

COMBINING ENTERPRISE ARCHITECTURE AND QUALITY ASSURANCE SYSTEM FROM DATA ADMINISTRATION VIEWPOINT

Jaakko Riihimaa¹

¹ Information Department/Data Administration, Seinajoki University of Applied Sciences,
Keskuskatu 34, Seinajoki, Finland
Jaakko.Riihimaa@seamk.fi

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1. EXECUTIVE SUMMARY

One of the most important current issues in Finland in the field of universities corporate governance is the discussion about enterprise architecture (EA) and the connections it has with IT, or more likely, data administration development. As MIT Center for Information Systems Research defines it “Enterprise Architecture is the organizing logic for business processes and IT infrastructure reflecting the integration and standardization requirements of the firm’s (organization’s) operating model.”

However, the EA work is mostly seen as technically oriented and more emphasis should be put to activities and contents. These were the key conclusions, for example, when stakeholder views on enterprise architecture in Finnish government administration were studied in 2008. There is just same pitfall when discussing about university administration and developing it.

Many enterprise architecture frameworks are focused into four practice areas: Levels of Business architecture, Information architecture, Applications, and Technology. This kind of model is useful for it simplifies the topic and divides it into smaller particles, still depending on each other. There is still the huge risk that organizations top management will see EA purely as an information technology oriented issue, not as the essential strategic tool to guide the evolution of organization’s core foundation of systems and processes.

An attempt to visualize the topic and bring it more relevant to management is to combine the most important processes of the organization with four-level EA-model. In university context this means the core process of education and core process of research. The core processes are defined, or at least they should be, in the quality assurance system (QAS) of the university.

The quality assurance system, like for example EFQM-model (European Foundation for Quality Management), links together organizations strategy, processes, leadership and key performance results. On the other hand this may help data administration staff to deduce better their tasks and services from organization strategy. Many times these strategies are written in upper abstraction level which causes difficulties to make them operational. On the other hand, when the processes are defined and continuously improved as a part of the QAS, the four levels of enterprise architecture model could play an important role. Processes will first be described in the level of business architecture, but also the information and applications level issues should be linked to the process descriptions. That helps the organization management and the process owners to see the dependencies between the integrated operational processes and integrated information systems. Thus the understanding on entirety will become better both in top management and in data administration staff.

This type combining of EA and QAS are proposed to put to the test within national RAKETTI-project, which aims to more comprehensive adoption of EA-models among Finnish universities.

2. ENTERPRISE ARCHITECTURE

The term enterprise architecture refers to various different issues, for example to a description, a process or a profession. In Finland the research project FEAR (Finnish Enterprise Architecture Research) at the Jyväskylä University has conducted research to support the enterprise architecture work for the Finnish public administration, especially government enterprise architecture (GEA). Within the Finnish universities working area the Ministry of Education started in June 2008 a project called RAKETTI to improve interoperability and quality of information systems in universities.

The framework FEAR presented was also adopted to the base of Finnish universities EA-work. If greatly simplified, it includes and emphasizes four layers or practice areas: Levels of Business architecture, Information architecture, Applications, and Technology.

