

## Current Research Projects

Tobias Escher\*, Lars Heilsberger, and Martin Mauve

# The PhD program “Fortschrittskolleg Online Participation”

DOI 10.1515/itit-2015-0033

Received August 14, 2015; accepted September 19, 2015

**Abstract:** Using the Internet to involve citizens in decision-making represents both a promise and a challenge. The PhD program “Fortschrittskolleg Online Participation” brings together more than a dozen PhD students from six different disciplines with practitioners from local administration and consulting companies that initiate and implement real-world participatory processes on the Internet. This article introduces the program’s main research aims and provides a summary of its structure that represents a response to the challenges of such a multi- and trans-disciplinary research effort.

**Keywords:** eParticipation, online participation, E-government.

**ACM CCS:** Applied computing → Computers in other domains → Computing in government → E-government

## 1 Overview

Enabling citizens to have an impact on political and administrative decisions that they consider important, is one of the most significant challenges in a democratic society. In recent years, there have been many instances where citizens felt that their voice was not heard and that their interests were not considered appropriately by decision makers. Two notable examples in Germany are the construction of a new train station in Stuttgart (Stuttgart21) and the (failed) school reform in Hamburg. Besides these prominent examples, there are many more controversial decisions that have been taken by political representatives and that met significant resistance by those who were affected by them, in particular at the local level. This suggests that

electing democratic representatives might not always be sufficient to gain endorsement for political decisions and that affected citizens actively demand additional opportunities for engagement in order to influence these decisions.

Research in particular into planning processes has established that extensive and direct participation in political and administrative decisions – for example via public hearings or citizen juries – can increase both the legitimacy and the quality of decisions [1–5]. So far the direct participation of those affected by decision-making processes has been limited to small groups, for example in the management of common pool resources [6, 7]. However, using Internet-based technology offers the opportunity to realize direct participation on a much larger scale. In particular this would enable participation with significantly less effort and costs, for almost arbitrary large groups in a manner that is independent of location and time. We use the term online participation to refer to this form of direct participation in decision-making processes in politics and administration.

Even though online participation has significant potential to strengthen the acceptance and the quality of political and administrative decisions it is not yet in widespread use. When it is used, it often falls short of the expectations envisioned by those organizing the online participation process or participating in it. We believe that there are three main reasons for this shortcoming.

First, the scientific knowledge about online participation is very limited. We still lack a comprehensive scientific basis for online participation that would allow us to fully understand cause-effect-relationships and as such to determine success factors for online participation in a variety of domains. Such knowledge is required in order to purposefully design the technology for online participation, to adapt the processes to their respective environments and to assess their potential impact and consequences. Without a stronger scientific knowledge base, built both from theory as well as empirical research, it is difficult to realize the potential of online participation and to avoid its pitfalls. So far, existing research efforts into online participation analyse predominantly subject-specific questions within particular disciplines. However, in online partici-

---

\*Corresponding author: Tobias Escher,  
Heinrich-Heine-Universität Düsseldorf,  
e-mail: [koordination-fortschrittskolleg@cs.uni-duesseldorf.de](mailto:koordination-fortschrittskolleg@cs.uni-duesseldorf.de)  
Lars Heilsberger, Martin Mauve: Heinrich-Heine-Universität  
Düsseldorf

pation processes technical and algorithmic problems are tightly connected to social, political, discursive, organisational, managerial and legal aspects. To come to a comprehensive understanding of online participation requires researching all those aspects simultaneously.

Second, currently organisers as well as researchers of online participation processes are not sufficiently prepared for the specific challenges and problems of online participation. These include creating an environment conducive for participation, designing participation platforms, adapting participation processes to existing legal frameworks or political and social contexts, or engaging people who do not use the Internet. What is missing is a program that combines interdisciplinary and transdisciplinary expertise to provide knowledge of the different aspects of online participation and that qualifies for the requirements of conducting online participation processes in different domains.

Third, at the moment, most existing applications of online participation take place in isolation. Even though, by now, a variety of stakeholders has gained considerable experience in this area, on the academic level we lack a systematic networking that would allow the exchange of experiences and synthesis of existing knowledge. As a result promising avenues for improving such processes remain untapped.

For these reasons, Heinrich-Heine-University Düsseldorf together with University of Applied Sciences for Public Administration and management of North Rhine-Westphalia has initiated a PhD program on “Online Participation”. The program is funded by the North Rhine-Westphalian funding scheme “Fortschrittskollegs”. While in its first phase it is supported from 2014 to 2018, the program represents an ongoing effort of both the universities involved and the state of North Rhine-Westphalia.

