Building strong organizations

Business Requirements as the basis for enterprise architecture and project architectures

Enabling the use of these architectures as strategic instruments

Harmen van den Berg

The Open Group Conference
November 8-9, 2011, Stockholm

BiZZdesign in one slide…

Tools

- Powerfull
- User friendly

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

Consultancy

- Experienced
- Certified

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

Best practices

- Practical
- Open standards

- ArchiMate®
- TOGAF™
- Reference models

Training

- Personal attention
- Practical focus

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

BiZZdesign now in Leaders Quadrant of Gartner MQ EA Tools!

► 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

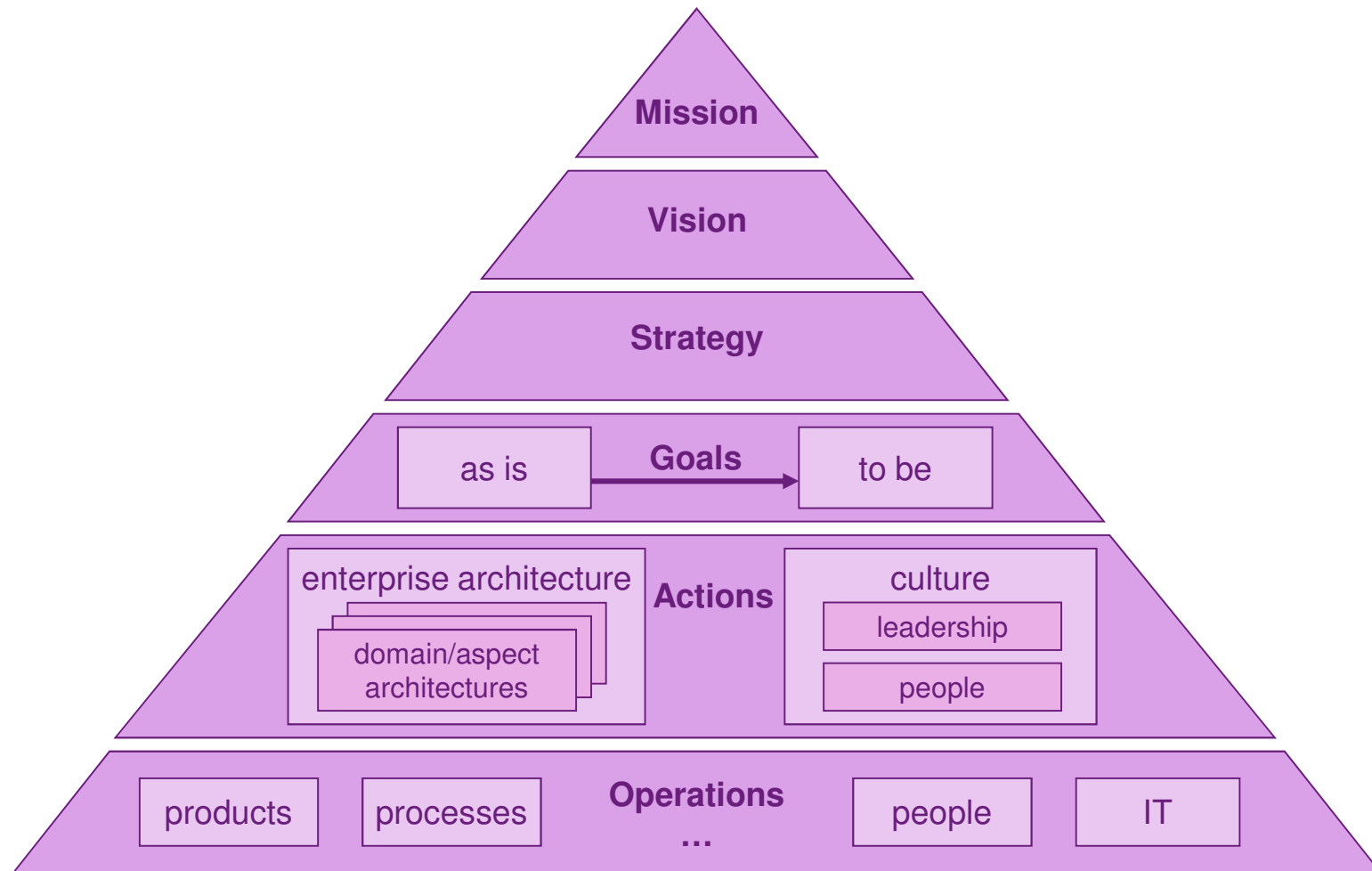**BiZZdesign** www.bizzdesign.com
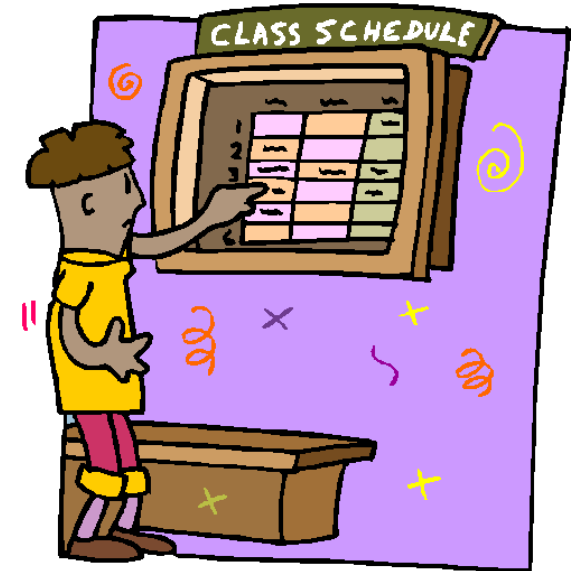
Why Enterprise Architecture?