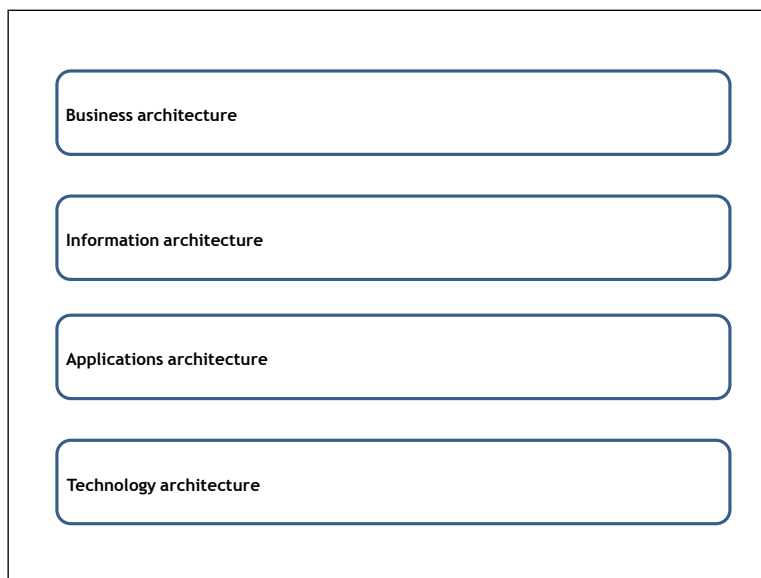


Figure 1. Four level enterprise architecture model

Business architecture refers to organizations business processes, in universities all kind of administrative (management), operational and supporting activities guiding students and staff. Information architecture refers to organizations (well defined) information resources, like conceptual, logical, and physical data models and metadata. Correspondingly Applications architecture refers to application software of organization and Technology architecture to hardware, networks and other kind of basic IT-infrastructure.

However, the form of the framework is not that important, but the point it offers the platform for discussions between organization management and data administration (equate to information management) professionals. One of the main challenges is how organizations top management will see EA as the essential strategic tool to guide the evolution of organization's core foundation of systems and processes, instead seeing it as purely an information technology oriented issue.

3. THE QUALITY ASSURANCE SYSTEM

In many ways the mutual understanding is fight against the language barrier and it is also about the motivation issues. More discussion and co-operation is needed, because the information systems

have their effect on most processes, importance of systems increases continuously and the ensemble of systems grows more and more complex.

One of the risks, when discussing enterprise architecture, is that it is seen as a new management model, just coming into fashion. Fashion comes and goes. Tackling the risk, EA should be seen as an extension of some familiar management model organization uses, for example the quality assurance system (QAS).

The quality assurance system links together organizations strategy, processes, leadership and key performance results. The Finnish Higher Education Evaluation Council (FINHEEC) has been developing the audit procedure focusing on the quality assurance systems of Finnish higher education institutions (HEIs) in order to show the international community that Finland has a valid and competent quality assurance practice.

About two years ago the audit of Seinäjoki University of Applied Sciences (UAS) was put into practice. It was the eighth such audit and in Finland the first international audit, implemented in English. Seinäjoki University of Applied Sciences is a comprehensive regional institution of higher education that is maintained by the Seinäjoki Joint Municipal Authority for Education. Seinäjoki UAS initiated its operations temporarily as a polytechnic in 1992, and its functions were established permanently in 1995. At the moment, Seinäjoki UAS staff total 370, of which full-time teachers number 207, but full-time staff total 120 with paid service operations staff totaling 43. In addition, there are 66 employees working in joint services. Staff who have completed their doctorate or licentiate degrees total 58, and 186 have received higher degrees in the applied sciences.

However, FINHEEC decided in its meeting of 24 October 2006 that the quality assurance system of Seinäjoki UAS had some major shortcomings and did not meet the audit criteria, for which reason the development of the quality assurance system calls for action from the HEI, as well as for a re-audit. The re-audit will particularly concentrate on the structure, coherence and documentation of the quality assurance system as a whole.

Quite strong development procedures were started in Seinäjoki UAS, and the re-audit was conducted according to the guidelines given. Based on the proposal of the audit group and the audit report, the FINHEEC decided in its meeting of 26 March 2009 that the quality assurance system of the Seinäjoki UAS fulfils the criteria set for the quality assurance system as a whole and for quality assurance in its basic missions. The audit is valid for six years.

The quality assurance system of Seinäjoki UAS is built within the European Foundation for Quality Management (EFQM) framework. According to the re-audit report and visit interviews the role of the EFQM seems not to be very central. They reported that Seinäjoki UAS had developed its own system with its own quality components.

From data administration viewpoint there were some important issues: The strong effect the university put into the QAS development work increased also the needs to describe the processes and also the role of the information systems within them. Although the role of the data administration professionals in the QAS development work was quite small they show also growing interest to QAS issues and terminology.