## 2 Challenges

The research topic of the PhD program leads to two interesting challenges at the management level. First, in order to provide research results that are meaningful and relevant in the area of online participation, a high degree of cooperation with practitioners is required. Without such a cooperation there would be only limited access to data and experiences from past online participation processes, it would be hard to get into contact with participants and organizers, and it would be difficult to introduce or evaluate novel functionality and organizational procedures in realistic settings. Furthermore it can be expected that many research results can be used directly to

improve real-world online participation. In order to address this challenge, the PhD program includes, as regular members, not only scientists (professors and graduate students) but also a large number of practitioners. These come from three groups. First, there are cities and municipalities where online participation is currently used to interact with citizens. Second, the group of practitioners also includes providers of (technical) solutions for online participation. Finally, there is the government of federal state North Rhine-Westphalia which is currently establishing an open government strategy. Members of all three groups are fully integrated in the PhD program. They serve as co-advisors in the PhD committees of the graduate students, they give presentations on their past experience and they help to transfer the ideas developed by the PhD students to real-world online participation processes.

The second challenge at the management level is that the research topic requires a very high degree of multidisciplinary. Meaningful work in this area demands, at the very least, research on: the functionality of online participation systems and the algorithms used to realize it (Computer Science), the organization of efficient online participation processes (Business Studies), the behaviour and interaction of the participants (Sociology and Communication Studies), the statutory framework of online participation (Law), metrics that are able to measure the effect of online participation (Sociology), the impact of online participation on the acceptance of political and administrative decisions (Political Science). Organizing multidisciplinary research is already a challenge when two or three research disciplines are involved. Coordinating six diverse research disciplines requires very careful planning. In addition, the PhD program is pioneering cooperative theses in cooperation with its partner, the University of Applied Sciences for Public Administration and management of North Rhine-Westphalia. Two PhD students of the university (“Fachhochschule”) will obtain their doctoral degree from the University of Düsseldorf.

The PhD program solves this challenge by forming four multidisciplinary groups that each investigate one specific aspect of online participation in detail:

- Understanding participants in online participation. This group looks at the individuals that participate in online participation processes. Its goal is to explain why and when individuals decide to participate, how they participate and what they expect to gain from participating.
- Understanding organizers of online participation. This group focuses on politicians and members of the administration that set up and support online participation processes as well as companies providing such

services. Its goal is to explain how online participation can be integrated in existing processes and the legal frameworks of political and administrative decision making and what effect it has on politicians and members of the administration.

- Measuring the effects of online participation. This group investigates metrics that are able to capture and evaluate the impact that online participation has on the participants, the organizers and the results of online participation processes.
- Providing functionality for online participation. This group seeks to understand what functionality should be provided and how it should be provided in order to enable “meaningful” online participation.

### 3 Multidisciplinary research

A closer look at the group working on functionality can serve as an example of how multidisciplinary research is organized in the PhD program. One key functionality of online participation is the exchange of information and arguments amongst the participants. Existing approaches to support this exchange are forums [8], pro/contra lists [9] and tools for large scale deliberation [10]. Unfortunately, all of these approaches have significant drawbacks when used for online participation with a large and very heterogeneous audience. Essentially, either they do not scale well or they require training and a high level of cognitive skills to be used properly.

This led us to reconsider how the exchange of information and arguments should be realized at a very fundamental level. The starting point was provided by researchers in the area of philosophy. Their theory on argumentation describes arguments as a structure with two elements – a premise and a conclusion. Furthermore, arguments may be connected by relations: each can support or attack other arguments. In public participation, however, the exchange of information consists of more than just rational exchange. It also includes emotions, narrations, and signaling of ways to reach a compromise. It requires work in the area of Communication Studies to take these factors into account and integrate them in a common model.

From a computer science perspective, the resulting model is a graph with very specific properties. Given such a graph, a researcher in the area of theoretical computer science might be able to derive information on the state of the discussion: Are there arguments that dominate the discussion? Is it likely that continuing the discussion might change its outcome significantly? What are the most promising positions for a compromise?

How does all this help with supporting the exchange of arguments and information in a real-world system for online participation? We now know that participating in a discussion is – at the most fundamental level – navigating a graph and adding nodes and edges. The key question then is: how do we guide a participant along the graph in response to her actions? In practical computer science this is known as a recommender system. Systems like this are used, for example, to provide users with product recommendations in online shops. Obviously, the specifics of recommending what argument to investigate next might be different from recommending what product to look at next. But the underlying fundamental principle is related.

In contrast to existing recommender systems the exchange of arguments and information during online participation requires a high degree of involvement. Thus we need to understand how to motivate participants to spend a significant amount of time and intellectual resources on taking part in the process. Is it possible to nudge participants in providing valuable information and arguments with appropriate interaction and feedback mechanisms? This is for example the domain of sociology.

This shows that, in order to understand all relevant aspects of exchanging arguments and information in online participation processes and in order to build systems that support this exchange in an appropriate fashion, it is necessary that scientists from the areas of philosophy, communication science, theoretical computer science, practical computer science and sociology work together.

