

AN INTEGRATED APPROACH FOR DEVELOPMENT AND IMPLEMENTATION OF IS/IT STRATEGIC PLANS AND ENTERPRISE ARCHITECTURES

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Abstract: *Defining an enterprise architecture and an IS/IT strategic plan separately leads to duplication of working activities and conflicting artefacts. Using such artefacts later in decision making process causes many problems. Consequently, in a phase of defining an IS/IT strategic plan also a skeleton of an enterprise architecture should be developed and written in a common repository. The paper presents advantages of an integrated approach for development and implementation of IS/IT strategic plans and enterprise architectures.*

Key words: *Enterprise architecture, Information technology*

1. INTRODUCTION

Strategic information systems planning (SISP) flourished in the 80' when Business Systems Planning and Information Engineering methodologies were mostly used to develop IS/IT strategic plans. Since then these approaches have evolved and new approaches have emerged, to address changed business and environment requirements (e.g. electronic business, business process reengineering, new legal requirements).

The field of enterprise architectures (EA) was introduced in 1987 by Zachman framework, which became the most frequently used EA framework. EA was recognised as a very useful tool for governance of an enterprise and also for IT governance, also in the public sector.

As SISP and EA approaches have common objectives and many other similarities, their deliverables are overlapping. This causes many problems when they are used in decision making processes by different stakeholders. The solution is the integration of both approaches. The paper represents inclusion of activities for developing the skeleton of EA in our SISP approach. We show advantages of the proposed approach which has been used on recent projects of defining the IS/IT strategic plan (e.g. an IS/IT strategic plan of the Employment Service of Slovenia and of a financial institution).

2. SISP AND EA SIMILARITIES AND DIFFERENCES

EA is especially important for large organisations (e.g. governments, multinational corporations), where achievement of interoperability and improvements in efficiency is very important but hardly fulfilled issue. Many EA frameworks were developed by:

- international organisations (e.g. TOGAF - The open Group architecture framework, IAF - Cap Gemini Ernst & Young's Integrated Architecture Framework),
- governments (e.g. FEAF – US Federal EA framework, DODAF - Department of Defense Architecture Framework, OIO EA - Danish government EA framework) and
- enterprises.

The recently introduced EA framework ArchiMate (Lankhorst, 2009) is very promising. It brings a common modelling language for describing different domains based on UML and uses services as a linking element between domains. It was

accepted as a technical standard for EA in 2009 by The Open Group organisation.

SISP and EA approaches have many similarities (Wilton, 2008):

- the main objectives of both fields are almost the same,
- IS/IT architecture is one of the main deliverables of many SISP approaches,
- both include a baseline summary of existing IT infrastructure and an objective architecture,
- both produce plans/architectures that are dynamic and need to be reviewed and updated regularly, etc.

However, the major difference is that SISP tends to be process-oriented, with relatively little specification of the deliverables, whereas EA is rather the opposite (but this also depends on the particular approach). SISP is mostly targeted at a single enterprise and does not address interoperability issues, whereas EA does. EA is also intended to produce nested architectures.

Defining the EA and the IS/IT strategic plan separately leads to duplication of working activities and conflicting deliverables. Using such deliverables lately for planning and decision making caused many problems. As securing the top management commitment is the biggest problem and also a critical success factor for both approaches, it is more efficient to seek the common commitment. Therefore, the solution could be an integrated SISP/EA approach.

3. THE INTEGRATED SISP/EA APPROACH

The main idea of this approach is that within a SISP process also a skeleton of EA is developed and written in a common repository. Later in the EA process this skeleton is further developed and also written in this repository. This enables that EA deliverables could be used in new iterations of a SISP process. It is also important that common change management, control and evaluation procedures could be established. Figure 1 presents the integration of SISP and EA approaches. It is realised with embedding the activities of Defining "As is" architecture and Defining "To be" architecture into the SISP process and with the common repository as a storage for deliverables. The figure also shows the processes of change management and implementation control and evaluation which should be continually executed to achieve successful governance of an enterprise and its sustainable performance.

