Increasing the Value of Process Modelling and Models

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ABSTRACT
This paper presents an effort to increase the value gained from process modelling activities in an organisation, both on a project and an organisational level. The main result of this effort is a framework to facilitate awareness of, communication about, and coordination of modelling initiatives between stakeholders and within and across projects, over time. The current version of the framework as a normative process model, is presented and discussed in the context of case projects and activities, and we conclude that although work remains both on sophistication of the approach and on validation of its general applicability and value, our results so far show that it addresses recognised challenges in a useful way.

Introduction
Enterprises have a long history as functional organisations. The introduction of machinery in the 18th century lead to the principle of work specialisation and the division of labour, and on to the need of capturing, structuring, storing and distributing information and knowledge on both the product and the work or business process. Business process models have always provided a means to structure the enormous amount of information needed in many business processes (Hammer, 1990). The availability of computers provided more flexibility in information handling, and lead to the adoption of modelling languages originally developed for systems modelling like IDEF0.(IDEF-0, 1993). The modelling of work processes, organisational structures and infrastructure as an approach to organisational and software development and documentation is becoming an established practice in many companies. Process modelling is not done for one specific objective only, which partly explains the great diversity of approaches found in literature and practice. Five main categories for process
modelling are proposed based on Curtis, Kellner, and Over (1992), Totland (1997), and Vernadat (1996):

1. Human-sense making and communication to make sense of aspects of an enterprise and to communicate with other people
2. Computer-assisted analysis to gain knowledge about the enterprise through simulation or deduction.
4. Model deployment and activation to integrate the model in an information system and thereby actively take part in the work performed by the organization.
5. Using the model as a basis giving the context for a system development project, without being directly implemented (as it is in category 4).

In an ongoing project on model-based network collaboration, we have investigated the practice and experience of process modelling across four business areas and a number of projects and initiatives in a large, international company. The main projects we have been investigating in various detail are:

- Process modelling for harmonising work processes
- Process modelling for improving quality
- Process models as work process support
- Process modelling for defining a new work area and process
- Process modelling for requirements engineering
- Process models as input for IT architecture decisions
- Enterprise modelling

The objective of these studies (Dalberg, Jensen, Krogstie, 2003) was to identify possible improvements and facilitate potential sharing of relevant resources, aiming towards an optimisation of value gained from modelling and models. Merriam-Webster Online defines value as: “something (as a principle or quality) intrinsically valuable or desirable”. We have aimed for a company-wide, inclusive scope in our use of the term value, guided by what has been deemed relevant by stakeholders.

Three important observations were made during the early stages of the project

- Even within projects a variety of objectives was found, spanning the categories presented above. A corresponding variety was found in tools, methods and attitudes to the potential value of modelling.
- In some initiatives there were significant divergence of expectations to the modelling results and value - between different stakeholders and also over time.
- Communication and sharing of resources between projects were mainly done through more or less ad-hoc reuse of models and personnel personally known by project workers in advance.

From this we made three assumptions:

- Single project value and stakeholder satisfaction could be increased by to a larger degree focusing on, communicating and prioritizing between diverging expectations and objectives.
- This would require a common platform for communication about modelling initiatives expectations, objectives, and other attributes.
- Such a platform could also facilitate reuse of relevant knowledge, tools, models, methods and processes between units and projects.
These assumptions lead to the development of a first version of a framework proposal on best practice for increasing the value of process modelling and models. This proposal consists of a terminology (taxonomy), a recommended model of activities for process modelling value increasing initiatives, and links to relevant knowledge and best practices for each step of the process.

The rest of this paper presents the methods used in our work, from identification of needs, development and assessment. We then give an overview of our first version of the framework of best practice for increasing the value of process modelling and models, and discuss its applicability with regard to challenges identified by stakeholders of earlier projects. Finally, we conclude on the applicability and usefulness within the limitations of our validation, and indicate needs for further development of the framework as well as for more large-scale validation within a wider scope.

