

*Henrik Korsgaard<sup>1</sup>, Myriam Lewkowicz<sup>2</sup>, Alexander Boden<sup>3</sup>, Gabriela Avram<sup>4</sup>, Susanne Bødker<sup>1</sup> (2020): Studying Technical Mechanisms for Supporting Sharing Communities. In: Proceedings of the 18th European Conference on Computer-Supported Cooperative Work: The International Venue on Practice-centred Computing on the Design of Cooperation Technologies - Workshop, Reports of the European Society for Socially Embedded Technologies (ISSN 2510-2591), DOI: 10.18420/ecscw2020\_ws01*

# Studying Technical Mechanisms for Supporting Sharing Communities

Henrik Korsgaard<sup>1</sup>, Myriam Lewkowicz<sup>2</sup>, Alexander Boden<sup>3</sup>, Gabriela Avram<sup>4</sup>, Susanne Bødker<sup>1</sup>

<sup>1</sup>Aarhus University, Denmark, <sup>2</sup>Troyes University of Technology, France,

<sup>3</sup>Fraunhofer-Institute for Applied Information Technology FIT, Germany,

<sup>4</sup>University of Limerick, Ireland

Contact Author: [korsgaard@cs.au.dk](mailto:korsgaard@cs.au.dk) & [alexander.boden@fit.fraunhofer.de](mailto:alexander.boden@fit.fraunhofer.de)

**Abstract.** Enabled by technical platforms, sharing economies have been studied with regard to their economic, legal and social effects, as well as with regard to their possible influences on CSCW topics such as work, collaboration and trust. While a lot of research is ongoing around the sharing economy and related communities, there is little work addressing the phenomenon from a socio-technical point of view. In particular, there is little work in CSCW looking at the technology behind existing platforms, why it was defined this way, what are its impacts, and what would it mean to offer technology that would support local sharing economies in their cooperative activities. Our workshop is meant to address this gap. The aim is to identify research themes and gaps in the related work, and work towards a better understanding of core mechanisms and trade-offs in the design of future and inclusive platforms for the sharing economy.

## Introduction and background

The labels “Sharing Economy” and “Collaborative Economy” have been widely used in recent years to refer to a variety of initiatives, business models and forms of work, from commercial platforms to makerspaces and urban gardens. Botsman (2013), one of the first to address this phenomenon, described the “sharing economy” as “[a] diverse field of innovation, which can be loosely defined as an Internet-mediated economic model based on sharing, swapping, trading, or renting products and services, enabling access over ownership.” Nesta (2014) acknowledge that the sharing economy has become “[a] popular term to describe a range of various business models, activities and organisations”, however they recommend seeing the concept *as a zoom lens*, in order to get a new perspective on the social, environmental, and economic value that can be created from a number of assets and skills in innovative ways and at an unprecedented scale.

Two different narratives on the collaborative economy tend to dominate the current discourse. One revolves around the emergence of market-focused digital innovation that is able to disrupt existing business models and generate economic activity. Potential social and environmental benefits are presented as the main incentives. This perspective has been widely criticised for exploiting legislation loopholes and undermining labour rights. The second group of focuses on social innovation, aiming at creating a more sustainable economic and environmental model, where sharing access to goods and services allows for a more efficient and sustainable utilisation of resources. Early proponents of the collaborative economy maintained that peer-to-peer exchange has the capacity to fundamentally change how we relate to one another and the environment (Balaram, 2016).

Recently, there has been a strong interest in challenges and opportunities surrounding sharing economy communities. Enabled by technical platforms, particularly in the context of the social web, sharing economies have been studied with regard to their economic, legal and social effects (Kenney and Zysman, 2015). as well as with regard to their possible influences on CSCW topics such as work, collaboration and trust (Lampinen et al., 2016). Initiatives such as housing cooperatives, community gardens, food coops, tool libraries, skill swapping arrangements and other citizen initiatives use digital technologies for collaboration, communication and coordination purposes, and are included under the same umbrella of the collaborative economy. In the latter cases, reuse, recycling, mobilisation of existing resources and initiatives have a real impact on the local economy.

