Toward Enabling IS Agility with Initiatives

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Abstract: The uncertain, unpredictable and ever-changing conditions of the information system (IS) enterprise environment require adaptive and holistic approaches from the IS engineering methods. As an answer, the agile paradigm has emerged in the business as well as in the software and IS development. In this context, we consider the idea that initiatives could play a prominent role in the IS evolution steering, particularly to the enterprise IS agility. IS evolution initiatives should be considered as opportunities for an IS to sustainably evolve, to support the enterprise transversal and value-creating activities and to be part of the IS steering methods. In this paper, we define the notion of initiative and propose an approach based on a set of inter-related IS steering meta-models and method components where initiatives play the role of agility enablers.

1 INTRODUCTION

In order to deal with the uncertain, unpredictable and ever-changing conditions of the Information System (IS) enterprise environment, adaptive and holistic approaches must prevail in the IS engineering. It is not possible to acquire or plan all the needed information that changes with the environment. Indeed, contingency may arise from any parts of the IS: organizational (with, for example, new business processes, units re-organisation, companies mergers and acquisitions), technological (with the introduction of new hard or soft technologies) or ontological (with law abrogation, law modification or new industrial standards). Consequently, we claim the importance of developing IS engineering methods toward building agile IS, and to this purpose we introduce here our approach based on initiatives.

However, enabling IS agility is not an easy task. This can be explained by several reasons: the need for signals capture and exploitation, the co-existence of multiple ISs in the organisation and the need for balancing decision making between IS stability and adaptation, to mention but a few. Therefore, to enable IS evolution in a coherent and sustainable way, IS steering is necessary. IS steering relies on the informational space models which interoperate the ontological, the organisational and the technological spaces models. Its task consists in assuring that all models are coherently articulated, and in managing the IS development toward this purpose. In order to cope with agility, we believe that IS steering must take into account the initiatives of IS evolution. Initiatives represent a pre-project phase where the IS stakeholders are empowered to make a proposal of IS evolution.

Organisation-wise, the home grounds of our approach are organisations with organic characteristics (Sherehiy, 2007). System-wise, our approach takes into account possible multiple ISs supporting the organisational activities (e.g. Marketing IS and HR IS) and possible multiple informational services (e.g. Training Service, Recruiting Service). We argue that initiatives play a role of agility enablers for the IS development, thanks to their embedded agility allowing guiding the management towards the purpose of IS development.

Section 2 introduces the key concepts of initiative. Section 3 presents related research works. Section 4 outlines our approach of IS Steering with initiatives with our IS Steering meta-models and sets of method components. Section 5 summarises the contributions of the paper.

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2 RATIONALE AND KEY CONCEPTS

2.1 Initiatives of IS Evolution

An initiative is defined in (Opprecht, 2010) as a proposal leading to the actions and mechanisms allowing to place the stakeholders concerned by the development of an IS in a situation of exploration for the discovery of new IS services. It can concern: a "request for discussion" (a tacit need and a not yet defined situation, such as an intuition), a "request for answer" (a defined situation without a proposed answer) or a "direct proposition of action" (a situation with a possible answer to be discussed and validated). Initiatives may arise from the different spaces of our reference model and for different reasons: organisational, ontological, technological or informational. Moreover, they may originate from multiple spaces (for example: both organisational and informational).

An example of IS evolution initiative could be issued by a group of employees from several departments following the launch of an organisation's wide evaluation toward an external qualification process. This initiative would request the creation of a self-service platform as part of their organisation's intranet, allowing anyone to create virtual workgroups. Among the several concerns it may raise, there are: the co-edited content ownership, the mobile access to the platform, the service's relationship to the organisation's ERP, etc.

2.2 Benefits of Initiatives Usage & Management

There are several reasons for considering the usage of initiatives. First of all, an initiative aims at answering to the IS evolution complexity with the gathering of multiple stakeholders (who may represent the different IS spaces) into a collaborative process. Then, it ensures the acceptance of business decisions through committing the stakeholders to the decisions made. Finally, it represents a triggering environment for the innovation.

Moreover, the management of initiatives brings several benefits. It gives an environment for the decision constructing leading to the decision taking (Yurchyshyna, 2011). It also permits to regulate the initiatives flow and consequently avoid the anarchic situations. It allows one to acquire the IS evolution requirements through stakeholders empowerment that may not have been otherwise acquired with traditional techniques. It promotes the interoperability of the ontological, organisational, technological and informational structures. Finally, it allows the IS to be sustainable, that is to be capable to adapt itself to its environment, to dynamically integrate the ever-changing conditions of its environment, and to be sustainably coherent with its evolving challenges.

3 RELATED WORKS

3.1 The Initiatives' Facets

The phenomenon of an initiative is explained by its multi-faceted origin, which is characteristic for different domains of science and business.

In the political sense, the initiative represents a central device of the direct democracy (Trechsel, 1996). A popular initiative can be made either on the federal, the cantonal or the municipal level, and can be either promoting or rejecting (vetoing a parliamentary bill). In the context of the design of mixed-initiative AI (artificial intelligence) systems, where both users and machines dialog together, multiple theories explain the term of initiative (Cohen, 1998): as a control over the flow of conversation, as an exercising power to perform a task for solving a problem, as seizing the control of a conversation by presenting a goal to achieve or as the first step of a goal-oriented process with a certain level of strengths. In the context of the behavioural psychology (Frese, 2001), personal initiatives represent a behaviour which pursuits self-set goals (contrary to assigned goals). Three aspects characterize it: self-starting, proactive and persisting.

