

9-2010

PROCESS MODELS AS TRANSFORMATION VEHICLE FOR STRATEGIC ALIGNMENT

Mikael Lind

University of Borås and Viktoria Institute Sweden, mikael.lind@hb.se

Ulf Seigerroth

Jönköping University Sweden, ulf.seigerroth@jth.hj.se

Follow this and additional works at: <http://aisel.aisnet.org/mcis2010>

Recommended Citation

Lind, Mikael and Seigerroth, Ulf, "PROCESS MODELS AS TRANSFORMATION VEHICLE FOR STRATEGIC ALIGNMENT" (2010). *MCIS 2010 Proceedings*. 56.

<http://aisel.aisnet.org/mcis2010/56>

This material is brought to you by the Mediterranean Conference on Information Systems (MCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in MCIS 2010 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

PROCESS MODELS AS TRANSFORMATION VEHICLE FOR STRATEGIC ALIGNMENT

*Mikael Lind, University of Borås and Viktoria Institute Sweden,
mikael.lind@hb.se;*

Ulf Seigerroth, Jönköping University Sweden, ulf.Seigerroth@jth.hj.se

Abstract

Practitioners within the IS-field tend to engage in different kind of modelling activities for the purpose of analysis, design and evaluation of information systems. Business process models has been used for several purposes such as reconstructing existing practice (AS-IS) and to design the future (TO-BE). So far little research has been conducted on process modelling practices, the role and characteristics of models mean for business transformation. This paper elaborates on the role of process models as transformation vehicle to create alignment between a strategic business plan and business processes. The empirical base in this paper is an action research project where researchers together with a retail chain in sports and recreation (Intersport), as a part of a bigger change program, has designed Intersport's future practice based on a new strategic business plan. The results in the paper are descriptions about the role, characteristics and usage of different models during process design. The design of the future is a transformational process where models will have different roles during different phases of the project; scoping models, chiseling models, design models and change models. Good design results can be ensured through that the business process models in the end manage to express vital business dimensions such as transformation, coordination and interaction. The conclusions also depict the need for incremental design to create strategic alignment. The main reason for this is that people need to digest the evolving design in order to be able to understand characteristics and consequences of the final design.

Keywords: Business process design, transformation, strategic alignment, incremental design.

1 INTRODUCTION

Practitioners within the IS-field tend to engage in different kind of modelling for the purpose of analysis, design and evaluation of information systems (Davies et al, 2006). Business process modelling has been used for several purposes (c.f. Bandara et al, 2006; Harmon, 2009) such as reconstructing existing practice (AS-IS) and consequently using evolving process models for reflection, modelling the future (TO-BE), as well as determining historical chains of events. So far little research has however been conducted on process modelling practices (c.f. Bandara et al, 2006) and the role and characteristics of models during the actual modelling process as a mean for transformation.

Business process models are to be seen as tangible descriptions of patterns of actions performed by people, often supported by artefacts, within and between organizations (Goldkuhl & Lind, 2008). This means that such models could be used as a support in a transformation process to take a business from one state to another. The aim in this paper is therefore to report experiences from an action research project where we have been involved in the transformation process of Intersport, one of the largest sport retail chains in Sweden, in the task of designing business processes of the future in a collaborative modelling endeavour. The task of modelling TO-BE situations is often conceived as a design process which needs to be governed by clear and understandable guidelines. Many times such governance has its foundation in business strategies where there is a need to create alignment between business strategies and different types of models and architectures (Ward & Peppard, 2002; Pearlson & Saunders, 2006, Lankhorst et al., 2005). Using business process modelling for process management has been acknowledged by several scholars (c.f. e.g. Günther et al, 2008; van der Aalst et al, 2007). Having people engaged in the design of tangible process patterns based on strategic plans could be a way to create commitment and reveal flaws in strategic declarations. In this paper we will address the process of designing Intersports business processes for the purpose of creating a solid base for taking a business into the future and where the new process design is aligned with the strategic goals. Experiences from the same setting, with different focuses, have been reported in Lind & Seigerroth (2010). In this paper we especially focus on the content of the process models being developed for such process design.

The process of deriving models is much about capturing different people's knowledge about diverse parts of business processes on different levels. Knowledge and commitment about the future is created by people interacting, i.e. acting socially in relation to each other. During the transformation different versions of models (solutions) co-evolve with the developed understanding of the situation (c.f. e.g. Dorst & Cross, 2001). This also means that different roles need to be involved in the process of modelling and thereby constructing a joint view of the business processes that are the object of investigation. One way to facilitate this is to follow a co-design approach (Lind et al, 2008) in which a number of views on reality co-exist during exploration of solutions and the problem domain. Co-design has been closely related to the streams of Web 2.0 in which clients are engaged in collaborative processes of design (c.f. Albinsson et al, 2008; Lind et al, 2007).

The research reported in this paper is driven by the question *of how to co-design business process models as a foundation for the implementation of business strategies*. The purpose of this paper is therefore to elaborate on the role and characteristics of process models during process modelling as transformation vehicle to achieve strategic alignment.