The emergence of the collaborative economy has been enabled by the technical infrastructures relying on web and mobile technologies, the availability of unutilised or underutilised goods and resources, as well as socio-economic drivers to capitalize on such resources and experiment with new labour opportunities. Collaborative economy offers considerable potential for supporting new modes of (peer-to-peer) exchange by fostering trust among strangers with the help of technologies, such as reputation and payment systems (Ikkala and Lampinen,

2015; McGregor et al., 2015; Teodoro et al., 2014). One potential innovation of platforms is the capability to potentially reallocate wealth across the value chain, specifically away from middlemen and towards small producers and consumers (Schor and Fitzmaurice, 2015) Schor and Fitzmaurice (2015). This somewhat optimistic view of connected consumption is in stark contrast with calls for more equitable forms of organizing platform labour, such as cooperatives and other social enterprises (Scholz, 2014), and critiques of the emotional labour, body labour, and temporal labour that work under platform capitalism involves (Casilli and Posada, 2019; Raval and Dourish, 2016).

Existing research on the collaborative economy from a socio-technical perspective has mainly examined specific platforms or subdomains, such as food sharing (Ganglbauer et al., 2014; Malmberg et al., 2015), time banking (Bellotti et al., 2014; Seyfang and Smith, 2002), and local online exchange (Lampinen et al., 2016; (Suhonen et al., 2010), as well as network hospitality (Bialski, 2012; Ikkala and Lampinen, 2015; Molz, 2012), on-demand labour (Teodoro et al., 2014) Teodoro et al. (2014) and crowdfunding (Bellotti et al., 2015; Gerber and Hui, 2013).

## Themes and topic areas

While there is a lot of research ongoing around the sharing economy and related communities, there is surprisingly little work addressing the collaborative economy phenomenon from a socio-technical point of view. In particular, there is little work in HCI or CSCW looking at the technology behind existing platforms, why it was defined this way, what are its impacts, and what would it mean to offer technology that would support local sharing economies in their cooperative activities.

Adopting a socio-technical point of view allows to study both the social processes and set of governance mechanisms and the technological architecture constituted of software modules, interfaces, and infrastructure. Following Orlikowski and Iacono (2001), we claim that as CSCW researchers, we have the opportunity and responsibility to influence what future is enacted with the technological architecture on which platforms are based. We must then engage with this technological architecture. Our interest in this technological infrastructure is based on the five premises offered by Orlikowski and Iacono (2000) to carefully engage with technological artifacts: (1) IT is not neutral or universal; IT is shaped by a variety of communities of developers, investors, users, etc. (2) IT is embedded in some time, place, discourse, community; (3) IT is made up of a multiplicity of components that require bridging, integration and articulation to work together. (4) IT emerges from practice, it can be used in different ways, adapted, expanded to accommodate different and evolving interests. (5) IT is dynamic; materials evolve, functions fail, standards are defined. In order to investigate the technological infrastructure, we need to invest in theorizing the nature and the impact of this infrastructure and to work towards richer conceptualizations of IT (Tilson et al., 2010).

Our workshop is meant to address this gap and get together researchers that are interested in research on socio-technical aspects of sharing economy platforms. The aim is to identify research themes and gaps in the related work, and work towards a better understanding of core mechanisms and trade-offs in the design of future and inclusive platforms for the sharing economy. By ‘mechanisms’, we mean technological mechanisms that play a role in enabling, ordering, structuring, hindering, shaping and have various other impact or effects on practice within sharing communities. Tentatively, technological mechanisms can be identified at different levels, e.g. features of a system, interface elements, software modules, infrastructure, data management, and even the interfaces between different systems.

