

Formal Analysis of Meeting Protocols*

(extended abstract)

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Meetings are important tools in most organizations to structure decision processes and to disseminate information throughout the organization. Typically the members of a group come together on a regular basis to inform each other of new developments, to discuss problems, and propose solutions. While many organizations depend on face-to-face meetings, it is notoriously difficult to hold a focused and effective meeting. There is an abundant literature on guidelines on how to carry a successful meeting; e.g., [1, 2]. These guidelines are rather informal, which makes it hard to put into practice and hard to evaluate.

This paper formalizes a domain-independent meeting protocol that can be used in various meetings. A generic role interaction protocol for meetings was formalized. Moreover, desirable overall properties for a meeting were formally specified. The formalization captures many intuitive ideas that are also mentioned in meeting guidelines, hence is compatible with most meeting guidelines. The meeting protocol is studied for an empirical trace and a simulated trace. The empirical trace is based on observations of a real meeting in the Artificial Intelligence Department of the Vrije Universiteit Amsterdam. The observer wrote down the conversations of the meeting in an informal language. Later these informal texts were formalized to analyze and reason about the meeting. The simulated trace is generated in a simulation. The two traces are compared in terms of desirable properties. Based on differences revealed in this comparison, a more human-like refined protocol was

* Full paper in: Davidsson, P., Gasser, L., Logan, B., and Takadama, K. (eds.), *Proceedings of the First Joint Workshop on Multi-Agent and Multi-Agent-Based Simulation (MAMABS 2004)*, 2004, pp. 91-100. To be published by Springer Verlag.

specified and used as a basis for another simulation, closely resembling the empirical data.

The simulations of interest are generated using a logic-based simulation environment. Using this environment, executable temporal rules are specified so that the simulation environment can generate a trace. Traces are analyzed with an automated logic-based checker. This checker takes as input a property of interest about the trace and logically validates the property by the trace. If the property holds in the trace, the checker outputs success otherwise it outputs fail.

As shown in the analysis, a real meeting may deviate from a meeting correctly following the generic protocol in the following ways:

- sometimes, by exception, protocol properties are violated by one of the members
- strategies are employed to handle these exceptions and get the meeting on the right track again

An interesting question is whether the generic meeting protocol can be refined by including such exception handling strategies to provide a more robust protocol. To experiment with such a refined protocol, a second simulation was developed, where a number of the rules for the simulation were adapted to reconstruct the empirical trace as precisely as possible. The generated trace indeed closely resembles the real meeting.

The work reported in the current paper contributes some first steps in formal analysis of meetings. It is shown how meeting simulations following widely accepted guidelines in a rigid manner, do not resemble human meetings, which exploit more sophisticated strategies. It is pointed out how this discrepancy can be overcome by allowing by exception violations of the protocol, and by including exception handling strategies within the protocol. Future research will address this theme further.

References

1. James L. Creighton. Using Group Process Techniques to Improve Meeting Effectiveness. URL: <http://www.effectivemeetings.com/teams/teamwork/creighton.asp>
2. Kevin Wolf. The Makings of a Good Meeting. October, 2002. URL: <http://members.dcn.org/kjwolf>