Civic Technologies

Research, Practice, and Open Challenges

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Credits

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Abstract

Over the last years, civic technology projects have emerged around the world to advance open government and community action. Although Computer-Supported Cooperative Work (CSCW) and Human-Computer Interaction (HCI) communities have shown a growing interest in researching issues around civic technologies, yet most research still focuses on projects from the Global North. The goal of this workshop is, therefore, to advance CSCW research by raising awareness for the ongoing challenges and open questions around civic technology by bridging the gap between researchers and practitioners from different regions.

The workshop was organized around three central topics:

1. discuss how the local context and infrastructure affect the design, implementation, adoption, and maintenance of civic technology;
2. identify key elements of the configuration of trust among government, citizenry, and local organizations and how these elements change depending on the sociopolitical context where community engagement takes place;
3. discover what methods and strategies are best suited for conducting research on civic technologies in different contexts.

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Workshop proposal

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1.1. Introduction

The Internet was heralded for its democratic potential empowering citizens and challenging existing power structures by diversifying the relationship between governments and citizens [30, 139]. In the last two decades, a large number of political innovations [207], powered by digital technologies, have emerged to scale up citizen participation and to promote new forms of governance. As noted by Linders [124], there is a plethora of competing labels for these initiatives: *collaborative government* [145], *citizen sourcing* [217], *wiki government* [160], *government as a platform* [164], *do-it-yourself government* [138], *participatory civics* [230], *digital civics* [162], etc. Among them, the term *civic technologies* (or simply **civic tech**), proposed in a report by the Knight Foundation [172] and motivated by the expected civic outcome of such technological approaches, has gained popularity in recent years.

The phenomenon of civic technologies has resulted in increasing research on different projects around the world. The first works, inspired by initiatives in the United States and Europe, focused on operationalizing the notion of civic tech and mapping existing projects into component areas [42, 54, 56, 152, 197, 201, 210]. This early literature—originated primarily in the business and social innovation sectors—was followed by academic works to develop knowledge on civic tech and its relation to public libraries [15], digital data analytics [10, 133], hackathons [94, 199], and urban collaborative governance [80]. Recent research has started to offer a broader perspective of the civic tech movement by covering case studies from geographical regions of the Global South, including Latin America [174, 188, 189], Africa [36, 174, 185], Asia [95, 213] and Oceania [187].

Although most works about civic technologies have come from social and political sciences, there has been an increase in the scholarship within the CSCW research community that examines the role of the Internet, social media, and ICTs on supporting civic engagement [14], mobilizing communities [193], and examining civic data practices [6, 24, 118, 148] and software development processes in civic projects [114, 204]. Nevertheless, there is still a tension in community technologies between novelty contributions and sustained engagement. As explained by Liu et al. [126], the broader HCI and CSCW literature has traditionally emphasized technological innovation rather than social impact. Similarly,

previous work has suggested considering not only the results of civic technologies but also community practices [81, 106, 141]. Thus, we observe the disconnection between research and practice as an opportunity for future CSCW research [192]. By bringing practitioners and members from different disciplines, we aim to bridge experiences about civic technologies from both sides.

Civic technologies are constrained by their context [82], such as infrastructure [224], history of the communities [53], local practices [156], and perceived trust [45]. Therefore, it is important to identify how these elements affect the design, implementation, adoption, and maintenance of civic tech in the targeted region. Up to now most of the CSCW research on civic technologies focused on projects from the Global North. This difference between Global North and South was measured in a recent systematic review literature of more than 100 papers about civic technologies: over 85% were designed and implemented in the Global North [192]. This inequality motivates the need to promote dialogue and collaboration with key players in civic technologies from the Global South. During our workshop, rather than erasing particularities, our goal is to identify common patterns, intersections on the approaches, and similarities in practices to address open challenges.

1.2. Goal of the Workshop

The goal of the workshop is twofold. First, to exchange knowledge and experiences when designing, implementing, deploying and maintaining civic technologies across regions with different infrastructures, needs, and local histories. Second, to bridge the gap between researchers and civic tech practitioners (e.g., policymakers, public officers, social innovators, developers, designers, activists, etc.). To this end, our activities will focus on discussing similarities, nuances and differences among civic technologies from different regions and unpacking ongoing research challenges such as:

- **Civics, Infrastructure, and Local Context**
  - Local conditions that favour the development and deployment of civic technologies
  - Challenges when adopting existing technologies in new socio-geographic environments
  - Hybridization of online and offline participation in civic technologies
- **Civics, Trust and Government**
  - Methods for building trust among civic tech participants and with government bodies
  - Challenges in making government data available to the public
- **Sharing Methods and Strategies**
  - Governance models of civic technologies based on participatory principles
  - Approaches to ensure project sustainability and the community engagement
  - Indicators for measuring community health and democratic quality online

Lastly, due to the exceptional virtual nature of *CSCW 2020* as a response to the global crisis of COVID-19, this will be a unique occasion to attract participants from the non-academic sectors and different regions to the venue. We expect to leverage the benefits of the virtual edition to foster the participation of communities that have historically lacked visibility in top-tier academic conferences. Therefore, we intend to give priority voice to civic technology initiatives developed in the Global South.

