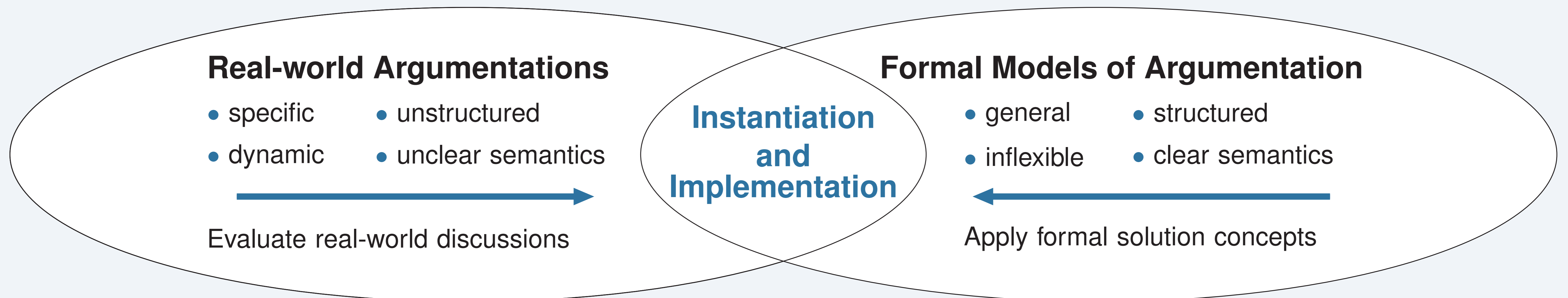


Formal Models for Argumentation in Online Participation Processes

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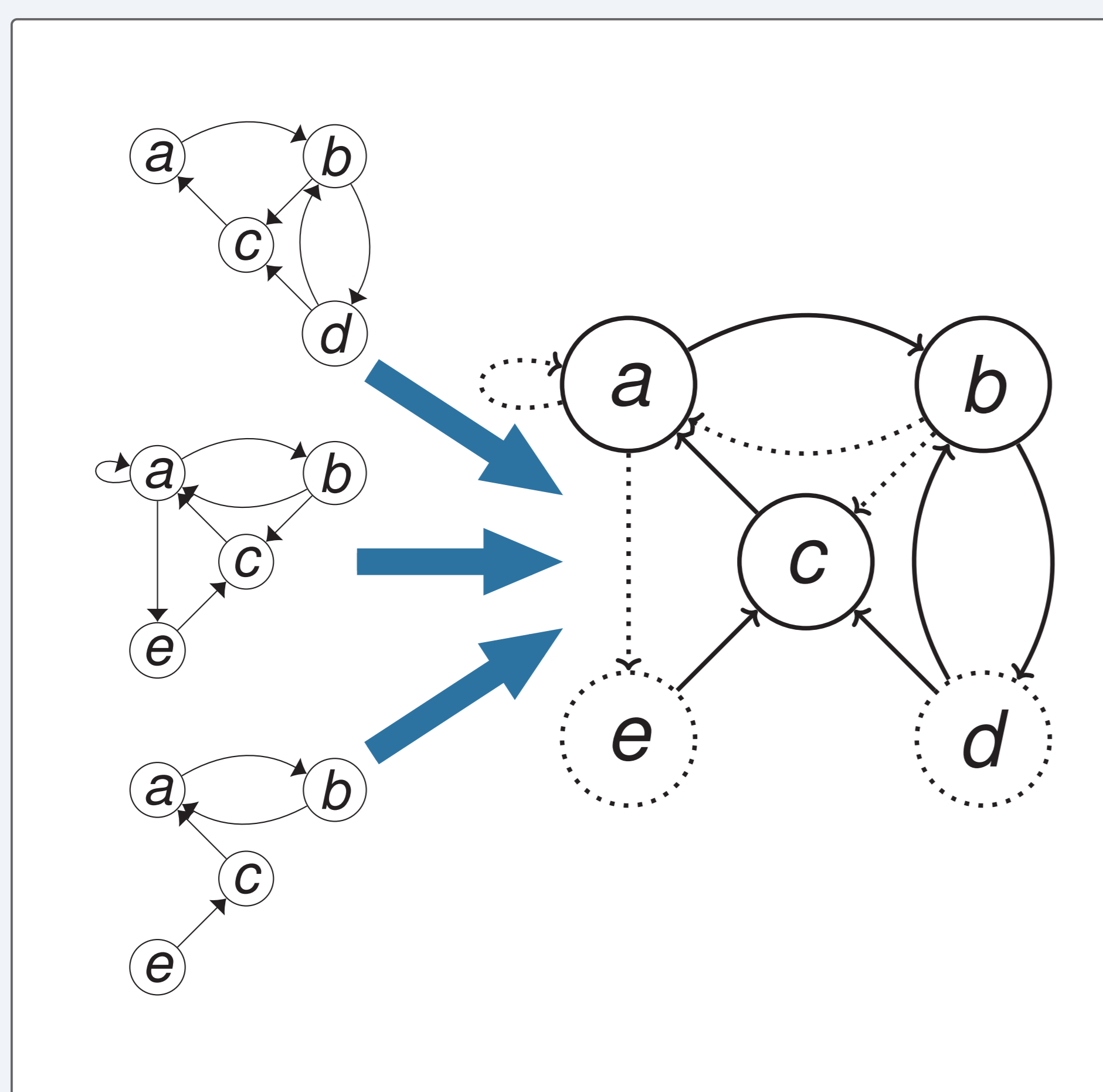
Motivation and central research topic



Central Question:

How can existing formal models of argument be adapted and implemented in order to represent and evaluate argumentations in online Participation processes?