After this section, theoretical insights related to business processes, process modelling and strategic alignment is presented. In the next section the Intersport case is presented and elaborated for process design, collaboration, and alignment. The paper will be concluded by reflections related to business process design.

2 PROCESS MODELING AND STRATEGIC ALIGNMENT

2.1 Process modelling, models and strategic alignment

In business process modelling there is a challenge in that the produced models are aligned with intended business plans and strategies. To meet this challenge there is a need to be able to handle the complexity that exists in terms of different aspects or conceptual domains in the business (Lankhorst et al., 2005; Vernadat, 2002; c.f. Langefors, 1973). The challenge is to go beyond the individual models and to cope with how they are related to each other (within and between conceptual domains) on different levels and how they as parts in the total picture supports different strategic goals (Lankhorst et al., 2005). One way to achieve alignment between strategies, models, and in the end IS/IT-architectures is to adopt a co-design approach (Lind et al, 2007; Liu et al, 2002; Rittgen, 2007). The aim with a co-design approach during process modelling is to simultaneously work with different stakeholders in a collaborative way to avoid conceptual deviations between strategic plans and models on different levels. Business process models are based on modelling languages (c.f. e.g. Schuette & Rotthowe, 1998), i.e. concepts and notation to be used for stating and answering questions. This means that the conception of business processes as well as the ways that people are interacting in a business process design becomes crucial in order to arrive at models for guiding people in the realization of business strategies (c.f. Vom Brocke & Thomas, 2006).

Much of the discourse related to strategic alignment is based on the framework by Henderson & Venkatraman (1999) who put forward four dimensions and their strategic fit to each other (cf. e.g. Ward & Peppard, 2003). These dimensions are usually elaborated through different models that are used as an instrument to express how to achieve alignment and competitive advantage. Another more recent framework that also put forward alignment issues is the Strategic Triangle by Pearlson & Saunders (2006). In this paper our basic assumption is that different types of process models can serve as a vehicle for realization of strategic business plans.

2.2 Transformation and coordination as dimensions of business processes

What aspects to capture in business process models have been discussed by several scholars. Stemming from systems science (c.f. e.g. Langefors, 1973) a strive has for a long time been to distinguish aspects to conceive as essential constituting business processes (c.f. Lind, 2006). As advocated for by vom Brocke & Thomas (2006) the use of reference models can increase the efficiency and effectiveness of a specific modelling process. Reference models are conceived as a special information model that can be reused in the design process of other business process models (ibid., pp. 681). Reference models consist of generic aspects to focus upon and these needs to be stated for the purpose of declaring views captured in business process models.

Traditionally a view on organizations putting emphasis on the horizontal work in contrast to vertical division of labour has dominated the field of Business Process Management (BPM). BPM has its origin from total quality management – TQM (Harrington, 1991) and business process reengineering – BPR (Hammer, 1990; Davenport, 1993). This can basically be viewed as an industrial perspective on business processes, where input (raw material) is transformed into output (finished products) that is of value for the customer. As advocated by Keen and Knapp (1996) this is however not the only point of departure for the conception of business processes, as e.g. the role of values (c.f. Vom Brocke et al., 2008) and the role of learning (c.f. e.g. Leyking et al., 2007). These other dimensions do however require a foundational conception, a backbone, of business processes as a basis for contextualization.

This paper relies on an ontological foundation where we acknowledge action as the core of business processes. In order to expand the scope beyond transformational dimensions of business processes the notion of business actions is conceived as the basic unit of analysis (c.f. Lind & Goldkuhl, 2003). A business act can be a speech act (communicative act) (c.f. e.g. Searle, 1969) or a material act. This notion of business acts builds upon the notion of social action. An organization consists of humans, artefacts and other resources, and actions performed. Humans (often supported by artefacts) perform (internal and external) actions in the name of the organization (Ahrne, 1994). Humans act in order to

achieve ends (von Wright, 1971). Human action often aims at making material changes. Humans do however not only act in the material world – they also act communicatively towards other humans. Human action is about making a difference, where such difference can have impact in the social world as well as in the material world. As described in Lind & Goldkuhl (2003) a business act is defined as *the performance of a communicative and/or material act by someone aimed towards someone else*. By using business act as the basic unit of business processes both transformative, co-coordinative, and interactive dimensions of business processes can be included (Goldkuhl & Lind, 2008).

Transformative dimensions mean a focus on the transformation of deliverable products, in structured and sequenced ways, from base products (raw material). Coordinative dimensions mean that business processes involve important coordination mechanisms for the establishment, fulfilment and assessment of *agreements* between involved stakeholders (e.g. suppliers and customers). Interactive dimensions are the special case of co-ordination in which the actors' performance of communicative and/or material exchanges is focused. As proposed by Goldkuhl & Lind (2008) these two viewpoints need to be combined to an integrative view where coordination (also including interaction) and transformation form an integrated texture of actions.

3 PROCESS MODELS AS TRANSFORMATION VEHICLE IN PRACTICE

3.1 The transformation project at Intersport

In this action research project (c.f. Lindgren et al., 2004) the main mission has been to identify and design Intersports future business processes based on their new strategic business plan (c.f. also Lind & Seigerroth, 2010). Intersport is today a voluntary specialized retail chain for sports and recreation. This means that a majority of Intersport's stores are owned and run by individual merchants who cooperate under the common brand Intersport, a franchise concept. Intersport Sweden is part of the Intersport International Corporation (IIC) which was founded in 1968 when 10 independent European purchase organizations joined their forces. Intersport is today the world largest sports chain.

