Role of Architecture Evaluations in ICT-companies

AISA-project
Quality Management of Enterprise and Software Architecture

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Motivation

- Architecture evaluation is
a way to get answers to company's business and ICT related
information needs, questions and topics of concerns.

- Open questions:
  - What roles and meanings may architecture evaluations
have in ICT-companies?
  - How architecture evaluation can be utilized in
companies?

Study Description

- Aim:
  - To gain understanding of the meanings and roles, which architecture evaluation and measurement may have in companies
  - To identify triggers for architecture evaluations

- Research data:
  - Focus group interview of five ICT-companies practitioners

Architecture Descriptions (ADs)

- Communication vehicles in architecture evaluations

- Ads can be used :
  - to define the scope and aspects of evaluations
  - to present existing knowledge, decisions and facts relating to company's business and ICT

- ADs in companies:
  - Enterprise architecture descriptions
  - Software architecture descriptions

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EA descriptions
Enterprise Architecture Viewpoints

- Business architecture

- Information / Data architecture

- Application / Systems Architecture

- Technical / Technology / Infrastructure architecture

- ….

(Open group, 2006; IT Governance Institute, 2005; Whittle et.al, 2005)

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SA descriptions
Software Architecture Viewpoints

- Functional

- Information

- Behavioral / Concurrency

- Development / External

- Deployment

- Operational

- ….

(May, 2005; Rozanski & Woods, 2005)

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Status of architecture evaluations in ICT-companies

- More trigger-based than stabilized work in companies.

- Has several meanings, roles and use purposes in companies.

- A motivation for evaluation define the material and architectural viewpoints to be viewed.

- The bad quality and lack of architecture documentation may have an effect on the possibilities to execute architecture evaluations.

Triggers for Architecture Evaluations

- **Company and business management:**
  Support needs for organisation's structural design (e.g. business process design) and for the distribution of the work (e.g for out-sourcing).

- **Holistic view:**
  Understanding needs relating to the current status of organisation's business and ICT-environment.

- **IT cost management:**
  Financial information needs relating to company's ICT (applications and technical infrastructure).

- **Change management:**
  Change pressures relating to architectures and architectural principles – identification of probability and nature of changes that should be made and decision making about changes.

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Triggers for Architecture Evaluations

- **Quality management:**
  Quality questions relating architectural documentation, the company's information/data structures, application and technical infrastructure, as well as systems solutions.

- **Architecture management:**
  Confirming that architecture related work meets expectations e.g. investments correspond to the architectural principles.

- **Architectural choices:**
  Evaluation of architectural alternatives against quality, cost and other aspects.

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Quality management related architecture evaluations

A need to produce architectural models and documentations that - can be quickly communicated and - are understandable by many different stakeholders - are cost-effectively kept up to date.	The evaluation the quality of architectural documentation. A need to evaluate: - Policy: do policies (e.g architectural framework) exist for documentation and are they followed? - Intelligibility and usability: are documents easy to understand and use? - Accuracy: are documents truthful and factual? - Cost effectiveness of maintenance: how much effort is needed to keep models and documentation up to date? - Traceability between architectural documents: is there traceability between architectural documents?	Architecture documentation (EA / SA)
A need to have organisation's business environment descriptions of good quality	The evaluation existence and quality of business descriptions (goals, strategy, company's operations) : •existence of business descriptions (e.g. goals, strategy, company's operations) •Accuracy: are the descriptions up to date?	Business architecture documentation
A need to have information / data models of good quality	The evaluation of the quality the information / data models	Information/ Data architecture

Change management related architecture evaluations

A change need in the business or ICT (e.g. a need to move from one solution to another)	The evaluation and identification of the places affected by a change and effects in each architectural viewpoint.	EA viewpoints
An observation that ICT-architecture do not correspond to company's business's requirements	The evaluation how the enterprise architecture should be changed by identifying what chances should be carried out in each architectural viewpoint.	EA viewpoints

Holistic view needs related architecture evaluations (1/2)

A need to enhance the understanding of company's business/ICT	The evaluation of enterprise architecture from different aspects or against different factors e.g. the identification of overlaps.	EA viewpoints
A goal that ICT supports business	The evaluation of how business architecture is supported by other viewpoints (information, applications, infrastructure).	EA viewpoints
A need to enhance the understanding of responsibilities in the company	Identification and evaluation of responsibilities in company (for example who is responsible for customer informations).	Business architecture
A need to understand the state of the company's product portfolio and processes	The description and evaluation of business architecture related aspects.	Business architecture

Holistic view needs related architecture evaluations (2/2)

A need to understand information managed in company	The description of major information entities and responsibilities in information management.	Information / Data architecture
A need to understand the state of the company's application portfolio	The description and evaluation of structures and components of application architecture.	Application architecture
A need to understand quality aspects relating to the company's application portfolio	The evaluation the application architecture against quality aspects and attributes e.g. the identification of overlaps.	Application architecture
A need to understand the current state of technical infrastructure	The description and evaluation of structures and components of technical infrastructure.	Technology architecture

Company and business management related architecture evaluations

A need to make sure that organisational choices are suitable	The evaluation of organisational structures and operations: are those suitable or should those be changed.	Business architecture
The distribution of work	The evaluation of processes: identification of which tasks will be carried out by the company and which are dealt out to partners.	Business architecture
Business process planning	The evaluation of functionality of business processes: e.g. do processes correspond to company's strategy?	Business architecture

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Architecture management related architecture evaluations

An observation that ICT-architecture does not correspond to ICT-development projects' needs	The evaluation of how architectural principles or architecture descriptions should be changed.	EA viewpoints
An effort to drive investments to follow up architectural principles	The evaluation of if the investment corresponds and is suitable to the existing architecture and architectural principles.	EA viewpoints
A need to drive technical infrastructure investments to follow the architectural principles	The evaluation of if investments correspond to the principles.	Technology architecture principles

IT cost management related architecture evaluations

A need to understand and manage costs relating to the company's application portfolio	The evaluation of financial aspects and factors relating to application architecture	Application architecture
A need to understand and manage costs relating to technical infrastructure	The evaluation of financial aspects and factors relating to technical infrastructure	Technology architecture

Architecture choices related architecture evaluations

A need to find the best possible system solution and a need to understand the aspects relating the solution	The evaluation of the architectural solution: e.g. evaluation of • quality aspects (evaluation against quality attributes), • flexibility of solution, • the life cycle of solution, • suitability for the situation in question (e.g is solution possible within available time, money and resources).	SA viewpoints (EA viewpoints)
An effort towards long-term technical solutions and need to argue for the long-term technical solutions	The comparison of a long-term and short-term solution.	EA / SA viewpoints

Conclusion

- Architecture evaluations seem not yet to have a stabilized role and meaning in companies.

- Architecture evaluation practices are still immature in general.

- Results of this study:
  Triggers for architecture evaluations were identified.

- Future questions:
  - What kind of stabilized role architecture evaluation could have in organisations?
  - How architecture evaluations and measurement could be linked to an organisation's other measurement and evaluation programs and practices?

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