
The 2nd Workshop on Hacking and Making at Time-Bounded Events: Current Trends and Next Steps in Research and Event Design

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Abstract

Hackathons or Hackathon-style events, describe increasingly popular time-bounded intensive events across different fields and sectors. Often cited examples of hackathons include the demanding overnight competitive coding events, but there are many design variations for different audiences and with divergent aims. They offer a new form of collaboration by affording explicit, predictable, time-bounded spaces for interdependent work and engaging with new audiences. This one-day workshop will bring together researchers, experienced event organizers, and practitioners to share and discuss their practical experiences. Empirical insights from studying these events may help position the CHI community to better study, plan and design hackathon-style events and socio-technical systems that support new modes of production and collaboration.

Author Keywords

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

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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

In recent years, there has been a surge in popularity of time-bounded intensive events. These events are generally known as hackathons, and engage young coders in small ad-hoc teams to produce software artifacts over 1 or 2-day event, and motivate them with competitive awards such as prizes and job offers [3]. Hackathon-style events are often termed as data dives, codefests, hack-days, sprints, edit-a-thons, mapathons, and so on. Such events are so popular and that collegiate hackathons alone are able to attract over 65,000 participants across 200 events each year [10].

The hackathon model is applied across fields. Examples include informal and collaborative learning [8, 13, 18], creating startups [5], arts and culture [3], civic open innovation [1], computational biology [14, 17], and social issue [16]. It has also been used in academic conferences through workshops exploring alternative models of creation such as OCData Hackathon at CSCW [9], and CHI4 Good Day of Service [16] and Crowdcamp [2] at CHI. These hackathons may differ on the interaction style—competition or collaboration, the mode of collaboration—face-to-face or remote, the extent to which communication tools are used [12], newly formed or existing communities working on new or existing projects [14, 17, 18], and goals and orientation—community building or advancement of existing projects [4, 6].

Hackathon-style events introduce new and interesting opportunities as well as challenges for the study of collaborative work. For example, these events may provide unique opportunities for cooperation by affording explicit and time-bounded spaces for individuals to work more interdependently; access to new collaborators with needed background and experience, and existing collaborators who are otherwise difficult to reach [18]; predictable interactions that can serve to strengthen existing social ties and develop new ones [14]. At the same time, working on projects that are outside of one's normal workflow may provide challenges for continuity after the brief cooperative stint is over [18]. 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], and keeping momentum and enthusiasm for completing projects [11]. These events may also provide different pressures on team dynamics process. For example, team development stages and common understanding need to happen relatively quickly.

Despite the plethora of research and public attention, little is known about how to design a hackathon to achieve intended outcomes, what benefits hackathons offers, what the immediate and longer-term impacts of hackathons are, and what the larger impacts of hackathons on CHI community and on the society as a whole are. To fill these gaps, we ran our first workshop at the 2017 ACM CSCW conference [7] which the current workshop is built upon, and brought together researchers and practitioners to share their hackathon-related experiences. The outcomes of our previous were reported in a technical report, and distributed to the workshop's participants through the mailing list.

Here, the CHI conference creates a perfect environment for this workshop to be successful not only in enhancing our understanding of hackathons but also better equipping HCI scholars with knowledge necessary to better orient hackathon-style events for intended purposes.

This one-day workshop will bring a diverse set of researchers and practitioners including past event organizers and individuals interested in running events in the future. The goals of this workshop are to (1) facilitate networking among participants, (2) explore opportunities to situate the hackathon phenomenon in the broader context of collaboration theory and research methods, (3) explore factors that could capture the success of hackathons, (4) discuss the role of diversity in hackathon context, (5) develop recommendations for event organizers, and (6) explore future research directions in this space.

Possible outputs of this workshop include a synthesis of our understanding of hackathons which will be made publically available as a technical report, possible research agendas for publications, publication venues related to the themes of this workshop, collaboration between researchers and practitioners on future studies, recommendations for practitioners, and other useful resources for putting on these events such as agendas, templates for recruiting materials, and checklist for infrastructure.

Workshop Themes

Topics of interest for the workshop, but are not limited to, are listed below. We will pay a good bit more attention to topics that were identified important for further discussion in our 2017 workshop such as

measurement, diversity, engagement and longer-term outcomes.