- **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

Flickr by neil nathanson

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The role of Enterprise Architecture

Pyramid diagram from top to bottom:
- Mission
- Vision
- Strategy
- Goals: as is → to be
- Actions: enterprise architecture (domain/aspect architectures); culture (leadership, people)
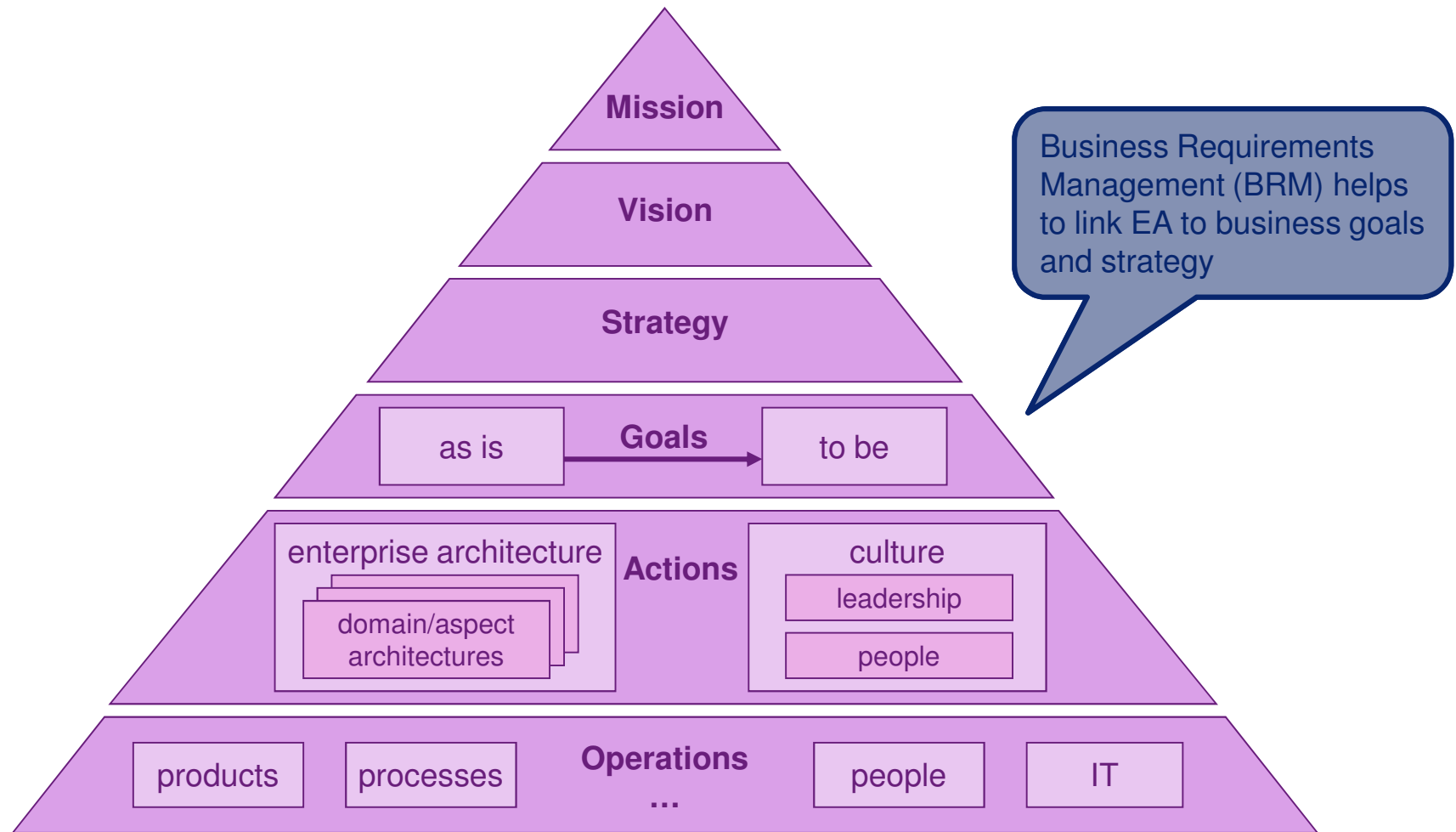- Operations …: products, processes, people, IT

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

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

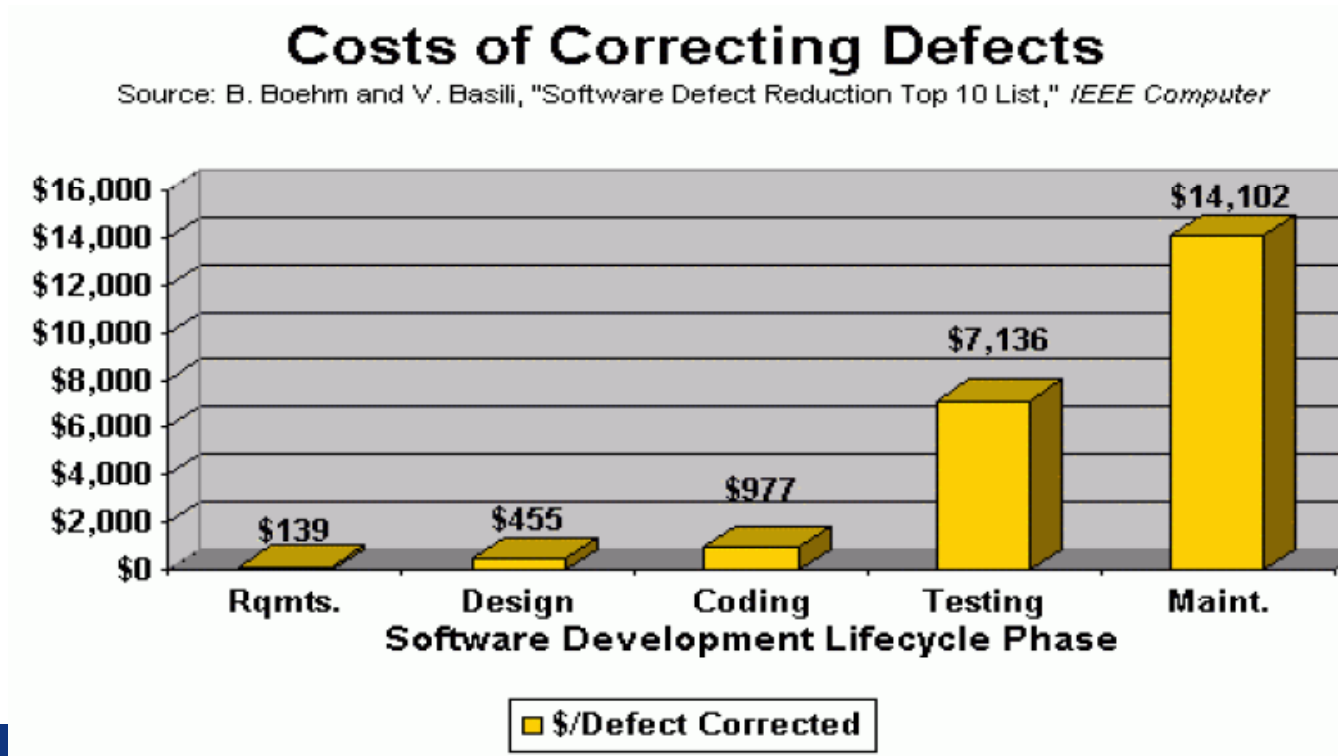[Lankhorst et al., 2005 - Fig. 1.4. Enterprise architecture as a management instrument]
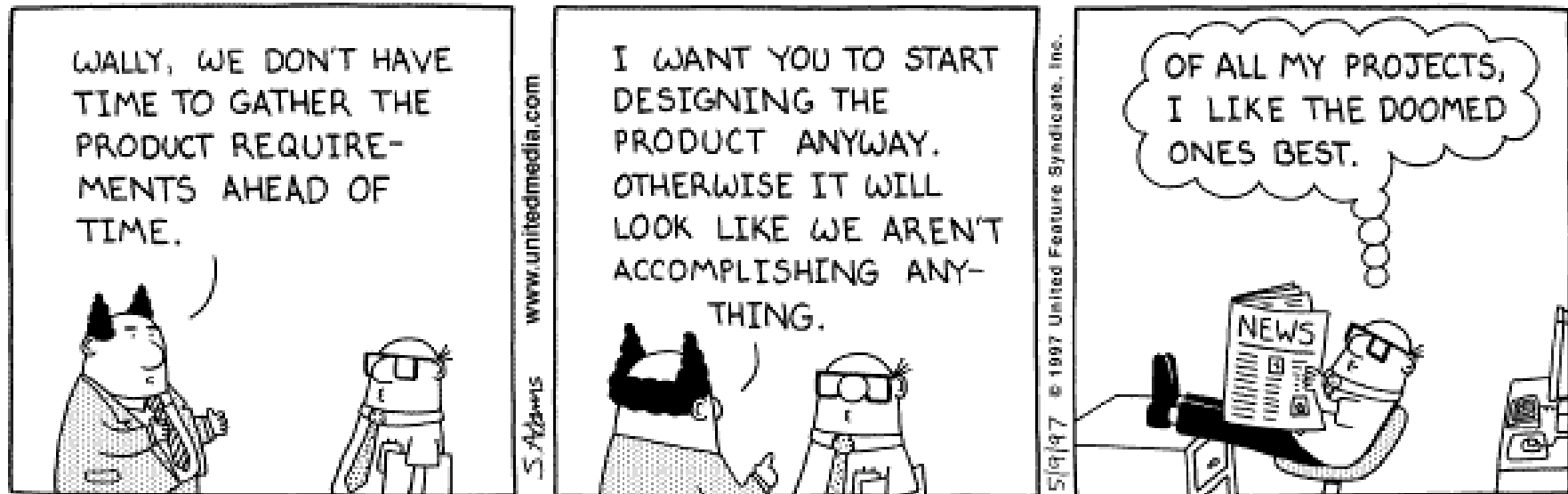
▶ Actually we know it is important
  ▶ But do we make a (serious) effort?
  ▶ And is this effort done right?