The background for this process design project is that Intersport Sweden, a couple of years ago, initiated an extensive change program where the goal was to meet the current and future need to create competitive advantage in retail for sports and recreation. In this change program Intersport has made a major redesign of their strategic business model. The core of the change process for Intersport is to go from being a wholesale dealer with mostly independent stores to take an overall central responsibility over the value chain including the stores, i.e. to become both retailer and wholesaler in a structured and coherent value chain. In this sense the scope of the business process design project covered activities arranged in a value chain spanning over several organizations. Intersports change program goes under the name of Wholesaler – Business development – Retailer (WBR). In WBR there are a number of business areas and change solutions suggested where the change process is spanning over six years. Intersports general plan is to have implemented the new business strategy to its full extend within a couple of years.

Our way into this process design project was Intersports evolving need to be able to address different change issues in WBR to different process contexts. They needed a solid ground for elaborating and dealing with different change dimensions that were expressed in WBR. The business process design project has in this context meant to define the future business practice for Intersport Sweden with respect to activities, results, prerequisites, work procedures, cooperation procedures, communication principles, roles and responsibilities on different levels. For this purpose business process models with a design-base in their new business strategy (The business plan 2007 "Towards future victories") were developed. This was done through a high degree of involvement of people affected by the design. For Intersport this covers everything in their business from strategic planning to products and services in use by their customers. Examples of new and important business principles covered by the new business plan for Intersport were:

- The responsibility for supplying and filling of the stores is moved from the stores to a central organization

- A shift of focus from products structure to concepts which includes more than the physical products
- The coordination and distribution of Intersports own and external brands should be done in a uniform way
- Intersport should have control over 80% of the total collection in all stores (base collection and category collections)
- A shift from that the stores order products early to an early early planning with late central distribution of collections
- A clear central retail function with responsibility for the total value chain

Through these changes Intersport expect to strengthen their position by adopting a retail focus with centralized management and coordination. In combination with this Intersport is also moving from a more narrow focus on products and purchase to a focus on concepts and sales. The external attraction should be increased in the value chain through development and clarification of Intersport's concepts, clarity in marketing and to put the customer in focus. The aim is also to increase the internal efficiency through development of product logistics and cost programs. The mission is to take back the position as the strongest actor on the market of sports and recreation.

3.2 Process design at Intersport

The modelling process in this project has been tailored for the purpose to fulfil the goals that were expressed in the new business plan. This means that the process design has been performed on different levels of abstraction but without going into great details of the processes. By the recruitment of new competences and in-service training of existing personnel the requirements in the new business plan was to be met. This has enabled us to involve key competences at Intersport for the process design. The process design has mainly been focusing on two levels as the main result:

- Main process model (the one overall process model that covers the total business model, see Figure 2 below)
- Detailed process models (detailed process models of all the parts in the main process model, see Figure 3 below for one example)

These two levels are based on a concept for business process modelling where different levels of the practice need to be investigated and designed in order to create a coherent and functioning wholeness. This means that decisions that are made on a strategic or business level and expressed in models on these levels should be reflected and understood on more detailed levels of modelling, i.e. there is a need for traceability both upwards and downwards between models with different focus and different abstraction levels. This way of working, by shifting between details and wholeness, has strong resemblance with other approaches for process modelling (c.f. e.g. Davis, 2001). It has therefore been necessary to develop an understanding of the present (AS-IS) and the future (TO-BE) in relation to wholeness and parts in parallel.

When working with the two levels above there has continuously been an interaction around the evolving business process models, the environment (local practice) and the knowledge base (external theoretical and methodological constructs). Throughout the design process different people at Intersport have been actively involved together with the researchers. This process has continuously been shifting between design activities and validation activities. This means that different constellations of people at Intersport have been involved in both design and validation during different stages of the process. Examples roles that have been involved are; CEO, management group, controller group, retail group, different functional units and different individuals with specific knowledge within a specific area. During the design process we have also been informed by theories and methods in order to create clear and coherent business processes. An example of this was that we elucidated transformation, coordination and interaction dimensions, as explicit generic aspects, in the evolving process models. The instantiation of categories in theories has therefore explicitly influenced the design in the models and helped us to translate and visualize Intersports new business plan into process models. The evolving process models served as an important transformation vehicle for successive operationalisation and design of the future business processes.

The project was divided into three phases; an Initial phase, an Intermediate phase and a Final phase. During the initial phase we mainly worked with so-called *scoping models*, i.e. through different models, based on the business plan, try to clearly define what to focus on and what to exclude. During this phase we mainly worked with versions of the principle process model (see figure 4) but after a while we also started to work with initial versions of the main process model (see figure 2) and detailed process models (see figure 3). The models that were produced during this phase addressed both AS-IS and TO-BE and mostly on a principle level of the practice. During the intermediate phase we worked with a division between *chiseling models* and *design models*. The chiseling models were mainly used to identify and describe guiding principles for design based on the earlier scoping models. During this phase we worked with both the principle process model, the main process model and the detailed process models. At this point, the principle process model also had served its purpose and was phased out from the project. These chiseling models were then used as a base to design the future practice expressed in the main process model and the detailed process models. In the final phase we then worked with so-called *change models*, i.e. models and a final report that should be used for the implementation of the new business processes. This phase was mostly about packaging, presentation and documentation of the design. The models and the final report now serves as a change guide for the implementation of the new strategy aligned business processes.

