Challenges Incorporating Community Feedback at Recurring Civic Hackathons

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Abstract
Civic organizers are increasingly appropriating hackathons to gather volunteer programmers, designers, and subject matter experts to develop technical solutions to social issues. Despite their increasing frequency we know little about how hackathon organizers support these events. We conducted a 6-week participant observation of a weekly civic hackathon in the Midwest. Our analysis suggests that organizers face three challenges with user research: 1) balancing user research with development, 2) testing early concepts with the target population, and 3) communicating research insights with new hackathon participants. We present opportunities for sociotechnical researchers and hackathon organizers to improve the way civic hackers incorporate feedback from the communities they serve.

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Hackathons, civic, collaboration, feedback, community, participatory design, user research

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction and Background

Throughout the globe, programmers, designers, and domain experts join hackathons, short and intensive events that produce technical solutions to challenges in areas such as computational biology and computer science [7]. More recently hackathons have addressed "social conditions and their consequences" [2], with participants tackling issues such as wildlife conservation and the prevention of bacterial outbreaks. In 2013, more than 11,000 individuals participated in such civic hackathons in 83 cities in the U.S. during the first National Day of Civic Hacking [10].

Civic hackathons have emerged as one way to develop technology outside of formal design environments [2]. These time-bounded events leverage the talent of programmers, designers, and subject matter experts to develop applications that directly improve civic life [2]. While these events help participants recognize their role in shaping governance [6], multiple HCI scholars are doubtful of their technological productivity [2-4,6]. The fleeting nature of hackathons makes it unlikely that innovative, deployable solutions will be developed [2]. In fact, Trainer et al. [9] stress the need to develop tools that support continued work after the hackathon.

Unlike short-term hackathons that may lack long-term impact, recurring civic hackathons allow teams to iteratively test, develop, and launch their solutions in the community. For example, ad-hoc "brigades" of civic hackers within the organization Code for America meet regularly to work on new or existing projects [1].

Despite the adoption of this model across several U.S. cities [1], we know little about how "hacking" should be supported [5]. Extant research describes the social, educational, and affective benefits of civic hackathons, but does not examine their ability to produce feasible and sustainable solutions [2-4,6]. Gregg [3], on the other hand, opposes the promotion of civic hackathons as sites of volunteerism, as the work produced resembles speculative design. As a result, researchers and organizers still know little about how local governments should work with civic hackers, how civic hackers should work with community members, and how groups of civic hackers can be supported in the short- and long-term.

In this paper, we focus on one area of the civic hackathon that currently poses challenges for teams: developing a shared understanding of the design challenge [4]. Participants at short-term hackathons struggle to develop a rich understanding of their end users and the design challenge, and scaffolding the design process may help participants overcome these difficulties under strict time constraints [4,8]. Another study suggests that participants who are also end users of the solution provide valuable feedback that greatly improves the quality of proposed solutions [9]. Nonetheless, it is unclear how these need-finding and evaluation activities unfold and can be supported in a recurring civic hackathon.

The research question driving the current study is: how does an ad-hoc design team at a recurring civic hackathon understand its users and the complexity of the challenge to develop a technological solution? Through a 6-week field study at a weekly "hack night" in the Midwest, we learned civic hackers struggle to

simultaneously conduct user research and develop technical solutions. To overcome some this challenge, we propose hackathon organizers invest more effort in incorporating community feedback at these events. We call on sociotechnical researchers to study how these efforts could influence the productivity and impact of civic hackathons.

A Case Study of a Recurring Civic Hackathon

From January to March 2016, we conducted a 6-week ethnographic study of a weekly civic hackathon in a large city in the Midwest. To preserve the confidentiality of our participants, we have used pseudonyms to represent the informants, organizations, and locations involved in our study. The hackathon is scheduled every week from 6:00 to 10:00 p.m. at the office of an online software company. The majority of the 40-100 attendees are professionals from the technology industry, journalists, freelancers, and local graduate students, who were attracted to the event for its career and learning opportunities.