1.3. Call For Participation

We seek participants who engage with research and/or practice focused on developing technologies, supporting civic engagement, or examine the mechanisms that citizens and organizations follow to influence change and decision-making on issues of concern. We will explicitly seek increased participation from researchers and practitioners from geographical regions that have traditionally been underrepresented in these academic venues, in specific from the Global South.

We will promote the call for participation in our workshop via online channels such as Twitter, Facebook groups, relevant mailing lists, and by contacting researchers and practitioners who are interested in these topics. In particular, we will contact the organizers of the *CHI 2016 Special Interest Group on Digital Civics* [221], the *CSCW 2017 Workshop on Crowdsourcing Law and Policy* [146] and the *CSCW 2019 Workshop on Social Technologies for Digital Wellbeing among Marginalized Communities* [52].

Submissions and Review
Applicants will be asked to submit a proposal including previous or ongoing research or practice that reflects on the process, lessons learned, or emerging challenges while examining, designing, or deploying civic technologies. We will give preferential treatment to applications including a 2-4 pages position paper (ACM Extended Abstract format) on their projects centered on civic technologies. Position papers are not limited to these topics, and broader discussions on digital civics are encouraged. The organizing committee will review the submissions according to their relevance and demonstrated experience with the goals of the workshop. We expect the maximum number of participants to be 25.

1.4. Workshop Format

1.4.1. Pre-Workshop Activities

Since *CSCW 2020* will take the form of a virtual conference, we will rely on the technological infrastructure provided by the conference chairs to facilitate workshops of this edition. Holding the workshop virtually will allow us to reach a broader type of participants, but this format also imposes several challenges such as reduction of depth on communication, reluctance to actively participate, and increased levels of distraction depending on the particularities of each participant's remote environment. To ameliorate some of these challenges, we are planning to send a survey before the workshop to learn about participants' time zones, identify any particular constraint, and accessibility needs that participants may have. With the results of the survey, we will be able to prepare and respond to any accessibility request and prevent unexpected situations. Additionally, we will make sure of making our workshop materials accessible. Lastly, to help to build community among participants before the workshop, we will create a Slack channel two weeks before the workshop to encourage them to begin a conversation.

1.4.2. Agenda

Table 1.1: Agenda of the workshop

Time	Activity	Outcome
45 min.	Introduction and Brief Remarks	-
1 hour	**First Session** Civics, Infrastructure, and Local Context	Collages
20 min.	*Break*	
1 hour	**Second Session** Civics, Trust, and Government	Stakeholders Maps
20 min.	*Break*	
1 hour	**Third session** Sharing Methods and Strategies	Affinity Diagrams

After the introductory session, our one-day workshop will be organized in three sessions, in each of which participants will brainstorm and reflect on the different challenges to research and practice of civic technologies (see Table 1.1). Participants will work in groups based on the topics that emerge from the position papers received. For the formation of the teams, we will consider the particularities of each position paper, such as target population, methods, the status of the project, and technology used. The organization of the groups will seek a balance between people from different regions and diverse backgrounds to encourage a richer discussion.

- **Introduction and Brief Remarks:** In this introductory session, the workshop's organizers will conduct brief remarks about the goal and motivation of the workshop. Then, each participant will introduce their work.

- **First Session | Civics, Infrastructure, and Local Context:** In this session, we will encourage discussion on infrastructure and local context, and how those two elements affect the design, implementation, adoption, and maintenance of civic technology. To this end, we will ask participants to craft a collage in which they describe the existent or lacking infrastructure in the context where they work. To facilitate this activity, we will provide participants with a collage kit.

- **Second Session | Civics, Trust, and Government:** Participants in this session will focus the discussion on how trust in digital civics depends on the sociopolitical context where community engagement takes place. We will encourage them to identify key elements of the configuration of trust among government, citizenry, and local organizations. To this end, we will ask participants to use an adapted version of stakeholder maps to visually communicate who are the key constituents of their ongoing projects and to define hierarchies and key relationships. To facilitate this process, we will provide participants with digital templates and visual materials on Jamboard. Similarly to the previous session, we will ask each group to present their maps to the rest of the participants.

- **Third Session | Sharing Methods and Strategies:** Building on the discussions of the two previous sessions, we will ask participants in the last session to reflect on how the key elements of infrastructure, local context, and trust of the region where they have been conducting their research have influenced their selection and adaptation of research methods. Through an affinity diagram activity, participants will share and discover what methods and strategies are best suited for conducting research on civic technologies in specific contexts. After the activity, each group will present their affinity diagram to the rest of the participants.

