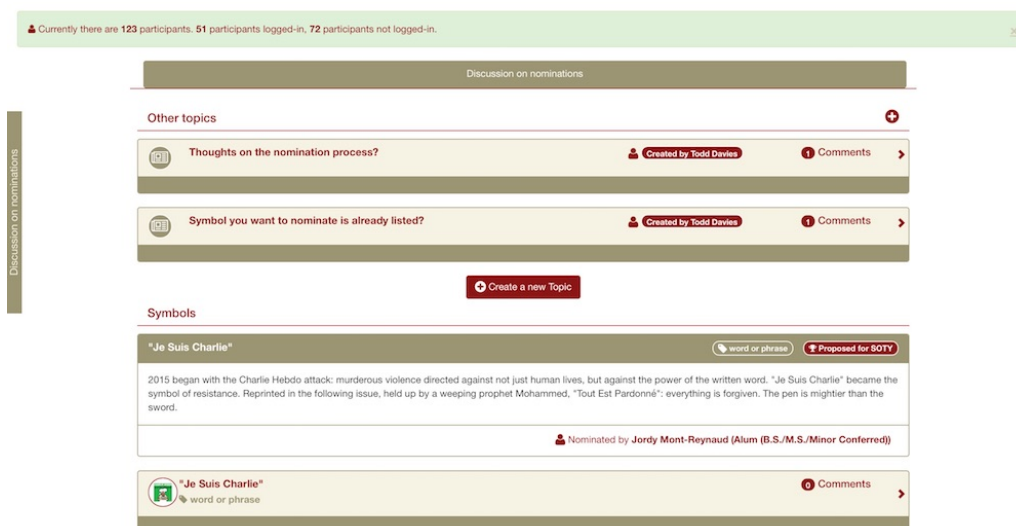
terface for voting symbols without and with deliberation. To improve overall usability inline manuals were added to each widget that users were allowed to interact with.

The leader-board was introduced after two days from the start of the ballot (on December 28th, 2015). It added visual feedback to the ONS and SOTY score in the index section of the proposed symbols' page. In the sections dedicated to each symbol, the leaderboard added visual feedback on amount of NN, ABST, ONS and SOTY votes. Figure 8.21 shows a fragment

Figure 8.24: The interface for voting symbols without discussion.
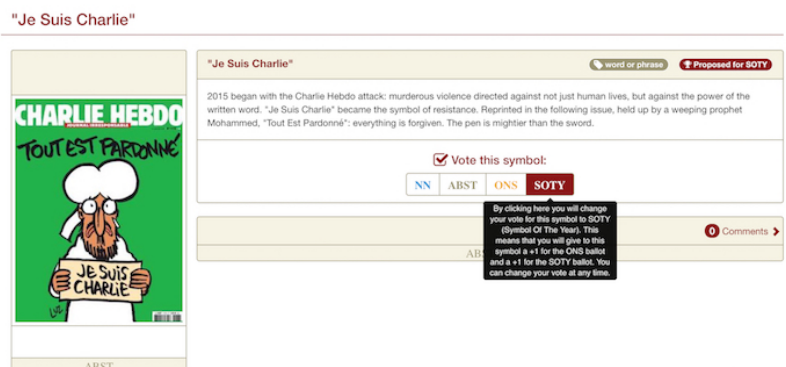
Figure 8.25: The interface for voting symbols after deliberation.
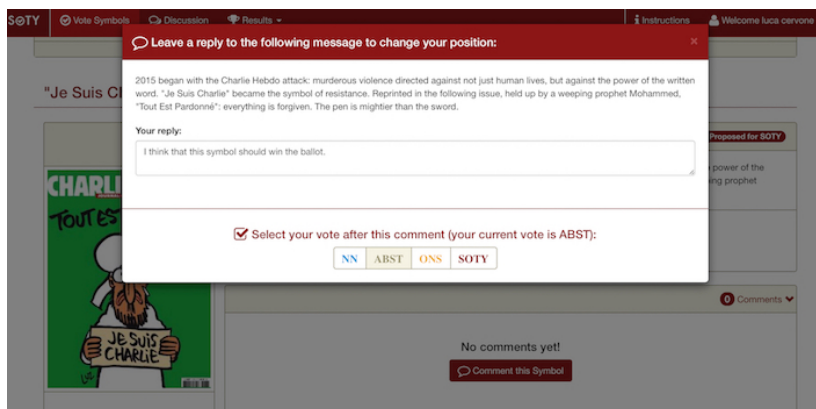
Figure 8.26: A symbol proposed for soty after the introduction of the leaderboard.
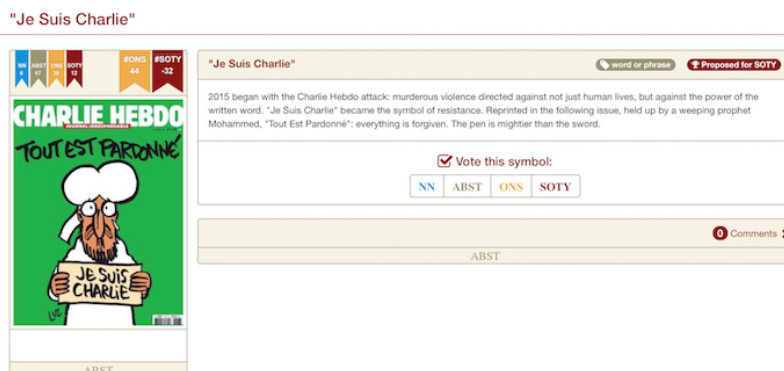
of the leaderboard in the index section. Figure 8.26 shows a symbol proposed for SOTY after the introduction of the leaderboard.

Three alerts were sent by email during the ballot. The first one was sent right after the ballot opened, and its aim was to make voters aware that the ballot had started. The second one was sent on December 28th, 2015, right after the leader-board was introduced, to alert the users of this change. The third one was sent on December 30th, 2015, and its aim was to remind the users that the leaderboard was introduced and that the ballot was going to end in two days.

The system was developed in order to be updated in real-time. To avoid any bias related to devices and usability, and so to give to ballot some of

Figure 8.27: The timeline of total amount of votes in the SOTY ballot.
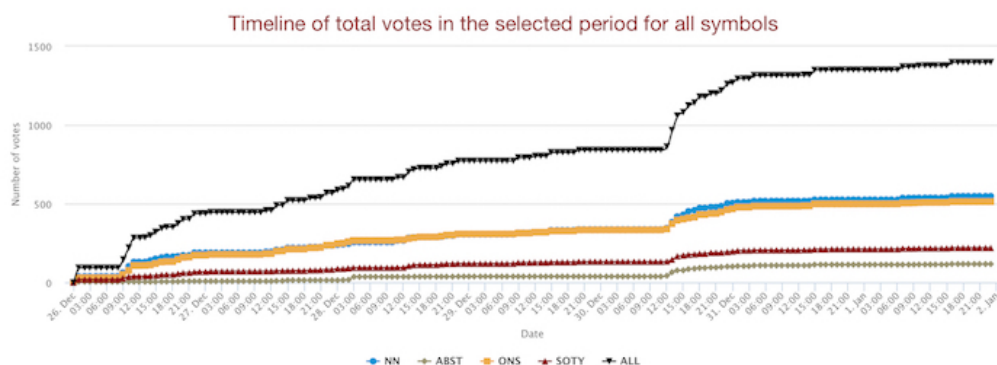
the legitimacy features that I have exposed in the chapter 5, the system was developed by means of responsive design, that I have exposed in section 6.1.

The final users' set was composed of 124 users, 73 of them without access to deliberation and 51 of them with access to deliberation. 85 users cast at least one vote. Users proposed a total of 20 symbols, 12 of them were proposed for SOTY, 8 of them were proposed for ONS. The final winner for SOTY is the symbol depicting the flag of the Black Lives Matter Movement. 10 symbols were designated as ONS[22].

In order to analyze the behavior of the users before and after the introduction of the leader-board and the delivery of alerts, timeline of users' votes and a representation of votes in different periods of the ballot were produced. Figure 8.27 shows the timeline of total amount of votes, and the total amount of NN, ABST, ONS and SOTY that voters cast during the whole period of the ballot.

Figures 8.28 and 8.29 show, respectively, the amount of votes, for each type, that have been cast in every interval of four hours and in every day of the ballot. By considering only the explicit ABST votes, users cast a total amount of 1398 votes during the whole ballot. Tables 8.2 and 8.3 summarize the amount of votes for each interval of four hours and for each day of the ballot.

---

[22]The official page of results lists the symbols elected as ONS.

Table 8.2: The amount of votes for each interval of four hours in the SOTY ballot.

PERIOD	NN	ABST	ONS	SOTY	TOTAL
Dec 26, 9am-1pm	39	5	30	19	**93**
Dec 26, 1pm-5pm	0	0	0	0	**0**
Dec 26, 5pm-9pm	92	0	77	21	**190**
Dec 26, 9pm-1am	28	1	23	9	**61**
Dec 27, 1am-5pm	14	2	29	12	**57**
Dec 27, 5am-9pm	16	0	14	7	**37**
Dec 27, 9am-1pm	0	0	5	3	**8**
Dec 27, 1pm-5pm	0	0	0	0	**0**
Dec 27, 5pm-9pm	6	0	5	1	**12**
Dec 27, 9pm-1am	25	6	29	3	**63**
Dec 28, 1am-5am	5	0	8	3	**16**
Dec 28, 5am-9am	14	0	27	9	**50**
Dec 28, 9am-1pm	17	22	20	7	**66**
Dec 28, 1pm-5pm	0	0	0	0	**0**
Dec 28, 5pm-9pm	10	0	4	1	**15**
Dec 28, 9pm-1am	22	1	18	17	**58**
Dec 29, 1am-5am	10	0	12	7	**29**
Dec 29, 5am-9am	8	1	7	1	**17**
Dec 29, 9am-1pm	0	0	0	0	**0**
Dec 29, 1pm-5pm	0	0	0	0	**0**
Dec 29, 5pm-9pm	13	0	11	7	**31**
Dec 29, 9pm-1am	13	0	8	2	**23**
Dec 30, 1am-5am	5	0	7	3	**15**
Dec 30, 5am-9am	0	0	0	0	**0**
Dec 30, 9am-1pm	0	0	0	0	**0**
Dec 30, 1pm-5pm	0	0	0	0	**0**
Dec 30, 5pm-9pm	8	5	6	2	**21**
Dec 30, 9pm-1am	107	42	69	43	**261**
Dec 31, 1am-5am	27	10	29	12	**78**
Dec 31, 5am-9am	25	6	29	8	**68**
Dec 31, 9am-1pm	14	7	17	8	**46**
Dec 31, 1pm-5pm	0	0	0	0	**0**
Dec 31, 5pm-9pm	0	0	0	0	**0**
Dec 31, 9pm-1am	8	5	15	6	**34**
Jan 1, 1am-5am	0	0	0	1	**1**
Jan 1, 5am-9am	0	0	0	0	**0**
Jan 1, 9am-1pm	0	0	0	0	**0**
Jan 1, 1pm-5pm	11	0	5	4	**20**
Jan 1, 5pm-9am	1	1	4	1	**7**
Jan 1, 9pm-1am	10	3	5	3	**21**
Jan 2, 1am-5am	0	0	0	0	**0**
Jan 2, 5am-1am	0	0	0	0	**0**

Table 8.3: The amount of votes for each day in the SOTY ballot.

PERIOD	NN	ABST	ONS	SOTY	TOTAL
Dec 26, 9am - Dec 27, 9am	189	8	173	68	**438**
Dec 27, 9am - Dec 28, 9am	50	6	74	19	**149**
Dec 28, 9am - Dec 29, 9am	67	24	61	33	**185**
Dec 29, 9am - Dec 29, 9am	31	0	26	12	**69**
Dec 30, 9am - Dec 30, 9am	167	63	133	65	**428**
Dec 31, 9am - Jan 1, 9am	22	12	32	15	**81**
Jan 1, 9am - Jan 2, 9am	22	4	14	8	**48**
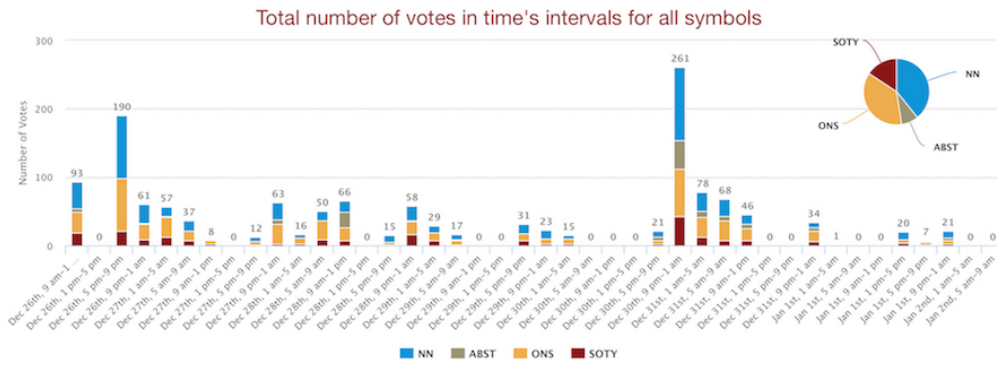
Figure 8.28: The amount of votes that were cast in each interval of four hours in the SOTY ballot.
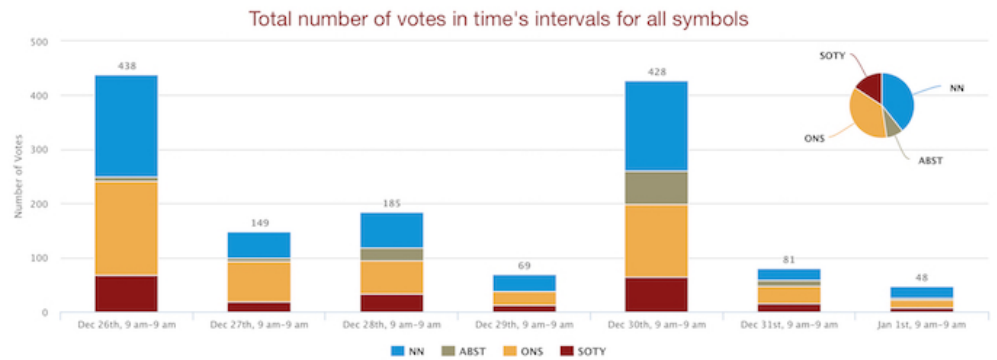
Figure 8.29: The amount of votes that were cast each day in the SOTY ballot.
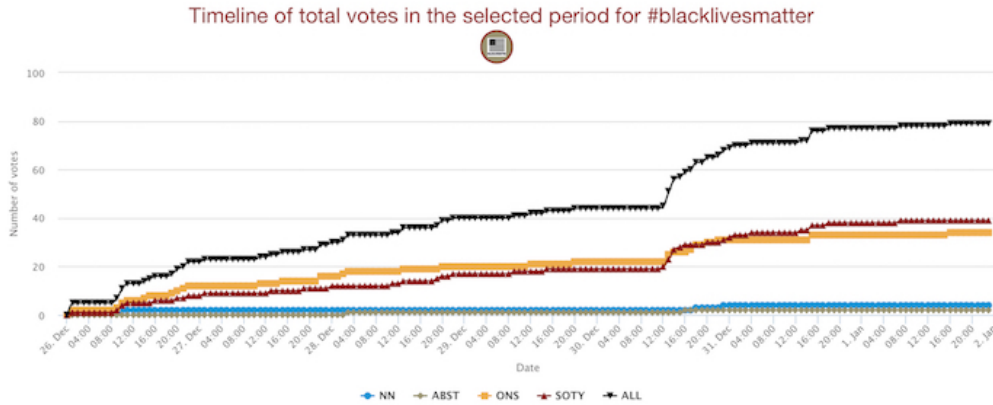
Figure 8.30: The timeline of votes for the winner of the SOTY ballot.

Figure 8.31: The timeline of votes for the first competitor of the winner of the SOTY ballot.
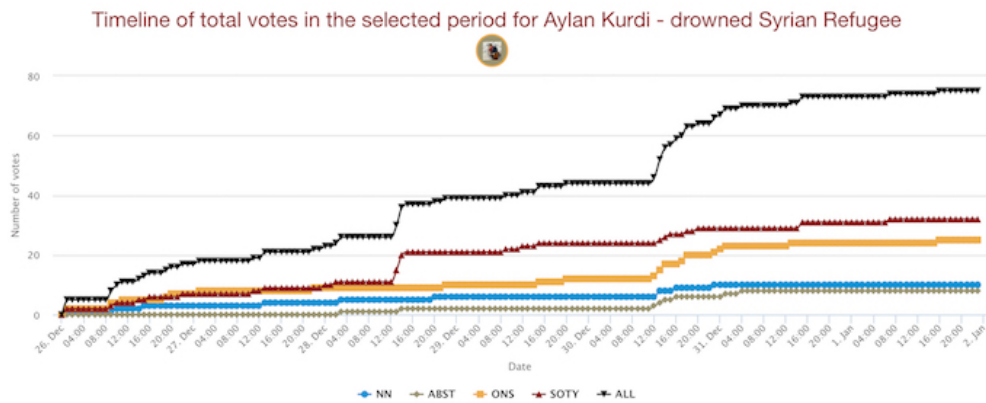
For the analysis of the BE timelines of votes for each symbol were produced. The most significant two, showed in Figures 8.30 and 8.31, are the timeline related to the final winner of the SOTY ballot, and the timeline related to the image depicting the drown refugee Alan Kurdi, that was the first competitor of the winner of the SOTY ballot.

To analyze the production of the GGH, for each symbol the probability of SOTY votes was computed and compared to the SOTY score and the probability of ONS votes compared to the ONS score. To analyze the position-related biases, the percentage of votes for each symbol listed in a

specific position was computed. Figure 8.52 and table 8.4 show the results
of the above computation.

Figure 8.32: Probability of SOTY and ONS votes when SOTY and ONS scores change
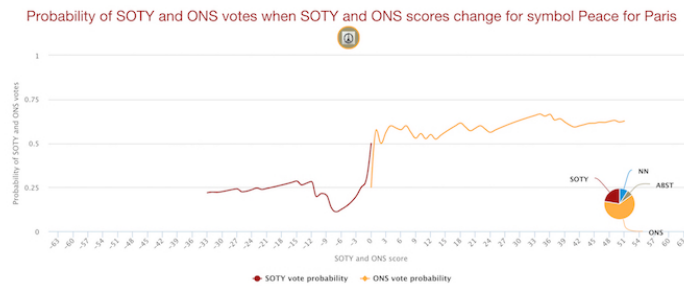for symbol "blacklivesmatter" in SOTY ballot
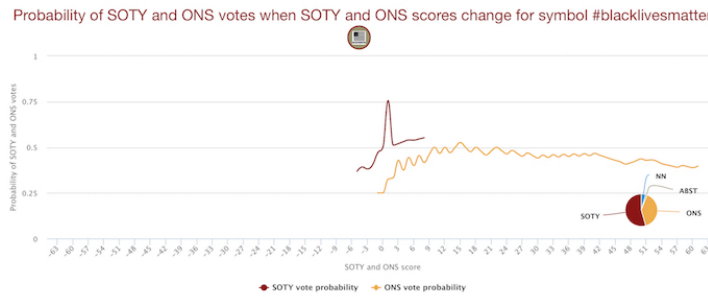
Figure 8.33: Probability of SOTY and ONS votes when SOTY and ONS scores change
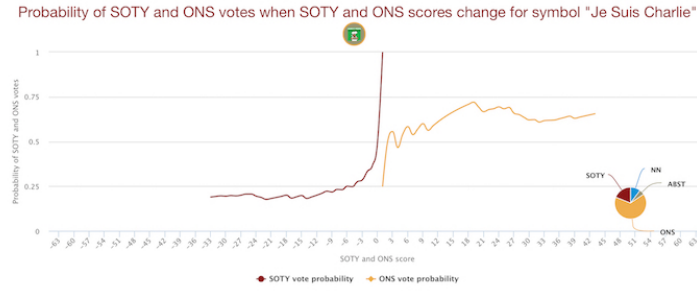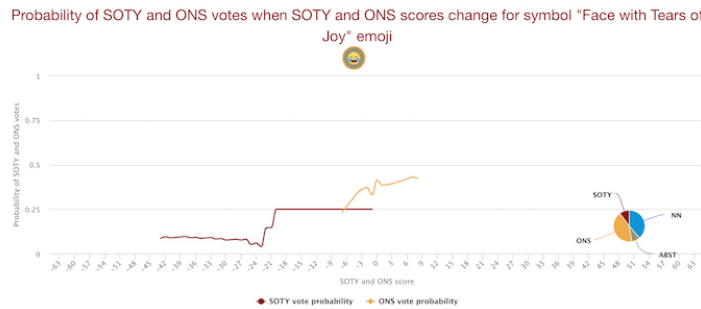for symbol "Alan Kurdy" in SOTY ballot
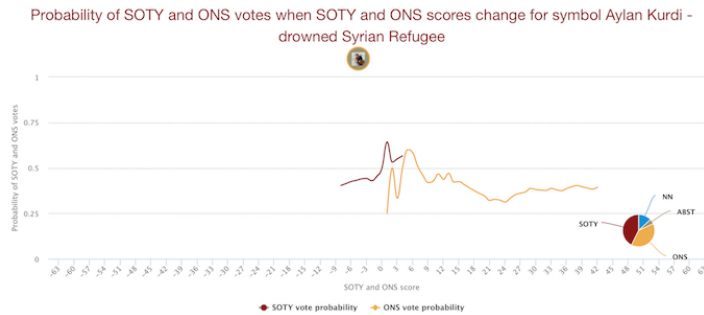
Figure 8.34: Probability of SOTY and ONS votes when SOTY and ONS scores change
for symbol "Peace For Paris" in SOTY ballot

Figure 8.35: Probability of SOTY and ONS votes when SOTY and ONS scores change for symbol "Je Suis Charlie" in SOTY ballot

Figure 8.36: Probability of SOTY and ONS votes when SOTY and ONS scores change for symbol "Face With Tears of Joy Emojy" in SOTY ballot

Figure 8.37: Probability of SOTY and ONS votes when SOTY and ONS scores change for symbol "Boat Full Of Syrian Refugee" in SOTY ballot
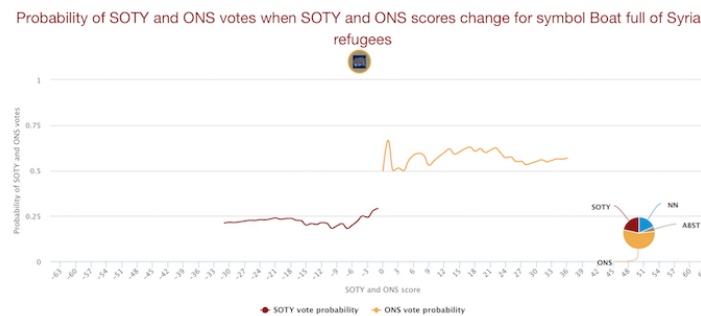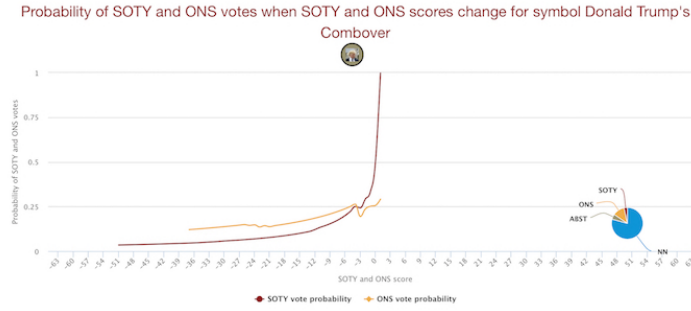
Figure 8.38: Probability of SOTY and ONS votes when SOTY and ONS scores change for symbol "Donald Trump's Combover" in SOTY ballot

Figure 8.39: Probability of SOTY and ONS votes when SOTY and ONS scores change for symbol "Electric Charging Station" in SOTY ballot
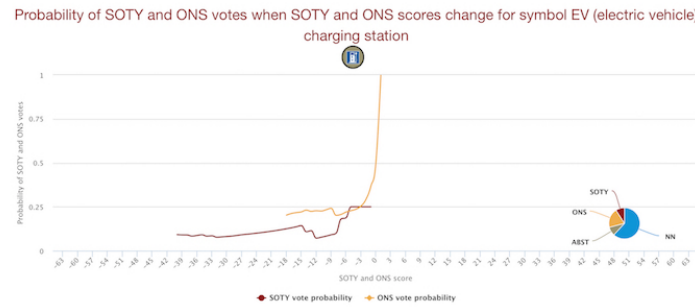

Figure 8.40: Probability of SOTY and ONS votes when SOTY and ONS scores change for symbol "Certified Vegan Symbol" in SOTY ballot
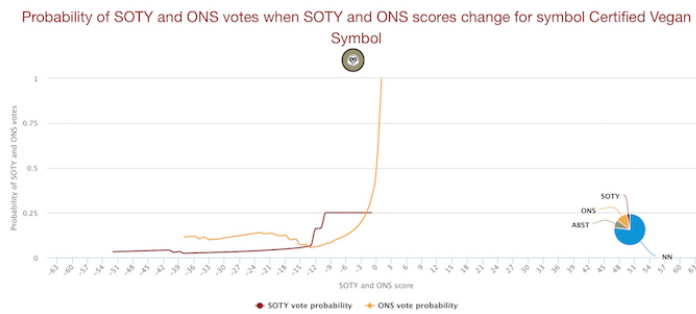
Figure 8.41: Probability of SOTY and ONS votes when SOTY and ONS scores change for symbol "Spinning Wheel of Death" in SOTY ballot
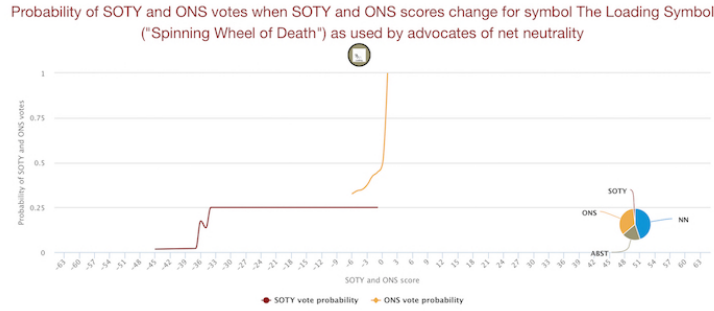

Figure 8.42: Probability of SOTY and ONS votes when SOTY and ONS scores change for symbol "The Button" in SOTY ballot
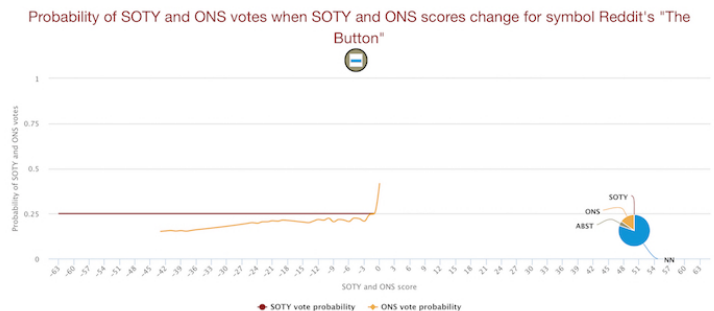

Figure 8.43: Probability of SOTY and ONS votes when SOTY and ONS scores change for symbol "Emoji" in SOTY ballot
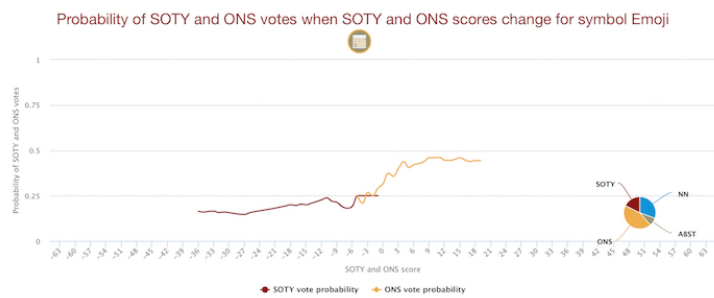
Figure 8.44: Probability of SOTY and ONS votes when SOTY and ONS scores change for symbol "Darth Vader Helmet" in SOTY ballot
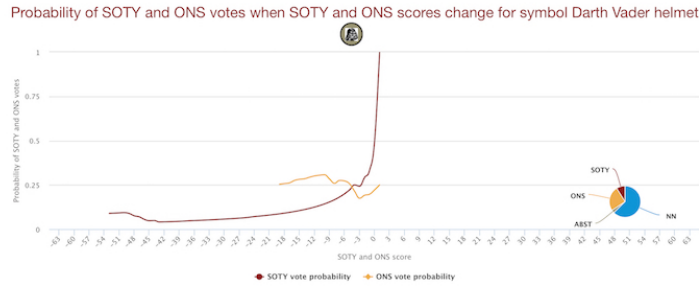

Figure 8.45: Probability of SOTY and ONS votes when SOTY and ONS scores change for symbol "The Swipe" in SOTY ballot

Figure 8.46: Probability of SOTY and ONS votes when SOTY and ONS scores change for symbol "Confederate Flag" in SOTY ballot

Figure 8.47: Probability of SOTY and ONS votes when SOTY and ONS scores change for symbol "ISIS/ISIL/Da'esh" in SOTY ballot

Figure 8.48: Probability of SOTY and ONS votes when SOTY and ONS scores change for symbol "Deep Dream" in SOTY ballot

Figure 8.49: Probability of SOTY and ONS votes when SOTY and ONS scores change for symbol "Representing Migration" in SOTY ballot
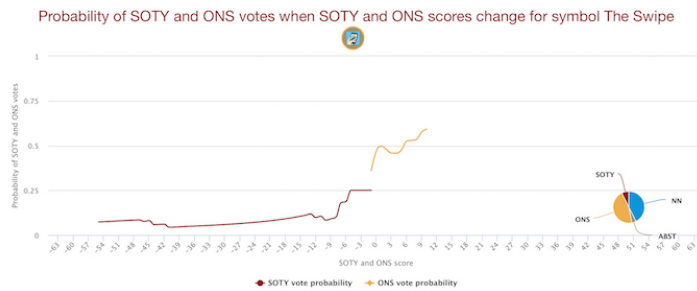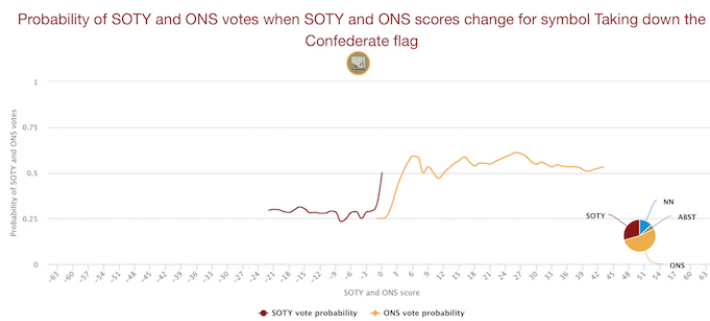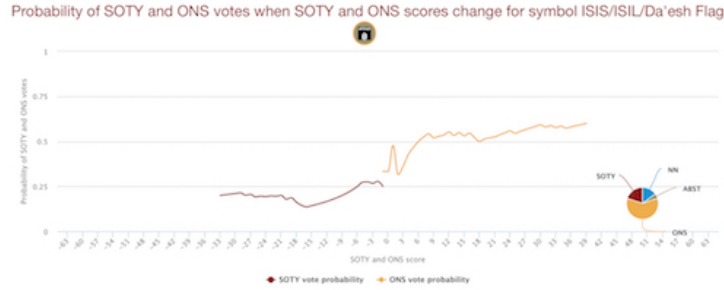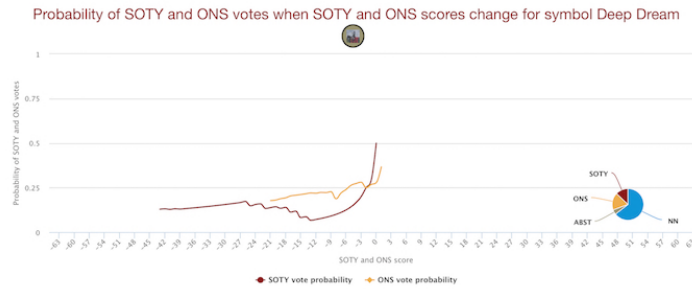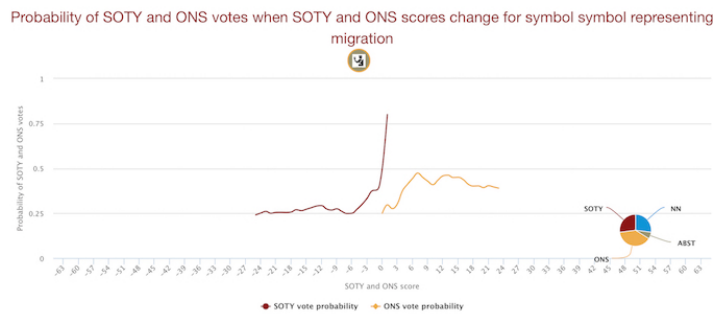
Figure 8.50: Probability of SOTY and ONS votes when SOTY and ONS scores change for symbol "The Dress" in SOTY ballot
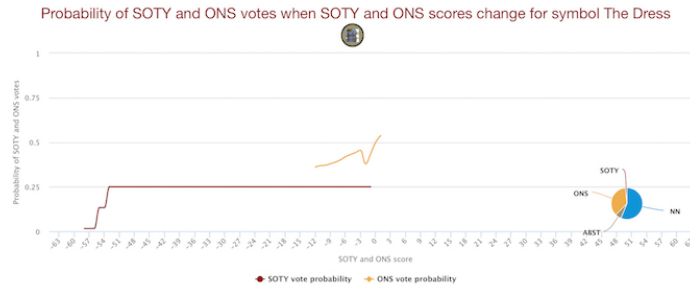
Figure 8.51: Probability of SOTY and ONS votes when SOTY and ONS scores change for symbol "Make America Great Again " in SOTY ballot
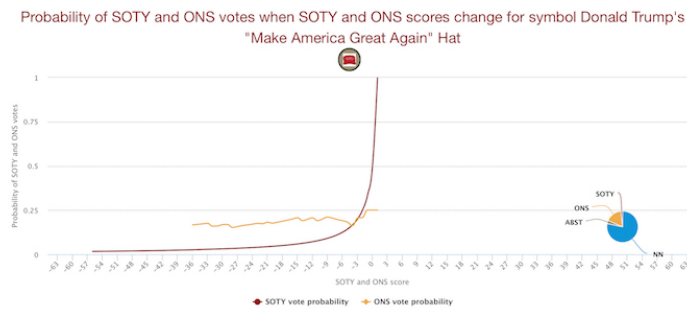
As showed in Figures 8.28 and 8.29, and in tables 8.2 and 8.3, the leaderboard and the email alerts seem to have produced behavioral changes in voters. Before the introduction of the leaderboard, the total amount of votes was 653, which represents the 46.7% of the votes that were cast during the whole ballot's period. After the introduction of the leaderboard, voters cast 745 votes, which is the 53.3% of the total amount of votes. By summarizing, we noticed a total increment of 6.6% of the amount of votes after the introduction of the leaderboard. By looking at the amount of votes in each day of the ballot, there seem to be three peaks.

