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Understanding the Behavior of Workshop Facilitators in Systems Analysis and Design Projects: Developing Theory from Process Modeling Projects

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Abstract:

Organizational and technological systems analysis and design practices such as process modeling have received much attention in recent years. However, while knowledge about related artifacts such as models, tools, or grammars has substantially matured, little is known about the actual tasks and interaction activities that are conducted as part of analysis and design acts. In particular, key role of the facilitator has not been researched extensively to date. In this paper, we propose a new conceptual framework that can be used to examine facilitation behaviors in process modeling projects. The framework distinguishes four behavioral styles in facilitation (the driving engineer, the driving artist, the catalyzing engineer, and the catalyzing artist) that a facilitator can adopt. To distinguish between the four styles, we provide a set of ten behavioral anchors that underpin facilitation behaviors. We also report on a preliminary empirical exploration of our framework through interviews with experienced analysts in six modeling cases. Our research provides a conceptual foundation for an emerging theory for describing and explaining different behaviors associated with process modeling facilitation, provides first preliminary empirical results about facilitation in modeling projects, and provides a fertile basis for examining facilitation in other conceptual modeling activities.

Keywords: Conceptual Modeling, Facilitation, Facilitator, Process Modeling Facilitation, Systems Analysis And Design.

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I. INTRODUCTION

Facilitation describes interventions that provide structured communication and decision making processes to promote constructive behaviors in interactional collaborative settings (e.g., Anson, Bostrom, & Wynne, 1995). In the realm of information systems, facilitation plays an important role in many collaborative activities, such as eliciting systems requirements, designing an information system, or investigating decision making processes in groups that the system in question should support. In particular, systems analysis and design projects, where multiple stakeholders model, analyze, and re-design business processes involving existing or new information systems, is an important area where facilitation support is needed (Alter & Browne, 2005). Our work concerns this important practice.

We specifically explore facilitation in the systems analysis and design practice of process modeling. Process modeling concerns the design of semi-formal models (directed graphs) of inter- or intra-organizational business processes for the purposes of business process management (BPM), process documentation, organizational re-design, or workflow automation (Rittgen, 2009). Process modeling's key objective is to reach a common understanding of how a business process works currently or in the future (Recker, Rosemann, & Indulska, 2009) in order to analyze or design information systems that can support these processes. Process modeling attains this goal by logically ordering business activities into models that describe organizational activities. Well-defined standardized modeling notations and corresponding tools support this practice.

We selected this specific focus for our study for four main reasons.

1. Process modeling has emerged as one of the most popular and important forms of conceptual modeling in practice (Davies, Green, Rosemann, Indulska, & Gallo, 2006; Fettke, 2009) and is widely practiced as part of organizational and information systems analysis and design (Kosalge & Chatterjee, 2011).

2. Process modeling, unlike other application areas of conceptual modeling (Wand & Weber, 2002), is specifically characterized by a multitude of application areas that range from process documentation, requirements specification, software customization, and ERP implementation to organizational re-design and knowledge management (Recker, Indulska, & Rosemann, 2010). The wide range of purposes for which process modeling is conducted inevitably means that the objectives, and thus the conduct, of process modeling need to vary to maintain close alignment to the application area. As such, facilitation is a prominent mechanism to manage the use of process modeling fit for purpose.

3. The growing relevance of process modeling to organizational and technological systems analysis and design and to IS education has been mirrored by a growing body of IS research that has examined and further developed process modeling as a field. Consequently, a comprehensive set of artifacts such as modeling grammars, methods, guidelines, and tools has been developed in academia and by a fast-growing ecosystem of vendors and users. However, relatively little is known about the actual adoption and ongoing use of process modeling in practice—that is, about the process of process modeling (Claes et al., 2012; Recker, Mendling, & Hahn, 2013; Koschmider & Reijers, 2014). One key activity while gathering process-related information is the act of facilitating workshops with domain experts. During these workshops, the so-called process modeling facilitator extracts relevant facts and requirements from the audience and converts these into models by means of a process modeling grammar (e.g., BPMN, EPC). As such, the facilitator plays a critical role as a boundary spanner between the tacit process know-how of the domain experts and its materialization in business process models, and also between the overall objective of the modeling exercise and the goals of the project. Still, the importance of this role to actual process modeling practice has not yet been balanced by a detailed examination. How to act as a process modeling facilitator successfully still needs to be addressed.

4. Finally, we develop a novel model of facilitation behaviors in systems analysis and design settings. As such, to facilitate the theory-building process, we opted to develop and explore our conceptualization in one specific domain such that we can develop substantive theory (Gregor, 2006, p. 616). Substantive theory is developed for a very specific area of inquiry, as opposed to formal theory that is developed for a broad conceptual area. In developing substantive theory, we have deliberately compromised some aspects of external validity of our model in order to be able to develop and explore our model in a specific context,

without being confounded by contextual factors (such as type of modeling artifact or the different types of stakeholders involved in other modeling projects). In turn, our substantive theory will have high internal validity.

We develop a more differentiated understanding of facilitation behaviors relevant to information development projects. While we will develop our view of facilitation in the substantive context of process modeling, we also explore this emergent understanding of facilitators' behavior in general terms, such that the model also applies in the broader context of information systems and organizational analysis and design practices. In doing so, we investigate the following research questions:

1. What are different behavioral styles that can be used to describe facilitation behaviors in process modeling workshops?

2. Which behavioral anchors characterize different behavioral styles?

3. What are the implications for other modeling practices in information systems analysis and design?

This paper proceeds as follows. In Section 2, we overview the related body of knowledge to create the basis for a framework for classifying styles of behaviors for process modeling facilitators. From this framework, in Section 3, we derive a set of hypotheses to structure the preliminary empirical investigation that we report on. In Section 4, we overview the research design. In Section 5, we point out how our contribution extends the existing body of knowledge, including adjacent fields of systems analysis and design. Finally, in Sections 6, 7, and 8, we discuss our contributions, our study's limitations, and conclude the paper, respectively.

II. BACKGROUND

Framework and Boundary of Study

We begin our research by developing a theoretical framework of the key units, interrelationships between units, and a boundary in which the framework holds (Dubin, 1978). We define the theoretical framework based on our research objective and includes the following elements (see Figure 1): process modeling facilitator, business process modeling, and styles of facilitation behavior. The interrelationships in focus are the interaction during the process modeling when requests and needs are observed by the facilitator and transformed into actions with the purpose of supporting the group modeling effort in business process modeling. Thus, the unit of analysis the facilitation behavior, which includes behavioral styles with anchors that the facilitator uses to support the business process modeling task at hand.

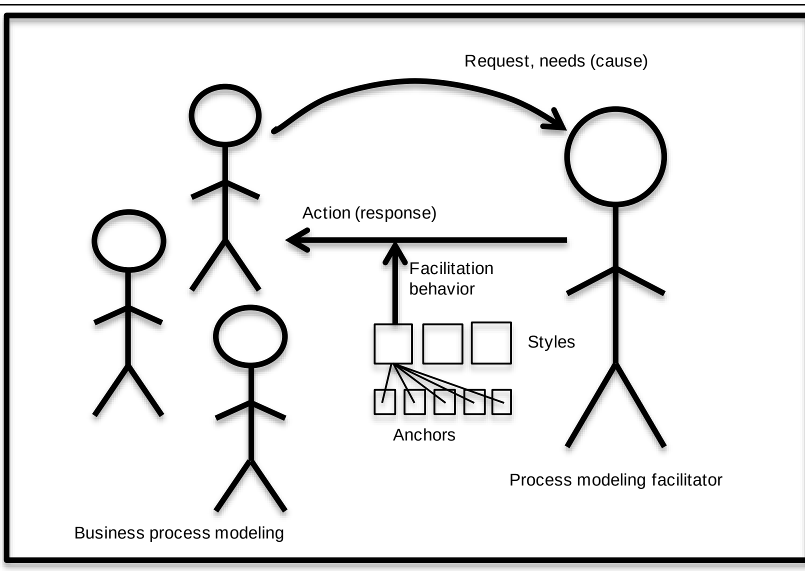

Figure 1. Theoretical Element in Our Study: Units, Interrelationships, and Boundary

Our emerging theoretical model focuses on the application area of business process modeling. However, in Section 6, we discuss the potential for analytical generalization of our model and empirical findings beyond this boundary and, thus, to other modeling contexts, such as, conceptual data modeling and object-oriented systems analysis and design.

Business Process Modeling

When seeking to (re) design organizational or technological systems, organizations often use externalized documentations of their business processes—so-called process models (Curtis, Kellner, & Over, 1992). These models capture, in some graphical and/or textual notation, at least the tasks, events, states, and business rules that constitute a business process (Recker et al., 2009). Process models are frequently used as a key tool in systems analysis and re-design decisions (Fettke, 2009), especially in the context of decisions about where, how, and why changes to processes should be enacted to warrant improved operational efficiency, cost reductions, increased compliance, or better IT-based systems. Studies have shown that process models indeed make a solid contribution in this area (Kock, Verville, Danesh-Pajou, & DeLuca, 2009), either in the form of an as-is model that captures the current state of operations or a to-be model that captures a possible future reality (e.g., Sharp & McDermott, 2009).

Process modeling as a phenomenon has been investigated from different viewpoints. Mendling, Reijers, and van der Aalst (2010), for example, present guidelines of process modeling based on their research on structural aspects of models as graphs. Bandara, Gable, and Rosemann (2005) and Eikebrokk, Iden, Olsen, and Opdahl (2011) describe factors and measures of business process modeling projects, and Rosemann (2006) discusses potential pitfalls of process modeling. Other studies have derived ontological principles to guide the development of "good" process models (Recker et al., 2010), but only recently research has emerged (e.g., Indulska, Recker, Rosemann, & Green, 2009b; Koschmider, Song, & Reijers, 2010; Claes et al., 2012; Recker et al., 2013) that draws attention not to the product (the model) but rather the process of process modeling; namely, the activities that are executed when developing a process model.

