LINKING IT AND BUSINESS PROCESSES FOR ALIGNMENT
A Meta Model based Approach

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Abstract: Methods to optimize alignment between an enterprises business strategy and its IT strategy has been on the agenda of IS research since the beginning of last decade. Recognizing the growing impact of IT on the revenue side and on the cost side of P&L, it has become one of the most pressing issues of strategic IT management since then. One promising approach in gaining best results for alignment is to synchronize similar and related processes in both the business and the IT domain. In this contribution we present an approach for identifying components of processes in both domains on the basis of existing meta models. We consider this as a first step in developing a method based coherent view on both domains which finally will allow us to create a systematic and comprehensive alignment method.

1 INTRODUCTION

Until recently, IT departments quite often were perceived by the business management as black boxes full of technology and hard to understand. In their view IT departments were merely cost centres, which were managed by setting budget targets. However overstated this might be, due to soaring IT costs CIOs are asked to prove the contribution of IT to the business results of the whole enterprise. Therefore there is a high need for methods which are supporting a value oriented management of IT. As we can find in Talon and Kraemer (2003), there should be a relation between the level of strategic alignment and the business value of IT examined at the process level of an enterprise.

In case of 'management by objectives', goals will be set or agreed on between the board and the departments of a company. These goals should be in line with the strategic goals of the enterprise. To be able to reach its specific goals the IT strategy has to be in line (aligned) with the company's strategy too. Chan defines alignment as: The "bringing in line" of the IS function's strategy, structure, technology, and processes with those of the business unit so that IS personnel and their business partners are working towards the same goals while using their respective competencies (Chan, 2003).

In literature, some authors argue that alignment is more than just the goal oriented bringing in line of strategy, structure, technology and processes. They discuss cultural, social or cognitive aspects in the relation to alignment (Chan & Reich, 2007; Reich & Benbasat, 1996). There is a further discussion whether alignment is just a state respectively a result (Reich & Benbasat, 2000) or a dynamic process which has to be continued (Burn, 1997) via the life cycle of an enterprise (Chan, 2003).

2 RELATED WORK

The strategic alignment model (SAM) separates areas of an enterprise into four domains (see fig. 1): These domains are business and IT horizontally and strategic (external) and infrastructural (internal) vertically. Regarding this model, alignment is "a balance among the choices made across all four domains" (Henderson & Vankatraman, 1993).

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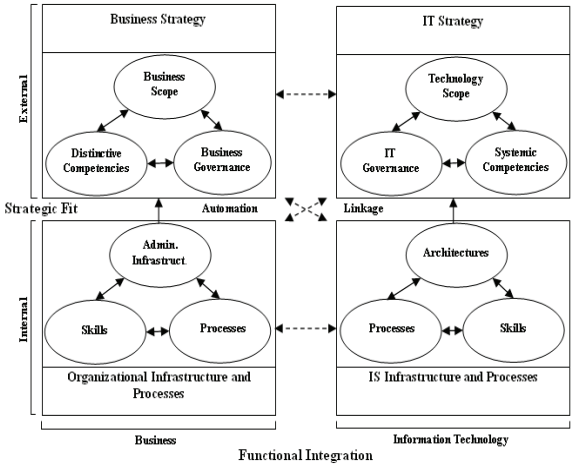

Figure 1: SAM.

This definition means not only a direct adjustment between neighbouring domains. Also indirect relations spanning the domains have to be considered in the alignment process. Starting with the business or IT strategy, the chain of causation will be initialized and driven to the next horizontal and vertical neighbour domain.

To achieve alignment, a holistic planning process is required which explicitly considers the linkages between business and IT. Reich and Benbasat (2000) used the idea of SAM with a focus on "intellectual" and "social" aspects. They define the linkage between business and IT - necessary to achieve alignment - as the "degree to which the IT mission, objectives, and plans support and are supported by the business mission, objectives and plans." (Reich & Benbasat, 1996). By following this definition the term objectives refers to goals of an organizational unit which sounds quiet close to the alignment definition of Chan (2002).

Reich and Benbasat examine the linkage between business and IT in two dimensions, A) the intellectual and B) the social dimension. The effect of a sense making linkage between business and IT in the *intellectual* dimension should be consistent and externally valid business mission, objectives and plans. In the *social* dimension this effect will cause a higher level of understanding of business and IT mission, objectives and plans by IS and business executives.