The first peak can be seen on the first day of the ballot, when the first alert by email was also sent. In our opinion, this is a quite normal effect because voters were aware of the starting date of the the ballot and they

Table 8.4: Table of percentages of votes for symbols listed in specific positions in the SOTY ballot.

POSITION	NN	ABST	ONS	SOTY
Pos. 1	37.487	6.171	39.430	16.912
Pos. 2	40.688	6.068	36.643	16.601
Pos. 3	41.111	6.159	36.059	16.671
Pos. 4	41.447	6.009	37.928	14.615
Pos. 5	45.028	6.075	34.151	14.747
Pos. 6	41.537	6.586	37.450	14.427
Pos. 7	38.109	6.506	37.870	17.514
Pos. 8	45.094	5.803	34.002	15.102
Pos. 9	37.931	6.173	38.444	17.452
Pos. 10	38.110	5.925	38.994	16.970
Pos. 11	40.330	6.069	36.491	17.111
Pos. 12	39.317	5.826	38.570	16.287
Pos. 13	47.835	5.682	33.071	13.412
Pos. 14	38.596	5.647	38.360	17.398
Pos. 15	41.747	6.060	36.543	15.650
Pos. 16	39.694	6.132	36.516	17.658
Pos. 17	43.154	5.576	36.047	15.223
Pos. 18	37.663	6.349	39.924	16.064
Pos. 19	47.525	6.211	33.053	13.211
Pos. 20	43.482	6.445	35.681	14.392

Figure 8.52: The percentage of votes for symbols listed in specific positions in the SOTY ballot.
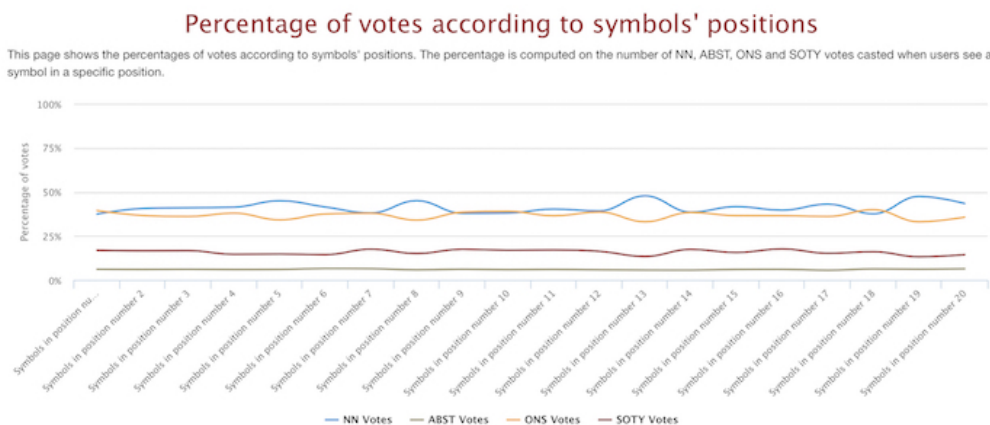
were expecting the opening of the ballot.

The second peak was on the day of the introduction of the leaderboard. By analyzing the amount of votes in each interval of four hours, as showed in Figure 8.28 and Table 8.2, two interesting facts are evident. Firstly, as theorized, there was a significant amount of votes cast right after the introduction of the leader-board. Secondly, and even more interesting, there was a significant increase of voting activity right before the introduction of the leader-board. I argue that also this effect is to bestow on the leader-board, because users were aware of the time when the leader-board would be introduced. This can have created a sort of expectation in the voters and, therefore, they might have changed their votes more frequently during the hours right before the introduction of the leader-board.

The third peak was on the day in which voters received the last alert, in which there was an amount of votes quite similar to the amount of the first day of the ballot. By looking at the intervals of time in which votes were cast, it is possible to see that most votes were cast right after we sent the last email alert. I argue that all of the above are evidences that the introduction of gamified elements produces behavioral changes in voters.

The results of the ballot also show interesting psychological effects due

to the introduction of the leader-board. I argue that the result of the ballot highlight three significant psychological effects that can be addressed to the introduction of gamified elements in online ballots. Firstly, by matching the behavior of users and the timelines of users' votes depicted in Figures 8.30 and 8.31, I argue that the sticked leader-board is effective to produce the BE. When the leaderboard was introduced, the amount of SOTY votes for symbol in Figure 8.31, that in that moment was supposed to be elected SOTY, significantly incremented. This happened also when the last alert by email was sent, but this time it happened for the symbol in Figure 8.30, that eventually won the SOTY ballot.

Secondly, as showed in Figures 8.32 to 8.51, when voters are aware of the other users' votes, by means of GGH, they vote SOTY or ONS the symbols that are likely to be elected as such. For all those symbols that were designated ONS (Figures 8.33, 8.34, 8.35, 8.36, 8.37, 8.43, 8.45, 8.46, 8.47, 8.49), the probability of receiving a vote of type ONS was higher when the symbol was near to score 0 for ONS, that was the threshold for being elected as ONS. Also, for the two symbols that were competing for SOTY (Figures 8.32 and 8.33), the probability to receive a SOTY vote was higher when they had an higher SOTY score.

Thirdly and lastly, as showed in Figure 8.52 and Table 8.4, there seems to be no correlations between the position of symbols in the voting page and the probability of receiving specific vote types. This happens both when the lader-board is not present in the system and when it is present. By merging the above outcomes and this last outcome, we can state that the introduction of unsorted leader-boards in online ballots produces desired behaviors without introducing position-related and undesired biases.

Finally, the software developed for the SOTY and the result of the ballot, highlighted that the introduction of a leader-board is not effective to engage voters in textual online interaction. Only 2 of the 51 users that were allowed to deliberate sent comments in the forum section of the online system. This means that the sticked leader-board and the other gamified components that

was introduced in the online ballot were not enough to motivate users to deliberate.

In the next section 8.7, I expose the literature on the common gamified element used to improve deliberation and participation in software for online Democracy, and in the next chapter 9, I expose a meta gamified model for the Design of engaging Deliberative Systems.

8.7 Gamification in Online Democracies

In the previous sections of this chapter I have exposed games and gamification concepts and showed, particularly in the previous section 8.6, that specific gamified dynamics, mechanics and components, when properly used, are useful to drive users' behavior and to engage them in specific actions. However, gamified concepts are not universally valid and must be wisely used depending on the context in which the gamification is implemented and the purposes of its implementation [279]. For instance, as I have found by implementing and experimenting the gamified ballot exposed in the previous section 8.6, leader-boards seem to be effective to drive voters to agree more naturally on ballot candidates, but to have no effects on engaging voters to deliberate.

At the moment of writing this work, the study on gamification applied to online Democracies is very lacking. Literature reviews of 2016 and 2017 show only a few applications for Civic Engagement using at least one gamified concept and developed after 2011 [308] [309]. The surveys found that these applications mostly, and effectively, revolve on a set of gamified concepts that are: (1) *achievements*; (2) *challenges*; (3) *competitions*; (4) *customization*; (5) *feedback*; (6) *points*; (7) *progress*; (8) *status*; and (9) *time constrains*.

Even more lacking is the literature on gamified Deliberative Systems, indeed, although it is not a goal of this research to deeply analyze this literature . No meaningful results in literature match any combinations of the terms: "Game Elements", "Gamification", and "Deliberative Systems".

Also, it seems that there are no entry in literature on Gamified tools for Online Participatory Democracies whose design is based on the principles of legitimacy of Deliberative Democracies and Systems, or whose design is focused on avoiding biases of human beings involved in deliberations.

In the next chapter 9, I expose a meta design process for Online Gamified Deliberative Systems that I have defined after my research and personal experience on Democracies, Deliberations, Deliberative Systems, Games and Gamification, described in all the previous chapters of this work.

Chapter 9

Gamified Online Deliberative Systems

In this chapter I expose the gamification design of an online Deliberative System. Firstly in the section 9.2, I define Gamified Online Deliberative Systems and Extensions of Gamified Online Deliberative Systems. Secondly in the sections 9.3 and 9.4, I describe the deliberation spaces offered by the systems. Thirdly in sections 9.5, 9.6 and 9.7, I expose the players involved in Gamified Online Deliberative Systems, their goals, and their progression to master the gamified system. Eventually, in sections 9.8 and 9.9, I describe gamified sessions for deliberation in general and a practical example of gamified session.

9.1 Preliminary Statements

In this chapter I describe the design of *Gamified Online Deliberative Systems* and their *Extensions*. For the purpose of this chapter I assume that systems are designed, implemented and deployed to environments that are already compliant to some of the requirements that I have listed in section 6.6. More specifically, the system is designed to be deployed to environments that already have the following characteristics:

Institutions have enacted articles of *Constitutions*, *regulations*, or *laws*, to *avoid to dominate the systems*, *to avoid rooted partisanship* in deliberations, *and to avoid to bound the deliberations* in any authoritative way. Also, Institutions *grant authority to deliberations*, *grant egalitarianism to participants*, *grant freedom to deliberate* to players, and *grant political equality* to players. Lastly, I assume that *any monetary incentive needed* for the correct functioning of the Deliberative System *is granted by default by Institutions*.

Gamified Online Deliberative Systems are intended to be deployed on the Internet as Web applications. For this reason, by default deliberations that occur in systems are *open*, *reliable*, and *transparent*. The access to deliberations is *unobstructed*, and communications are *asynchronous*, *continuous*, *distributed* and *ubiquitous*. Internet technologies and the Web technologies also grant, at least partially, *diversity* and *pluralism* of inputs, and they grant to players involved in decision-making procedures their *anonymity* and *egalitarianism*.

The design of Online Gamified Deliberative Systems does not make any assumption on the *inclusiveness*, *responsivity* and *usability* of the final systems, that must be taken care at implementation level. All of them are assumed to be satisfied by default.

The data on which systems rely on and systems produce, are assumed to be by default *Linked Open Data*. All the features granted by the creation of outputs compliant to standards of Linked Open Data must be taken in consideration at the implementation level. For these reasons, the strategies followed at the design level of Gamified Online Deliberative Systems do not affect in any way *accountability*, *effectiveness*, the *efficacy*, *monitarability*, and *revisability* of outputs.

In the next sections I describe the design of Gamified Online Deliberative Systems, and all their gamified aspects. For the design of gamified systems, I

have followed guidelines and strategies exposed by the most known entries in literature about Game Design and Gamification Design [211] [223] [310] [311] [312] [280], merging them with my personal explorations. For this reason, in the next sections of this chapter, unless strictly necessary I do not expose any reference to the literature on Game Design and on Gamification Design.

## 9.2 Definition of Gamified Online Deliberative Systems

Gamified Online Deliberative Systems (hereinafter GODS) are extensible and flexible gamified meta-systems that specify meta-requirements, meta-structures, meta-rules, meta-mechanics, meta-dynamics and meta-components for the creation of expansions of GODS (hereinafter eGODS) compliant with GODS specifications and interoperable among themselves. By being flexible and extensible, GODS allow the creation of eGODS specifically intended to address diverse deliberative issues. For instance, Countries can implement eGODS to discuss Bills according to their legislative traditions, Business Companies can create eGODS to deliberate on their business models, and Citizens that belong to Social Streets[1]can create eGODS to allocate funds collected by means of crow-funding actions in their streets. Each eGODS is a Deliberative Space, that is at the same time independent and interconnected with other eGODS. Figure 9.1 shows a depiction of a GODS that contains three eGODS. GODS and eGODS are defined, respectively, as follows:

Definition 18 (Gamified Online Deliberative System). *A flexible and extensible gamified system that specify meta-requirements, meta-structures, meta-rules, meta-mechanics, meta-dynamics and meta-components for the creation of interoperable gamified extensions.*

---

[1]*The Social Street* is an idea firstly introduced in Via Fondazza of Bologna, in Italy. The scope of Social Streets is to link streets' neighbors in order to create connections, to deliberate, and to solve any issue related to the neighborhood. More information are available on the Social Street Web site (http://www.socialstreet.it).

Definition 19 (Extension of Gamified Online Deliberative System). *A stand-alone, independent and interoperable gamified environment aimed to foster players to reach a consensus on values, beliefs and preferences about specific issues in specified contexts.*

Figure 9.1: A depiction of Gamified Online Deliberative Systems
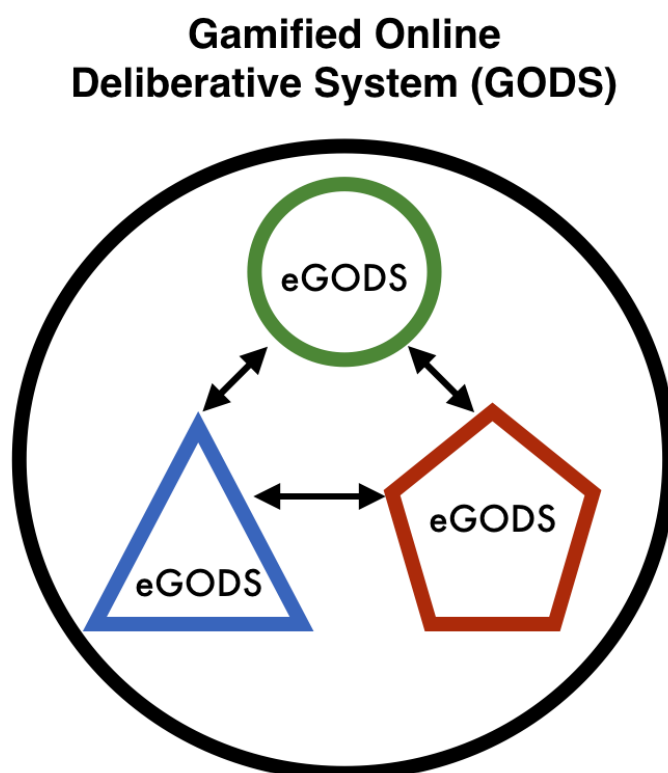
According to the components of Deliberative Systems that I have exposed in section 5.8 of this work, each eGODS has its own Deliberative Space (Deliberations) that hosts players belonging to one of the two possible categories of players (Citizens and Institutions) involved in gamified sessions (Decisions-Making Procedures) to persuade other players to accept their Societal needs (Inputs) and, so, create collaboratively Democratic outcomes (Outputs) to satisfy them.

In the next section 9.3, I expose the game spaces and the game dimensions that belong to eGODS.

9.3 Spaces and Dimensions in eGODS

Deliberations in eGODS occur in a continue two-dimensional space composed by three sub-spaces, and in a zero-dimensional space[2].

The continue two-dimensional space is the Deliberative Space, and it is the main-board of the eGODS. In each gamified session, inputs must move into the Deliberative Space by stepping through its three Sub-Spaces, that are the Normative Values Space, the Epistemic Values Space, and the Preferential Values Space[3].

When inputs are in the Normative Values Sub-Space, they are ideas (the why) that must be supported by players to step forward into the Epistemic Values Sub-Space. If inputs receive a sufficient amount of endorsements, they move into the Epistemic Values Sub-Space, in which players supporting them deliberate about possible solutions to implement the ideas (the how). After a specified period of time the inputs, with all their possible solutions, move to the Preferential Values Sub-Space. In the latter sub-space, players choose their preferred options (the what) among the ones created in the previous step by means of ballots compliant to specified rules. If inputs reach the Preferential Values sub-space, and at least one of their possible solutions or implementations passes the ballot, they become outputs and exit the gamified session, while remaining available to become inputs for other gamified sessions of the eGODS. When players are in one of the three sub-spaces, they must stay focused on the specific actions required by that

---

[2]Although eGODS are online gamified systems, they can be conceived as board-games. Board-games usually involves an *out-door continue and two-dimensional space* (the board), and a series of other *sub-spaces* (for mini-games). Aesthetics of games' boards give to players a first impression of the complexity of games [310, pp. 132-134]. In eGODS it is important to simplify the Deliberation Space to do not give players the feeling of a complex platform.

[3]Sub-spaces are useful to deal with *sub-games phases*, and they are very useful to drive players to focus on specific situations. For instance, in soccer, when striking penalty kicks, players are focused on that kick and they do not focus on the whole match, even if the kick may seriously affect the match outcome [310, p. 134].

Table 9.1: The transition of inputs from the normative sub-space to the preferential sub-space in three instances of eGODS

	eGODS for Legislative Process BILLS	eGODS for Business Company BUSINESS MODELS	eGODS for Social Street FUNDS
Normative Values Sub-Space	Preserve the anonymity on the Web	Enter the Video Games Market	Spaces for children
Epistemic Values Sub-Space	1) Modify the Bill XYZ 2) Create a new Bill	1) Create a new Video Game 2) Acquire a Video Games Company	1) Create green areas 2) Create areas for sports
Preferential Values Sub-Space	1a) Abrogate the Article j 1b) Modify the Article k 2a) Bill titled Norms for the protection of the Web 2b) Bill titled Right of anonymity for users of the Web	1a) Create an Occasional Video Game 1b) Create a Massive Online Role Game 2a) Acquire the XYZ inc. 2b) Acquire the ABC inc.	1a) Demolish abandoned building and plant trees 1b) Join private gardens to create a shared garden 2a) Build a soccer field 2b) Build a tennis court

sub-space. However they must feel free, and they must indeed be free, to move around the other sub-spaces to explore them.

Figure 9.2 shows a depiction of the Deliberative Space and its three sub-spaces, and table 9.1 shows the transition of inputs from the normative sub-space to the preferential one in the three examples of eGODS introduced in the previous section 9.2.

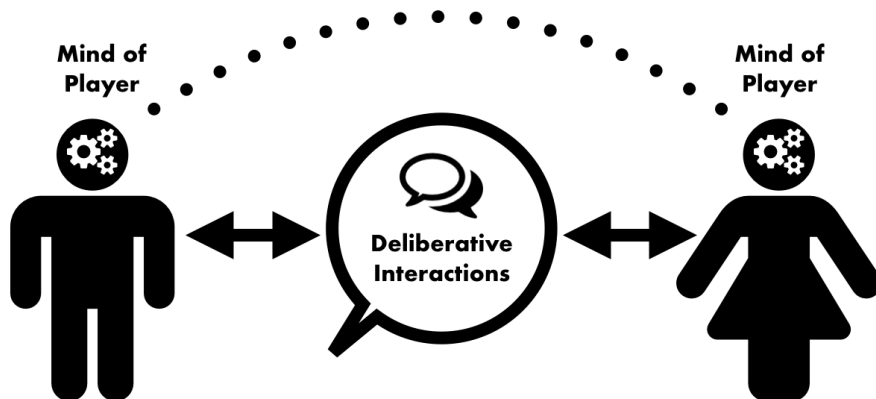**Figure 9.2:** The Deliberative Space and its Sub-Spaces
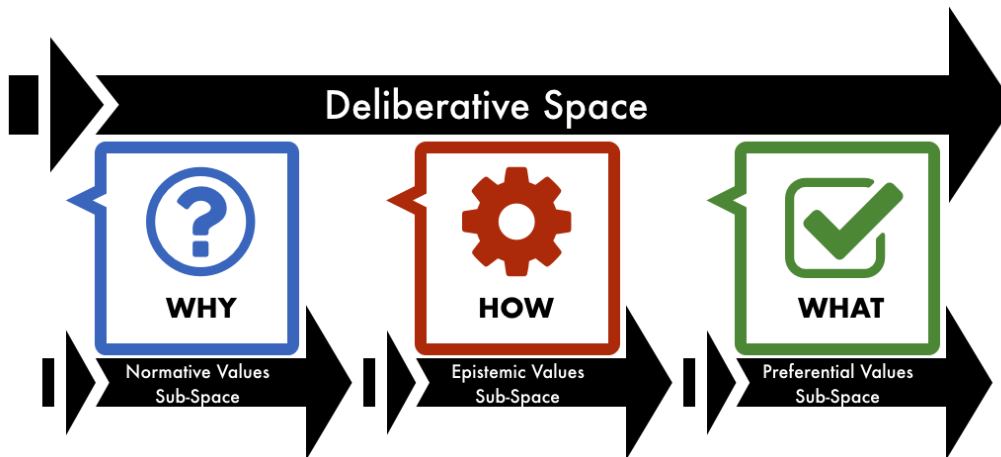
In the whole Deliberation Space and in each one of its sup-spaces there is also a zero-dimensional space, that I expose in the following section 9.4.

9.4 The Deliberative Interactions Dimension

The zero-dimensional space is the Deliberative Interactions Dimension, a sub-game dimension itself aimed to connect the minds of players by means of Deliberative Interactions[4]. In eGODS, players have ideas of their values (their why) and, by using the modes of communication supplied by the Deliberative Interactions Dimension, must describe their ideas in the best possible way to obtain the endorsement of the other players. Players can also use the Deliberative Interaction Dimension to communicate with the eGODS itself. Figure 9.3 shows a depiction of the Deliberative Interactions Dimension.

Figure 9.3: The Deliberative Interactions Dimension

The Deliberative Interactions Dimension is present in the whole Deliberative Space and in each one of its sub-spaces. In other words, players can use Deliberative Interactions in each moment of every gamified session, but also when they are not strictly involved in a gamified session and, so, when they are simply exploring the system. Deliberative Interactions are

---

[4]To better understand zero-dimensional games consider, for instance, a game where by means of five questions one player must guess who is the person that the other player is thinking to.

classified into two abstract classes, Continuous Deliberative Interactions and One-Shoot Deliberative Interactions. The first category includes for instance chats among players. The second category includes for instance clicks on buttons to vote inputs. The set of Deliberative Interactions can include a lot of diverse Types of Deliberative Interactions, but each eGODS must supply at least Deliberative Interactions aimed to the following:

Exploration of the system : players must be allowed to explore eGODS by navigating their sections and by interacting with their graphic widgets.

Creation of inputs : players must be allowed to create inputs that start gamified session.

Endorsement of inputs : players must be allowed to support inputs created by other players in one or more ways.

Persuasion of players : players must be allowed to persuade other players in one or more ways in order to convince them to support inputs.

Chat with players : players must be allowed to persuade other players in one or more ways in order to convince them to support inputs.

Every time players properly perform Deliberative Interactions, they gain Deliberation Points that increase their Deliberation Score. As I expose later in section 9.7, when players reach specified amounts of Deliberative Points, they progress in their Player Level, and when they reach specific Player Levels they change their Player Status. This process is the Flow of Gamified Deliberations depicted in figure 9.4.

Figure 9.4: The flow of Gamified Deliberations
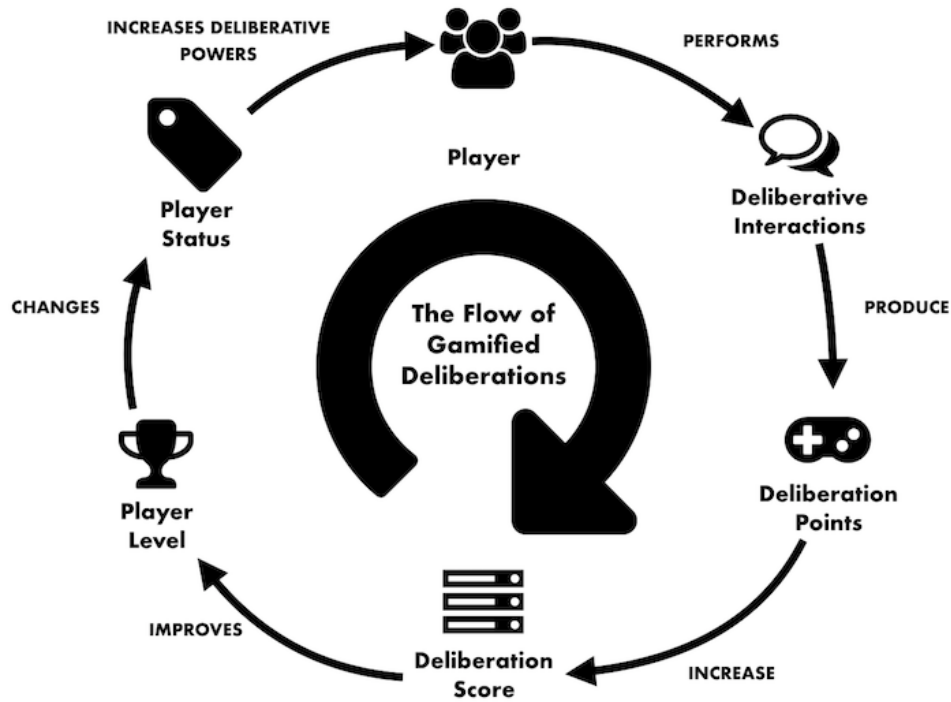
Deliberative Interactions award players with Deliberation Points, but some of them may have a cost, according to their category and to their type. One-shot interactions have constant costs, whilst continuous interactions have variable costs according to specific parameters. For instance, the cost to vote inputs can be unitary, and the cost to send chat messages can be equal to the number of characters used in the message. To properly deal with costs of Deliberative Interactions, eGODS must implement two kinds of Exchangeable Points, the Deliberation Tokens and the Deliberation Inks. Different implementation of eGODS can implement one or more types of Deliberation Tokens and one or more types of Deliberation Inks.

The amount of Deliberation Points that result from performing Deliberative Interactions must be specified by specific instances of eGODS. However, as a generic rule, every interaction of players with the eGODS or with other players must be rewarded at least with one Deliberative Point. In order to

Table 9.2: Deliberation Tokens and Deliberation Inks for three examples of eGODS

type of eGODS	Deliberative Interactions	Deliberative Tokens	Deliberative Interactions	Deliberative Inks
Legislative Process	1) Propose Bills 2) Support Bills	1) Blue Pencils 2) Green Pencils	1) Chat with Institutions 2) Persuade Citizens	1) Blue Pens 2) Green Pens
Business Company	1) Vote For New Video Game	1) Stamps	1) Persuade Owners of Company to fund a Video Game	1) Blue Pens
Social Street	1) Rate Sports Facilities	1) Stars	1) Chat with Inhabitants	1) Blue Pens

discriminate between purposed interactions and interactions merely aimed to earn points, eGODS must implement mechanisms to foster long term rewards rather than immediate ones. For instance, eGODS can give players one Deliberative Point every time they visit the Preferential Sub-Space of the system, and one million points to players for inputs they have supported and that became outputs. The levels progression of players must then be designed to allow them to step forward when they gain millions of Deliberative Points. Table 9.2 shows instances of Deliberation Tokens and Deliberation Inks for the three examples of eGODS that I have exposed in the previous sections of this chapter.

When players create inputs they start new gamified sessions, in which they must try to achieve their goals by means of Deliberative Interactions. Players have different goals according to their categories and to the gamified sessions in which they are engaged. I describe categories of players and their goals in in the next sections 9.5 and 9.6.

9.5   Players in eGODS

Although eGODS are mostly intended to be designed to implement features of Deliberative Systems, in which players are Citizens and Institutions, for the definition of meta eGODS players must be abstracted into two categories, the Undergraduates and the Graduates.

Implementations of eGODS must choose proper and not discriminatory names for the two abstract categories. Undergraduates access eGODS in anonymous way, always voluntarily and in any moment they desire to do so. Graduates access eGODS in non-anonymous way, only if they are granted the access by other Graduates or when other Graduates engage them to enter the eGODS. Specific implementations of eGODS, according to requirements of agencies supplying them, may ask players to sign-up with their names and other personal information. However, as I have exposed in part I of this work, this information should not be visible to other players for the sake of legitimacy and proper functioning of Deliberative Systems.

Players that belong to the Graduates category are a kind of Gamemasters *Gamemasters*[5]. They can check the fairness of gamified sessions, distribute incentives to foster activities, and create special gamified sessions that allow players to gain special bonuses. Players that belong to the Graduates category are not allowed to block gamified sessions, censure gamified sessions or players, or assign bonuses directly to players. Players are not allowed to subscribe to eGODS as Graduates, and only Graduates can create other players belonging to the Graduates category, or promote other players from Undergraduates to Graduates if they want. The rules of eGODS can allow a promotion from the Undergraduates category to the Graduates one in automatic ways when players perform specified actions. Graduates also have the final word on outputs of gamified sessions, that must be certified by one of more Graduated in order to become official outputs.

Undergraduates are the most common kind of players in eGODS. They create gamified sessions and they participate in them according to their purposes, motivations, goals and strategies. They can create gamified sessions by introducing inputs in eGODS, participate to gamified sessions created by other players, and stay engaged in eGODS in other ways that I will expose later in this chapter. Undergraduates are engaged simultaneously in competitive tasks, for instance when they introduce their inputs in eGODS

---

[5]Gamemasters are special players, mostly present in *Role Playing Games*

and attempt to persuade other players to prefer them instead of the ones introduced by others. They are also engaged in collaborative tasks, for instance when they support ideas of other players or when they work with other players to find possible solutions to their needs.

For both the categories of players, the eGODS must supply a set of roles and a set of tasks that players can perform according to their roles. Roles must not be mutually exclusive and can be shared between the two categories of players, and tasks must not be blocking, meaning that players can be involved in more tasks simultaneously. The eGODS must specify rules and implement mechanics to allow players to master one or more roles. I describe the design of the progression to the mastery for roles in the following section 9.7 of this chapter. Table 9.3 summarizes possible categories of players, their tasks, and their roles in eGODS. Tables 9.4, 9.5, 9.6 are the players, tasks and roles for the three eGODS instances that I have exposed in the previous sections of this chapter.

For the sake of the diversity and pluralism of players accessing eGODS and inputs initiating gamified sessions, eGODS designers must not make any assumption on the types of players that may access eGODS and their intrinsic and extrinsic motivations. Every eGODS must be designed to satisfy motivations of all the types of players exposed in section 8.3. The motivations of players must be nurtured to foster them to achieve their goals and the eGODS purposes exposed in the next section 9.6.

9.6 Goals of Players in eGODS

eGODS instances must be designed to achieve goals according to the specific purposes of the eGODS, and allow players to achieve their personal goals. However, each eGODS must be designed for at least two mandatory and ultimate purposes, called Primary Goals. The first one is to improve the Deliberative Capacities of players, and the second one is to drive players to achieve a Deliberative Consensus on issues.

Table 9.3: Category of players, roles and tasks in eGODS

Names of Categories of players	NAME OF THE eGODS	
	NAME OF THE CATEGORY FOR UNDERGRADUATE PLAYERS	NAME OF THE CATEGORY FOR GRADUATE PLAYERS
Allowed TASKS for the category of players	**TU-1:** **TU-2:** **TU-3:** ... **TU-N:**	**TG-1:** **TG-2:** **TG-3:** ... **TG-N:**
Allowed ROLES for the category of players	**RU-1:** **RU-2:** **RU-3:** ... **RU-N:**	**RG-1:** **RG-2:** **RG-3:** ... **RG-N:**

Table 9.4: Category of players, roles and tasks of an eGODS for Legislative processes of Countries

Players Categories	eGODS for the Legislative Process	
	Citizens	Institutions
Players Tasks	**TU-1**: Propose Bills or Amendments **TU-2**: Support Bills of Amendments of other Citizens of Institutions **TU-3**: Explore inputs to warn proposers on issues related to their legal validity	**TG-1**: Check the fairness of gamified sessions **TG-2**: Propose special Bills according to Institutional requirements **TG-3**: Create incentives to foster Citizens to improve their Deliberative Capacities
Players Roles	**RU-1**: Proposer **RU-2**: Supporter **RU-3**: Legal Expert	**RG-1**: Proposer **RG-2**: Subsidizer **RG-3**: Arbitrator

Table 9.5: Category of players, roles and tasks of an eGODS for Business Companies

	eGODS for a Business Company	
Players Categories	**Employers**	**Company Owners**
Players Tasks	**TU-1**: Propose new Video Games **TU-2**: Check the technical feasibility of proposed Video Games **TU-3**: Find markets for new Video Games	**TG-1**: Propose new Video Games **TG-2:** Supply incentives to foster the creativity of Employers
Players Roles	**RU-1**: Proposer **RU-2**: Technical Expert **RU-3:** Markets Expert	**RG-1**: Proposer **RG-2**: Subsidizer

Table 9.6: Category of players, roles and tasks of an eGODS for Social Streets

	eGODS for a Social Street	
Players Categories	**Inhabitants**	**Street Majors**
Players Tasks	**TU-1**: Propose new facilities for sports in the street. **TU-2**: Draw projects for proposed facilities	**TG-1**: Allocate funds for new facilities **TG-2**: Facilitate Deliberations among neighbors
Players Roles	**RU-1**: Proposer **RU-2**: Architect	**RG-1**: Funds Manager **RG-2**: Facilitator

Besides the two Primary Goals, each eGODS could be designed to achieve other Primary Goals and other non-mandatory goals, called Secondary Goals. The goals are divided into three categories: the goals of deliberations, the goals of undergraduate players accessing the eGODS, and the goals of graduate players. The first category includes all the community goals and, so, all those goals that are inherent to the purposes at the heart of deliberations. The second category and third category include all the goals that specific players may want to achieve according to their individual purposes. The eGODS and the rules of their gamified sessions must be designed starting by enumerating the goals of deliberations, then the goals that may nurture motivations of players and, so, drive them to achieve their individual goals.

The goals of undergraduate and graduate players could be different. However, to improve deliberations, eGODS must be designed to reach at least one mandatory goal for each one of the two categories of players. The Primary Goal for undergraduate players is to achieve a Deliberative Consensus on the inputs that they create, and so to transform their inputs into outputs. The Primary Goal for graduate players is to keep the eGODS active, and so to keep all the players engaged into deliberations.

In summary, eGODS must be designed to achieve three levels of goals: the goals of the eGODS itself, the goals of undergraduate players, and the goals of graduate players. For each one of them, there are mandatory goals (Primary Goals) and non-mandatory goals (Secondary Goals). Each eGODS must be designed for achieving at least the four mandatory goals exposed in this section. Table 9.7 can be used to specify goals of eGODS implementations. Tables 9.8, 9.9 and 9.10 show the goals for the three examples of eGODS exposed in the previous sections of this chapter (eGODS for the Legislative processes of Countries, for a Business Company, and for a Social Street).

The primary main goal of eGODS and their players can be achieved by implementing proper dynamics and mechanics, driving players through an improvement of their level and status, and supplying them engaging gamified sessions to achieve a consensus, as described in the following sections 9.7 and

Table 9.7: Primary and Secondary Goals for eGODS and players

| | Goals of eGODS | |
	Primary Goals	Secondary Goals
eGODS	**PGeG-1**: improve the Deliberative Capacities of players	**SGeG-1**:
	PGeG-2: drive players to achieve a Deliberative Consensus on issues	**SGeG-2**:
	PG-eG-3:	**SGeG-3**:
	...	...
	PG-eG-N:	**SGeG-N**:
Undergraduate Players	**PGU-1**: transform inputs into outputs	**SGU-1**:
	PGU-2:	**SGU-2**:
	PGU-3:	**SGU-3**:
	...	...
	PGU-N:	**SGU-N**:
Graduate Players	**PGG-1**: keep players engaged in deliberations	**SGG-1**:
	PGG-2:	**SGG-2**:
	PGG-3:	**SGG-3**:
	...	...
	PGG-N:	**SGG-N**:

9.8.

9.7 Progression of Players in eGODS

All eGODS must be designed to drive their players to improve their De-
liberative Capacities, regardless of other purposes that they may have. As I
have exposed in section 8.1, the best strategy to motivate players of gamified
systems to improve their skills is to design a proper progression system .