- **Design variations:** What are the different variations in event design? How variations in design impact event success, participant satisfaction, and group processes, such as idea generation, prototyping, team formation, team dynamics, etc., and diversity and inclusion?
- **Short-term and long-term outcomes:** How do event goals vary across contexts and designs? How do we measure success in achieving these goals? How do we support longer-term outcomes, such as building a longer-term community by fostering engagement?
- **Practical support for event organizers:** How do we design tools, processes, and workflows that support organizers and community managers, such as instruments to evaluate outcomes and assess community needs?
- **Applications:** What are the possible application areas of hackathons beyond traditional contexts, e.g., learning environments, user-centered design and HCI research, and non-software engineering work in general? What are the success factors and lessons learned in each of these applications?
- **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 vice versa?

- **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 HCI research?

Organizers

Ei Pa Pa Pe Than (*Primary contact*) is a postdoctoral researcher in the Institute for Software Research at Carnegie Mellon University. Her research focuses on understanding how technologies can help to create new forms of collaboration that foster engagement, productivity and outcome quality, by considering the interplay among technical, social and individual factors. She published her work in journals including Behaviour and Information Technology, Computers in Human Behavior, and Journal of the Association for Information Science and Technology, and presented at Annual Conference of ICA and ASIS&T. She was also a co-organizer of a special session on Human Computation at the 2013 International Conference on Active Media Technology.

Liz Gerber is an Associate Professor of Design at Northwestern University, where she leads the Design Research Cluster and directs the Delta Lab in the Design Institute. Her research focuses on crowdsourcing and the future of work. She currently serves as an associate editor of ACM Transactions on Social Computing.

Brittany Fiore-Gartland is the Director of Data Science Ethnography at the eScience Institute and a Senior Research Scientist in the Department of Human Centered Design and Engineering at the University of Washington. Her research focuses on the emerging cultures and practices of data science and the social and ethical implications of technological change.

Brad Chapman is a senior research scientist at Harvard T.H. Chan School of Public Health. He develops open source tools for analyzing biological data (<http://bcb.io/>), and organizes yearly Codefest working sessions for the open source bioinformatics community. This year’s Codefest was the 8th, with an increased focus on community building through engagement and training (https://www.open-bio.org/wiki/Codefest_2017).

Aurelia is a developer and curious cartographer building communities and fellowships around code at Mozilla. She volunteers as a Chapter Leader for the NYC Girl Develop It, teaches data visualization at the School of Visual Art, and writes about geospatial design and development. She’s been working in the open tech and non-profit research space for a few years, and recent projects have had mapping sensor data to support agricultural security and sustainable apis ecosystems in the Global South.

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.

Alexander Nolte is a postdoctoral researcher at the School of Information Sciences at the University of Pittsburgh and a research associate at the Institute for Software Research at Carnegie Mellon University. His research focuses on understanding how information technology can be leveraged to support the sustained collaboration of individuals in organizational and volunteer contexts. His work has been published in multiple journals (e.g. DSS and JCSCW) and conferences (e.g. CSCW). He has organized multiple workshops in international conferences such as ECSCW and ITS and he has served on the program committee of several conferences including ACM GROUP and CAiSE.

Nancy Wilkins-Diehr is an Associate Director at the San Diego Supercomputer Center. She directs the Science Gateways Community Institute. This institute, funded by the National Science Foundation's Office of Advanced Cyberinfrastructure, is designed to speed the development of sustainable, effective advanced web interfaces known as science gateways, science portals, virtual research environments and by many other names. She is interested in bringing learnings from well-run hackathons to the larger science gateway development community served by SGCI. She is also a co-PI on the NSF-funded XSEDE program where she co-directs the Extended Collaborative Support Service, pairing cyberinfrastructure experts with researchers in

all domains for in depth collaborations designed to accelerate research using high end cyberinfrastructure such as supercomputers.

Pre-Workshop Plans

Recruitment and Selection

We aim to recruit between 20-30 participants, and encourage participation of researchers working broadly in this space as well as practitioners with experience in running events in a variety of settings ranging from academic to corporate, open source, collegiate and so on, and participants interested in running events in the future.

Once accepted, we will make the detailed workshop information available at (<http://hackathon-workshop-2018.com>). 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 (e.g., chi-announcements), and social media groups (e.g., Researchers of the Socio-Technical Facebook Group), sending invitations to our previous workshop attendees, and leveraging the existing network of contacts the organizers have been building in the past several years of their work in the space. Through our personal networks, we have already received expressions of interest for participation from researchers and practitioners working in this space from Carnegie Mellon University, Harvard T.H.Chan School of Public Health, University of Washington, and Northwestern University.

