Remaining Fit: On the Creation and Maintenance of Fit

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Abstract. This paper serves as the introductory note to the Fifth Workshop on Business Process Modeling, Development, and Support (BPMDS'04). The workshop focuses on the exploration of issues related to the fit between business processes and Business Process Support (BPS) systems. BPS systems are IT based systems that are dedicated for the execution of business processes. Some degree of fit is necessary between the supported business processes and the supporting system, the BPS. In this paper we aim at providing a brief but holistic discussion of some of the issues related to the creation and maintenance of this fit.

1 Introduction

The subject of the BPMDS series of workshops is the modeling and development of business processes and support systems for these processes. The fifth workshop in the series, BPMDS'04 focuses on the issues concerning the creation and maintenance of fit between business processes and their support systems. The papers submitted to the workshop mainly present theories and techniques that relate to the creation and maintenance of such a fit. It so happens that none of these papers discusses such questions as what is fit, why is it needed and how it is created and maintained. Discussing these questions is nonetheless important in order to understand how the various papers presented at the workshop approach the issues related to fit.

In this paper we will very briefly discuss the following questions:

- What is fit? Are there different kinds of fit? (Section 2)
- Is there a difference between creation and maintenance of fit? (Section 3)
- Why do we need fit? To what degree is fit needed? (Section 4)
- How is fit created and maintained? (Section 5)

The number of concepts discussed in this paper and their complexity, don't enable us to go into details. Thus in this paper we favor breadth over depth in order to show how the different pieces of the fit puzzle fit together.

2 What is Fit? Are There Different Kinds of Fit?

The concept of fit can be defined as the correspondence between a set of components. A system, any system, over time develops standard ways of coping with its environment and, if it survives, of maintaining a relative fit with this environment. Those entities of the system that produce changes in the system and its environment we usually call the behavior of the system. Those entities that don't seem to produce changes we usually call the structure[1] of the system. The behavior and structure of a system support the fit of the system in a given environment but often act as a barrier when the fit needs to change. Business processes can be seen as the description of the behavior of an organization.

The fit related literature is mainly based in the information systems (IS) and organization science disciplines [1]. In this literature the most frequent synonym for fit seems to be *alignment*. Other synonyms partially borrowed from [1] are: linkage, top-down approach, congruence, match, consistent, adaptation, correspondence, coherence.

In fit speak there are several dimensions with which fit can be characterized [1]:

- Bivariate vs. multivariate fit
- Internal vs. external fit
- Static vs. dynamic fit

Bivariate fit is the fit between 2 components. Multivariate fit is the fit between several components. At some level of abstraction, the fit between business process and a BPS system seems to imply a bivariate fit, a fit between two components. When examined in more detail, or when set in the context of the organization, it becomes a multivariate fit involving people, organizational structure, processes, products, etc.

Internal fit is the fit of components internal to a given organization, for example the fit between business processes and BPS systems can be seen as internal to the organization for which the business process is executed. Internal fit refers to the degree to which the internal components of the organization correspond to each other. External fit is the fit between the organization and its environment. In business process speak it is the correspondence between the business processes of the organization and the stakeholder that constitute its environment, for example, customers, suppliers, investors, regulators, competitors etc. External fit refers to the degree to which the actions of an organization are acceptable by the environment

Static fit refers to the state of fit at a given point in time. Dynamic fit refers to the evolution of fit in time. The concept of dynamic fit is firmly associated with the concept of change. In unchanging environments static fit, once created, is permanent. In changing environments, static fit is ephemeral. Change renders a fit created at one point in time irrelevant in the long run.

Fit is also a point of view. Indeed, Bivariate vs. Multivariate depends mostly on the level of detail in which the fit is described. Internal vs. external depends on what is the

[1] We use the term structure in this paper even though it is not the best of terms because it can be said that a process also has a structure. However, structure is the term used in fit literature, as usually opposed to strategy. A non overloaded term may be constitution but it is rarely if ever used in this context.

boundary that separates what is considered as internal from what is considered as external. Static vs. dynamic depends on the perception of time, on understanding of the past and present as well as predictions about the future. All these elements depend essentially on human judgment. People are therefore likely to disagree on questions of fit and misfit. For example, it is often the case that inventors are considered as misfits. However, if their inventions are successful, they become the new standard, i.e. the new fit. Hence, the biologists Maturana and Varela argue that as long as a living thing exists it is impossible to say that it is not adapted to its environment [2].