In eGODS, both Undergraduate Players and Graduate Players have a
Player Level and a Player Status. The Player Level is the overall level of
players in eGODS and their overall progression in the activities for which

Table 9.8: Goals of deliberations and goals of players of an eGODS for Legislative processes of Countries

	Goals of eGODS for the Legislative Process	
	Primary Goals	**Secondary Goals**
eGODS	**PGeG-1**: improve the Deliberative Capacities of players **PGeG-2**: drive players to achieve a Deliberative Consensus on Bills and amendments **PGeG-3**: supply to Citizens transparent information about legislative processes and law making procedures	**SGeG-1**: acquire Citizens societal needs **SGeG-2**: improve Communnications among Citizens and Institutions
Citizens	**PGU-1**: transform needs into bills aimed to satisfy them **PGU-2**: make the society aware of particular Societal issues	**SGU-1**: become more powerful in deliberative processes **SGU-2**: check the legal validity and the legitimacy of Bills before they become laws
Institutions	**PGG-1**: keep players engaged in deliberations **PGG-2**: allocate funds for pubblic commons	**SGG-1**: appease Societal conflicts

Table 9.9: Goals of deliberations and goals of players of an eGODS for a Business Company

	Goals of eGODS for a Business Company	
	Primary Goals	**Secondary Goals**
eGODS	**PGeG-1**: improve the Deliberative Capacities of players **PGeG-2**: drive players to achieve a Deliberative Consensus on new Video Games projects	**SGeG-1**: improve knoweldge of players about Video Games markets
Employers	**PGU-1**: transform ideas into implemented Video Games **PGU-2**: advance in career	**SGU-1**: develop Video Games whose implementation does not require technologies not owned by the company
Company Owners	**PGG-1**: keep players engaged in deliberations **PGG-2**: improve Company incomings	**SGG-1**: individuate best employers to better allocate year-end bonuses

Table 9.10: Goals of deliberations and goals of players of an eGODS for a Social Street

| | Goals of eGODS a Social Street | |
	Primary Goals	Secondary Goals
eGODS	**PGeG-1**: improve the Deliberative Capacities of players **PGeG-2**: drive players to achieve a Deliberative Consensuson new facilities for sports that must be built in the street **PGeG-3**: improve social connections among neighbors	**SGeG-1**: allocate collected money in more transparent ways
Inhabitants	**PGU-1**: transform ideas into sport facilities or green areas	**SGU-1**: acquire new competences in architectural issues related to Social Streets
Street Majors	**PGG-1**: keep players engaged in deliberations **PGG-2**: create connections with other Social Streets	**SGG-1**: acquire demographic information on the inhabitants of the street

eGODS are designed. Player Statuses are checkpoints that, when reached, increase the power of players in eGODS by giving to players new abilities, or by granting them the access to new eGODS areas.

Before moving forward and explain the meta design of Player Levels and Player Statuses, it is very worth of notice that levels and statuses of players are always the only public information about them and, thus, also represent the identity of players in eGODS. When players visit the sections of eGODS related to other players, they must always be able to see their level and their status. As I have explained in the section 9.5, the other information about players can be public only if authorities or agencies that supply eGODS require them, or if eGODS allow players to participate in specific gamified sessions in non-anonymous ways in order to achieve special bonuses.

The previous statements also mean that inputs entering gamified sessions are never accounted to specific players, but to Deliberative Groups composed by the player who has created the input and each other player supporting it. If the implementation of the eGODS does not specify different rules, the summation ofthe values of all Players Statuses that compose the Deliberative Group is the Consensus Power of the input. As I expose in the following section 9.8, the more the Consensus Power, the more the input is likely to reach a Deliberative Consensus, and to be transformed into an output.

The Player Levels progression must be designed as a non-linear progres-

sion, as I have exposed in section 8.1. When players enter eGODS, they start by Level 0, and the level progression must be designed to be infinite. When players reach a specified amount of Deliberation Points, they increase their level. The abilities granted to players when they reach specific levels must be defined according to the eGODS purposes , however the first progression levels must always be designed to create on-boarding systems and, every time players change their status, they must be granted to access new areas of eGODS or to use new tools, in order to implement scaffolding systems.

The set of statuses that players can unblock must follow a metaphor to be more engaging and clear to players. The eGODS statuses systems can be designed in a similar way to the ranking system of fighters in Martial Arts[6], thus every change of status of players is related to a specific colour. The eGODS must supply nine coloured statuses, or a subset of them, and enable the infinity of progression of statuses: when players reach the last status they start again by adding strings or dots to it (always according to the chosen system of colours). Each Player Status must be related to a status value representing the Deliberative Power of players.

The table 9.11 shows a generic example of required points to move from the level one to the level ninety in eGODS, and the figure 9.5 shows the non-linear progression through levels. The figures 9.6 and 9.7 show, respectively, the infinite statuses that players may unblock in eGODS, and the relation between Player Levels and Player Statuses. Table 9.12 shows the an example scheduling of values of statuses of eGODS.

---

[6]In Japanese and Korean Martial Arts the ability of fighters is indicated by means of colored belts. When fighters improve their level of ability they gain a new belt and even when they achieve the last belt, fighters are able to improve their status by adding colored strings to their belts (https://en.wikipedia.org/wiki/Dan_(rank)).

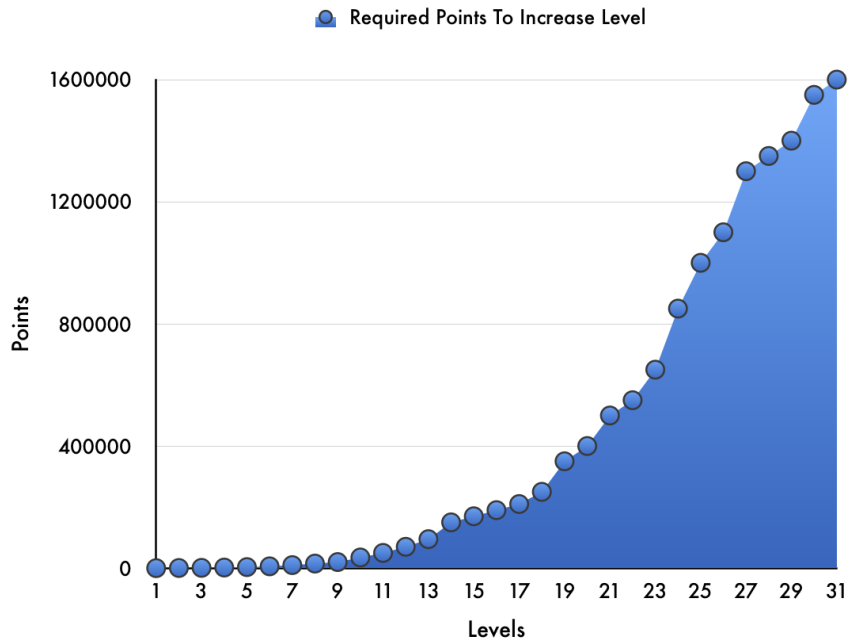**Figure 9.5:** Non-linear progression of Player Levels

Table 9.11: Required points to increase Player Level in eGODS

Level	Required Points	Change Status	Level	Required Points	Change Status	Level	Required Points	Change Status	Level	Required Points	Change Status
1	1	YES	10	35.000	YES	19	350.000	NO	28	1.350.000	YES
2	500	YES	11	50.000	NO	20	400.000	NO	29	1.400.000	YES
3	1.000	NO	12	70.000	NO	21	500.000	NO	30	1.550.000	NO
4	2.000	YES	13	95.000	NO	22	550.000	NO	31	1.600.000	YES
5	3.500	NO	14	150.000	YES	23	650.000	NO	...	...	...
6	6.000	NO	15	170.000	NO	24	850.000	NO	...	...	...
7	10.000	YES	16	190.000	NO	25	1.000.000	YES	...	...	...
8	15.000	NO	17	210.000	NO	26	1.100.000	NO	...	...	...
9	20.000	NO	18	250.000	YES	27	1.300.000	NO	90	1.000.000.000	NO

Specific eGODS implementations can use subsets of the meta statuses set that I have exposed in this section. They can also use evocative names for the different statuses, and different levels and statuses for Undergraduate Players and Graduate Players. Table 9.13 shows the Player Statuses for three examples of eGODS. Players gain Deliberation Points and, so, improve their levels and change their statuses, by continuing to be engaged in deliberations, and by using proper strategies to foster the Deliberative Consensus in gamified sessions. In the next session 9.8, I expose the generic and meta
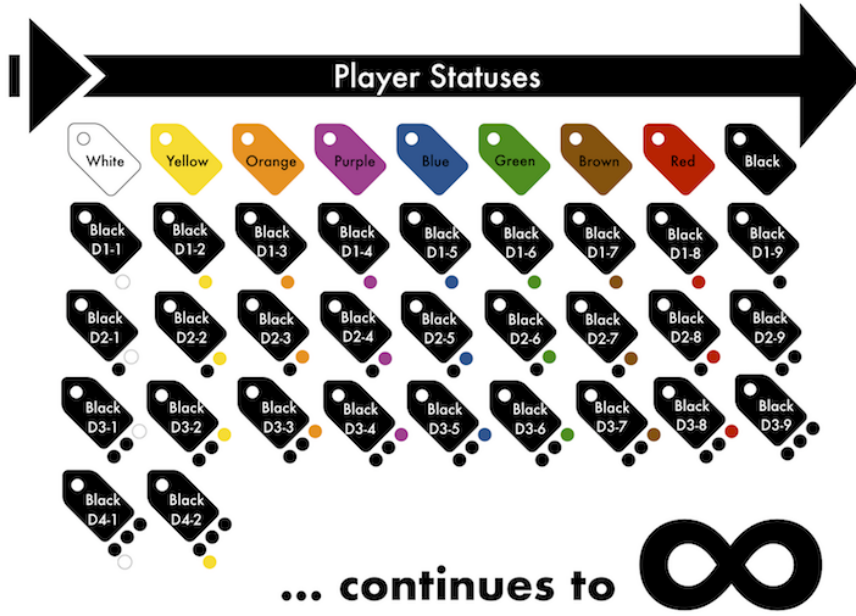
Figure 9.6: The progression of Player Statuses
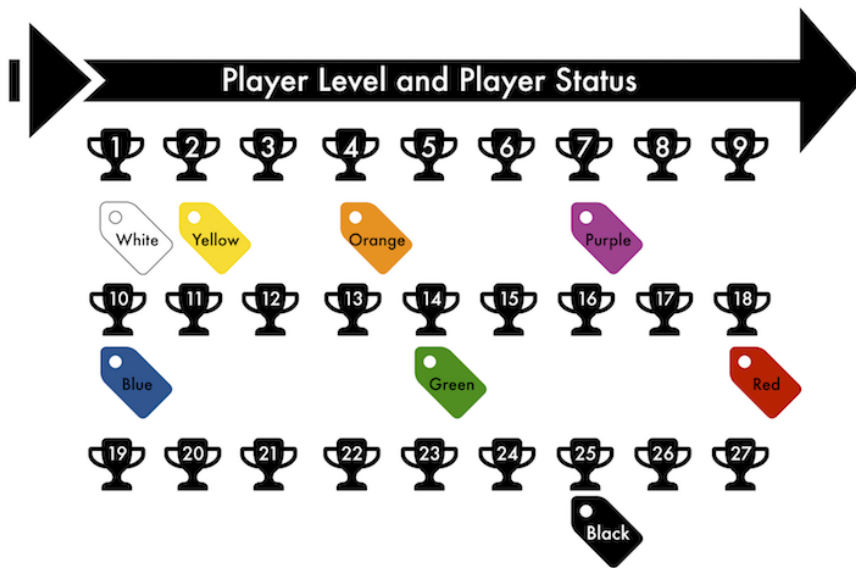

Figure 9.7: The progression of Player Levels and Statues

Table 9.12: Player Statues and their related Deliberative Powers

Role Status	Color	Value	Role Status	Color	Value	Role Status	Color	Value
White	white	1	**Black D1-1**	Black with one white dot	$9 + (9 \times 1) = 18$	**Black D2-1**	Black with one black dot and one white dot	$90 + (9 \times 1) = 98$
Yellow	yellow	2	**Black D1-2**	Black with one yellow dot	$9 + (9 \times 2) = 27$	**Black D2-2**	Black with one black dot and one yellow dot	$90 + (9 \times 2) = 108$
Orange	orange	3	**Black D1-3**	Black with one orange dot	$9 + (9 \times 3) = 36$	**Black D2-3**	Black with one black dot and one orange dot	$90 + (9 \times 3) = 117$
Purple	purple	4	**Black D1-4**	Black with one purple dot	$9 + (9 \times 4) = 45$	**Black D2-4**	Black with one black dot and one purple dot	$90 + (9 \times 4) = 126$
Blue	blue	5	**Black D1-5**	Black with one blue dot	$9 + (9 \times 5) = 54$	**Black D2-5**	Black with one black dot and one blue dot	$90 + (9 \times 5) = 135$
Green	green	6	**Black D1-6**	Black with one green dot	$9 + (9 \times 6) = 63$	**Black D2-6**	Black with one black dot and one green dot	$90 + (9 \times 6) = 144$
Brown	brown	7	**Black D1-7**	Black with one brown dot	$9 + (9 \times 7) = 72$	**Black D2-7**	Black with one black dot and one brown dot	$90 + (9 \times 7) = 153$
Red	red	8	**Black D1-8**	Black with one red dot	$9 + (9 \times 8) = 81$	**Black D2-8**	Black with one black dot and one red dot	$90 + (9 \times 8) = 162$
Black	black	9	**Black D1-9**	Black with one black dot	$9 + (9 \times 9) = 90$	**Black D2-9**	Black with two black dots	$90 + (9 \times 9) = 171$

Table 9.13: Players Levels and Players Statuses for three examples of eGODS

Statuses And Levels of eGODS for the Legislative Process		
Citizens		
Player Level	**Status Name**	**Status Color**
1	Underage	White
4	Citizen	Orange
10	Deputy	Blue
18	Senator	Red
25	President	Black

Statuses And Levels of eGODS for a Business Company		
Employers		
Player Level	**Status Name**	**Status Color**
1	Developer	White
7	Designer	Purple
10	Project Manager	Blue
14	Team Manager	Green
25	Business Area Manager	Black

Statuses And Levels of eGODS for a Social Street		
Inhabitants		
Player Level	**Status Name**	**Status Color**
1	Street Friend	White
7	Street Lover	Purple
10	Street Worker	Blue
14	Street Officier	Green
25	Street Architect	Black

Institutions		
Player Level	**Status Name**	**Status Color**
1	Public Administration	White
10	Minister of Economy	Blue
25	Minister of Defense	Black

Company Owners		
Player Level	**Status Name**	**Status Color**
1	Associate	Black

Street Majors		
Player Level	**Status Name**	**Status Color**
1	Street Manager	Green
10	Street Administrator	Blue

rules for Gamified Sessions and for the Deliberative Consensus.

9.8 Gamified Sessions and Deliberative Interactions in eGODS

Gamified Sessions start when players create inputs that must be pushed through the three sub-spaces of the eGODS to reach a Deliberative Consensus and become outputs. Created inputs are Deliberation Cards that have a Consensus Power. The more the Consensus Power, the more Deliberation Cards will be visible to players, and the more players that support the idea will progress in eGODS by gaining points.

When inputs enter eGODS, they start a new gamified session entering it with an initial Consensus Power equal to the Deliberation Power of players who have created them. Inputs are called Deliberation Cards, and structured

Table 9.14: Example of costs for the creation of Deliberation Cards

Type of eGODS	Allowed Modes of Communication for Cards' Title	Cost (Deliberation Tokens)	Allowed Modes of Communication for Cards' Solution	Cost (Percentage of Deliberation Ink or Deliberation Tokens)
Legislative Process	1) Text (max 140 characters)	1	1) Text (max 140 characters) 2) URL of a bill or of a law	1) 1 Del. Token 2) Percentage of Del. Ink according to the number of laws modified by the bill
Business Company	1) Text (max 140 characters)	1	1) Text (max 140 characters) 2) Image	1) 1 Del. Token 2) Percentage of Del. Ink according to the number of sharing of the image
Social Street	1) Text (max 140 characters)	1	1) Text (max 140 characters) 2) Video	1) 1 Del. Token 2) Percentage of Del. Ink according to the number of sharing of the video

as actual Cards. The creation of Cards must be structured in one simple phase. Players enter a Card Title and a Possible Solution. The cost for card creation must be measured in Deliberative Tokens and Deliberative Inks. Both the card title and the possible solution by the player can be expressed in different communication modes , according to the set of types of Deliberative Interactions allowed by the eGODS in which the Card is created. Table 9.14 shows examples of costs for the creation of Deliberation Cards for three examples of eGODS.

When players create Deliberation Cards, inputs start their journey through the three Deliberative Spaces to reach a Deliberative Consensus. In the first step, Deliberation Cards are ideas (values) that must reach the highest possible Normative Consensus and Consensus Power. When Deliberation Cards are introduced in gamified sessions the players, with the exclusion of the creator of the Deliberation Card and of Graduate players, are neither allowed to see the possible solution that creators have thought, nor the Consensus Power that Deliberation Cards have reached.

In this initial step, players can only see the amount of Normative Consensus that Deliberation Cards have received, that is a number from zero

Table 9.15: Example of costs of Normative Consensus and received Deliberation Points

Type of eGODS	Cost of Normative Consensus (Deliberative Tokens)	Amount of Deliberation Points Received
Legislative Process	1	10.000
Business Company	1	10.000
Social Street	1	10.000

to a maximum equal to the number of players subscribed to the eGODS. If Deliberation Cards receive the maximum amount of Normative Consensus, all the players and the card itself must receive special bonuses. If players give to Deliberation Cards their Normative Consensus, they are able to see the possible solution by the creator of the Deliberation Cards, and enter a second voting phase. The act of giving the Normative Consensus is a Deliberative Interaction and for this reason it must have a cost in term of tokens. Table 9.15 shows examples of costs of the Normative Consensus and the Deliberation points that players receive by giving it.

In the second voting phase, players are able to give their epistemic and preference consensus to Deliberation Cards by voting the solution that creators of Deliberation Cards have indicated when they created the Card. The second ballot is structured as a variant of combined approval voting, in which players can positively or negatively vote the solution, or abstain. There is no default vote but, if players do not vote, they are not able to see the Consensus Power that Deliberation Cards have already received. The vote that players give in this phase is a Deliberative Interaction too, so it must have a cost in terms of Deliberation Tokens. Table 9.16 shows examples of costs of this voting phase and the amount of Deliberative Points that players receive according to the Consensus Power of Deliberation Cards.

When players positively or negatively vote solutions of Deliberation Cards, their Consensus Power is increased or decreased according to the Deliberative Power of players that have voted. Players are always enabled to change their vote, but changes have costs in terms of Deliberation Tokens. Figure 9.8 shows a depiction of this phase of the gamified session.

Table 9.16: Example of costs to increase or to decrease the Consensus Power

Type of eGODS	Cost for Increasing or Decreasing the Consensus Power (Deliberative Tokens)	Amount of Deliberation Points Received
Legislative Process	1) 3 if the Consensus Power is in the Neutral Space 2) 2 if the Consensus Power is in the Approval Space 3) 1 if the Consensus Power is in the Disapproval Space	1) 10.000 if the Consensus power is in the Neutral Space 2) 10.000 + (Bonus according to the value of the Consensus Power) if the Consensus Power is in the Approval Space 3) 10.000 - (Malus according to the value of the Consensus Power) if the Consensus Power is in the Approval Space
Business Company	1) 3 if the Consensus Power is in the Neutral Space 2) 1 if the Consensus Power is in the Approval Space or in the Disapproval Space	1) 10.000 if the Consensus Power is in the Netrual Space 2) 10.000 + (fixed value) if the Consensus Power is in the Approval Space or in the Disapproval Space
Social Street	3	10.000 + Bonus according to the value of the Consensus Power

Figure 9.8: The first step of a gamified session
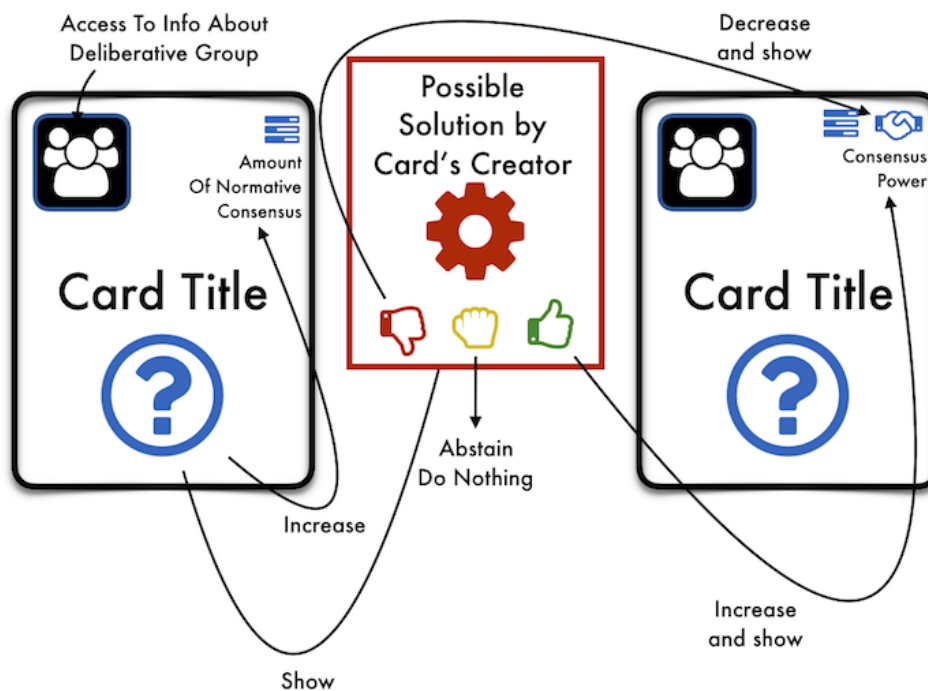
Figure 9.9: Example of range of the Consensus Power
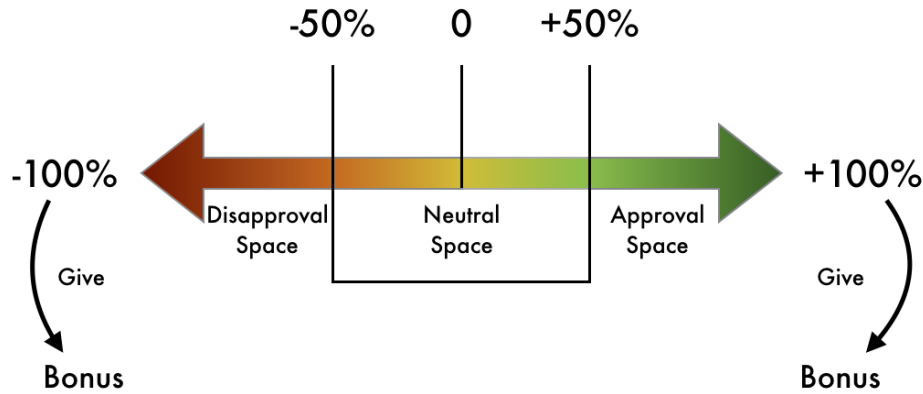
The Consensus Power is a number in a range computed according to the summation of Deliberation Powers of players that have voted the Deliberation Card. Figure 9.9 shows the range of Consensus Power from -100% to +100% of the maximum possible amount. If the Deliberation Card receives the minimum or the maximum consensus, all the players who have given the Normative Consensus to the card receive a Bonus. Until the Consensus Power of Deliberation Cards is in the Neutral Space, they are not allowed to move to the second step of the gamified session. When the Consensus Power reaches the Approval Space, cards can move to the second step after a specified amount of Graduate Players give to the Card a special vote called Approval Vote. If the Deliberation Cards reach the maximum Consensus Power, Approval Votes are not needed.

In the first step of the gamified session, players receive Deliberation Points every time they perform Deliberative Interactions, and receive other points when Deliberation Cards are approved and move to the second step of the gamified session. The eGODS must specify rules to assign different amounts of Deliberation Points according to the Deliberative Interactions performed by players in the first step. For instance, players who have given only the Normative Consensus must gain less points than players who have positively or negatively voted the possible solution indicated by the creator of the Card.

Also, if the card reaches an approval, the players who have negatively voted must not gain more points than the ones who have positively voted.
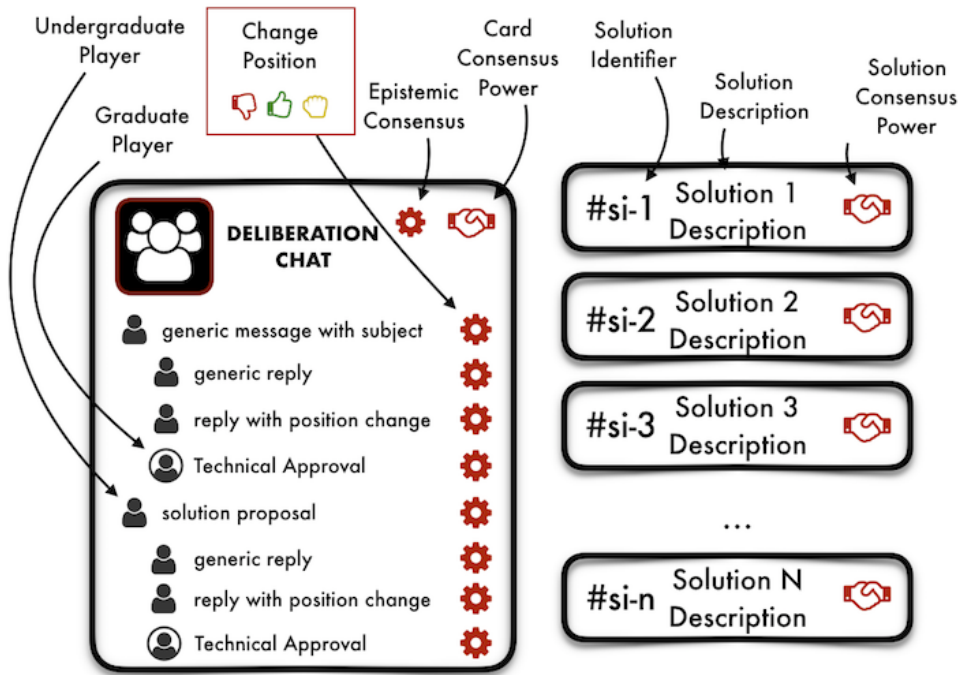
In the second step of gamified sessions, players share and argue possible solutions to issues or ideas exposed by Deliberation Cards. The second step is structured as a Deliberation Chat and only players who have positively or negatively contributed to the Consensus Power of the Card in the first step of the gamified session are allowed to participate. Other players can enter in this step only if they are granted with special access permissions specified by the eGODS rules. The second step finishes after a specific period of time, computed according to the Consensus Power received by Deliberation Cards in the first step.

The Deliberation Chat is a kind of driven chat in which messages are Deliberative Interactions and have costs in terms of Deliberation Inks. In Deliberation Chats, players can use all the modes of communication allowed by eGODS rules, but messages must always have a subject that is a possible solution to issues highlighted by Deliberation Cards. The first solution is the one proposed by the creator of the Deliberative Card in the first step of the gamified session.

Undergraduate Players can generically chat about solutions or propose new ones. Proposals of new solutions have costs in terms of Deliberation Tokens. Undergraduate players can also reply to other messages by changing their position on a solution and, if they do so, the message to which they have replied is the justification of their position change. Undergraduate players are also allowed to change their position on a solution without replying to any message, but in this case they have to justify their position change. In this step of gamified sessions, Graduate Players are allowed to give a special vote to solutions called Technical Approval, and they are allowed to perform other special Deliberative Interactions according to the eGODS rules. For instance, Graduate Players could be allowed to mark a solution or a chat message with an out-of-topic tag.

Solutions have a Consensus Power, computed in the same way of the

Figure 9.10: The second step of a gamified session

Consensus Power of Deliberation Cards in the first step of gamified sessions. Deliberation Chats have a Consensus Power, that is the sum of the absolute values of the Consensus Powers of all the solutions proposed, and an Epistemic Consensus, that is equal to the number of solutions that players have proposed. The initial value of the Consensus Power is equal to the Consensus Power that Deliberation Cards received in the first step of gamified sessions, and the initial Epistemic Power is equal to one. Figure 9.10 shows a depiction of the second step of gamified sessions.

In the second step of gamified sessions players receive Deliberative Points every time they perform Deliberative Interactions but, as in the first step, each Deliberative Interaction has a cost. The cost to propose new solutions must be quantified in terms of Deliberation Tokens, as well as the costs to vote solutions, positively or negatively, while the cost of messages in Deliberative Chats must have a cost in terms of Deliberation Inks.

Solutions have dedicated Consensus Power. Like in the first step of gami-

fied sessions, the Consensus Power of a solution can be in the Neutral Space, in the Approval Space, and in the Disapproval Space. If the solution receives the maximum or minimum amount of Consensus Power, players receive a Bonus. If the Consensus Power of solutions reaches the Approval Space, they become Approved Solutions if at least one Graduate Player gives a technical approval. If solutions receive the maximum amount of Consensus Power, the technical approval is not required.

When the time allowed for the second step of gamified sessions ends, the final Epistemic Consensus and the final Consensus Power are computed. The Epistemic Consensus is equal to the number of solutions that have reached an approval in their dedicated ballots. The Consensus Power is computed by summing the Consensus Power of all the Approved Solutions, and by dividing the resulting number by the Epistemic Consensus. This means that the more the Players have agreed on a small set of solutions, the more Consensus Power Deliberation Cards will have when moving to the thirds step of gamified sessions.

The third step of gamified sessions is aimed to deliberate on actual implementations of the solutions proposed in the first and second step. The design of the third step can be very different in eGODS, because it is strictly related to their purposes.

The third step of gamified session ends after a specific amount of time, that eGODS must compute according to the Power Consensus that Deliberation Cards have when they enter this step, and may occur in more than one gamified sub-space. Each solution that has reached an approval in the second step generates a different gamified sub-session, and players are placed into these sub-sessions according to the approvals they have given in the second session. If players gave their approval to more than one solution they are allowed to play in more than one gamified sub-session. Gamified sub-sessions are intended to propose and discuss implementations of specific solutions. One third of the total amount of time of the third step is dedicated to propose implementations, the remaining two thirds of the time are dedicated to

discuss and vote the proposed implementations.

Players, both Graduate and Undergraduate, can propose implementations and approve other implementations. Both the proposal and the vote are Deliberative Interactions, so they have a cost in terms of Deliberation Tokens and Deliberation Inks. Graduate Players may also give their technical approval or, according to specific eGODS rules , are allowed to perform other Deliberative Interactions on implementation proposals. Implementation proposals have their dedicate Deliberation Chat in which players can send generic messages or messages involving particular Deliberative Interactions, like replies to other messages with a position change in their preference. Deliberative Interactions in contextual chats have costs both in terms of Deliberation Inks and Deliberative Tokens, if they are related to other interactions.

To enter contextual Deliberation Chats, players must give their Preferential Consensus to implementation proposals and, so, must indicate their position about them. Players are always allowed to change their position on proposals. Players who have proposed implementations have always the possibility to modify them, but only by means of a specific Deliberative Interaction in the contextual chat. For instance, players may choose to modify information about the implementation in reply to a specific message that other players have sent into the contextual chat. Players who have proposed implementations can also retire the proposal or ask other proposers to merge their implementations. The latter actions are special ones, with special costs in terms of Deliberation Tokens.

Implementations proposals have a Consensus Power that is managed and computed in the same way as the Consensus Power in the other two steps of the gamified sessions. Gamified sub-sessions have a Preferential Consensus that is equal to the number of proposals that have reached an approval, and a Consensus Power too, equal to the sum of the Consensus Power of all implementation proposals, multiplied by the Preferential Consensus. The Consensus Power of Deliberation Cards that have generated gamified sub-

Figure 9.11: The third step of a gamified session
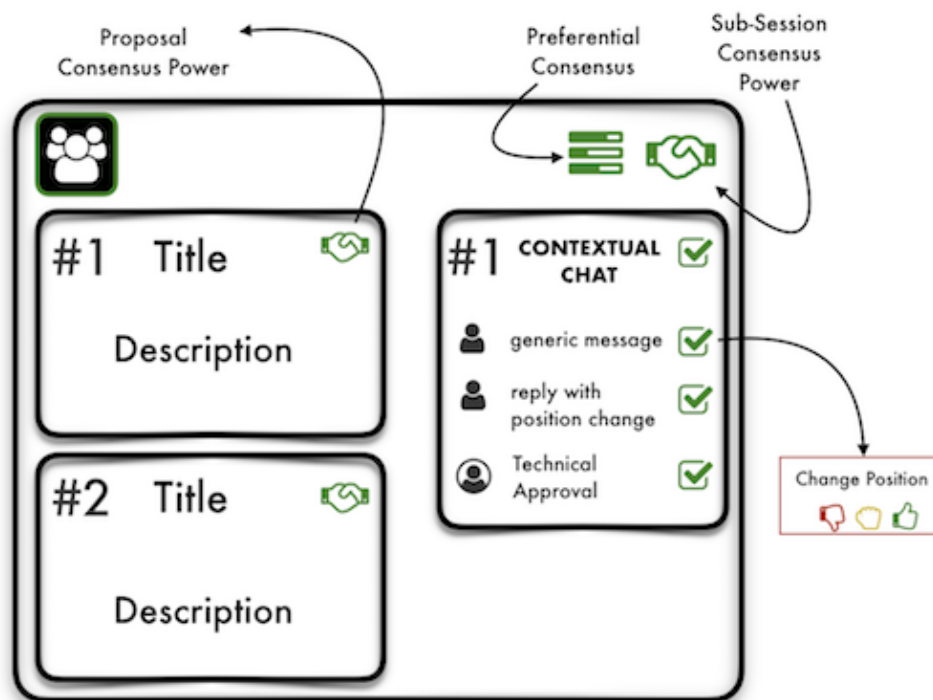
sessions is computed by summing the Consensus Power of all the gamified sub-sessions. Figure 9.11 shows a depiction of the third step of gamified sessions.

When the time allowed for the third step gamified session ends, and all the gamified sub-session of this step finish, the consensus power of each gamified sub-session is computed. After this step, Graduate players choose the implementations to be approved according to the Consensus Power they have received, or to the rules of the specific eGODS. For example, eGODS can specify that Graduate Players must approve the gamified sub-session with the highest Consensus Power, or approve more than one gamified sub-session. However, Graduate Players must always transform at least one gamified sub-session into an output, and so they must approve at least an implementation proposal.

In this section I have exposed the flow of gamified sessions of eGODS and

the dedicated rules of each of their steps. However, all the three steps of gamified sessions must rely on shared rules. In order to describe the generic rules, in the next section 9.9, I illustrate an example of gamified session.

9.9   Example of a Gamified Session and Generic Rules of eGODS

In this section I describe an example of gamified session of an eGODS for Legislative Process of Countries. In this example, I assume that a Government has supplied Citizens an eGODS in which, starting from their needs, they can propose amendments to Laws or Bills. If proposals reach the end of gamified sessions, Graduate Players can decide to discuss the proposal or amendment in the Parliament. In this example, the Undergraduate players are called Citizens, and the Graduate players are called Institutions.