3.2 The Agile Response

Agility is the capability of a method to cope with uncertainty in a reactive as well as proactive manner. It forms a paradigmatic approach since the beginning of the 1990s (Huumonen, 2011), in the mainstream business literature first, then across many fields and disciplines such as in the software development (with the agile methodologies Extreme Programming/XP and Scrum for the most popular) and in the information system engineering.

Although many definitions of agility co-exist, and may lack of conceptual grounding (Abrahamsson, 2009) (Huumonen, 2011), several benefits to embrace an agile strategy/methodology can be listed: flexibility and adaptability, responsiveness (quick and efficient reaction to

changing requests), speed, integration (of information technology, personnel, business process organisation, innovation and facilities), low complexity, mobilization of core competences, high quality and customized products, culture of change, removal of non-value-added activities, stakeholders satisfaction and finally unison of the enterprise resources to compete with the changes in the environment and to create business value.

3.3 Information Systems Agility

As pointed out by (Desouza, 2007), little literature examines the concept of IS agility in an integrated manner, with management and technological aspects in concert.

As an answer to the problem of IS alignment to the organisation's business strategy, (Galliers, 2007) presents a framework for information systems strategizing which comprehends exploitation, exploration and change management strategies in an infrastructure of knowledge creation and sharing. For him, agility "is more likely to emerge from a creative process of exploration, and not from mechanistic, prescriptive, and commoditized techniques and technologies".

In (Maurer, 2010), three dimensions of IS agility are defined in order to develop a scale for measuring IS agility: technical infrastructure agility (hardware, platform, network, application and information agility), IS process agility (maintenance process, planning process agility, development, process agility, monitoring & assessment process agility) and human characteristics (behavioural, business and technical skills). In (Lui, 2007), the authors identify four components of an IS agility, namely: technology, process, people and structure agility, and propose a technique for measuring degrees of agility in information systems based on fuzzy logic.

3.4 Research Contribution & Scope

Our present contribution addresses the question of IS agility with the comprehension of the multiple IS dimensions (i.e. organisational, ontological, technological and informational). In contrast to other works, there is no intention here to define a methodology for business/IT, IS/strategy or IS/business processes alignment. We rather propose a framework for IS Steering which takes into account the ever-changing conditions of the IS environment, which empowers any IS stakeholders to make a proposal of IS evolution, and, finally, which gives to the information a central role. Our principal focus is to build an agile IS, not to build agile methods for IS engineering.

4 TOWARD ENABLING IS AGILITY THROUGH INITIATIVES

4.1 Initiatives as Agility Enablers

We argue that initiatives may play a role of agility enablers because they share the following characteristics of agility identified in the literature (Sharifi, 1999), (Sherehiy, 2007), (Siakas, 2007), (Huumonon, 2011), (Iivari, 2011), (Tseng, 2011) and (Iivari, 2011): stakeholders' empowerment, holistic comprehension, change adaptation and response, opportunities identification and collaborative process.

Indeed, the IS Steering with initiatives allows the self-seizure of a control (or empowerment) from the IS stakeholders who endorse the role of initiators. Our initiatives-based approach also comprehends a holistic view with: (i) the interoperability of the organisational, technological, ontological and informational models; (ii) the transdisciplinary practice which our initiatives-based approach encourages. Another reason for considering the initiatives as agility enablers, is because the IS requirements for change are raised with the initiatives environment in an organic manner, allowing to capture requirements which may not have been otherwise acquired. Moreover, with initiatives, opportunities are identified and proposed by the initiator(s) and discussed by the initiatives participants as pre-projects. Finally, our approach for supporting initiatives toward IS evolution also comprises a collaborative process where the initiatives are co-elaborated.

4.2 IS Steering Meta-models

In order to guide the IS steering with initiatives we build a product model ("IS Steering Meta-models") and a set of process models ("IS Steering Guidelines").

The IS Steering meta-models, which we can only broadly present here comprehend: an activity model, a technological model, an ontological model and an informational model. The later is broken up into three levels: Global, (Several) IS and Service levels. Indeed, as we have already mentioned in the introduction, we aim at supporting the IS evolution

in the context of possibly multiple ISs in an organisation ("IS level"), and to the purpose of IS steering, we propose to generate a global level "by deduction" of the IS level. We also define a third level ("Service level") for modelling the informational services which are based on the informational elements existing in on one or more ISs.

4.3 IS Steering Guidelines

Based on the previous meta-models, we build a set of IS steering guidelines which can be adapted to a given situation and assembled with one another. Two sets of method components are considered: method components for the IS steering, and method components for the collaborative engineering of an initiative.

The first set of method components regards the process of IS steering toward evolution. They propose directives for instantiating the steering referential, for identifying and characterizing the IS evolution and for identifying the impacts of an evolution. The following levels of coordination are considered: several ISs, global (or federal) and services. The second set of method components regards the collaborative engineering of an initiative with the following intentions: initiative launch, initiative categorization, call for participation, ideation, initiative abstraction, initiative concepts description, initiative modelling, initiative evaluation and build consensus.

5 CONCLUSIONS

In this paper we introduce the concept of initiative in the context of the IS evolution steering where the initiatives play the role of agility enablers. We draw the outlines of our IS Steering meta-models and of our sets of method components for IS evolution. The question of IS agility remains complex, nevertheless, we believe that agility is more inclined to emerge from a creative process of exploration such as the one we propose with initiatives, and not from a pure mechanistic or prescriptive approach.

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