3.3 The use of models for transformation and alignment

During the project we have produced different models, which have had different roles during different phases of the project. Based on the two levels of modelling that were described earlier we have mentioned that we worked with an intermediate level during the first half of the project (principle process model). This means that we in total actually worked with three modelling levels with corresponding three types of models; Main process model, Principle process model, Detailed process models (for model examples see figure 2, 3, and 4 below).

Based on the earlier described phases in the project and the three types of models, the design process can be described according to figure 1 below.

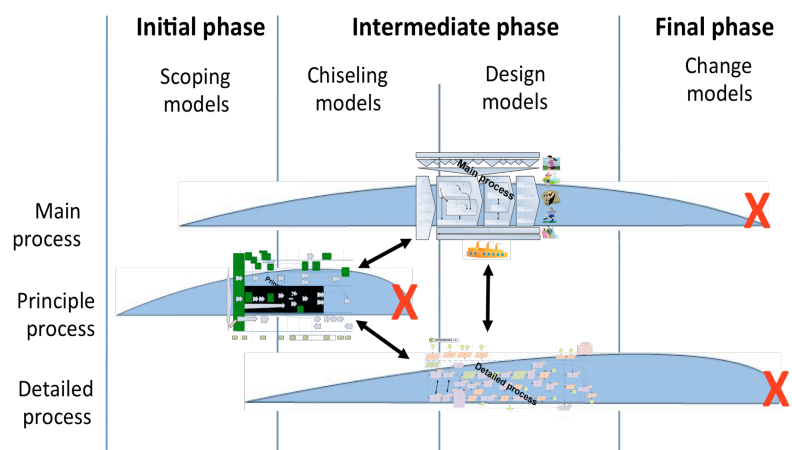


Figure 1. The role of different models (Lind & Seigerroth, 2010)

The red crosses in the figure above represent the status of the example models that are shown in the figures below. The blue whales in figure 1 above represent the intensity in the development of the three types of models. We can also observe in figure 1 that the two types of models (main process model and detailed process models) that were supposed to be the final design result weren't what we started to work with. The reason for this was that the initial versions of the main process model were regarded to be too abstract while the detailed process models got stuck in details. Therefore we started to work with an intermediate level (principle process, see figure 4 below) that addressed principles in

the new business plan at the same time as we were able to understand the major consequences of these principles for further detailed design of the main process model and the detailed process models.

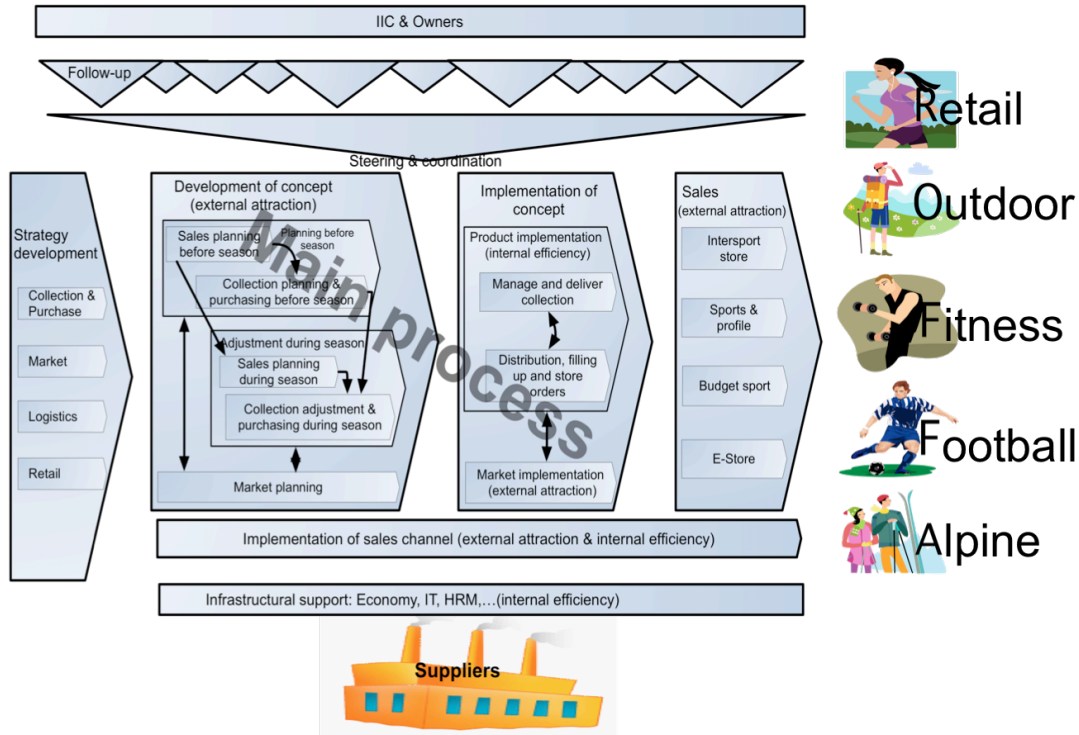


Figure 2. The main process, final version (Lind & Seigerroth, 2010)

In figure 2 above the main process model is depicted. The core of the model is a pattern of actions spanning from strategy development (left part) to sales and products in use by customers via generation and implementation of concepts to be supplied and sold in stores. At the bottom of the model relations to infrastructure are depicted and on the top-layer relations to governing and governing actors are expressed.

