
Civic Technologies: Research, Practice and Open Challenges

Pablo Aragón

Eurecat, Centre Tecnològic de Catalunya
Universitat Pompeu Fabra
Barcelona, Spain
elaragon@gmail.com

Adriana Alvarado Garcia

Christopher A. Le Dantec
Georgia Institute of Technology
Atlanta, USA
adriana.ag@gatech.edu
ledantec@gatech.edu

Claudia Flores-Saviaga

West Virginia University
West Virginia, USA
cif0001@mix.wvu.edu

Jorge Saldivar

Barcelona Supercomputing Center
Barcelona, Spain
jorgesaldivar@gmail.com

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 will be 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. These core topics will be covered across sessions that will initiate in-depth discussions and, thereby, stimulate collaboration between the CSCW research community and practitioners of civic technologies from both Global North and South.

KEYWORDS

Civic technologies, government technologies, civic engagement, citizen participation, digital civics, infrastructure, trust.

ORGANIZERS

Pablo Aragón is a research scientist at the Big Data & Data Science unit of Eurecat and an adjunct professor at Universitat Pompeu Fabra. His research focuses on characterizing online participation in civic technologies, the online network structures of grassroots movements and political parties, and the technopolitical dimension of networked democracy.

Adriana Alvarado Garcia is a Ph.D. student at the Georgia Institute of Technology. Using a mix-methods approach, she designs contextualized technologies that support social media data migration from online to offline context to advocate for human rights in the context of Latin America.

Claudia Flores-Saviaga is a Fellow at Facebook Research. She is also a Ph.D. candidate in the HCI Lab at West Virginia University. Her research involves the areas of Artificial Intelligence, Crowdsourcing, and Social Computing. Previously, Claudia worked as a technical adviser to the Government in Mexico.

Jorge Saldivar is a post-doctoral researcher at the Barcelona Supercomputing Center (BSC). His research involves areas of crowdsourcing, collective intelligence, and civic engagement and focuses on applying quantitative method to study the impact of technology in society. Previously, Jorge has worked as Data Scientist at the initiative Data Science for Social Good, University of Chicago.

Christopher A. Le Dantec is an associate professor at the Georgia Institute of Technology. His research is focused on the area of digital civics where he works with a range of community-based partners to explore new forms of civic participation through community-centered design inquiry at the intersection of participatory design, digital democracy, and smart cities. He is the author of *Designing Publics* (2016, MIT Press).

INTRODUCTION

The Internet was heralded for its democratic potential empowering citizens and challenging existing power structures by diversifying the relationship between governments and citizens [6, 26]. In the last two decades, a large number of political innovations [48], powered by digital technologies, have emerged to scale up citizen participation and to promote new forms of governance. As noted by Linders [22], there is a plethora of competing labels for these initiatives: *collaborative government* [28], *citizen sourcing* [51], *wiki government* [33], *government as a platform* [35], *do-it-yourself government* [25], *participatory civics* [54], *digital civics* [34], etc. Among them, the term *civic technologies* (or simply **civic tech**), proposed in a report by the Knight Foundation [36] 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 [8, 12, 13, 31, 44, 46, 49]. 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 [4], digital data analytics [2, 24], hackathons [17, 45], and urban collaborative governance [14]. 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 [37, 40, 41], Africa [7, 37, 38], Asia [18, 50] and Oceania [39].

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 [3], mobilizing communities [43], and examining civic data practices [1, 5, 21, 30] and software development processes in civic projects [20, 47]. Nevertheless, there is still a tension in community technologies between novelty contributions and sustained engagement. As explained by Liu et al. [23], 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 [15, 19, 27]. Thus, we observe the disconnection between research and practice as an opportunity for future CSCW research [42]. 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 [16], such as infrastructure [53], history of the communities [11], local practices [32], and perceived trust [9]. 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 [42]. 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.

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.

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* [52], the *CSCW 2017 Workshop on Crowdsourcing Law and Policy* [29] and the *CSCW 2019 Workshop on Social Technologies for Digital Wellbeing among Marginalized Communities* [10].

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.

WORKSHOP FORMAT

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.