**Research methods**

The research presented in this paper is based on qualitative analysis of a limited number of case studies. According to Benbasat, Goldstein, and Mead (1987), a case study is an approach well suited when the context of investigation takes place over time, is a complex process involving multiple actors, and is influenced by events that happen unexpectedly. Our situation satisfies these criteria, and the work has taken place within the frames of a three year project, including one in-depth case study, and several other less extensive studies of cases. In deciding whether to use case studies or not, Yin (1994) encourages to evaluate the type of research question, the control the investigator has over the actual behavioural events, and how the case focus on contemporary as opposed to historical events. Yin (1994) states that a single case study is relevant when the goal is to identify new and previously not researched issues. When the intent is to build and test a theory, a multiple case study should be designed. The intention of our study has been to find out how to increase the value of modelling and models in an organisation. There has not been reported much research within this area earlier, and we have therefore chosen a multiple case approach for the work presented in this paper, in order to investigate this research area closer.

The framework for increasing value of process modelling and models presented in this paper has been developed through an iterative process, refining the model. So far we have been through four iterations.

1. In the first iteration we studied the modelling initiative in a particular project in detail, using observation, participation, and semi-structured interviews. After initial explorative research, we focused on identifying the expectations and experiences towards the modelling and the models, on their score related to process modelling success factors, as well the extensive reuse of the models across the organisation, viewing this as possible knowledge creation and sharing as a part of organisational learning. An initial hypothesis on process modelling value was established, based on our findings regarding the importance of the relation to the context of modelling versus the context of use.

2. In the second iteration, we went through semi-structured interviews with representatives of several different modelling initiatives throughout the organisation to survey their experience with modelling, especially with respect to benefits and value of reusing knowledge through models across projects and organisation. A number of
initiatives were selected for the study where we were able to get in-depth knowledge from those involved in the process. An interview guide for interviews with key stakeholders was established. These interviews were focused on expected and experienced use and value from the modelling efforts in the case study, aiming at identifying as many expectations as possible, including any that may not have been documented in project documentation, because they were not considered directly relevant for the project goal. After initial open questions, the interviews were structured around keywords from the work of Sedera, Rosemann, and Doebli (2003) concerning “process modelling success”. Documentation of the study is based on these interviews, studies of project documentation and models. The information from the interviews was partly structured through the use of the interview guides. The guides were used as basis for structuring contact summary sheets with the main concepts, themes, issues and questions relating to the contact (Miles and Huberman, 1994). We used conceptual modelling techniques (Krogstie and Sølvberg, 2003) to structure this information, with a focus on the goals and expectations, modelling tasks, modelling projects, roles, modelling concepts, tools involved, and experiences. This second iteration resulted in a first design of the process modelling framework, including both models and text descriptions.

3. As a third iteration we carried out a workshop with a group of modelling experts, discussing the framework in relation to their own experiences through numerous process modelling projects. This resulted in an updated version of the framework.

4. In what has so far been our last iteration, we included the framework in an actual business project using action research, where one of our researchers also acted as a modeller. This was an informal test of the framework, but gave valuable input to updating it. We also saw the value of the framework in a modelling initiative through this test, where it gave positive guidance for the modelling. The next iteration of the development of the best practice framework should be to conduct formal tests in actual projects.

Our results and approach this far has certain limitations relative to internal validity (Miles and Huberman, 1994), as representatives of some of the involved roles have been followed more closely than others. As for descriptive validity (what happened in specific situations) the close day to day interaction with the users, especially in the first and the last iteration by one of the researchers, give us confidence in the results on this point. As for the interpretive validity (what it means to the people involved) we have again in-depth accounts from central people in main roles, but again not all the involved roles have been represented to the same depth. The same can be said on evaluative validity (judgements of the worth and value of actions and meaning). That we find many results that fit the categories of existing theoretical frameworks gives us confidence on the theoretical validity of the results.

A framework for increasing the value of process modelling and models
In this framework we focus on the context of the modelling initiative and the practice of the modelling, emphasising the value that can be extracted from the modelling and the models. The framework does not focus on how to perform the modelling itself. A lot of techniques, methods and tools already exist, so this framework rather focuses on the models and
modelling context; how to increase the value of the initiatives, through choosing the right practice based on the present context.

This framework aims to increase the value of the modelling and models through enhanced awareness about current and future stakeholders, any (potential) conflicts of interest, stakeholder expectations and potential value to be gained, as well as any negative effects increasing total cost. Based on this knowledge, decisions regarding resource allocation, modelling methods and tools, responsibilities etc can be made to optimize the value of a modelling activity and its resulting models, on a project level as well as on an organisational level. The basic elements of the framework are a recommended main process (see figure) and some basic concepts, elaborated on in the description of each sub-process in the main process.

Context is the surroundings of an initiative that might influence this. Value is identified in relation to the identified context, but also on potential value outside the initial project scope. The practice focuses on the strategies and practice around the modelling and the models.