The main processes of Seinäjoki UAS are the teaching/learning process and the R&D process. These processes are handled by the teaching performance area managed by the university Vice President and the R&D activity performance area managed by the R&D Director. Each has the support of the performance area steering committee, which concentrates primarily on strategic questions.

Alongside the main processes, also internal management and support service processes - The Student Affairs Administration, The University Library Services, Financial Administration, Staff management, Data Administration and Facility management process - are implemented at Seinäjoki UAS, and about 90 subprocesses are described in more detailed way in Quality manual.

4. EA-SCHOOL OF SEINÄJOKI UAS

Within autumn 2008 a special project to introduce and implement first version of enterprise architecture to Seinäjoki UAS was organized. The goal was to discover the challenges in implementing the EA. As well the applicability of the Finnish Government Enterprise Architecture (GEA) in the Seinäjoki UAS was tested. Target group was CIO and seven data administration professionals.

The EA School functioned in workshops, each dedicated to a certain EA practice area. The project experiences clearly indicate that the Finnish GEA is suitable for the universities. However, from the point of view of the CIO, there will be challenges. The most significant challenge seems to be the data administration personnel's idea of their job description: the data administration staff did not consider Enterprise Architecture related issues as part of their work.

Within the project many useful and practicable tools were defined; documentation models, templates, data classifications, system maps etc. In the future the most optimal exactness and abstraction level of these tools must be more carefully considered.

One of the most important discoveries was the important role of the QAS. If the processes were well defined in the QAS, it was quite easy to build the tools in consequent way and get the relevant contents to EA templates and documentation models. Vice versa, if the processes were left in too abstract level, it was not possible to join the two ends of a chain, the processes and templates.

5. RAKETTI-PROJECT

The Finnish Ministry of Education started in June 2008 an enterprise architecture-based project called RAKETTI to improve interoperability and quality of information systems in universities.

The driving forces of the project were heavy structural changes to be expected within the Finnish university area - fusions, networked co-operation structures and regional centralization - and strategies and development plans presented by the Finnish Ministry of Education. For example, as one of the recent Ministry committees states in their report concerning eServices of higher education institutions (HEI): "... advances in the development of eServices in HEI entails management committed to cooperation, transparent decision-making, coordinated cooperation networks, more uniform conceptual models, interfaces and processes, and a uniform information management infrastructure. The leadership of the information management must be closely linked with the overall management of the HEI. Special attention must be paid to the organisation of information management and to its integration into other administrative operations; information management must not be developed as a separate operation. Barriers between different units in HEIs must be removed and intra-institution cooperation needs to be stepped up."

The RAKETTI-project is managed by Finnish CSC. Finnish CSC is the Information Technology Center for Science Ltd, non-profit company administered by the Ministry of Education. CSC provides IT support and resources for academia, research institutes and companies: modelling, computing and information services.

When considering the possibilities to highlight the importance of the topic and to increase interactive discussions between management and data administration staff, "How to speak the Chancellor-/ rector-language", various proposals were presented.

One of the proposals was by two "RAKETTI-administrators", CIO Jaakko Riihimaa and CIO Ahti Planman, the framework combining the four-level EA-model with core processes of the university, or more likely the most important processes from the EA-model viewpoint.

The main idea by using different kind of models is to find the common shared language between the parties. Selecting the core processes of the university, "teaching/learning" (education) and

“research/development”, will emphasize the importance of the main functions of the university. Correspondingly, if the core process covers all the four EA-model levels that show and emphasize the demands to take into consideration all the different viewpoints we must notice. For example, it is not uncommon when a problem occurs trying to resolve it by buying rapidly a new functional (or as well process oriented) application, without checking how well or badly compatible it is with other processes, our concepts and data, existing systems and current IT-infrastructure. All that kind of ad hoc purchases increase incoherence, causes growing costs and, when the complexity of the system is widespread enough, affects bad end-user experiences among students, teachers and researchers.