Table 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.	<i>Break</i>	
1 hour	Second Session Civics, Trust, and Government	Stakeholders Maps
20 min.	<i>Break</i>	
1 hour	Third session Sharing Methods and Strategies	Affinity Diagrams

Agenda

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). 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 cscwcivicttechnologies.wordpress.com

Website

We have created a website¹ 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.

REFERENCES

- [1] Adriana Alvarado Garcia, Alyson L. Young, and Lynn Dombrowski. 2017. On Making Data Actionable: How Activists Use Imperfect Data to Foster Social Change for Human Rights Violations in Mexico. *Proc. ACM Hum.-Comput. Interact.* 1, CSCW, Article 19 (Dec. 2017), 19 pages. <https://doi.org/10.1145/3134654>
- [2] Pablo Aragón. 2019. *Characterizing online participation in civic technologies*. Ph.D. Dissertation. Universitat Pompeu Fabra.
- [3] Mariam Asad and Christopher A. Le Dantec. 2015. Illegitimate Civic Participation: Supporting Community Activists on the Ground. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing* (Vancouver, BC, Canada) (CSCW '15). Association for Computing Machinery, New York, NY, USA, 1694–1703. <https://doi.org/10.1145/2675133.2675156>
- [4] Lori Bowen Ayre and Jim Craner. 2017. Technology column: public libraries as civic technology hubs. *Public Library Quarterly* 36, 4 (2017), 367–374.
- [5] Kirsten Boehner and Carl DiSalvo. 2016. Data, design and civics: An exploratory study of civic tech. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*. 2970–2981.
- [6] Manuel Castells. 2008. The New Public Sphere: Global Civil Society, Communication Networks, and Global Governance. *The ANNALS of the American Academy of Political and Social Science* 616, 1 (2008), 78–93. <https://doi.org/10.1177/0002716207311877> arXiv:<https://doi.org/10.1177/0002716207311877>
- [7] David Cheruiyot, Stefan Baack, and Raul Ferrer-Conill. 2019. Data journalism beyond legacy media: The case of African and European civic technology organizations. *Digital Journalism* 7, 9 (2019), 1215–1229.
- [8] RY Clarke. 2014. Civic Tech Fuels US State and Local Government Transformation.
- [9] Eric Corbett and Christopher A. Le Dantec. 2018. Going the Distance: Trust Work for Citizen Participation. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems* (Montreal QC, Canada) (CHI '18). Association for Computing Machinery, New York, NY, USA, 1–13. <https://doi.org/10.1145/3173574.3173886>
- [10] Michael A Devito, Ashley Marie Walker, Jeremy Birnholtz, Kathryn Ringland, Kathryn Macapagal, Ashley Kraus, Sean Munson, Calvin Liang, and Herman Saksono. 2019. Social Technologies for Digital Wellbeing Among Marginalized Communities. In *Conference Companion Publication of the 2019 on Computer Supported Cooperative Work and Social Computing*. 449–454.
- [11] Jessa Dickinson, Mark Díaz, Christopher A Le Dantec, and Sheena Erete. 2019. "The cavalry ain't coming in to save us" Supporting Capacities and Relationships through Civic Tech. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (2019), 1–21.
- [12] Daniel Dietrich. 2015. The role of civic tech communities in PSI reuse and open data policies. *European Public Sector Information Platform Topic Report 5* (2015).
- [13] Stacy Donohue. 2016. Engines of change: What civic tech can learn from social movements. (2016).
- [14] Hollie Russon Gilman. 2017. Civic tech for urban collaborative governance. *PS, Political Science & Politics* 50, 3 (2017), 744.
- [15] Eric Gordon and Rogelio Alejandro Lopez. 2019. The practice of civic tech: Tensions in the adoption and use of new technologies in community based organizations. *Media and Communication* 7, 3 (2019), 57–68.