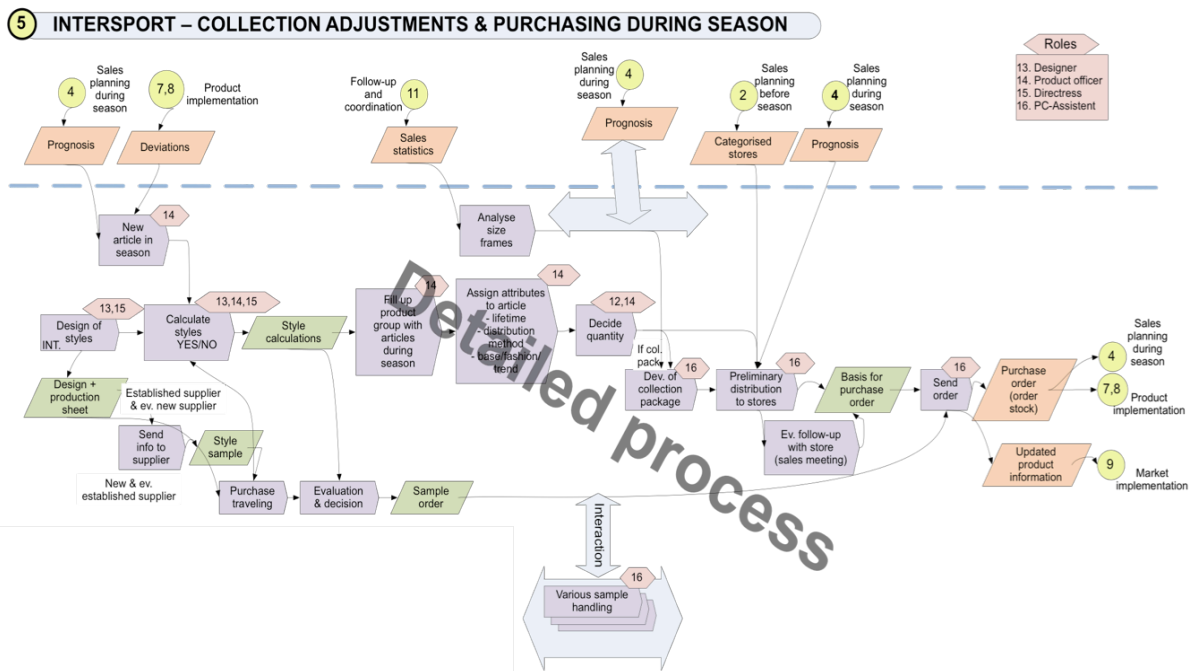


Figure 3. An example of one detailed process, final version (Lind & Seigerroth, 2010)

In figure 3 an example of a detailed process model is presented. This model shows relations between actions performed by actors, results and conditions. At the top-part of the model actions for governance are expressed.

In figure 4 the final version of the principle process is depicted. This model is more of a traditional swim-lane model expressing relations within and between diverse organizational dimensions. This principle process served as a bridge between the main process model and the detailed process models for the first half of the project. As can be seen in Figure 1 the principle model had served its purpose when the other two models had evolved to a state where the alignment between these two models had become clear. At this state it started to be clear how the new business plan was instantiated and manifested on the main process level and how these principles were instantiated and manifested in the detailed process models. When the principle process model had been phased out the main and detailed processes evolved together in parallel.

