

Towards Collaborative Business Process Modeling¹

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1 Business Process Management Primer

Given the dynamic nature of today's markets, products undergo constant evaluation, review, refinement, and change. Products are provided by business processes, i.e., collections of tasks that are performed by people and systems. This key role of business processes holds for both tangible products like electronic devices and intangible products like insurance policies.

Since business processes play a key role in understanding how businesses operate and how that can be improved, there is increasing interest in properly documenting and developing these processes. Only if business processes are represented in a way that the people can understand, the process can be improved, adapted to new market situations, and implemented in software.

We will use a sample business process from the telecommunications domain to illustrate business process modeling. The process involves three departments of a fictitious telecom organization, which are shown as swim lanes in the process model in Figure 1.

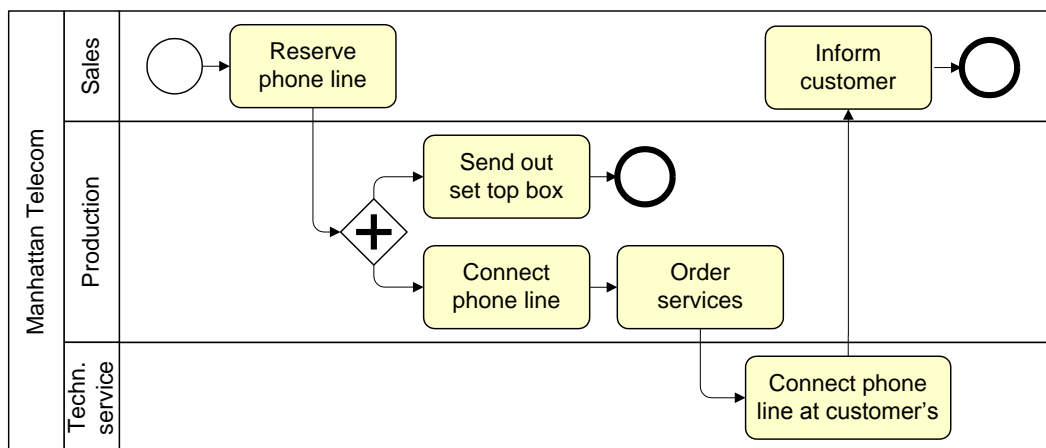


Figure 1: Sample telecommunications business process involving three departments. Process models help to pinpoint information and to use it as discussion basis for the people involved.

Each swim lane holds the activities that the respective organizational unit is responsible for. For example, the process starts with the Sales department reserving a phone line for a new customer. Next, Production sends out a set top box and connects the phone line and internally orders the services the customer booked. Finally, Technical Service makes the final setup and Sales informs the customer about the availability of the new product.

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While this process model represents a simplification of a real world business process, it is suitable to answer a number of interesting questions regarding the operations of the telecommunications company, like the following.

- Who is responsible for starting the process?
- Which activities need to be conducted and which departments are responsible?
- When does hand-over of work between departments occur?
- What is the flow of information between departments?
- What are the decision points, and who is responsible for taking the decisions?
- How can we use information system to speed up the process?
- How fast is the process, what are the costs?
- Where can I improve speed and save unnecessary activities?
- Who is affected by a product change?

While not all of these aspects are directly covered in the example, it is obvious that all these questions can be discussed more concretely by visually inspecting the process model. Answers can be located by pointing at specific parts of the model. For instance, you can point the finger to the Connect phone line activity and ask why does Production connect the phone line? Why not Technical Service? The visual representation of the process model provides a common understanding of the people involved, which in turn enhances productivity and reduces misunderstandings during process modeling and improvement.

While the benefits of business process modeling is widely recognized, traditional process design methodologies and tools suffer from not putting process participants in the center of the modeling effort. Modern, collaboration-based methodologies and tools provide a significant progress in this direction. Recent advances in software technology and Web 2.0 make it possible to assign to process participants a more active role in business process modeling. Rather than being interviewed and getting to see the final outcome of a consultant's modeling effort, process participants are actively involved in the design and development of the process. Collaboration technology is used to achieve discussion, improvement, and agreement about business processes. In this article, we illustrate this current trend towards collaboration and social networks as essential parts in business process management.