Traditionally, the process of process modeling has been described as a single-person activity. This perspective highlights the view of one person being responsible for eliciting domain knowledge, creating a conceptual model, and finally verifying the model. In academic settings, this single-person perspective is often used to train students in the competencies of both domain expertise and method expertise. In corporate reality, however, a single-person conceptualization of process modeling is hardly realistic: the view suggests that one person is undertaking all activities necessary in the process of modeling practice (namely, eliciting information, creating a model, and verifying its correctness). Yet, such method and domain expertise are typically distributed among different staff members in an organization (Khatri, Vessey, Ramesh, Clay, & Sung-Jin, 2006), which makes it necessary to involve several stakeholders in modeling. Moreover, knowledge about organizational procedures tends to be widely distributed in an organization (den Hengst, 2005), which makes it necessary to include a number of complementary domain experts in the process of modeling. Also, other stakeholders might have a strong interest in contributing to the process of modeling (e.g., for controlling or auditing purposes), such as project sponsors or other stakeholders with vested interests (Rosemann, 2006). Finally, integrating multiple stakeholders in the process of modeling is important for the validation and verification stage because a single person would be a potential source for modeling errors and subjective bias. In effect, process modeling in practice involves multiple stakeholders.

Therefore, perspectives have recently emerged that describe process modeling as a goal-driven multi-stakeholder dialogue (Hoppenbrouwers, Weigand, & Rouwette, 2009) or a negotiation process (Rittgen, 2007). In these views, the participating actors can broadly be classified into either domain experts who generate and validate statements about the domain, or process analysts who create and verify formal models. Rittgen (2007) further argues that information is created through a social and communicative process of modeling, and roles in the group develop parenthetically. Each participant can contribute to all phases of the process, although the level of participation may vary with the participant's organizational role and level of knowledge.

The perspective of process modeling as a goal-driven multi-stakeholder dialogue is certainly more conducive to actual process modeling practice. Process modeling is, in virtually all cases, performed by means of workshop sessions, which are employed as a way to foster collaboration, stimulate participation, and build consensus between different stakeholders (Sharp & McDermott, 2009). Therefore, we view process modeling as a collaborative process that includes dialogue and negotiation as part of the different stages. This view emphasizes the workshop setting in which process modeling is conducted and the key role of facilitation behavior that is adopted and used to guide these sessions. There is support for this view. A recent study showed that collaborative process modeling not only enables the joint production and validation of a "good" model, but also leads to knowledge development and learning among participants (Recker et al., 2013).

Facilitation in Process Modeling

Facilitation has primarily been researched in group support systems (GSS) (e.g., Bostrom, Anson, & Clawson, 1993; Anson et al., 1995; Wheeler & Valacich, 1996). The relevance of facilitation to organizational and systems analysis, however, has also been highlighted in early works by Burrell and Morgan (1979) and in information systems development (Hirschheim and Klein, 1989) and business analysis (Avison & Wood-Harper, 1986). Notably, the literature covers the identification of important features of facilitation (Bostrom et al., 1993) and investigations into how GSS can support facilitators (Griffith, Fuller, & Northcraft, 1998).

The concept of facilitation has gained popularity since the late 1960s, when the American psychologist Rogers (1967) introduced the notion to improve higher education. Advocators such as Doyle and Strauss (1986), Heron (1999), and Schwarz (2002), among others, have brought the notion into the realm of the professional organization and use it to describe values for, and forms of, group facilitation. In this paper, we use facilitation to describe a behavior designed to assist the collaborative modeling process in a workshop. Facilitation is typically performed by either a business/process analyst from outside who has been contracted to perform this role, or by an internal person (e.g., the head of the group or a group member) who has been designated on a temporary or a long-term basis for this purpose. Researchers have noted the facilitator's role's importance to organizational analysis (Burrell & Morgan, 1979) and information systems development (Hirschheim & Klein, 1989). However, while the literature has identified different facilitator roles (e.g., expert, facilitator, partisan, and emancipator; see Burrell & Morgan, 1979), it has not yet described the composition of different behavioral styles, let alone the behavioral anchors that characterize the differences between how facilitation roles might be assumed by individuals in different workshop settings. A more detailed examination of facilitation behavior is especially important because modeling sessions can be quite complicated settings (Vennix, 1996). Facilitation tends to be the most visible aspect of a collaborative group work session, and it is often argued to be one of the most crucial roles in collaborative modeling work. For instance, Vennix (1996, p. 133) states that "the behavior of the facilitator will either turn the project into a success or into an utter failure".

Richardson and Andersen (1995) distinguish between five different but important roles during modeling workshops: the group facilitator, the content coach, the process coach, the recorder, and the gatekeeper. These different conceptualizations, in our view, point to facilitation being a multi-faceted behavior, and possibly one that facilitators can choose and draw on, depending on audience, project, and context. Notwithstanding these finer differentiations of facilitation, we contend that the role of the facilitator, in all settings, remains to be the person who actually guides the group's process and elicits the participants' points of view of the domain being modeled. As such, we focus on the facilitation behaviors that any person in this role might employ.

III. THEORY DEVELOPMENT

A Model of Facilitation on the Basis of Four Behavioral Styles

Because a facilitator's behavior is considered crucial for modeling workshops' success (Bandara et al., 2005), we argue that it becomes important to investigate which different behavioral facilitation styles exist that a facilitator may use during process modeling workshops. We define a facilitation style as a collection of actions, languages, and practices that facilitators can choose and adopt based on experience and expertise that they possess (Rogers, 1967; Heron, 1999). In other words, a facilitation style is a mask that a person can wear to impose a particular style on their behavior and the perception thereof by others.

Facilitation styles can be learned, adopted, rehearsed, and prepared before being used. Whether and how individuals adopt and adapt such styles is to some extent a function of their individual traits, such as personality and/or self-beliefs. Such broad and stable traits predispose individuals in task-based performances, but do so in a consistent manner and, thus, exert a less-pervasive influence on dynamic individual differences (Day & Silverman, 1989). Therefore, facilitation styles can be seen as a collection of dynamic traits, which are situation specific and which can be learned and also be influenced through organizational intervention strategies, such as provisioning incentives or standards (Thatcher & Perrewé, 2002).

To investigate facilitation behavior in process modeling workshops, we define four different facilitation styles made up by combinations of the opposite pairs: the "driver" versus the "catalyst" and the "engineer" versus the "artist". We realize that the choice of these terms evokes certain connotations about stereotypes that exist for individuals that have chosen, for example, engineering or artistic professions in their career. Our intent is neither to make a statement about the behaviors that people expect or observe in people in these professions, nor to unequivocally associate any factual or stereotypical behaviors of engineers or artists with facilitators in process modeling. Rather, we use these terms as metaphors (Hirschheim & Newman, 1991) as a generic vehicle to generate common understanding of some fundamental differences between different facilitation styles. This means that we describe them in terms of concepts that are commonly understood as having behavioral differences: namely, the behaviors of engineers in comparison to artists, and the driver in comparison to the catalyst.

The "driver" enters a situation with a predetermined solution in mind, pushes towards a certain, perhaps not fully disclosed, agenda, and has a clear mind of what they want to achieve. The driver defines a successful situation as one during which the desired predetermined solution has been achieved; namely, where the participants have bought into and achieved the driver's agenda. The "catalyst", on the other hand, does not have a predetermined solution in mind. Instead, the catalyst makes sure that issues, objectives, and outcomes emerge as results of a highly interactive and collaborative style, and pulls outcomes from the audience. Success in the eyes of a catalyst is defined by high levels of consensus and the achievement of an outcome that 1) was not predetermined and 2) the participants perceive as being satisfactory. The "engineer" seeks comfort in problem solving, and uses prescriptive and detailed methods, tools, and templates. Activities led by the engineer tend to be well structured, follow a predefined schedule, and are comparable across multiple situations. An engineer relies heavily on the existence of well-structured and methodical techniques and procedures for successful conducting the task at hand, and their expertise to engineer solutions and solve problems. The "artist", finally, makes up the agenda and activities "on the fly" and does not follow prescriptive routes of action. Based on purpose, participants, emerging themes, and others factors, activities will proceed in non-deterministic ways. The artist requires a strong and convincing personality and engages participants in a creative, non-textbook oriented manner.

These two sets of opposite pairs are orthogonal and disjointed in their operationalization. Thus, when combining these two independent pairs of metaphors, we can derive four behavioral facilitation styles for investigating facilitation behavior in process modeling workshops:

- The driving engineer style
- The driving artist style
- The catalyzing engineer style, and
- The catalyzing artist style.

Facilitation based on the driving engineer style seeks out support for a predetermined outcome during the workshop, and structured and pre-defined procedures are used for modeling and to take care of the group's effort. A process modeling facilitator using this style systematically frames and expertly solves the modeling task at hand and is well grounded in a wide range of structured tools, techniques, and methods. Workshops conducted using this style have a comparable structure and process, and the outcomes can be anticipated if the facilitation is successful.

Facilitation based on the driving artist style aims toward support for a predetermined outcome. A process modeling facilitator adopting this style uses their ability to govern the situation via expressing passion and creative problem solving abilities. The facilitator engages the audience in a spectrum of activities, shows flexibility where required, but aims for unconditional support for the outcome reached and the approach used.

Using the catalyzing engineer style, a process modeling facilitator does not anticipate the outcomes from a workshop. Instead, such an individual takes full benefit from a long list of available tools, techniques, and methods to seek and pull input from the participants and create consensus in achieving an emerging solution. This style involves the facilitator's guiding the participants in how to best use these artifacts, but the participants completely drive the workshop's outcome. As such, the actual results of the workshop will only emerge during the session.

Finally, in facilitation based on the catalyzing artist style, the process modeling facilitator transfers the responsibility for progress in the modeling workshops to the participants, and supports the group with inspiration, encouragement, and listening. We can expect that process modeling facilitators using the catalyzing artist style are acting in very uncertain circumstances, where the facilitation techniques have to be defined on the spot and in accordance with the emerging results.

Ten Dyadic Behavioral Anchors of the Facilitation Styles

Having defined four facilitation styles available to a process modeling facilitator, we now develop a better understanding of the relevant attributes of each style and identify further differentiating characteristics. To that end, we describe and discuss ten pairs of behavioral anchors that one can observe in facilitating a modeling workshop. We argue that any facilitation style consequently is configured by behavioral anchors.