We recognise that there is no causal effect between how a community uses a platform or how activities unfold and then technical mechanisms, however, we believe that it is possible to identify and discuss common use patterns, effects and probable relations between one or more technological mechanisms and sharing and caring practices. Hence, our workshop is intended to focus on the technical features and infrastructures that support the collaborative practices and community aggregation, in relation to their effects on collaboration and economic relations. We think in particular that technical features should be studied not only from the perspective of the support they provide for collaboration, but also regarding constraints and limitations that these features impose, observing how people practically overcome such limitations. We propose the following themes as possible topics for submissions.

## Platform taxonomies

As platforms become the primary way we interact across communities in/and outside work, researching and analysing platforms from a more technical perspective become a common strategy – people compare platforms when considering which to adopt and/or champion specific platforms for technical features or adoption or success stories, and we see that many of the specific features, e.g. webshops, communication fora, community membership portals, knowledge sharing, event management etc. are implemented again and again. Still, there are very few surveys of platforms and their features and we see an opportunity for developing different analytical taxonomies in studying platforms in the sharing economy. For well-known genres of platforms, e.g. wiki engines<sup>1</sup> or CMS-systems<sup>2</sup>, we frequently see comparisons between different options made to offer comparison along mostly technical dimensions, like programming language, licensing model, support and whether they are open source or not. When examining platforms and ecologies of systems within the collaborative economy, common socio-technical criteria and grounds for comparison would be welcome for researchers and practitioners alike. Different taxonomies and analytical lenses

---

<sup>1</sup> [https://en.wikipedia.org/wiki/Comparison\\_of\\_wiki\\_software](https://en.wikipedia.org/wiki/Comparison_of_wiki_software)

<sup>2</sup> [https://en.wikipedia.org/wiki/List\\_of\\_content\\_management\\_systems](https://en.wikipedia.org/wiki/List_of_content_management_systems)

that merge technical, interface and usage criteria could also help inform designs and more modular approaches.

## Ideals and conflict

Developing from understandings that technology embodies values and plays a formative role in communities (Bødker et al., 2016), we see conflicts arising between community ideals and then the tools they use. A lot of sharing communities are driven by values, e.g. resource sharing, sustainable practices, and often employ inclusive and democratic organisation model. Commercial platforms or software appropriated as the community platform may embody potential conflicting ideas about the activities at hand, data, membership, hosting etc. than those discussed in the community. These ideals are rarely reflected into the decisions and design of the platforms and the codified elements are rarely apparent from the get go and tensions arise down the line (Bødker et al., 2016). E.g. a community may use a social media platform early in their work and then realise that the ownership of data or lack of good archiving is a problem. Or a community may bolster ideals on environmentalism or localism and then later realise the impact of cloud computing and remote hosting.

## (Un)intended dark designs

Commercial platforms apply strategies to lure users into oversharing information or spend more time on the platform. These have been collected and described as dark design patterns<sup>3</sup>; Similarly, high level economic analysis and studies of commercial platforms have revealed some systemic effects, e.g. how ride-sharing affects congestion (Li et al., 2016) or house-sharing affects property value (Sheppard et al., 2016). When communities and local stakeholders pick or appropriate existing tools, or develop new open versions inspired by commercial platforms applying their (dark) designs, there is a risk that although driven by community ideals, unintended effects and implications are introduced. Or, perhaps the unintended implications introduced by platforms and interactive tools might look completely different when considering sharing economy initiatives and community-oriented platforms?

## Organising on and around platforms

When appropriating a platform for a sharing initiative, the platform itself often comes with an internal organization model or imposes constraints on the initiative and how activities are organised. Platforms seldom support all activities or groups within a community and they rarely 'fit' the community governance model. Communities often use a plethora of tools, some agreed upon and others

---

<sup>3</sup> <https://www.darkpatterns.org/>

appropriated on the spot, and need ways to organise and integrate across multiple platforms and tools, e.g. to handle payment, social media, newsletters etc.