For the sake of simplicity, I assume that there are one-hundred players in the eGODS, but I consider only five of them, three Citizens and two Institutions. The levels and statuses of the two Institutions are not relevant for the sake of this explanation. The three Citizens have levels, statuses and deliberative powers showed in table 9.17 and figure 9.12. The eGODS implements one type of Deliberation Token and one Type of Deliberation Ink, the Deliberation Tokens are called Pencils and the Deliberation Inks are called Ink. According to their level and their status, Citizens have a maximum amount of Pencils and Ink as shown in table 9.12.

The three Citizens are all allowed to see the Deliberation Cards proposed by other players. Each player sees the Deliberation Cards randomly sorted, but specific eGODS implementations can supply mechanisms to sort the cards is the way players prefer. Figure 9.13 shows the Deliberation Cards already presented in the eGODS as the player Citiz-2 sees them. The player Citiz-2 has also already given her negative vote to the card titled "Private Healthcare", so she is able to see the Consensus Power of that Deliberative Card. Three players that have status Deputy whit Deliberative Power of

Table 9.17: The status and level of three players in an example of Gamified Session

Player	Level	Status	Deliberative Power	Allowed To
Citiz-1	Level 4	Citizen	4	1) Participate in the first step of Gamified Sessions.
Citiz-2	Level 10	Deputy	18	1) Participate in the first and in the second step of Gamified Sessions. 2) Create Deliberation Cards
Citiz-3	Level 18	Senator	90	1) Participate in the first, in the second and in the third step of Gamified Sessions. 2) Create Deliberation Cards 3) Propose new solutions in the second step

Figure 9.12: The status and the level of three players in a sample of Gamified Session
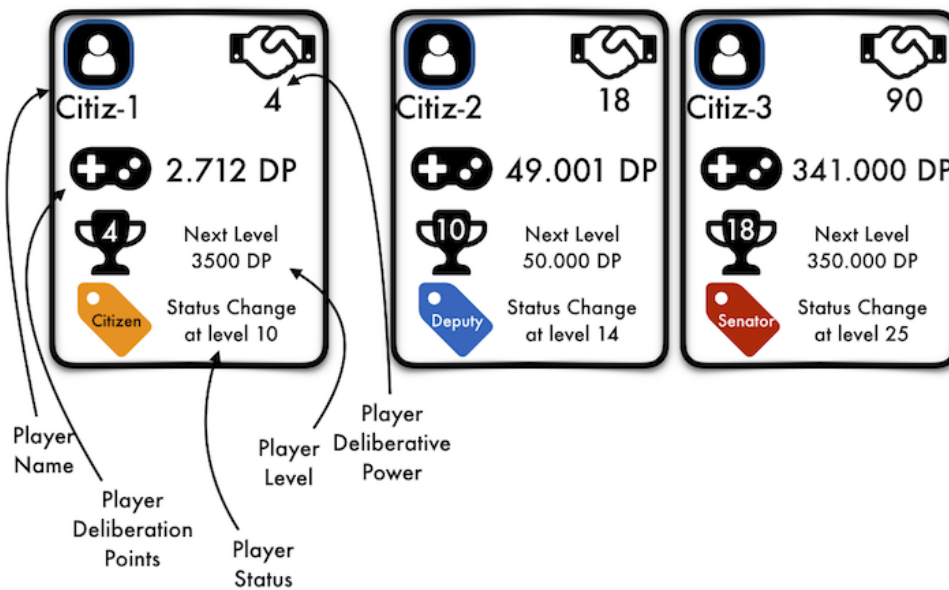
Table 9.18: The maximum amount of Deliberative Tokens and Deliberative Ink for Players in a sample of gamified session

Player	Level	Status	Max Pencils	Max Ink
Citiz-1	Level 4	Citizen	4	40
Citiz-2	Level 10	Deputy	10	100
Citiz-3	Level 18	Senator	18	180

Figure 9.13: The Deliberation Cards in a sample of Gamified Session
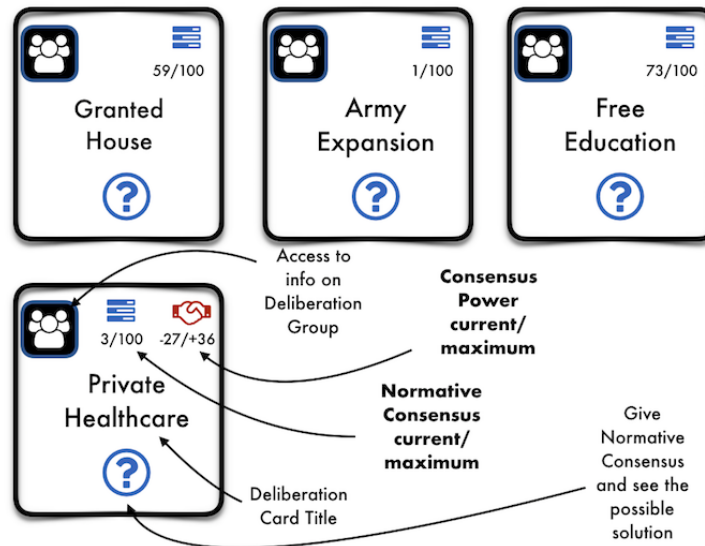
eighteen have voted the card Private Healthcare, so it has a maximum amount of Consensus Power equal to thirty-six. Two of them have voted negatively, one of them has voted positively, so the current Consensus Power of the card is -27, and the Deliberation Card is in the Disapproval Space. The positive vote was implicitly given by the author of the Deliberation Card at the moment of its creation and, for this reason, that Card has entered the eGODS with a Consensus Power of eighteen.

Since the player Citiz-2 has already entered the gamified session relative to the Deliberation Card titled "Private Healtcare", she has already used

Table 9.19: The amount of Deliberative Tokens and Deliberative Ink for Players in a sample of gamified session

Player	Level	Status	Amount of Pencils current/max	Amount of Ink current/max
Citiz-1	Level 4	Citizen	4/4	400/400
Citiz-2	Level 10	Deputy	8/10	1000/1000
Citiz-3	Level 18	Senator	18/18	1800/1800

some of her Pencils. More specifically, she has used one Pencil to look at the possible solution proposed by the creator of the card, and one Pencil to give her negative vote to the solution. According to the rules of this example of eGODS, Pencils are recharged weekly, and Ink is recharged daily. The table 9.19 shows the current amount of Pencils and Ink for the three players.

The player Citiz-2 decides to create a new Deliberation Card because of her interest to protect the anonymity of the Web. The eGODS shows to the player a form similar to the one displayed in figure 9.14. The player decides to create a card titled "Anonymity of the Web", and her proposed solution is to modify a Law that contains 37 normative references. For the creation of the Deliberation Card, the Citiz-2 spends one pencil and 427 inks, 370 for the normative references in the target law, and 57 for an introduction text that is: "*A modification of the article 3 of the following Law would be perfect*". The Card enters the eGODS, all players can see it in different positions as showed in figure 9.15, and both the players Citiz-1 and Citiz-2 decide to give their Normative Consensus to the Card.

The three players gain Deliberation Points and the player Citiz-2 increases her level after the creation of the card and, because of this, also gains a refill of her pencils and ink. The Normative Consensus scores ten multiplied by the level of the player. The used ink scores the amount of ink multiplied by the level of the player that uses it. The players gain, respectively, 40, 4.370, and 180 Deliberative Points. Table 9.20 shows the new situations of points, pencils and ink for the three players.

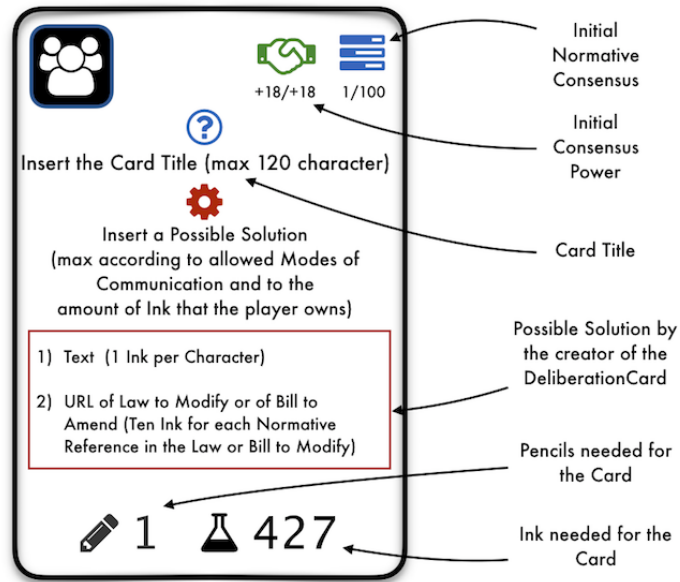**Figure 9.14:** The creation of Deliberation Cards in an example of Gamified Session

Figure 9.15: The visualization of Deliberation Cards for three different players in an example of Gamified Session
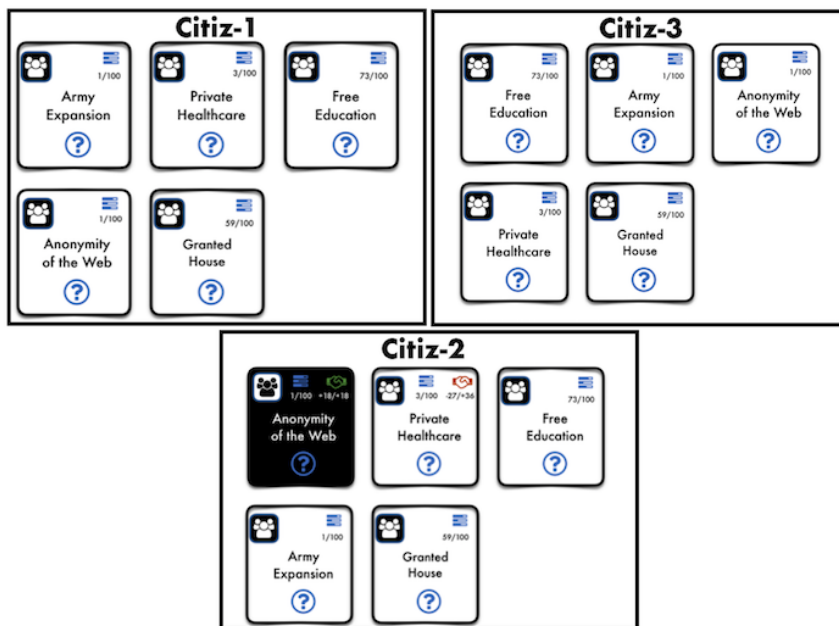
Table 9.20: The Deliberation Points of three players after they have performed Deliberative Interactions in an example of Gamified Session

Player	Level	Status	Amount of Pencils current/max	Amount of Ink current/max	Deliberation Points
Citiz-1	Level 4	Citizen	3/4	400/400	2.752
Citiz-2	Level 11	Deputy	11/11	1100/1100	53.371
Citiz-3	Level 18	Senator	17/18	1800/1800	341.180

Table 9.21: The computation of the Consensus Power of a Deliberation Card in a sample of Gamified Session

Levels	Amount of Citizens	Deliberative Power Of Citizens	Votes			Total
			Positive	Negative	Abstained	
Level 4	23	4	17	5	1	(4 x 17) - (4 x 5) + 0 = 48
Level 11	23	27	17	5	1	(27 x 17) - (27 x 5) + 0 = 324
Level 18	23	90	19	3	1	(90 x 19) - (90 x 3) + 0 = 1.440
						1.812

According to the rules of the eGODS, the first step of the Gamified Session for the Deliberation Card ends after seven days. At that time, 69 Citizens have given their Normative Consensus. For simplicity, we assume that Citizens are divided among only three levels: 23 of them are at level 4, 23 of them are at level 11, and 23 of them are at level 18. In the first group, 17 Citizens have positively voted, 5 have negatively voted, and one has abstained to vote. In the second group 70 Citizens have positively voted, 5 have negatively voted, and one has abstained to vote. In the third group 19 Citizens have positively voted, 3 have negatively voted, and one has abstained to vote. The consensus power is computed by summing the Deliberation Power of the players who have positively voted, and by subtracting the Deliberation Power of Citizens who have negatively voted. Eventually, the Deliberation Card reaches a total Consensus Power equal to 1.709 as showed in table 9.21 and figure 9.16.

Since the Deliberation Card received an approval, all the players giving their normative consensus, or their positive or negative vote, gain other Deliberation Points. The computation of this bonus is made in relation to the

Figure 9.16: The Consensus Power of a Deliberation Card in a sample of Gamified Session
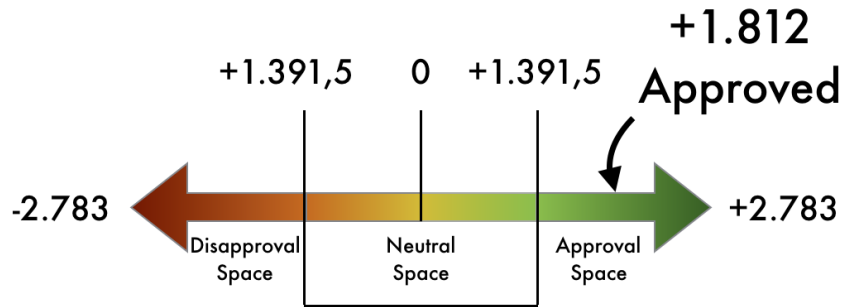
Normative Consensus and the votes of players. Players who have positively voted receive an amount of Deliberation Points equal to the sum of the Deliberative Power of all the players who have positively voted. Players who have negatively voted receive an amount of Deliberation Points equal to the sum of the Deliberative Power of all the players who have negatively voted. Since not all the players participating in the eGODS have given the normative consensus to the card, the amount of points that I have listed in the previous statement are adjusted according to the percentage of players who have given normative consensus. Citiz-1 gave a positive vote to the Card and increased his level with the received points. Citiz-3, after having changed three times his position, finally gave a negative vote to the card. Table 9.22 shows the new scores and the overall information of Citiz-1, Citiz-2, and Citiz-3. If Deliberation Cards receive a full approval, or full disapproval, all the players receive further bonuses. More specifically, they receive a double amount of points to the one they would normally receive. Specific implementations of eGODS may reward players with other bonuses when this situation occurs.

After scores are computed, the Deliberation Card moves to the second step of the gamified session. This step lasts for a period of time related to the Consensus Power and the Normative Consensus that the card has received

Table 9.22: The Deliberation Points of three players after the first step in an example of Gamified Session

Player	Level	Status	Amount of Pencils current/max	Amount of Ink current/max	Deliberation Points received in the first step	Deliberation Points
Citiz-1	Level 5	Citizen	5/5	500/500	round(1.543,53) = 1.544 (4 x 10) for having voted = 40	4.336
Citiz-2	Level 11	Deputy	11/11	1100/1100	round(1.543,53) = 1.544 (11 x 10) for having voted = 110	55.025
Citiz-3	Level 18	Senator	18/18 (refilled after a week)	1800/1800	round(293,25) = 293 (18 x 10 x 4) for having voted = 720	342.193

in the first step. Fifteen minutes of chat time are granted for each player who has given the Normative Consensus to the card. Only a percentage of the total amount of minutes is allocated to the second step of the gamified session, equal to the percentage of Power Consensus that the Deliberation Card did not receive. The players have a maximum amount of time that they can use for Deliberative Interactions in the second step. The amount of time granted to each player is equal to the total amount of minutes for the session divided by the number of players who participate to the session.

Table 9.23 shows the total amount of time allocated to the second step of the sample gamified session described in this section. If the Deliberation Card has received a total consensus in the first step, the card skips the second step and players receive special bonuses if specified by the eGODS rules . However, in such a situation, players receive the same amount of Deliberation Points they would receive if the second step was played, according to the rules that I expose later in this section.

The countdown for the second session starts 24 hours after the first session has finished. Countdowns for the allowed interaction time for players start in the moment they begin Deliberative Interactions, and stop when they finish them. If players, at the end of the second step, have not used all their minutes, they are rewarded with an amount of Deliberation Points equal to the number of minutes left multiplied by the player level.

Table 9.23: The total amount of hours for the second step in a sample of Gamified Session

Total Number of Players	Participating players in the second session	Total minutes according to participating players	Max Consensus Power	Starting Consensus Power	Percentage of Consensus Power	
					Received (rounded)	Not Received (rounded)
100	69	(69 x 15) = 1.035	2.783	1.812	65	35

Total amount of minutes	
Duration of the second step	Allowed minutes of Deliberative Interactions for players
(1.035 x 35) / 100 = 362,25 minutes = 6 hours (rounded)	((1.035 x 35) / 100) / 69 = 5 minutes (rounded)

Deliberation Chats have a Consensus Power and an Epistemic Consensus. The initial Consensus Power is equal to the one that the card has received in the first step, whilst the initial Epistemic Power is equal to one, because the chat starts with only one possible solution (the one proposed by the players who have created the Deliberation Card in the first step). The solution has itself an initial Consensus Power equal to the one of the Deliberation Chat. Figure 9.17 shows the initial status of the Deliberation Chat in the second step.

During the Deliberation Chat players can use all the modes of communication allowed by the eGODS. For the sake of simplicity, in this example we assume that players are only allowed to write text messages. When players begin to write a message their timer starts, and when they send the message their timer stops, but the time is actually decreased only if players send the message. Each message has a cost in terms of ink (one ink for each character used in messages), and it rewards players with an amount of Deliberation Points that is equal to the number of characters used for the message multiplied by the level of the player. While chatting players can change their position on solutions, and the position change has a cost in terms of Pencils but rewards players with Deliberation Points. More specifically, each position change in this step costs two pencils and rewards players with a total amount of points obtained by multiplying the player level by 20. Figure 9.18 shows an example of chat among Citiz-1, Citiz-2, Citiz-3 and Inst-1, from the perspective of Citiz-1.

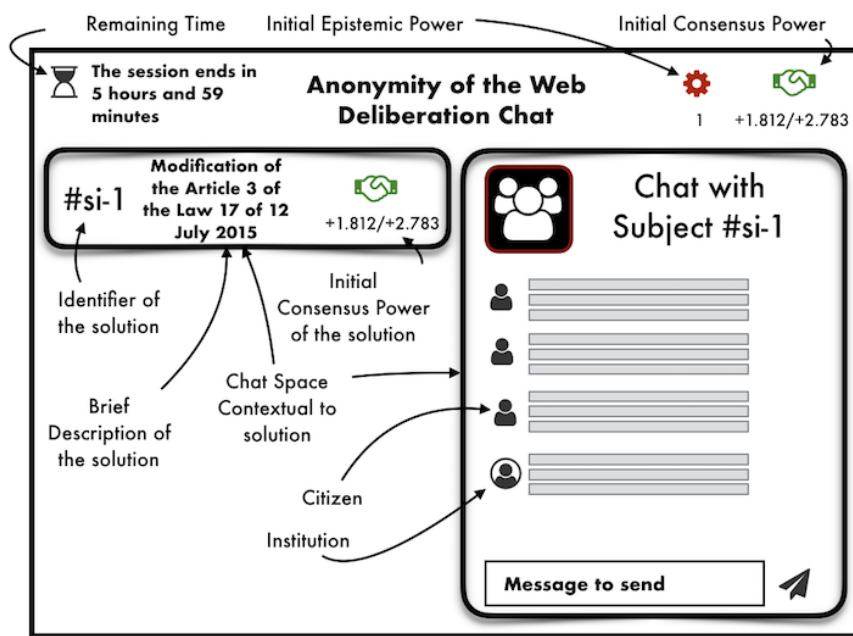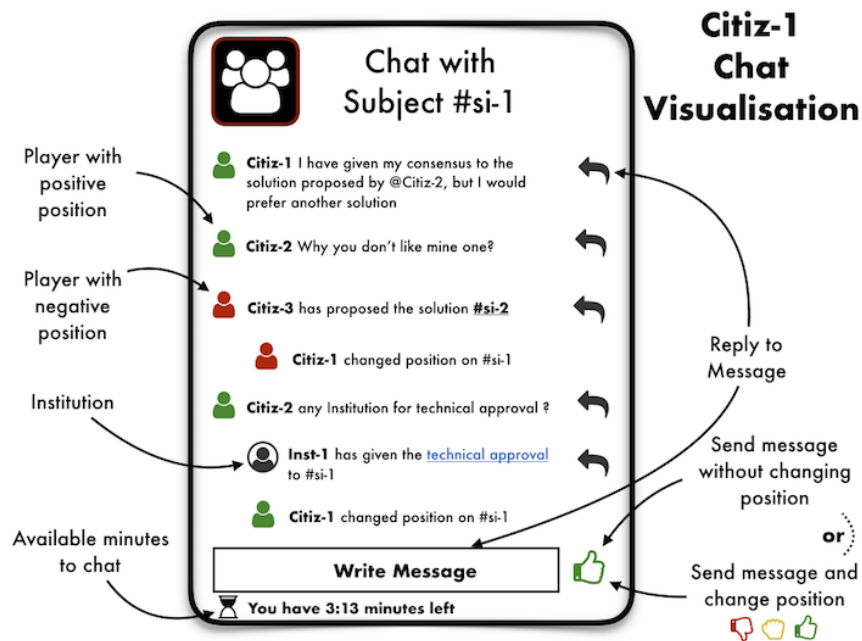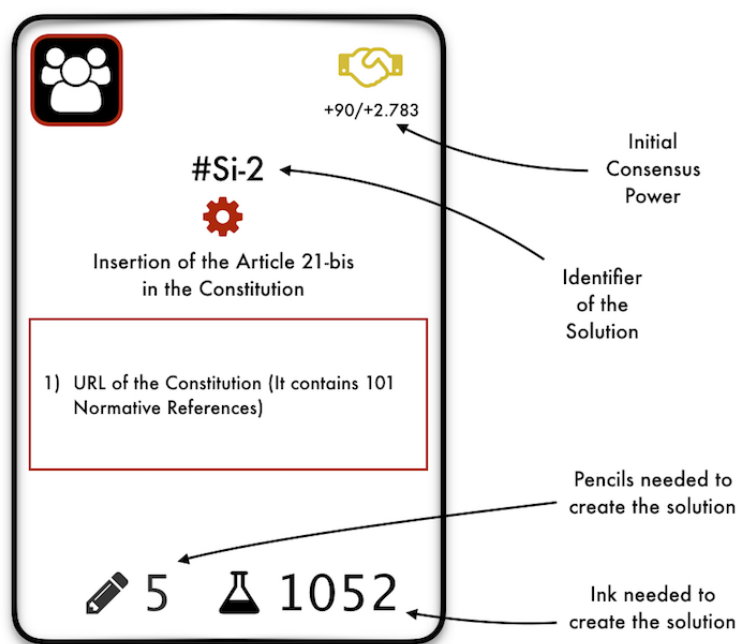**Figure 9.17:** The initial status of the Deliberation Chat in a sample of Gamified Session

Figure 9.18: Example of messages in the Deliberation Chat in an example of Gamified Session

Figure 9.19: The creation of a Solution in the second step of an example of Gamified Session

Because of her level, as I have previously exposed in this section, Citiz-3 is the only player allowed to create another solution in this step. The player creates a new solution with a mask similar to the one in figure 9.19. Like in the first step of the gamified session, the creation of the solution has a cost in terms of Pencils and Inks, and it rewards the player with Deliberation Points. More specifically, the player spends 5 pencils, 1.052 ink, and receives a reward of 11.420 Deliberation Points, according to her level and to the Pencils and the Ink used for the creation of the Solution. Figure 9.20 shows the second step of the gamified session after the creation of the second Solution.

As the Deliberation Cards displayed to players in the first step, also the solutions in the second step are randomly ordered and presented to players. As showed in figure 9.20the overall Consensus Power of the Deliberation Chat doubles and the Epistemic Consensus becomes two. After the introduction of the new solution, all the players that gave their negative consensus to the first solution, give their positive consensus to the second one, and players Citiz-1

Figure 9.20: Two different solutions in an example of Gamified Session
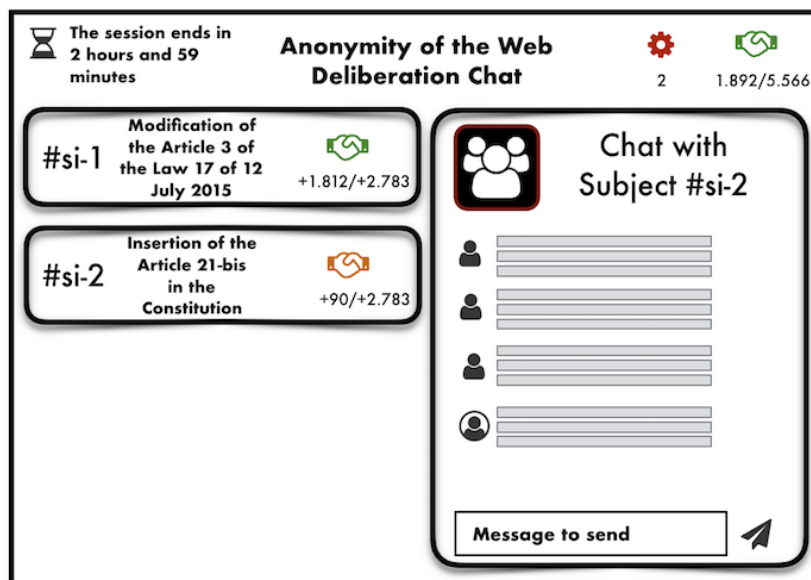
and Citiz-3 change their position on #si-1 from positive to negative, giving their positive consensus to #si-2. Besides, the three players who abstained in the first step change their position and give positive consensus to the solution #si-1. Lastly, all the players who gave positive consensus to the solution #si-1, give their negative consensus to the solution #s1-2. Figure 9.21 shows a depiction of the new status of the Deliberation chat.

After the introduction of the solution, the players Inst-1 give her technical approval to the solution #si-1 as showed in figure 9.18, and she gives technical disapproval to the solution #si-2. Because of the technical disapproval, all the players decide to give a negative consensus to the solution #si-2, and all of them give their positive consensus to the solution #si-1. Figure 9.22 shows a depiction of the new status of the gamified session.

The Deliberation Chat ends in this status with a final Consensus Power equal to 5.566 divided by two, that is the Epistemic Consensus and so the number of proposed solutions in this step. All the players receive two bonuses, one for the full negative consensus on the solution #si-2 and one for the full

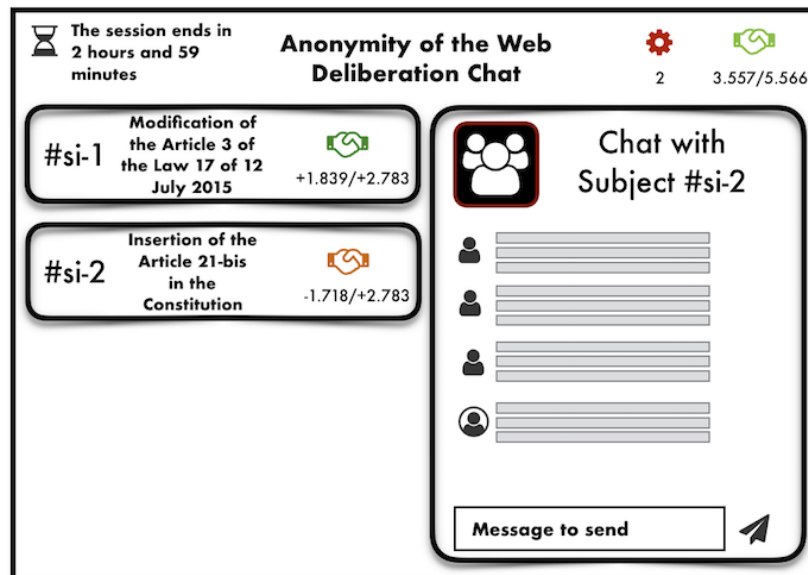**Figure 9.21:** Two different solutions in an example of Gamified Session

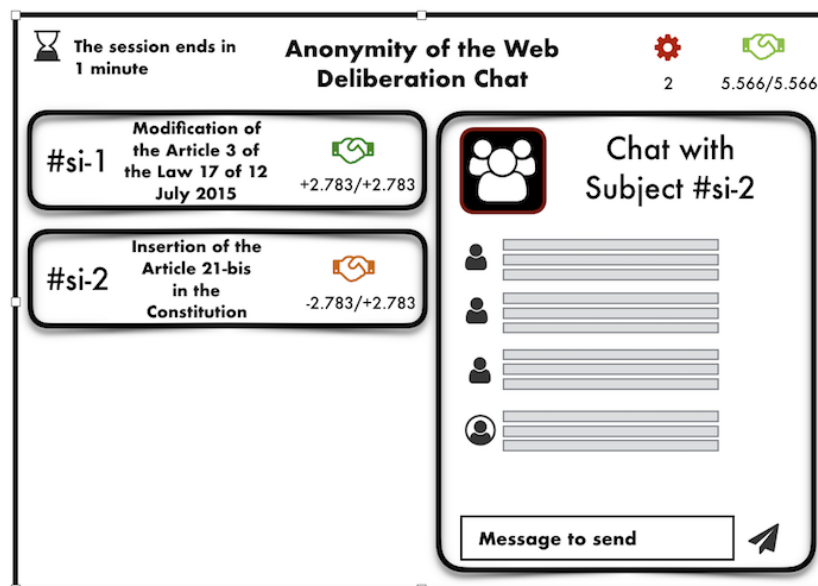**Figure 9.22:** The final status of the Deliberation Chat in an example of Gamified Session

Table 9.24: The amount of time dedicated to the third step in an example of Gamified Session

Participating players in the second session	Total minutes according to participating players	Max Consensus Power	Received Consensus Power	Percentage of Consensus Power	
				Received	Not Received
69	(69 x 30) = 2.070	5.566	5.566	100%	0

Total amount of minutes	
Duration of the third step	Allowed minutes of Deliberative Interactions for players
(2.070 x 100) / 100 = 2.070 minutes = 35 hours (rounded) + 72 hours = 107 hours	((2.070 x 100) / 100) / 69 = 30 minutes

positive consensus on the solution #si-1. The amount of bonus is calculated by multiplying the player level by 100. The players also received other Deliberation Points for the consensus received by the Deliberation Chat and they are computed like in the first step, as I have previously exposed. After having received the points, both Citiz-1 and Citiz-2 increase their level and, because of her new level, Citiz-2 is enabled to participate in the third step of the gamified session, whilst Citiz-1 increases her level to seven and she is still not allowed to participate in the third step.

Like in the second step, the final Consensus Power is used to compute the amount of time allowed for the third step, but unlike the second step, the time is computed in function of the positive consensus that the Deliberation Chat received, and each player has thirty minutes allowed for Deliberative Interactions in contextual chats for proposals. In addition, the third step grants 72 hours of Deliberation on proposals. Table 9.24 shows the time allocated to the third step of the gamified session.

The third step is dedicated to deliberate and choose the actual implementation of the solutions. In this example, the eGODS supplies tools to propose modification to laws or to bills. The eGODS supplies the players an interface similar to figure 9.23, that is focused on the law or on the bill to modify.

The third step has an initial Preferential Consensus that is equal to zero, and it has an initial Consensus Power that is equal to the consensus power received in the Deliberation Chat. According to their level, players are enabled

Figure 9.23: The third step in an example of Gamified Session
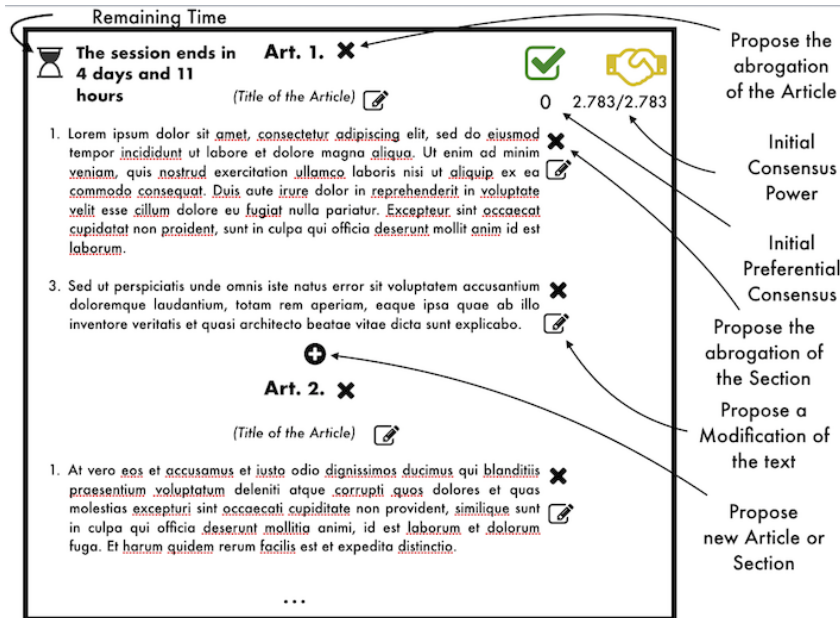
to propose modifications, integrations or abrogations of all the partitions of the subject of the step. Proposals have costs in terms of pencils and ink and, if players decide to create proposals, the eGODS supplies them interfaces similar to figures 9.24 and 9.25. In the example, Citiz-3 and Citiz-2 decide to propose, respectively, an abrogation and a modification, and both enter the step with their dedicated Consensus Power.

When proposals are created, other players are able to see them as showed in figure 9.26. Players can access the list of proposals dedicated to specific partitions and deliberate on them by means of contextual chats, whose rules and implementation are identical to the Deliberation Chat of the second step. Players can also cast positive or negative votes on the proposals, and also these interactions are managed in identical ways as the others steps of the gamified session. The figure shows the list of proposals on a specific partition and the Deliberation Chat dedicated to one of the proposals.