The process is initiated when someone has identified a possible need for modelling, and has three main sub-processes, each of which are detailed below. The detailed graphical descriptions of each sub-process shows the main activities we have identified as important in order to increase the value of the modelling and models.

**IDENTIFYING CONTEXT**

Identifying the context is mostly about expressing the circumstances of the identified need for modelling, as a basis for further communication, prioritization and planning. It will usually coincide with the writing of an application for funding, development of a project mandate and/or a project plan. In this sub-process one should keep within the scope of the initial need,
usually expressed in traditional project documentation with formal obligations. Main issues to be clarified are detailed in Figure 3, and include:

- Identification of the context of the modelling or model activity/initiative, including users and other stakeholders, uses, and objectives.
- Identification of the organisations installed base, including existing reusable models or descriptions and other relevant tacit or explicit constraints.

![Figure 3: Identify context](image-url)

There are different actors related to a modelling initiative and a model, holding one or more roles. Users are using the models or participating personally in the modelling in order to achieve objectives. Other stakeholders may not be using the models directly, but (hope to) extract value from planned or achieved objectives. Techniques e.g. from user-centred design is useful at this stage in the identification of stakeholder types. Use includes how the modelling and models are going to be used in order to achieve the objectives. Objectives are the goals and purposes of the modelling and models.

**Table 1: Examples of activity context**

<table>
<thead>
<tr>
<th>Uses</th>
<th>Users</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilitate human understanding and learning</td>
<td>Top management</td>
<td>Increase human understanding</td>
</tr>
<tr>
<td>Communication tool</td>
<td>Middle management</td>
<td>Improve process</td>
</tr>
<tr>
<td>Support process improvement</td>
<td>Work executers</td>
<td>Manage process</td>
</tr>
<tr>
<td>Support process management</td>
<td>Software process engineers</td>
<td>Work more effectively</td>
</tr>
<tr>
<td>Support the work process</td>
<td>Project managers</td>
<td></td>
</tr>
<tr>
<td>Automate process guidance</td>
<td>Software engineers</td>
<td></td>
</tr>
<tr>
<td>Automate execution support</td>
<td>System engineers</td>
<td></td>
</tr>
<tr>
<td>Computer-assisted analysis</td>
<td>Software developers</td>
<td></td>
</tr>
<tr>
<td>Model deployment and activation</td>
<td>Software executives</td>
<td></td>
</tr>
<tr>
<td>Basis and context for software development</td>
<td>Project managers</td>
<td></td>
</tr>
<tr>
<td>Training of personnel</td>
<td>Software engineers</td>
<td></td>
</tr>
<tr>
<td>Measuring and analysing processes</td>
<td>System engineers</td>
<td></td>
</tr>
<tr>
<td>Document best practice</td>
<td>Software developers</td>
<td></td>
</tr>
<tr>
<td>Used as a support tool in requirement</td>
<td>Software executives</td>
<td></td>
</tr>
<tr>
<td>specification</td>
<td>Customer management</td>
<td></td>
</tr>
</tbody>
</table>
Installed base includes tacit and explicit assets already existing in the organisation that will have influence on the modelling and model context. Constraints include issues such as personal and organisational knowledge (may be tacit or explicitly expressed constraints), organisational guidelines or instructions (explicit constraints), existing tools and languages etc. Reusable models are models or other documentation that were created for other purposes, but that could be reused in the new project. Often models are created, but then not further used until an initiative arises, and someone remembers these models. Identifying these existing models is therefore an important task in order to later in the process decide whether or how to use them.

### Table 2: Examples of organisation installed base

<table>
<thead>
<tr>
<th>Constraints</th>
<th>Existing reusable models</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The organisation has bought one particular process modelling tool</td>
<td>• There exist old models that could or should be reused or built on</td>
</tr>
<tr>
<td>• The governance manuals states the modelling practice (tools, languages, methods)</td>
<td>• There exist text documents describing the work process</td>
</tr>
</tbody>
</table>

#### IDENTIFYING POTENTIAL VALUE

In the first sub-process, we identified the context where the modelling and the models were meant to play a role. In this second sub-process, Identifying potential value, the aim is to capture any (potential) extra and positive benefits of the modelling and models, exceeding the primary objectives captured in the first sub-process. Value may be connected to the resulting models, or to the modelling activity in itself.

