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Potential pitfalls of process modeling: part A

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Abstract

Purpose – This paper summarizes typical pitfalls as they can be observed in larger process modeling projects.

Design/methodology/approach – The identified pitfalls have been derived from a series of focus groups and semi-structured interviews with business process analysts and managers of process management and modeling projects.

Findings – The paper provides a list of typical characteristics of unsuccessful process modeling. It covers six pitfalls related to strategy and governance (1-3) and the involved stakeholders (4-6). Further issues related to tools and related requirements (7-10), the practice of modeling (11-16), the way we design to-be models (17-19), and how we deal with success of modeling and maintenance issues (19-21) will be discussed in the second part of this paper.

Research limitations/implications – This paper is a personal viewpoint, and does not report on the outcomes of a structured qualitative research project.

Practical implications – The provided list of total 22 pitfalls increases the awareness for the main challenges related to process modeling and helps to identify common mistakes.

Originality/value – This paper is one of the very few contributions in the area of challenges related to process modeling.

Keywords Organizational processes, Process management, Modelling

Paper type Viewpoint

Process modeling is a widely-used approach to achieve the required visibility for existing processes and future process scenarios as part of business process improvement projects. The intellectual challenges related to process modeling keep many academics entertained and a plethora of tools, methodologies and educational material in the form of publications and seminars is available. However, process modeling has also strong opponents. It is criticized for being over-engineered, time-consuming, costly and without (sufficient) value. Thus, the challenge is to find the right level of modeling for the underlying purpose. I am strong supporter of process modeling, but this paper is not about the advantages of modeling. It is dedicated to the typical pitfalls of process modeling. Awareness of the main challenges is often a better secret of success than blindly following recommendations why we should do it. In general, it has been proposed to increasingly learn from failures in order to derive a list of those factors that characterize true successful practice (Denrell, 2005).

1. Process modeling in the twenty-first century

Flowcharting and process mapping as a means to visualize a business process have been around "forever". One of the first systematic approaches was flow diagrams as

The author would like to thank Roger Tregear, Leonardo Consulting, Andrew Spanyi, Spanyi International Inc., Brad Power, Babson College, and Jan Recker, Queensland University of Technology, for their critical review and valuable contributions to this list of pitfalls.

Business Process Management Journal
Vol. 12 No. 2, 2006
pp. 249-254

1463-7154
DOI 10.1108/14637150610657567

developed by Goldstine and von Neumann in 1946, and flowcharts have been a part of software development since the beginning of programming. Flowcharts in all types of sizes and shapes have been popular in organization management. They are part of policies, procedures and organizational handbooks.

The current generation of business process analysts prefers the term "process modeling" rather than flowcharting or mapping. Process modeling claims a more disciplined, standardized, consistent and overall more mature and scientific approach. It facilitates process visibility and has to satisfy an increasingly heterogeneous group of stakeholders (from the CXO to the end-user) and modeling purposes. It has to be scalable, configurable and usually be able to provide a bridge between IT capabilities and business requirements.

A second change over time has been an increased focus on business process modeling. The prefix "business" encourages the community of business representatives, end-users, and, most of all, potential process owners not only to understand process models, but also to more, and more actively, model their own business processes. The assumption is that it is easier to pick up the concepts and techniques of process modeling than to articulate the complexities of a certain business domain to a business process analyst. As a response upper-CASE tools are available, which support the business modeling community, but have only limited intentions to convert the outcomes into executable or implementable process specifications.

Another observation is related to the increased size of process modeling initiatives. A number of organizations conduct process modeling with an enterprise-wide scope and even globally. As a consequence, the investment related to tools, methodologies, training and modeling activities reached the point, where process modeling increasingly faces the "Where is the return on investment?" question.

Such a development can be appreciated from an academic viewpoint as it provides opportunities for countless research projects. However, this situation is also exposed to the danger of over-engineered techniques, tools, modeling conventions, etc. resulting in projects which finally fail.

Like business process management, knowledge management and customer relationship management, nobody seriously questions the need for process modeling, but the million-dollar question is how much modeling is actually required?

A wide variety of responses to this question can be found in current projects all over the globe. At one extreme, some companies consciously minimize their efforts related to process modeling as they do not believe in "fat methodologies". In these cases, the blueprinting of future business processes is conducted with the simplest drawing tool, even if the modeling project is followed by a multi-million dollar ERP implementation. Such a behavior is in sharp contrast to the actual impact on the costs of business processes. The early phases of business process design might not be the most expensive ones, but they tend to have the highest impact on the benefits and costs of the implemented business processes.