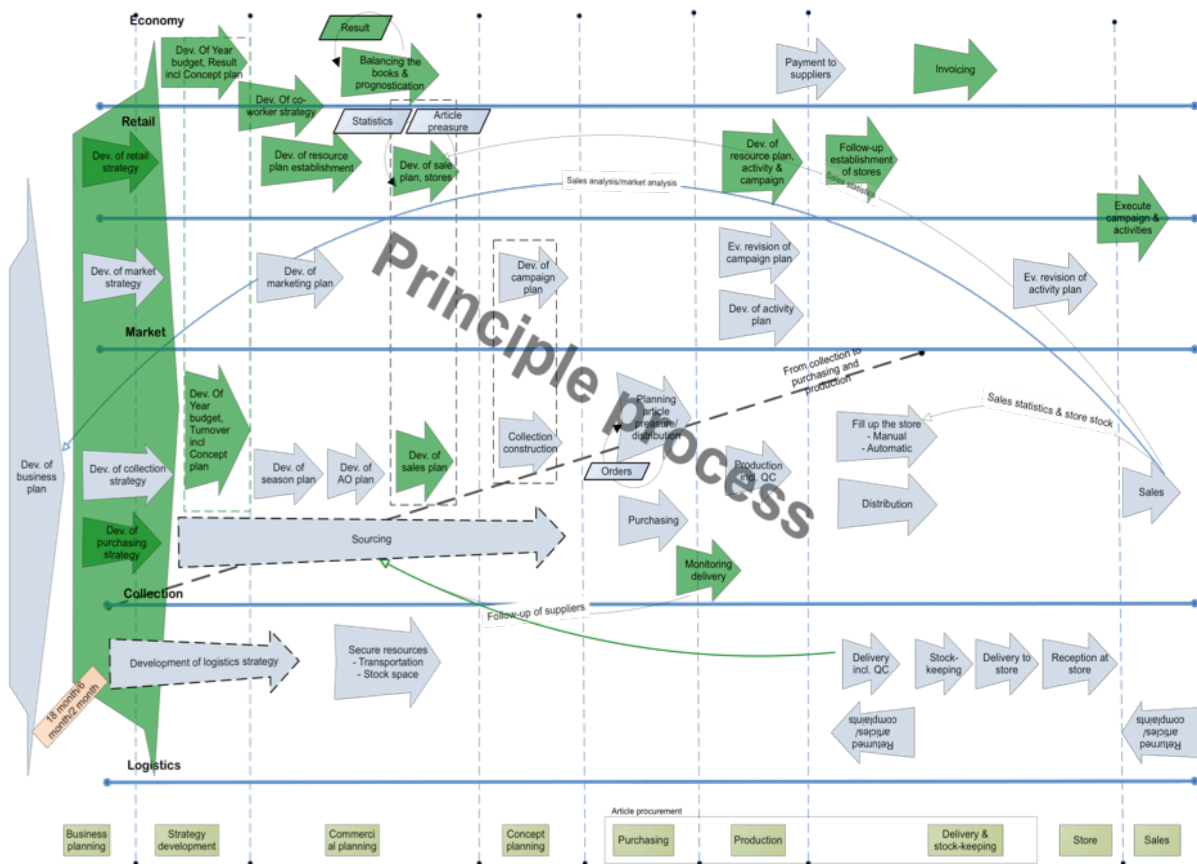


Figure 4. Principle process, final version (Lind & Seigerroth, 2010)

4 DISCUSSION – MODELS AS TRANSFORMATION VEHICLE FOR DESIGNING BUSINESS PROCESSES FOR THE FUTURE

4.1 Strategic alignment of process models

Throughout the project different models have continuously been designed and refined. As claimed earlier different process models were needed to capture different aspects in the business plan to pinpoint design results translated from the business plan on different levels of granularity. Building on pragmatic foundations (Lind & Goldkuhl, 2003) for understanding, evaluating and designing business

processes that are aligned with the business plan it is claimed that three essential process dimensions need to be elaborated on:

- Transformation, i.e. the refinement of basis to finished products
- Coordination, i.e. the governance and management of the transformation
- Interaction, i.e. the interaction between actors (organizational roles)

In the analysis we have explored three types of models (main process model, principle process model and detailed process model) and their role during different phases in the project (see table 1 below). The table is horizontally divided into the phases that we have identified in the project and vertically into the three core process dimensions that need to be elaborated in order to facilitate alignment between the process models and the business plan.

Model type/ Aspect	Initial phase	Intermediate phase		Final phase
	Scoping Models	Chiseling Models	Design Models	Change Models
Transf.	Main: Part Princ: Dom Detail: Dom	Main: Dom Princ: Dom Detail: Dom	Main: Dom Princ: N/A Detail: Dom	Main: Dom Princ: N/A Detail: Dom
Coord.	Main: Part Princ: Part Detail: None	Main: Part Princ: Part Detail: Part	Main: Dom Princ: N/A Detail: Dom	Main: Dom Princ: N/A Detail: Dom
Interact.	Main: None Princ: None Detail: None	Main: Part Princ: None Detail: Part	Main: Part Princ: N/A Detail: Dom	Main: Part Princ: N/A Detail: Dom

Table 1. Different models and the role of process dimensions during different phases in the project (Lind & Seigerroth, 2010)

As can be seen in table 1 the role of the three dimensions (i.e. transformative, coordinative, and interactive) in the models has evolved during the phases of the project. One can note that the transformative dimension has been important during all phases of the project while the interactive dimension of the models is suppressed until the latter phases. The reason for this is that we in the project needed to reach quite detailed descriptions of the business plan as process models before it was meaningful to really address which organizational roles that should be responsible and involved in different parts of the process. Similarly the coordinative dimensions were only briefly addressed in the early phases and they were not fully developed until the latter phases of the project. The reason for this was also the need to first translate the business plan into transformational process knowledge in order to know what to coordinate. It is also important to note that to be able to achieve a “usable” business aligned design, all three dimensions (transformation, coordination, and interaction) needed to be expressed in the process models. An important vehicle to develop the main process model and the detailed process models was the principle process model which was a bridging facilitator during the first two phases. The principle process model had served its purposes after the first half of the intermediate phase (indicated as N/A during the two last phases in table 1).

