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Collaborative editing systems for large scale online citizen participation

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Abstract. Modern online participatory platforms are a key tool for large-scale citizen participation, both concerning the number of citizens participating and their geographical distance. However, existing platforms implement little if any collaborative system in order to help people contribute. Consequently, my doctoral research questions the relevance of different types of collaborative editing systems as supports for citizen participation. Apart from that, I also propose an analysis of users' behavior in a past online consultation in order to identify flaws and to draw recommendations concerning the design of participatory platforms.

Introduction

Citizen participation, as defined by Baum (2001), is the involvement of citizens in public decision making. During the past decades, citizen participation in the political life of their city, province or country has become more and more applied, especially at the local scale with initiatives like those studied by Lupia (1994) or de SOUSA SANTOS (1998). Citizen participation can be applied in various circumstances, from participatory budgeting, like in Holston et al. (2016), to public consultation, like in Aragón et al. (2017). In the recent years, these diverse

applications have been massively implemented in an online context. A survey on 40 major cities (more than 200,000 inhabitants) from the United Nations (2018) shows that 85% of them propose online feedback submission systems. Nevertheless, participatory systems granting more power to citizens are far less implemented in the surveyed cities, with only 23% of them proposing online participatory budgeting.

Digital alternatives to in-person citizen participation have the main advantage of enabling massive participation at the national and international scale. However, they imply computer-specific problems, from technical issues (e.g., bugs, security breaches, etc.) to the need for a certain degree of computer literacy through the necessity of making many contributors collaborate. To achieve viable participatory democracy systems, these problems have first to be identified and addressed. Toward this objective, the computer-based collaborative editing research field can be an inspiration, since it has already treated similar questions and proposed functional systems for both the general public and certain specific communities.

Collaborative editing systems, as well as other CSCW applications, have been classified by Johansen (1988) in four categories depending on their temporal and location dimensions, i.e., whether or not contributors collaborate respectively at the same time and at the same place. These categories do not offer the same possibilities for online citizen participation and a focus of my Ph.D. has been to assess which category was the most appropriate for the different types of citizen participation. Moreover, my analysis of modern citizen participation platforms has highlighted the fact that these platforms implement little means to enable large scale collaboration among contributors. Consequently, we have chosen to focus on the following research questions:

- How can we build an online CSCW platform for citizen participation which is able to handle the contributions of a large number of users (of the order of the population of a city or a country) while remaining usable and without exposing them to an information overload?
- What are the biases induced by a platform for participatory democracy and how can we detect and prevent them?

Methodological approach

As a first step, we have performed an analysis of a citizen consultation platform set up during the elaboration of the République Numérique French law[1]. This platform allows the users to contribute to the law project by either proposing new articles or amending, discussing and voting existing ones in a manner similar to the one described by Parra et al. (2017). The determining factor in our platform choice was the high number of active contributors, here 21464 different citizens, organizations and institutions. Other factors, such as the existence of a dataset detailing all the

[1] https://www.republique-numerique.fr

contributions and the fact that it was held in French, which is fluently understood by my supervisors and myself, have also impacted our choice.

The objective of our analysis was to identify flaws in the design of citizen participation platforms and to propose recommendations to solve them. In order to validate our recommendations, we will develop a prototype of platform for participatory democracy focused on ideation, elaboration and approval Parra et al. (2017) of propositions and to submit it to empirical validation through the organization of an online consultation. We plan to use the Decidim open source project as a starting point for its development. The criteria of evaluation will be its technical viability, its capability to solve the issues that we have identified on preexisting participatory platforms and to allow contributors to collaborate in order to express and discuss propositions.

First results

Our analysis of the existing collaborative editing systems has led us to question the viability of the categorization proposed by Johansen (1988) in the case of citizen participation. Indeed, the location differentiation between the "same place" and the "different places" systems seems to be irrelevant since, until now, online platforms are primarily used for citizen participation in order to increase the amount of possible contributors and to reduce the impact of geographical position of citizens on their capability to contribute. Consequently, we decided to revisit the location differentiation and to base it on the technical architecture of the platforms to distinguish centralized and distributed systems. This categorization allows us to differentiate the forms of citizen participation where a conceptual central node with decisive power can be identified, generally an institution, from those where decision-making power power is distributed more evenly, as described by Arnstein (1969). Concerning the temporal differentiation between synchronous and asynchronous platforms, we consider that these two types of platforms offer completely different possibilities for citizen participation, both in terms of applicability depending on the amount of users and of appropriate use cases.

Moreover, our analysis of the République Numérique online citizen consultation has allowed us to identify flaws in the design of the dedicated platform and to measure their impact on the participation. These flaws can create centralization of contributions around a small set of initial propositions, reduce the number of propositions related to a specific topic or unbalance the amount of replies of different types to a single proposition. In this latter case, we can see for example propositions receiving many votes – symbolizing their (dis)approbation by the contributors – but very little comments or arguments – which would be helpful to help new contributors form an opinion. Finally, through this analysis, we also highlight the fact that the République Numérique platform, as well as most other participatory platforms we have reviewed, contains very little collaborative tools. Consequently, we consider that such platforms are not collaborative and that new specific tools for citizen participation should be implemented. These tools

should support the ideation, elaboration and discussion phases of the participatory process.

Next Steps

During the next months, I expect to develop a participatory platform based on the Decidim framework in order to implement the recommendations drawn by our analysis of the République Numérique online consultation. I also plan to integrate new means of collaboration among contributors according to our analysis of the existing collaborative editing systems. We expect to subject the elements implemented in this platform to empirical validation through the organization of an online consultation.

I also plan to analyze other use cases of collaborative editing which are more mature, such as Open Source software development. We expect that the means implemented to enable large-scale collaboration in different contexts can be used to widen the scope of means to improve online citizen participation. We also plan to question the viability of the different means proposed to manage high amounts of contributions without exposing contributors to information overload.

Finally, I plan to investigate the relevance of Natural Language Processing (NLP) as a mean to enable large-scale citizen collaboration. So far, we have identified two different use cases for NLP in a participatory platform. The first one is to identify irrelevant, duplicate or malicious contributions, which has already been done for other types of platforms such as StackOverflow – by Correa and Sureka (2013) or Tóth et al. (2020). The second use case is to filter the propositions highlighted for a contributor depending on their areas of interest and expertise and on their prefered means of contribution.

Biography

William Aboucaya is a second year Ph.D. student in the MiMove team of INRIA. His doctoral research focuses on the use of CSCW for online citizen participation and is funded by Sorbonne Université. William obtained his computer engineer degree (equivalent to master's degree) in 2019 at the ISEP engineering school, with an elective in software engineering. His Ph.D. is directed by Valérie Issarny (MiMove@INRIA) and supervised by Rafael Angarita (LISITE@ISEP).

During his master's degree, William has obtained a software and distributed systems-oriented background. The first months of his Ph.D. have provided him a better knowledge of participatory systems and collaborative editing. William has also taught a web development class at ISEP during the first semester of the academic year 2020/2021.

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