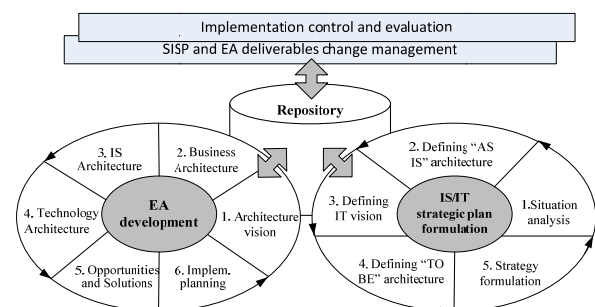


Fig. 1. Integrated SISP/EA approach

3.1 The development of an IS/IT strategic plan and a skeleton of EA

In our approach (Bajec et al., 2007) the development of an IS/IT strategic plan consists of five processes (as shown in Figure 1):

- **Situation analysis:** the aim of the first process is to get a clear and documented diagnosis of the existing situation (business and IT) in the target enterprise. Interviews with many stakeholders are performed and documentation about the enterprise is studied.
- **Defining “As is” architecture:** the process is dedicated to a presentation of enterprise's key business processes, information technology that is used for their automation, organizational units, functions and roles, which cooperate in these processes to achieve business objectives. The integration issues are also addressed. The gap analysis between the current and desired state is performed.
- **Defining IT vision:** the aim of this process is to examine possibilities for utilization of new information technologies to improve achievement of business objectives defined in the business strategy.
- **Defining “To be” architecture:** desired key business processes and their IT support are presented. The necessary integration improvements are also addressed.
- **Strategy formulation:** in the final process the projects with priorities are defined. Involvement and responsibilities of different stakeholders in the implementation phase are defined. Also plans for user training are established. Finally, change management, control and evaluation processes are defined in order to manage the implementation process and assure consistent updating of deliverables.

With the execution of the second and the fourth process the skeleton of EA (at strategic level) is developed and stored in the repository. The number and the level of detail of deliverables depend on SISP objectives stakeholders want to achieve. It is the most important that all deliverables are put into the repository and thus could be further developed and managed.

In the prior version of our SISP approach (Krisper et al., 2003) we used different modelling notations (e.g. ER, eEPC, UML) for the representation of “as is” and “to be” situation of the enterprise and its information system. For the linkage between domains we used many matrixes (e.g. functions against data subjects, business processes against applications, objectives against technologies). To cover this heterogeneity we used different software tools that did not have a common repository. Because we would like to standardize the presentation of artefacts in our integrated SISP/EA approach we choose the ArchiMate framework, which provides a common modelling language. Its most important advantages are:

- common modelling language for different domains (business, information, technology),
- integration between domains is realized by a concept of a service.

3.2 The implementation of the IS/IT strategic plan and EA

When IS/IT strategy and EA are developed it is necessary to continually control and evaluate the implementation and report the results to top management and other stakeholders. The control and evaluation are very important to achieve SISP and EA success and are also necessary for improvement in capabilities of SISP and EA processes through organisational learning (Baker, 1995; Bechor, 2010; Grover, 2005). Change management assures up to date SISP and EA artefacts in the repository. This is very important as we want that also business and environment requirements which appeared during the implementation phase are supported in the developed IS. The implementation phase usually lasts from two to five years.

In enterprises these processes are rarely defined and performed (Newkirk, 2003) what causes many problems, such

as: low implementation rates of planned projects, delays in delivery, implemented IS that does not support lately business requirements, decisions are based upon non accurate information about the enterprise and its IS, low management support for future SISP and EA activities etc. (Teo & Ang, 2001). As it was proven by many researchers that control, evaluation and change management processes positively influence SISP success we added them to our SISP approach. It previously contained only processes for the first phase of SISP, the development of the IS/IT strategic plan.

4. CONCLUSIONS

The integrated SISP/EA approach, described in this paper, has many advantages. As the skeleton of EA is developed already in the SISP process and written in the repository all deliverables could be further developed in the architecture process. The approach thus eliminates duplication of development activities and conflicts among deliverables. However, the biggest benefits are gained when those deliverables are used in decision making and in change management processes. We believe that is easier to achieve top management commitment and involvement for the proposed integrated SISP/EA approach as for both approaches separately.

The ArchiMate modelling language used in the proposed approach also brings many advantages. It ensures unified presentation of SISP and EA deliverables, common language for describing different domains and a common way of domain integration. This could improve efficiency, effectiveness and especially mutual understanding of many involved stakeholders. Formerly stakeholders should have been familiar with different modelling languages, depending on the domain and the level of detail of a particular deliverable.

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