► Why BRM?

"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]

Costs of Correcting Defects

Source: B. Boehm and V. Basili, "Software Defect Reduction Top 10 List," *IEEE Computer*

Software Development Lifecycle Phase	$/Defect Corrected
Rqmts.	$139
Design	$455
Coding	$977
Testing	$7,136
Maint.	$14,102

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%
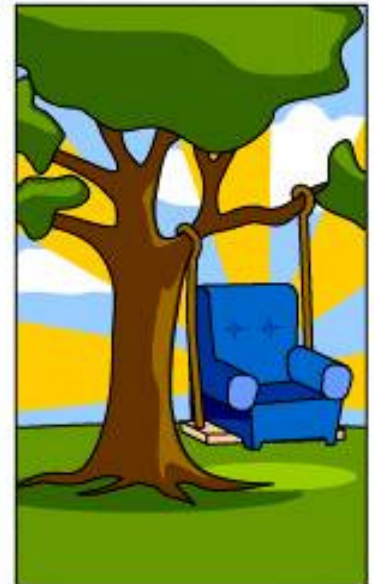10. Technology Illiteracy 4.3%

Impaired projects

- Incomplete Requirements
- Lack of User Involvement
- Unrealistic Expectations
- Changing Requirements & Specifications
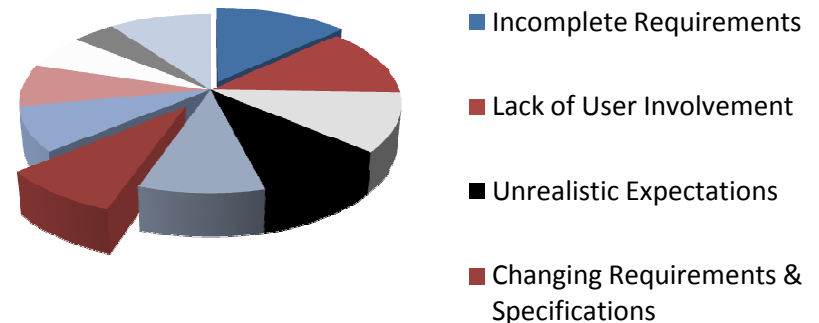
How the customer explained it
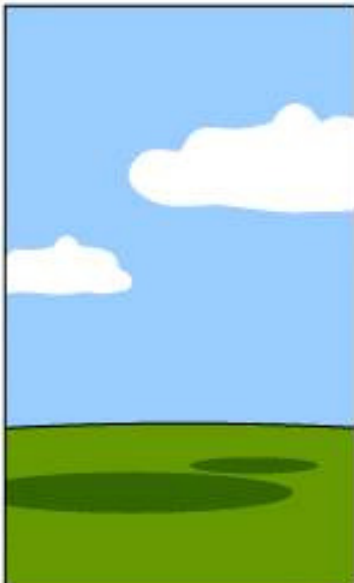
How the Project Leader understood it