Often the objectives identified in sub-process 1 will relate to the modelling or model initiative, while any potential value to the rest of the organisation will typically be ignored in the formal project documentation developed at this stage – due to a lack of awareness, or to avoid complicating responsibilities and bindings.

Value can be explicit and easy to grasp, but also tacit. Tacit value (e.g. the improved understanding of a work process for a modeller originally producing models for others) are often not explicitly captured in traditional project documentation, but may still affect decisions before or during a project, or the perceived value of the project in retrospect. Future reuse of the models can be an added value of the current modelling and models, especially if this potential is taken into account at an early stage. When describing potential value, we will differentiate on value related to

- Communication
- Learning
- Long-term benefits
Identifying potential value

CHOOSE PRACTICE

The choice of a suitable practice should be based on the identified contexts of the modelling and models, as well as the identified expected value. Modelling practice include reuse strategy, methods, languages and tools, while managing practice define the importance to focus on the management the modelling, the models and the work processes. The general framework of quality of models and modelling languages (Krogstie and Sølvberg, 2003) can be used as guidance here relative to modelling practice related to methods languages, and tools, having the stakeholders of the models and the objectives of modelling already defined. When goals or stakeholder types are changed during a modelling project, one need to reassess these aspect, and potentially select a new modelling language, method or tool.

Table 3: Examples of modelling practice

<table>
<thead>
<tr>
<th>Reuse strategy</th>
<th>Method</th>
<th>Language</th>
<th>Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Do not reuse anything, start from scratch</td>
<td>• Visual representation</td>
<td>• IDEF0</td>
<td>• Visio</td>
</tr>
<tr>
<td>• Reuse documentation</td>
<td>• Modelling</td>
<td>• UML</td>
<td>• PowerPoint</td>
</tr>
<tr>
<td>• Reuse models indirectly or directly</td>
<td>• Mapping</td>
<td>• “Boxes and arrows”</td>
<td>• METIS</td>
</tr>
<tr>
<td>• Reuse methods, language and/or tools</td>
<td>• Text</td>
<td>• Text</td>
<td>• Aris</td>
</tr>
<tr>
<td>• Workshops</td>
<td>• DNV Mapping method is one example.</td>
<td>• Checklists</td>
<td>• Excel</td>
</tr>
<tr>
<td>• Workshops</td>
<td>• “Boxes and arrows”</td>
<td>• Templates</td>
<td>• Word</td>
</tr>
<tr>
<td>• Workshops</td>
<td>• “Boxes and arrows”</td>
<td>• Images</td>
<td>• “Pen and paper”</td>
</tr>
</tbody>
</table>
**Sense-making versus corporate memory**
We have chosen to differentiate between modelling for *sense-making* and for *corporate memory*. These concepts can be helpful for expressing fundamental differences in expectations to a modelling initiative, often rooted in personal worldviews emerging as strong opinions on modelling use and approaches. Totland (1997) addresses modelling for sense-making and corporate memory, and the relation to objectivistic and constructivistic worldviews.

The corporate memory models are reflecting the organisation, and will exist as a reference point over time. The sense-making models are used within an activity in order to make sense of something in an ad-hoc manner, and will usually not be maintained afterwards. Sense-making and corporate memory can be seen as the two endpoints of a scale, where you have examples of mixed types of models in between.

These concepts express and explain one type of differences and disagreements between stakeholders, drifting within projects, or conflicting approaches in modelling activities that would otherwise be expected to have much in common.

![Figure 5: Level of formality vs. goal of modelling](image)

The choice of the formality of the modelling practice should be based on the previous identified contexts, and where these fit on the line with sense-making and corporate memory as the two extremes. As shown in the above figure, sense-making initiatives generally require a low level formality of practice, while when the context is corporate memory a more formal approach is needed. The choice of methods, tools and languages, as well as the choice of managing practice should reflect the level of need of formality. High formality requires more managing than low formality.