- [16] Eric Gordon and Paul Mihailidis. 2016. *Civic media: Technology, design, practice*. MIT Press.
- [17] Youyang Hou. 2018. *Understanding the Design and Implementation of Civic Technologies in Resource-Limited Public Organizations*. Ph.D. Dissertation. University of Michigan.
- [18] Yu-Tang Hsiao, Shu-Yang Lin, Audrey Tang, Darshana Narayanan, and Claudina Sarahe. 2018. vTaiwan: An empirical study of open consultation process in Taiwan. (2018).
- [19] Ian G Johnson, John Vines, Nick Taylor, Edward Jenkins, and Justin Marshall. 2016. Reflections on deploying distributed consultation technologies with community organisations. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*. 2945–2957.
- [20] Antti Knutas, Victoria Palacin, Giovanni Maccani, and Markus Helfert. 2019. Software engineering in civic tech a case study about code for Ireland. In *2019 IEEE/ACM 41st International Conference on Software Engineering: Software Engineering in Society (ICSE-SEIS)*. IEEE, 41–50.
- [21] Christopher A. Le Dantec, Mariam Asad, Aditi Misra, and Kari E. Watkins. 2015. Planning with Crowdsourced Data: Rhetoric and Representation in Transportation Planning. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing (Vancouver, BC, Canada) (CSCW '15)*. Association for Computing Machinery, New York, NY, USA, 1717–1727. <https://doi.org/10.1145/2675133.2675212>
- [22] Dennis Linders. 2012. From e-government to we-government: Defining a typology for citizen coproduction in the age of social media. *Government Information Quarterly* 29, 4 (2012), 446 – 454. <https://doi.org/10.1016/j.giq.2012.06.003> Social Media in Government - 12th Annual International Conference on Digital Government Research (dg.o2011).
- [23] Can Liu, Mara Balestrini, and Giovanna Nunes Vilaza. 2019. From social to civic: Public engagement with iot in places and communities. In *Social Internet of Things*. Springer, 185–210.
- [24] Monika Mačiulienė and Aelita Skaržauskienė. 2019. Building the capacities of civic tech communities through digital data analytics. *Journal of Innovation & Knowledge* (2019).
- [25] Helen Margetts and Patrick Dunleavy. 2013. The second wave of digital-era governance: a quasi-paradigm for government on the Web. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* 371, 1987 (2013), 20120382. <https://royalsocietypublishing.org/doi/abs/10.1098/rsta.2012.0382>
- [26] Michael Margolis and David Resnick. 2000. *Politics as usual: The Cyberspace 'Revolution'*. Vol. 6. SAGE Publications Ltd.
- [27] Andrew May and Tracy Ross. 2018. The design of civic technology: factors that influence public participation and impact. *Ergonomics* 61, 2 (2018), 214–225.
- [28] Michael McGuire. [n.d.]. Collaborative Public Management: Assessing What We Know and How We Know It. ([n. d.]).
- [29] Brian McInnis, Alissa Centivany, Juho Kim, Marta Poblet, Karen Levy, and Gilly Leshed. 2017. Crowdsourcing law and policy: a design-thinking approach to crowd-civic systems. In *Companion of the 2017 ACM conference on computer supported cooperative work and social computing*. 355–361.
- [30] Amanda Meng, Carl DiSalvo, and Ellen Zegura. 2019. Collaborative Data Work Towards a Caring Democracy. *Proc. ACM Hum.-Comput. Interact.* 3, CSCW, Article 42 (Nov. 2019), 23 pages. <https://doi.org/10.1145/3359144>
- [31] David Moore. 2015. Unpacking Civic Tech—Inside and Outside of Government. (2015). <http://www.participatorypolitics.org/civic-tech-inside-and-outside-of-government/>
- [32] Seungahn Nah and Masahiro Yamamoto. 2017. civic technology and community building: interaction effects between integrated connectedness to a storytelling network (ICSN) and internet and mobile uses on civic participation. *Journal of Computer-Mediated Communication* 22, 4 (2017), 179–195.
- [33] Beth Simone Noveck. 2009. *Wiki government: how technology can make government better, democracy stronger, and citizens more powerful*. Brookings Institution Press.
- [34] Patrick Olivier and Peter Wright. 2015. Digital civics: taking a local turn. *Interactions* 22, 4 (2015), 61–63.
- [35] Tim O'Reilly. 2011. Government as a Platform. *Innovations: Technology, Governance, Globalization* 6, 1 (2011), 13–40.