## Goals and activities

The aim of this workshop is to map and explore a list of opportunities and challenges for HCI and CSCW to engage with socio-technical perspectives on platforms and support tools within the sharing and collaborative economy from the perspective of researchers and practitioners. We are also aiming at helping practitioners that are interested in participating and starting sharing economies to get a better understanding of the possibilities of the tools that already exist, as well as inform design researchers about possible gaps and room for improvement. The opportunities and challenges will be organised under four main aims:

- Collecting research on socio-technical aspects of sharing economy platforms. Here we emphasise perspectives and discussions aimed at connecting the two – the social and the technical – in discussing platforms and their underlying technologies.
- Identifying research themes, gaps, related work, in particular topics that are relevant to CSCW. This includes rethinking earlier trends in CSCW on groupware systems from a sharing platform perspective.
- Working towards a better understanding of core mechanisms and trade-offs in the design of platforms for the sharing economy, as well as implications in adopting and appropriating commercial solutions and platforms invented to support different kinds of work and collaboration.
- Discuss and outline various abstractions across identified platforms, e.g. design patterns for community platforms, catalogues of proven mechanisms and enabling features.

Depending on the outcome of the workshop's discussions and on the interest of the participants, we may explore further publication outlets for the workshop papers. The contributions will be made available on the workshop website, given participant consent.

## Activities and structure

We propose a one-day, 8 hour workshop. In the workshop, we will combine discussion of position papers with the themes and aims. Some activities will be group-based centred around generating contributions within the four aims of the workshop.

**Preparation before the workshop** We will circulate the accepted position papers and ask participants to read these and reflect on these based on the themes proposed. Depending on the scope and focus of the contributions, we will consider proposing a few guiding questions.

**Morning: Introductions and short presentations** The workshop will start with short presentations of the position papers. Depending on the clustering around the themes, this can happen in plenum or in two steps where they are grouped around themes and then synthesised into a group presentation by the participants.

**Afternoon (1) Generative group work:** The afternoon will start with group work examining the themes with the aim of generating input to the four main aims. This will involve mapping potential taxonomies, speculative research design, in relation to Ideals and conflicts and design implications (dark designs) within the sharing economy.

**Afternoon (2) Synthesis** As the final step, participants will engage in a collective exercise with the task of synthesising the workshop and discussions into key directions for future research under the heading “*What has CSCW to offer to the sharing economy?*”

## Organisers

*Gabriela Avram* is lecturer in Digital Media and Interaction Design, and senior researcher at the Interaction Design Centre of the University of Limerick (Ireland). Building on a CSCW background, her research currently focuses on the implications of the collaborative economy on urban communities, with an emphasis on DIY, civic engagement and cultural heritage. She is the Chair of the COST Action Sharing & Caring.

*Alexander Boden* is post-doc researcher at the Fraunhofer Institute for Applied Information Technology FIT. His work focuses on developing interactive tools in the domain of environmental and consumer informatics in a broad range of application domains ranging from smart factories to private households, as well as on ethical and social implications of technology. Alexander publishes in research communities such as CSCW, HCI and Software Engineering.

*Susanne Bødker* is Professor of Human-Computer Interaction at the Department of Computer Science, Aarhus University. She works with activity theoretical HCI, Participatory Design and Computer Supported Cooperative Work. She is currently working on her ERC Advanced research project Common Interactive Objects, that takes a new theoretical focus on how we collaborate and make sense of the interactive objects in our everyday lives. Susanne is a scientific advisor for the COST action Sharing & Caring.

*Henrik Korsgaard* is a post-doc researcher at the Department of Computer Science at Aarhus University. He works with activity theoretical HCI, CSCW and place-centric computing. He mixes empirical work on how communities adopt and

appropriate technologies with constructing and deploying prototypes primarily focusing on supporting intrinsic development of local applications and services.

*Myriam Lewkowicz* is Full Professor of Informatics at Troyes University of Technology (France), where she heads the teaching program “Accompaniment of the Digital Transformation”, and the pluridisciplinary research group Tech-CICO. Her interdisciplinary research involves defining digital technologies to support existing collective practices or to design new collective activities. In 2017, she was elected the next chair of the European Society for Socially Embedded Technologies (EUSSET). She is vice-chair of the COST Action Sharing & Caring, and the co-chair of the working group focusing technical platforms in this action.