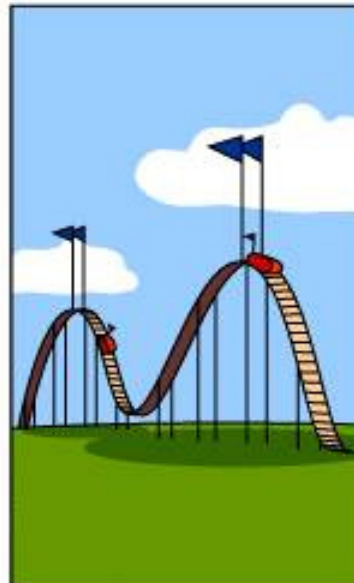How the Analyst designed it

How the Programmer wrote it

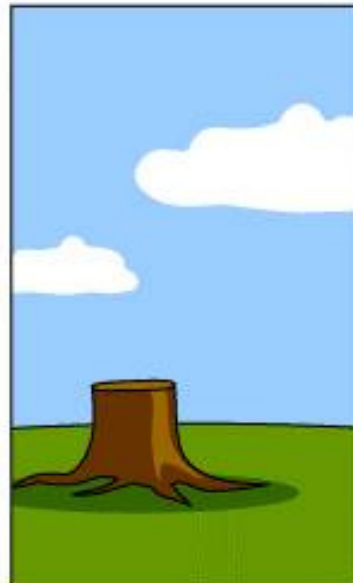How the Business Consultant described it

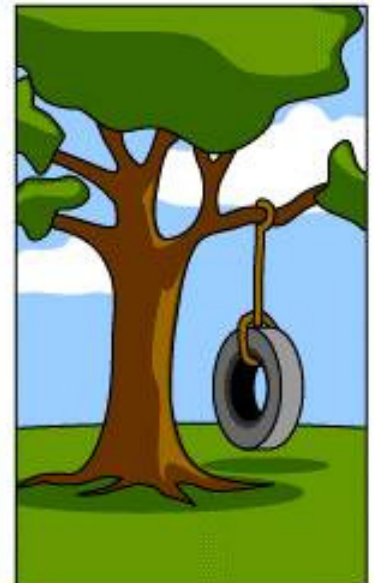How the project was documented

What operations installed

How the customer was billed

How it was supported

What the customer really needed

► "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?
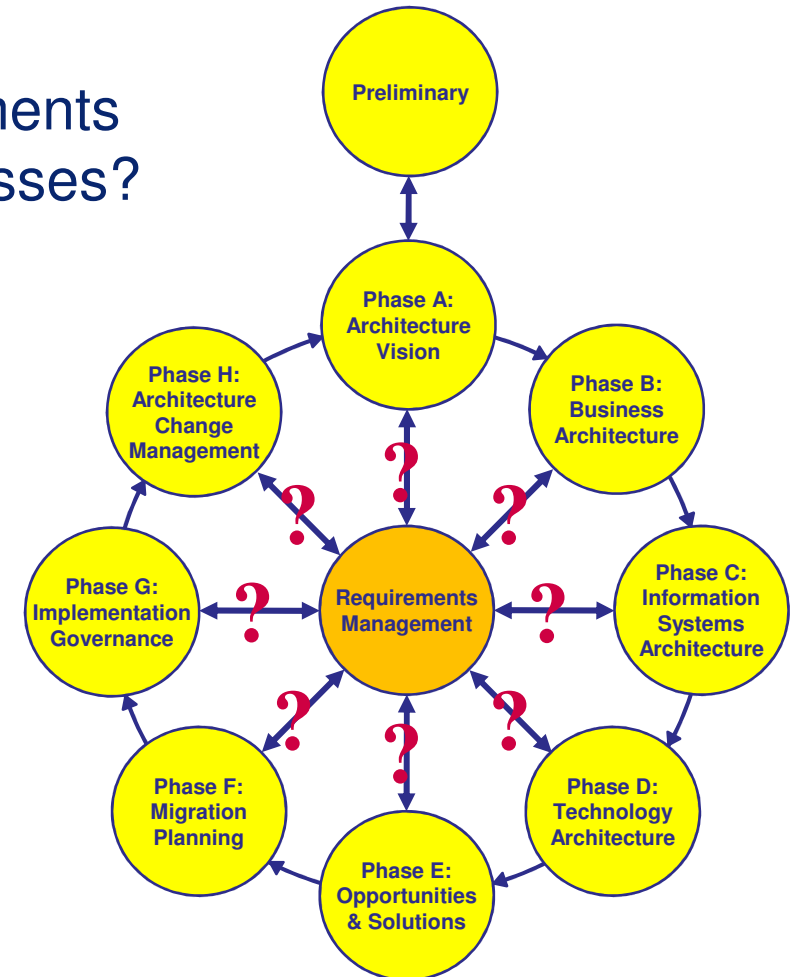- ▶ How to get grip on the impact of changes?

▶ 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?