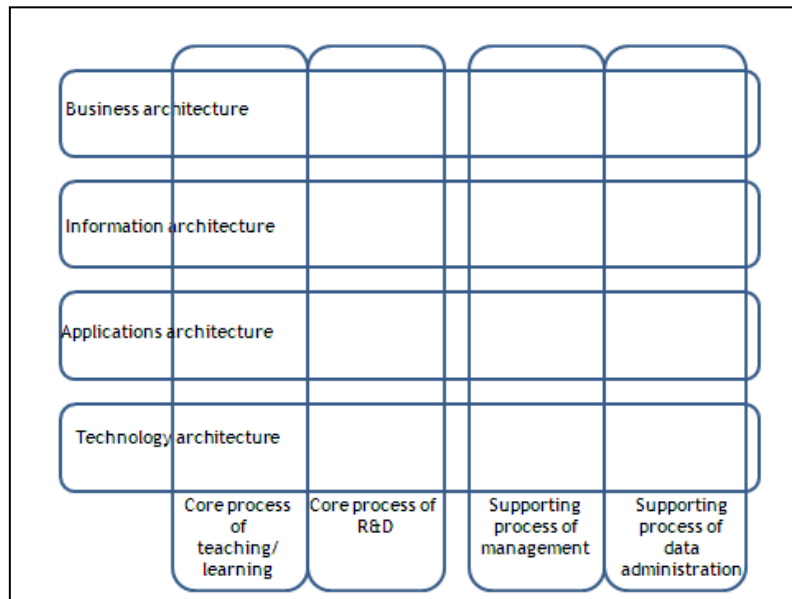


Figure 2. Four level enterprise architecture model combined with core/important processes

Core processes are familiar, or they should be, to rectors and peoples working in management of the university. However, it must be noted abstraction level in this particular framework is too high, so more exact subprocesses are needed. Having well-designed QAS is one of the most promising ways to handle this problem.

Another point in the framework is to emphasize the co-operation between the processes. On the one hand “teaching/learning” and “research/development” are normally tied together in daily university life. On the other, co-operation between data administration and other university management staff should be strongly enhanced. This demand is highlighted within the framework by binding the data administration subprocess with management subprocess. Calling university management as “subprocess” will also more stress the point that teaching and learning as well as research and development are our core functions, not management.

The RAKETTI-project has currently four subprojects: OPI for “teaching/learning”-process, in its early phase being TUTKI for “research/development”-process, KOKOA for building up activities and models to increase co-operation between management and data administration and XDW developing different issues within EA-level “information architecture”. The last mentioned includes activities for example to implement nationwide data warehouse services, define shared concept models, etc.

6. FOLLOWING STEPS

In the near future several issues focusing enterprise architecture will be activated.

The RAKETTI-project will deepen and develop those four subprojects it has, considering common processes and information systems of educational administration and research activities, aiming to recognize new ways to build better co-operation between management and data administration. It will also establish various working groups and practical pilots for important EA-topics.

In Seinäjoki UAS one of the next steps will be the data administration strategy, binding and developing lessons learned in EA-school and QAS audit. The base model for the strategy creation will be the framework presented in the Figure 2. The strategy work must recognize more carefully important subprocesses and their owners as well as define the process owners' rights and responsibilities. Also organizational structures of data administration will be considered and some central guidelines will be documented and strengthened. Because the quite abstract Seinäjoki UAS main strategy had to be one of the cornerstones of the data administration strategy, there surely will be some challenges to build the bridge between the strategies to get results concrete and relevant enough.

When discussing the QAS development Seinäjoki UAS will continue building and further developing its QAS around the present chosen components of quality variables, and perhaps bringing it closer to the all various features of EFQM framework. It also must remember that quality work is slow, iterative process, aiming for continuous improvement of things. It may take years to achieve the strategic goals.

More commonly, it might also be useful to ponder how to contribute to the shared language. For example, most data administration (or information management) people usually talk about IT, which literally means information technology. That is the way we automatic focus on technological issues and alike not that high priority to other organization management staff. Should we more talk about IS, information systems, which is maybe more difficult, but clearly broader concept including also human resources, information systems etc. among technology? And should we bring in new models to debate, like the model combining enterprise architecture and QAS with the most important core processes?

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