Approach and current status

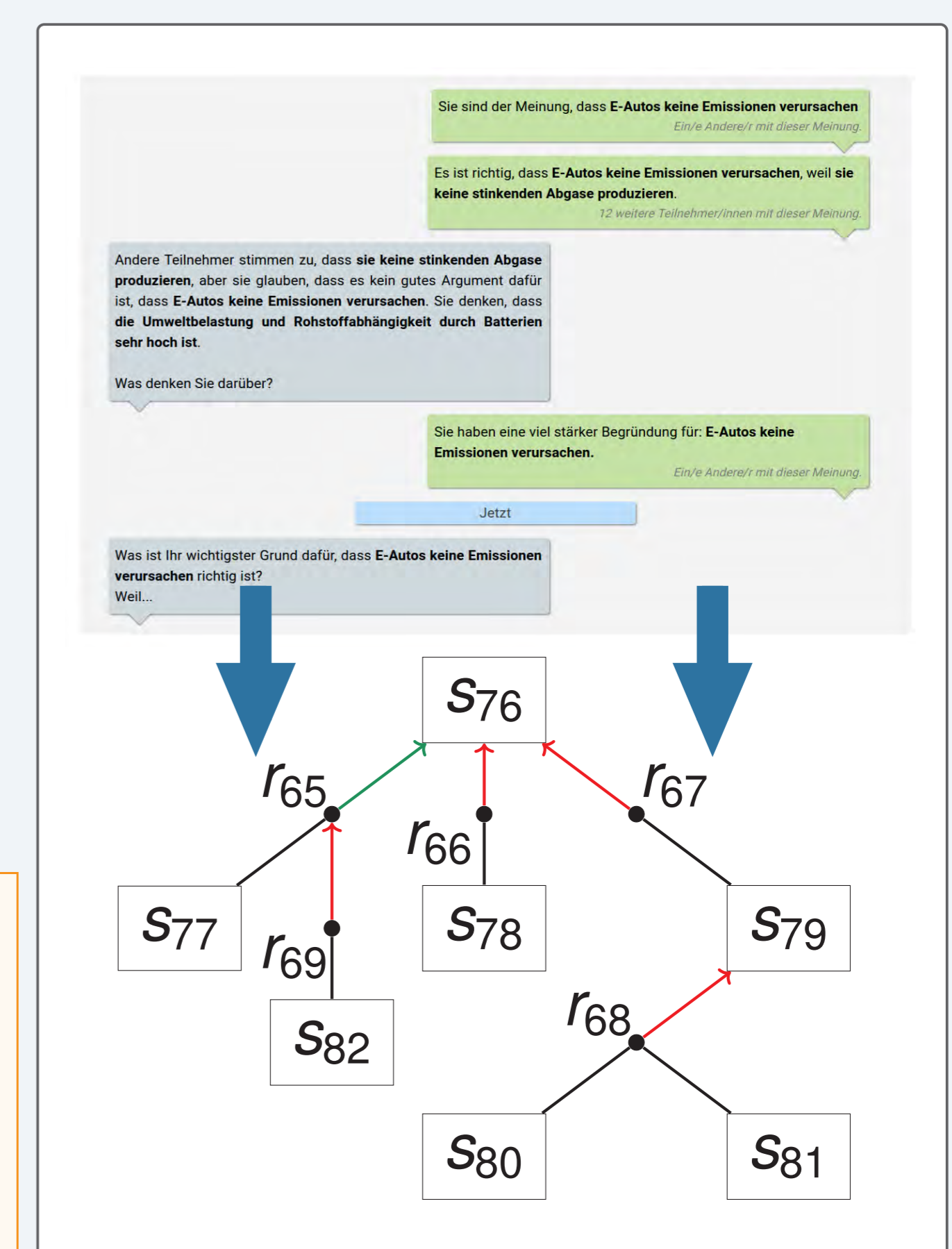


We **extended** the established model of Argumentation Frameworks to **express uncertainty** about the discussion:

- Arguments and/or attacks may not be known to exist
- Application: **merging** different views on one discussion
- Results: full **complexity analysis** of verification problem [1,2,4]

DABASCO [3] – software tool that **implements formal argumentation** for D-BAS:

- Export to **AF, ADF** and **ASPIC⁺**
- Calculate **degrees of justification** and **reason relations**



Publications:

- [1] D. Baumeister, D. Neugebauer and J. Rothe. *Verification in Attack-Incomplete Argumentation Frameworks*. In *Proceedings of the 4th International Conference on Algorithmic Decision Theory*, pp. 341–358. Springer-Verlag, September 2015.
- [2] D. Baumeister, D. Neugebauer, H. Schadrack and J. Rothe. *Verification in Incomplete Argumentation Frameworks*. *6th International Workshop on Computational Social Choice*, June 2016.
- [3] D. Neugebauer. *Generating Defeasible Knowledge Bases from Real-World Argumentations using D-BAS*. *1st Workshop on Advances In Argumentation In Artificial Intelligence*, November 2017.
- [4] D. Baumeister, D. Neugebauer, H. Schadrack and J. Rothe. *Complexity of Verification in Incomplete Argumentation Frameworks*. *32nd AAAI Conference on Artificial Intelligence (accepted for presentation)*, February 2018.

Inter- and transdisciplinarity

Modelling:

Theoretical models were discussed and developed together with researchers from Philosophy

Aims and Application:

Close co-operation with researchers from practical computer science to implement our models for their online discussion platform

Supervision team

- Prof. Dr. Jörg Rothe (Computer Science, HHU)
- Jun.-Prof. Dr. Dorothea Baumeister (Computer Science, HHU)
- Prof. Dr. Gregor Betz (Philosophy, KIT)
- Rouven Brües (Liquid Democracy e.V.)