

From Dialogue Games to m-ThinkLets: Overview and Synthesis of a Collaborative Modeling Approach

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ABSTRACT

The authors present an integrated overview and extension of a conversational approach to support analysis and design of goal-driven and focused interaction between stakeholders and facilitators, to be specifically applied in collaborative modeling. Complementary to ‘collaborative diagram drawing’ approaches, the authors provide more focused and accessible, wizard-like or even game-like conceptualization support. This work is rooted in theory as well as (study of) industrial practice. Ideas developed in over half a decade, as well as some new concepts, are coherently presented, centering on the notion of ‘Dialogue Games’. The approach is brought under the umbrella of the ‘ThinkLet’ approach from Collaboration Engineering, and is positioned as a specialization thereof, aiming to fit the specific needs and features of collaborative modeling.

Keywords: Collaboration Engineering, Collaborative Modeling, Dialogue Games, Enterprise Modeling, Information Systems Modeling

INTRODUCTION

In many uses of collaborative modeling, e.g. in business engineering (den Hengst & de Vreede, 2004), knowledge engineering (Hoppenbrouwers, Schotten, & Lucas, 2010), problem structuring (Vennix, 1996), and enterprise engineering (Barjis, 2009), collaborative modeling with stakeholders untrained in modeling is a required and common practice, but also a continuous challenge, sometimes referred to as the ‘knowledge acquisition bottleneck’ (Hoppenbrouwers et al., 2010).

In the field of collaborative modeling (Renger, Kolfshoten, & De Vreede, 2008), most work focuses on the collaborative creation and validation of model diagrams, using some standard modeling language, for example UML activity diagrams (Rittgen, 2007). A different approach, which this paper is an exponent of, concerns the isolation of more focused, ‘smaller’ conceptualizations that help gather and communicate highly to-the-point, well structured information that can be the basis for *derivation* (manually or possibly automatically) of more

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formal, ‘technical’ models (Hoppenbrouwers, 2008; Hoppenbrouwers et al., 2010).

Once we move away from the ‘collaborative diagram drawing’ approach and into more limited and focused conceptualization (aiming to get closer to the stakeholders’ familiar concepts and requiring less skill in dealing with abstract syntax and complex visualizations and verbalizations), we can also move towards more closely guided, wizard-like or even game-like conceptualization support (Hoppenbrouwers, Weigand, & Rouwette, 2009). We thus, in the long run, work towards the creation of a coherent library of well focused and often interrelated ‘modeling games’: rule-based, goal-driven interactive procedures that do not involve more than a few meta-concepts each and should be relatively easy to ‘play’ for stakeholders untrained in formal modeling (Wilmont, Brinkemper, van de Weerd, & Hoppenbrouwers, 2010).

Such ‘conceptualization games’ bear considerable resemblance to the ThinkLet concept central in Collaboration Engineering (de Vreede & Briggs, 2005; Kolfshoten, Briggs, de Vreede, Jacobs, & Appelman, 2006), and can in fact be seen as a specialized extension of that approach. However, as will be explained, some additional properties are to be added to ThinkLets for them to (also) become Dialogue Games (DGs). The DG approach originated in the field of conceptual modeling, whereas CE concerns collaborative conceptualization more in general yet placed in the specific context of CSCW. We hope to eventually link not only the approaches, but ultimately also the two fields.

This paper is partly an integrated overview of previous, fragmented work, but also introduces into the collaborative modeling literature some new concepts, most prominently ‘m-ThinkLet’ and ‘Communication Situation’. It is a direct result of intensive field study of industrial practices (Hoppenbrouwers et al., 2012) and a prelude to recently initiated systematic application of the approach in business engineering industry.

We first present relevant background literature, covering the conversational nature of the collaborative modeling process and the

Dialogue Game approach to the description, analysis and guidance of such conversations. Next, we briefly discuss Collaboration Engineering as a generic framework for aiding facilitation of collaborative conceptualization, as well as the Focused Conceptualization concept as a way of breaking up larger conceptualization or modeling efforts into smaller, more manageable chunks or ‘conceptualization modes’. We also introduce the ‘Communication Situation’ concept, which helps analyze and organize the broader communicative context of conceptualization efforts. Next we discuss how the Collaboration Engineering approach (with ThinkLets as its main concept) can be extended into a Dialogue Game approach more specifically aimed to support collaborative *modeling* (introducing the specialized m-ThinkLet concept). We provide an illustrative example from industrial knowledge engineering practice. We finish with conclusions and suggestions for further research.

THEORETICAL BACKGROUND

Theory underlying the approach presented in this paper is rooted in a communicative perspective on collaborative modeling, and on collaborative *conceptual* modeling in particular. We present a brief, integrated overview of work spanning over half a decade, providing a basis for operationalization of the approach, which will be discussed in later sections.

Modeling as a Conversation: a Retrospect

The act of Collaborative Modeling (CM), in particular conceptual modeling in context of the development of information systems and knowledge-based systems, inherently involves people talking to each other, i.e. conversation. It not only draws upon knowledge that participants have of the ‘Universe of Discourse’ reflecting the domain to be analyzed, described, or supported (Falkenberg et al., 1996; Hesse & Verrijn-Stuart, 2000), but also constitutes a conversation *of its own*: the conversational ‘moves’

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