The original SAM and also its extensions are descriptive and not directly usable for practical purposes of planning and aligning an enterprise. But, it can be helpful to solve alignment questions on an abstract level of research. Furthermore, alignment has to be operationalized at the process level of an enterprise because business and IT strategies are represented by business and IT processes and their holistic collaboration (Winter, 2003).

Supporting linkages between business and IT forms the basis for an improved process for aligning business and IT. Therefore one next step is to identify "synchronisation points" between both, business and IT. These synchronisation points have to be controllable in real life operations and have to be useful to establish linkages.

Our next step should be to examine, if there are conceptualizations of standard business and standard IT processes which can be represented by standardised components. An analysis of these standard components can give us general insights about the existence of major synchronisation points between IT and business.

Identifying synchronisation points between business and IT can be helpful to expand SAM for an operationalized support of alignment using the process level view. If we are able to identify synchronisations points for a sense making linkage between business and IT inside of SAM, we will maybe be able to introduce the idea of supporting the operational part of alignment between the different domains of SAM for practical purposes.

3 IDENTIFYING STANDARD BUSINESS AND IT PROCESSES

To identify possible linkages between 'standard IT processes'(SITP) and 'standard business processes' we will divide further proceeding into three steps. We refer to standardized processes when using standards, frameworks, best practices etc. as a broader used abstraction to real processes.

In the first step we will identify a standard IT process and its components by analyzing the IT governance best practice framework COBIT (Control Objectives for Information and Related Technology). In a second step we take a look at the components of a standard business process by using an enhanced meta model of a standard business process derived from the business process modelling notation (BPMN). In a third step we identify linkages between the components of SITP and standard business processes.

3.1 COBIT as Framework for Standard IT Processes

COBIT is an IT governance framework with can be used independently of the branch or the size of

enterprises. It contains internationally accepted controls and goals for the IT departments of enterprises. It supports the management of an enterprise by providing methods for an efficient and effective use of its information technology. COBIT contains standard IT processes, goals and metrics which should typically used by IT organizations. It especially addresses the aspect of IT business alignment to make sure that the IT supports the business (Johannsen & Goeken, 2007).

Alignment will be provided by following a top down procedure which is based on the bringing in line of the IT strategy with the corporate strategy of an enterprise. IT processes are triggered by other IT processes.

In previous research we analyzed COBIT and developed a meta model of the COBIT IT processes which represents the components of COBIT and how they are related (Goeken & Alter, 2008). The core part of the model (see appendix A) is the component *process*. The entity *process* can be defined as the connecting entity which has direct and indirect relationships to all entities represented by the model. In our case the COBIT meta model will be used as a descriptive model which represents the basic components of a so called standard IT process developed by consolidating best practice experiences of several executive practitioners.

3.2 The BPMN Meta Model of a Standard Business Process

Koherr and List (2007) developed an extended BPMN meta model with performance measures using UML. The meta model (BPMNMM) was developed in order to represent the main components of the BPMN. Initially the BPMN was developed in 1999 by the Business Process Management Initiative (BPMI). The main intention of its developments was to fit the gap between business process design and its implementation on an easily understandable and usable level for business users using graphical components.

The meta model developed by Koherr and List (2007) is based on the core components of the BPMN enhanced by process goals and performance measures (see appendix B). Therefore they expanded it by further classes. We preferred to use this model because in accordance to introducing argumentation we assume that process performance measures are very important for alignment purposes and IT business process synchronization.

'Activity' is the core component of the model which is related to several other components (Koherr & List, 2007). In their core model they specified the (A) type level and the (B) instance level with the (A) cost and quality and (B) cycle time – as further specializations – to measures the performance of a standard business process. We prefer to replace these measures by an component called metrics to give the model a wider range for further kind of measures.

3.3 Analyzing SIP and SBP to Identify Linkages

By analyzing both models we identify different kinds of classes which can be classified as potential synchronisation points (linkages) between standard business and standard IT processes. In the following two sub chapters we will introduce the components we have identified as primarily relevant for linking / synchronisation purposes.

3.3.1 Classes for Alignment Purposes in Standard IT Processes

To find classes in a SITP which can be related to classes of a standard business process, we will analyze each class given by the COBIT meta model using the following methodology.