In general, anchors describe reference points that individuals can draw on when choosing a behavior or making a decision (Tversky & Kahneman, 1974). Thus, our adoption of the term anchor draws attention to the fact that the ten dyadic characteristics of the four facilitation styles are simplified endpoints that people can use as reference heuristics (thus, as anchors) when choosing a particular behavior. This definition also draws attention to the fact that any adoption of such an anchor does not necessarily mean that the particular behavior will always manifest to its fullest extent; that is, that anchoring is a heuristic rather than a defined type of behavior. It is also important to note that anchors belong to the class of dynamic traits: behavioral responses are affected by stimuli in a specific situation (i.e., the context of their activation) (Thatcher & Perrewé, 2002). In turn, the adoption of, and extent of reliance on, a particular behavioral anchor is (a) influenced by the stable traits (e.g., the personality) of the facilitator, but more importantly is (b) susceptible to potential organizational interventions and (c) dependent on the context of the workshop.

Below we propose an initial set of ten behavioral anchors of facilitation styles. We identified the anchors by reviewing and interpreting the literature on facilitation (e.g., Anson et al., 1995; Griffith et al., 1998; Heron, 1999), group work (e.g., Rogers, 1989; Ron Chi-Wai, Jian, & Vogel, 2002), and education (e.g., Webne-Behrman, 1998; Schwarz, 2002). We distilled our review findings in an interpretive, consensual process into the set of ten anchors presented. By nature, this process was emergent and iterative, and inter-subjectively interpretive. We sought to cover all behavioral dimensions that the literature discusses while balancing for parsimony. This way, we attempted to avoid conceptual redundancy between the dimensions. During this process, we felt that a set of ten anchors sufficiently allowed us to cover different aspects of facilitation while arriving at a somewhat parsimonious model. However, without reliance on a conceptual framework, we could not ensure validity of our selection of anchors. Therefore, by no means do we regard the set of ten anchors to be complete or exhaustive; rather, we found them to be a good sensitizing device for interpreting the literature, and for describing and investigating the above-mentioned four facilitation styles based on the empirical data that we set out to collect.

Communication Anchor: Talks vs. Listens

In order to derive and construct knowledge about business processes, communication related to the domain and the associated requirements is essential (Rittgen, 2007; Hoppenbrouwers et al., 2009). In relation to the practice of facilitation, Webne-Behrman (1998) argues that a facilitator is a communicator who models effective communication and supports participants to understand each other. Thus, the emphasis in regard to the facilitator's behavior is on listening and monitoring the communication performed in the workshop (Vennix, 1996). However, in order to support the group effectively, a facilitator also has to be a part of the dialogue. Webne-Behrman (1998) puts forward related guidelines such as encouraging, clarifying, restating, reflecting, summarizing, and validating as important principles to use to facilitate meetings.

As such, facilitation during process modeling can be characterized alongside two extremes in terms of communication: facilitation in which the process modeler talks versus listens. If the facilitator's behavior is dominated by talk, the facilitator, viewing the participants as an audience, proactively guides the dialogue and tends to inform and instruct them. If the behavior is listening, then the facilitator is more reactive in the dialogue and stresses the need to learn from the participants rather than dominating the communication processes through proactive engagement (namely, talking). Following this dichotomy, we can assume that facilitation based on the styles of driving engineer and driving artist will rely more on talking because anticipated outcomes need to be explicated to be achieved. Facilitation based on the styles of catalyzing engineer and catalyzing artist may instead tend towards listening in order to derive results from the participants' interaction.

Power Anchor: Assertive vs. Non-Assertive

A social situation such as modeling is always imprinted by power (Introna, 1997). The facilitator influences the power setting by their behavior. In learning contexts, Rogers (1967) argues that one of the qualities in facilitating knowledge acquiring is when the facilitator adopts non-assertive understanding as a style. This is when the individual has the ability to understand the participants' reactions from the inside and when the individual has a sensitive awareness of the way the process of the modeling seems to the participants. If so, the likelihood of significant learning is increased (Rogers, 1967). Still, a facilitator may sometimes have to take an opposite position during modeling and, in an assertive way, decide something or everything during a workshop (Heron, 1999). Rogers (1989, p. 349) also acknowledges this when he describes assertive confrontation as a measure during facilitation: "I tend to confront individuals on specifics of their behavior. 'I don't like the way you chatter on. Seems to me you give each message three or four times. Wish you would stop when you've completed your message.'".

A process modeling facilitator can thus either, in its extreme form, be assertive or non-assertive in the modeling workshop. When an assertive facilitator leads the modeling, then the facilitators' ambitions dictate the modeling. This behavior is assumed to be prominent if the facilitator adopts the styles of the driving engineer or the driving artist. A non-assertive facilitator is more in the hands of the audience and lets the participants shape the conversation and agenda, which we proposed as being characteristic of the catalyzing artist style. As the style of catalyzing engineer involves both pull and push, we assume that a facilitator using this style, depending on circumstances, either acts with assertive or non-assertive behavior.

Adaption Anchor: Static vs. Flexible

Conducting a modeling workshop can have different degrees of predictability (Vennix, 1996). Richardson and Andersen (1995) posit that some modelers tend to follow a script of the meeting in detail. The facilitator, in these cases, can be seen as crafting a detailed, predefined template for executing the workshop with a detailed agenda and a fixed (static) allocation of tools, techniques, and methods for each activity in it. The action course in the workshop is then merely pursuing this predefined template. Although this might be very useful, according to Vennix (1996), this approach may also entail the danger that the facilitator might adhere too strictly to the pre-defined template and, in consequence, may not be flexible enough to meet participants' needs during the workshop. Alternatively, as Suchman (1987) advocates, the facilitator can instead value a more flexible approach, viewing plans/preparations as resources for situated actions, and adjusting their successive actions depending on the emerging events in the workshop. Rogers (1989) has the view that "everything planned" should be avoided if the group members are not as fully in on the plan as the facilitator. Instead, Rogers values spontaneous behavior with or without procedures. What happens is up to the group.

Thus, we can characterize a facilitator's adaptation style as either static ("everything planned") or flexible ("spontaneous"). Consequently, we assume that process modeling facilitators adopting the driving engineer style will tend to follow a static approach to take full benefit from the set of tools, techniques, and methods at their disposal. Contrary, process modeling facilitators using the driving artist style strive, out of necessity or out of choice, for a flexible adaption style. Catalyzing artists are assumed to be forced into flexible behavior because they merely following the group and react to their behavior. On the contrary, a facilitator with the catalyzing engineer behavior is expected to have a systematic flexible behavior because the flexibility is coordinated by the tools and techniques the facilitator uses in the workshop.

Disagreement Anchor: Embraces Conflict vs. Avoids Conflict

Disagreements are an important factor in collaborative modeling. A produced final model is materialized consensus, which we define as the reached agreement between relevant stakeholders (e.g., the majority of workshop participants). Disagreements, perhaps rooted in so-called "problem people" (Doyle & Straus, 1986), may threaten a facilitator's efforts to create equal participation in the group, and hinder the participants in reaching consensus. In these situations, according to Schein (1987), four types of intervention strategies exist: *exploratory*, *diagnostic*, *action alternative*, and *confrontational interventions*. The two latter imply that a facilitator's behavior in relation to disagreements can be characterized as embracing conflict, and the former two characterize strategies where conflict is avoided. A facilitator who embraces conflict faces disagreements head on. The intervention strategy *action alternative*, for instance, means focusing on questions related to what can be done about something hampering the situation, while *confrontational interventions* directly focus on a participant's behavior. In contrast, a facilitator who avoids conflict tries to manage disagreements by other means than making the conflict explicit. Schein (1987) describes two such strategies: *exploratory interventions*, which aim to encourage a person to go on talking and tell more, and *diagnostic interventions*, which, through questions, aim to trigger participants to think about something else.

As the driving styles embrace proactiveness, we expect that the styles of the driving engineer and the driving artist will be likely to embrace conflict on the way to the predetermined outcomes. The catalyzing styles will embrace reactiveness towards the groups and, as such, we assume that the styles of catalyzing engineer and catalyzing artist are characterized by the avoidance of conflict, but in different ways.

Control Anchor: Centralized vs. Decentralized

The responsibility for performing a respective task in the modeling event can either be executed in a centralized or in a decentralized manner. Webne-Behrman (1998) argues for the latter as an effective strategy when describing the practice of facilitation. In her view, a facilitated group is not one whose process is owned by one or a few; the workshop belongs to all. According to Heron (1999), this style means that the power to make decisions has been delegated to the participants themselves. The facilitator in this setting of autonomy encourages people to play new roles in the workshop and take ownership themselves of the outcome that the workshop delivers (Webne-Behrman, 1998). According to Rogers (1967), this idea rests on the assumption that the facilitator trusts the participants' capacity to develop and take responsibility for their own future. If this is the case, then the facilitator can provide the group with opportunities and permit the participants to choose their own work direction. Heron (1999), however, argues that delegation is only one mode of control style in a group setting, where, on the opposite side, the centralized anchor exists, in which the facilitator directs the workshop. A facilitator who values a centralized approach does not divide the modeling group into sub-groups with individual and independent tasks. Instead, such a facilitator remains the center of attention.

We believe the centralized behavioral anchor can be expected from a driving engineer because a facilitator adopting this style pushes the workshop toward a predetermined solution. We also assume that centralized control is a part of the driving artist style, yet for a different reason. This style is based on the facilitator's ability to use their passion to push the workshop forward. In an opposite fashion, we assume that a facilitator adopting the catalyzing engineer style strives to decentralize the responsibility of the modeling task to the participants. Using this style, such a facilitator then releases the control and lets the participants take responsibility for reaching a consensus. This could involve multiple streams of conversations that occur in parallel. We predict that catalyzing artists will also show this type of behavior.

Modeling Anchor: Solo Modeling vs. Group Modeling

The act of performing the actual modeling as part of a modeling workshop may also differ between facilitators. Some do all the modeling in order to ensure a high degree of syntactical correctness and overall consistency across the models. This style is advocated by Vennix (1996), who states that facilitators themselves either simultaneously facilitate the dialogue and record the model from the modeling dialogue, or use a recording assistant, following the modeling language used, who is capable of listening very carefully and translating participants' ideas into models. In this scenario, the workshop participants play the role of sole domain experts in designing the model. In contrast, other advocators (e.g., Persson, 2001) argue that facilitators should let the participants do the modeling and transform them into modelers, and not just use their own domain expertise during the workshop. In this scenario, the facilitator will merely empower, encourage, and govern the act of modeling, rather than partaking themselves.