In summary, fit is a viewpoint, a judgment made by a person or a machine. Fit has several dimensions. The ones we have mentioned are the number of components that are considered, whether these components cross some organizational boundary, and whether the fit may change over time.

3 Is There a Difference Between Creation and Maintenance of Fit?

When discussing the creation of fit, we give the impression of addressing only static fit. When we add the maintenance of fit to this discussion, we seem to address dynamic fit.

But creation vs. maintenance may also depend on what we perceive as change. When we perceive large change, we say that the creation of new fit is needed. When we see little change, we say that maintenance is needed. However, what appears as little change to one person may seem as large change to another person. Thus, every action in the journey of maintenance of the fit can be seen as an act of creating a new fit. The difference may simply be in the scale of change required to maintain the fit.

For example, when developing an IT based BPS system for a business process, it is often seen as the creation of fit because the BPS system did not exist before. From another point of view the same effort can be seen as an act of maintenance, transforming a paper based BPS system into an IT based BPS system.

Maintaining dynamic fit requires flexibility [1], since the organization needs to continuously change itself in order to maintain the fit with its environment. Flexibility is key to future fit. Knoll and Jarvenpaa [1] associate the following synonyms to flexibility: adaptability, agility, corrigibility, elasticity. To which we can add plasticity.

According to Knoll and Jarvenpaa [1], the fit literature prior to 1994 assumed a scarce resource view where IT fit to the organization‘s strategy and structure was mainly needed in order to make efficient use of IT expenditures. This can be seen as the optimization of internal fit. This view often leads to creating a static fit at one point in time, forfeiting the potential for maintaining the fit in the future. In order to maintain a long term fit, BPS systems may use IT systems’ ability to distribute and process information. This may help organizations to create more agile strategies and structures while still maintaining the necessary fit with their stakeholders.

In summary, creation vs. maintenance of fit is as much a judgment call as fit itself. The difference may lie in the amount of change that we specify as creation. For the maintenance of fit in a changing environment, some flexibility is needed.

4 Why do we Need Fit? To What Degree is Fit Needed?

The search for fit is at the heart of the survival of all systems, i.e. in the need to survive in some environment. A system sometimes adapts to an environment and sometimes adapts the environment to itself. Adaptation to the environment occurs, for example, when a company changes a product or service to suit changing customers' desires. An example of an adaptation of the environment is when a company creates a product or service that customers did not feel they needed before they saw it, e. g. Alexander Graham Bell's telephone. The telephone created a new situation where new behaviors became possible and older ones became obsolete. So systems seem to co-evolve by creating misfit for the other systems in the environment [2].

Failing to maintain the fit with the environment ultimately spells the demise of the system. However, this doesn't mean that fit is needed at all times, i.e. that there may not be times when there is misfit. On the other scale, some systems may disappear if they fail to maintain the fit for even a short period of time, as can happen in unforgiving environments such as a mouse that fails to detect a stalking cat.

In business related applications, some misfit may be necessary to maintain long term fit as when a company tries to develop a new product and needs to create the need for it. At first this will lead to a misfit. However, if the company is successful, it will have changed the environment and created a new fit.

Similarly, a lasting perfect fit may lead to future large misfit as it may be considered as achieved once and for all, i.e., the organization may forget about dynamic fit.

To remain agile, it seems, businesses need the right amount of fit and misfit. At least some tendency for misfit is needed to either influence the environment (creativity) or to react to changes in the environment when needed.

For an organization to maintain the fit with its environment means that a fit needs to be found with the potentially conflicting requirements of multiple stakeholders. When attempting to create and maintain the fit with one stakeholder the organization runs the risk of disrupting the fit with another. The classical example is the balancing of fit between the desires of investors and those of customers. The organization creates the best possible balance between these bivariate fits.

Hence, an organization in a changing environment consisting of multiple stakeholders needs to maintain an optimizing-balancing act, i.e., creating a balance between the different needs of its stakeholder while attempting to maintain fit with each stakeholder [4]. This optimizing balancing act is usually visible in the organization's business process. One of the roles of a BPS system is to help the organization with this optimizing-balancing act as discussed in [3]. The BPS system, in this role, influences the organization's external fit.

This optimizing balancing act requires flexibility. Also, as noted in [1], maintaining external fit may mean relaxing internal fit since a rigid organization in which all pieces perfectly fit together is probably not as flexible as an organization that is more accustomed to misfits. However, business processes, BPS, organization, people, etc. need some measure of stability. In a fast changing environment it is difficult to maintain enough flexibility. Contrary to what seems to be the current practice, BPS systems should be used to maintain flexibility rather than to rigidify business processes.

