Hacking and Making at Time-Bounded Events: Current Trends and Next Steps in Research and Event Design

Anna Filippova
Institute for Software Research
Carnegie Mellon University
Pittsburgh, PA 15213, USA
annafil@cmu.edu

James D. Herbsleb
Arun Kalyanasundaram
Erik Trainer
Institute for Software Research
Carnegie Mellon University
Pittsburgh, PA 15213, USA
{jdh,arunkaly,etrainer}@cs.cmu.edu

Brad Chapman
Harvard T.H.Chan School of Public Health
Harvard University
Boston, MA 02115, USA
bchapman@hsph.harvard.edu

Aurelia Moser
Mozilla Science Lab
Mozilla Foundation
Brooklyn, NY 11201, USA
aurelia@mozillafoundation.org

R. Stuart Geiger
Berkeley Institute for Data Science
University of California, Berkeley
Berkeley, CA 94720, USA
stuart@stuartgeiger.com

Arlin Stoltzfus
Institute for Bioscience and Biotechnology Research
University of Maryland
Rockville, MD 20850, USA
arlin@umd.edu

Abstract

Time-bounded collaborative events in which teams work together under intense time pressure are becoming increasingly popular. While hackathons, that is, competitive overnight coding events, are one of the more prevalent examples of this phenomenon, there are many more distinct event design variations for different audiences and with divergent aims, such as sprints, codefests, hack-days, edit-a-thons and so on. Taken together, these events offer new opportunities and challenges for cooperative work by affording explicit, predictable, time-bounded spaces for interdependent work and access to new audiences of collaborators. This one-day workshop brings together researchers interested in the phenomenon, experienced event organizers, and participants interested in running their own events to consolidate research to-date, share practical experiences, and understand what benefits different event variations may offer, how they may be applied in other contexts, and how insights from studying these events may contribute to CSCW knowledge.

Author Keywords

Time-bounded collaborative events; hackathons; sprints; codefests; edit-a-thons; open-source software; scientific software; radical collocation; innovation; collaborative learning.

ACM Classification Keywords

K.4.3 [Computers and society]: Organizational Impacts–Computer-supported cooperative work; H.5.3 [Information interfaces and presentation (e.g., HCI)]: Group and Organization Interfaces–Computer-supported cooperative work

Introduction

Time-bounded collaborative events, sometimes called hackathons, data dives, codefests, hack days, sprints, edit-a-thons, map-a-thons, and so on, are exploding in both number and popularity. In 2015, collegiate hackathons alone attracted over 54,000 participants across 150 events [7]. Conventional discourse is that ad-hoc teams of young coders compete in these several-day events, motivated to stay up all night by the appeal of free food, prizes and job offers. Yet there are variations in their design, purpose and adaptation across other fields and contexts that suggest they are a more broad form of cooperative work.

Such events may be non-competitive and oriented to specific themes and disciplines, like social good, to support participation from varying audiences [3]; they may differ on whether participants are present face-to-face or collaborate remotely, and the extent to which communication tools are used [8]; involve newly formed teams working on new projects or existing communities working on well-defined agendas [15, 11, 9]; they may be applied towards informal and collaborative learning [12, 5, 13, 10, 14], creating startups [4], innovative prototypes for arts and culture [2], civic open innovation [1] or strengthening interaction in specific scientific domains like computational biology [11, 9]. The hackathon model has even been applied to academic conference spaces through workshops exploring alternative models of creation, such as OCData @ CSCW '14 [6], and several events at other venues like CHI 2013-2014 [3].

However, to the best of our knowledge, a workshop has yet to bring together these diverse threads of research and practice into a broader agenda. It is important to do so because despite these differences, hackathon-like events all share a common collaborative element: attendees team up with each other and use these spaces to 'hack' on new technologies and ideas, projects that are not within the scope of their regular work, or move forward work they otherwise would not be able to, due to either a lack of dedicated time or resources.