Based on this contrast, we expect that facilitators using the driving engineer style will tend to do large parts of the modeling themselves by using the structured methods and techniques that they have mastered. We also assume that that the driving artist style also means that most of the modeling is done by the facilitator. The difference will be that this focus is not anchored in the facilitator's ability to master formal modeling techniques or methods but is based on the facilitator's ability to centralize the control of the workshop using their passion and group-management abilities. We assume that a facilitator acting as a catalyzing artist will depend on participants' modeling talent ("let's model") because this style decentralizes the control of the activity to the group. The style of the catalyzing engineer, we believe, generates a behavior in which the facilitator models if needed or lets the group model in order to activate the participants and stimulate them to become owners of the results.

Facilitation Anchor: Solo Facilitation vs. Group Facilitation

The act of facilitating in terms of deciding and enacting required behaviors may similarly differ between individuals. Some facilitators do all the decision making: they use the participants only as contributors to the decision making process. Other facilitators let participants facilitate the work effort and co-opt them all (or, at least, some) as (co-) facilitators who, in turn, enact behaviors and/or make decisions. Webne-Behrman (1998) claims that one of the most important responsibilities of a facilitator is to commit to the norm of sharing their role with all other participants in the workshop. Even if someone has been formally designated for such a role, a fully empowered group may still end up being one that takes responsibility for the group facilitation and all included behaviors itself. This is core in the facilitator style that Rogers (1989) originally depicts. He argues that, in a situation in which participants need support, the participant often relies on the wisdom of the group rather than the facilitator's own therapeutic potential to support the participant in question: "It makes me realize what incredible potential for helping resides in the ordinary untrained person, if only he feels the freedom to use it" (Rogers, 1989 p. 352).

We expect facilitators using the driving engineer style or the driving artist style will both tend to control the facilitation (facilitates alone), while facilitators using the catalyzing artist style will tend to allow joint facilitation ("let's facilitate") in order to benefit from a variety of facilitation approaches and the group as a source of knowledge and inspiration. We believe a facilitator using the catalyzing engineer style will combine both facilitating alone and letting the group facilitate the work process themselves.

Involvement Anchor: Involves vs. Disconnects

At the core of the facilitator style that Rogers (1967, 1989) describes lies participants' involvement in the work performed and the way that the facilitator strives to involve him or herself with the group (e.g., in order to achieve non-assertive understanding). Notwithstanding the benefits emerging from a deep involvement with the participants, a facilitator may still be required or advised to use disconnection as a tool during collaborative work. Disconnection in this situation means that a member within the group during the workshop is detached from the collaboration. Such a tactic, however, should be based on an agreement between the facilitator and the participants that the person disconnected wishes to be on the sideline in regard to the group. Rogers (1989, p. 345) argues: "Silence or muteness in the individual are acceptable to me providing I am quite certain it is not unexpressed pain or resistance". Sharp and McDermott (2009) identify another form of disconnection during modeling workshops, which they label "constructive ignorance" (i.e., asking seemingly dumb questions). They recount that, when applying constructive ignorance, they often uncover important facts or ideas and discover that an "off the wall" comment from a participant was rather on point. It is our interpretation that a facilitator who ignores participants has a rigid view of the rights and wrongs in a situation. When a facilitator disconnects, the facilitator does not view active contributions from every participant as a success metric for the workshop. An example of this would be a facilitator who, when validating a process model, ignores quality-related input from participants and instead performs the validation individually while ignoring all other comments or input. The latter describes the typical behavior of a facilitator using the driving engineer style in an extreme form.

In contrast, a facilitator who actively (i.e., on a regular or intermittent basis) involves participants in process modeling uses an unbiased mind on what is right or wrong, true or false, in a situation. The facilitator then strives to engage participants and adopts a style that encourage participants' involvement. Involvement on an intermittent basis identifies a driving artist, while involvement on a regular basis is characteristic of catalyzing engineers. For participants, it may be impossible to "hide" or continually be passive in such workshops (pausing, however, might be acceptable to some extent). Therefore, we expect that facilitators using the driving artist or the catalyzing styles tend to show this behavior.

Work Approach Anchor: Structured vs. Unstructured

Webne-Behrman (1998) advocates that it is important for a facilitator to observe a situation without prejudice and to apply prior experience only as a guide, not as a constraint, for the work. This approach, in turn, describes a rather unstructured approach to process modeling work. Sharp and McDermott (2009), on the other hand, point out that a facilitator in a process modeling setting needs to have an overall process map, the process framing material, a parking lot list, and a session plan posted in the modeling room in order to use these instruments to successfully navigate the workshop.

In the light of these recommendations, a facilitator following a structured approach to work executes a systematic way of working when performing workshop facilitation. The workshop requires substantial planning in advance, the schedule will be well defined, and the procedure will be predictable and reliable. We assume these characteristics to be a typical of the two engineer styles of behavior. Facilitator following a more unstructured work approach are instead more open in their work model. They make "ad-hoc" decisions when performing workshop facilitation based on the events that unfold. As a whole, the work process is far less predictable and repeatable in terms of the activities that take place than a structured work approach. We assume these characteristics to be typical of the artist styles.

Domain Knowledge Anchor: Domain Agnostic vs. Domain Expert

A facilitator may possess deep knowledge of the business (or type of business) being modeled and, thereby, can be an expert in the specific domain. Webne-Behrman (1998) underlines that knowing the context or purpose of the problem being posed may be an important element in practicing facilitation. For a facilitator, it may be important to understand the culture and domain from which the problem has arisen. In order to be able to identify the right problems and subsequently resolve them during a workshop, a contextualized domain understanding is critical. However, Schwarz (2002) criticizes this view: he places emphasis on process and method expertise, which implies that the facilitator should be the one who has the ability to contribute to the group's procedural effectiveness. This view downplays the facilitator as a content expert. Instead, the facilitator may lack knowledge about the domain being modeled, and perhaps even be indifferent in regard to the business or participants that are involved in the modeling workshop. This lack of knowledge, in turn, allows the facilitator to remain detached and unbiased about the domain and related issues that may surface during the modeling.

We believe that expert domain knowledge describes a typical desired attribute of a driving engineer and a driving artist when the facilitator using either of these styles pushes the workshop to its end based on either the skills of mastering modeling tools (driving engineer) or mastering the situation itself using his or her persona (driving artist). In contrast, we assume that a facilitator using the catalyzing engineer style relies far less on domain expertise. Instead such a facilitator uses collaborative abilities, skills, and techniques to support the group to elicit their own domain knowledge when they are developing the results. Therefore, we assume that the catalyzing engineer requires no domain knowledge.

Factors Describing the Process Modeling Setting

In this section, we examine factors that influence why process modeling is conducted differently in different organizational settings, and examine how and why the differences in the settings could or should correspond to different facilitation style choices. We examine two setting factors specifically; namely, process modeling purpose and process modeling maturity.

Process Modeling Purposes

The outcome of process modeling workshops is a set of models that are developed for a specific purpose. Modeling could, on the one hand, be conducted to develop models that show the current workflow in an organization. On the other hand, it could be performed to develop outcomes that show a proposed workflow or a requirement specification for changes in the workflow. Sharp and McDermott (2009) label the former “as-is modeling” (i.e., developing “as-is” models of current organizational reality), and the latter “to-be modeling” (i.e., developing “to-be” models of possible future alternatives of organizational reality).

As-is modeling creates models that should capture the current state in a workflow; hence, one could argue that it becomes important that these models accurately reflect the actual reality in the workflow. For these models to be objective and be valued as results with high quality, they have to display the actual current state of the workflow that they depict. This means that the setting when as-is modeling is performed is characterized as a task to reveal the present, often in order to identify problems and challenges and depict these through the models. To-be modeling is, contrary to this, characterized as a task in which the future is designed. Objective to-be models are valued as results with high quality if they are able to ease the imagination of alternative states in the workflow relative to the current state. Focus in to-be modeling becomes on constructing solutions to challenges and, through the models, present these proposed solutions to participants and stakeholders. These proposed solutions could, in turn, act as requirements for organizational change processes, which might include the development of new IT systems, policies, or routines.

Process Modeling Maturity

Maturity in relation to process modeling can refer either to process maturity in an organization (Hammer, 2007) or to the maturity that an organization has in performing process modeling and managing the business through the outcome of this practice (Rosemann, de Bruin, & Power, 2006; de Bruin, 2009). In an organization where the latter is on an optimized (or high) level, process modeling tends to be a core part of both strategic and operational management. On the contrary, in an organization where maturity is at an initial (or low) level, process modeling is either non-existing or is performed only in a very uncoordinated and ad-hoc way (Niehaves, Pöppelbuß, Plattfault, & Becker, 2014). We argue that the level of process modeling maturity creates differences in a modeling setting. In an optimized maturity setting, for instance, there will not be a significant need to explain process modeling basics among the participants. Teams often are knowledgeable about both the tools and the rationale behind modeling. Opposite to this, in settings where the maturity level is low, often no knowledge exists about either the tools or the rationale behind the modeling effort. In these settings, a facilitator has to cope with the lack of existing knowledge about process modeling in order to guide the team to a successful end. The differences in maturity hence condition which style the facilitator should adopt in performing this guidance. This reasoning is aligned with Niehaves et al. (2014), who argue that developing BPM capabilities should be based on the organization’s characteristics and environmental settings.

Hypothesis Development

The core premise of our model of facilitation in process modeling is that each of the four facilitation styles presented describes a distinct way of approaching facilitation during process modeling workshops. The consequential thesis of our model is that these four facilitation styles can be identified by examining facilitation behavior in terms of the dyadic behavioral anchors proposed. We now formalize our expectations about the situations in which facilitators would opt for any of the facilitation styles, depending on the context and purpose of the process modeling endeavor they are concerned with. We specify these expectations in two initial hypotheses.

Through the two hypotheses, we explore in which modeling situations a facilitation style is more likely to be used. In order to explore situations in terms of appropriate facilitation behaviors, we use the above-introduced two purposes for process modeling (develop as-is model vs. develop to-be models) as anticipated outcomes from modeling workshops, and view them as one antecedent condition to be able to determine suitable behavioral styles. As we discuss above, as-is models refer to models depicting the current state in an organization, and to-be models refer to models illuminating an imagined future state in the workflow in an organization.

A facilitator in a to-be modeling setting must be able to guide and support the team through a generative process where a future state in a process is illuminated. This is in contrast to a facilitator guiding a team in an as-is setting, who instead has to guide the team through a revealing activity where problems and challenges in the organization are unveiled and documented through a straight forward process. Therefore, we expect:

H1. An engineering facilitation style is more likely to be adopted in as-is modeling situations, whereas an artist facilitation style is more likely to be adopted in to-be modeling situations.