- [36] Mayur Patel, Jon Sotsky, Sean Gourley, and Daniel Houghton. 2013. The emergence of civic tech: Investments in a growing field. *Knight Foundation* (2013).
- [37] Tiago Peixoto and Micah L Sifry. 2017. Civic tech in the global south.
- [38] Juliana Rotich. 2017. Ushahidi: Empowering Citizens through Crowdsourcing and Digital Data Collection. *Field Actions Science Reports. The journal of field actions* Special Issue 16 (2017), 36–38.
- [39] Rebecca Rumbul. 2015. Novel online approaches to citizen engagement: Empowering citizens and facilitating civic participation through digital innovation in New Zealand and Australia. (2015).
- [40] Rebecca Rumbul. 2016. Developing transparency through digital means? Examining institutional responses to civic technology in Latin America. *JeDEM-eJournal of eDemocracy and Open Government* 8, 3 (2016), 12–31.
- [41] Rebecca Rumbul. 2016. Tools for transparency? Institutional barriers to effective civic technology in Latin America. In *2016 Conference for E-Democracy and Open Government (CeDEM)*. IEEE, 147–155.
- [42] Jorge Saldivar, Cristhian Parra, Marcelo Alcaraz, Rebeca Arteta, and Luca Cernuzzi. 2019. Civic technology for social innovation. *Computer Supported Cooperative Work (CSCW)* 28, 1-2 (2019), 169–207.
- [43] Saiph Savage, Andres Monroy-Hernandez, and Tobias Höllerer. 2016. Botivist: Calling Volunteers to Action Using Online Bots. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing* (San Francisco, California, USA) (CSCW '16). Association for Computing Machinery, New York, NY, USA, 813–822. <https://doi.org/10.1145/2818048.2819985>
- [44] Emily Shaw. 2015. Why Civic Technologists Should Still Care About E-Gov.
- [45] Shun Shiramatsu, Teemu Tossavainen, Tadachika Ozono, and Toramatsu Shintani. 2015. Towards continuous collaboration on civic tech projects: use cases of a goal sharing system based on linked open data. In *International Conference on Electronic Participation*. Springer, 81–92.
- [46] Micah L Sifry. 2014. Civic Tech and Engagement: In Search of a Common Language. 5 (2014). <http://techpresident.com/news/25261/civic-tech-and-engagement-search-common-language>
- [47] Aelita Skarzauskiene. 2018. Monitoring Collective Intelligence: A Survey of Lithuanian Civic Tech. In *Companion of the 2018 ACM Conference on Computer Supported Cooperative Work and Social Computing*. 277–280.
- [48] Graham Smith. 2009. *Democratic innovations: Designing institutions for citizen participation*. Cambridge University Press.
- [49] Matt Stempeck. 2016. Towards a taxonomy of civic technology. 7 (2016), 2016. <https://blogs.microsoft.com/on-the-issues/2016/04/27/towards-taxonomy-civic-technology/>
- [50] Yu Sun and Wenjie Yan. 2020. The power of data from the Global South: environmental civic tech and data activism in China. *International Journal of Communication* 14 (2020), 19.
- [51] Lars Hasselblad Torres. 2007. Citizen sourcing in the public interest. *Knowledge Management for Development Journal* 3, 1 (2007), 134–145.
- [52] Vasillis Vlachokyriakos, Clara Crivellaro, Christopher A Le Dantec, Eric Gordon, Pete Wright, and Patrick Olivier. 2016. Digital civics: Citizen empowerment with and through technology. In *Proceedings of the 2016 CHI conference extended abstracts on human factors in computing systems*. 1096–1099.
- [53] Sebastian Weise, Paul Coulton, and Mike Chiasson. 2017. Designing in between local government and the public—Using institutional analysis in interventions on civic infrastructures. *Computer Supported Cooperative Work (CSCW)* 26, 4-6 (2017), 927–958.
- [54] Ethan Zuckerman. 2014. New Media, New Civics? *Policy & Internet* 6, 2 (2014), 151–168. <https://doi.org/10.1002/1944-2866.POI360> arXiv:<https://onlinelibrary.wiley.com/doi/pdf/10.1002/1944-2866.POI360>