Submissions will be accepted based on their relevance to outlined themes, and potential to contribute to provocative discussion among participants. As the workshop is designed to emphasize conversations and

discussions among participants, a smaller subset of submissions will be selected for formal presentations. The talks will reflect a combination of work from researchers, practitioners with experience in organizing events and participants interested in organizing future events.

Participants who have not been selected for formal presentations will be encouraged to volunteer as discussants. In particular, we will encourage HCI researchers to sign up as discussants for presentations of 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.

A Slack channel and mailing list will be set up prior to the workshop. This will facilitate initial participant introductions, the sharing of submissions between accepted participants, the coordination with discussants, dissemination of workshop outcomes, and future communication among participants. We plan to use Google Docs to record and archive discussions, and it will be shared with all workshop participants.

Workshop Activities

The workshop comprises a combination of presentations and discussions, small break-out groups, and additional activities designed to encourage social interaction and the development of new collaborations. Details of each activity are described as follows:

- “Boasters” session: The workshop will begin with a short “boasters” session, in which each participant

will stand up and introduce themselves, their area of expertise and what they hope to achieve from this workshop.

- Paper presentations and discussions: Each presentation will be given a 10-minute presentation by authors, followed by a 15-minute discussant-led session. Based on the presentations and discussions happened in this session, organizers will come up with four or five broad topics for break-out sessions.
- Coffee and lunch breaks: 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 for practitioners: This session will feature presentations from participants interested in running their own events, with discussants leading a structured conversation among all participants that aims to synthesize insights and provide recommendations for presenters based on lessons learned during the day.
- Break-out session: The purpose of this session is to lay the groundwork for future collaborations. This session will involve two sub-sessions. Participants will break into smaller groups, and each group will sign up for one of the topics identified in the presentations and discussion session. Each group will be given 45 minutes to work on the topic, and then present their ideas to all participants. After revision, each group will then post a research agenda(s) to the workshop Slack channel.
- Closing session: 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.

Post-Workshop Plans

We will follow up the workshop with several engagement and dissemination activities. First, we will continue to use the communication channels set up prior to the workshop to build and grow the community. To this end, we will encourage participants to share their reflections of the workshop and their plans with proposed agendas, and invite others who may be interested in this space. Next, we aim to disseminate findings of this workshop to broader HCI community. For this, we will build on ideas initiated during the workshop, such as a potential review of literature on hackathons, invite participants for co-authorship, and reach out to possible publication venues. Finally, we will consolidate and make available insights and recommendations through those communication channels to support future collaboration.

Call for participation

Time-bounded collaborative events, or hackathons, in which teams work together under intense time pressure are becoming increasingly popular across disciplines. Yet little is known about what benefits hackathons offer and how to structure the event to better cater to the needs of all stakeholders. Following the CHI's successful way of integrating multiple perspectives to produce new and innovative solutions, this one-day workshop will bring together researchers interested in the phenomenon, experienced event organizers, and individuals interested in running their own events. The objectives are to facilitate sharing hackathon-related experiences, consolidating existing research, and building and strengthening academic-industry partnerships to enable new research opportunities.

We solicit position papers between 2-4 pages in the ACM SIGCHI Extended Abstract Format that include a short overview of each author's background, their interest in this field, and motivation for participation in the workshop, as well as a description of one or more workshop themes of particular interest to the authors. This may be in a form of summarizing research ideas, recounting an experience with related event, or story drawn from participant's own research or event. Supplementary materials can be submitted. Submissions will be accepted based on the relevance to the workshop themes and their potential to contribute to the workshop discussions and goals. All submissions will be peer-reviewed by the workshop organizers. Submissions need to be made by 2nd February 2018 at <http://hackathon-workshop-2018.com>. We require at least one author of each accepted position paper must attend the workshop, and that all participants must register for both the workshop and for at least one day of the conference.