## Maximum number of participants expected

We expect to bring together a maximum of 20 participants. Our intended audience is primarily researchers who are actively engaged in studies of sharing economy contexts, but also active members of such communities. We will encourage a mix of practitioners, graduate students, new faculty, and established researchers to participate.

## Means of recruiting and selecting participants

The call for papers will be disseminated via CSCW-related mailing lists (e.g. EUSSET, CSCW). We will also publish the call via social media and community mailing lists of our COST Action in order to target a broader audience, especially active members of sharing communities. We will establish a webpage that we will use throughout the process to advertise and collect information, a tentative reader on the sharing economy and subsequently publish the position papers and insights from the workshop, with participant consent.

In order to attract practitioners, we will contact organizations involved in designing platforms, with whom we already interacted in the framework of the COST action: E.g. Platform Design Toolkit (Simone Cicero) and Collaboriamo (Elisa Saturno).

Prospective participants are invited to submit short papers (4-6 pages) on their research using the ECSCW Exploratory Paper template. Submitted papers should relate to the research questions outlined in the call. We are especially interested in empirical studies of sharing economy platforms and their socio-technical implications. Both reports of research in progress and completed studies will be accepted. We are also inviting practitioners to submit experience reports about existing technologies.

The workshop organisers will select the position papers based primarily on their ability to generate fruitful discussion of important issues and also to provide examples of practice related, high quality case studies. At least one author of each



accepted paper must attend the workshop. The accepted papers will be made available to the participants in advance and discussants will be assigned to each paper.

## References

- Balaram, B. (2016): 'Fair Share: Reclaiming power in the sharing economy'. *RSA available at <https://medium.com/@thersa/fair-share-reclaiming-power-in-the-sharing-economy-499b46bd4b00#klx0etam9>*.
- Bellotti, V., A. Ambard, D. Turner, C. Gossmann, K. Demkova, and J. M. Carroll (2015): 'A Muddle of Models of Motivation for Using Peer-to-Peer Economy Systems'. In: *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*. Seoul, Republic of Korea, pp. 1085–1094, Association for Computing Machinery.
- Bellotti, V. M., S. Cambridge, K. Hoy, P. C. Shih, L. R. Handalian, K. Han, and J. M. Carroll (2014): 'Towards community-centered support for peer-to-peer service exchange: rethinking the timebanking metaphor'. In: *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. Toronto, Ontario, Canada, pp. 2975–2984, Association for Computing Machinery.
- Bialski, P. (2012): 'Technologies of hospitality: How planned encounters develop between strangers'. *Hospitality & Society*, vol. 1, no. 3, pp. 245–260.
- Bødker, S., H. Korsgaard, and J. Saad-Sulonen (2016): "'A Farmer, a Place and at Least 20 Members": The Development of Artifact Ecologies in Volunteer-Based Communities'. In: *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing*. New York, NY, USA, p. 1142–1156, Association for Computing Machinery.
- Botsman, R. (2013): 'The sharing economy lacks a shared definition'. *Fast Company*, vol. 21, pp. 2013.
- Bødker, S., H. Korsgaard, P. Lyle, and J. Saad-Sulonen (2016): 'Happenstance, Strategies and Tactics: Intrinsic Design in a Volunteer-based Community'. pp. 1–10.
- Casilli, A. and J. Posada (2019): 'The platformization of labor and society'. *Society and the Internet: How Networks of Information and Communication are Changing Our Lives*, pp. 293.
- Ganglbauer, E., G. Fitzpatrick, Ö. Subasi, and F. Güldenpfennig (2014): 'Think globally, act locally: a case study of a free food sharing community and social networking'. In: *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing*. Baltimore, Maryland, USA, pp. 911–921, Association for Computing Machinery.
- Gerber, E. M. and J. Hui (2013): 'Crowdfunding: Motivations and deterrents for participation'. *ACM Transactions on Computer-Human Interaction (TOCHI)*, vol. 20, no. 6, pp. 34:1–34:32.
- Ikkala, T. and A. Lampinen (2015): 'Monetizing Network Hospitality: Hospitality and Sociability in the Context of Airbnb'. In: *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing*. Vancouver, BC, Canada, pp. 1033–1044, Association for Computing Machinery.
- Kenney, M. and J. Zysman (2015): 'Choosing a future in the platform economy: the implications and consequences of digital platforms'. In: *Kauffman Foundation New Entrepreneurial Growth Conference*, Vol. 156160.