4.2 Incremental design steps for future design

There is a challenge to design future processes when there are several dimensions of the future that is unclear. This means that even though the goal is to design the future we still have to take incremental steps on that path. These incremental steps will then pave the way to achieve the final design goal, i.e. knowledge and artifacts need to evolve during the project in order to be able to design the future.

A challenge in this is that the people involved in the task of pinpointing a desired future state have different mindsets about the future. As e.g. the president of the company might not be aware of all details of how things should work and can thereby not really give advise before taking a number of incremental steps. We believe that continuous learning, c.f. e.g. the hermeneutic spiral where pre-knowledge form the basis for new knowledge, need to be acknowledged. Initially we had the ambition to design the final future state. In retrospect on the produced models we can observe that they reflect different time states of the future. The future process isn’t in all aspects designed as the final state and they will therefore need further design.

An unresolved quest is therefore whether all models need to capture the final state or if it is acceptable that some models reflect different time states along that path? We do believe that it is necessary to temporarily leave some parts of the process and to revisit these parts for further design as people's mindsets are being refined. This means that there is a need to allow incremental design steps during such design process (see figure 5) in order to be able to achieve the final design goals.

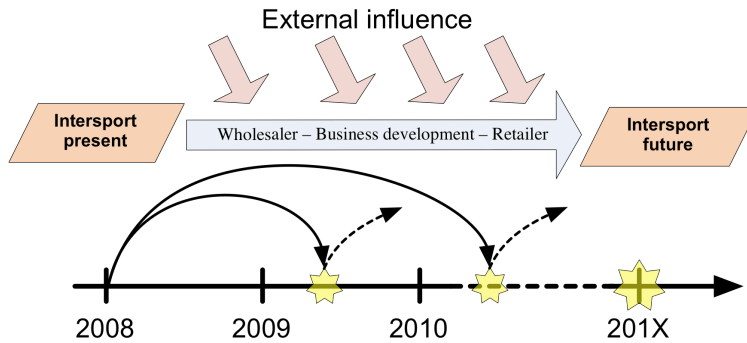


Figure 5: Incremental process design

5 CONCLUSIONS

In this paper we have reported upon a action research project performed in a retail chain setting where process models have served as a transformation vehicle to create strategic aligned business processes. In this setting a business process design has been performed as a step to transform a strategic business plan into comprehensive business process models. In this paper we have had a focus on the content of the process models being developed in two respects:

- The role of transformative, co-ordinative, and interactive dimensions
- Which future that is manifested in the process models

The knowledge endeavour reported in this paper is to be seen as a step towards a practical theory (Cronen, 1995) with the purpose to support people in performing process design. Due to the fact that the process design has been performed as an action research project it has been possible to develop the business process models by letting practitioners and researchers jointly co-design these models. Due to the focus made in this paper some guidelines, as part of a practical theory for process modelling can be derived:

- The modelling process should allow the inclusion of viewpoints from diverse stakeholders as a foundation for grounded descriptions and commitments of future actions for realizing business plans
- The modelling process is a transformational process where models will have different roles during different phases of the project; scoping models, chiseling models, design models and change models
- One way to reach good design results is to ensure that the business process models in the end manage to express vital business dimensions such as transformation, coordination and interaction
- The involvement of different stakeholders, from practice and research, in a joint action arena is vital for the production of models that will be accepted, implemented, and executed as the new business practice
- Different types of models serve as important transition vehicles during the process to actually reach the desired design
- On the way to the future “final” design we need to, in some parts, take incremental steps and allow some models or parts of models to not immediately reach the final design. The main reason for this is that people need to digest the evolving design in order to be able to understand characteristics and consequences of the final design

An important task of further research is to elaborate further on how deviations in business models about future states could be used as a source and asset for the creation of really valid and anchored designs of the future.