References

1. Esteve Almirall, Melissa Lee, and Ann Majchrzak. 2014. Open innovation requires integrated competition-community ecosystems: Lessons learned from civic open innovation. *Business Horizons* 57, 3 (2014), 391–400.
2. Paul André, Michael Bernstein, Mira Dontcheva, Elizabeth Gerber, Aniket Kittur, and Rob Miller. 2012. CrowdCamp: Rapidly iterating ideas related to collective intelligence & crowdsourcing. In *Proc. CHI EA '12*, 2687-2690. <http://dx.doi>
3. Gerard Briscoe. 2014. Digital innovation: The hackathon phenomenon. Working Papers of The Sustainable Society Network 2014.
4. Adrienne Decker, Kurt Eiselt, and Kimberly Voll. 2015. Understanding and improving the culture of

- hackathons: Think global hack local. In *Frontiers in Education Conference (FIE)*, 1-8.
5. Marthe Dehli. *Hackathons as a ground for creating start-ups: Evidence from THE Port 2014*. Ph.D. Dissertation. CERN.
 6. Margaret Drouhard, Anissa Tanweer, and Brittany Fiore-Gartland. 2017. A typology of Hackathon Events. Paper presented at the First Workshop on Hacking and Making at Time-Bounded Events, Conference on Computer-Supported Cooperative Work and Social Media.
 7. Anna Filippova, Brad Chapman, R. Stuart Geiger, James D. Herbsleb, Arun Kalyanasundaram, Erik Trainer, Aurelia Moser, and Arlin Stoltzfus. 2017. Hacking and Making at Time-Bounded Events: Current Trends and Next Steps in Research and Event Design. In *Companion of CSCW '17*, 363–370. <https://doi.org/10.1145/3022198.3022658>
 8. Allan Fowler. 2016. Informal STEM Learning in Game Jams, Hackathons and Game Creation Events. In *Proc. of the International Conference on Game Jams, Hackathons, and Game Creation Events*, 38-41. <http://dx.doi.org/10.1145/2897167.2897179>
 9. Sean Goggins, Andrea Wiggins, Susan Winter, and Brian Butler. 2014. OData Hackathon @ CSCW 2014: Online Communities Data Hackathon. In *Proc. CSCW Companion'14*, 317-318. <http://dx.doi.org/10.1145/2556420.2558865>
 10. Major League Hacking. 2016. Retrieved September 8, 2017 from <https://mlh.io/about>
 11. Marco Komssi, Danielle Pichlis, Mikko Raatikainen, Klas Kindström, and Janne Järvinen. 2015. What are Hackathons for? *IEEE Software* 32, 5 (2015), 60-67.
 12. Mozilla Science Lab. 2016. Mozilla Science Lab Global Sprint 2016. (2016). Retrieved September 7, 2017 <https://science.mozilla.org/programs/events/global-sprint-2016>
 13. Miguel Lara and Kate Lockwood. 2016. Hackathons as Community-Based Learning: A Case Study. *TechTrends* 60, 5 (2016), 486–495.
 14. Steffen Möller, Enis Afgan, Michael Banck, Raoul JP Bonnal, Timothy Booth, John Chilton, Peter JA Cock, Markus Gumbel, Nomi Harris, Richard Holland, Matúš Kalaš, László Kaján, Eri Kibukawa, David R. Powel, Pjotr Prins, Jacqueline Quinn, Olivier Sallou, Francesco Strozzi, Torsten Seemann, Clare Sloggett, Stian Soiland-Reyes, William Spooner, Sascha Steinbiss, Andreas Tille, Anthony J. Travis, Roman Valls Guimera, Toshiaki Katayama, and Brad A. Chapman. 2014. Community-driven development for computational biology at Sprints, Hackathons and Codefests. *BMC Bioinformatics* 15, 14 (2014), S7. <http://dx.doi.org/10.1186/1471-2105-15-S14-S7>
 15. Arnab Nandi and Meris Mandernach. 2016. Hackathons as an Informal Learning Platform. In *Proc. SIGCSE '16*, 346-351. <https://doi.org/10.1145/2839509.2844590>
 16. Emily Porter, Chris Bopp, Elizabeth Gerber, and Amy Volda. 2017. Reappropriating Hackathons: The Production Work of the CHI4Good Day of Service. In *Proc. CHI '17*, 810-814. <https://doi.org/10.1145/3025453.3025637>
 17. Arlin Stoltzfus, Michael Rosenberg, Hilmar Lapp, Aidan Budd, Karen Cranston, Enrico Pontelli, Shann Oliver, and Rutger A. Vos. 2017. Community and Code: Nine Lessons from Nine NESCent Hackathons [version 1; referees: 1 approved, 1 approved with reservations]. *F1000Research* 2017, 6:786.
 18. Erik H. Trainer, Arun Kalyanasundaram, Chalalai Chaihirunkarn, and James D. Herbsleb. 2016. How to Hackathon: Socio-technical Tradeoffs in Brief, Intensive Collocation. In *Proc. CSCW '16*, 1118–1130. <https://doi.org/10.1145/2818048.2819946>