Preliminary

Phase A:
Architecture
Vision

Phase H:
Architecture
Change
Management

Phase B:
Business
Architecture

Phase G:
Implementation
Governance

Requirements
Management

Phase C:
Information
Systems
Architecture

Phase F:
Migration
Planning

Phase D:
Technology
Architecture

Phase E:
Opportunities
& Solutions

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?
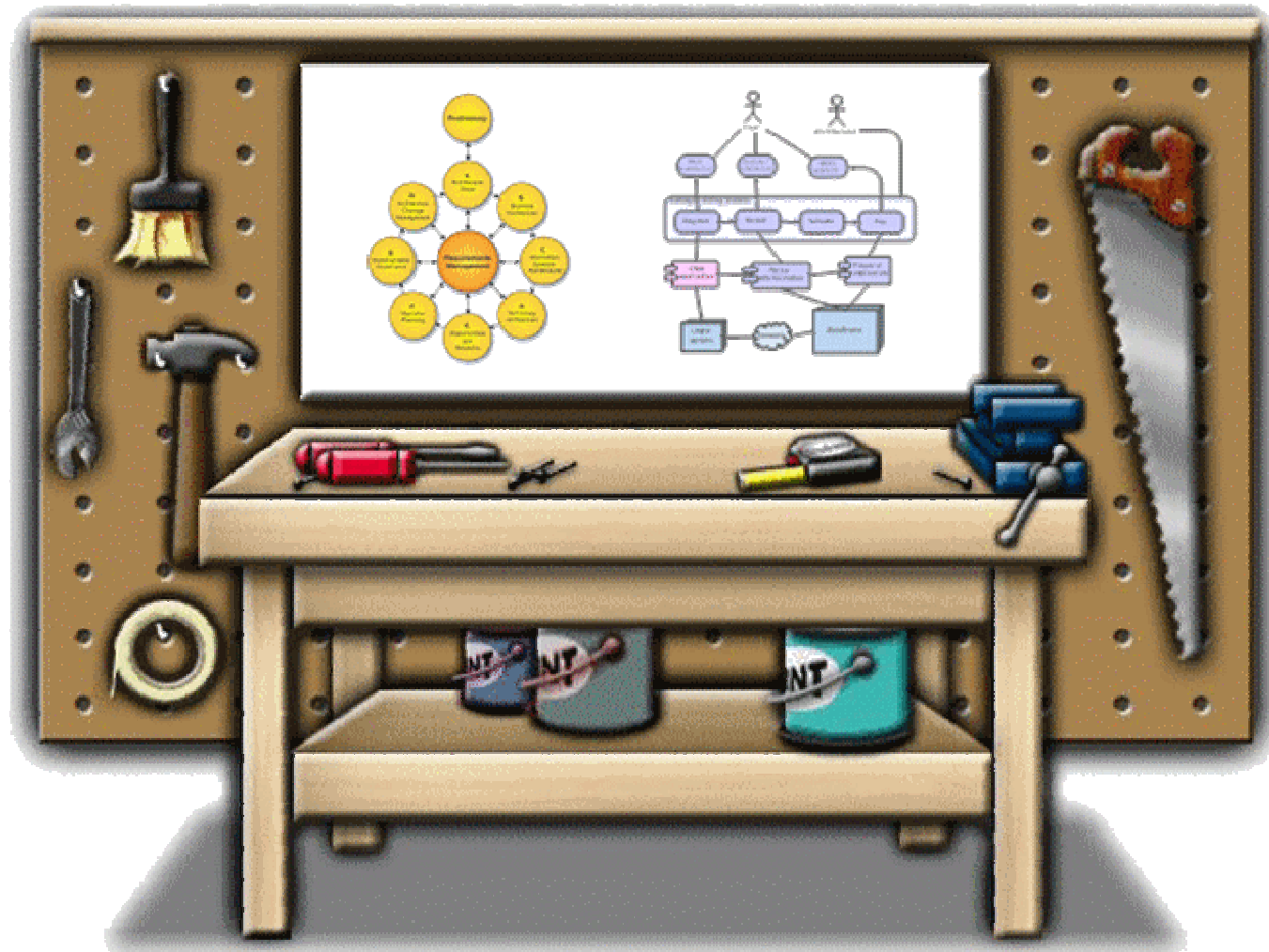
Enterprise Architecture

▶ 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

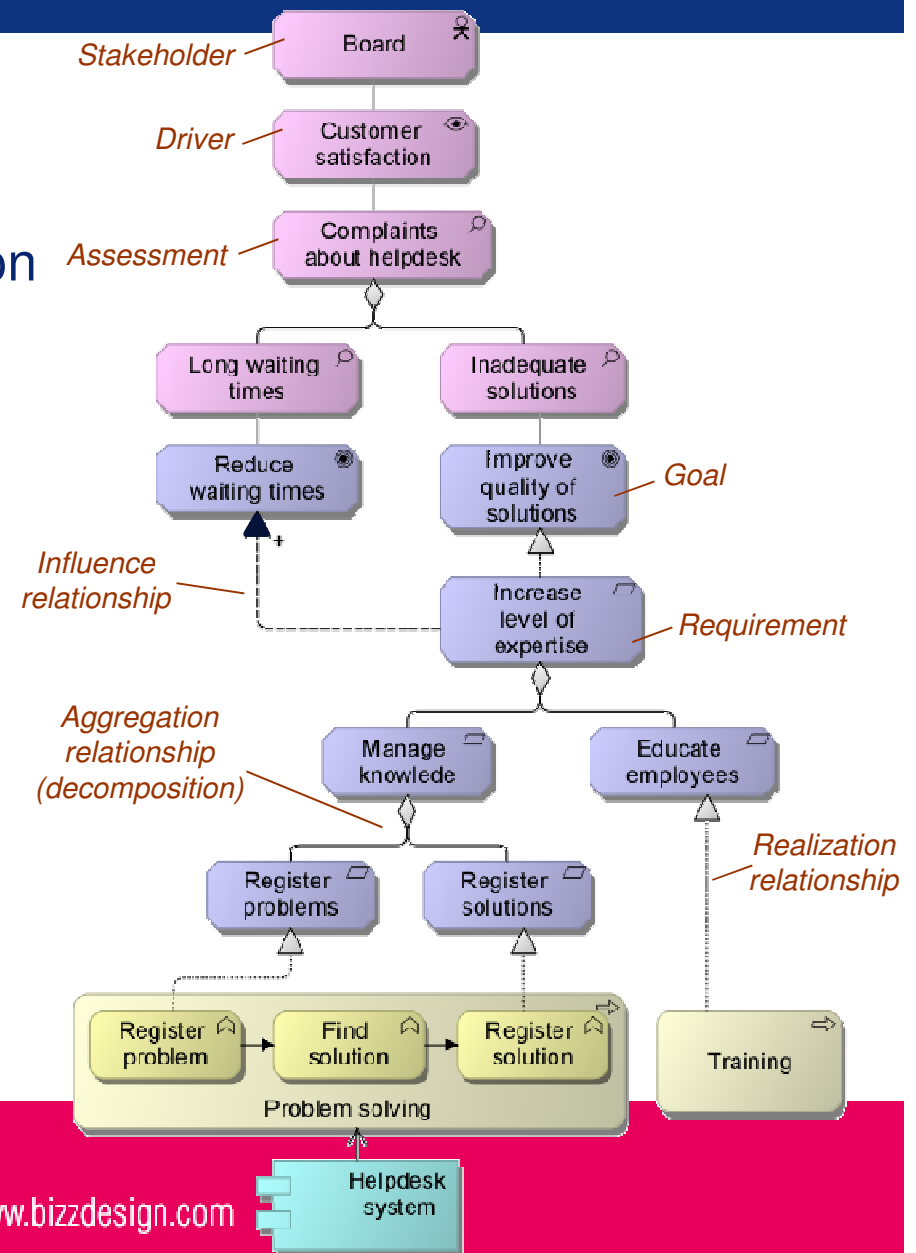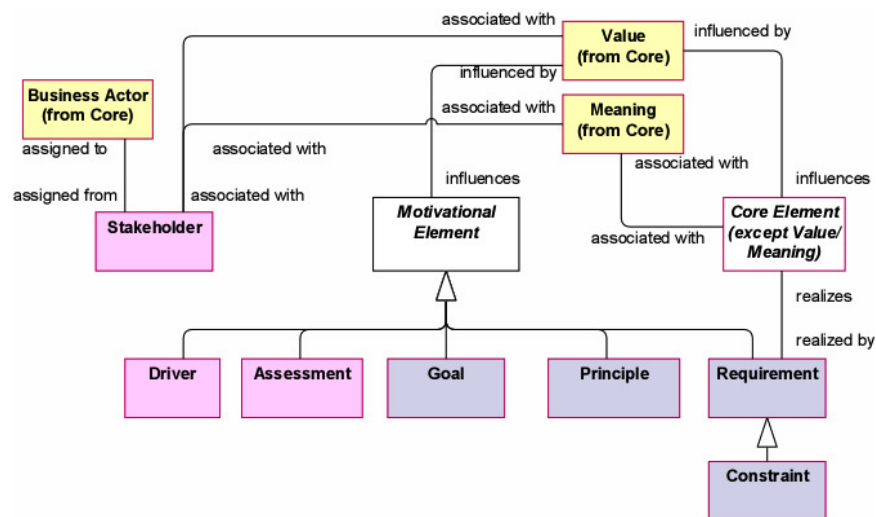 ▶ With people and resources
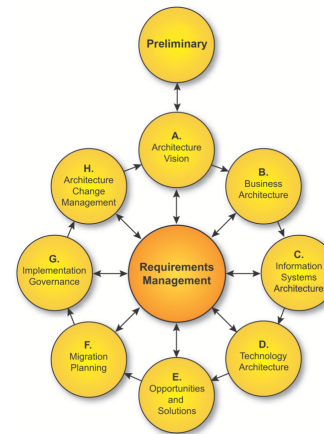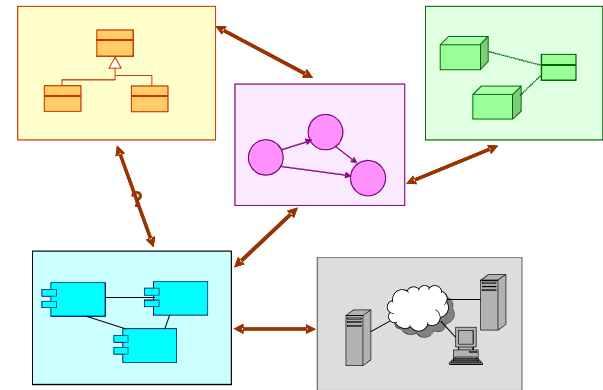
Support for BRM – the language