2 Adding Collaboration to Process Modeling

In this section, collaboration in process modeling is motivated by highlighting the issues related to the traditional approach to process modeling. In Section 2.2 collaborative business process modeling is introduced as the conceptual basis for the remainder of this article.

2.1 Traditional Approaches

Process modeling is a challenging task that many large and mid-sized companies and public administration struggle with. Arguably the most prominent reason for this situation is the fact that business processes are not tangible, they are not visible. They represent how organizations work, which departments have which responsibilities, how work is handed over and related aspects.

To make this point more concrete, we relate business processes to tangible objects like, for instance, buildings. Architectural drawings can easily be related to the final building as they simply look like it – despite all the abstractions made in the drawing. Process modeling is significantly harder because it has to make something visible which is invisible. In addition, different persons in different roles are involved in business processes, each of whom with an own perception of the process and its current shortcomings.

This might be an explanation why only experts dare to work with process models. An isolated group of “gurus”, i.e. people with specialized training and skills, create and maintain these models. We will call them “method experts”. They typically belong to a strategic department or a group responsible for organizational development. It is also external consultants who come on board as method experts, especially in mid-sized companies.

Traditional process modeling approaches are based on the following pattern. The method expert visits the company, conducts interviews with employees. He develops process models and makes them available for others to consume, to look at and to locate themselves and their work in the process. Business process modeling tools often provide publishing mechanisms for the company intranet, allowing employees to browse the vast process landscape.

The main problem in this traditional approach is that most people involved are degraded to passive readers of the diagrams. Their experience made in their daily work, their ideas on process innovation are lost. Being a product of a small group of method experts, process models too often have low acceptance among actual process participants. As soon as daily doing changes, the models are outdated. Here, process models miss their objective. They were introduced as basis for discussion and as orientation guide. Now they quickly become obsolete. In many cases, this setting ultimately leads to “mothware”, process models that are put on a shelf – or on the intranet – and never looked at again.

2.2 Collaboration Space

As motivated in the previous section, too often, these process models reflect the understanding of the method expert rather than that of the persons actually involved in the process, i.e., process participants. Too often, the valuable knowledge of process participants is not used to the full extent. Imagine that a process participant experiences difficulties in performing a business process. Given appropriate collaboration support, he could proactively express this by annotating the respective process model. Method experts could take this valuable feedback to revise the process model accordingly. Thereby, valuable information would be added to the knowledge base of the organization.

This description might be a little too dramatic – but just to point to where a lot of improvement potential can be found. Process models must reflect a shared understanding. They must be the central starting point for discussing process innovation ideas.