References

- Ahrne G. (1994). *Social Organizations. Interaction Inside, Outside and Between Organization*, Sage, London
- Albinsson L., Lind M., Forsgren O. (2007). "Co-Design: An approach to border crossing, Network Innovation" in Cunningham, P and Cunningham, M (Eds), *Expanding the Knowledge Economy: Issues, Applications, Case Studies, Volume 4, Part 2*, Amsterdam, IOS Press, pp. 977-983
- Bandara W., Gable G., Rosemann M. (2006). *Business Process Modeling Success: An Empirically Tested Measurement Model*, Twenty-Seventh International Conference on Information Systems, Milwaukee
- Cronen V. (1995). Practical theory and the tasks ahead for social approaches to communication, in Leeds-Hurwitz W (Eds, 1995) *Social approaches to communication*, Guildford Press, New York
- Davenport, T.H. (1993). *Process Innovation. Reengineering Work Through Information Technology*, Harvard Business School Press, Boston, MA.
- Davies, I., Green, P., Rosemann, M., Indulska, M., & Gallo, S. (2006). How do Practitioners Use Conceptual Modeling in Practice? *Data & Knowledge Engineering*, 58(3), 358-380.
- Dorst K., Cross N. (2001). Creativity in the design process: co-evolution of problem–solution, *Design Studies*, Vol. 22 (5), pp. 425-437
- Goldkuhl G., Lind M. (2008). Coordination and transformation in business processes: Towards an integrated view, *Business Process Management Journal*, Vol 14 (6), pp. 761-777
- Günther, C., Rinderle-Ma, S., Reichert, M., Van der Aalst, W. M. P., & Recker, J. (2008). Using Process Mining to Learn From Process Changes in Evolutionary Systems. *International Journal of Business Process Integration and Management*, 3(1), 61-78.
- Hammer, M. (1990). "Reengineering work: Don't automate, obliterate", *Harvard Business Review*, Vol. 68 No. 4, pp. 104-12.
- Harmon P. (2009). "The Scope and Evolution of Business Process Management" in vom Brocke J., Rosemann M. (Eds.) *Handbook on Business Process Management*, Springer
- Harrington, H.J. (1991). *Business Process Improvement. The Breakthrough Strategy for Total Quality, Productivity and Competitiveness*, McGraw-Hill, New York, NY.
- Henderson J. C., Venkatraman N. (1999). Strategic alignment: Leveraging information technology for transforming organisations, *IBM System Journal*, Vol32 (1)
- Keen P.G.W., Knapp E.M. (1996). *Every Manager's Guide to Business Processes: a Glossary of Key Terms and Concepts for Today's Business Leaders*, Harvard Business School Press, Boston, MA.
- Langefors B. (1973). *Theoretical Analysis of Information Systems*. Fourth edition, Studentlitteratur, Lund
- Lankhorst M. (Eds., 2005). *Enterprise Architecture at Work – Modelling, Communication, and Analysis*, Springer
- Leyking K., Chikova P., Martin G., Loos P. (2007). Integrating Learning and Business Process Management, *Proceedings of the 18th Australasian Conference on Information Systems*, Toowoomba, pp. 981-990
- Lind M. (2006). "Determination of business process types founded in transformation and coordination", *Systems, Signs & Actions*, Vol. 2 (1), pp. 60–81
- Lind M., Albinsson L., Forsgren O., Hedman J. (2007). *Integrated Development, Use and Learning in a Co-design Setting: Experiences from the Incremental Deployment of e-Me, eChallenges e-2007*, The Hague, The Netherlands
- Lind M., Goldkuhl G. (2003). "The constituents of business interaction - generic layered patterns", *Data & Knowledge Engineering*, Vol. 47 (3)
- Lind M., Seigerroth U. (2010). "Collaborative Process Modeling: The Intersport Case Study" in vom Brocke J., Rosemann M. (Eds.) *Handbook on Business Process Management*, Springer

- Lind M., Seigerroth U., Forsgren O., Hjalmarsson A. (2008). Co-design as social constructive pragmatism, The Inaugural meeting of The AIS Special Interest Group on Pragmatist IS Research (SIGPrag 2008) at International Conference on Information Systems (ICIS2008), France
- Lindgren R., Henfridsson O., Schultze U. (2004). Design Principles for Competence Management Systems: A Synthesis of An Action Research Study, *MIS Quarterly*, Vol. 28 (3), pp. 435-472
- Liu K, Sun L and Bennett K (2002). Co-Design of Business and IT Systems. *Information Systems Frontiers* 4(3), 251-256
- Pearlson and Saunders (2006). *Managing and Using Information Systems – A Strategic Approach*, John Wiley & Sons
- Rittgen, P. (2007). Co-designing Models for Enterprises and Information Systems – a Case for Language Integration, in Magyar, G.; Knapp, G.; Wojtkowski, W.G.; Zupancic, J. (eds): *Advances in Information Systems Development: New Methods and Practice for the Networked Society*. Vol 1. Springer, Berlin, pp. 73-83
- Schuette R., Rotthowe T (1998). The Guidelines of Modeling – An Approach to Enhance the Quality in Information Models, *Proceedings of the International Conference on Conceptual Modeling – ER '98*, Springer, Berlin, pp. 240-254
- Searle J. R. (1969). *Speech Acts. An Essay in the Philosophy of Language*, Cambridge University Press, London
- van der Aalst, W. M. P., Rosemann, M., & Dumas, M. (2007). Deadline-based Escalation in Process-aware Information Systems. *Decision Support Systems*, 43(2), 492-511.
- Vernadat F.B. (2002). Enterprise Modeling and Integration (EMI): Current Status and Research Perspectives, *Annual Reviews in Control* 26 (2002) 15-25
- von Wright G. H. (1971). *Explanation and Understanding*, Routedge&Kegan Paul, London
- Vom Brocke J., Thomas O. (2006). Reference Modeling for Organisational Change: Applying Collaborative Techniques for Business Engineering, *Proceedings of the Twelfth American Conference on Information Systems*, Acapulco, Mexico, pp. 680 – 688
- Vom Brocke J., Mendling J., Recker J. (2008). Value-oriented Process Modeling – Towards a Financial Perspective on Business Process Redesign, *Proceedings of the Fourteenth American Conference on Information Systems*, Toronto, Canada
- Ward J., Peppard J (2002). *Strategic Planning for Information Systems*, Third Edition, John Wiley & Sons Ltd