After the Deliberation on proposals ends an outcome is created and, in this example, the eGODS produces an amendment to the Law and a report

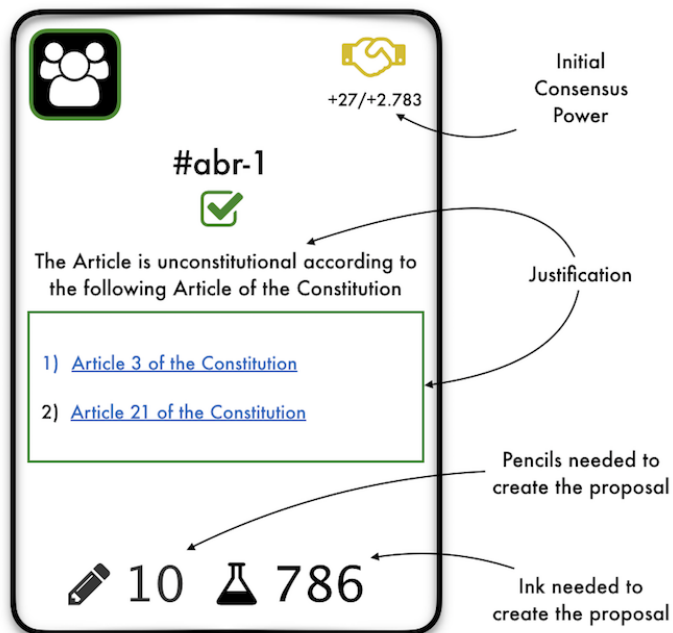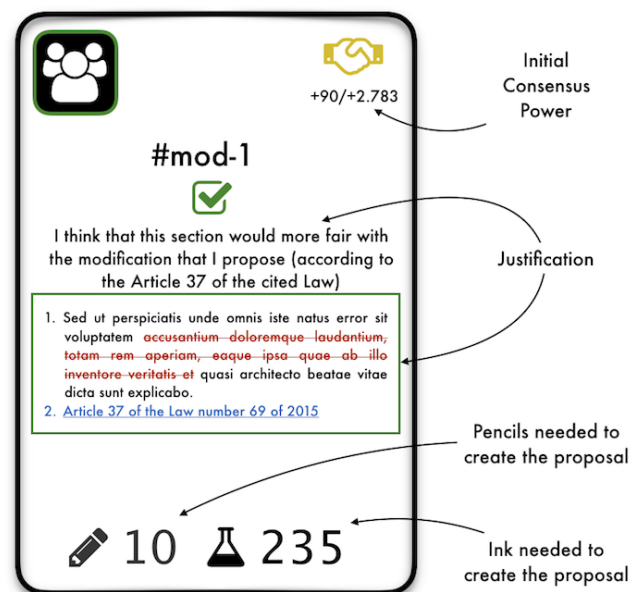**Figure 9.24:** An abrogation proposal in a sample of Gamified Session

Figure 9.25: An modification proposal in a sample of Gamified Session

Figure 9.26: Different proposals in an example of Gamified Session

Figure 9.27: The list of proposals related to a partition in an example of Gamified Session

that includes all the Deliberative Interactions that players have performed during the gamified session. According to the requirement of agencies supplying the eGODS, the outcome of the Deliberation can be directly introduced into to the Democratic system of the country, or dispatched to the proper Institutions.

Since the gamified session eventually produced an outcome, all the players who have participated into it are rewarded with special bonuses and can be allowed to enter other eGODS that manage the produced outcomes for other purposes. For instance, if the outcome is going to be discussed in the Parliament, there could be another eGODS dedicated to this discussion, and Citizens who have performed well in the creation of the outcome may be allowed to enter this eGODS.

In case the initial Deliberation Cards are transformed into outputs, they are added to the profile pages of players who have participated into the Deliberation. Players can always see all the Cards that other players have and these Cards can be used for other gamified purposes; for instance, when there are no active gamified sessions, the cards can be used in mini-games aimed to improve the Deliberative Capacity of Citizens.

As I expose in the following section, the eGODS features that I have described in the previous sections of this chapter and the gamified session that I have described and exemplified in the previous section 9.8 and in this section are properly designed to implement some of the requirements of online Deliberative Systems.

9.10   Towards an implementation of eGODS

The gamified system described in this chapter is designed to implement the requirements for the legitimacy of Deliberative Systems related to the motivations and the biases of human beings. Also, the system is designed around mechanisms of Deliberative Interactions and Deliberative Consensus, in order to implement other needed requirements for its legitimacy.

More specifically, the eGODS implements mechanisms of Deliberative Interaction by allowing player to use different communication modes. Indeed, players can communicate by means of chats in which they can link images, videos, Web pages and other resources, or they can use generic text. Also, players can communicate by simply interacting with the system for reaching the Deliberative Consensus, by casting votes or creating new inputs to nurture the deliberation. Final decisions are made by using the ballot mechanisms described in the previous sections of this chapter, based on the majority rule. However, players are allowed to change their position at any moment, their egalitarianism and anonymity are granted and, although they can have different statuses and levels, the eGODS avoids any form of hierarchy, because players have equal possibilities to increase their level. For the same reasons, the design of the Deliberative Interaction and Deliberative Consensus also avoid social domination, and allow players to persuade other players to accept their points of view.

The Players Levels and the Players Statuses are designed to foster the motivations of users to learn and improve their deliberative capacities, and to master the system and the deliberation. The deliberation and the voting system, combined with the scaffolding system and the on-boarding system implemented by the levels and the statuses design, are useful to check the capability, conscientiousness, education and the purposes of players. Also, the gamified session gives interesting options to players to select.

The eGODS is also designed to avoid common biases of human beings, like the filter bubble effect, the confirmation bias, the authority bias and the Lucifer effect. All of them are avoided by combining the anonymous access to gamified sessions and the sticked leader-boards. Indeed, although players can see the Power Consensus of any item introduced in the system, Deliberation Cards, solutions and proposals are always ordered randomly when they are showed to players.

In the next chapter 10, I describe the mock-ups and the other salient traits of a Web application aimed to implement the eGODS that I have

described in this chapter, the gamified session that I have described in the section 9.9, and designed to exploit Web technologies in order to implement other legitimacy requirements of online Deliberative Systems.

Chapter 10

WONSAMU, an eGODS implementation

The aim of this chapter is to expose WONSAMU, an implementation of eGODS that I have designed to accomplish the goals of my research work. In the next section 10.1, I describe the generic aspects of the system and the technologies on which it relies. In the sections 10.2, 10.4, and 10.5, I expose the three steps of gamified sessions of WONSAMU and, eventually, in the section 10.6, I expose the legitimacy features that WONSAMU implements.

10.1   Description of The System

WONSAMU[1], is an open source implementation of eGODS, developed
with Node.js[2], Meteor.js[3], HTML5[4], and AkomaNtoso[5]. Although WON-
SAMU is easily customizable, localizable and extendable, it was originally
designed to fulfill the exigency of Italian Institutions that want to engage
Citizens in the discussions of Bills proposed by the Italian Chambers, and
in the proposals of new Bills. At the moment of writing the system is fully
designed and partially implemented. WONSAMU design strongly relies on
four main aspects in order to satisfy the legitimacy requirements of online
Deliberative Systems, as I have exposed in chapter 6.

Firstly, all the discussions and the other interactions among users are
serialized in reports marked-up with AkomaNtoso. According to the Ako-
maNtoso standard and naming convention, the reports have their own Uni-
form Resource Identifier[6] and contain expansive metadata sections. For this
reason, although Citizens are allowed to interact anonymously, deliberations
are traceable, transparent, monitorable, accountable and revisable.

Secondly, by leveraging on Meteor, Node.js and HTML5, WONSAMU
in easily portable on different devices, and it is possible to connect it whit
other systems developed with other technologies. This means that users
can deliberate asynchronously and they can access the deliberation at any
time, also with their mobile devices. Because of its portability, WONSAMU
fulfils the legitimacy requirements of deliberation since, indeed, it allows

---

[1]The name WONSAMU is derived by the Adrinka Symbol of West Africa WO NSA DA
MU A, that means *"if your hand are in the dish"*. The symbol represents the Democracy
for the Ashanti People of Ghana (http://www.adinkra.org/htmls/adinkra_index.htm).

[2]Node.js is a Javascript run-time for developing javascript code that can be run server-
side (https://nodejs.org/en/).

[3]Meteor is an open source framework based on Node.js to develop cross-platform live
applications that can be developed on the Web, on smart-phones, and on other devices
(https://www.meteor.com).

[4]See the section 6.2.

[5]See the section 6.2.

[6]See the section 6.2.

distributed, continuous, interconnected, interdependent and ubiquitous deliberation. Node.js and Meteor also enable other interesting features because they are based on asynchronous event-driven architectures, meaning that systems can emit special events when particular situations happen. This is useful for the implementation of online Deliberative Systems, because systems could be connected to other systems that, for instance, may control the fairness of deliberations when specific events are emitted. Moreover, Meteor strongly relies on the Distributed Data Protocol[7] and is predisposed to use the GraphQL language[8]. These technologies, used in combination with AkomaNtoso, allow an easier interconnection among Deliberative Systems. Indeed, Deliberative Systems can be designed to share data among themselves and this is useful, for instance, to recognize the activities that users perform in different systems.

Thirdly, the interface of WONSAMU is designed to follow the most recent guidelines and standards on usability and accessibility. The interface is based on Material Design and, as I have exposed in section 6.1, it is designed to be responsive. This means that not only the system is cross-platform, but it can also be properly displayed on screens of different sizes. As I have already stated previously, WONSAMU is designed to be simply localized, but it can also use different types of languages according to the characteristics of users who access the deliberation. This leads to another main aspect of WONSAMU.

Lastly, WONSAMU is not designed to be natively gamified. The gamification is an over layer that can be activated or deactivated. This is important to not confuse users already used to deliberate in "old-fashion" ways, or to respect the requirements of specific Institutions that for bureaucratic reasons

---

[7]The Distributed Data Protocol is a simple protocol to synchronize different clients according to changes that may occur on server side databases (https://guide.meteor.com/methods.html).

[8]GraphQL is a query language for software APIs developed by Facebook. It allows to query data to software by using a simple syntax regardless of the storage engine that systems use (http://graphql.org/).

Figure 10.1: A screen-shoot of the desktop and non-gamified version of WONSAMU
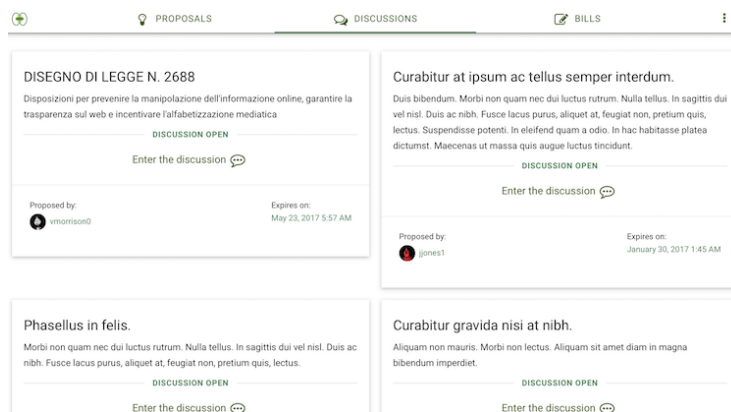
can not use gamification. For this reason, WONSAMU is designed to use different languages, and it has a different aspect when gamification is activated or not activated. Figures 10.1 and 10.2 show, respectively, a screen-shoot of WONSAMU in its desktop and non-gamified version, and a screen-shoot of its mobile and non-gamified version.

Although the general structure of the gamified version of WONSAMU is very similar to the non-gamified version, as showed in figures 10.3 and 10.4, due to its gamified nature it leads to very different user experiences. In the next sections of this chapter, starting by the on-boarding phase of WONSAMU, I will show the design of its gamified version. The design is made according to the rules of eGODS that I have exposed in the previous chapter 9. More specifically, WONSAMU is implemented to model the gamified session that I have exposed in sections 9.8 and 9.9.

Figure 10.2: A screen-shoot of the mobile and non-gamified version of WONSAMU
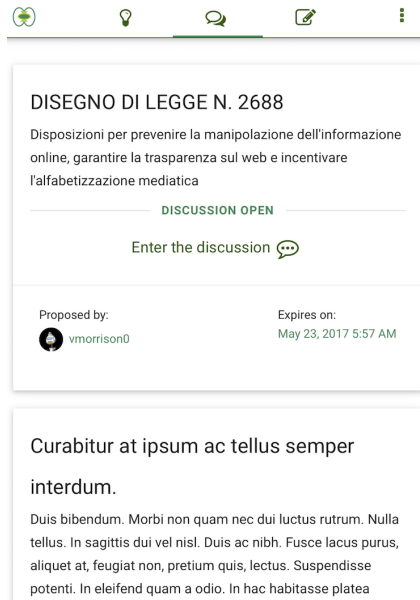
Figure 10.3: A screen-shoot of the main structure of the gamified version of WONSAMU (Browser)
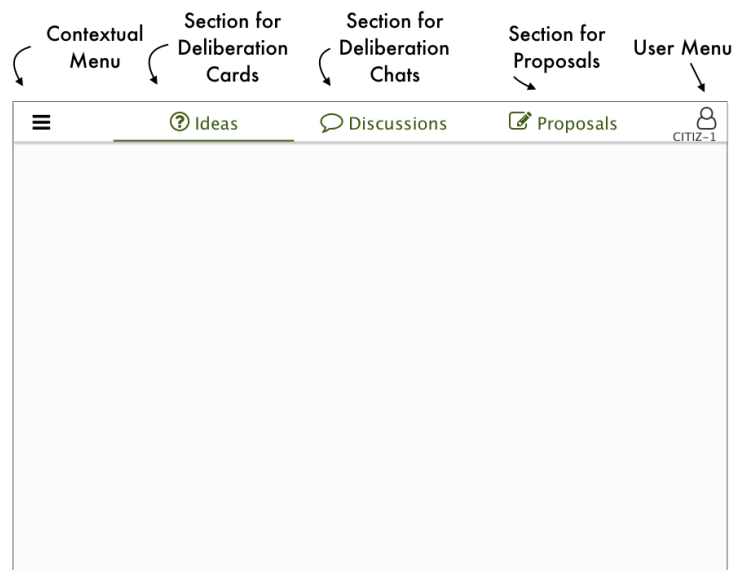
Figure 10.4: A screen-shoot of the main structure of the gamified version of WONSAMU (Mobile App)
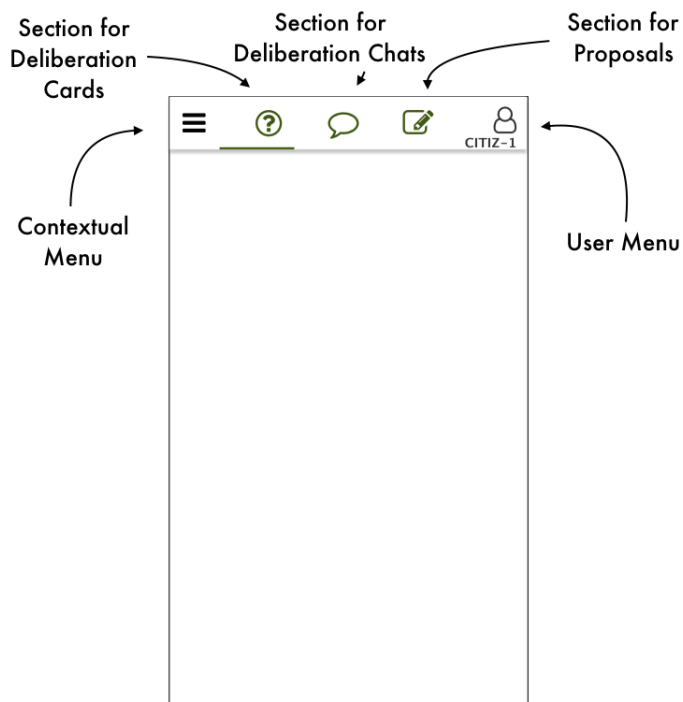
10.2   The On-boarding Phase

WONSAMU implements both types of on-boarding systems that I have exposed in section 8.4. The first is a classical one, and the second is a Batman on-boarding. The aim of the first on-boarding system is to drive users to learn the system, teach them the main parts of the user interface and the meaning of the gamified components that the system exposes, and to give users a first insight on the actions that they may perform in order to progress into the game and the deliberation. The second on-boarding system is a kind of continuous on-boarding, and is used to give hints on the actions they can perform while they are involved in Deliberative Interactions. In this section, I expose the classical on-boarding system, whilst in section 10.4, I show screen-shoots of the Batman on-boarding.

Figure 10.5: A screen-shoot of the on-boarding system of WONSAMU (Mobile)

When users sign-in for the first time into WONSAMU, they start from level zero and the underage status, and have to progress until the fourth level in order to change their status to Citizens and, so, to be able to actually start to deliberate. Although they are enabled to dismiss the on-boarding system whenever they want, it is designed to drive users to reach level four.

When users sign-in, the system assign them a random user name and the on-boarding starts by asking users to change their name as showed in figures 10.5 and 10.6. If they dismiss the message, they are able to explore the sections of the system but they can not see any content, as showed in figures 10.7, 10.8 and 10.9. In these situations, the system will display a floating action button in the bottom-right corner of the screen. By tapping or clicking the button, users can have access again to the on-boarding instructions. The button is also used after the on-boarding phase to display notifications to users, and the color of its border changes according to the "seriousness" of the notification.

If users decide to change their name, the system shows them a form that they can fill-in with the name they prefer, as showed in figure 10.10. The users fill in their name and click the "done" button. This action rewards

Figure 10.6: A screen-shoot of the on-boarding system of WONSAMU (Browser)
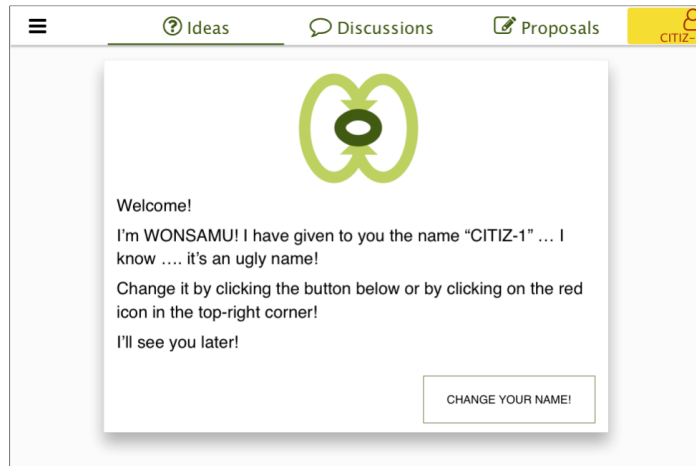
Figure 10.7: A screen-shoot of the ideas section when users are not able to see the contents
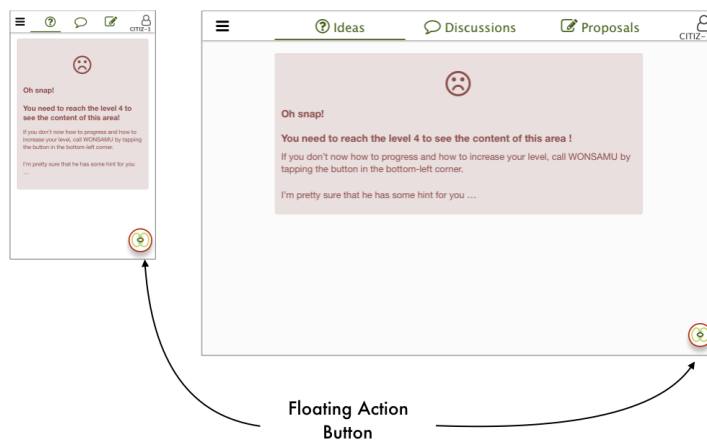
Figure 10.8: A screen-shoot of the discussions section when users are not able to see the contents
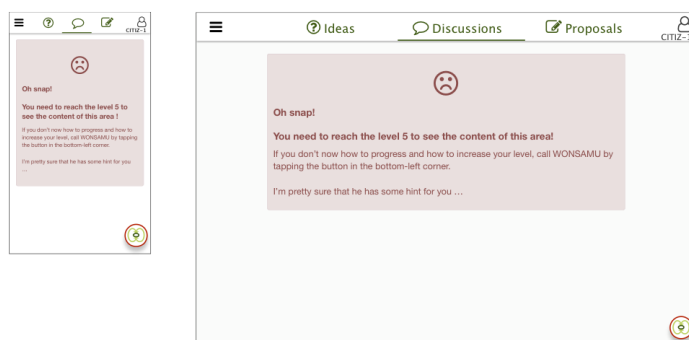
Figure 10.9: A screen-shoot of the proposals section when users are not able to see the contents
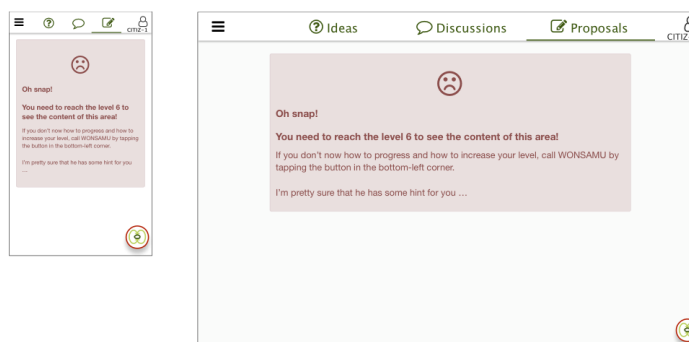
Figure 10.10: A screen-shoot of the form to change the user name
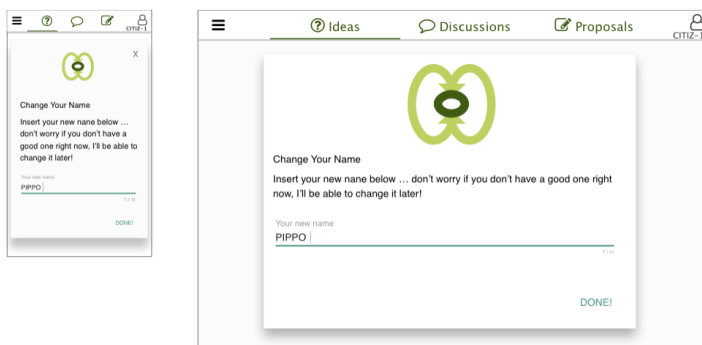
Figure 10.11: A screen-shoot of the on-boarding system when users gain their first Deliberation Point
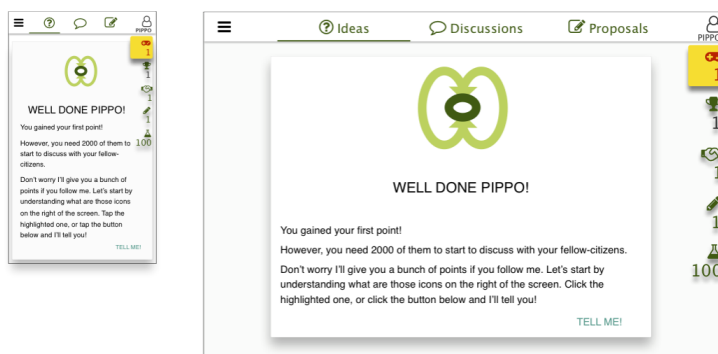
them with a first Deliberation Point and, by means of it, users reach level one. The on-boarding system congrats users, and supplies them further actions and instructions to progress in the game, as showed in figure 10.11.

When users click on the highlighted icon that displays their current amount of points, they start a kind of wizard that drives them to reach the fourth level and upgrade their status to the Citizen one. The first three steps of the wizard are aimed to teach to users the meaning of the Points, the Levels, and the Power, and they are aimed to drive users to reach the level 3. The figure 10.12 shows the first three steps of the wizard in the mobile version of WONSAMU. In the browser version the wizard is identical, with

Figure 10.12: A screen-shoot of the on-boarding system when users click on the points icon
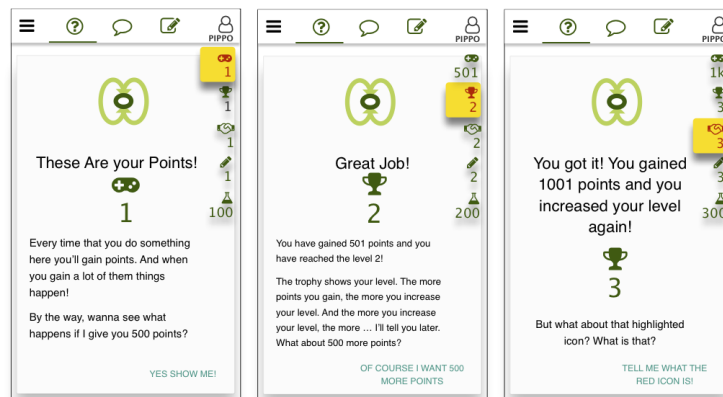
the only exception of the size of the messages.

The fourth, fifth and sixth step of the wizard, showed in figure 10.13, are aimed to explain users the functioning of the pencils and the ink. At the end of the sixth step, users are requested to insert their skills, if they want to do so. By doing it, users understand the costs of Deliberative Interactions by practicing a sample of them, as showed in figure 10.14, and gain 300 further points needed to increase their level. Figure 10.14 also shows the two steps of the on-boarding system that drive users to reach level four. In these last two steps, users learn how to close the icons set that displays their gamified status and, eventually, the system asks them to move to the ideas section, where they are now able to see the list of Deliberation Cards that have already entered the system. The last step of the on-boarding system starts when users scroll the Deliberative Cards.

I describe the last step of the on-boarding systems in the next section 10.3, in which I also expose the interface of the ideas section of WONSAMU.

Figure 10.13: A screen-shoot of the on-boarding system when users click on the pencils icon
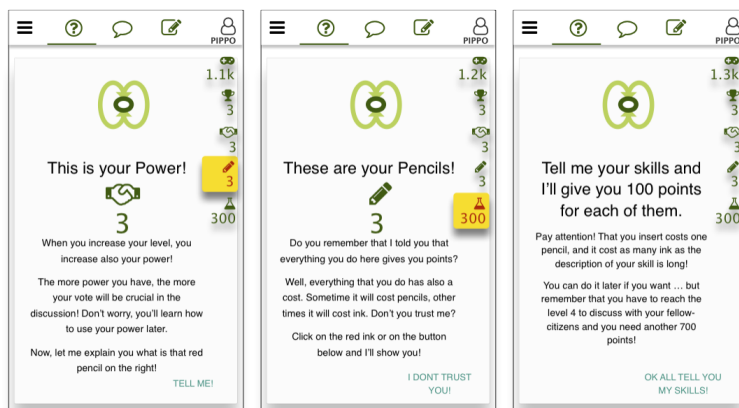
Figure 10.14: A screen-shoot of the on-boarding system to teach users the cost of Deliberative Interactions
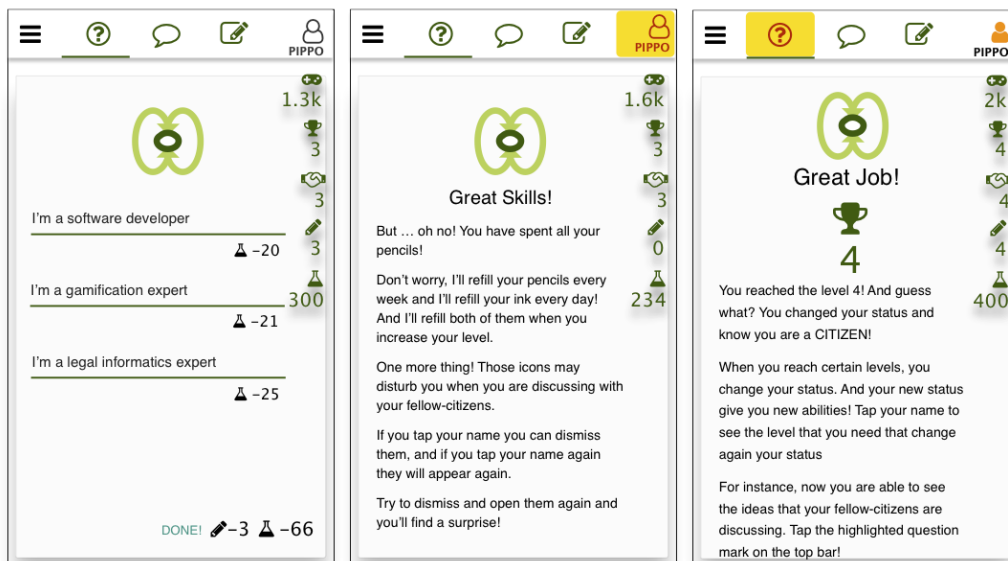
10.3 The Deliberation Cards

When users reach level four, they can see in the ideas section of WON-SAMU the Deliberation Cards that have already entered the system. If they see the cards for the first time, WONSAMU insert a fake card among the others, as showed in figure 10.15. As soon as users start to scroll the cards or they tap or click them, the last part of the on-boarding starts, as showed in figure 10.16. The last step of the on-boarding is structured as a contextual help, because the card and the on-boarding messages must be showed simultaneously.

Figure 10.15: A screen-shoot of the ideas section of WONSAMU and the Deliberation Cards
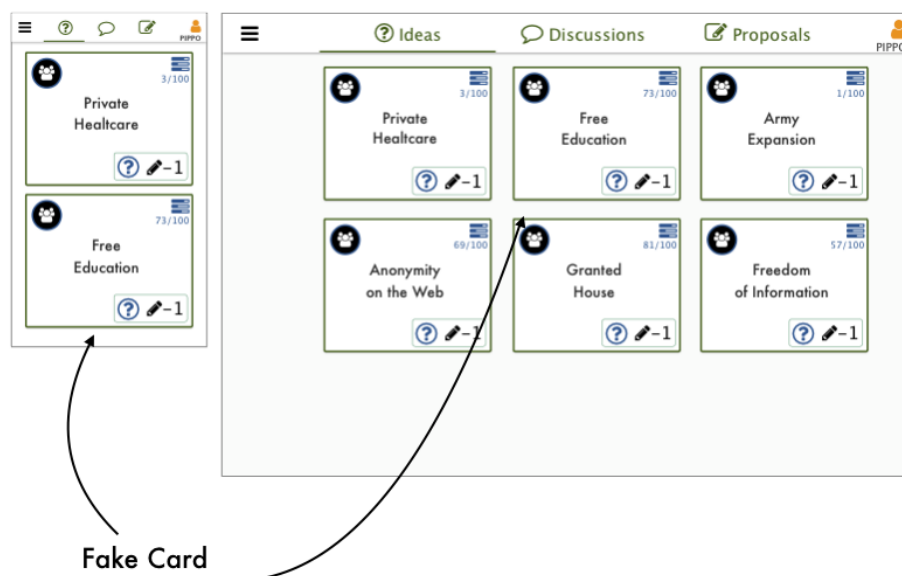
The last step of the on-boarding is aimed to teach users the first voting mechanism of WONSAMU. Firstly, the on-boarding shows users how they can start a gamified session by giving to a card their normative consensus and, so, by looking at the first solution for the issue inserted by the creator of the card. Secondly, the on-boarding gives instructions to users about the

Figure 10.16: A screen-shoot of the contextual on-boarding in WONSAMU
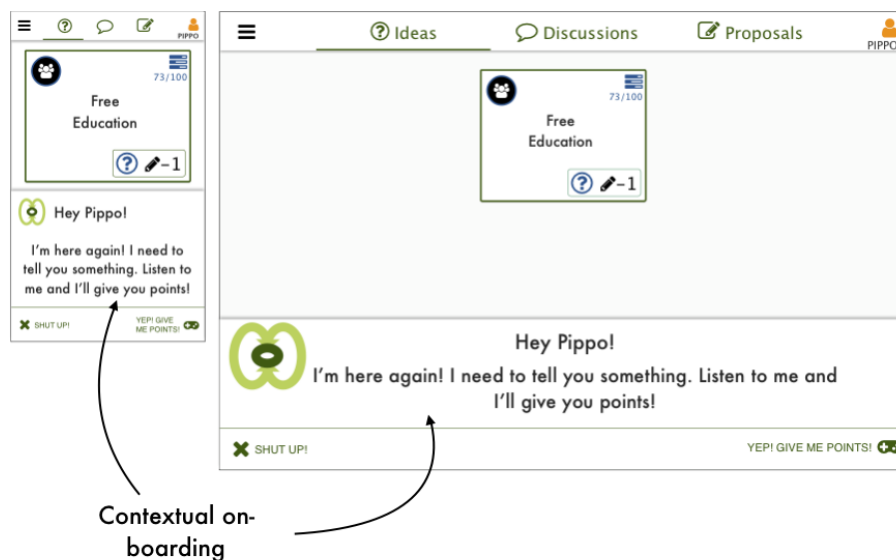
consensus power and how they can give their positive or negative consensus to the proposed solution. Thirdly, the on-boarding teaches users the rules of the combined approval voting, on which the ballot system of WONSAMU relies. Fourthly and lastly, the on-boarding system shows users how they can access the information about the deliberation group and, so, about all users who have given their positive or negative consensus to the card. Figure 10.17 shows the first three steps of the last part of the on-boarding in the mobile version of WONSAMU.

When users have learned how to vote for ideas, the floating button to request help to the system, that I have exposed in the previous section 10.2 appears again in the bottom-right corner of the screen and users are finally ready to start the actual deliberation, as showed in figure 10.18. The on-boarding shows-up again automatically when users reach certain statuses and levels in the system. More specifically, other on-boarding sessions are scheduled when users enter for the first time the discussions section and the proposals section of WONSAMU. Also, as soon as users increase their level

Figure 10.17: A screen-shoot of last part of the on-boarding in WONSAMU

Figure 10.18: A screen-shoot of the ideas section in WONSAMU when the on-boarding ends
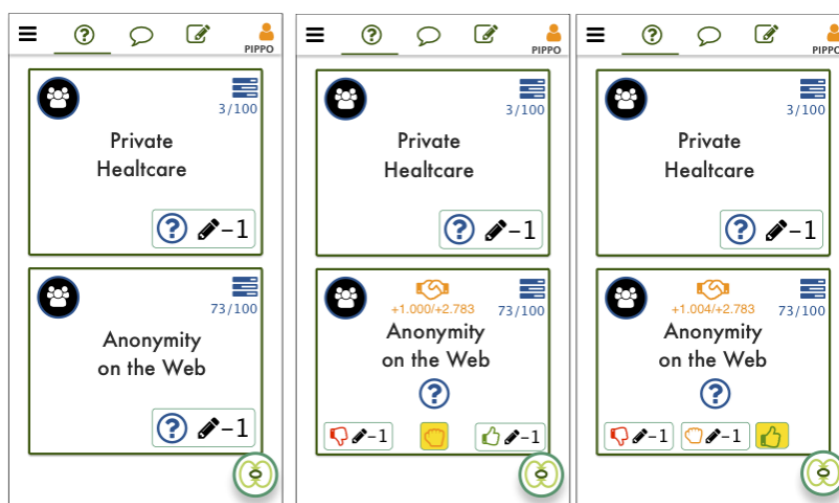
Figure 10.19: A screen-shoot of the floating menu button in WONSAMU
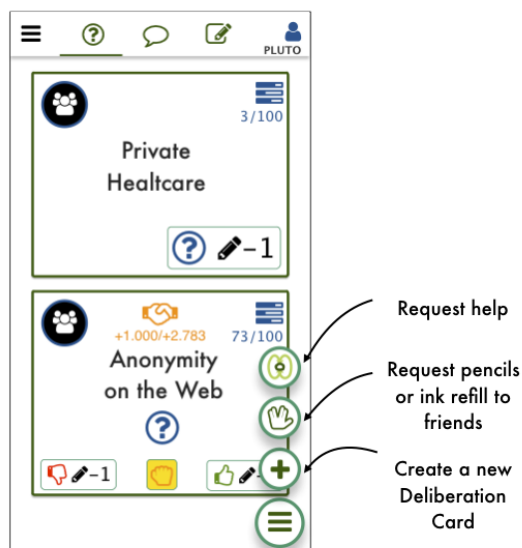
and, so, have more options to interact with the system, for instance when they can create Deliberation Cards, the floating button changes and becomes a floating menu button that contains several options contextual to the area users are currently visiting. Figure 10.19 shows the floating menu button in the ideas section for a user that has reached the deputy status.

Users can access other information on the idea by interacting directly with cards. For instance, as depicted in figure 10.20, by tapping or clicking consensus power icons cards flip and show the situation of the current consensus power and other information, such as the amount of consensus that the card must receive to reach the approval space. If users tap or click the question mark icon, they can see the solution proposed by the proposers of ideas and all the motivations they have given to justify their ideas. Figure 10.21shows an idea whose solution is to modify an Article of an Italian Bill. The proposer of the idea has justified it by inserting a personal text, a video, and a link to an article of the Italian Constitution.

