Business Requirements as the basis for enterprise architecture and project architectures

Enabling the use of these architectures as strategic instruments

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The Open Group Conference
November 8-9, 2011, Stockholm
BiZZdesign in one slide...

Tools
- Design tools for EA and BPM
- Monitoring tools for Governance
- Publication via InSite Portal

Consultancy
- Architecture, Business and IT
- Project Management
- Design / modeling

Best practices
- ArchiMate®
- TOGAF™
- Reference models

Training
- Foundation
- Practitioner
- Certification
- Accredited by The Open Group

BiZZdesign now in Leaders Quadrant of Gartner MQ EA Tools!

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Schedule

- Introduction
  - From strategy to operation
- The need for business requirements management
- Support for business requirements management
  - the modeling language for BRM
  - the process for BRM
- Portfolio valuation based on BRM and EA
  - IT portfolio valuation
  - Project portfolio valuation
- Business Model innovation
  - From strategy to enterprise architecture
Why Enterprise Architecture?

- Managing change and complexity:
  - Aligning business and IT
  - Outsourcing
  - Impact analysis
  - Project support (project start architectures)
  - Portfolio management
  - Communication with stakeholders
  - ...
- Strategic decision making
  - EA between strategy and operations
The role of Enterprise Architecture

[Fig. 1.4. Enterprise architecture as a management instrument]

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The role of Enterprise Architecture

- EA and BPM models help to understand, design and manage the operations of the business
- Relation to business goals and strategy is often unclear and not made explicit
- Impact of changes is unclear
- Questions
  - What is the business value of this product/process/application?
  - In which projects should we invest?
  - Does our portfolio cover the business goals that have been set?
  - How feasible is this new business idea?
The role of Enterprise Architecture

Business Requirements Management (BRM) helps to link EA to business goals and strategy.

[Lankhorst et al., 2005 - Fig. 1.4. Enterprise architecture as a management instrument]
Why BRM?

- Actually we know it is important
  - But do we make a (serious) effort?
  - And is this effort done right?
“No other part of the work so cripples the resulting system if done wrong.”

[F.P. Brooks, No silver bullet: Essence and accidents of software engineering]
The Standish Group: CHAOS report

Project Impaired Factors
1. Incomplete Requirements 13.1%
2. Lack of User Involvement 12.4%
3. Lack of Resources 10.6%
4. Unrealistic Expectations 9.9%
5. Lack of Executive Support 9.3%
6. Changing Requirements & Specifications 8.7%
7. Lack of Planning 8.1%
8. Didn't Need It Any Longer 7.5%
9. Lack of IT Management 6.2%
10. Technology Illiteracy 4.3%
“Why” is the reason!

In general, only the solution (architecture, process, ..) is modelled, and not the underlying intentions, like goals and requirements …

- Why do we need this change, what is the real problem?
- Who are the stakeholders, what do they want?
- How do different stakeholder goals influence each other?
- How are goals translated into requirements?
- Can we support all business requirements?
- Why this solution and not another one?
RM in TOGAF

- Managing requirements applies to all ADM phases
- Requirements Management is a dynamic process
  - The identification of requirements for the enterprise
  - Storing them
  - Feeding them in and out of relevant ADM phases
- TOGAF does not mandate any specific process or tool for requirements management
- But it does suggest a number of techniques
  - The Business Scenarios technique
  - Volere requirements specification template
FAQs

- How to deal with long lists of requirements?
- How to ‘anchor’ requirements in architecture or business processes?
- How to get grip on the impact of changes?
Long requirements lists

- Large documents
- Lack of structure – hidden relationships
- Lack of overview and insight
- Difficult to analyse
  - Is the set of requirements complete?
  - Do I have the right requirements?
‘Anchor’ requirements in architecture

How can I relate business requirements to architecture and business processes?
  - Methodological support
  - Modelling support

How can I show that the architecture and its processes satisfy the concerns and goals of the stakeholders?
Impact of change