As such, these spaces introduce new and interesting opportunities and challenges for the study of Computer-Supported Cooperative Work. For example, hackathon-like events may provide unique opportunities for cooperation, by affording explicit and time-bounded spaces for individuals to work more interdependently, as well as providing access to new collaborators with needed background and experience, or existing collaborators who are otherwise difficult to reach, such as remote community members. Furthermore, some variations employed by distributed collaborative communities, such as regular sprints during yearly conferences, may support predictable interactions that can serve to strengthen existing social ties and develop new ones.

At the same time, working on projects that are outside of one's normal workflow may provide challenges for continuity of this activity after the brief cooperative stint is over. For example, continuing projects in a virtual setting may require carrying over social and work artefacts that are not in easily editable formats and highly context dependent [15]. Time-bounded collaborative events may also provide different pressures on team dynamics during the event, such as the need to go through team formation and development stages relatively quickly to be productive, as well as quickly dissipating dynamics and enthusiasm for completing projects

when participants return to higher priority regular activities at the conclusion of the event.

This workshop will explore a number of initial questions surrounding this nascent phenomenon: What distinct practices do these events adopt, what goals and whose interests do they serve, and what makes them distinct from other cooperative activities? Do they achieve unanticipated benefits that can be leveraged in other contexts? How do we design more effective spaces to address specific event goals and what are the design trade-offs? How can CSCW theory help in studying this space, and how do insights from this phenomenon add to CSCW knowledge?

We will invite both researchers and practitioners (including past event organizers, and individuals interested in running events in the future) to network, share ideas and have interesting conversations centered on the above questions, as well as to identify new areas of inquiry in this emerging space. In doing so, the workshop will provide an initial opportunity to consolidate what we know so far about the 'hackathon' phenomenon, where our gaps in understanding are, and ways to fill these gaps. Workshop participants will produce and share useful resources for putting on these events, such as sample agendas, templates for recruiting materials, and checklists for infrastructure. Finally, we will explore appropriate venues for research related to the themes of the workshop.

Objectives

The present workshop aims to facilitate the following objectives:

- Networking between CSCW scholars and practitioners (both those who have experience putting on time-bounded collaborative events and those who are curious about doing so);
- Developing an understanding about ways to situate the nascent phenomenon in the broader context of CSCW methods and theory;
- Enumerating and compiling concrete recommendations for organizers of time-bounded collaborative events, as well as trade-offs to be aware of; and
- Exploring future directions for research in this space, including publication venues.

Themes

Topics of interest for the workshop include, but are not limited to:

- **Design variations:** What are the different variations in event design? What conditions support event success, participant satisfaction, team dynamics (such as team formation, idea generation, conflict) and inclusivity along multiple dimensions of diversity?
- **Short-term and long-term outcomes:** How do event goals vary across different contexts and designs? How do we measure success in achieving these goals? How do we support more long-term outcomes, such as encouraging sustained participation and continued community development post-event?
- **Practical support for event organizers:** Designing supporting tools and workflows for hackathon organizers and community managers to leverage, such as instruments to evaluate outcomes and assess community needs.
- **Applications:** Applications of hackathon-style events to non-traditional contexts (such as, but not limited to, learning environments and/or non-software engineering work), reports of both successes and lessons learned

- **Mediated interactions and modality transitions:** How are computer-mediated communication and collaborative tools used in augmenting time-bounded collaborative events? What collaboration structures support different event designs and outcomes? What opportunities and challenges do these tools introduce? How do we preserve group and work artefacts when we move from virtual to face-to-face spaces and back?
- **Theoretical space of 'hackathons':** Building theory around the ecology and etymology of 'hacking' to support a more generalized understanding of the opportunities for collaborative work, e.g. what is the boundary space for events to be considered "hackathons", what are related activities that go by different names (e.g. Codefests, Sprints), how are they connected, and where does the family of events fit within the broader space of CSCW?