At the other extreme, companies invest a significant amount of time and money to select the most appropriate modeling tool, write literally hundreds of pages of guidelines attempting to precisely standardize the layout of a process model. They spend weeks customizing the tool, comprehensively modeling their processes in terms of scope and depth. This approach is then rolled out all over the world with the aim of developing a consistent template for execution.

Thus, the actual practice of modeling sees all variations and can range from brown (butcher) paper to the use of sophisticated modeling techniques with high expressive power leading to executable process specifications. However, elaborated modeling techniques often come with the price of limited understandability.

A process model has two complexity drivers. One driver is the way process modeling is approached, i.e. *modeling complexity*. How difficult is it to design a model within the provided modeling environment (tool, techniques, guidelines, etc.)? How complex does the model look which is derived? Or, as a representative from an American financial service provider phrased it: "Does the model still fit on one page? If not, it is not a good model." The other complexity driver is the complexity of the process itself, i.e. *process complexity*. A process model is like a mirror; it reflects. But unlike a mirror, it also allows deeper focus on the elements of interest. Unfortunately, process modeling is sometimes seen as being very complex and modeling complexity is blamed for this. However, it is possible to reduce and manage modeling complexity to a large extent, which allows concentrating on process complexity. Giving up on modeling means giving up on comprehending business processes and escaping from dealing with the process complexity of an organization.

Process modeling is an area where artists (heavy right brain utilization) meet scientists (heavy left brain utilization), internal knowledge workers meet external knowledge owners, business meets IT. It is not only about the final artifacts (the models), which represent the outcome of these modeling session, but it is the process of modeling itself and its impact on subsequent activities and projects, which deserves attention.

This brief introduction shows that process modeling is (back) on the radar screen and gets attention. Consequently, I thought it might be worthwhile to increase the awareness for common traps. The following list provides such an overview of typical characteristics of unsuccessful process modeling. This first part of the paper covers pitfalls related to strategy and governance (1-3), and the involved stakeholders (4-6). The second part will cover tools and related requirements (7-10), the practice of modeling (11-16), the way we design to-be models (17-19), and how we deal with success of modeling and maintenance issues (19-21). I like to stress, that these pitfalls are about process modeling and not about business process management.

1.1 Lack of strategic connections

Process modeling, like everything else we do in any organization, should have a demonstrable connection (direct or indirect) to one or more critical business issues. Anything that does not have such connections is a pernicious form of "waste" and we should stop doing it. This applies to process modeling as well, especially where process management maturity is low and the whole approach is "on trial" and competing for corporate attention and funding. Making sure that there are real and perceived links to corporate strategy is vital for ongoing success. Ongoing success in contributing to the execution of corporate strategy is a prerequisite for ongoing support for process work.

> Establish and maintain a clear and widely shared understanding of the contribution being made by process modeling to the better execution of corporate strategy.

1.2 Lack of governance

Who owns process modeling? How do we measure its success? Who and how do we make decisions regarding tools, methods, procedures, reporting duties, etc.? And most important, how do we fund all of this? We lack an established body of knowledge on process (modeling) governance. However, where there is a conscious focus on process management governance, accountability for modeling as well as the processes related to process modeling, can be defined. It is common practice that the business areas are responsible for the model contents while a central process management group is responsible for consistency in light of the modeling conventions, etc.

> Governance, i.e. accountability and decision processes related to process modeling requires a clear specification and has to be adapted with changes in the objectives, scope or size of the modeling initiative.

1.3 Lack of synergies

Business modeling can be conducted for a wide range of purposes. It could be the interest to document, to cost, to simulate, to animate or to improve a business process. Or the driver might be the need to be compliant (ISO, Sarbanes-Oxley, Basel II). Models are used for software selection, software evaluation, software configuration, and software development. Process modeling takes place in the context of the design of enterprise architectures, HR capacity planning, project management, knowledge management, document management, and relationship management and so on. More advanced modeling solutions cater for the modeling requirements of a wide range of these purposes. However, in practice we see many organizations where different organizational groups model the same process independent from each other for different purposes. A large Australian bank, for example, uses ARIS for their Sarbanes-Oxley-related work, but IGrafix for a company-wide process improvement project. The opposite is the case at an American brewery, which uses ARIS for the purpose of an SAP-implementation, but Visio for Sarbanes-Oxley. These scenarios are unfortunately more the rule than the exception. They show that at this stage the reuse of models is not fully utilized, and as a consequence true economies of scale are not achieved. This of course is also related to governance issues (see previous item).

> Be aware of all stakeholders with potential interest in modeling, and try to migrate them to one platform.