As a second antecedent condition, we turn to participants' process modeling maturity in the modeling workshop, and consequently the target groups maturity, to react to the actions that the facilitator performs to respond to different needs and requests. The extensive use of business process modeling and the evolution of the practice into a distinct field have resulted in individuals and organizations being very skilled in developing and using business process models (Niehaves et al., 2014). These individuals and organizations consequently possess high process modeling maturity, which, for example, allows them to more readily understand and use process models (Mendling, Strembeck, & Recker, 2012). In contrast, there are also individuals and organizations who have no or very little training in process modeling techniques and who rarely, if ever, use process models in their organizations. These individuals and organizations consequently possess process model maturity at an initial state (Rosemann et al., 2006). This is important because, while process modeling aims to involve individuals regardless of maturity level, a facilitator's behavior needs to adapt based on the maturity level of the group in order to successfully facilitate the group processes and achieve the anticipated outcomes (as-is or to-be models). Therefore, we expect:

H2. A driving facilitation style is more likely to be adopted in modeling situations with low participant maturity, whereas a catalyzing facilitation style is more likely to be adopted in modeling situations with high participant maturity.

IV. RESEARCH DESIGN

In Section 3, we develop a novel conceptualization of facilitation behaviors in process modeling projects. To lend some empirical support to the suggested framework, we performed preliminary, exploratory case study research guided by our two hypotheses. Case study research is an established approach in information systems research (Benbasat, Goldstein, & Mead, 1987; Lee, 1989; Sarker, Sarker, Sahaym, & Bjørn-Anderson, 2012) that is commonly employed when the research investigates a phenomena in its natural setting. It is an appropriate technique to use to both explore and describe the nature of a phenomena or explain its mechanisms in its natural setting (Lee, 1989). It is particularly appropriate when the phenomenon is not yet well understood or researched, which is the case for facilitation in modeling projects.

Several principles exist to govern the development of an appropriate case study design. Researchers using the approach should strive to anchor the research in a clear unit of analysis (Benbasat et al., 1987), especially if the research develops knowledge explaining the phenomena (Yin, 2009). A unit of analysis could be related to an individual, a team, or a whole organization. It could also be related to a process or an event. Starting with the unit of analysis, Table 1 positions the case study design for our study. We explain facilitation behaviors in process modeling projects, and provide a firm base for predictive and normative knowledge that guides the process modelers in the future.

Table 1: Case Study Design

Design principle	Design decision
Unit of analysis	Facilitation behaviors and underlying behavioral anchors adopted by workshop facilitators in process modeling projects
Objective	Provide explanation and prediction
Case research type	Positivist case study
Research strategy	Deductive test of hypotheses derived from our conceptual model
Number of cases	Multiple cases
Case selection technique	Diverse case method
Data collection techniques	Interview and questionnaires

For our study, we selected the positivist case research type as research approach with to develop generalizations independent of time or context (Orlikowski & Baroudi, 1991). From this, we developed a rigorous research strategy, which included clearly defining the concepts used, formulating hypotheses, deductively testing them, and considering the outcome's validity and reliability (Shanks, 2002). Single versus multiple cases is another important design decision in case study research (Benbasat et al., 1987). Single case study research is useful in revelatory research or if a critical case has been obtained to test a well-formulated theory. A multiple case approach is appropriate when one wants to describe a phenomena or when a theory is developed or tested. In this study, we derived propositions based on an extensive theoretical investigation. In turn, we tested these propositions to explain facilitators' behavioral styles. Multiple cases provide us with the possibility to perform cross-case analyses and test the propositions in a variety of circumstances represented by the different nature of our six cases. Subsequently, we selected cases for this study by means of the diverse case selection method (Gerring, 2007). We carefully selected from a well-known pool of organizations that form parts of a national (Australian) community of practice in business process management.

Case study research advocates the use of multiple data collection techniques (Yin, 2009). As such, we first conducted six in-depth semi-structured interviews with analysts experienced in facilitating process modeling workshops. We selected interviews over participant observation because the latter would have introduced obtrusion bias into our investigation (Trochim & Donnelly, 2006). Also, interviews allowed us to more precisely examine different facilitation behaviors that may or may not have been readily observable in a particular observation context. Each interview focused on one particular case of a process modeling initiative as part of an organizational re-design project. All interviews were conducted in Brisbane, Australia. The interviews followed a semi-structured interview protocol, which we developed based on the behavioral styles and anchors we describe below. All interviews took approximately one hour and were recorded and transcribed. The interview protocol was structured as follows:

1. We asked the interviewees to provide their demographic details and contextualize the setting of work in terms of common modeling purposes and modeling maturity.
2. We gathered interviewees' views on the role and importance of facilitators of modeling workshops.
3. We presented the four behavioral styles of facilitation and asked the interviewees to position which style they generally used when conducting process modeling workshops in projects in their organization.
4. We then presented the ten dyadic behavioral anchors and asked the interviewees to identify those anchors they typically employed and that their workshop participants generally viewed favorably.

We implemented the case study design in autumn 2010, and we completed exploratory empirical work in spring 2011. To ensure a rigorous process, we adopted and used existing guidelines for positivist case study research to frame the presentation of the research (Shanks, 2002). Table 2 summarizes how we used rigor in our study.

Table 2: Ensuring Rigor in Positivist Case Study Research

Guidelines for positivist case study research (Shanks, 2002)	Adoption of guidelines
1. Develop a clear understanding of key concepts and assumptions in the positivist paradigm.	We defined a clear unit of analysis and developed an appropriate case study design.
2. Provide clear and unambiguous definitions of the units and interactions in the theory.	We clearly defined the units process modeling, process modeling facilitation behaviors, behavioral styles and anchors, and their relationships. We set the boundary of the theory we used.
3. Carefully define the boundary of the theory used in the case study.	
4. Use hypotheses (not propositions) in empirical testing.	We defined explicit hypotheses based on the theoretical framework and tested them based on empirical data form a multiple case study.
5. Consider using fuzzy or probabilistic propositions and embrace post-positivism.	We carefully developed tentative hypotheses and developed suggested relationships based on indicative but not definite data.
6. Generalization from case study research is inherently different to generalizing from experiments.	Carefully examined the data, and developed and discussed tentative findings.

V. ANALYSIS OF THE EXPLORATORY EMPIRICAL FINDINGS

In this section, we first provide a walkthrough of cases, in which we point out the findings generated from the interviews with representatives from the case sites. Subsequently, we perform cross-case analysis and determine whether they support the hypotheses we presented in Section 3.

Case Descriptions and Interview Findings

First Case: The Shared Service Provider

At this case site, a shared service provider in a state government, a process design team regularly used workshops to prepare decisions for organizational change. Thus, the dominant modeling purpose was performing to-be modeling. The team entered the workshops well prepared. Maturity regarding process modeling was high. Related process documents were studied, standard operating procedures extracted, and any further process-related information identified. The facilitator typically designed a draft process model before the workshop in order "to avoid starting from scratch", which gave the work process structure. As such, we can view the facilitator's role as "setting the context" for the team and "drawing out the required information" when the team works. The control style used was "to put the responsibility on the participants" because the maturity in the team allowed it and "to have the tools and methods" in place to guide the team to develop aimed outcomes. The preferred anchor in terms of communication style was the listening anchor and, in terms of work process, a structured work flow with inherent flexibility so that alternative methods could be used if needed to manage specific challenges during the modeling situation. The act of modeling was preferably done by involving participants rather than disconnecting them. Having structure was essential, and domain knowledge preferable but not necessary because the facilitator could rely on the structure used in the workshop and the high maturity in the team. Personality, experiences, and familiarity with tools and methods were seen as factors that determine the selection of the appropriate style to facilitation.

Second Case: The State Government

The three-year old program office in this state government department differentiated and used, based on qualifications and expertise, two types of modeling roles: business analysts and process modeling graduates. The business analysts performed the bulk of the facilitation of workshops that aim to result in requirements gathering as a basis for organizational change (i.e., to be modeling). These workshops often involved participants with low experience in the practice of modeling but who possessed vast power to influence the operation of the business being modeled. The facilitator's role is one that "actively triggers the participants, keeps them focused and drives towards outcomes". The business analyst "has to ensure acceptance of a solution and reach agreement with the participants" who are from senior management. The ability to interact with the participants is, thus, a key behavior for the facilitator. Proper preparation preceded every workshop but not with a focus to prepare the work methodology in the workshop. Instead, the preparation involved a detailed assessment of the involved stakeholders (with interviews) and the occasional use of a "preparation checklist". For the actual conduct of these workshops, business analysts seldom brought prepared process models; instead, it often came down to interpersonal experience to facilitate the workshop dialogue. One respondent stated: "you definitely need more than one trick to be flexible". Every workshop had a firm objective and the business analyst played the role of the "devil's advocate" by critically questioning ideas and solutions as the workshop's aim was to prepare organizational change. It was important that the facilitator possess certain knowledge about the business so this individual could lead the conversation. Based on our framework of facilitation styles as an explanatory lens, business analysts in this case tended to act more like artists than engineers, and as drivers rather than catalysts. The business analysts were, as one respondent stated, "less fussed about being methodologically perfect and certainly jump around, if required". Domain expertise was required to the extent that it was "dangerous without it as it will get yourself into trouble". The facilitator's credibility was connected to the knowledge that the facilitator had about the business. Being assertive, involving participants in the dialogue, and not avoiding conflict were seen as key behaviors.

On the other hand, process modeling graduates, when facilitating workshops to create as-is models, strictly followed their modeling grammar (here, BPMN) and used a firm set of related methods to structure the work. Thus, they used a structured work behavior and could not "move on, until they have ticked off a certain deliverable". These facilitators behaved not as driving artists but instead with a behavioral style that matches engineers; that is, they base their work on their methods rather than interpersonal skills. Therefore, to be able to model was an important behavioral skill for the graduates because they met participants that possessed more experience about the processes being modeled than themselves. They needed to grasp this knowledge and transfer it to the models. The graduates worked with a structured approach where they facilitated the work based on the tools and predefined models that they brought to the workshops. They also did the majority of modeling themselves because the process modeling maturity was low in the organization. The act of facilitating and modeling was, hence, not delegated to participants; instead, the graduates used a more-centralized control approach that the organization preferred due to the graduates' low maturity in process modeling.