In summary, fit is needed for survival in a given environment. However, total fit to a certain environment may make it difficult to maintain the fit when the environment changes. In changing environments some misfit may be needed in order to maintain flexibility. Organizations need to maintain multivariate fit. This implies the continuous balancing of different bivariate fit. This flexibility is difficult to maintain, BPS systems could be used to enhance flexibility.

5 How is Fit Created and Maintained?

There are probably an infinite number of strategies possible for creating and maintaining the fit between a system and its environment. There are nonetheless a few basic mechanisms on which these strategies rely.

To create and maintain fit, some understanding of what requirements will define the fit is needed. Some measurement is needed to understand the difference between the present situation and the requirements for fit (gap analysis). For maintenance, continuous measurements and definitions of requirements are needed. The consequences of misfit also need to be evaluated. This results in the continuous monitoring of fit.

The most basic mechanism for maintaining a fit is to wait until there is a substantial amount of non fit and then take action to restore the fit. However, this means that some tolerance of misfit is needed since first the misfit has to be sensed before action can be taken. To reduce the amount of misfit other mechanisms are needed such as anticipation of future misfit. Anticipation is mainly based on an analysis of the past from which conclusions are drawn about what the future may be. But the future may not resemble the past in which case the anticipated conditions may fail to materialize. In other words anticipation in changing environments is extremely error prone. Anticipation, if successful reduces the amount of initial misfit. If the anticipated misfit doesn't materialize there is a risk of wasting resources as well as creating backlash.

Examples of non anticipation of requirements are quite common in the IT industry. Business processes are likely to change rendering an existing BPS system or one that is under construction unfit.

Whenever it senses that a requirement has changed substantially, the organization is likely to attempt to regain the balance by creating a new fit. Before such a change is decided on, the organization usually goes through a phase of evaluation of the consequences of the change and non-change. Many times no change in the business

processes is performed and the organization “simply” accepts the misfit and thus creates a new fit with no change of behavior.

An organization’s business processes are influenced by their stakeholders’ needs (both internal and external), by the existing or projected organization’s structure and by the capabilities of BPS systems. Models of the organization, its environment, its business processes, and BPS systems are used explicitly or implicitly to share an understanding of what constitutes a fit. These models are used in business processes and BPS system requirements definition, design, implementation, deployment and maintenance.

The models should represent what the stakeholders consider as acceptable fit, to what extent this fit exists, what changes are likely to create this fit in the future, and what would be the consequences of a new fit on the stakeholders. This last point is motivated by the fact that creating a better fit for one stakeholder is likely to loosen the fit with another. Moreover, Stakeholders don’t operate in a vacuum. They share a common context which shapes and gives meaning to their requirements. It is important to model this context and its influences on individual stakeholders’ requirements.

In summary, in order to create and maintain fit, an organization needs to continuously monitor its fit. Reaction and anticipation mechanisms are often used to create and maintain fit. The consequences of change and non-change need to be evaluated. In all these activities modeling of the organization and its environment is needed in order to reach shared understanding about fit.

6 Conclusions

In this paper we briefly discussed the question of the creation and maintenance of fit between business processes and BPS systems. We have shown that there are different kinds of fit. We have shown that this fit is part of the more global question of the fit between the organization and its environment and that this is at the center of an organization’s survival in this environment. We discussed some of the basic elements of fit creation and maintenance

We have also shown that fit is not an objective criterion but rather a point of view. Therefore, shared understanding of what fit will represent to the different people internal and external to the organization is needed. This shared understanding is usually created through modeling activities and discussions. It is no surprise therefore that all the papers presented at the workshop propose or discuss methods for creating and maintaining models that represent some aspect of fit.

What has not been discussed in these papers is the positive aspect of misfit. Misfit gives an opportunity for change. When everything fits people are unwilling to change. When things do eventually change, no one is prepared. Non-fit is essential for flexibility. However, the amount of non-fit depends on stakeholders’ expectations. For example, it is easier to accept non-fit in non mission critical applications than in mission critical applications.

The ultimate fit in a changing environment may be to create and maintain flexibility as flexibility enables an organization to maintain fit as needed. However, perfect

flexibility is impossible to achieve because there is also a need for stability. Flexibility in business process and BPS systems may be the subject of the next BPMDS workshop.

7 References

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