1.4.3. Website

We have created a website[1] to provide an overview of the workshop, the agenda, and expected outcomes. The website will also be used to post the call for submissions and to feature accepted position papers, relevant materials and, after the conclusion of the workshop, a summary of the contributions to the CSCW community.

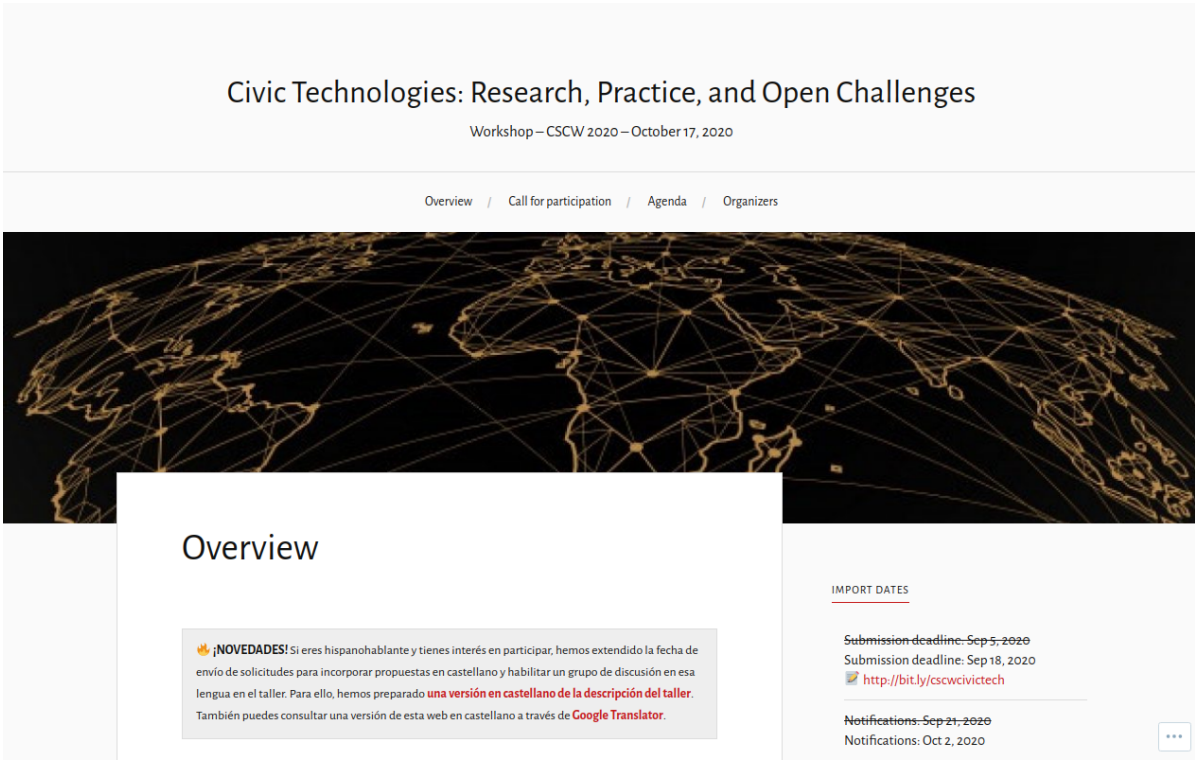

Figure 1.1: Screenshot of the website.

[1] cscwcivictechnologies.wordpress.com

3.8. Flattening the Curve with Civic Technologies: A Case of Open Innovation during COVID-19

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This paper draws from previous research on crowd-civic systems to present the case of Mobadarat, an open innovation platform to crowdsource ideas and solutions to contribute to the COVID-19 response. Mobadarat leverages local capacities and digital infrastructure to channel ideation and solutions sourced from the local community. The paper also considers the issue of building trust between different stakeholders in this process and suggest further lines of research on civic technologies.

3.8.1. Introduction

COVID-19, the first pandemic of the digital age, has crudely revealed the limits of our emergency systems. In many countries, the response to the event has been hampered by unpreparedness and lack of both coordination and resources. Yet, the pandemic has also accelerated digitally enabled forms of collective intelligence that have been tested and deployed over the last decade: crowdsourced crisis mapping, citizen science, and peer-to-peer networks of open innovation. This paper briefly examines the role of civic technologies in the pandemic emergency by presenting the case of Mobadarat, an open innovation platform developed in Morocco to address COVID-19 related issues. The structure of the paper follows the questions that this workshop on civic technologies addresses: (i) role of local contexts and infrastructures (and case study); (ii) key elements in building trust, and (iii) methods and strategies for conducting research on civic technologies. We conclude by suggesting further lines of research in this area involving open data.