Third Case: The Utility Provider

At this case site, a corporate process consultant was tasked with implementing a business process improvement framework into the organization. This individual supported organizational members to enable business process improvement initiatives by supporting them in training and with evaluating business process models. Two contractors (external facilitators) ran the workshops. We learned that "the role of the facilitator was to extract the information from the heads of the people" (i.e., the participants involved). The workshop was ran to obtain an understanding of what participants did and to support them in understanding what they did in terms of business processes (e.g., as-is modeling). Because the task involved implementing a novel framework, the experience of performing process modeling was low. As such, the facilitators used tools and methods to structure the workshops, which means that they did "not have to use their own persona in order to proceed". Instead, they relied on their capability "to do the mechanics" because the process modeling maturity among the participants was low. The majority of talking was done by facilitators in order to push the team forward. The modeling effort was mainly centralized to the facilitators and a static approach was used. We can explain this style of facilitation, compared with our framework, as a driving engineer style similar to the behavior that the graduates in the second case displayed. The facilitation style used in this case seemed to be determined by the desired outcomes in combination with the maturity in the organization. When asked about this relationship, the corporate process consultant stated: "if you have a specific outcome, you (as a facilitator) need to take control and dominate the workshop so you get your outputs". The respondent also indicated that, when required, it was important that the facilitator take on a conflict by using an assertive style and overlook input that was not viewed as relevant to the task at hand. This was, according to the corporate process consultant, necessary in order to get the best outcome related to the ongoing business process improvement initiative.

Fourth Case: The Investment Company

In this case, an enterprise architect was in charge for process-related activities. In order to fulfill this assignment, he had a team with architects and analysts. As for developing facilitation abilities, these members were trained during a company course that the enterprise architect himself ran. For the business analysts in particular, the course lifted their skill level to engage with business stakeholders and, leveraging their skills in process modeling together with the input from stakeholders, model business processes in the company: "We have had various kinds of success in getting to that point, but this is an evolutionary thing, and it has been one of the drivers for the last lot of training that I have done with the teams". The process modeling maturity in the whole organization was neither low or high. Instead, it was viewed as moderate because stakeholders from different functions have participated on a regular basis in modeling activities and have gradually improved their ability to perform modeling. The modeling purpose at hand was mainly documenting the existing business into models that depicted how the business operated.

The role of the architects and analysts when facilitating a workshop was primarily to introduce the participants into new ways of conceiving the business. The task also involved provisioning insights into business processes and modeling. One respondent stated: "So it is in one degree leading people into business process modeling, but another part is enabling and supporting them to feel confident using these skills in the business themselves". Thus, the workshops were characterized by a mix of instructing and directing people in developing new ideas and skills. At the same time, it was also about following the norm of "stepping back" to give the participants the freedom to develop their own ability to use these skills in the workshop. An important behavior for a facilitator in this setting was, hence, to read the situation to be able to select an appropriate facilitation approach: for example, when they should talk or when they should listen.

According to one of the enterprise architects, a good facilitator does not exclude one alternative but chooses the appropriate one depending on the situation.. The key behavior advocated is consequently flexibility and, through active listening, the monitoring of the progress in the workshop as participants collaborates. The control of the work progress was primarily decentralized to the participants who were encouraged to both model and facilitate the work effort themselves. This set of behaviors matches the catalyzing artist style in our proposed framework. Domain expertise was not viewed as key for facilitators in this organization; instead, emphasis was placed on leading participants into the process modeling practice so that they themselves could create models that depict their workflows. Sometimes, the facilitator needed to step forward to actively support and instruct the group; however, the main behavior was to catalyze the group to be creative and independent by involving them and transferring control over to them.

Fifth Case: The Logistics Service Provider

At this case site, the respondent was a business architect responsible for formulating standards for how business processes should be modeled. She informed us that, in her organization, modeling workshops were organized to both grasp the business itself and to create the basis for organizational change. The level of maturity in the organization to perform modeling activities was generally low because this was not a core ability there. Workshops at the strategic level—often oriented towards organizational changes—were seldom assigned to internal facilitators. Instead, external facilitators who relied less on tools and methods and more on interpersonal skills and communication were used. At the operational level, facilitators in the organization often led the workshops "so they [the participants] feel safe and not feel threaten[ed]". Indeed, "145 years of history with a command and control culture” have created an engineer culture within the logistics service provider in which an assertive, structured, and domain skilled behavior was favored.

In the case, modeling efforts were supported by 25 junior- and senior-level analysts who acted as facilitators of modeling workshops and were divided into facilitation teams. The junior analyst in the team provided the ground work for the senior business analyst “by being present in the workshop and by taking notes”. The junior analysts made sure that everything was being captured in the workshop and, hence, used listening as a key behavior. According to the business architect, “The senior analyst [was] the key” to the workshop’s success. It is this senior analyst, using skills in negotiations, interpersonal skills, and communication, who interacts with the participants to elicit information from and present it back to the audience through models engaging the audience. Hence, the communication behavior was both listening (junior analyst) and talking (senior analyst) during the workshop. It was the senior analysts who also organized the workshop, selected the participants, and, prior to the workshop, created an understanding of who the stakeholders were in the room. This knowledge was acquired in an assertive way by engaging people prior to the workshop to ensure its success; as our respondent put it: “All participants should be stitched up and prepared; the workshop is not a talk fest; desired outcomes and the scope should be set prior to the workshop”. The facilitator team catered for modeling and facilitation, and the work approach was highly structured and static. As participants should be “stitched up” before the workshop, conflicts were to be avoided and defused in advance, but, if they occurred, the facilitator needed to engage and resolve them promptly.

Sixth Case: The City Council

At the local city council, the BPM advisor was both an enterprise architect and secretary of the BPM council. In her role as enterprise architect, she headed a small team that comprised one business architect, one support officer, and two business analysts. Together, they performed workshops with participants from different functions in the organization. These workshops documented the ongoing business processes in as-is models. The participants in the workshops were process owners who were, in regard to their business process maturity, on the lower level side of the scale. Because the process owners had low process modeling maturity, the facilitation team was required to bring, in addition to “generic facilitations skills, concrete BPM expertise and experience into the workshops” so that workshops succeeded. Another role that the team took during the workshops was to point out dependencies between workflows in the organization to process owners; for example, to transfer knowledge of how a future change in one process might affect other processes in other parts of the organization. The facilitation team brought prepared models into the workshops to accelerate the process modeling activities and the related conversation. This ex ante modeling was done largely by the team itself as the process owners lacked the required BPM expertise.

The BPM advisor aimed to decentralizing the work to the participants during the workshop. Still, because of the low maturity, the facilitators did not always entirely transfer responsibility to the group. Instead, they rather acted as driving engineers who took “a little more responsibility that we ought to, which is not a sustainable work approach in the long run”. The facilitators did a lot of talking during the workshops yet still favored a situation in which they could step back more and actively listen. Consequently, the control was centralized to the facilitation team, which performed the modeling and facilitation based on participants’ input. The team strived to involve the participants in the effort; however, because the maturity was low, the participants frequently disconnected themselves from the modeling, leaving the facilitation team to make independent decisions regarding the models that were being developed during the workshops. Quality in the outcomes was somewhat ensured because the facilitation team possessed expertise about the organizational domain due to the fact that the members of the team were recruited from in the city council. Aside from preparing models that were used during the workshops, the facilitators spent time before the workshop to counter the disconnection of participants during the workshops by ensuring that “everyone was on-board prior to the workshop”. They strove toward a flexible structure but were following a very deterministic, pre-prepared path. The workshops were centralized to the BPM team, but the organization wanted to create a sustainable work model in which the control over the work, including the modeling, was decentralized to the participants.

Cross-Case Analysis

We performed a cross-case analysis by comparing the case data based on the ten behavioral anchors and the two factors determining the process modeling setting. This created the basis to determine which style was preferred within each case and to investigate each style’s configuration of anchors. Table 3 summarizes the findings from the cross-case analysis.

The communication anchor listening was preferred in the first and fourth cases. Facilitators in these organizations often took a step back and actively strove to promote the group to take responsibility for the dialogue and, thus, decentralize control over the progress to the participants. Domain knowledge was consequently not perceived as important in these cases and neither was assertive behavior. One explanation for this finding seems to be that the participants in these settings had a high degree of knowledge themselves about the business being modeled and about process modeling maturity that enabled participants to self-organize the modeling work. The difference between the two organizations seems to be that, in the first case, the modeling effort's goal was to prepare requirements for changing the organization (i.e., to-be modeling). Facilitators in this setting, therefore, took a step back and used listening as a communication anchor. On the other hand, they "locked in" which tools to use and what process to follow in order to achieve the workshop's goal. This is contrary to the fourth case, in which the workshops' goal was to develop an understanding of how processes currently worked in the organization. Facilitators in the fourth case used a flexible adoption behavior and adapted workshop processes and tools based on the requirements and requests that participants made. Their overall strategy seemed to be to develop process modeling maturity to such a level that the participants themselves could facilitate their work process and perform modeling. Comparing the data collected from these two cases, we find that the style used in the first case matches the catalyzing engineer style, and that the style adopted in the fourth case matches the catalyzing artist.

We further found that the communication anchor talking was viewed as an important behavioral characteristic in several of the cases where the level of modeling maturity was low. In these settings, facilitators were not able to transfer the responsibility of the modeling dialogue to the group. Instead, they used a centralized model of control that participants, somewhat surprisingly, seemed to prefer. This model entails a behavior in which the facilitator performs both facilitation and modeling. In the second, third and fifth case this was done by using an assertive approach based on domain knowledge about the business being modeled. The facilitators took "a step forward" and became the midpoint in the workshop dialogue. They did this in order to coordinate both questioning and answering. In the third case, for instance, where the main purpose of the workshops was to create an understanding about the business, the facilitator had to possess a high degree of domain expertise together with tool and method excellence. The facilitator required this expertise to be able to guide the participants during the workshop. Thus, the style adopted by the third case's facilitator matches the driving engineer style, which is contrary to the style used by the facilitators in and the first and fifth cases. In these two cases, the facilitators, when working with senior management, had to use intercommunication skills and domain expertise rather than expertise in modeling techniques and tools to guide the workshops to develop to-be models. These facets match our model's driving artist style of facilitation.