At hack nights, participants join breakout groups that work on projects, or learning groups that support technical skill development. One of the authors joined Justice in the City, a breakout group led by Kelly, a nonprofit attorney. The group's mission was to develop a technological solution to recidivism by removing information barriers that lead the formerly incarcerated to violate parole. The size of the group varied between 3 and 7 people and only a few of individuals could be considered core members. Group members have included geographic information system analysts, programmers, user interface designers, and writers.

Challenges Balancing User Research with Development

Throughout the study, Justice in the City devoted time to understanding problems facing their target community, but struggled to simultaneously develop and test technical solutions. Early on, Kelly invited individuals who have worked with the formerly incarcerated to speak to the team. These discussions directed the team away from less feasible ideas; for example, the team quickly learned that a mobile application would not be ideal for providing information as many parolees do not have access to a personal smartphone. In addition, these discussions helped the team understand larger systemic problems that lead to recidivism. Nonetheless, these insights also prevented the team from deciding on suitable technical solutions. One member expressed concern that the team had not started development even after several weeks.

When solutions were explored, the group failed to test early concepts with target users. After learning that websites for parolees contained outdated, difficult-to-use resources, the team attempted to create an online guide for re-entering society based on a guide developed by a local organization. The team spent one meeting reading an existing guide to familiarize themselves with the resources that should be provided to parolees. Although team members listed ways to improve the organization of this content, they were unable to test these solution ideas directly with the target population. This was partly due to the difficulty of arranging regular meetings with recent parolees and providing transport to the hackathon venue.

Because not all members were present at each meeting, the team struggled to communicate research

findings across hack nights and especially to new members. Only core members had attended events outside of hack night (i.e., a job fair and a support group meeting) to understand the target population. Other team members volunteered to complete tasks remotely. Because the organizers do not impose constraints on participants' leaving and joining groups, team members were responsible for proposing their own tasks based on their availability and expertise. For example, the author helped evaluate content on websites for recent parolees. While the author helped the group start a virtual task and ideas list to organize these research findings, new members struggled to tap into this shared understanding of the problem space and contribute to discussions about solution ideas. In order to accommodate this, the leader would summarize key insights from previous hack nights for new members, which was time consuming.

Discussion and Limitations

While the civic hackathon we attended provided ample technical resources, our study revealed difficulties hackers face when learning about the communities they serve. To address these difficulties, hackathon organizers should explore ways to help teams incorporate feedback into the development process. For instance, organizers could provide themed events to encourage teams to alternate between developing technical solutions and conducting user research. To reduce the burden on individual teams, organizers can establish relations with subject matter experts in the community and invite these individuals to provide feedback at hack events.

Sociotechnical researchers should also investigate the use of technology to support civic hackers; for example, online crowdwork platforms could be used to test early concepts with a large number of users. Lastly, researchers should study how technology can improve shared understanding of insights from user research. Because our study is focused on one civic hackathon team over a limited period of time, further research is needed to understand the broader spectrum of challenges civic hackers face in developing technology for their communities.

Conclusion

Even though investing time in user research helps civic hackers develop more feasible solutions, it is challenging for teams to simultaneously develop technical solutions, test concepts early with target users, and communicate research insights with new team members. Our goals at CSCW are to 1) understand existing approaches to incorporating community feedback at hackathons; 2) discuss barriers to collecting and integrating community feedback; 3) define expectations for recurring and non-recurring hackathons to solicit community feedback; and 4) form a research agenda for studying this phenomenon from various perspectives (e.g., designing sociotechnical systems, understanding small team dynamics).

About the Authors

Eureka Foong is a PhD student and Segal Design Cluster Fellow at Northwestern University studying crowdsourcing applications that support design education. She has spoken at TEDx about user research and problem solving at civic hackathons.

Elizabeth Gerber, PhD, is the Breed Junior Chair of Design at Northwestern University and Faculty Founder of Design for America, a nationwide network of student

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