MoRoCo 2013: Models and their Role in Collaboration

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Abstract. Using visual representations of work or business processes can be considered a common practice in modern organizations. These models serve a large variety of different purposes such as documentation of current practices, or informing and planning change or software development. Given the nature of work and businesses they reflect it is reasonable to develop and use them collaboratively. There are, however, also many downsides to collaborative model usage and development in current practice. Among others, models are often not fully understood and are thus not used by people who work in the processes the models represent, resulting in limited impact of process redesign on everyday work. Furthermore, only a minority of people within organizations actually use models, even though they have been proven to be very useful especially for collaborative work. Given the increasing popularity of models in organizations, understanding and defining their role in collaboration is of vital interest for the CSCW community and therefore this workshop aims at bringing together researchers and practitioners and forming a community for research in this area.

Introduction

The usage of visual representations of static parts of an organization (e.g. diagrams depicting hierarchies in the organization's structure or a company's competences), dynamic aspects (e.g. work and business processes) or results of creative problem-solving sessions (e.g. brainstorming results) can be considered a common practice in modern organizations. These visual representations include process models, conceptual models and mind maps. They are used for multiple tasks such as software development, design and engineering, process optimization and reengineering as well as marketing and strategic development. Obviously, these models are hardly ever artifacts that are used and developed by single users for their own personal needs. They are rather developed for larger target groups throughout an organization to support them in sense making and creating a shared understanding about cooperative work and its interfaces. Consequently, they are both used by many people and developed collaboratively. However, the number of people that are affected by these representations is usually larger than the number of people who participate actively in their development. The need to create communicable and comprehensible models is thus evident.

Alongside the increasing usage and popularity of visual representations in organizations, there also is growing interest in their usage and development in the CSCW[1] community. This comprises not only the usage and development by modeling experts, but explicitly takes users into account that are no experts in modeling, thus including factors that might motivate or hinder them to use models and actively participate in their development. The emerging importance of this new field of CSCW research is reflected by workshops (e.g. "TAProViz" at BPM 2012 and "CollabViz" at ECSCW 2011), tracks at international conferences (e.g. "Collaborative Modeling" at HICSS 2009, 2010, 2011 and 2012), papers at various CSCW related conferences (e.g. Baacke, Rohner, Winter & Fitterer, 2009; Brosch, Seidl, Wieland, Wimmer & Langer, 2009; Herrmann & Nolte, 2010; Klebl, Hackel & Lukosch, 2009; Nolte & Prilla, 2012), journal contributions (Heer, Bostock & Ogievetsky, 2010; Renger, Kolfschoten & De Vreede, 2008; Rittgen, 2010; Yuille & Macdonald, 2010) and journal special issues (Prilla, Nolte, Herrmann, Kolfschoten, & Lukosch, 2013; Rittgen, 2009, 2012). Additionally, there are various parallel approaches in related research communities such as Group Decision Support, Business Process Management and Group Support Systems.

However, despite the fact that modeling is a popular approach in practice and thus, many models exist in organizations, they are only used by a minority of the people. This consequently leads to them only playing a minor role in everyday work of the employees of an organization. This is quite surprising considering the fact that models have proven to be very useful for cooperative work, especially

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[1] Computer-Supported Cooperative Work

when planning it. Furthermore, the number of people creating models stands in stark contrast to the number of people that are actually affected by planning based on these models. Even if they are created collaboratively by process stakeholders, they often have little impact on the people that are actually working in these processes (cf. Prilla, 2010) and thus do not transcend into work practice. The reasons for this are manifold. First, there are few insights on how to spread models and sustain their usage in organizations thus coupling them with activities and artifacts of everyday work. This explicitly includes a lack of knowledge about factors that might motivate or hinder model usage and development. Furthermore, up to now, little is known about how people interact with models that are no modeling experts. By interaction of these non-expert users, we not only refer to model creation, but also their usage in people's daily work for e.g. discussion, knowledge elicitation and creating a common understanding. Non-expert interaction with them however proves to be an issue, as people that are involved in processes usually are no modeling experts. Interaction in this context includes enabling people to use modeling languages and thus to directly contribute to model development, as well as providing other means such as textual or visual annotations to enable indirect contributions. This leads to the question of how models can be coupled with other artifacts of everyday work, which might prove to be beneficial for their usage and ultimately increase their impact.

Besides the usage of models by non-experts, there is an additional research gap in the collaborative construction of visual representations. Usually, the creation and modification of models is restricted to collocated workshops and similar modes of interaction and collaboration, where experts are required to facilitate and support the modeling process. Despite their applicability and feasibility in many situations, these workshops simply do not fit the need to rapidly adjust processes to changing conditions inside and outside an organization. Given the distributed nature of many organizations, these workshops also do not sufficiently reflect the need to include expertise distributed across different locations. Therefore, finding ways to enable dislocated users to contribute actively to model creation and maintenance in a collaborative modeling process is necessary.

Given the increasing usage of visual representations in organizations, their collaborative and distributed use, creation and sustainment is of vital interest for the CSCW community, which has a long tradition of researching the usage of common artifacts, the influence on collaboration by artifacts and their collaborative creation. This workshop therefore aims at being a starting point in forming a community for research in this area.

It is a follow up to a workshop on "'Collaborative usage and development of models and visualization" which was held at ECSCW 2011 in Aarhus. Proceedings of which can be found online at http://ftp.informatik.rwth-aachen.de/Publications/CEUR-WS/Vol-777/. Selected papers from the workshop

will also be published in a special issue of the International Journal for eCollaboration (Prilla et al., 2013).