Table 3: Cross-Case Analysis						
	First case: the shared service provider	**Second case: The state government**	**Third case: the utility provider**	**Fourth case: the investment company**	**Fifth case: the logistics service provider**	**Sixth case: the city council**
Behavioral anchors						
Communication anchor	Listening	Talking or listening	Talking	Listening	Talking or listening	Talking
Power anchor	Non-assertive	Assertive	Assertive	Non-assertive	Assertive	Non-assertive
Adaption anchor	Flexible	Static	Static	Flexible	Static	Static
Disagreement anchor	Avoid conflict	Embrace conflict	Embrace conflict	Avoid conflict	Embrace conflict	Avoid conflict
Control anchor	Decentralize	Centralize	Centralize	Decentralize	Centralize	Centralize
Modeling anchor	Lets the group model	Does modeling	Does modeling	Lets the group model	Does modeling	Does modeling
Facilitation anchor	Does facilitation	Does facilitation	Does facilitation	Lets the group facilitation	Does facilitation	Does facilitation
Involvement anchor	Involves	Involves or Disconnects	Disconnects	Involves	Involves or disconnects	Disconnects
Work approach anchor	Structured	Unstructured or Structured	Structured	Unstructured	Structured	Structured
Domain knowledge anchor	Agnostic	Domain expert or Agnostic	Domain expert	Agnostic	Domain expert or Agnostic	Domain expert
Situational factors						
Process modeling purpose(s)	To-be modeling	To-be or as-is modeling	As-is modeling	As-is modeling	To-be or as-is modeling	As-is modeling
Process modeling maturity	High	Low	Low	Moderate	Low	Low
Adopted style(s) in comparison to proposed framework	Catalyzing engineer	Driving artist or driving engineer	Driving engineer	Catalyzing artist	Driving artist or driving engineer	Driving engineer

Our case findings partially support H1. As-is modeling was, as expected, well supported by facilitators who followed a pre-defined work process and took an active role in the modeling dialogue. However, this was only the case when participants had low process modeling maturity. The reason for this seems to be that this style ensures that the workshop in such a setting becomes more effective. If the facilitator instead adopted a flexible and decentralized approach, the participants could have become anxious, rendering the modeling process inefficient. This negative effect seems to be enhanced if the facilitator lost their grip of the modeling process when attempting to transfer control over to the participants. The sixth case supports this interpretation: here, the facilitation team aimed toward a style that was decentralized, but they choose to use a centralized approach to avoid an inefficient work process based on lack of experience. By contrast, in as-is modeling settings where the participants possessed moderate or high modeling maturity (fourth case), the facilitator needed to be able to take a step back and catalyze the process by decentralizing responsibility to the group by, for example, using their skill to listen to the dialogue now driven by the participants themselves. This corresponds to the catalyzing artist style of behavior and not the engineer as we anticipated. Consequently, the data does not fully support H1.

However, our findings fully support H2. In the second, third, fifth, and sixth cases, the process modeling maturity was low. The favored facilitator style in these cases was the driving engineer style when the aim of the modeling was to develop as-is models. In contrast, if the purpose was to develop to-be models and maturity was low, then the preferred style shifted to the driving artist style. Data from the second and fifth cases in particular highlight the fact that participants who possessed low process modeling maturity favored a facilitation style that relied on interpersonal communication skills combined with domain expertise. The mechanics of modeling tools and techniques appear less preferred. Participants instead expected that the facilitator—often external and contracted—took an active position and guided them through the workshop by using a variety of activities based on inter-personal skills and acting with high flexibility when the participants required it. This corresponds to the driving artist style of facilitation.

If the process modeling maturity is high in a team, their facilitation needs changes. In these cases, a facilitator needs to be able to use their expert knowledge in modeling tools and techniques to support the participants when they themselves design appropriate outcomes, which acts as a basis for future organizational change (e.g. information systems development). This was the situation in in the first case, where a structured facilitator decentralized the work responsibility to the participants. This resembles the traits of the catalyzing engineer. This also means that a facilitator could be domain agnostic and rely completely on the knowledge about the tools used in the workshop when supporting a group to develop models representing a business's future states. Yet, the insights from the cases indicate that the behavior of the catalyzing engineer tends to be enhanced if they understand the business being modeled because this augments their ability to coach the group from "their viewpoint" and select appropriate tools when they themselves model the processes.

In Figure 2, we summarize the results from the cross-case analysis. The model illustrates that the most favored facilitation style was the driving engineer, which four of the six cases preferred when performing as-is modeling with participants with low modeling maturity. The driving artist was favored in two of the cases when performing to-be modeling with participants with low modeling maturity. Teams with high modeling maturity tended to favor catalyzing engineers when the purpose was to develop to-be models. Finally, organizations with teams of both high and low maturity favored catalyzing artists when as-is models were developed.

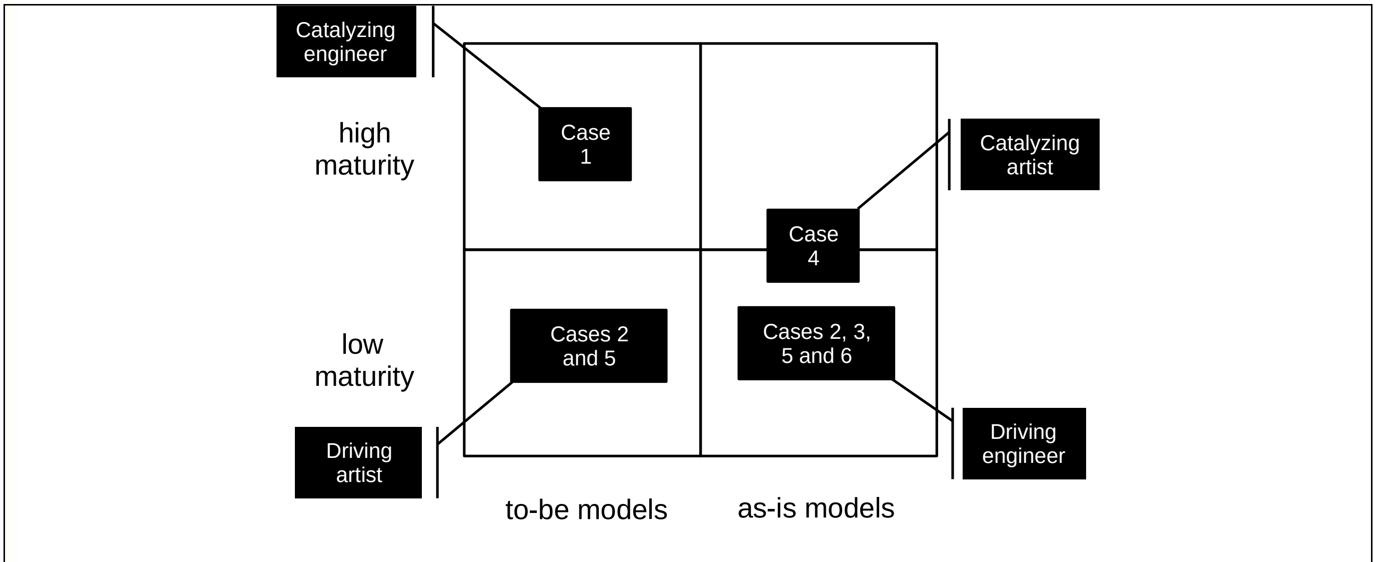

Figure 2. Visualization of Facilitation Styles by Modeling Maturity and Modeling Purpose

VI. DISCUSSION

Summary of Contributions

The facilitation of process modeling workshops has been largely ignored as a unit of analysis by the academic community, which is surprising given the relevance of facilitation to process modeling projects and to other analyst and design tasks (e.g., database specification or object-oriented design work). With the research results we present in this paper, we provide the following contributions.

First, contrary to existing literature (e.g., Persson, 2001) that reduces a facilitator to one stereotype (that is, in our conceptualization, the catalyst), we present some preliminary empirical evidence suggesting the existence of varied stereotypical archetypes when performing facilitation. As antipode to the catalyst, a second archetype of facilitation, the driver, is grounded in our empirical findings. For both archetypes, our characterization of the facilitation styles through dyadic behavioral anchors extends the description of different facilitation roles, such as those described in the literature on organizational analysis (Burrell & Morgan, 1979) or systems development (Hirschheim & Klein, 1989). Second, we show that we can further differentiate the catalyst and driver archetypes with the artist and engineer archetypes. It is the combination of these two opposite pairs (catalyst vs. driver and engineer vs. artist) that allows one to identify different facilitation styles, which, in turn, also suggests that a facilitator may choose from multiple styles based on the situational factors process modeling purpose and process modeling maturity.

Third, our empirical exploration suggests that organizations may not, but should, be aware of the diversity of potential facilitation styles, instead of reducing a facilitator to an un-opinionated, mechanistic stakeholder performing a script. We argue that our findings show that anticipated outcomes of the workshop and the process modeling maturity in a group ought to decide what facilitation style a process modeler should adopt for the task at hand. As Figure 2 visualizes, if the process modeling maturity is low and the purpose of the workshop is to deliver as-is models, then the driving engineer appears to be an appropriate style to use. This ensures that the modeling activity proceeds efficiently, which will include facilitators' performing facilitation and modeling themselves. In contrast, if the modeling maturity is high in the team, then the group is sufficiently empowered so that the facilitator can "take a step back" and decentralize the initiative and the control to the participants themselves. This means that the catalyzing artist style appears to be appropriate in situations where the purpose of the modeling is to develop as-is models. When the purpose is to develop to-be models and the group has high modeling maturity, then the facilitator must be prepared to meet questions and resolve issues regarding the modeling technique used. This means that the catalyzing artists' traits focusing on interpersonal abilities may not be sufficient. Instead, a catalyzing engineer style is appropriate because this style relies on anchors such as listening involvement, and a structured work approach using modeling techniques and tools. Contrary, if the modeling maturity is low and to-be models need to be developed, then our research indicates that the appropriate style is the driving artist. In this setting, the quality of the actual modeling dialogue appears to be most important, not modeling technique finesse. Dialogue seems to be the key mechanism to achieve a joint agreement in the group about how the business should be structured. Skills in negotiation (i.e., talking) and the ability to engage in modeling dialogue (i.e., domain knowledge) and resolve conflicts head-on, seems in this situation, to be key conduct rather than a display of expertise in modeling techniques and tools.