- What is the impact of changing business goals and requirements on the architecture?
- What is the impact of changes in the architecture on the business goals and stakeholders?
An integrated toolbench for the architect
Enterprise Architecture

- A discipline, with the objective of steering changes

- A product
  - A design that shows the coherence between products, processes, organisation, information supply and infrastructure, based on a vision and certain explicit starting points, principles and preferences

- A process
  - Way of working
  - Aimed at the development and use of enterprise architectures within an enterprise
  - With people and resources
Support for BRM – the language

Language
  - ArchiMate – Motivation extension
Support for BRM – the language

Language

ArchiMate – Motivation extension
BRM – the method

Problem

Requirements Engineering

Solution

Trigger

Problem investigation

Solution investigation
BRM and EA

- Starting point for RE
- Result of RE
Problem chains

“The solution for one, is the problem for another one”
Requirements and Architecture

<table>
<thead>
<tr>
<th>WHY</th>
<th>WHAT/HOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve customer satisfaction</td>
<td>Portfolio management service</td>
</tr>
<tr>
<td>Coordinate portfolio services</td>
<td>Portfolio management process</td>
</tr>
<tr>
<td>Support on-line premium payment</td>
<td>Premium payment service</td>
</tr>
<tr>
<td></td>
<td>Claim handling process</td>
</tr>
<tr>
<td></td>
<td>Sales process</td>
</tr>
<tr>
<td></td>
<td>Claim registration service</td>
</tr>
</tbody>
</table>
Requirements engineering cycle

‘Solution investigation’ in two steps

1. Problem investigation
2. Investigate alternative solutions
3. Solution validation

Goal model
Requirements model

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Requirements engineering cycle

1. Problem investigation
2. Investigate alternative solutions
3. Solution validation

Architecture process

Change

Requirements process

Model M1

Architecture As-is ➔ Architecture A1 ➔ Architecture An ➔ Architecture To-be
Support for BRM - Method

Method
- Requirements Engineering Cycle
- Relation to TOGAF

1. Problem investigation
2. Investigate alternative solutions
3. Solution validation
Support for BRM - Method

- Method
  - Requirements Engineering Cycle
  - Relation to TOGAF
Summary BRM – the method

Method

- Requirements Engineering Cycle
- Related to EA process
Support for BRM - Tool

- Language
  - ArchiMate – Motivation extension
- Method
  - Requirements Engineering Cycle
  - Related to EA
- Tool – BiZZdesign Architect
  - Modeling
  - Analysis
- See our book on BRM
  - Get a copy at our booth!
EA-based portfolio valuation

Using BRM and EA to valuate your IT and project portfolio
Motivation (ArchiValue project)

- “IT innovation squeeze”
- Increasing part of IT budget spent on maintenance
- Leaving less room for innovation
Observation

- IT is mainly treated as a cost center
  - Operational focus: efficiency, minimal risk and cost
  - Contribution to business goals and strategy is (almost) not considered

- Business case for activities with different focus is difficult
  - For example, phasing out ‘old’ applications, invest in new technologies to explore new business opportunities
Alternative sources of value [Venkatraman]

- **Cost center**
  - Support current business strategy
  - Minimize risk

- **Service center**
  - Enable new business capabilities
  - Long term focus

- **Investment center**
  - Enable new business capabilities
  - Long term focus

- **Profit center**
  - Deliver IT services
  - Knowledge and experience
In which projects to invest?

- What is the contribution of IT?
- In which processes, applications or infrastructure to invest?
- ...
IT Portfolio Valuation

Goal: to optimize
- the value of IT and
- the investments in IT
Role of Enterprise Architecture

**Enterprise Architecture**

- **Business**
  - goal
  - product
  - service
  - process

- **IT**
  - service
  - function
  - component
  - project

- **‘Resource’**
  - technology
  - IT ..
  - capabilities
  - time, ..