**Table 4: Comparing modelling for sense-making and corporate memory**

<table>
<thead>
<tr>
<th>Sense-making</th>
<th>Corporate memory</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The modelling process is the goal</td>
<td>- The model itself is the goal</td>
</tr>
<tr>
<td>- The actual use is often documented</td>
<td>- The intended use is often documented</td>
</tr>
<tr>
<td>- Collects the natural structures</td>
<td>- Collects the formal structures</td>
</tr>
<tr>
<td>- Identified people important</td>
<td>- General user-roles important</td>
</tr>
<tr>
<td>- Less formal methods, tools and languages</td>
<td>- Formal methods, tools and languages</td>
</tr>
<tr>
<td>- Often used only for a specific activity or project</td>
<td>- Often re-use across the organisation</td>
</tr>
<tr>
<td>- The models are “thrown away” after use</td>
<td>- The models are stored and re-used</td>
</tr>
<tr>
<td>- Management of the work process, models and modelling not important</td>
<td>- Management of the work process, models and modelling important</td>
</tr>
<tr>
<td>- Roles not important, more ad-hoc</td>
<td>- Roles important.</td>
</tr>
</tbody>
</table>
When identifying the context of the modelling activity, the optimal position on the sense-making – corporate memory axis is crucial in order to be able to choose appropriate methods, languages and tools, as well as formality for the managing practice.

**Applying the Framework**

During our research we have studied several cases throughout the organisation, and documented them based on interviews, observations, participation, workshops and document reviews. Through this we have identified expected and experienced value of the modelling initiatives and the models themselves, as well as the challenges they have experienced. In this chapter we present some of the identified value, and then look into the challenges and how we mean the framework can help solving some of these, and thereby increase the value of the modelling and models.

**BENEFIT AND VALUE**

The stakeholders in our case studies indicated many valuable outputs in addition to those initially intended from modelling initiatives and the use of models. In the following table we list some of our findings.

**Table 5: Identified examples of benefit and value of modelling**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Value of process modelling and models</th>
</tr>
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</table>
| Communication         | • High-level models encourage an agreement among the management participants, creating important common references, identification and enthusiasm.  
                        | • The models trigger communication, being something that everyone can relate to.  
                        | • “Three boxes and some arrows: This is a fantastic communication tool!  
                        | • Communication is initiated and facilitated by and through the models.                                                                                                                                 |
| Learning              | • The modelling process itself can be a learning experience for the participating domain experts, increasing their knowledge about the processes.  
                        | • Through the workshop sessions the participants learn a lot from interacting with each other, a lot of “new” information is uncovered, and afterwards they all have an overview that none of them had from before. People see themselves better after such a modelling session.  
                        | • Training may take less time when process models are used.                                                                                                                                 |
| Long-term benefits    | • The process model gives the organisation one language and one tool for everyone in the organisation; a common frame of reference.  
                        | • Simple and effective diagrams show what is important for the organisation.  
                        | • The models helpe taking care of and storing the competence of the people in the organisation. Modelling is seen as a mechanism to extract knowledge from “peoples head”.  
                        | • Through modelling AsIs, and not only ToBe, best practise is secured and not forgotten.  
                        | • The models are being used in marketing towards potential customers. There is a value in telling the world that they are using a process.                                                                                                                                 |

**CHALLENGES OF MODELLING AND MODELS**

We will in the following address some of the major challenges identified in our case studies, and examine how the framework could help solving these. For each paragraph we first state
the challenge, then we look into how to possibly solve it through use of elements of the framework.

**Challenge 1:** To keep the models and other descriptions updated and consistent.  
*Example:*  
- It becomes difficult to keep the models updated as the complexity increases, and the amount of different non-integrated tools rises.  
*Framework application:* The framework suggests to carefully analyse the expected context of the models, and to use this as a base when choosing the modelling practice. Correctly choosing methods, language and tools, considering the future complexity, will make the management of the models easier. The framework also states the importance of viewing the management of the models as a specific activity, stressing the importance of appointing a model responsible. This is a different role than the modelling responsible or the work process responsible (process owner).

**Challenge 2:** To re-use the models in situations they were not intended for.  
*Example:*  
- Models are often created primarily for one objective. This is challenging when others want to use them as basis for other work.  
*Framework application:* Through an analysis in the early phase of the modelling activity, identify both the primary use, as well as potential future use and additional potential value. If there are indications of future use of the models, one should be considered to take this into account when choosing the modelling and the managing practice to the extend possible. When in a re-use situation, where a modelling initiative is going to re-use earlier developed models, it is important to investigate the context the models were created for, and what modelling and managing practice have been used. The decision of a re-use strategy should be based on this investigation.