### 4 Conclusion

The thirteen students of the PhD program have started their work in late 2014. By now they have identified and specified the topics of their theses in close cooperation with advisors, practitioners and other PhD students. First papers have already been published, while the main part of the research will be conducted in the next two and a half years. During that time the members of the PhD program will also create a common wiki that includes a synopsis of related work and their own contributions. This wiki will contain information in a way that makes it usable for scientists, practitioners and the interested public. Further information on the PhD program can be found at [www.fortschrittskolleg.de](http://www.fortschrittskolleg.de).

**Funding:** Ministerium für Innovation, Wissenschaft und Forschung des Landes Nordrhein-Westfalen.

## References

1. S. Bowler and T. Donovan, “Democracy, Institutions and Attitudes about Citizen Influence on Government”, *Br. J. Polit. Sci.*, vol. 32, no. 02, pp. 371–390, Mar. 2002.
2. P. Esaiasson, M. Gilljam, and M. Persson, “Which decision-making arrangements generate the strongest legitimacy beliefs? Evidence from a randomised field experiment”, *Eur. J. Polit. Res.*, vol. 51, no. 6, pp. 785–808, 2012.
3. T. Dietz and P. Stern, *Public participation in environmental assessment and decision making*, National Research Council, 2008.
4. J. Newig, N. Jager, and E. Challies, “Führt Bürgerbeteiligung in umweltpolitischen Entscheidungsprozessen zu mehr Effektivität und Legitimität?”, *Zeitschrift für Polit.*, vol. 22, no. 4, pp. 527–564, 2012.
5. S. Gonçalves, “The effects of participatory budgeting on municipal expenditures and infant mortality in Brazil”, *World Dev.*, vol. 53, pp. 94–110, Jan. 2014.
6. E. Ostrom, *Governing the Commons. The Evolution of Institutions for Collective Action*, vol.: pbk. Cambridge: Cambridge University Press, 1990.
7. E. Ostrom, “Collective action and the evolution of social norms”, *J. Econ. Perspect.*, vol. 14, no. 3, pp. 137–158, 2000.
8. PhpBB, “The PHP Bulletin Board”, 2015. [Online]. Available: <https://www.phpbb.com/>. [Accessed: 07-Aug-2015].
9. T. Kriplean, J. Morgan, D. Freelon, A. Borning, and L. Bennett, “Supporting reflective public thought with considerit”, *Proc. ACM 2012 Conf. Comput. Support. Coop. Work – CSCW ’12*, p. 265, 2012.
10. M. Klein, “Enabling large-scale deliberation using attention-mediation metrics”, *Comput. Support. Coop. Work*, vol. 21, no. 4–5, pp. 449–473, 2012.

## Bionotes



### Dr. Tobias Escher

Heinrich-Heine-Universität Düsseldorf,  
Institut für Informatik, D-40225 Düsseldorf  
[tobias.escher@uni-duesseldorf.de](mailto:tobias.escher@uni-duesseldorf.de)

Tobias Escher is a social scientist with a DPhil in Information, Communication and the Social Sciences from the Oxford Internet Institute at the University of Oxford. Having previously worked and studied in Oxford, London, Leicester and Berlin, he joined Heinrich-Heine-University Düsseldorf in 2011 as a postdoc research fellow where he currently coordinates the PhD program “Fortschrittskolleg Online Participation”. His research interests are the design and evaluation of participatory online processes.



### Lars Heilsberger M.A.

Heinrich-Heine-Universität Düsseldorf,  
Institut für Informatik, D-40225 Düsseldorf  
[heilsberger@phil.uni-duesseldorf.de](mailto:heilsberger@phil.uni-duesseldorf.de)

Lars Heilsberger studied Sociology, Political Science and Communication Studies at the Heinrich-Heine University Düsseldorf. As the former coordinator of the interdisciplinary PhD program “Linkage in Democracy” at the Institute for social sciences he joined the coordination of the PhD program “Fortschrittskolleg Online Participation” in 2014. His main research interests are sociological concepts of political stability, sociology of emotions and theories of social exchange.



### Prof. Dr. Martin Mauve

Heinrich-Heine-Universität Düsseldorf,  
Institut für Informatik, D-40225 Düsseldorf  
[mauve@cs.uni-duesseldorf.de](mailto:mauve@cs.uni-duesseldorf.de)

Martin Mauve is heading the chair for Computer Networks and Communication Systems at the Heinrich-Heine University Düsseldorf. His main research interest is designing and building infrastructure for online democracies. The specific focus of his current work is on enabling large and heterogeneous groups of users to discuss complex topics online and to reach a common agreement on what actions should be taken. Professor Mauve is leading the PhD program “Fortschrittskolleg Online Participation” which is funded by the state North Rhine-Westphalia through its “Fortschrittskolleg” funding scheme.