**Contribution**

**Usage**

**Derive benefits and risks from the Contribution of IT to the Business**

**Derive costs and risks from the Usage of ‘Resources’ by IT**

**Information**

**Benefits**

**Costs**

**Risks**
1. Valuation of IT artifacts (applications, services) based on ‘As-is’ architecture

2. Determine change goals

3. Develop projects to realize change goals

4. Projects implement the ‘To-be’ architecture

5. Valuation of projects based on comparison of ‘As-is’ and ‘To-be’ architecture
1. Should the organisation invest in ISs?
2. On which business processes should the investment focus?
3. Which ISs should be developed or improved?

- Determination of IBO, IAB, ESA
  - Interviews
  - Decision trees
  - Business value, technical value (ASL)
Step 1: Valuation of IT (portfolio)

IBG = Importance of business process for (strategic) goal

IBA = Importance of business activity for business process

ESA = Effectiveness of application for business activity

Fund projects to maintain performance
High priority
Fund projects to prevent failure
Lowest priority
Financial risk

Strategic importance
Effectiveness

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Step 1: Results

Business process portfolio

Activity portfolio for 'Handle claim'

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Step 2: Valuation of IT projects
Step 2: Result

![Graph showing project score (PRI) vs. costs with different project symbols and lines for Project 1 to Project 6.]
Added value of projects

Project scores

- Project P1 High-revenue mutual fund using integrated asset management
- Project P2 High-revenue mutual fund
- Project P3 Set-up integrated asset management
- Project P4 Integrate asset management
- Project P5a Enable internet as a channel
- Project P5b Add internet as a channel
- Project P6 Integration of local ordering services
- Project P7 Integration of local reporting services
- Project P8 Real-time asset reporting
- Project P9 Real-time asset monitoring
Roadmap and projects
Risk and completion times
Compare scenario’s

Scenario scores

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Added value</th>
<th>Costs</th>
<th>Completion (month)</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a-2a-3a</td>
<td>201,9864</td>
<td>285000</td>
<td>12</td>
<td>high</td>
</tr>
<tr>
<td>1a-2a-3b</td>
<td>276,0936</td>
<td>370000</td>
<td>12</td>
<td>high</td>
</tr>
<tr>
<td>1a-2b-3a</td>
<td>223,3208</td>
<td>285000</td>
<td>12</td>
<td>medium</td>
</tr>
<tr>
<td>1a-2b-3b</td>
<td>297,428</td>
<td>370000</td>
<td>13</td>
<td>medium</td>
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<tr>
<td>1b-2a-3a</td>
<td>236,4264</td>
<td>220000</td>
<td>10</td>
<td>high</td>
</tr>
<tr>
<td>1b-2a-3b</td>
<td>310,5336</td>
<td>305000</td>
<td>10</td>
<td>high</td>
</tr>
<tr>
<td>1b-2b-3a</td>
<td>257,7608</td>
<td>220000</td>
<td>10</td>
<td>low</td>
</tr>
<tr>
<td>1b-2b-3b</td>
<td>331,868</td>
<td>305000</td>
<td>13</td>
<td>low</td>
</tr>
</tbody>
</table>
Compare scenario’s – which one first?

Scenario scores

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Added value</th>
<th>Costs</th>
<th>Added value</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a-2a-3a vs 1b-2a-3a</td>
<td>201,9864</td>
<td>285000</td>
<td>236,4264</td>
<td>220000</td>
</tr>
<tr>
<td>1a-2a-3b vs 1b-2a-3b</td>
<td>276,0936</td>
<td>370000</td>
<td>310,5336</td>
<td>305000</td>
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<td>1a-2b-3a vs 1b-2b-3a</td>
<td>223,3208</td>
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<tr>
<td>1a-2b-3b vs 1b-2b-3b</td>
<td>297,428</td>
<td>370000</td>
<td>331,868</td>
<td>305000</td>
</tr>
</tbody>
</table>

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Additional analyses possible