**Challenge 3:** To handle situations when the modelling starts out as an informal activity, but ends up being used as the process defining tool, and the formality in the original language and tools are not suited for this.  
*Example:*  
- Often a modelling initiative starts out creating relatively informal models in order to use for scope and time limited activities, where there is less focus on formality. After a while, sometimes the models moves towards having a more permanent place in the organisation, and needs to be kept updated, be scaleable, and often add other functionality when the areas of use are extended. The experience is often that the chosen tools and formality in language does not fit into this new scenario.  
*Framework application:* What is important, is the awareness of where on the scale of sense-making versus corporate memory the models were initially created, and where on the scale the models have ended up (and where they can be expected to end up). Sense-making models do not require a very high level of formality, while corporate memory models often do. Being conscious about this will make it easier to identify what has to be changed in the modelling and managing practice in order to align with the new situation.

**Challenge 4:** To produce views of the model of a scale suitable for the user.  
*Example:*  
- Not being able to produce views of the models adapted to the specific user and the objective of the use creates challenges. Specific users and specific objectives of use
require adapted views of the model. The creation of these is a challenge, both technically and as regards content.

Framework application: Identify the users and other stakeholders as part of “identify context”, analyse their background knowledge, needs, and planned model use. Methods, language and tools should then be chosen based on this.

Challenge 5: To create models that do not restrict or limit the communication.
Example:
• High level models are easy to agree upon, but real gaps between the model and current situation stay uncovered.
• A model is only one view of the world. When a model is the communication generating artefact, the discussions often leave out those issues not included in the model.

Framework application: Carefully identify the context and the potential value of the modelling and models before creating the models, in order to include what communication is needed. Being conscious about how to increase the potential value of the communication situation, will potentially help creating a more fitting model. The awareness of the limitations of a model, and what restrictions it gives is the key.

Challenge 6: To implement the models in the organisation, also among those that were not a part of the modelling team.
Example:
• It is a challenge to make the models an integrated part of the organisation, and to involve the users to the extent that they feel an ownership and responsibility for them.
• When the person doing the modelling leaves the project and the modelling is left to the domain experts to finish, implement and keep updated, experience shows that focus on the models often fades. If the modeller leaves too early, the models may not be implemented.

Framework application: Identify all the expected users and other stakeholders during the initial phase of the modelling activity, look into their expected areas of use and identify potential value. By choosing a modelling practice that magnifies the experienced value of the models also by users and other stakeholders not participating in the modelling, it will most likely be easier to implement the models in a way that creates ownership and feels useful for the involved parties. In some circumstances it is found important to involve many stakeholders in the modelling, in which case one can use techniques such as “modelling conferences” (Gjersvik et al 2004).

Challenge 7: To be conscious about distributing the responsibility of the modelling, models and processes correctly.
Example:
• One person was responsible for everything that had to do with the processes and the models.

Framework application: The framework distinguishes between managing the modelling, the models, and the work processes. One role is related to the management of the modelling, another to management of the models, a third to management of the work processes. This makes it easier to address each aspects, while also leaving the initiative less vulnerable to personnel changes

Challenge 8: To merge models due to organisational changes.
Example:
• Merging several models into one, describing one common work process is a challenge when the work processes, the modelling tools and the modelling languages are all different. They were created for different user groups originated in different organisational units and also countries. The modelling processes were also different, involving different types of people.

Framework application: Such models are most likely based on different methods, languages and tools, created for different objectives, uses and users and other stakeholders. The historic context and the modelling and managing practice of each of the models should be investigated in order to establish a re-use strategy and choose the correct current modelling and managing practice.

Conclusion and further work

The Value Framework has been evaluated against challenges and experiences of several modelling initiatives in the organisation. There are clear indications that further development and use of the framework will facilitate communication and alignment within and between project initiatives and organisational units, thus potentially increasing value from projects through improved relevance and quality of results as well as reduced cost.

The present results of internal evaluations and testing are sufficient for our decision to continue development and testing of the value framework. For a more reliable and general assessment of its applicability and value, more research is needed. This should include a more thorough testing of the framework in a wide range of projects and across companies.

Acknowledgements

We would like to specifically thank the participants in the conducted interviews for openly sharing their experiences with and views on process modelling activities.

The reported work has been part of the research project 156440 MONESA (Modellbasert Nettverkssamarbeid), partly founded by the Norwegian Research Council.

Author Biography

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Siri Moe Jensen has an MSc (1989) in Informatics from the University of Oslo. She worked for 9 years with data communication, interoperability and e-business at Norsk Regnesentral, an independent research foundation. After four years of independent consultancy, she started
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