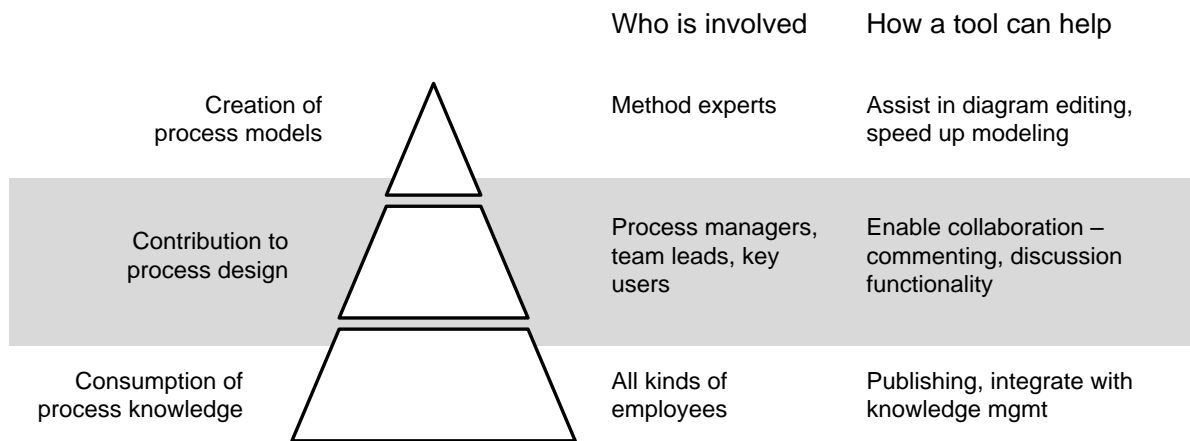


Figure 2: Collaborative business process modeling pyramid. In traditional approaches, only the upper part and the lower part are filled: Method experts design process models and employees are expected to read them. Collaborative business process modeling adds the mid tier, the process collaboration space.

Figure 2 shows a framework of process modeling, where the method expert is in the top of the pyramid and the employees are at the bottom of the pyramid. In the traditional approach, the middle tier is not populated, resulting in the issues addressed above.

Collaborative process modeling adds the middle tier to the pyramid shown in Figure 2. Process managers, team leaders and key users can now contribute to the process modeling effort. Rather than being silent consumers of the models, effective collaboration concepts and the respective tools bring them in a position to proactively comment on issues and shortcomings of processes. This is facilitated by software tools that enable the collaboration, including easy-to-use commenting and collaboration functionality.

3 The Signavio Approach

The collaborative business process management approach sketched in Section 2 was the motivation behind the development of the Signavio Process Editor. In the remainder of this section, we sketch its functionality regarding collaboration.

Let us assume a process participant actually wants to contribute his knowledge to improve a process model. We have to keep in mind that providing such improvement ideas only fills a very small share of this person’s working time. Therefore, he or she will not be willing to spend much time on getting familiar with a software tool. Any technical barrier, be it a complex tool installation or simply handling a complex user interface, will scare the valuable contributor away.

This is the reason why Signavio chose the web-based path. This enables a “two click” approach: The first click will lead the contributor to the commenting mode for a process model (e.g. by following a link in an email). No software installation is required; the application is automatically loaded into the standard web browser. The second click will allow adding comments on a process model diagram. Free text can be entered and the comment is stored along with the diagram. Other colleagues can join into the discussion and share their ideas.

Finally, the method expert can get involved and modify the diagram accordingly. Signavio maintains the full version history of diagrams and it can be seen which version a comment relates to.

Being a completely web-based tool, all three tiers of the process modeling pyramid introduced in Section 2 are realized as applications that are executed within the web browser. This includes publishing functionality for browsing process landscapes, commenting functionality realizing the collaboration space as well as diagram editing which also happens within the browser. Especially the latter allows to easily empowering casual contributors to become actual modelers at any point in time. While major changes to a diagram are probably unrealistic for these kinds of users, minor updates such as editing of labels are absolutely feasible even for novices in process modeling.

The collaboration aspect is also supported by the web-based approach. All diagrams are addressed by a Uniform Resource Locator URL. This implies that inviting colleagues to join into a discussion or into collaboratively editing a process model diagram can happen through link passing, e.g. via email, instant messaging, micro blogging services like Twitter, or blogs.