As H0 hypothesis we declared **all classes** shown by Figure 1 **as relevant** for a sense making linkage between BP's and ITP's.

As H1 hypothesis we declared **all classes** shown by Figure 1 as **non relevant** for a sense making linkage between SBPs and SITPs.

To find out which of them are relevant and which are not we will use deductive argumentation. Therefore we try to falsify the non relevance (H1 hypothesis) of the whole set of components by finding logical reasons (arguments) that they are not useful for aligning SBP's and SITP's for each component of the set.

For sample argumentation we will use the strategic planning process as standardized by COBIT process PO1 because the business and IT domain of an enterprise should have their own strategy and therefore a strategic plan. This helps us to bring our argumentation on a similar base.

3.3.2 Entity Types for Alignment Purposes in Standard Business Processes

Classes of the standard business process meta model given by Koherr and List (2007) were analyzed following the same methodology as described in chapter 3.3.1 for standard IT processes. By

excepting arguments and classes which would (significantly) mirror results of our prior examination, we were only able to identify the class 'Data Objects' for linking purposes on the business process side.

4 RESULTS

We identified eight classes of our meta models as primary relevant synchronisation points (see Table 1) which should be synchronised to link business and IT processes in order to achieve the positive effects of social and intellectual linking respectively alignment.

Therefore we falsified the H1 hypothesis for all those components in table 1 by identifying reasons for their relevance in case of alignment purposes.

Also classes and other components which can be described as secondary relevant were found by looking for falsification arguments. Discussing the relevance of this kind of secondary relevant components should be a further step in research and is still in progress.

Also we found a lot of components interesting for modelling purposes like 'message flows' and so on. Message flows are used to show the flow of messages between two separate process participants (Koherr & List, 2007). But this kind of well known information is not relevant for us because we tried to identify synchronisation points for linkage in real life. Flow objects are no sync. points. Important in our kind of view is e.g. the data object, which can be an e-mail that contains information which has to be synchronised because information can contain links to other messages, process activities or issues for example.

Table 1: Components Identified as Potential Interfaces between IT and Business Processes.

COBIT	BPMN
▪ Process Goal ▪ Information Criteria ▪ Input ▪ Output ▪ Role	▪ Data Objects ▪ Process Goals ▪ Roles*

By identifying the primary synchronisation classes listed in table 1 we got useful insights to develop an idea of how alignment can be operationalized by explicitly considering intellectual and social aspects using a process based approach. As a conclusion of former research we will introduce an idea of how to expand SAM in operationalizing alignment in a process based way.

As shown in the original SAM represented by figure 1, requires a vertical and horizontal alignment also as a crosswise alignment via all four domains. To perform this kind of alignment, a process based approach can be used as we have depicted by figure 2. By establishing standardised strategy governance, guided by a standard business strategy development process, the components identified in our research have to be synchronised to link business and IT and align business and IT strategy. At the IT side a holistic IT governance framework like COBIT can be used to establish strategic alignment by the strategic alignment process PO1 for example. By implementing COBIT, IT governance will also take effect to the infrastructural and process domain because vertical alignment will be fully implemented by using COBIT.

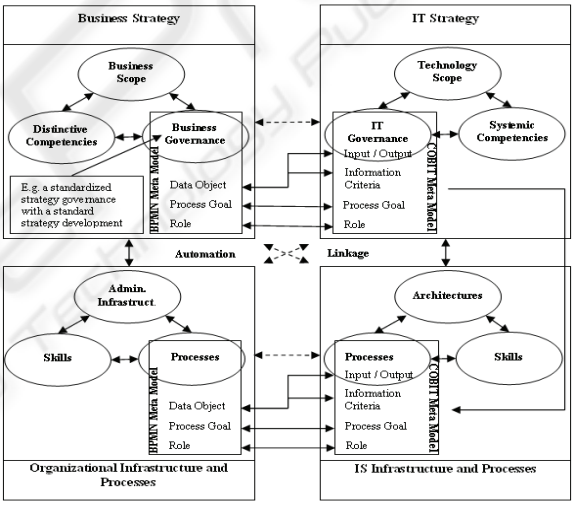

Figure 2: SAM with process based linkages between business and IT.