Recruitment and Submission

We aim to encourage participation from both researchers working broadly in this space as well as practitioners with experience running past events (in a variety of settings from academic to corporate, open source, collegiate and so on), and participants interested to get help on running future events.

We plan to recruit participants using a web-based call for proposals (CFP) as well as by sharing the CFP link on relevant mailing lists (such as -chi-announcements), social media groups (such as Researchers of the Socio-Technical Facebook Group), and leverage the existing network of contacts the organizers have been building in the past several years of their work in the space.

We encourage submissions between 2-4 pages that include the following details:

- Title, names, affiliations, and emails of each author
- A description of one or more themes of particular interest to the participant that are related to the workshop topic. This may be presented in the form of an extended abstract summarizing a research idea, a recounting of an experience with a related event, or a story that draws from the participant's own research or event experience.
- A short biography of each author's background, their interest in this area, and their motivations for participating in the workshop.

Given that our audience also includes practitioners who may not be familiar with CSCW submission formats, we aim to use a web form for submissions that prompts participants to answer the above 3 questions, and provides an option for a PDF upload as an alternative. We will further encourage participants to reach out to us by e-mail with initial submission ideas or questions prior to the CFP deadline.

Though our personal networks, we have already received expressions of interest for participation from researchers and practitioners working in this space from University of Washington, Ohio State University and the University of Victoria.

Description of workshop activities

Overview and selection

Between 20-30 participants will be invited to attend the workshop, based on the relevance of their submissions to the outlined themes. As the workshop is designed to emphasize conversations and discussions among participants, a smaller subset of participants will be selected to

give more formal presentations based on their submissions. Between 5-6 submissions will be selected that best represent the emerging themes in the space and provide the most opportunities for discussion.

The talks will reflect a combination of work from researchers working in the space, practitioners with experience in organizing events and participants interested in organizing future events. Each presentation will be approximately 15-20 minutes, balanced with a 10 minute discussant-led session and approximately 15 minutes of free form discussions (for a total of 25 minutes of discussion time per presentation).

Participants who have not been selected for formal presentations will be encouraged to volunteer as discussants for the second half of each session. In particular, we will encourage CSCW researchers to sign up as discussants of presentations by event organizers and vice versa, to enable greater cross-fertilization of ideas and diverse perspectives. The organizers will work together with the discussants prior to the workshop, providing additional materials and assisting in implementing a consistent and comfortable format for each session.

The workshop will be divided into four 90 minute blocks that comprise a combination of presentations, discussion, and additional activities designed to encourage the development of new collaborations among participants:

- The workshop will begin with a short "boasters" session, in which each participant will be able to stand up and introduce themselves, their area of expertise and what they hope to get out of the workshop.
- During break times for coffee and lunch we will encourage participants to approach someone from the boaster session they have not met but whose work they thought was interesting.
- A dedicated session will feature presentations from participants interested to run their own events, with discussants leading a structured conversation among all participants that aims to synthesize insights thus far and provide recommendations for presenters based on lessons learned during the day.
- Depending on the volume of submissions received and their relevance to the workshop themes, we may replace one block of presentations with an "unconference" session, allowing participants to propose breakout topics for discussion and others to sign up to participate in the discussion. We could support approximately 2 rounds of 3 parallel discussions in one 90 minute block and address a number of participants' thematic interests in this way.
- Finally, the workshop will wrap up with a presentation from a funding agency interested in supporting work in the space, to facilitate future work opportunities for workshop participants.

Pre-workshop activities
A Slack channel or similar online discussion space will be set-up prior to the workshop. This will facilitate initial participant introductions and the sharing of submissions between accepted participants. The organizers will also facilitate group Hangouts with both the presenters and discussants prior to the workshop, to support their preparation.

Post-workshop plans
We will continue to use the discussion space set up prior to the workshop to maintain, and possibly grow, the community of researchers and practitioners working in the space.