- Overlap between projects
- Cost–benefit analysis
- Extra dimensions: time and uncertainty
- Alternative migration scenarios
  - Costs, risks, completion times
- ...
Summary

- Combining BRM and EA supports
  - Explicitly modeling business requirements
  - Relating business requirements to enterprise architecture
  - Valuating the IT-portfolio
  - Valuating the project portfolio
  - Valuating IT and project portfolio in combination
  - Bridging the gap between strategy and enterprise architecture
  - Thanks to ArchiMate for providing the modeling support!
Business Model Innovation
from strategy to Enterprise Architecture

Some thoughts and observations
Business model innovation

“A business model describes the rationale of how an organization creates, delivers and captures value”
Help organizations to develop, analyze and compare alternative business ideas before implementation.

Wouldn’t it be nice to have an *integrated* business design platform, consisting of:

- Business models
- Business requirements management
- Enterprise architecture
- Business process design
Example
Relation with Enterprise Architecture

![Diagram showing the relation with Enterprise Architecture]

- Business
- Applications
- Technology

KP | KA | VP | CR | CS
---|----|----|----|---
KR |    |    |    | C$
CH |    |    |    | R$

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Mapping onto ArchiMate

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From BM to EA

Overview of canvas

Zoom in on details
Views to highlight relationships
Current and future state
# Cost and revenue calculation

<table>
<thead>
<tr>
<th>Revenue/costs type</th>
<th>Source</th>
<th>Revenues baseline</th>
<th>Costs baseline</th>
<th>Revenues target</th>
<th>Costs target</th>
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</thead>
<tbody>
<tr>
<td>Personal portfolio fees</td>
<td>High-wealth individuals with personal portfolio</td>
<td>10000.00</td>
<td>10000.00</td>
<td>10000.00</td>
<td>10000.00</td>
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<tr>
<td>High-revenue fund fees</td>
<td>High-wealth individual with high-revenue fund only</td>
<td>0.00</td>
<td>4000.00</td>
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<tr>
<td>IT development &amp; maintenance</td>
<td>IT systems</td>
<td>500.00</td>
<td>600.00</td>
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<tr>
<td>Personal portfolio management</td>
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<td>800.00</td>
<td>700.00</td>
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<tr>
<td>Salaries</td>
<td>Personnel</td>
<td>2000.00</td>
<td>2500.00</td>
<td>2500.00</td>
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<tr>
<td>Mutual fund management</td>
<td>Mutual fund management</td>
<td>0.00</td>
<td>250.00</td>
<td>250.00</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10000.00</strong></td>
<td><strong>14000.00</strong></td>
<td><strong>3300.00</strong></td>
<td><strong>4050.00</strong></td>
<td><strong>9950.00</strong></td>
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<tr>
<td><strong>Result</strong></td>
<td><strong>6700.00</strong></td>
<td><strong>6700.00</strong></td>
<td><strong>6700.00</strong></td>
<td><strong>9950.00</strong></td>
<td><strong>9950.00</strong></td>
</tr>
</tbody>
</table>
Possible analyses

- Completeness / consistency checks (whole canvas)
- Traceability (whole canvas)
- Value Chain Analysis (The *Key Activities* belonging to a single *Value Proposition*)
- Resource Analysis (*Key Resources*) [J. Barney]
- Stakeholder Analysis (*Key Partners* and *Customer Segments*)
- Scenario Analysis (whole canvas)
- Value Modelling / Profitability Analysis (whole canvas)
- SWOT Analysis (whole canvas or per building block)
- Blue Ocean Strategy (whole canvas)
- Financial Sensitivity Analysis and Forecasting
Conclusions

- Do you like the idea of an *integrated* business design platform, consisting of
  - Business models
  - Business requirements management
  - Enterprise architecture
  - Business process design
  - With a diverse set of analyses possibilities

- If so, don’t forget to check [www.BiZZdesign.com](http://www.BiZZdesign.com)!
Thank you!

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