Fourth, our work uncovered that one can examine the set of orthogonal styles through the lens of behavioral anchors. We provide an initial set of ten behavioral anchors of facilitation mapped with the four behavioral styles that we believe can provide an emergent, richer understanding of the nuances and differences of facilitation roles in process modeling than previous research achieves (e.g., Hirschheim & Klein, 1989; Richardson & Andersen, 1995; Griffith et al., 1998; Persson, 2001). As such, this work forms a basis for developing facilitation measurement instruments that could be used for future research into forms and impact of facilitation styles. An emerging question in such future research could be to verify which of these styles—or which of the associated behavioral anchors—are enabling or inhibiting factors in collaborative settings. For example, group decision making processes and outcomes are likely to be influenced in different ways if the facilitator occupies a driving engineer versus a driving artist style.

Finally, we note that our model of behavioral styles in facilitation also supports the interpretation that each behavioral style can be subjected to priming (Chartrand & Bargh, 1996) through interventions or incentives. Thereby, our model can be used to identify appropriate organizational intervention strategies to prime the desired behavior of a facilitator, and, with this as base, provide actionable instructions about process modeling governance, a key noted issue in practice (Indulska et al., 2009b). Different mechanisms exist for priming particular behaviors, and the efficacy of principles such as instructive communication (Mayer, 2009), activation exercises (Martinsen, 1993), and educational strategies (Ramsden, 1988) should be noted as an important further research direction to explore the potential to increase the extent of actionable insights for practice.

The Applicability of Our Model to Other Areas of Systems Analysis and Design

Business process modeling was the primary application area for the theoretical model we developed. In the IS field, there are additional potential application areas for the model (e.g., data modeling and object-oriented modeling).

Data modeling is the process wherein a systems developer (the data modeler) analyzes what the data requirements are to build information systems that support business processes in an organization. Data modeling differs in comparison to process modeling in that it focuses on what data is needed to execute different activities in the business, while process modeling's focuses on capturing the flow of activities in the business. Data-modeling techniques are used by the data modeler to structure data in a consistent, standardized, and predictable manner. Hence, it is a practice often performed in collaboration with business stakeholders, including potential users of an information system.

Object-oriented modeling is a practice wherein a software engineer models an information system as a cluster of interacting objects. As a process, it builds on the results from the process and data modeling activities, and ends up with a system being modeled that is characterized in terms of class, data elements, and behavior. One often used notation for representing models developed during object-oriented modeling is UML.

Table 4 summarizes key propositions and findings from exploring facilitation behavior in the process modeling context, and present an outline of the expected scenario if a similar exploration were to be performed in the data modeling and object-oriented modeling context.

Table 4: The Applicability of our Model to other Areas of Systems Analysis and Design

Key propositions from our study	Findings from exploring the process modeling context	Expected scenario in data modeling	Expected scenario in object-oriented modeling
Four facilitation styles exist.	We found evidence for the existence of the styles driving engineer, catalyzing engineer, driving artist, and catalyzing artist.	Same premise and same findings if collaborative data modeling is performed.	Same premise and same findings; however, only the driving engineer and catalyzing engineer are likely to be supported due to little or no business stakeholder involvement.
The choice of a facilitation style is dependent on the modeling purpose.	We found that, during as-is modeling, the driving engineer or catalyzing artist styles were preferred; during to-be modeling, the driving artist or catalyzing engineer style was preferred..	Same premise and same findings.	Same premise and same findings regarding the driving engineer and the catalyzing engineer.
The choice of a facilitation style is dependent on participants' modeling maturity.	The driving engineer or driving artist style was preferred when maturity was low; the catalyzing engineer or catalyzing artist style was preferred when maturity was high.	Same premise and same findings.	Same premise and same findings regarding the driving engineer and the catalyzing engineer.

We predict that the four facilitation styles that we propose in this paper will be applicable to data modelers when they facilitate collaborative data modeling sessions. One likely reason for this proposition is that these modeling sessions will involve business stakeholders, such as potential end users who may, in similar fashion to process modeling, not always possess high levels of data modeling maturity. These situations will require a driving engineer if as-is models are developed or a driving artist if to-be models are developed. This proposition is supported by the fact that outcomes from these sessions are on an aggregated level also similar to a process modeling session. To-be or as-is models are developed stating requested data requirements in a future system or existing data use in a running system. Therefore, in line with the theoretical model developed, it may well be that as-is data modeling is best supported by a catalyzing artist if the maturity is high and by a driving engineer if the modeling maturity is low.

In contrast, in object-oriented modeling, we predict that only the findings related to driving engineer and catalyzing engineer will be supported. We anticipate that the participants in object-oriented modeling sessions are more homogenous than in data modeling and process modeling sessions. The participants in such situations are system engineers with similar competence profiles even though they may vary in their maturity in software engineering. As such, in an object-modeling context, the flexible characteristics of an artist may not be appropriate. Instead, we predict that the styles of a driving engineer or a catalyzing engineer will be valid styles in these settings.

These implications are, of course, speculative in nature. Future research could be performed in order to test these predictions, and to investigate whether there are other appropriate styles to adopt if the style of an artist is an inappropriate mask in facilitating an object-oriented modeling workshop.

VII. LIMITATIONS

Our development of a framework of facilitation styles is bound by several limitations. Our empirical evidence is limited in that we relied on six exploratory cases in which we collected interview data and relevance assessments of the ten behavior anchors as that our interviewees provided. We did not triangulate our data with other data such as video recordings of workshops, training material, and/or templates. We stress that further empirical evidence will need to be collected and analyzed to increase the external validity of our findings, and also to more rigorously examine the internal validity of our conceptualization. Our preliminary exploration might prove useful to such studies because the collected data provides several interesting insights into how facilitation occurs and is perceived in real modeling projects. In turn, even if limited, our empirical insights can provide an important cornerstone of a future research program on facilitation in modeling projects. In our view, a particularly important element of such a future research program will be collecting additional evidence to provide a more complete and precise base to investigate the relationships between the different anchors and the different styles and to clarify the boundaries between them to develop them into distinct anchors through both merging and refinement.

In this paper, we develop substantive theory; that is, we develop and explore a novel conceptualization of facilitation behaviors in systems analysis and design. Therefore, our model of facilitation can be seen as a sensitizing device that interprets and analyzes facilitation in systems analysis and design, rather than explains and predicts it. We discover preliminary empirical insights to assist further theory development. We did not comprehensively validate the newly developed conceptualization and the theoretical premises inherent in our model. We acknowledge that the scope of the data obtained is limited for hypothesis testing and, thus, our statistical conclusion validity is minimal. Future research could endeavor to further develop our conceptualization into formal theory and to develop a suitable operationalization of our model into a measurement instrument with which the presence of particular facilitation behaviors can be examined and correlated to data about modeling processes and/or outcomes. Ideally, this research would explore a multitude of different modeling projects and workshops and explore data from both qualitative and quantitative sources.

Furthermore, in our preliminary exploration, we acknowledge that we did not consider in full detail the specific context of each interview. We are, for example, aware that the interviewees worked in different industries and for organizations of different size. At this stage of our research, however, we only wanted to derive an initial taxonomy of facilitation styles and anchors. A further investigation of context-specific factors would likely lead to even deeper insights. However, this will require a larger set of data.

Third, we focused on ten behavioral anchors and their relative position in defining four facilitation styles. We note that we based our identification of the ten anchors on an interpretive review of facilitation, group work, and education literature to develop a parsimonious model (i.e., not more than ten anchors) and a model with sufficient content validity (i.e., anchors that sufficiently cover the substantive area of facilitation behaviors). While the iterative process led to refinement and an inter-subjectively comprehensive and disjointed set of anchors that broadly cover facilitation styles, we do not have means to argue exhaustiveness, comprehensives, or, indeed, discriminant validity of our conceptualization.

Fourth, we note that the choice, adoption, and efficacy of facilitation styles is neither entirely nor exclusively dependent on a facilitator's behavioral anchor choices. Instead, they are influenced by a broader range of personal, socio-organizational, and situational factors, all of which may exhibit strong, moderate, or weak influence on the actual style selected for a given project. For example, the dynamics of user participation can mediate the choice of style, and the change in user participation can require the adaptation of the facilitation style over the course of one or several workshop settings. Further extending and developing the conceptualization will be required to develop a more comprehensive understanding. To be able to develop a model of facilitation behaviour, we deemed it necessarily to isolate our focus. Further work could consider specifically the interaction between different stakeholders and the emergence of behaviours in these interactions.

Finally, we also caution the reader about the relationships of the behavioural anchors underlying the facilitation styles with each other. Our definition of the anchors suggests important differences between any two sets of anchors. However, we did not have data to examine discriminant validity of these anchors to examine any potential overlap. Such an examination would be best performed using statistical analysis of quantitative data with principal component analysis. Likewise, we do not have evidence about convergent validity of the anchors in relation to the styles. While our interviews and case analyses suggest that most anchors were prominent in identifying a particular style, we noted that some anchors (e.g., the anchors "involvement" and "work approach") did not become very apparent in our case data. Therefore, it will be important to examine the convergence of anchors in different styles, and to take opportunities to increase the parsimony of the facilitation model by eliminating anchors that add little explanatory value to the model. Again, such work favors more extensive data collection, preferably with quantitative data analysis, which we could not do.

VIII. CONCLUSION

In this paper, we advance a conceptual framework with four behavioral styles of facilitation, which can be used to describe, investigate, and explain the behavior associated with modeling workshop facilitation. We believe our explanatory model will be an important sensitizing vehicle in examining the ultimate outcomes from collaborative process modeling endeavors. To that end, we introduce ten proposed dyadic behavioral anchors that differentiate four facilitation styles based on the situational factors modeling purpose and modeling maturity. This is an important initial conceptualization of the success factor “business process modeling facilitation” and can be used to identify different facilitation styles and relate these styles to the ultimate success of process modeling projects.

To conclude, our work will hopefully lead to research that uncovers an emerging theory that evidences and explains not only workshop facilitation as just one success factor of process modeling, but moreover positions workshop facilitation in relation to other success factors of process modeling, such as top management support, modeling tool, and resource availability (Bandara et al., 2005). This theory, once fully mature and evidenced, will lead to more substantiated and detailed normative advice on creating the benefits typically expected from process modeling (Indulska et al., 2009a).

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Editor’s Note: The following reference list contains hyperlinks to World Wide Web pages. Readers who have the ability to access the Web directly from their word processor or are reading the paper on the Web, can gain direct access to these linked references. Readers are warned, however, that:

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