▶ Language

 ▶ ArchiMate – Motivation extension
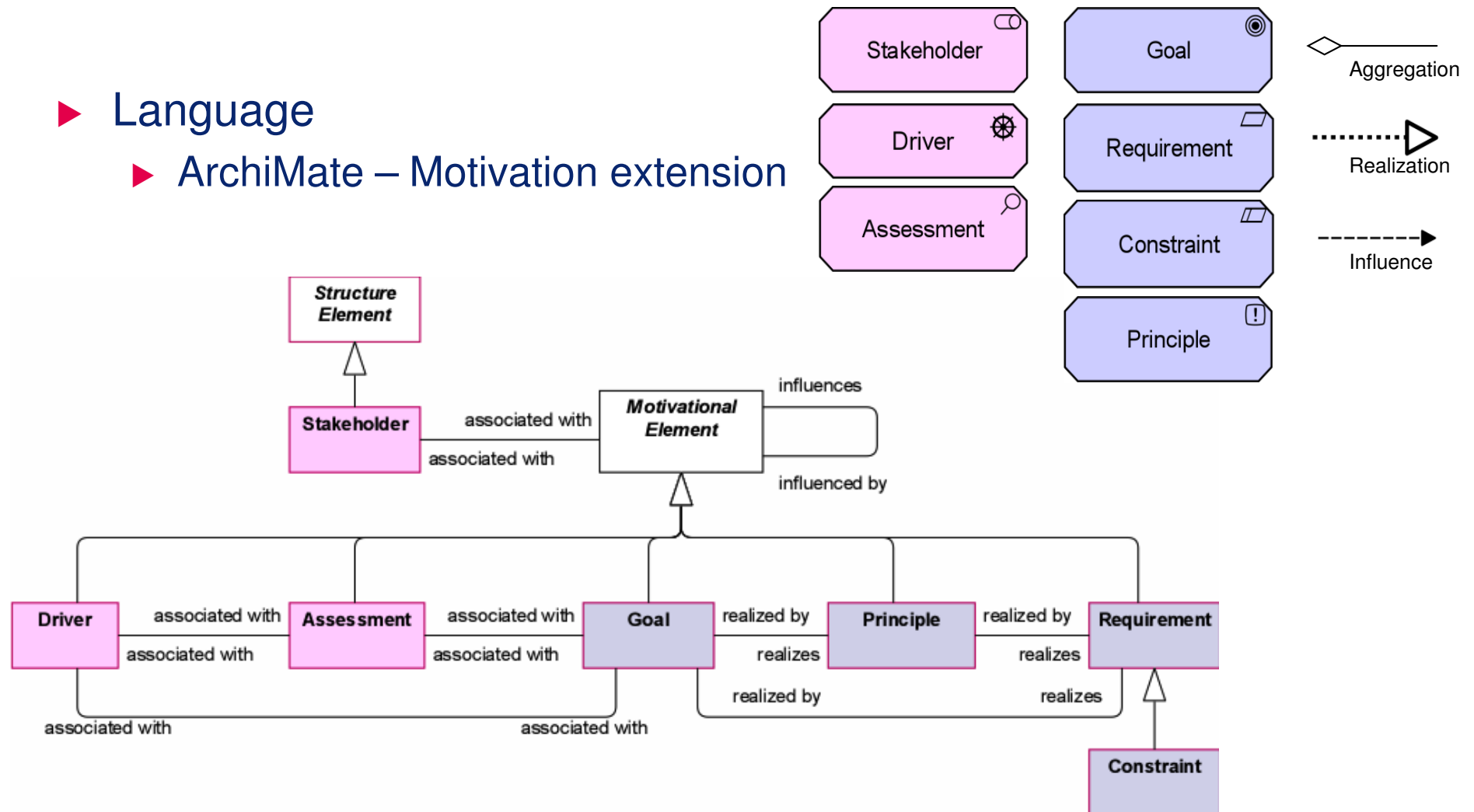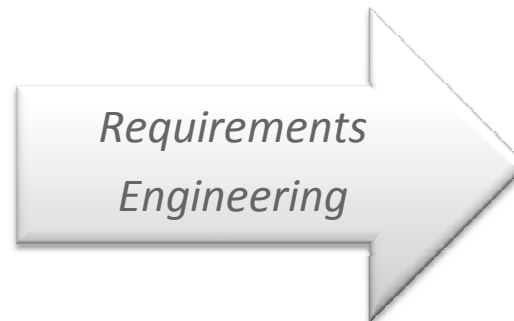
Support for BRM – the language
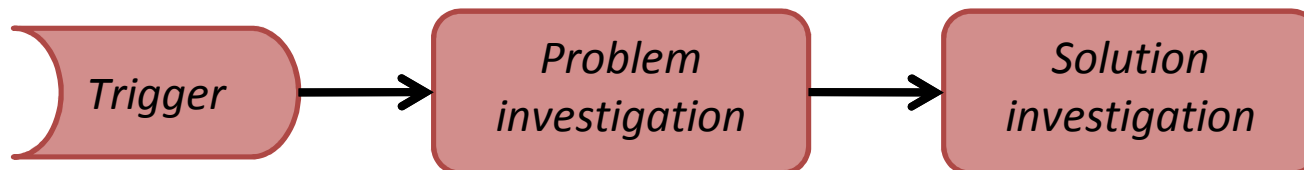