Although users can link directly into the app videos, images and laws or bills, they are retrieved by dedicated Web sites and the metadata is used

Figure 10.20: A screen-shoot of a flipped card in WONSAMU
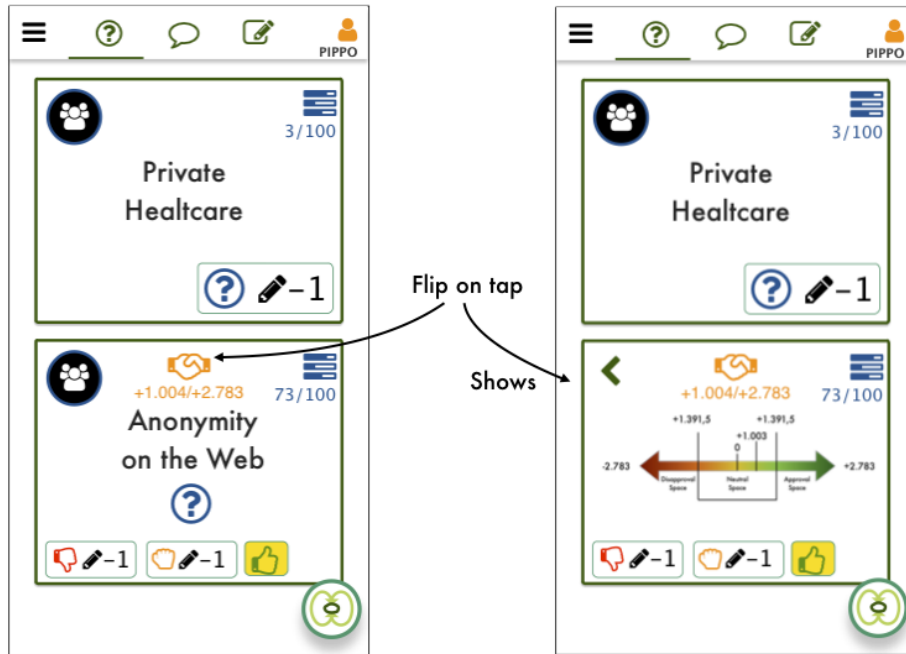
Figure 10.21: A screen-shoot of the motivations of an idea in WONSAMU
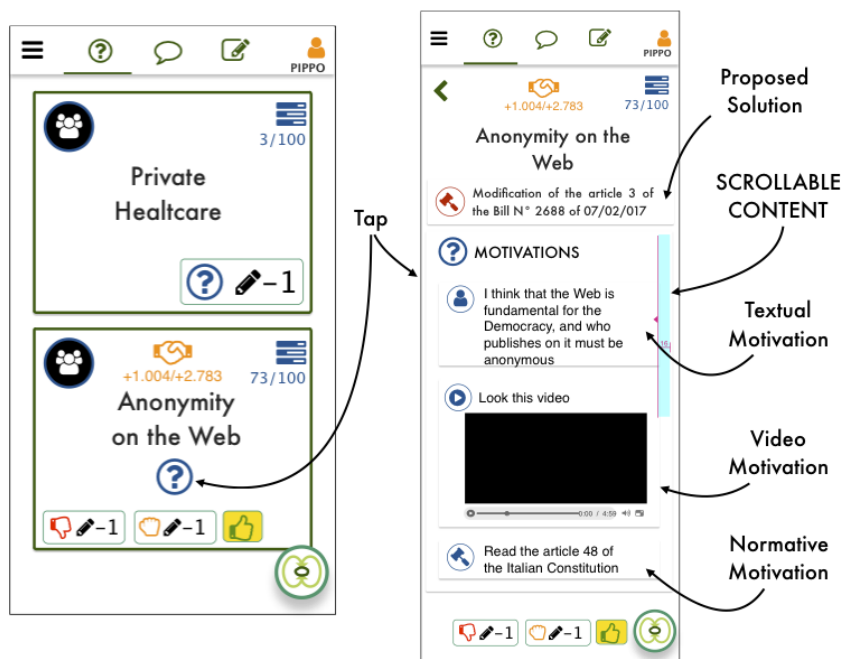
Figure 10.22: A screen-shoot of a Bill from the Italian Senate displayed in WONSAMU
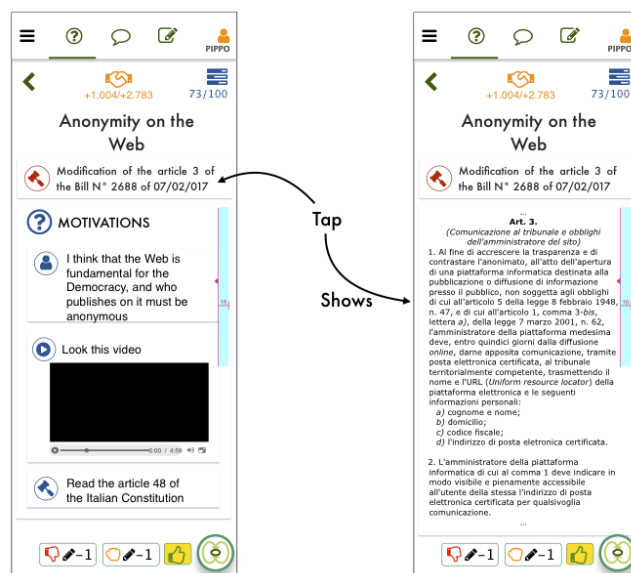
to compute the cost for the creation of cards. For instance, WONSAMU allows to link videos on youtube, images on instagram, and laws and bills supplied as Linked Open Data by the Italian chamber of Deputies and the Italian Senate. Figure 10.22 shows the Bill number 2688 retrieved by the Italian Senate and displayed into the WONSAMU application. As showed in figures 10.21 and 10.22, when users navigate solutions of ideas and their motivations, they can always see the consensus power that ideas currently have, their position about the idea, and they can change their position at any time.

Users having at least the Deputy status are allowed to insert ideas and, so, to create cards in WONSAMU. Figure 10.23 shows the form for the creation of ideas. When users create ideas, they can see the total cost for the creation and the cost of each motivation that they insert. Users can insert as much motivations they want, provided that they have enough ink, and the only mandatory information are the title of the idea and the initial solution to it, that can be a modification of a Law or Bill, or a generic text.

Figure 10.23: A screen-shoot of the form to propose an idea in WONSAMU
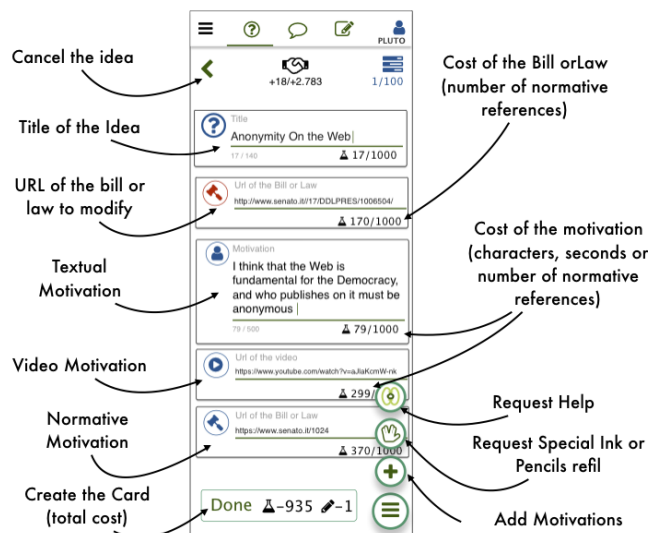
When users reach level 6, they can access the discussions section of WON-SAMU, and take part to Deliberation Chats. In the next section 10.4, I expose the interface and functioning of Deliberation Chats in WONSAMU.

10.4 The Deliberation Chat

The discussion section of WONSAMU is where deliberation chats among users occur. Deliberation chats are aimed to drive Citizens to reach a consensus on different alternatives to implement proposals created in the ideas section. As showed in figure 10.24, users who have reached at least level six can access the discussions section where WONSAMU shows them the list of deliberation cards that have passed the first step and in which they have participated. Deliberation cards have their current power consensus, equal to the sum of the absolute value of the power consensus of each solution, and their epistemic consensus, equal to the number of solutions proposed for the idea. Cards have also a countdown that displays the remaining time until the deliberation in that idea ends.

Figure 10.24: A screen-shoot of the list of Deliberation Chats in WONSAMU
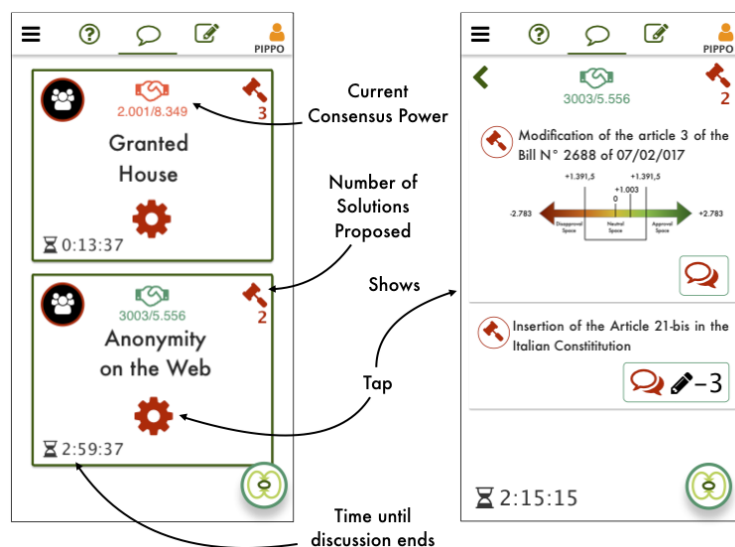
If users tap or click a card, they are able to see all the proposed solutions for that card, but they can see only the power consensus of the solution that they have already voted (figure 10.24) and, so, the solution proposed in the ideas section or the ones for which they have already joined the chat. If users can see the power consensus of a solution, they can also access all the other information about the solution, by tapping or clicking it. As showed in figure 10.25, in this page users can also change their preference about the solution without accessing the chat, but this action is more expensive than a change of opinion in the chat.

Users who have reached at least level eighteen, and so have at least the deputy status, are allowed to create new solutions. The interface for the creation of solutions, displayed in figure 10.26, is very similar to the one for the creation of ideas that I have explained in the previous section 10.3. All the users owning at least three pencils can enter deliberation chats dedicated to specific solutions.

Deliberation chats in WONSAMU are structured as classical chats, but provide additional features useful to deliberate. More specifically, in WON-SAMU chats, users can send generic messages, reply to messages and simul-

Figure 10.25: A screen-shoot of a solution in WONSAMU
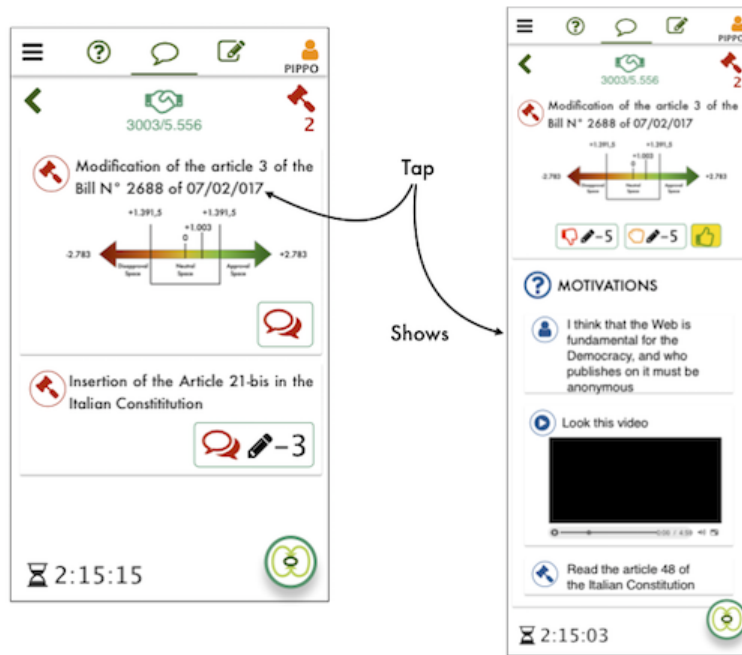
Figure 10.26: The creation of a new solution in WONSAMU
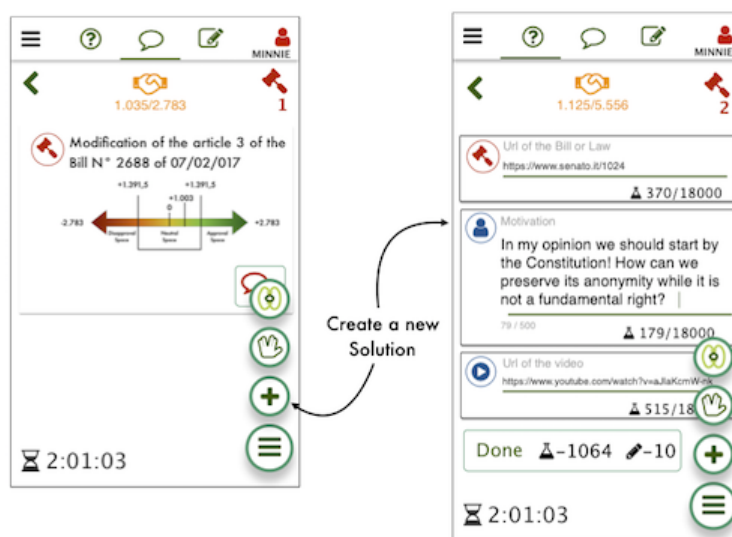
Figure 10.27: An example of Deliberation Chat in WONSAMU

taneously change their position on solutions, and every time users send a message in the chat they can send it in conjunction to a position change, meaning that the message is the justification of their opinion change. Figure 10.27 shows an example of chat in WONSAMU.

During the Deliberation Chat, the floating menu button is filled with new options. More specifically, if users simply tap it, they send the message without changing their position. If users hold it the floating contextual menu appears and they can send the message and change their position simultaneously. Users can also directly reply to a message by tapping on the message to which they want to reply. If they do so, a contextual floating menu appears on the message and they can chose to send a simple reply or a reply with a position change, as showed in figure 10.28.

Deliberation chats allow any modes of communication allowed in the other sections of WONSAMU. Users can link video, Bills and Laws in their message and, if they do so, WONSAMU instantaneously retrieves the metadata of linked resources and updates the cost of messages. Figure 10.29 shows a

Figure 10.28: A reply with position change in WONSAMU
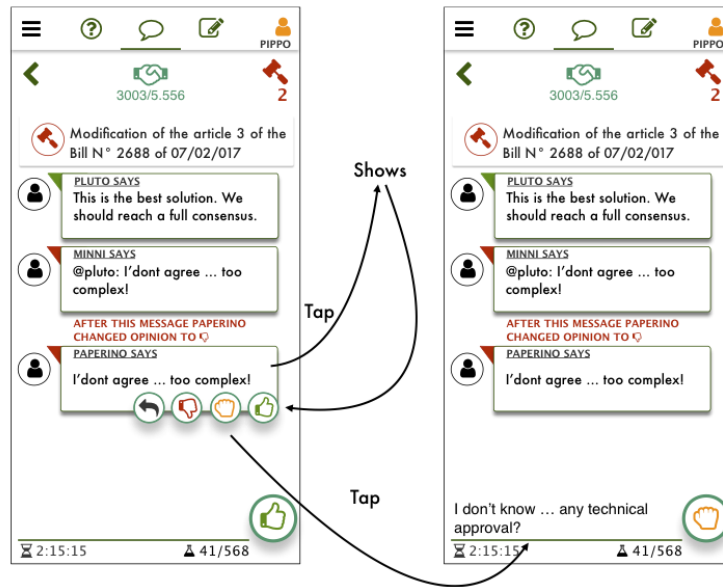
message that contains a link to the Italian Constitution and its cost.

Institutions, thus graduate players as I have exposed in section 9.5, are allowed to participate in Deliberation Chats too. Although WONSAMU does not require technical approvals of solution in order to transform them in bill proposals, hesitant users can ask for technical approval of institutions, as showed in figure 10.30. If solutions receive one or more technical approvals and gain enough power consensus to become a bill or an amendment proposal, all the players who have given their positive consensus to the solution gain a special bonus.

When the time allocated to a deliberation chat ends, the deliberative power of Deliberation Cards is computed and, if at least one of their solutions has received a consensus, as I have exposed in sections 9.8 and 9.9, the solutions enter the proposal section of WONSAMU. In the next section 10.5, I expose the functioning and the interface of the proposals section of WONSAMU.

Figure 10.29: A chat message with a normative reference in WONSAMU

Figure 10.30: A technical approval in a Deliberation Chat in WONSAMU
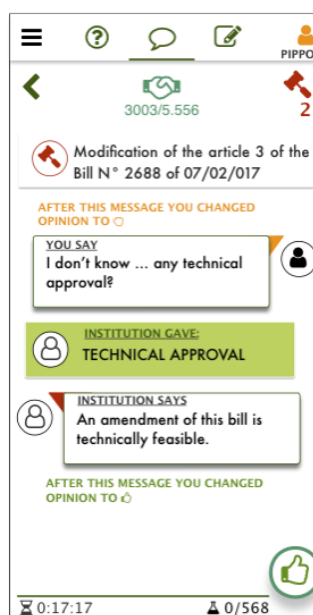
10.5   The Discussion of Proposals

The proposals section of WONSAMU collects all the deliberative cards for which Citizens have found at least a solution. Deliberative cards enter the proposals section with the power consensus they have received in chats section and all the Citizens can propose actual implementations of the solution. The number of proposed implementations is the preferential consensus of the card. When users tap a card they access the discussion of implementations as showed in figure 10.31.

Figure 10.31: The proposals section in WONSAMU
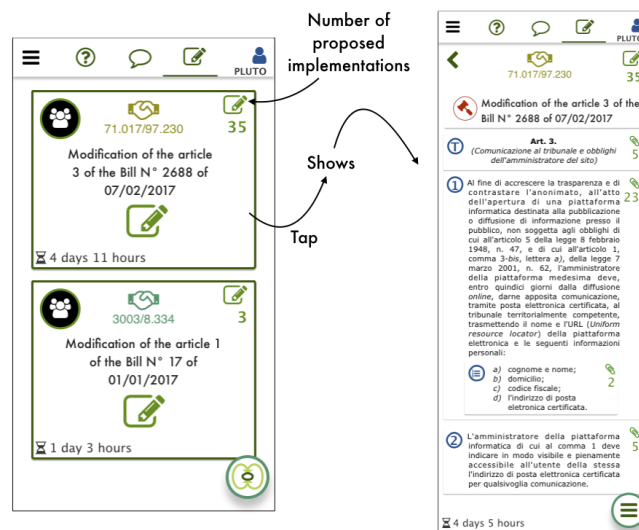
In WONSAMU, the implementations in the proposals section are modifications that Citizens would like to apply to solutions found in the chats section, and so to laws or bills. Users are only allowed to propose modifications on specific partitions, and they are not allowed to modify the whole document.

To propose modifications, users must select the text they would like to modify. If they do so, a floating action button appears and by tapping on it users can create their modification proposal inline, as showed in figure 10.32. The mask for the creation of modifications is quite similar to the one for the

Figure 10.32: The creation of a modification proposal in WONSAMU
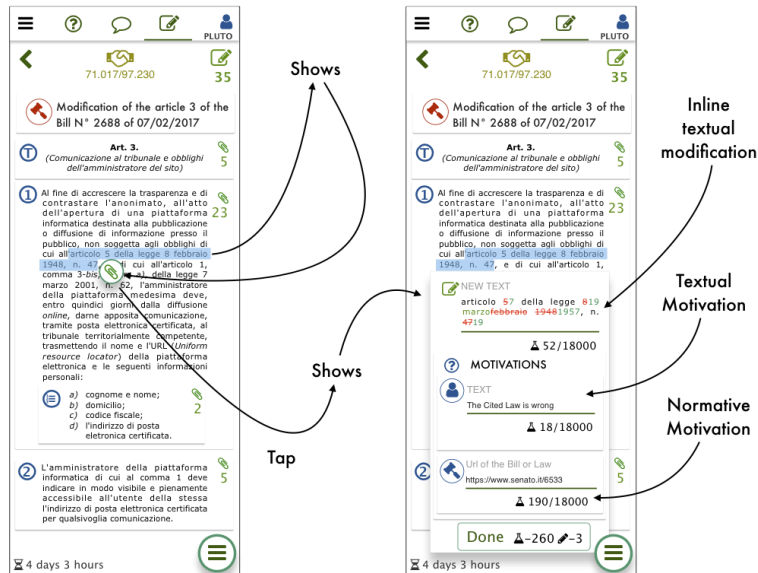
creation of solutions that I have exposed in the previous section 10.4, with the exception that it allows users to modify the text they have selected, and immediately see the difference among the old text and the new one.

When users click on the paper-clip showing the number of proposed modifications of a partition, all of them appear as post-its attached to the right of the clicked partition. At this stage, users are only able to see the power consensus that each proposal of modification received, as showed in figure 10.33. When users click on the post-it, they can see more information about the proposals, as showed in figure 10.34.

Modification proposals have their own dedicated deliberative chats; if users have already accessed the chat they can change their opinion about the modification without accessing the chat again, but this vote is more expensive than the one they could do in the chat (figure 10.34). If users spend pencils, they access the chat related to the modification that are identical to the ones of solutions that I have exposed in the previous section 10.4, with the exception that in this section the chats are displayed inline.

When the allowed time for the discussion of modification proposals ends,

Figure 10.33: The proposed modifications in WONSAMU
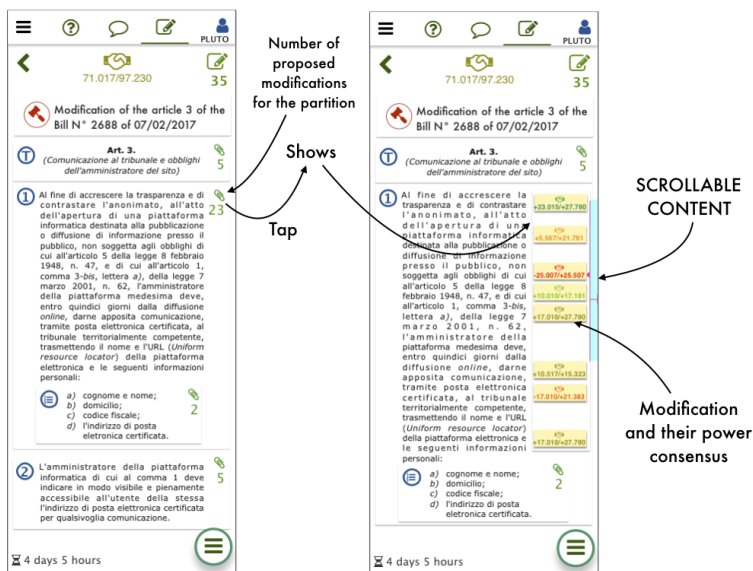
Figure 10.34: The information about proposals of modifications in WONSAMU
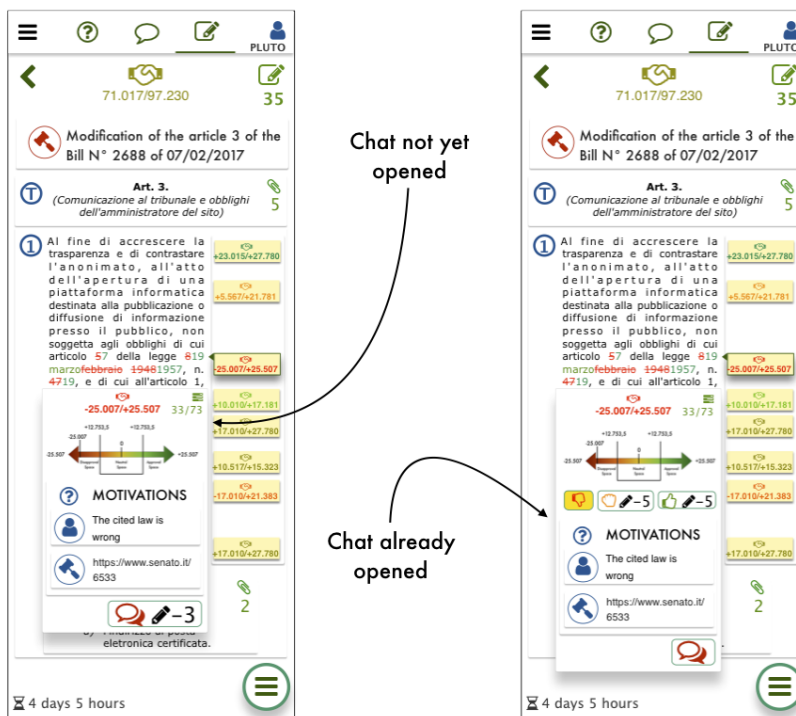
Figure 10.35: The dedicated chat of a modification proposal in WONSAMU
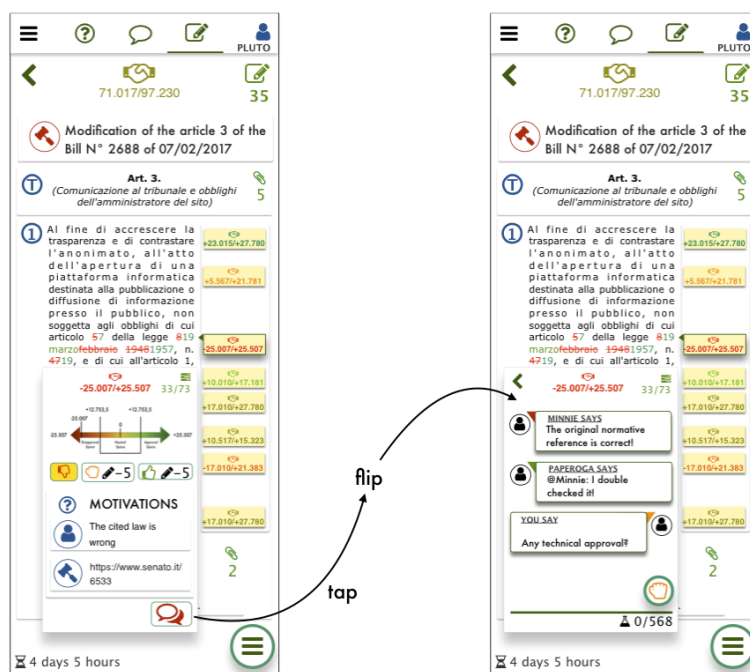
the total power consensus of the card is computed, as I have exposed in section 9.9, and WONSAMU merges automatically all the modifications that have reached the approval space and creates an amendment or a bill in AkomaNtoso.

If there are no overlapping modifications the gamified session ends. If users have created modifications that overlap, WONSAMU creates different versions of the amendment or the bill, as many as the number of overlapping modifications. In this case, WONSAMU generates a mini-game called "puzzling" that lasts for twenty four-hours. As showed in figure 10.36, proposals that are in the puzzling phase have inverted colours, and users who have given their negative or positive consensus to at least a modification proposal, can access the mini-game by clicking on proposals with inverted colours.

The goal of the mini-game is to divide the total power consensus received by the proposal among the different documents that WONSAMU has produced. In order to do so, users can see all the different documents, (figure

Figure 10.36: A proposal with overlapping modification in WONSAMU

10.37) and order them according to their preferences. At the end of the twenty-four hours allocated to the mini-game, the winner is computed by means of the Condorcet theorem, that I have introduced in chapter 3.

In the puzzling mini-game users drag the documents in the version they prefer in order to assign them a position. For instance, as showed in figure 10.38, the user "Pluto" chooses to place "document c" in first position, "document b" in second position, and "document a" in third position.

As I have previously stated in this section, the preferences of citizens are evaluated by means of the Condorcet theorem, and the power consensus is divided among the documents according to the preferences they have received. Table 10.1 exposes the calculation of the power consensus for the example showed in figures 10.37 and 10.38.

The output created by means of gamified sessions in WONSAMU can be used in different ways, according to the purposes that Citizens and Institutions have, or can be used by other software. For instance, figure 10.39 shows screen-shoots of WONSAMU-social, an eGODS that can take as input a doc-

Figure 10.37: An example of puzzling mini-game in WONSAMU
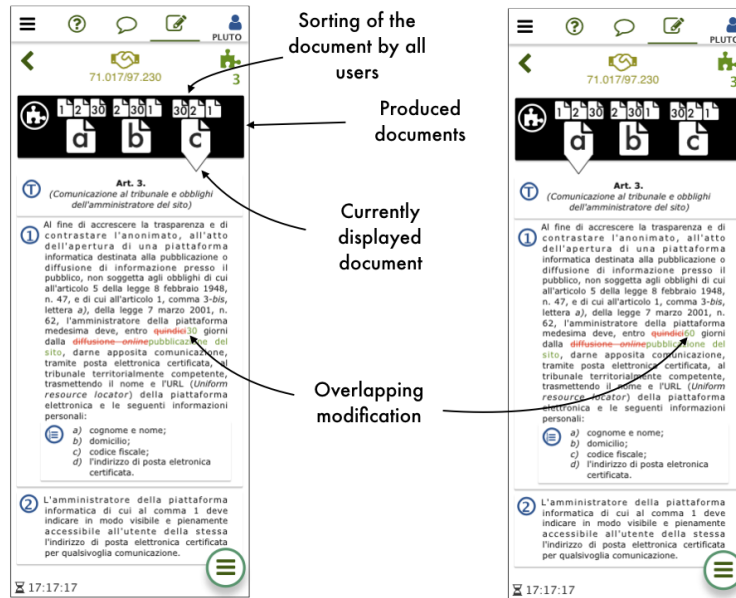
Figure 10.38: An example of document sorting in the puzzling mini-game in WONSAMU
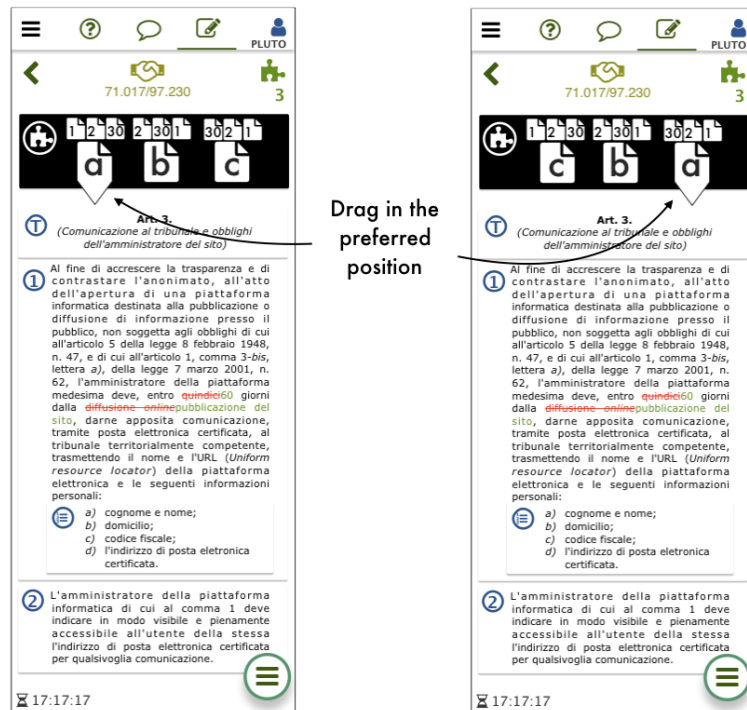
Table 10.1: The results of an example of the puzzling mini-game in WONSAMU

		AGAINST		
		document a	document b	document c
FOR	**document a**		64	65
	document b	497		32
	document c	496	529	

<div align="center">

RESULTS

</div>

POSITION	Document	Consensus Power
First	c	2 x (Total Consensus Power / 3) 2 x (71.017 / 3) = 47.346
Second	b	2 x [(1 x (Total Consensus Power / 3)) / 3] 2 x [(1 x (71.017 / 3)) / 3] = 15.782
Third	a	2 x [(1 x (Total Consensus Power / 3)) / 3] 1 x [(1 x (71.017 / 3)) / 3] = 7.891

Figure 10.39: A screen-shoot of WONSAMU-*Social*
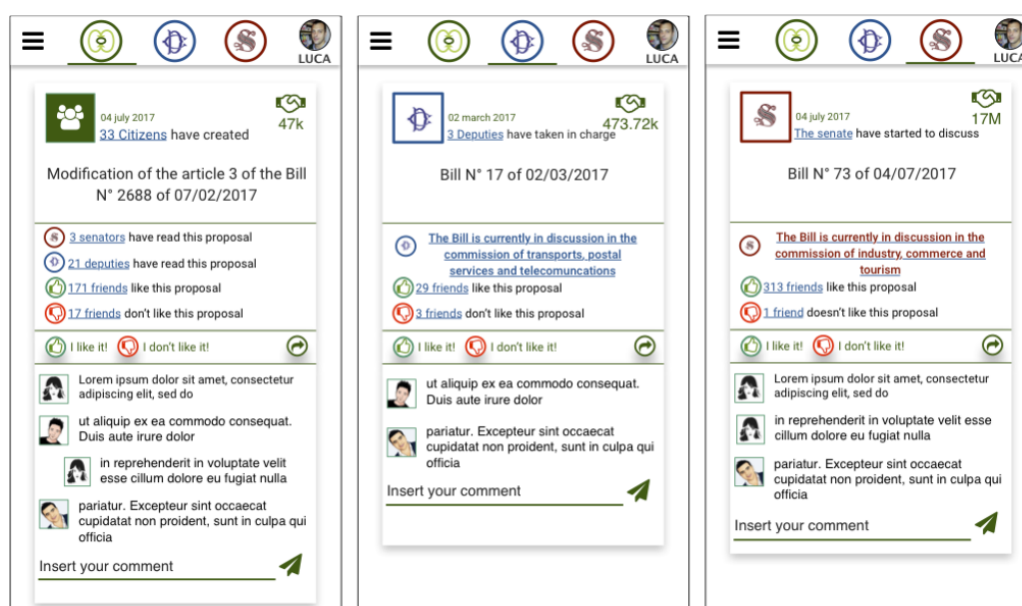
ument produced with WONSAMU or in other ways, and engage Citizens in persuading Italian Senators and Deputies to discuss them in the Chambers.

In this section and in the previous sections of this chapter, I have described the user interface and the functioning of WONSAMU, an implementation of eGODS that I have created for one of my research goals: to demonstrate the feasibility of legitimated Gamified Online Deliberative Systems and Extensions of Gamified Online Deliberative Systems. In the next section 10.6, I summarize the legitimacy features implemented by WONSAMU, and I conclude by briefly discussing them.

10.6   Legitimacy features of WONSAMU

In this chapter I have exposed the interface and functioning of WONSAMU, an eGODS implementation for the deliberation about amendments and bills proposed by Citizens. WONSAMU was specifically designed to follow the requirements that I have exposed in chapter 6 and, for this reason, implements all the legitimacy features of Deliberative Systems that I have exposed in chapter 5.

As the other systems that I have described in chapter 7, and according to the preliminary statements that I have given in sections 9.1 and 10.1, all the legitimacy features of WONSAMU related to the requirements of Institutions, the Internet and the Web must be considered as implemented by default. Table 10.2 and the following list, expose a summary of the other legitimacy features implemented by WONSAMU in relation to the requirements for their implementation that I have exposed in the chapter 6.