1.4 Lack of qualified modelers

Even if Microsoft Word provides me with templates, auto-formatting, spell-checking, thesaurus, etc. I will most likely never be the next Dan Brown (the author of the bestselling *The Da Vinci Code* book). In a similar way, a business process analyst needs more than an advanced and customized modeling tool and detailed modeling conventions. He or she needs the right methods and skills to be able to facilitate interviews and workshops. (S)He must be able to translate comments and process documentation into structured and overall appropriate process models. However, many vendors and organizations focus too much on explaining the keystrokes of the modeling tool rather than educating the next generation of process modelers. In fact, recent focus groups with organizations conducting large modeling projects indicated that the capabilities of the modelers seem to be one of the key issues. An Australian

utility provider acknowledged this, and sent 18 of its business analysts to a university for a process management course in order to convert them into business process analysts. The fast growing interest in process management education and even certification courses (see BPMG) is another indication of the need for specific process management skills. The need for appropriately qualified process modelers increases with the size of the initiative as it becomes important that adequate quality assurance procedures are part of the modeling process. It is not possible to control the different quality aspects of a model (syntax, semantics, pragmatics) after the models are designed, if on a single day 100 + hours are spent on designing new models.

Business process modeling requires specific skills, which are different to the classical profile of a business analyst.

1.5 Lack of qualified business representatives

I have to admit that I know some intellectually gifted academic colleagues, who are amazing thinkers and create wonderful solutions. However, they struggle to find realistic problems to match those solutions. This might be tolerated in academia, but this is not the case for the world of business process improvement. As much as I rely on qualified modelers, I require the right process representatives, i.e. appropriate subject matter experts. In principle, I need three types of people. First, I need people with knowledge about the current processes. Their level of knowledge will depend on the focus of the project. Their role is to report on the current ways the process is conducted, what steps are undertaken, what data is required, what exceptions do exist, who is involved, etc. In most cases, there is no time and/or budget for detailed time and motion studies, so the process modeler relies on the expertise of the business representative. Of course, the modeler has to be careful that (s)he captures as-is models – instead of as-if models. Furthermore, these representatives will become the ambassadors for the process change, and thus they have a crucial role in the organizational change to follow. Second, we need people who provide directions. What is the overall objective? What is the timeframe for the project? Can we think out-of-the-box? What are the constraints? Who will be responsible? How do we measure the success? Third, we need people who create ideas. These people do not have to be involved in the actual current process. However, they have to have a sufficient understanding of the project objectives, unutilized capabilities, current common practices, and future developments. It is also worthwhile to involve further external stakeholders (customers, vendors, further business partners) in selected modeling sessions, so their viewpoints can be considered as well.

The right mix of business representatives is crucial for the project success.

1.6 Lack of user buy-in

I remember a project in Canberra. Business analysts in a government organization used Rational Rose and UML diagrams to capture approximately 90 business processes. They were very satisfied with the outcomes and had the feeling they really understood the business requirements. However, this perception was not shared by the involved business representatives. It is essential that business modeling is a collaborative effort between business process analysts and business representatives.

Another example – in one of my very first modeling-related projects, I asked the project sponsor if they had done modeling before. He opened the drawer of his desk and pulled out two folders as thick as the Boston phone book. These examples tell one story. Modeling should not happen behind the line of visibility. UML is without any doubt one of the emerging candidates for future business modeling initiatives, especially when it really merges with the new proposed business process modeling notation. But at this stage, its limitations in terms of supporting a number of business-related drivers for modeling do not make it a convincing candidate for business modeling. We also see many cases, in which models are copied from dedicated modeling tools into PowerPoint, and then modified in size, shape and color to make them more user-friendly. The problem of models, which are not self-explanatory gets worse when organizations start to publish their process models on the web. In many cases thousands of employees are able to access hundreds of process models via their intranet. In these scenarios the models need to be self-explanatory. I admit that the academic world did not pay sufficient attention to an appropriate visualization of process models. There is some research going on in this area involving experts familiar with multimedia, virtual reality, creative industries, etc. However, it will take a while before we see modeling solutions which combine advanced expressive power of a modeling language (syntactic and semantic quality) with intuitiveness and user-oriented graphics (i.e. pragmatic quality).

> Make sure that the way you visualize your models is liked, intuitive and well-accepted by your users.

Further pitfalls of process modeling-related to tools and related requirements, the practice of modeling, the way we design to-be models and how we deal with success of modeling and maintenance issues will be discussed in the second part of this paper.

Reference

Denrell, J. (2005), "Selection bias and the perils of benchmarking", *Harvard Business Review*, Vol. 83 No. 1.