- Language
  - ArchiMate – Motivation extension
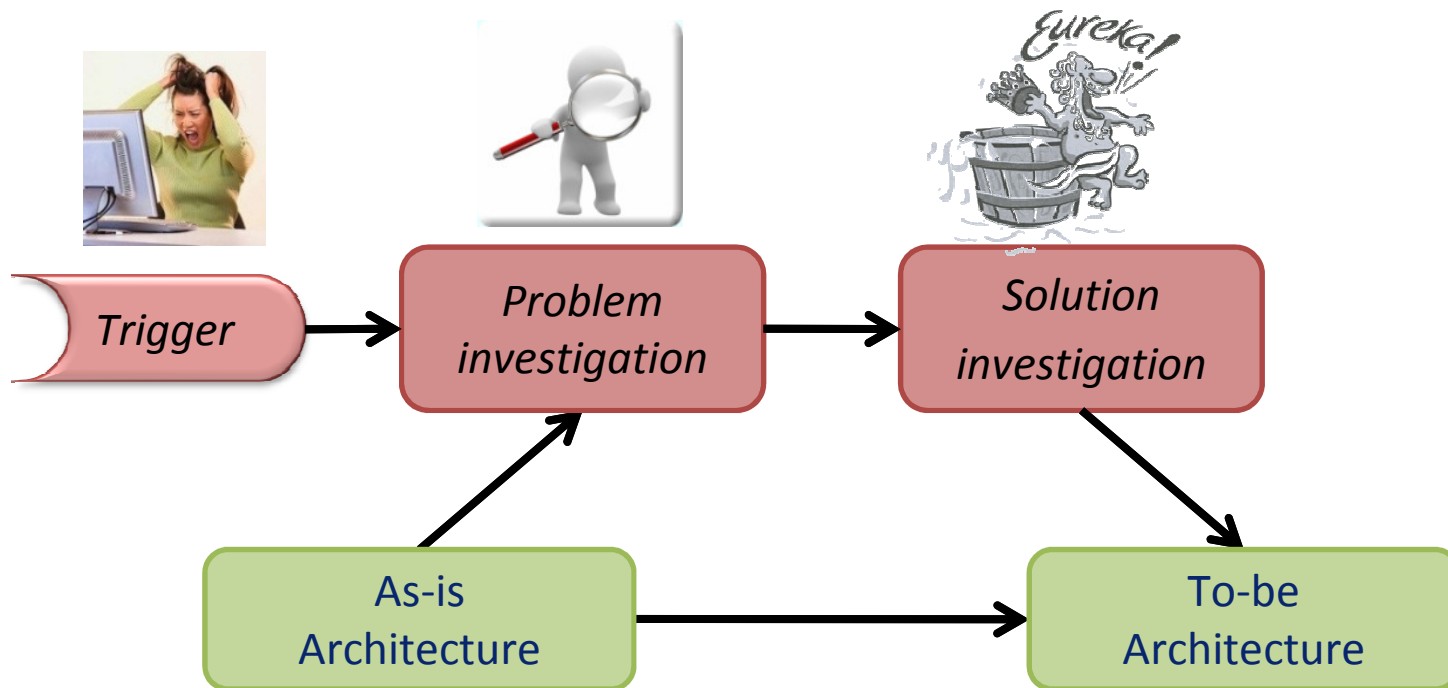
BRM – the method

Problem

Requirements Engineering

Solution

Trigger → Problem investigation → Solution investigation

BRM and EA

- Starting point for RE
- Result of RE

Trigger → **Problem investigation** → **Solution investigation**

As-is Architecture → Problem investigation

Solution investigation → To-be Architecture

As-is Architecture → To-be Architecture

► Problem chains

"The solution for one,
is the problem for another one"

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Requirements and Architecture