5 CONCLUSIONS AND FUTURE RESEARCH

To improve current methods to align business and IT, we argued for synchronizing processes on both the business and the IT side of an enterprise. We identified synchronisation points using meta models of standard business and IT processes based on the BPMN with expansions and the COBIT IT governance framework. We applied meta models in order to establish our approach on a broadly accepted basis. We exemplified our approach by

integrating it into the domains of the strategic alignment model.

Our approach aims at an improved overall IT alignment to be implemented and operationalized at the process level of an enterprise. Therefore we considered horizontal, vertical and crosswise alignment as recommended by the Strategic Alignment Model (SAM). By applying SAM (expanded by social alignment and intellectual alignment), our approach builds on, supports and expands well established models. Also it explicitly accommodates that there is a dichotomy between business and IT because both have their own strategy, processes etc. Also we accommodate an important issue of design science research, namely to deliver theoretical support for real world problems by achieving a tighter fit between practice and theoretical research.

As issues for future research we see the discussion of the relevance of components we this time identified as secondary relevant for business IT synchronisation. Also it will be important to discuss how to measure the performance of our approach and to examine if there is a contribution of it to the value that IT delivers to a companys performance. Therefore it is also necessary to examine how to measure the relation between our approach and a companys performance. Further research should also focus on validating and evaluating the presented conceptual research results. We assume that this would improve the understanding of the elaborated alignment mechanism. Another research direction should be the integration of additional frameworks and models like CMMI, ITIL, PMBOK in our work in order to combine them for a more holistic support.

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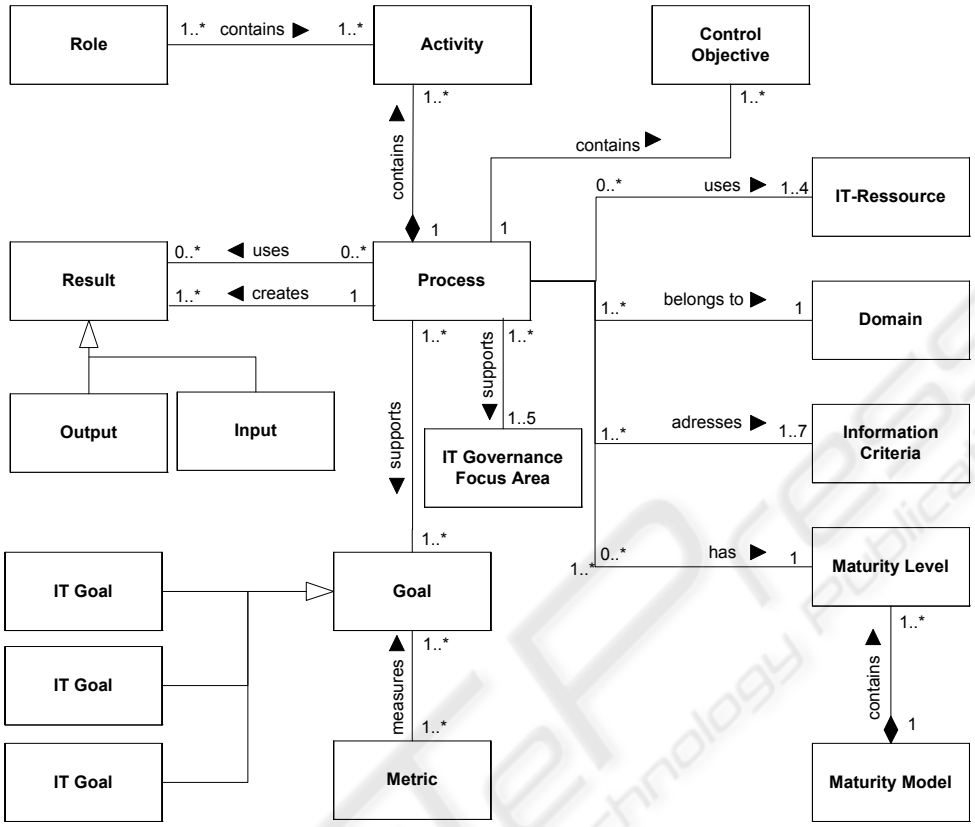
APPENDIX A: COBIT META MODEL



APPENDIX B: BPMN META MODEL