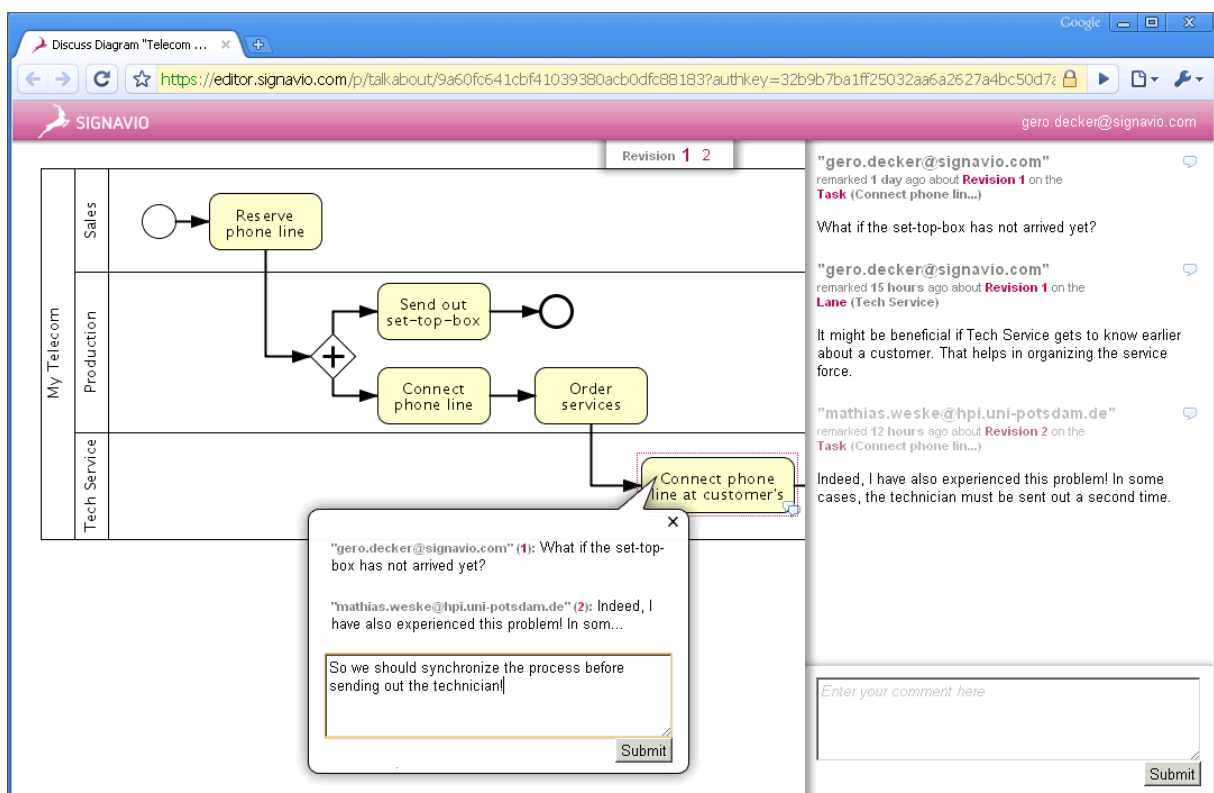


Figure 3: Screen shot of the Signavio Process Editor commenting functionality. Contributors can comment on the process model, either on the diagram as a whole or on specific elements of the process model diagram, such as activities and decision points.

Once there is an initial version of the process model, collaboration can start. Often, the method expert invites process managers, team leaders and key users to contribute. This covers the classical reviewing cycle after process design.

Figure 3 shows a screen shot of the commenting functionality of the Signavio Process Editor. We see a situation in which a contributor chooses to comment on the “Connect phone line at customer’s” activity, discussing an issue together with a colleague. Additional people can comment, so that a discussion about this process is spawned, very similar to Web 2.0 applications, where the users add to the value of the system.

As a second channel, which more directly reaches into the daily doing of the process participants, Signavio integrates with different workflow solutions. Here, all people involved can easily navigate to the process definition that serves as context information for any task to be performed. By choosing “comment now”, the process participant can directly share her knowledge. As she is currently performing the process, the impressions of what goes wrong or what could be improved have just been experienced. Of course, she can then invite other colleagues to get involved in the discussion and also share their thoughts.