Scope and aim of MoRoCo

The goal of MoRoCo is to bring together researchers, lecturers and practitioners from different fields, who are interested in the collaborative usage and development and maintenance of structured visual representations such as process models, conceptual models or mind maps. This includes experiences from empirical case studies, teaching and the introduction of models and modeling into organizations. The workshop aims at building a large picture of research on the role that models play in collaborative work in order to set up a common research agenda. The topics of the workshop thus include but are not restricted to:

- The process of cooperative modeling: design cycles, model negotiation, view integration, roles of participants in modeling, team organization, etc.
- Sustaining model usage and maintenance in organizations
- Motivating involvement and active usage of models
- Involving non-experts in model development and usage
- Increasing the range of involvement: from core stakeholders to all stakeholders
- Coupling models with activities and entities of work
- Roles of models for collaboration e.g. guides / maps
- Models as instruments for consensus building
- The role of models in spanning inter or intra organizational boundaries
- Integrating visual modeling and model dialogues in natural language
- "Meta"-modeling: structuring the dialogue around models
- Access to models: Creating a model friendly cooperation environment
- Alignment of different understandings about collaborative work during modeling
- Empirical evidence for positive effects of modeling and model use

The aim of MoRoCo is not to discuss the advantages and disadvantages of different modeling notations. It rather puts strong emphasis in the role of models in collaborative work including their collaborative development, collaborative interaction with them as well as intertwining them with activities and artifacts of everyday work.

Accepted papers

Eight papers have been accepted for the workshop after a thorough review by an international program committee. These contributions reflect the broad scope of the workshop in contributing to a variety of aspects in the area of how models affect and are affected by collaboration.

In their paper *Cooperation on Models and Models for Cooperation* Gross and Beckmann take a theoretically based stance on collaborative model and model usage by applying Goffman's framework of social interaction to these tasks. From this perspective, they derive support needs for collaborative model usage and development.

Two papers approach the interplay of modeling and creativity and outline how creative processes can be supported methodologically and technologically. In his paper *Facilitating and Prompting of collaborative Reflection Process Models* Thomas Herrmann and Kai-Uwe Loser report on an approach to support socially distributed reflection of diagrammatic process models. They identify two fundamental concepts for reflection support: identification of model parts that can be reflected on in disjoint social groups and computer-supported prompting to substitute the role of a facilitator when reflecting in multiple groups. The paper offers examples of how these concepts could be implemented using the SeeMe modeling language and the socio-technical walkthrough. Bartelt, Vogel and Warnecke also aim at supporting the interplay between creativity and modeling within their work on *Collaborative Creativity: From Hand Drawn Sketches to Formal Domain Specific Models and Back Again*. They discuss Scribbler, a system for collaborative creation of hand-drawn models and their transformation to formal domain-specific models (e.g. based on EMF) using sketch recognition. Their toolset provides support for adaptively recognizing freehand drawings of models created by multiple users and transforming them to formal EMF-models and back again for further processing. The toolset is designed for collaborative operation and provides a set of features that support the traceability of the development history of models.

Using models to support collaboration in organizational environment almost always involves laymen modelers, i.e. people who are experts in their area of work but have no experiences in creating models or working with them. The challenge of involving these people in modeling processes is discussed in three papers presented at the workshop. In his paper *Towards Role-distributed Collaborative Business Process Elicitation*, Stefan Oppl describes an approach in letting different roles (stakeholders) in a modeling project model the processes separated from each other and how to get resulting models into a commonly agreed on model. Hoppenbrouwers, Thijssen and Vogels discuss in *Operationalizing Dialogue Games for Collaborative Modeling*, how dialogue games can be used for collaborative modeling. They present a methodology and a prototypical tool that support the process of structuring and guiding conversations for modeling. The paper focusses on the procedural guidelines necessary to implement a dialogue game for modeling and gives a good impression of how it could be facilitated. The description of the support system gives an overview of how facilitation could be aided by software. In *Beyond Collaborative Model Usage and Development – A Model Lifecycle Approach for Lay User Modeling*,

Nolte and Prilla discuss the foundations of collaborative modeling with laymen. They propose that we need concepts to engage users without modeling capabilities into self-directed, user-managed processes of using and working on models. They also presents a corresponding model lifecycle as well as suitable interaction and participation modes, using examples from their work on integrating lay-users into model usage and development.

Empirical studies on the effects of applying collaborative modeling in practical settings on the modeling process and outcome are rarely available so far. One paper that will be presented at the workshop has approached this topic. In their paper *The Added Value of Collaborative Modeling for Legal Business Rule Management* van Stokkum, Heiner, Hoppenbrouwers and Mulder describe a case where collaborative modeling is used within the area of legal modeling. Particular emphasis lies on combining business rule management with collaborative modeling in order to create a broader acceptance for new rules that are being applied. The paper thus provides an interesting and novel environment for collaborative modeling techniques.

Poppe, Recker, Johnson and Brown argue that distributed collaborative modeling requires support for visual cues used in co-located collaboration. In *Using natural user-interfaces for collaborative process modelling in virtual environments* they present their approach based on a 3D virtual world to facilitate remote collaborative process model creation and validation. However, the added complexity of having to navigate a virtual environment and using an avatar for communication makes it difficult for novice users. An improved version of a 3D modeling tool is supposed to address these issues by providing natural user interfaces for non-verbal communication, navigation and model manipulation.

Program committee

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