Linked Open Data Technologies: WONSAMU strongly relies on AkomaNtoso and all the produced documents, the report of discussions among Citizens and the other resources used in deliberations and produced by deliberations are univeocally accessible both by human-beings and machines. For this reason all the legitimacy features related to this requirement are considered as implemented.

Inclusiveness, Responsiveness and Usability: the design of WONSAMU relies on the Material design and follows the best design practice that I have exposed in section 6.1. For this reason, all the features related to these requirements are considered as implemented.

Deliberative Interaction: WONSAMU allows different communication modes. Users can interact with the system and with other users by using textual chats and videos or normative references. Also, WONSAMU users can perform deliberative interactions by simply acting on specific parts of the interface. Although users are granted anonymous access to deliberations, every action that they perform is logged and inserted in final reports that describe the creation of the deliberative outputs produced with WONSAMU. The design of deliberative interactions, in conjunction with the design of the process to reach the deliberative consensus described in the following paragraph, grant WONSAMU all the features of legitimacy related to these two requirements.

Deliberative Consensus: the deliberative consensus in WONSAMU is designed as a composed consensus, as I have exposed in section 6.3. Citizens who agree on normative values (the ideas section in WONSAMU) can discuss and agree on their beliefs and, so, on their epistemic values (the discussions section in WONSAMU). After having reached a consensus on these values, Citizens can discuss on different preferences to implement their needs and, so, try to reach a preferential consensus (the proposals section in WONSAMU).

During the three phases of the process to reach a consensus, citizens can persuade other citizens by means of different communication modes, as I have previously stated. Although WONSAMU drives Citizens to agree on shared values, users can change their mind at any moment of decision-making procedures, and the consensus is measured by means of ballots relying on the majority rules in different ways based on the techniques of Combined approval voting and on the Condorcet theorem.

The design of Deliberative Interactions and of the process to achieve the consensus in WONSAMU has the purpose to avoid social domination and hierarchies, and grant egalitarianism to all the Citizens involved in deliberations. All the legitimacy features granted by the design of deliberative interactions and deliberative consensus are considered as implemented.

Nurture Intrinsic and Extrinsic Motivations: WONSAMU is a complete gamified system and, for this reason, implements the features of Citizens, inputs, decision-making procedures and outputs related to these requirements. As I have exposed in this chapter and in previous chapter 9, the game design of gamified sessions in WONSAMU is specifically intended to nurture intrinsic and extrinsic motivation of all the types of players who can access the system.

Avoid/Exploit Biases: WONSAMU relies on the anonymity of Citizens and on gamified widgets, like the sticked leader-boards, to avoid the raise of biases in Citizens involved in deliberations, and to exploit biases that can be useful to drive Citizens to reach a consensus.

The filter bubble effect can not be produced in WONSAMU because all the arguments discussed in decision-making procedures are always displayed to Citizens in random order. Citizens are able to see the arguments that received more consensus by checking their consensus power, and they can find arguments near to their positions, but they have to explore the system in order to find them.

The anonymity grants Citizens a possibility to stay safe from online firestorm effects and from the authority bias and the Lucifer effect, and these effects are also avoided by means of the gamification design assigning a cost to each interaction users perform. By doing so, Citizens are driven to use their resources to persuade other Citizens on their beliefs, and they do not waste resources to denigrate other Citizens and other arguments.

The consensus power is specifically designed in order to foster the production of the Goal Gradient Effect. Indeed, by dispatching bonuses when full consensuses are achieved, WONSAMU drives Citizens to fully agree on arguments that have reached the approval space and are near to the full consensus. Also, by leveraging on the loss and risk aversion, WONSAMU drives Citizens to not spend resources on arguments that are not receiving approval in deliberations.

In this chapter, and in the previous chapters of this part, I have described the design of Gamified Online Deliberative Systems and their Extensions and, by describing WONSAMU, I have showed that gamified Deliberative Systems whose design follows the guidelines exposed in this research work implement all the features needed for the legitimacy of Deliberative Systems. In the following chapter11, I summarize the research results that I have achieved in my doctoral research period, and I briefly expose the future work that could be done starting from my findings.

Table 10.2: The legitimacy features implemented by WONSAMU

DELIBERATIONS

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
D-MUST-1	Must be accessible	✓				✓	✓	✓				
D-MUST-2	Must be open	✓	✓	✓		✓	✓	✓				
D-MUST-3	Must be reliable		✓	✓	✓	✓	✓	✓				✓
D-MUST-4	Must be traceable			✓	✓							
D-MUST-5	Must be transparent				✓							
D-MUST-6	Must be unobstructed	✓	✓	✓		✓	✓	✓				✓
D-COULD-1	Could be asynchronous		✓	✓								
D-COULD-2	Could be continuous		✓	✓		✓	✓	✓				
D-COULD-3	Could be distributed		✓	✓								
D-COULD-4	Could be interconnected				✓							
D-COULD-5	Could be interdependent				✓							
D-COULD-6	Could be ubiquitous		✓	✓		✓	✓	✓				

CITIZENS

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
C-MUST-1	Must be capable	✓							✓	✓	✓	✓
C-MUST-2	Must be conscientious								✓	✓	✓	✓
C-MUST-3	Must be educated	✓							✓	✓	✓	✓
C-MUST-4	Must be motivated	✓							✓	✓	✓	✓
C-MUST-5	Must be purposed								✓	✓	✓	✓
C-MUST-6	Must be respectful								✓	✓	✓	✓

INPUTS

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
I-MUST-1	Must be balanced		✓	✓	✓	✓	✓	✓				✓
I-MUST-2	Must be diverse		✓	✓	✓	✓	✓	✓				✓
I-MUST-3	Must be informed				✓							✓
I-MUST-4	Must be interesting				✓						✓	✓
I-MUST-5	Must be justified				✓							✓
I-MUST-6	Must be pluralistic		✓	✓	✓	✓	✓	✓				✓

DECISION-MAKING PROCEDURES

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
DMP-ALLOW-1	Must allow mind changing								✓	✓		
DMP-ALLOW-2	Must allow majority rule								✓	✓		
DMP-AVOID-1	Must avoid social domination		✓	✓					✓	✓	✓	✓
DMP-AVOID-2	Must avoid hierarchies		✓	✓					✓	✓	✓	✓
DMP-FOSTER-1	Must foster learning					✓	✓	✓	✓	✓	✓	
DMP-FOSTER-2	Must foster mastering					✓	✓	✓	✓	✓	✓	
DMP-FOSTER-3	Must foster persuasion								✓	✓	✓	
DMP-GRANT-1	Must grant anonymity	✓	✓	✓					✓	✓	✓	
DMP-GRANT-2	Must grant egalitarianism	✓	✓	✓					✓	✓	✓	✓

OUTPUTS

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
O-MUST-1	Must be accountable			✓	✓							
O-MUST-2	Must be effective				✓	✓	✓	✓				✓
O-MUST-3	Must be monitored			✓	✓							
O-MUST-4	Must be revisable			✓	✓							
O-SHOULD-1	Should be efficient				✓	✓	✓	✓				✓
O-SHOULD-2	Should be satisfying				✓	✓	✓	✓			✓	✓

INSTITUTIONS

CODE	DESCRIPTION	Regulations, Laws or Constitutions	Internet Technologies	Web Technologies	Linked Open Data Technologies	Design For Inclusiveness	Design For Responsiveness	Design For Usability	Design For Deliberative Interaction	Design For Deliberative Consensus	Design For Intrinsic and Extrinsic Motivations	Design To Avoid/Exploit Biases
IN-AVOID-1	Must avoid domination	✓			✓	✓	✓	✓	✓	✓	✓	✓
IN-AVOID-2	Must avoid rooted partisanship	✓			✓							
IN-AVOID-3	Must avoid tightness	✓			✓							
IN-GRANT-1	Must grant authority to deliberations	✓										
IN-GRANT-2	Must grant egalitarianism to participants	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
IN-GRANT-3	Must grant freedom to deliberate	✓	✓	✓		✓	✓	✓	✓	✓	✓	
IN-GRANT-4	Must grant incentives to deliberate	✓							✓	✓	✓	
IN-GRANT-5	Must grant political equality to citizens	✓	✓	✓								

Chapter 11

Conclusions and Future Works

The research work that I have described in this thesis is aimed to answer ten research questions, listed in chapter 1. All these research questions can be summarized in the following simple one, from which all the work exposed in this thesis started:

> "*Would it be possible to improve Society by engaging People in continuous and satisfying Democratic Systems based on deliberations?*"

The answer to the previous question needs a deep investigation and understanding of several and diverse contexts, such as Philosophy, Laws, Legal Informatics, Human Computer Interaction, Games-Design and Gamification, and in my doctoral research exposed in this work I borrow meaningful concepts from these areas of study and propose a possible answer. To put it in the simplest possible way, as I have demonstrated in this thesis, the answer is:

> "*Yes. It is possible, provided that these kinds of engaging Democracies are built to meet specific requirements in order to implement specific features needed for their legitimacy.*"

In order to build this answer, firstly I found the model of Democracy that is most suitable to be engaging. To accomplish this task, in part I of

this work, I have explored the different models of Democracies. Starting by understanding what the concept of Democracy means, what are the elements that compose Democracies, and what are the ways to address the legitimacy of a Democracy, I have studied three models of Democracies: Representative Democracy, Participatory Democracy and Deliberative Democracy.

After a deep explorations of Representative Democracies, I concluded that they are not suitable for my research goals, due to their functioning strictly based on infrequent ballots based in turn on the majority rule and, most importantly, because they are facing a severe crisis all over the world. For these reasons, Representative Democracies must be replaced or integrated with more direct models of Democracies. One of them is Participatory Democracy: a model of Democracy that involves Citizens in solving Societal issues by their own, without delegating their Democratic power to representatives. Sadly, in the end, Participatory Democracies are not suitable for my research goals because they rely on mechanisms similar to the ones of Representative Democracies and, so, on political rhetoric and aggregation of preferences of Citizens by means of ballots.

Eventually, I find out that Deliberative Democracy has the juice to satisfy my research goals. Deliberative Democracies are based on genuine deliberations in which Citizens can use diverse communication modes according to their deliberative capacities. After several properly designed deliberative interactions, Citizens are likely to more naturally agree on values, beliefs and preferences and, so, the aggregation of preferences is made during discussions, without excluding the possibility to use ballots based on the majority rule for selecting the most preferred options to satisfy Societal needs.

Studies on Deliberative Democracies in the last fifty years have widely investigated and exposed the list of features that they must implement to be legitimated and, eventually, after having evolved through four generations, have flown into the concept of Deliberative Systems, Democratic Systems in which Citizens are engaged in continuous, synchronous or asynchronous, ubiquitous and interconnected deliberations aimed to solve specific Societal

issues.

Deliberative Systems are perfectly fit for my research goals, provided that they are designed to follow requirements implementing several legitimacy features exposed by scholars, collected, listed and catalogued in a framework for the evaluation of their legitimacy. The framework also introduces two requirements neglected by scholars of Deliberative Democracies, that I argue are necessary to implement mandatory legitimacy features. Deliberative Systems must be designed to motivate Citizens to enter deliberations and remain engaged in them, and to avoid or exploit cognitive biases in order to achieve legitimated deliberations or drive users more naturally towards a consensus.

I used the framework to evaluate a set of online Web applications designed for deliberations or participation. Although they are not explicitly defined as Deliberative Systems, I investigated their legitimacy features in order to understand if they are suitable to be connected to Deliberative Systems. The result of the analysis shows that, to a greater or a lesser extent, the analyzed systems implement the mandatory legitimacy features, but none of them is designed to nurture the motivation of Citizens or to handle the most-known cognitive biases. However, one of the systems introduces points, levels, and leader-boards and, so, gamified components that, if properly used, can motivate Citizens to deliberate.

The Gamification is a brand-new area of studies on Human Computer Interaction that investigates how to use games elements in contexts external to games. For instance, in my research period at the Stanford University, I have implemented a gamified system to handle ballots, make them more engaging, and drive users to behave in desired ways, for example to check the results right before the end of the ballot in order to change their preferences if they wish to do so. I found that, according to my framework for the evaluation of the legitimacy, in order to implement the mandatory features neglected by other systems it is possible to design Online Gamified Deliberative Systems, and Extensions of Online Gamified Deliberative Systems,

that are fully gamified environments whose gamified sessions follow specific guidelines borrowed by game-design theories.

The design of Gamified Online Deliberative Systems relies on engaging Deliberative Interactions and Deliberative Consensus, that give legitimacy to deliberations from two perspectives. Firstly, they give motivations to Citizens to deliberate by means of gamified dynamics that nurture their intrinsic and extrinsic motivations. Secondly, they drive deliberations and the behaviour of users in order to not produce biased deliberation or exploit cognitive biases to help Citizens to reach a consensus in more natural ways.

Eventually, I demonstrated the feasibility of Gamified Online Deliberative Systems by describing the interface and the functioning of a practical implementation of them called WONSAMU. I described how WONSAMU, by means of its gamified sessions, drives users to reach a full consensus on their values, beliefs and preferences, or a partial consensus. In this last case, and to conclude, I explained how WONSAMU is able to create different Democratic outcomes, each one of them having a Consensus Power computed on the basis of the consensus that the outcome received. According to their consensus power, all Democratic outcomes can be reintroduced in Deliberative Systems for different purposes.

Several researches on diverse fields of study can start by the founding of my doctoral research exposed in this work. For instance, WONSAMU could be fully implemented and tested in several ways, in order to adjust the rules of the abstract model of Gamified Online Deliberative Systems that I have defined. Also, different implementations of Gamified Online Deliberative Systems can be developed in order to run experiments on the results produced by interconnecting them and, so, by interconnecting the Citizens who use them, the inputs on which they deliberate, and the Democratic outcomes that they produce.

Among the others, a future work that must be studied from technological, Institutional, philosophical and cognitive perspectives, is particularly close to my heart and to my research goals in the long term. It is aimed to investigate

the effects of an actual introduction of Online Gamified Deliberative Systems in current Representative Democracies and Democratic process of Countries. Online Gamified Deliberative Systems can be initially introduced only for deliberations about restricted contexts, like the proposal and the deliberation of bills and amendments among Citizens who do not have technical and legislative skills. Systems like WONSAMU can handle these contexts and it would be really interesting to conduct empirical studies on the satisfaction of Citizens involved in these deliberations, and on the effectiveness and the efficiency of the outcomes produced by deliberations in relation to the Society. However, from a philosophical and a cognitive perspective this study may raise several research questions. Since this is a research work, and research work must necessarily start with doubts and end with doubts, I would like to conclude by leaving to readers the following thorny one:

> *"If it is true that representation does not work anymore, what will happen when everyone will represent herself?"*

Bibliography

[1] M. H. Hansen, *The Athenian democracy in the age of Demosthenes: structure, principles, and ideology.* University of Oklahoma Press, 1991.

[2] S. M. Lipset, "Some social requisites of democracy: Economic development and political legitimacy," *American political science review*, vol. 53, no. 01, pp. 69–105, 1959.

[3] J. Huizinga, *Homo Ludens Ils 86.* International Library of Sociology, Taylor & Francis, 2014.

[4] K. Squire, "Changing the game: What happens when video games enter the classroom," *Innovate: Journal of online education*, vol. 1, no. 6, 2005.

[5] J. Juul, "Introduction to game time/time to play: An examination of game temporality," *First Person: New Media as Story, Performance and Game*, pp. 131–142, 2004.

[6] L. Alexander, "Gdc 2012: Sid meier on how to see games as sets of interesting decisions," *Gamasutra. The Art & Business of Making Games*, vol. 7, p. 2012, 2012.

[7] W. ISO, "9241-11. ergonomic requirements for office work with visual display terminals (vdts)," *The international organization for standardization*, vol. 45, 1998.

[8] N. Bevan, "International standards for hci and usability," *International journal of human-computer studies*, vol. 55, no. 4, pp. 533–552, 2001.

[9] C. Lord, *Aristotle's "Politics": Second Edition.* University of Chicago Press, 2013.

[10] R. A. Dahl, *Polyarchy: Participation and opposition.* Yale University Press, 1973.

[11] T. Christiano, "The authority of democracy," *Journal of Political Philosophy*, vol. 12, no. 3, pp. 266–290, 2004.

[12] F. Peter, "Political legitimacy," in *The Stanford Encyclopedia of Philosophy* (E. N. Zalta, ed.), summer 2016 ed., 2016.

[13] R. C. Box, G. S. Marshall, B. Reed, and C. M. Reed, "New public management and substantive democracy," *Public Administration Review*, vol. 61, no. 5, pp. 608–619, 2001.

[14] R. J. Arneson, "Defending the purely instrumental account of democratic legitimacy," *Journal of Political Philosophy*, vol. 11, no. 1, pp. 122–132, 2003.

[15] K. O. May, "A set of independent necessary and sufficient conditions for simple majority decision," *Econometrica: Journal of the Econometric Society*, pp. 680–684, 1952.

[16] C. Bonvecchio and G. Zaccaria, "Lessico della politica," 1989.

[17] J. A. Schumpeter, *Capitalism, socialism and democracy.* Routledge, 2013.

[18] J. Habermas, "Three normative models of democracy," *Constellations*, vol. 1, no. 1, pp. 1–10, 1994.

[19] D. Easton, "An approach to the analysis of political systems," *World politics*, vol. 9, no. 03, pp. 383–400, 1957.

[20] F. W. Scharpf, *Governing in Europe: effective and democratic?* Oxford University Press, 1999.

[21] T. Risse and M. Kleine, "Assessing the legitimacy of the eu's treaty revision methods," *JCMS: Journal of Common Market Studies*, vol. 45, no. 1, pp. 69–80, 2007.

[22] V. A. Schmidt, "Democracy and legitimacy in the european union," 2012.

[23] V. J. Bekkers, *Governance and the democratic deficit: assessing the democratic legitimacy of governance practices.* Ashgate Publishing, Ltd., 2007.

[24] M. Russell, *The contemporary House of Lords: Westminster bicameralism revived.* Oxford University Press, 2013.

[25] S. Henson, "Private agrifood governance: conclusions, observations and provocations," *Agriculture and human values*, vol. 28, no. 3, pp. 443–451, 2011.

[26] V. Bekkers and A. Edwards, "Legitimacy and democracy: A conceptual framework for assessing governance practices," *Governance and the democratic deficit: Assessing the democratic legitimacy of governance practices*, pp. 35–60, 2007.

[27] J. Eshuis and A. Edwards, "Branding the city: The democratic legitimacy of a new mode of governance," *Urban Studies*, p. 0042098012459581, 2012.

[28] C. Brooker, "The waldo movement, blackmirror, season 2, episode 1," February 2013. Premiered on Channel 4.

[29] C. Mudde and C. R. Kaltwasser, *Populism in Europe and the Americas: Threat or corrective for democracy?* Cambridge University Press, 2012.

[30] E. Jones, "Populism in europe," *SAIS Review of International Affairs*, vol. 27, no. 1, pp. 37–47, 2007.

[31] D. Van Reybrouck, *Against Elections: The Case for Democracy.* Vintage Publishing, 2016.

[32] R. D'Alimonte, "The italian elections of february 2013: the end of the second republic?," *Contemporary Italian Politics*, vol. 5, no. 2, pp. 113–129, 2013.

[33] R. Carty, "I partiti come sistemi di franchising. l'imperativo organizzativo stratarchico," *L. Bardi (a cura di), Partiti e sistemi di partito, Bologna, Il Mulino*, pp. 81–101, 2006.

[34] S. Della Repubblica, "Constitution of the italian republic," 2007.

[35] D. Donina, M. Meoli, and S. Paleari, "Higher education reform in italy: Tightening regulation instead of steering at a distance," *Higher Education Policy*, vol. 28, no. 2, pp. 215–234, 2015.

[36] B. Manin, *The principles of representative government.* Cambridge University Press, 1997.

[37] A. Hamilton, J. Madison, J. Jay, and L. Goldman, *The federalist papers.* Oxford University Press, 2008.

[38] E. Corwin, *The Constitution of the United States of America_ Analysis and Interpretation.* US Government Printing Office, 1953.

[39] J. Madison, "The federalist no. 10," *November*, vol. 22, no. 1787, pp. 1787–88, 1787.

[40] A. Loeper, "Cross-border externalities and cooperation among representative democracies," *European Economic Review*, vol. 91, pp. 180–208, 2017.

[41] M. S. Golwalkar, *Bunch of thoughts*. Vikrama Prakashan; sole distributors: Rashtrotthana Sahitya Bangalore,, India, 1966.

[42] J. L. Hyland, *Democratic theory: the philosophical foundations*. Manchester University Press, 1995.

[43] E. Kofmel, *Anti-democratic thought*. Imprint Academic/SCIS, 2008.

[44] J.-J. Rousseau and G. D. H. Cole, *The Social Contract, Or, Principles of Political Right*. University of Virginia Library, 2001.

[45] A. H. Meltzer and S. F. Richard, "A rational theory of the size of government," *Journal of political Economy*, vol. 89, no. 5, pp. 914–927, 1981.

[46] A. Caplin and B. Nalebuff, "Aggregation and social choice: a mean voter theorem," *Econometrica: Journal of the Econometric Society*, pp. 1–23, 1991.

[47] L. Rubinelli, "How to think beyond sovereignty: On sieyes and constituent power," *European Journal of Political Theory*, p. 1474885116642170, 2016.

[48] K. Fierlbeck, *Globalizing democracy: Power, legitimacy and the interpretation of democratic ideas*. Oxford University Press, 2008.

[49] J. Wenders, "Democracy would doom hong kong: The difference between freedom and democracy," *FREEMAN-NEW YORK-FOUNDATION FOR ECONOMIC EDUCATION-*, vol. 48, pp. 43–45, 1998.

[50] A. Gutmann and D. Thompson, *Why deliberative democracy?* Princeton University Press, 2009.

[51] C. J. Davis, J. S. Bowers, and A. Memon, "Social influence in televised election debates: A potential distortion of democracy," *PloS one*, vol. 6, no. 3, p. e18154, 2011.

[52] A. Tversky and D. Kahneman, "The framing of decisions and the psychology of choice," in *Environmental Impact Assessment, Technology Assessment, and Risk Analysis*, pp. 107–129, Springer, 1985.

[53] D. Kahneman, *Thinking, fast and slow*. Macmillan, 2011.

[54] C. Mudde, "The populist zeitgeist," *Government and opposition*, vol. 39, no. 4, pp. 542–563, 2004.

[55] E. I. Unit, "Democracy index 2016," 2016.

[56] C. R. Kaltwasser, "The responses of populism to dahl's democratic dilemmas," *Political Studies*, vol. 62, no. 3, pp. 470–487, 2014.

[57] J. Butler, "'we, the people': Thoughts on freedom of assembly," *Alain Badiou et al., What Is a People*.

[58] T. Zittel, D. Fuchs, *et al.*, *Participatory democracy and political participation: can participatory engineering bring citizens back in?* Routledge, 2006.

[59] V. Lyon, "Carole pateman, participation and democratic theory. cambridge: Cambridge university press, 1970, pp. 122.," *Canadian Journal of Political Science*, vol. 4, no. 04, pp. 583–584, 1971.

[60] T. Pogrebinschi and D. Samuels, "The impact of participatory democracy: Evidence from brazil's national public policy conferences," *Comparative Politics*, vol. 46, no. 3, pp. 313–332, 2014.

[61] D. Vitale, "Between deliberative and participatory democracy: A contribution on habermas," *Philosophy & social criticism*, vol. 32, no. 6, pp. 739–766, 2006.

[62] D. Altman, *Direct democracy worldwide*. Cambridge University Press, 2010.

[63] S. Banerjee, "Anna hazare, civil society and the state," *Economic and Political Weekly*, pp. 12–14, 2011.

[64] U. Allegretti, "Basi giuridiche della democrazia partecipativa in italia: alcuni orientamenti," *Democrazia e diritto*, 2006.

[65] L. Bobbio, "Dilemmi della democrazia partecipativa," *Democrazia e diritto*, 2006.

[66] J. H. Oliver, "Reforms of cleisthenes," *Historia: Zeitschrift für Alte Geschichte*, no. H. 4, pp. 503–507, 1960.

[67] S. Everson, *Aristotle: The politics and the constitution of Athens.* Cambridge University Press, 1996.

[68] N. Wilson, *Encyclopedia of ancient Greece.* Routledge, 2013.

[69] M. H. Hansen, "The concepts of demos, ekklesia, and dikasterion in classical athens," *Greek, Roman, and Byzantine Studies*, vol. 50, no. 4, pp. 499–536, 2010.

[70] M. H. Hansen, "How often did the" ecclesia" meet?," *Greek, Roman and Byzantine Studies*, vol. 18, no. 1, p. 43, 1977.

[71] M. H. Hansen, "Seven hundred" archai" in classical athens," *Greek, roman and byzantine studies*, vol. 21, no. 2, p. 151, 1980.

[72] M. H. Hansen, "How did the athenian" ecclesia" vote?," *Greek, Roman and Byzantine Studies*, vol. 18, no. 2, p. 123, 1977.

[73] A. Lanni, *Law and justice in the courts of classical Athens.* Cambridge University Press, 2006.

[74] M. Lagogianni-Georgakarakos and K. Buraselis, "Athenian democracy speaking through its inscriptions," 2009.

[75] D. Piovan, "Criticism ancient and modern. observations on the critical tradition of athenian democracy," *Polis: The Journal of the Society for Greek Political Thought*, vol. 25, no. 2, pp. 305–329, 2008.

[76] R. K. Sinclair, *Democracy and participation in Athens.* Cambridge University Press, 1991.

[77] D. M. MacDowell, *Athenian homicide law in the age of the orators*, vol. 15. Manchester University Press, 1999.

[78] S. Todd *et al.*, "The purpose of evidence in athenian courts," *NOMOS: essays in Athenian law, politics and society*, vol. 26, 1990.

[79] D. Held, *Models of democracy.* Polity, 2006.

[80] A. Fung and E. O. Wright, "Deepening democracy: innovations in empowered participatory governance," *Politics & Society*, vol. 29, no. 1, pp. 5–41, 2001.

[81] B. de Sousa Santos, "Participatory budgeting in porto alegre: toward a redistributive democracy," *Politics & society*, vol. 26, no. 4, pp. 461–510, 1998.

[82] P. Alegre, "Case study 2-porto alegre, brazil: Participatory approaches in budgeting and public expenditure management," 2003.

[83] B. Wampler, *A guide to participatory budgeting.* International Budget Partnership, 2000.

[84] Y. Sintomer, C. Herzberg, G. Allegretti, A. Röcke, and M. Alves, "Participatory budgeting worldwide–updated version," *Global Civic Engagement–Service for Development Initiatives*, 2013.

[85] Y. Sintomer, C. Herzberg, and A. Röcke, "Participatory budgets in a european comparative approach," *Perspectives and chances of the cooperative state at the municipal level in Germany and Europe*, vol. 2, 2005.

[86] Y. Sintomer, C. Herzberg, and A. Röcke, "Participatory budgeting in europe: potentials and challenges," *International Journal of Urban and Regional Research*, vol. 32, no. 1, pp. 164–178, 2008.

[87] A. Röcke, *Framing citizen participation: participatory budgeting in France, Germany and the United Kingdom.* Springer, 2014.

[88] M.-H. Bacqué and Y. Sintomer, "Gestion de proximité et démocratie participative," in *Les Annales de la recherche urbaine*, vol. 90, pp. 148–155, Persée-Portail des revues scientifiques en SHS, 2001.

[89] A. Starr, M. E. Martínez-Torres, and P. Rosset, "Participatory democracy in action: Practices of the zapatistas and the movimento sem terra," *Latin American Perspectives*, vol. 38, no. 1, pp. 102–119, 2011.

[90] A. Floridia and R. Vignati, "Deliberativa, diretta o partecipativa: Quale democrazia per il movimento 5 stelle," in *The Annual Convention of the Italian Society of Political Science*, 2013.

[91] J. L. Newell, "The italian general election of 2013: a revolution with uncertain consequences," *Polis*, vol. 28, no. 1, pp. 9–24, 2014.

[92] E. Castañeda, "The indignados of spain: A precedent to occupy wall street," *Social Movement Studies*, vol. 11, no. 3-4, pp. 309–319, 2012.

[93] Y. Sintomer, "Participatory democracy and governance: local politics in france," *Ponencia presentada en las sesiones conjuntas de ECPR en Grenoble*, pp. 6–11, 2001.

[94] R. Koole, "Greece, european democracy and the legitimacy of politics," *Social Europe*, vol. 30, 2015.

[95] I. M. per le Riforme Costituzionali, "Relazione finale," *Roma: Ministro per le Riforme Costituzionali*, 2013.

[96] S. R. Arnstein, "A ladder of citizen participation," *Journal of the American Institute of planners*, vol. 35, no. 4, pp. 216–224, 1969.

[97] D. P. Moynihan, "Citizen participation in budgeting: Prospects for developing countries," *Participatory budgeting*, pp. 55–87, 2007.

[98] B. Obama, *The audacity of hope: Thoughts on reclaiming the American dream.* Canongate Books, 2007.

[99] J. Parkinson, *Deliberating in the real world: problems of legitimacy in deliberative democracy.* Oxford University Press on Demand, 2006.

[100] A. Bächtiger, S. Niemeyer, M. Neblo, M. R. Steenbergen, and J. Steiner, "Disentangling diversity in deliberative democracy: Competing theories, their blind spots and complementarities," *Journal of Political Philosophy*, vol. 18, no. 1, pp. 32–63, 2010.

[101] J. Mansbridge, J. Bohman, S. Chambers, D. Estlund, A. Føllesdal, A. Fung, C. Lafont, B. Manin, *et al.*, "The place of self-interest and the role of power in deliberative democracy," *Journal of political philosophy*, vol. 18, no. 1, pp. 64–100, 2010.

[102] T. W. Flynn, *Debating deliberative democracy: how deliberation changes the way people reason.* PhD thesis, University of York, 2011.

[103] S. Burkhalter, J. Gastil, and T. Kelshaw, "A conceptual definition and theoretical model of public deliberation in small face—to—face groups," *Communication Theory*, vol. 12, no. 4, pp. 398–422, 2002.

[104] J. L. Wilson, "Deliberation, democracy, and the rule of reason in aristotle's politics," *American Political Science Review*, vol. 105, no. 02, pp. 259–274, 2011.

[105] J. Habermas, *Between facts and norms: Contributions to a discourse theory of law and democracy.* Mit Press, 1996.

[106] J. Habermas, *Legitimation Crisis*, vol. 519. Beacon Press, 1975.

[107] J. Habermas, "Popular sovereignty as procedure," *Deliberative democracy: Essays on reason and politics*, pp. 35–65, 1997.

[108] S. Rodotà, "Tecnopolitica. la democrazia e le nuove tecnologie della comunicazione," 1997.

[109] G. Cardoso, *The media in the network society: Browsing, news, filters and citizenship.* Lulu. com, 2006.

[110] S. Elstub, S. Ercan, and R. F. Mendonça, "Editorial introduction: The fourth generation of deliberative democracy," 2016.

[111] J. Habermas, "The theory of communicative action, volume i," *Boston: Beacon*, 1984.

[112] J. Habermas, *Moral consciousness and communicative action.* MIT press, 1990.

[113] J. Rawls, *Political liberalism.* Columbia University Press, 2005.

[114] J. Rawls, "The idea of public reason revisited," *The University of Chicago Law Review*, vol. 64, no. 3, pp. 765–807, 1997.

[115] J. Cohen, "Deliberation and democratic legitimacy," *1997*, pp. 67–92, 1989.

[116] J. S. Dryzek, *Discursive democracy: Politics, policy, and political science.* Cambridge University Press, 1994.

[117] J. S. Dryzek, *Foundations and frontiers of deliberative governance.* Oxford University Press, 2012.

[118] J. S. Dryzek, "Global democratization: Soup, society, or system?," *Ethics & International Affairs*, vol. 25, no. 02, pp. 211–234, 2011.

[119] I. M. Young, "Communication and the other: Beyond deliberative democracy," *Democracy and difference: Contesting the boundaries of the political*, vol. 31, pp. 120–135, 1996.

[120] I. M. Young, *Inclusion and democracy.* Oxford University Press on Demand, 2002.

[121] I. M. Young, "Justice, inclusion, and deliberative democracy," 1999.

[122] R. E. Goodin and S. J. Niemeyer, "When does deliberation begin? internal reflection versus public discussion in deliberative democracy," *Political Studies*, vol. 51, no. 4, pp. 627–649, 2003.

[123] D. Thompson and A. Gutmann, "Democracy and disagreement," *Judith M. Green, Deep Democracy: Community, Diversity and*, 1996.

[124] J. S. Dryzek and S. Niemeyer, "Reconciling pluralism and consensus as political ideals," *American Journal of Political Science*, vol. 50, no. 3, pp. 634–649, 2006.

[125] J. Mansbridge, "Everyday talk in the deliberative system," 1999.

[126] P. J. Conover and D. D. Searing, "Studying 'everyday political talk'in the deliberative system," *Acta Politica*, vol. 40, no. 3, pp. 269–283, 2005.

[127] J. Mansbridge, J. Bohman, S. Chambers, T. Christiano, A. Fung, J. Parkinson, D. F. Thompson, and M. E. Warren, "A systemic approach to deliberative democracy," *Deliberative systems: Deliberative democracy at the large scale*, pp. 1–26, 2012.

[128] J. Bohman, *Deliberative democracy: Essays on reason and politics*. MIT press, 1997.

[129] C. Fabre, "To deliberate or to discourse: is that the question?," *European Journal of Political Theory*, vol. 2, no. 1, pp. 107–115, 2003.

[130] M. A. Neblo, "Family disputes: diversity in defining and measuring deliberation," *Swiss Political Science Review*, vol. 13, no. 4, pp. 527–557, 2007.

[131] J. O'neill, "The rhetoric of deliberation: some problems in kantian theories of deliberative democracy," *Res Publica*, vol. 8, no. 3, pp. 249–268, 2002.

[132] G. Remer, "Political oratory and conversation: Cicero versus deliberative democracy," *Political Theory*, vol. 27, no. 1, pp. 39–64, 1999.

[133] T. Triadafilopoulos, "Politics, speech, and the art of persuasion: Toward an aristotelian conception of the public sphere," *The Journal of Politics*, vol. 61, no. 3, pp. 741–757, 1999.

[134] J. Yearwood, *Technologies for Supporting Reasoning Communities and Collaborative Decision Making: Cooperative Approaches: Cooperative Approaches*. IGI Global, 2010.

[135] M. Deveaux, "A deliberative approach to conflicts of culture," *Political Theory*, vol. 31, no. 6, pp. 780–807, 2003.

[136] J. S. Fishkin and R. C. Luskin, "Experimenting with a democratic ideal: Deliberative polling and public opinion," *Acta Politica*, vol. 40, no. 3, pp. 284–298, 2005.

[137] R. A. Posner, *Law, pragmatism, and democracy*. Harvard University Press, 2005.

[138] S. L. Popkin, *The reasoning voter: Communication and persuasion in presidential campaigns*. University of Chicago Press, 1994.

[139] A. Lupia and M. D. McCubbins, *The democratic dilemma: Can citizens learn what they need to know?* Cambridge University Press, 1998.

