AISA Research Project

Quality Management of Enterprise and Software Architectures

2005-2008

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Introduction

- A three-year research project studying the quality management and evaluation aspects of both enterprise architecture (EA) and software architecture (SA)
- 1.3.2005 – 31.3.2008
- Participating organizations: A-ware, Elisa, IBM, Osuuspankkikeskus, SOK, Tieturi
- Funded by the Finnish Funding Agency for Technology and Innovation (Tekes) and the participating organizations
Project Themes and Objectives 1/2

Major research questions:

- What are the characteristics of architecture planning and development processes of high quality and maturity (= process view)?
- What are the characteristics of enterprise and software architectures of high quality and maturity (= product view)?
Project Themes and Objectives 2/2

To tackle the research questions the following sub-themes were scrutinized:

- Architecture success from the viewpoint of architecture maturity and quality
- Architecture quality management processes
- Architecture work status and development needs in ICT-provider and user organizations
- Architecture quality evaluation criteria and metrics
- Architecture quality management/evaluation methods and practices
- Architectural decision-making
- Architectural risks
First Year Results

Methods/Practices

Validation of the methods and practices
Case Studies/Pilots

General Evaluation Model for Architecture Work (1st version)

Areas of Architecture Work
Maturity levels

Empirical Research

Success Factors for EA
Success Factors for SA
Quality Management Activities For EA
Quality Management Activities For SA

Theoretical Research

Background theories

Status of Architecture Work in Organizations

Success Factors for SA
Quality Management Activities For EA

Status of Architecture Work in Organizations
Second Year Results

Validation of the methods and practices

Case Studies/Pilots:
Application of Evaluation Criteria and Metrics in Case Organizations

Methods/Practices

Evaluation of Architecture Processes and Architectures

Evaluation Criteria and Metrics

Evaluation Practices

General Evaluation Model for EA

Empirical Research

Evaluation Needs for Architecture Processes and Architectures

Evaluation Criteria and Metrics for Architecture Work (process view)

Existing Evaluation Methods for Architecture Work

Theoretical Research

Evaluation Criteria and Metrics for Architectures (product view)

Background theories

Evaluation Criteria and Metrics

Case Organizations

Application of Evaluation Criteria and Metrics

General Evaluation Model

Evaluation Needs

Evaluation Criteria

Evaluation Practices
Third Year Results

Validation of the methods and practices

Methods/Practices

General Evaluation Model for Architecture Work

Empirical Research

Architectural Risks and Risk Management

Architectural Decision-Making

Status of Architecture Work in Organizations: How has the Status Evolved?

Theoretical Research

Background theories

Case Studies/Pilots

Status of Architecture Work in Organizations:

How has the Status Evolved?
Publications

- 17 Scientific Articles
  - 4 Journal Articles
  - 13 Conference Articles
- 16 Project Reports and Related Presentations
- Theses
  - 1 Dissertation
  - 1 Master’s Thesis
- Results are also wrapped up in a CD-Rom publication titled “Evaluation of Enterprise and Software Architectures – Critical Issues, Metrics and Practices”. Publications of the Information Technology Research Institute, 18, 2008.
Main Conclusions 1/2

- Architectural work is a vast area, and the success and quality of both EA and SA work seem to be influenced by multiple - and to some extent interrelated – factors
  - factors can be used as checklists or to support the definition of company-specific success factors

- Architecture work is currently under development or in initial state
  - Organizations may have defined e.g. architectural frameworks and principles, but architectural models are still generally under construction as well as the transition plan
Main Conclusions 2/2

- Architecture evaluation is a multifaceted instrument in architecture work; the wide selection of evaluation questions, criteria and metrics charted for various evaluation targets can be used to define the few specific metrics for the organization-specific needs.

- In practice, architectural work seems to be very different from theoretical frameworks and process models. There seems to be a need for a light and agile EA methodology, or at least a usable and simple enough EA process, in organizations initiating architectural work.
Further Research

Suggestions for further research relate e.g. to the

- improvement of the generic evaluation model for EA
- construction of the evaluation methods and metrics for architecture benefits
- creation of a systematic, consistent architecture evaluation methodology
- clarification of the initialization phase of architecture work
- implementation and utilization of architectures
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