- Lampinen, A., V. Bellotti, C. Cheshire, and M. Gray (2016): 'CSCW and TheSharing Economy: The Future of Platforms as Sites of Work Collaboration and Trust'. In: *Proceedings of the 19th ACM Conference on Computer Supported Cooperative Work and Social Computing Companion*. New York, NY, USA, p. 491–497, Association for Computing Machinery.
- Li, Z., Y. Hong, and Z. Zhang (2016): 'An empirical analysis of on-demand ride sharing and traffic congestion'. In: *Proc. International Conference on Information Systems*.
- Malmberg, L., A. Light, G. Fitzpatrick, V. Bellotti, and M. Brereton (2015): 'Designing for Sharing in Local Communities'. In: *Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems*. Seoul, Republic of Korea, pp. 2357–2360, Association for Computing Machinery.
- Mcgregor, M., B. Brown, and M. Glöss (2015): 'Disrupting the cab : uber, ridesharing and the taxi industry'. *Journal of Peer Production*, no. 6.
- Molz, J. G. (2012): 'CouchSurfing and network hospitality: 'It's not just about the furniture''.
- Nesta (2014): 'Making Sense of the UK Collaborative Economy'.
- Orlikowski, W. and C. Iacono (2000): 'The Truth Is Not Out There: An Enacted View of the "Digital Economy'. *Understanding the Digital Economy: Data, Tools, and Research*.
- Orlikowski, W. J. and C. S. Iacono (2001): 'Research Commentary: Desperately Seeking the "IT" in IT Research—A Call to Theorizing the IT Artifact'. *Information Systems Research*, vol. 12, no. 2, pp. 121–134.
- Raval, N. and P. Dourish (2016): 'Standing Out from the Crowd: Emotional Labor, Body Labor, and Temporal Labor in Ridesharing'. In: *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing*. San Francisco, California, USA, pp. 97–107, Association for Computing Machinery.
- Scholz, T. (2014): 'Platform cooperativism vs. the sharing economy'. *Big data & civic engagement*, vol. 47.
- Schor, J. B. and C. J. Fitzmaurice (2015): 'Collaborating and connecting: the emergence of the sharing economy'. *Handbook of Research on Sustainable Consumption*.
- Seyfang, G. and K. Smith (2002): *The time of our lives: Using time banking for neighbourhood renewal and community capacity building*. NEF.
- Sheppard, S., A. Udell, et al. (2016): 'Do Airbnb properties affect house prices'. *Williams College Department of Economics Working Papers*, vol. 3, pp. 1–45.
- Suhonen, E., A. Lampinen, C. Cheshire, and J. Antin (2010): 'Everyday favors: a case study of a local online gift exchange system'. In: *Proceedings of the 16th ACM international conference on Supporting group work*. Sanibel Island, Florida, USA, pp. 11–20, Association for Computing Machinery.
- Teodoro, R., P. Ozturk, M. Naaman, W. Mason, and J. Lindqvist (2014): 'The motivations and experiences of the on-demand mobile workforce'. In: *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing*. Baltimore, Maryland, USA, pp. 236–247, Association for Computing Machinery.
- Tilson, D., K. Lyytinen, and C. Sørensen (2010): 'Research Commentary—Digital Infrastructures: The Missing IS Research Agenda'. *Information Systems Research*, vol. 21, no. 4, pp. 748–759.