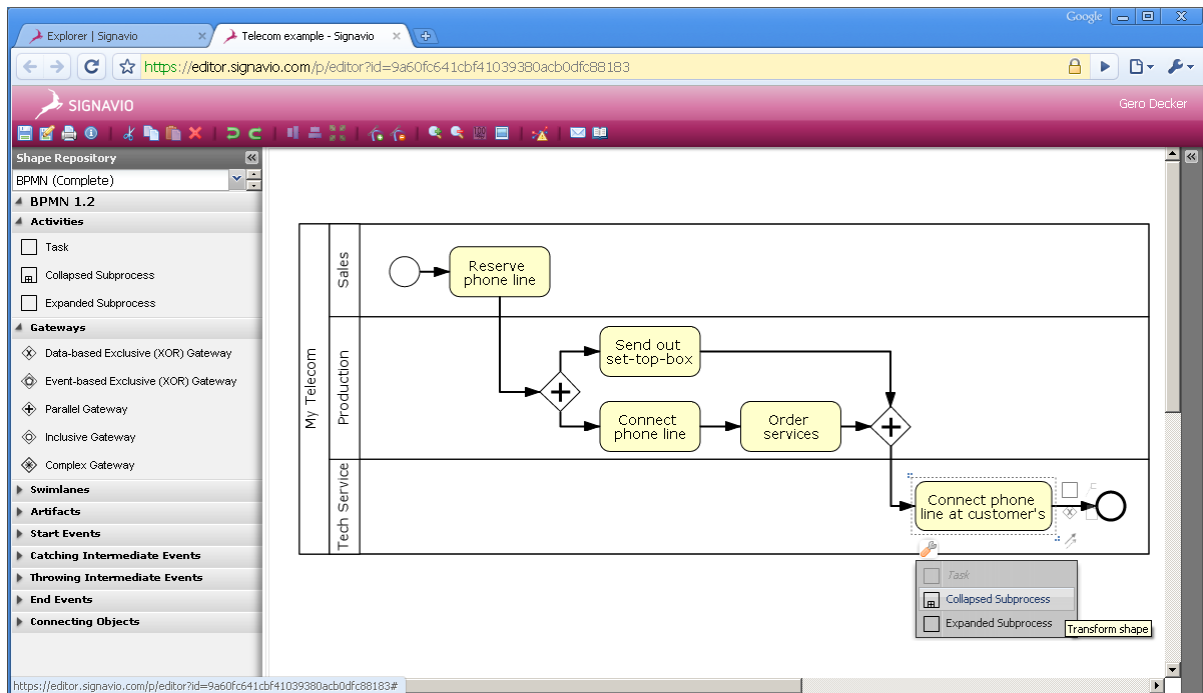


Figure 4 shows the method expert’s view on the process model. He can edit the diagram in the web browser. Based on the comments received earlier, a synchronization point is added before the final activity. The palette on the left hand side displays all modeling constructs and is used for dragging new elements onto the canvas. Additional menus within the drawing area also help to transform element types or to add further activities downstream.

To conclude this section, we stress the use case for the collaboration approach presented. From a business perspective, the comments in Figure 3 indicate a problem that process participants have witnessed: In a particular case, the phone line was already connected and the customer was informed about the new service, before the set-top box was actually sent out. To avoid this unsatisfactory situation for the customer, the method expert adds a synchronization point before connecting the phone line, so that the phone line can only be connected once the set-top box has been sent. While this example does not have the complexity of a complete business use case, it illustrates the potentials of collaborative business process modeling.

4 Conclusions

In this article we have sketched collaborative business process modeling as a new paradigm to actively involve process participants in the modeling and reviewing process. It is based on the understanding that process innovation cannot be ruled by (external) method experts. On the contrary, the knowledge, experience and expertise of process participants are essential for processes innovation. Process participants are domain experts – we do not expect them to be method experts.

However, they are exposed to process models and they understand process models sufficiently to comment and propose new ways of performing processes better and more efficiently.

In the second part of this article, we have sketched the Signavio Process Editor, a commercial process modeling tool targeting the collaboration space. Using concrete use cases, we have illustrated what collaboration means concretely in business process modeling.

In the dynamic business process management space, new challenges are emerging once a step forward has been taken. Regarding collaboration technologies, we are currently investigating live process collaboration techniques as a more immediate, more direct way of collaboration. This aspect requires technical issues to be solved, but also organizational aspects need to be covered, so that the technological advances will finally be transformed into business value.