[140] L. M. Sanders, "Against deliberation," *Political theory*, vol. 25, no. 3, pp. 347–376, 1997.

[141] C. R. Sunstein, "The law of group polarization," *Journal of political philosophy*, vol. 10, no. 2, pp. 175–195, 2002.

[142] J. Femia, "Complexity and deliberative democracy," *Inquiry*, vol. 39, no. 3-4, pp. 359–397, 1996.

[143] D. Van Mill, "The possibility of rational outcomes from democratic discourse and procedures," *The Journal of Politics*, vol. 58, no. 3, pp. 734–752, 1996.

[144] J. Bohman, "The coming of age of deliberative democracy," *Coherencia*, vol. 13, no. 24, pp. 105–143, 2016.

[145] S. Niemeyer and J. S. Dryzek, "The ends of deliberation: Metaconsensus and inter-subjective rationality as ideal outcomes," *Swiss Political Science Review*, vol. 13, no. 4, pp. 497–526, 2007.

[146] N. P. Barry, *An introduction to modern political theory.* Springer, 1989.

[147] D. Schwartz and D. Galily, "The feasibility of participatory democracy," 2017.

[148] R. A. Dahl, "A democratic dilemma: system effectiveness versus citizen participation," *Political science quarterly*, vol. 109, no. 1, pp. 23–34, 1994.

[149] J. S. Fishkin, *When the people speak: Deliberative democracy and public consultation.* Oxford University Press, 2011.

[150] S. Elstub, "The third generation of deliberative democracy," *Political studies review*, vol. 8, no. 3, pp. 291–307, 2010.

[151] S. Elstub, "A genealogy of deliberative democracy," 2015.

[152] J. S. Dryzek, *Deliberative democracy and beyond: Liberals, critics, contestations.* Oxford University Press on Demand, 2000.

[153] J. S. Dryzek, "Deliberative global politics: Discourse and democracy in a divided world," 2006.

[154] J. S. Dryzek, *The politics of the earth: Environmental discourses.* Oxford university press, 2013.

[155] J. Dryzek and P. Dunleavy, *Theories of the democratic state*. Palgrave Macmillan, 2009.

[156] S. R. Brown, "Q methodology and qualitative research," *Qualitative health research*, vol. 6, no. 4, pp. 561–567, 1996.

[157] M. R. Steenbergen, A. Bächtiger, M. Spörndli, and J. Steiner, "Measuring political deliberation: A discourse quality index," *Comparative European Politics*, vol. 1, no. 1, pp. 21–48, 2003.

[158] S. Chatterji, A. Sen, and H. Zeng, "A characterization of single-peaked preferences via random social choice functions," *Theoretical Economics*, vol. 11, no. 2, pp. 711–733, 2016.

[159] J. S. Kelly, "Arrow's impossibility theorem," in *Social Choice Theory*, pp. 80–87, Springer, 1988.

[160] B. Ackerman and J. S. Fishkin, "Deliberation day," *Journal of Political Philosophy*, vol. 10, no. 2, pp. 129–152, 2002.

[161] A. Downs, "An economic theory of political action in a democracy," *Journal of Political Economy*, vol. 65, no. 2, pp. 135–150, 1957.

[162] A. Fung, "Survey article: recipes for public spheres: eight institutional design choices and their consequences," *Journal of political philosophy*, vol. 11, no. 3, pp. 338–367, 2003.

[163] J. S. Fishkin, *The voice of the people: Public opinion and democracy*. Yale University Press, 1997.

[164] C. J. Lukensmeyer, J. Goldman, S. Brigham, J. Gastil, and P. Levine, "A town meeting for the twenty-first century," *The deliberative democracy handbook: Strategies for effective civic engagement in the twenty-first century*, pp. 154–163, 2005.

[165] C. M. Hendriks, "Integrated deliberation: Reconciling civil society's dual role in deliberative democracy," *Political studies*, vol. 54, no. 3, pp. 486–508, 2006.

[166] S. Benhabib, "Toward a deliberative model of democratic legitimacy," *Democracy and difference: Contesting the boundaries of the political*, pp. 67–94, 1996.

[167] A. Mitra, "Marginal voices in cyberspace," *New media & society*, vol. 3, no. 1, pp. 29–48, 2001.

[168] C. Weare, "The internet and democracy: The causal links between technology and politics," *International Journal of Public Administration*, vol. 25, no. 5, pp. 659–691, 2002.

[169] I. Lejarraga, "The future of the internet and democracy beyond metaphors, towards policy," *Promise and Problems of E-Democracy*, pp. 143–162, 2004.

[170] M. Margolis and D. Resnick, *Politics as Usual: The CyberspaceRevolution'*, vol. 6. Sage Publications, 2000.

[171] P. Golding, "Forthcoming features: information and communications technologies and the sociology of the future," *Sociology*, vol. 34, no. 1, pp. 165–184, 2000.

[172] A. B. Forouzan, *Data communications & networking (sie)*. Tata McGraw-Hill Education, 2006.

[173] B. Van Schewick, *Internet architecture and innovation*. MIT Press, 2012.

[174] L. M. Correia, H. Abramowicz, M. Johnsson, and K. Wünstel, *Architecture and design for the future internet: 4WARD project*. Springer Science & Business Media, 2011.

[175] S. Albrecht, "Whose voice is heard in online deliberation?: A study of participation and representation in political debates on the internet," *Information, Community and Society*, vol. 9, no. 1, pp. 62–82, 2006.

[176] M. Mueller, D. L. Cogburn, J. Mathiason, and J. Hofmann, "Net neutrality as global principle for internet governance," 2007.

[177] P. DiMaggio, E. Hargittai, *et al.*, "From the 'digital divide' to 'digital inequality': Studying internet use as penetration increases," *Princeton: Center for Arts and Cultural Policy Studies, Woodrow Wilson School, Princeton University*, vol. 4, no. 1, pp. 4–2, 2001.

[178] A. B. Sideridis, Z. Kardasiadou, C. P. Yialouris, and V. Zorkadis, *E-Democracy, Security, Privacy and Trust in a Digital World: 5th International Conference, E-Democracy 2013, Athens, Greece, December 5-6, 2013, Revised Selected Papers*, vol. 441. Springer, 2014.

[179] E. Showers, N. Tindall, and T. Davies, "Equality of participation online versus face to face: An analysis of the community forum deliberative methods demonstration," 2015.

[180] E. C. Peca, Viorel, "Digital agenda for europe," 2010.

[181] P. del Consiglio dei Ministri, "Strategia per la crescita digitale 2014-2020," 2015.

[182] S. Keates, P. J. Clarkson, L.-A. Harrison, and P. Robinson, "Towards a practical inclusive design approach," in *Proceedings on the 2000 conference on Universal Usability*, pp. 45–52, ACM, 2000.

[183] U. Persad, P. Langdon, and P. Clarkson, "Inclusive design evaluation and the capability-demand relationship," in *Designing accessible technology*, pp. 177–188, Springer, 2006.

[184] P. Clarkson, R. Coleman, I. Hosking, and S. Waller, "Inclusive design toolkit, university of cambridge, uk," 2007.

[185] I. Hickson and D. Hyatt, "Html 5: W3c working draft," 2008.

[186] B. S. Gardner, "Responsive web design: Enriching the user experience," *Sigma Journal: Inside the Digital Ecosystem*, vol. 11, no. 1, pp. 13–19, 2011.

[187] A. Lella and A. Lipsman, "The us mobile app report," *Tech. Rep.*, vol. 8, 2014.

[188] G. Ziccardi, *Informatica giuridica*, vol. 1. Giuffrè Editore, 2008.

[189] S. Prehn, "Open source software development process," in *AG Software Engineering Seminar SS07*, 2007.

[190] M. Janssen, Y. Charalabidis, and A. Zuiderwijk, "Benefits, adoption barriers and myths of open data and open government," *Information systems management*, vol. 29, no. 4, pp. 258–268, 2012.

[191] U. N. D. of Economic, *United Nations E-Government Survey 2016: E-GOVERNMENT IN SUPPORT OF SUSTAINABLE DEVELOPMENT*, vol. 2. United Nations Publications, 2016.

[192] E. Commission, *Creating Value through Open Data*. European Union, 2015.

[193] N. Huijboom and T. Van den Broek, "Open data: an international comparison of strategies," *European journal of ePractice*, vol. 12, no. 1, pp. 4–16, 2011.

[194] A. for the Digital Italy, *AN OVERVIEW OF THE ITALIAN "GUIDELINES FOR SEMANTIC INTEROPERABILITY THROUGH LINKED OPEN DATA"*. Agency for the Digital Italy, 2013.

[195] E. IDABC and D. Industry, "European interoperability framework for pan-european e-government services," *European Communities*, 2004.

[196] F. Bauer and M. Kaltenböck, "Linked open data: The essentials," *Edition mono/monochrom, Vienna*, 2011.

[197] L. Cervone, *Parametric editors for structured documents.* PhD thesis, 2013.

[198] G. Sartor, M. Palmirani, E. Francesconi, and M. A. Biasiotti, *Legislative XML for the semantic web: principles, models, standards for document management*, vol. 4. Springer Science & Business Media, 2011.

[199] B. Yu and G. Cai, "Facilitating participatory decision-making in local communities through map-based online discussion," in *Proceedings of the fourth international conference on Communities and technologies*, pp. 215–224, ACM, 2009.

[200] V. Miori and D. Russo, "Integrating online and traditional involvement in participatory budgeting," *Electronic Journal of e-Government*, vol. 9, no. 1, pp. 41–57, 2011.

[201] M. Palmirani and F. Vitali, "Akoma-ntoso for legal documents," in *Legislative XML for the semantic Web*, pp. 75–100, Springer, 2011.

[202] M. Palmirani, "Legislative change management with akoma-ntoso," in *Legislative XML for the semantic Web*, pp. 101–130, Springer, 2011.

[203] E. T. O'Neill, "Frbr: Functional requirements for bibliographic records," *Library resources & technical services*, vol. 46, no. 4, pp. 150–159, 2011.

[204] O. Lassila and R. R. Swick, "Resource description framework (rdf) model and syntax specification," 1999.

[205] M. Palmirani and L. Cervone, "Measuring the complexity of the legal order over time," in *AI Approaches to the Complexity of Legal Systems*, pp. 82–99, Springer, 2014.

[206] J. R. Terborg and H. E. Miller, "Motivation, behavior, and performance: A closer examination of goal setting and monetary incentives.," *Journal of Applied Psychology*, vol. 63, no. 1, p. 29, 1978.

[207] D. Ariely, A. Bracha, and S. Meier, "Doing good or doing well? image motivation and monetary incentives in behaving prosocially," 2007.

[208] J. B. Watson, *Behaviorism.* Read Books Ltd, 2013.

[209] J. Haugeland, "The nature and plausibility of cognitivism," *Behavioral and Brain Sciences*, vol. 1, no. 02, pp. 215–226, 1978.

[210] L. G. Breuning, *Habits of a Happy Brain: Retrain Your Brain to Boost Your Serotonin, Dopamine, Oxytocin, and Endorphin Levels.* " F+ W Media, Inc.", 2015.

[211] A. C. Marczewski, *Even Ninja Monkeys Like to Play: Gamification, Game Thinking and Motivational Design.* CreateSpace Independent Publishing Platform, 2015.

[212] A. Pickering, J. Gray, *et al.*, "Dopamine, appetitive reinforcement, and the neuropsychology of human learning: An individual differences approach," *Advances in individual differences research*, pp. 113–149, 2001.

[213] S. B. Flagel, J. J. Clark, T. E. Robinson, L. Mayo, A. Czuj, I. Willuhn, C. A. Akers, S. M. Clinton, P. E. Phillips, and H. Akil, "A selective role for dopamine in stimulus-reward learning," *Nature*, vol. 469, no. 7328, pp. 53–57, 2011.

[214] K. Uvnäs-Moberg, "Oxytocin may mediate the benefits of positive social interaction and emotions," *Psychoneuroendocrinology*, vol. 23, no. 8, pp. 819–835, 1998.

[215] P. J. Zak, "Why inspiring stories make us react: The neuroscience of narrative," in *Cerebrum: the Dana forum on brain science*, vol. 2015, Dana Foundation, 2015.

[216] P. J. Zak, A. A. Stanton, and S. Ahmadi, "Oxytocin increases generosity in humans," *PloS one*, vol. 2, no. 11, p. e1128, 2007.

[217] M. Kosfeld, M. Heinrichs, P. J. Zak, U. Fischbacher, and E. Fehr, "Oxytocin increases trust in humans," *Nature*, vol. 435, no. 7042, pp. 673–676, 2005.

[218] A. Bari, D. E. Theobald, D. Caprioli, A. C. Mar, A. Aidoo-Micah, J. W. Dalley, and T. W. Robbins, "Serotonin modulates sensitivity to reward and negative feedback in a probabilistic reversal learning task in rats," *Neuropsychopharmacology*, vol. 35, no. 6, pp. 1290–1301, 2010.

[219] N. Schweighofer, M. Bertin, K. Shishida, Y. Okamoto, S. C. Tanaka, S. Yamawaki, and K. Doya, "Low-serotonin levels increase delayed reward discounting in humans," *Journal of Neuroscience*, vol. 28, no. 17, pp. 4528–4532, 2008.

[220] A. P. Blaszczynski, S. W. Winter, and N. McConaghy, "Plasma endorphin levels in pathological gambling," *Journal of Gambling Behavior*, vol. 2, no. 1, pp. 3–14, 1986.

[221] J. McGonigal, *Reality is broken: Why games make us better and how they can change the world.* Penguin, 2011.

[222] R. M. Ryan and E. L. Deci, "Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being.," *American psychologist*, vol. 55, no. 1, p. 68, 2000.

[223] K. Werbach and D. Hunter, *For the win: How game thinking can revolutionize your business.* Wharton Digital Press, 2012.

[224] V. Chirkov, R. M. Ryan, Y. Kim, and U. Kaplan, "Differentiating autonomy from individualism and independence: a self-determination theory perspective on internalization of cultural orientations and well-being.," *Journal of personality and social psychology*, vol. 84, no. 1, p. 97, 2003.

[225] R. F. Baumeister and M. R. Leary, "The need to belong: desire for interpersonal attachments as a fundamental human motivation.," *Psychological bulletin*, vol. 117, no. 3, p. 497, 1995.

[226] V. G. Kasser and R. M. Ryan, "The relation of psychological needs for autonomy and relatedness to vitality, well-being, and mortality in a nursing home1," *Journal of Applied Social Psychology*, vol. 29, no. 5, pp. 935–954, 1999.

[227] M. Cskszentmihalyi, "The flow experience and its significance for human psychology," *Optimal experience*, pp. 15–35, 1988.

[228] S. S. Iyengar and M. R. Lepper, "Rethinking the value of choice: a cultural perspective on intrinsic motivation.," *Journal of personality and social psychology*, vol. 76, no. 3, p. 349, 1999.

[229] J. G. Miller, D. Munro, J. Schumaker, and S. Carr, "Cultural conceptions of duty," *Motivation and culture*, pp. 178–192, 1997.

[230] A. Fung, "Deliberation before the revolution: Toward an ethics of deliberative democracy in an unjust world," *Political theory*, vol. 33, no. 3, pp. 397–419, 2005.

[231] A. Fung, "Varieties of participation in complex governance," *Public administration review*, vol. 66, no. s1, pp. 66–75, 2006.

[232] D. French and M. Laver, "Participation bias, durable opinion shifts and sabotage through withdrawal in citizens' juries," *Political Studies*, vol. 57, no. 2, pp. 422–450, 2009.

[233] C. J. Navarro and J. Font, "The biased inclusiveness of local democratic innovations: vehicles or obstacles for political equality?," *Participatory democratic innovations in Europe. Barbara Budrich Plublishers*, pp. 95–122, 2013.

[234] T. Nabatchi, E. Ertinger, and M. Leighninger, "The future of public participation: Better design, better laws, better systems," *Conflict Resolution Quarterly*, vol. 33, no. S1, pp. S35–S44, 2015.

[235] S. Niemeyer and C. L. Spash, "Environmental valuation analysis, public deliberation, and their pragmatic syntheses: a critical appraisal," *Environment and Planning C: Government and Policy*, vol. 19, no. 4, pp. 567–585, 2001.

[236] S. D. McClurg, "The electoral relevance of political talk: Examining disagreement and expertise effects in social networks on political participation," *American Journal of Political Science*, vol. 50, no. 3, pp. 737–754, 2006.

[237] J. Pfeffer, T. Zorbach, and K. M. Carley, "Understanding online firestorms: Negative word-of-mouth dynamics in social media networks," *Journal of Marketing Communications*, vol. 20, no. 1-2, pp. 117–128, 2014.

[238] G. W. Allport and L. Postman, "The psychology of rumor.," 1947.

[239] T. C. Schelling, "Hockey helmets, concealed weapons, and daylight saving: A study of binary choices with externalities," *Journal of Conflict resolution*, vol. 17, no. 3, pp. 381–428, 1973.

[240] R. E. Burton and R. Kebler, "The "half-life" of some scientific and technical literatures," *Journal of the Association for Information Science and Technology*, vol. 11, no. 1, pp. 18–22, 1960.

[241] J. Pfeffer and K. M. Carley, "Modeling and calibrating real world interpersonal networks," in *Network Science Workshop (NSW), 2011 IEEE*, pp. 9–16, IEEE, 2011.

[242] N. Diakopoulos, M. De Choudhury, and M. Naaman, "Finding and assessing social media information sources in the context of journal-

ism," in *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pp. 2451–2460, ACM, 2012.

[243] K. Y. McKenna and J. A. Bargh, "Plan 9 from cyberspace: The implications of the internet for personality and social psychology," *Personality and social psychology review*, vol. 4, no. 1, pp. 57–75, 2000.

[244] S. Milgram and C. Gudehus, "Obedience to authority," 1978.

[245] R. S. Nickerson, "Confirmation bias: A ubiquitous phenomenon in many guises.," *Review of general psychology*, vol. 2, no. 2, p. 175, 1998.

[246] L. Rösner and N. C. Krämer, "Verbal venting in the social web: Effects of anonymity and group norms on aggressive language use in online comments," *Social Media+ Society*, vol. 2, no. 3, p. 2056305116664220, 2016.

[247] P. G. Zimbardo, *Lucifer Effect*. Wiley Online Library, 2007.

[248] P. Mendels, "The two faces of on-line anonymity," *New York Times*, 1999.

[249] E. Pariser, *The filter bubble: What the Internet is hiding from you.* Penguin UK, 2011.

[250] T. T. Nguyen, P.-M. Hui, F. M. Harper, L. Terveen, and J. A. Konstan, "Exploring the filter bubble: the effect of using recommender systems on content diversity," in *Proceedings of the 23rd international conference on World wide web*, pp. 677–686, ACM, 2014.

[251] Q. V. Liao and W.-T. Fu, "Expert voices in echo chambers: effects of source expertise indicators on exposure to diverse opinions," in *Proceedings of the 32nd annual ACM conference on human factors in computing systems*, pp. 2745–2754, ACM, 2014.

[252] E. Colleoni, A. Rozza, and A. Arvidsson, "Echo chamber or public sphere? predicting political orientation and measuring political homophily in twitter using big data," *Journal of Communication*, vol. 64, no. 2, pp. 317–332, 2014.

[253] S. Sinek, *Start with why: How great leaders inspire everyone to take action*. Penguin, 2009.

[254] R. J. Vallerand and G. F. Losier, "An integrative analysis of intrinsic and extrinsic motivation in sport," *Journal of applied sport psychology*, vol. 11, no. 1, pp. 142–169, 1999.

[255] R. J. Vallerand, "Intrinsic and extrinsic motivation in sport and physical activity," *Handbook of sport psychology*, vol. 3, pp. 59–83, 2007.

[256] K. C. Williams and C. C. Williams, "Five key ingredients for improving student motivation," *Research in Higher Education Journal*, vol. 12, p. 1, 2011.

[257] H. Tüzün, M. Yılmaz-Soylu, T. Karakuş, Y. İnal, and G. Kızılkaya, "The effects of computer games on primary school students' achievement and motivation in geography learning," *Computers & Education*, vol. 52, no. 1, pp. 68–77, 2009.

[258] R. Garris, R. Ahlers, and J. E. Driskell, "Games, motivation, and learning: A research and practice model," *Simulation & gaming*, vol. 33, no. 4, pp. 441–467, 2002.

[259] C. A. Steinkuehler, "Learning in massively multiplayer online games," in *Proceedings of the 6th international conference on Learning sciences*, pp. 521–528, International Society of the Learning Sciences, 2004.

[260] B. Loguidice and M. Barton, *Vintage games: An insider look at the history of Grand Theft Auto, Super Mario, and the most influential games of all time*. CRC Press, 2012.

[261] M. D. Childress and R. Braswell, "Using massively multiplayer online role-playing games for online learning," *Distance Education*, vol. 27, no. 2, pp. 187–196, 2006.

[262] N. Ducheneaut, N. Yee, E. Nickell, and R. J. Moore, "Alone together?: exploring the social dynamics of massively multiplayer online games," in *Proceedings of the SIGCHI conference on Human Factors in computing systems*, pp. 407–416, ACM, 2006.

[263] H. Cole and M. D. Griffiths, "Social interactions in massively multiplayer online role-playing gamers," *CyberPsychology & Behavior*, vol. 10, no. 4, pp. 575–583, 2007.

[264] J. P. Gee, *Good video games+ good learning: Collected essays on video games, learning, and literacy*, vol. 27. Peter Lang, 2007.

[265] E. S. Association *et al.*, "Essential facts about the computer and video game industry," 2017.

[266] J. D. Stoddard, A. M. Banks, C. L. Nemacheck, and E. Wenska, "The challenges of gaming for democratic education: The case of icivics," *24 Democracy & Education 1-12 (November 2016)*, 2016.

[267] P. C. Adams, "Teaching and learning with simcity 2000," *Journal of Geography*, vol. 97, no. 2, pp. 47–55, 1998.

[268] J. Gaber, "Simulating planning: Simcity as a pedagogical tool," *Journal of Planning Education and Research*, vol. 27, no. 2, pp. 113–121, 2007.

[269] J. Kahne, E. Middaugh, and C. Evans, *The civic potential of video games.* MIT Press, 2009.

[270] E. Gordon and G. Koo, "Placeworlds: Using virtual worlds to foster civic engagement," *Space and Culture*, vol. 11, no. 3, pp. 204–221, 2008.

[271] A. Lenhart, J. Kahne, E. Middaugh, A. R. Macgill, C. Evans, and J. Vitak, "Teens, video games, and civics: teens' gaming experiences are diverse and include significant social interaction and civic engagement.," *Pew internet & American life project*, 2008.

[272] D. R. Michael and S. L. Chen, *Serious games: Games that educate, train, and inform.* Muska & Lipman/Premier-Trade, 2005.

[273] U. Ritterfeld, M. Cody, and P. Vorderer, *Serious games: Mechanisms and effects.* Routledge, 2009.

[274] C. C. Abt, *Serious games.* University Press of America, 1987.

[275] J. F. Silva, J. E. Almeida, R. J. Rossetti, and A. L. Coelho, "A serious game for evacuation training," in *Serious Games and Applications for Health (SeGAH), 2013 IEEE 2nd International Conference on*, pp. 1–6, IEEE, 2013.

[276] B. Williams, *Microsoft flight simulator as a training aid: a guide for pilots, instructors, and virtual aviators.* Aviation Supplies & Academics, Inc., 2007.

[277] S. McCallum, "Gamification and serious games for personalized health," *Stud Health Technol Inform*, vol. 177, no. 2012, pp. 85–96, 2012.

[278] A. Dix, *Human-computer interaction.* Springer, 2009.

[279] S. Deterding, D. Dixon, R. Khaled, and L. Nacke, "From game design elements to gamefulness: defining gamification," in *Proceedings of the 15th international academic MindTrek conference: Envisioning future media environments*, pp. 9–15, ACM, 2011.

[280] G. Zichermann and C. Cunningham, *Gamification by design: Implementing game mechanics in web and mobile apps.* " O'Reilly Media, Inc.", 2011.

[281] K. Seaborn and D. I. Fels, "Gamification in theory and action: A survey," *International Journal of Human-Computer Studies*, vol. 74, pp. 14–31, 2015.

[282] M. Robertson, "Can't play, won't play," *Hide & Seek*, vol. 6, p. 2010, 2010.

[283] K. M. Kapp, *The gamification of learning and instruction: game-based methods and strategies for training and education.* John Wiley & Sons, 2012.

[284] E. Lawley, "Games as an alternate lens for design," *Interactions*, vol. 19, no. 4, pp. 16–17, 2012.

[285] E. Y. Chang, *Technoqueer: Re/Con/Figuring Posthuman Narratives.* University of Washington, 2012.

[286] I. Bogost, "Persuasive games: exploitationware. gamasutra," 2011.

[287] I. Bogost, "Gamification is bullshit," *The gameful world: Approaches, issues, applications*, pp. 65–80, 2011.

[288] R. Hunicke, M. LeBlanc, and R. Zubek, "Mda: A formal approach to game design and game research," in *Proceedings of the AAAI Workshop on Challenges in Game AI*, vol. 4, 2004.

[289] H. J. R. Murray, *A history of board-games other than chess.* Clarendon press, 1952.

[290] S. Woods, *Eurogames: The design, culture and play of modern European board games.* McFarland, 2012.

[291] R. Bartle, "Hearts, clubs, diamonds, spades: Players who suit muds," *Journal of MUD research*, vol. 1, no. 1, p. 19, 1996.

[292] J. Hamari and J. Tuunanen, "Player types: A meta-synthesis," *Transactions of the Digital Games Research Association*, vol. 1, no. 2, 2014.

[293] G. F. Tondello, R. R. Wehbe, L. Diamond, M. Busch, A. Marczewski, and L. E. Nacke, "The gamification user types hexad scale," in *Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play*, pp. 229–243, ACM, 2016.

[294] T. A. Judge, C. A. Higgins, C. J. Thoresen, and M. R. Barrick, "The big five personality traits, general mental ability, and career success across the life span," *Personnel psychology*, vol. 52, no. 3, pp. 621–652, 1999.

[295] J. Kumar, "Gamification at work: Designing engaging business software," in *International Conference of Design, User Experience, and Usability*, pp. 528–537, Springer, 2013.

[296] J. Hamari, "Do badges increase user activity? a field experiment on the effects of gamification," *Computers in human behavior*, 2015.

[297] J. Hamari, D. J. Shernoff, E. Rowe, B. Coller, J. Asbell-Clarke, and T. Edwards, "Challenging games help students learn: An empirical study on engagement, flow and immersion in game-based learning," *Computers in Human Behavior*, vol. 54, pp. 170–179, 2016.

[298] P. E. Anderson, T. Nash, and R. McCauley, "Facilitating programming success in data science courses through gamified scaffolding and learn2mine," in *Proceedings of the 2015 ACM Conference on Innovation and Technology in Computer Science Education*, pp. 99–104, ACM, 2015.

[299] A. Kankanhalli, M. Taher, H. Cavusoglu, and S. H. Kim, "Gamification: A new paradigm for online user engagement," 2012.

[300] F. F.-H. Nah, L. S. Daggubati, A. Tarigonda, R. V. Nuvvula, and O. Turel, "Effects of the use of points, leaderboards and badges on in-game purchases of virtual goods," in *HCI in Business*, pp. 525–531, Springer, 2015.

[301] R. N. Landers, K. N. Bauer, and R. C. Callan, "Gamification of task performance with leaderboards: A goal setting experiment," *Computers in Human Behavior*, 2015.

[302] R. N. Landers and A. K. Landers, "An empirical test of the theory of gamified learning: The effect of leaderboards on time-on-task and academic performance," *Simulation & Gaming*, vol. 45, no. 6, pp. 769–785, 2014.

[303] C. Li, Z. Dong, R. H. Untch, and M. Chasteen, "Engaging computer science students through gamification in an online social network based collaborative learning environment," *International Journal of Information and Education Technology*, vol. 3, no. 1, p. 72, 2013.

[304] M. Weij *et al.*, "Effects of different leaderboards in a casual gaming application in higher education," Master's thesis, 2017.

[305] H. A. Simon, "Bandwagon and underdog effects and the possibility of election predictions," *Public Opinion Quarterly*, vol. 18, no. 3, pp. 245–253, 1954.

[306] C. L. Hull, "The goal-gradient hypothesis applied to some" field-force'problems in the behavior of young children," *Psychological Review*, vol. 45, no. 4, pp. 271–299, 1938.

[307] D. S. Felsenthal, "On combining approval with disapproval voting," *Behavioral Science*, vol. 34, no. 1, pp. 53–60, 1989.

[308] S.-K. Thiel, M. Reisinger, K. Röderer, and P. Fröhlich, "Playing (with) democracy: A review of gamified participation approaches," *JeDEM-eJournal of eDemocracy and Open Government*, vol. 8, no. 3, pp. 32–60, 2016.

[309] L. Hassan, "Governments should play games: Towards a framework for the gamification of civic engagement platforms," *Simulation & Gaming*, p. 1046878116683581, 2016.

[310] J. Schell, *The Art of Game Design: A book of lenses.* CRC Press, 2014.

[311] R. Koster, *Theory of fun for game design.* " O'Reilly Media, Inc.", 2013.

[312] K. Salen and E. Zimmerman, *Rules of play: Game design fundamentals.* MIT press, 2004.

[313] S. Synder and G. Capullo, *Batman N° 1: Tomorrow Is One Dream Away (The New 52).* DC, 2011.

Acknowledgments

When people complete a period of studies, they usually end-up with a thesis and, very often, the very last part of that thesis contains acknowledgments. So, usually they thank their parents, a lot of friends, their special *friend, their pets, the more nerd ones acknowledge their laptop, and some one of them do not forget to be grateful to God or Gods. Also, the most of the time, in that thesis student remember stories related to their period of study that usually involve one or more of the followings: alcoholics, naked men or women, unspecified substances to enhance the production of their neurotransmitters, endless nights. Or, the stories of the more serious ones include one or more of the followings: alcoholics after a day of hard work, naked men or women after a day of hard work, unspecified substances to enhance the production of their neurotransmitters after a day of hard work, a day of hard work after an endless night.

After having obtained one or more degrees, people continue their life and, sometimes, they will face again situations in which they wish to write acknowledgments. And, suddenly, they understand that they are grown-up. This is not due to the number of degrees they have, or due all the thinks they have achieved in their life, but it is due to new acknowledgments that they wish to write. Usually, they understand that the set of people they have to thank is smaller than the one of their thesis and, very very sadly, they understand that they have less stories to narrate. Moreover, subjects of stories have changed and have become (regardless to the type of person they are): very scarce alcoholics after several day of hard work, very scarce naked

men or women (usually just one and sometimes neither completely naked) after several day of hard work, specific and legal substances to enhance the production of their neurotransmitters after several day of hard work, nights that, contrary to the rules of the Nature, last for a couple of hours.

Well, know what? That didn't happened to me! I still have a lot of stories to narrate that contain a lot of funny things. For instance naked people. Yeah I know, the most of the time my stories would include just one naked person, and I can assure you that he is not a beautiful show, but he was naked and this is the thing that really matter. The stories would also include endless nights in Malta, Madrid, Berlin, Bologna, Florence, Arezzo, Isola D'Elba, Milan and Sannicandro Garganico, a lot of legal substances such as aspirins, but swallowed from the belly-button, alcoholics, lost smartphones, change of destiny, strangers engaged in serious discussion while they were peeing, panties thrown from balconies like they were bridal bouquet, injured eyes and very sensible parts of the body busted, illegal punk raves reached by luxury cars when wearing elegant suites, cases of beers brought home with taxy, and sockets that were lost in hotel and found again in the middle of Alexander Platz in Berlin.

For all these stories, I have to thank a group of very special people that I have meet during my life. In alphabetical order: Alfredo, Alice, Arianna, Barbara, Daniela, Elisa, Fabien, Francesco, Laura, Luca, Lucia, Matteo D. Matteo G, Nazario, Roberto, Simona, Valentina, Valerio. Thank you guys, really. I would have not finished this work without you, who have tolerated me and my digressions about Democracy in these last months. Someone of you is near in Bologna, someone is far in the World, and someone is gone in the meanwhile, but I'll be always grateful to you. I have meet some of you when I was I child and some other later, but with all of you I have learned the most of the things that I know about how to live properly. Like the name of that chat group, I hope that it will be *"sempre e per sempre"*. Hey, and if someone says that those nights are not yet livable when 35 years hold, just answer: *"Desculpa! Vacaciones."*.

During these last three years, I also had the opportunity to know a special kind of persons. I have known researchers. In my opinion they are kind of superheroes. They are like the Batman. He was afraid of bats, but he fought is phobia and now bats are his best friends. It is the same for researchers. Because their lives are all around Scientific certainties, they could be afraid of doubts. But they have understood how to fight them and, now, they live together with doubts, and doubts move the Science. Researcher are "Doubtwomen" and "Doubtmen", and I hope that they will accept me in their community. I promise I'll do everything that I can to be a good Doubtman.

Among others, I am specially and very grateful to three researchers and Professors. Firstly, Monica. Thank you for having trusted me and for having supported this work. Secondly, Fabio. Thank you for having trusted me since I was nothing else than a "smanettone". Thirdly, Angelo, my brother. Thank you for having had the patience to review the "*Italenglish*" in which this work was originally written.

Last but absolutely not least, thanks to Carmela and Emanuele (XXL), my mom and dad, that by harvesting and cooking delicious vegetables have feed me up during the most stressful period of this work. And thanks to Makiko that have created the most sweet, funny and smart children in the World: Emanuele (XS), Matteo, and the imminent "🔲 Cervone". Hey *nipoti*, I have cited Super Mario a lot of times in this work! I hope that you will be proud of me, and that what I have done will contribute to a better and funnier World for you.

Besides the answers to the research topics of this work, in these last three years I have found other things. I would like to conclude by sharing them with you.

Fact number one: "*Sometimes the second version of your work is better than the third one. They may ask you a third version, you may convince yourself that a third version would be better, and you'll made it. That version will belong to the world. The second one will belong to the*

perfection.", **Luca Cervone** while looking at "La Fiumana".

Figure 11.1: "La Fiumana". the second version of "Il Quarto Stato" by Pellizza da Volpedo

Fact number two: "*Do not trow flowers. Just left them in the country. They are aimed to remember to people that different and diverse colors put together can not harm anyone. Bricks and walls, they can harm more than one.*", **Luca Cervone** while looking at an opera by Bansky.

Figure 11.2: Bansky

Fact number three: "*Tomorrow is one dream away*" [313], **Bruce Wayne**, aka **The Batman** in Batman N° 1 of November 2001.

"*Time is the only thing that is equally shared among every one of us. But remember to measure it as damn hell you want to.*" **Luca Cervone** while reading Batman N° 1.

Figure 11.3: The cover page of Batman N° 1, the New 52

Fact number four: *"It could take several years to fill up a stadium with people. But then, just imagine what they can do together."* **Luca Cervone**, April 22nd, 2017.

Figure 11.4: Lo Stato Sociale in Assago, April 22nd, 2017

Fact number five: *"Rember to always reward yourself after an hard work."* **Luca Cervone**, June 15th, 2017.

"E quess' je u' paradis' ... " **Nazario Giordano**, several times at five o'clock in the morning.

Figure 11.5: The best reward ever