We will also aim to use this channel to consolidate and make available insights and recommendations from the workshop. Finally, we aim to reach out to possible publication venues to build on ideas initiated during the workshop, such as a potential review of literature on the phenomenon thus far.

Equipment and supply needs
We anticipate needing a small to medium sized room for 20 to 30 people, a projector for presentations, and power strips for participants to use for laptops. We plan to utilize online collaborative group editing tools to record discussions as far as possible, to facilitate archiving and sharing.

Organizers

Anna Filippova (*primary contact*) is a postdoctoral researcher with the Institute for Software Research at Carnegie Mellon University, where she studies the role of events in supporting open collaborative community development. She has several years of experience in organizing open-source community events, including large-scale conferences like Abstractions and Red Dot Ruby, and monthly meet-ups. Her Ph.D work with the National University of Singapore examined the impact of different forms of conflict on Free and Open Source Software development. She has also studied group norm evolution and normative conflict in virtual spaces and open collaborative communities.

Brad Chapman is a research scientist at Harvard T.H. Chan School of Public Health. He develops open source tools for analyzing biological data, and organizes yearly Codefest working sessions for the open source bioinformatics community. This years Codefest was the 7th, with an increased focus on community engagement and training (https://www.open-bio.org/wiki/Codefest$_2016$).

R. Stuart Geiger is an ethnographer and post-doctoral scholar at the Berkeley Institute for Data Science at UC-Berkeley, where he studies the infrastructures and institutions that support the production of knowledge. His Ph.D research at the UC-Berkeley School of Information focused on the governance and operation of Wikipedia and scientific research networks. He has studied topics including newcomer socialization, moderation and quality control, specialization and professionalization, cooperation and conflict, the roles of support staff and technicians, and diversity and inclusion.

James Herbsleb is a Professor of Computer Science at Carnegie Mellon University, where he serves as Director of the PhD program in Societal Computing. His research interests focus on global software development, open source, and more generally on collaboration and coordination in software projects. He was recently awarded the SIGSOFT Outstanding Research Award in 2016, and previously the Alan Newell Award for Research Excellence in 2014. He has served on the PC of several conferences, including ICSE and FSE, was co-chair of CSCW 2004, and served as an associate editor of ACM Transactions on Software Engineering and Methodology.

Arun Kalyanasundaram is a PhD student in the Institute for Software Research at Carnegie Mellon University. His research involves studying coordination and collaboration in open-source software. He has performed ethnographic studies of hackathons to understand their socio-technical outcomes and their impact on building scientific software communities.

Aurelia Moser is a developer and curious chemist-cartographer building communities around code at the Mozilla Science Lab. She works particularly on outreach and event development for Mozilla's convenings programs, including the Working Open Workshop, Global Sprint, Mozfest, and Fel-

lowship Research Jams. Previously of Ushahidi, Internews Kenya, and Carto, she's been working in the open tech and non-profit space for a few years, and recent projects have had mapping sensor data to support agricultural security, citizen science, and sustainable apis ecosystems in the Global South.

Arlin Stoltzfus is a Research Biologist at the Institute for Bioscience and Biotechnology Research (Genome-scale Measurements Group, NIST), where his work focuses on issues in molecular evolution, bioinformatics, and evolutionary theory, using computer-based approaches. He also develops software and participates in community efforts to improve interoperability of software and data used in evolutionary analysis. He was part of the group of scientists that, over a 10-year period, developed and refined the hackathon model used at the National Evolutionary Synthesis Center (NESCent), a US National Science Foundation-funded research center. He continues to plan and facilitate time-bounded cooperative events.

Erik Trainer is a post-doctoral researcher in the Institute for Software Research at Carnegie Mellon University. He received his PhD in Information Computer Science from the University of California, Irvine in 2012. His research focuses on creating technologies and practices that support the relationships of people engaged in technical work, especially in open-source software development and software production in science.

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