3.8.2. The Role of Local Context and Infrastructure in Designing, Implementing, Adopting, and Maintaining Civic Technology

For some years now, crowdsourcing and open data have evolved as a powerful method for civic engagement in crisis and emergency situations [177, 178]. In this context, crowd-civic systems—broadly defined as systems blending digital technology, design, and public data [146]—leverage crowdsourcing tools and techniques to enhance the discovery of relevant local information about issues of public concern. Previous research on crowd-civic systems [179] has proposed to consider them as part of broader “linked democracy” ecosystems with some specific properties: (i) contextually-bound (defined by an inner environment); (ii) open-ended (adaptive); (iii) blended (offline and online interactions); (iv) distributed (networked structures); (v) technologically agnostic (based on needs); (vi) modular (composable modules); (vii) scalable; (viii) knowledge-reusing (taping on multiple sources); (ix) knowledge-archiving (keeping knowledge accessible); (x) aligned (consequential). By leveraging digital technologies, therefore, crowd-civic systems can produce collective, reusable commons-based knowledge with consequential effects. In other words, when decisions are made or solutions are reached, the outcomes can be consequential and extend their reach to the outer context, aligning with and informing external processes of decision making.

Case study

Mobadarat.ma was born in March 2020, one week after the declaration of lockdown in Morocco. Launched by Impact For Development (IFD) in partnership with the School of Collective Intelligence of

University in partnership with the School of Collective Intelligence at University Mohamed VI polytechnic and Alakhawayn University, the platform aimed to create a space where the community's collective intelligence can be utilized to address the effects of COVID-19 in Morocco. Mobadarat.ma1 leverages crowdsourcing as a method combined with both bottom up and top down strategies:

- **Ideation**: The use of crowdsourcing to enable participants to share their ideas and proposals regarding the emerging Covid-19 related challenges;
- **Initiatives Observatory**: a bottom-up approach that enables cross learning and knowledge exchange. It also provides open government stakeholders with a platform to collectively and proactively tackle the challenges at hand. In turn, the tool collects and publishes lessons learned;
- **Open challenges**: a top-down approach consisting of a space where decision-makers can share their challenges and ask the community to submit proposals and solutions.

Mobadarat has been adopted by the United Arab Emirates University in the UAE context. This expansion opens the door for international collaboration and learning in open innovation. In this regard, and as part of its effort to breaking international knowledge silos, IFD, in partnership with GovRight, has also launched OpenDev Library, a benchmarking platform combining initiatives, policies and approaches in various policy areas, co-created and undertaken by stakeholders as part of their efforts to foster further development.

3.8.3. Key elements of the configuration of trust among government, citizenry, and local organizations

The erosion of citizens' trust in democratic institutions is one of the most noted trends in recent years, together with the rise of populist solutions [97]. Mobadarat.ma aims at introducing a new relational paradigm based on an epistemic relationship between citizens and governments. This relationship builds on the capability of "a group of individuals to envision a future and reach it in a complex context" and the idea that "knowledge is openly shared, used and remixed" [179]. This paradigm requires further engagement from citizens to become a driving force in creating proposals and solution-driven approaches to challenges.

The strategy to leverage the capacities of citizens to collectively produce innovative solutions has long manifested itself in fragile states, such as the recent emergency in Lebanon shows. Yet, these citizen-driven solutions are often dismissed as mere reactions to the inability of those states to fulfill their needs and thus they can only exist in fragile contexts. In our view, citizen-driven initiatives may offer a wide array of lessons learned beyond its immediate local context. The goal of mobadarat.ma is reusing that knowledge and adapting it to the context of other developing countries.

3.8.4. Methods and Strategies for Conducting Research on Civic Technologies

Research on civic technologies is multidisciplinary and applies different methods and strategies, depending on the theoretical and empirical focus. In recent work [176], for example, we analyse mutual help as a digital commons and consider whether digitally-enabled mutual help aligns with Ostrom's design principles for the sustainable management of common-pool resources [165].

Artificial Intelligence has also been adopted in civic technology research and applications. In our view, this requires a middle-out approach rather than top-down or bottom-up ones. As stated in [169], forms of engagement require coordination mechanisms that are in-between, middle-out, as neither co-regulatory models nor self-regulation are adequate to comply with the ethical, legal and technological requirements needed in the interplay of civics and technology. Linked democracy designs should endorse the set of principles for Open Governance—e.g. traceability, transparency and accountability—and the recommendations for a responsible AI design—security, scalability, adaptability, modularity, interoperability. This is the common framework in which the tools and metrics of digital data analytics—Natural Language Processing, Machine Learning and Representation Languages—can be implemented and embedded to facilitate the emergence of sustainable civic technology ecosystems.