WHY	WHAT/HOW

Improve customer satisfaction

SOLUTION →

PROBLEM

Portfolio management service

Coordinate portfolio services

SOLUTION →

Portfolio management process

Claim handling process

Sales process

Support on-line premium payment

PROBLEM

SOLUTION →

Premium payment service

Claim registration service
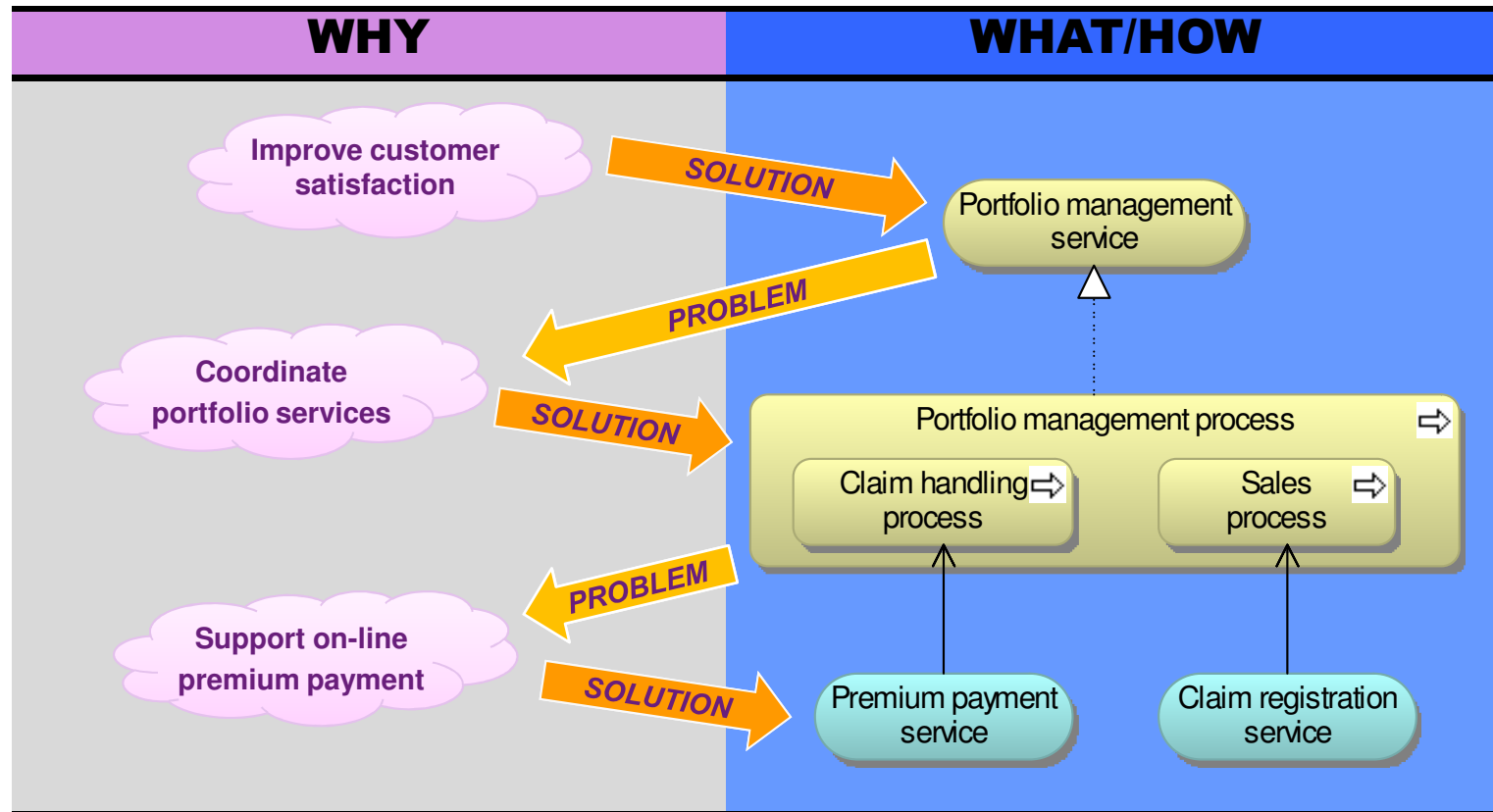
Iteration
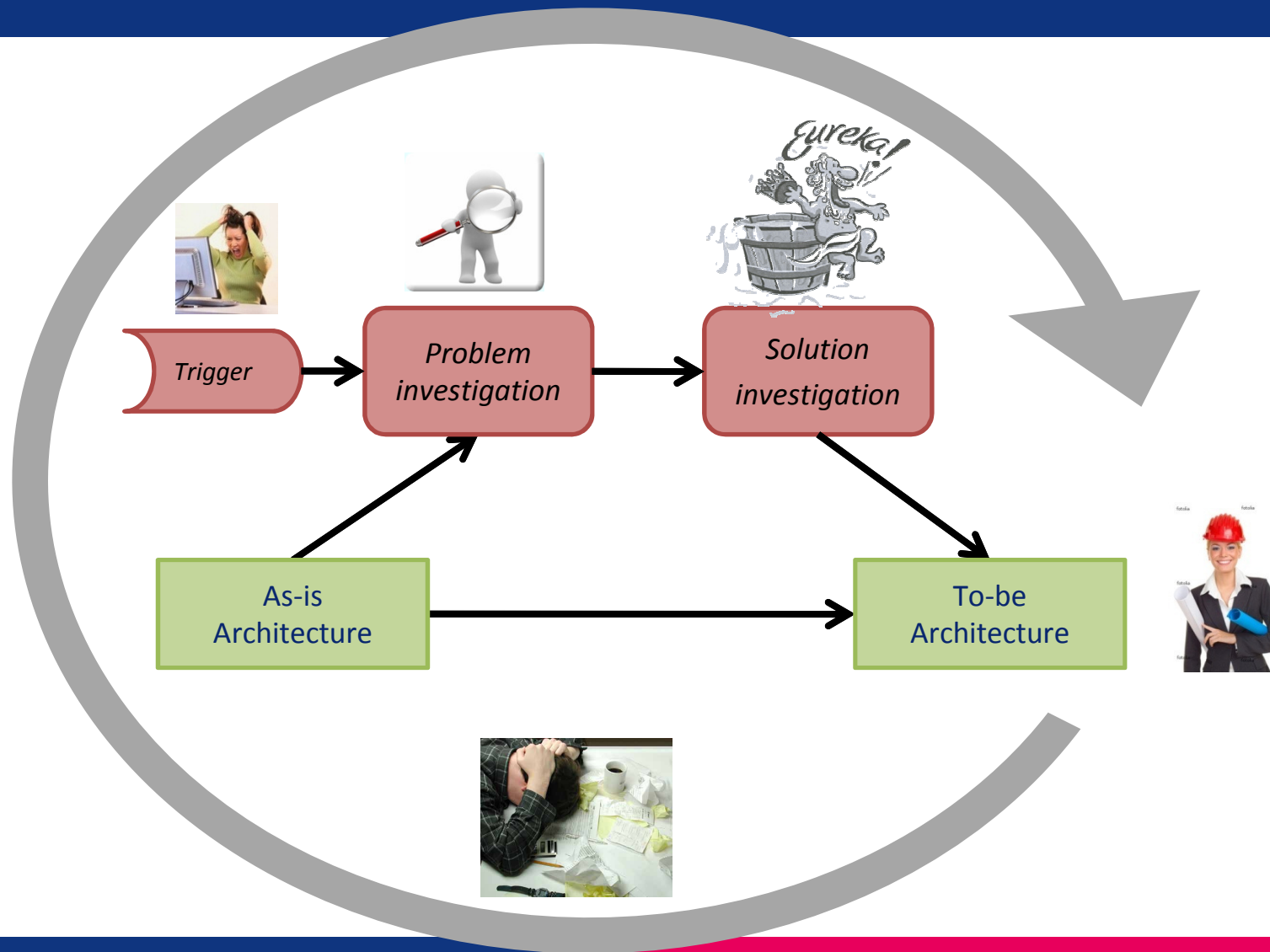
Requirements Management Process

Architecture process

Requirements process

Need for change

Requirements for architecture

Architecture design

Requirements for solution

Design of solution

Change

Requirements Traceability & Impact of change
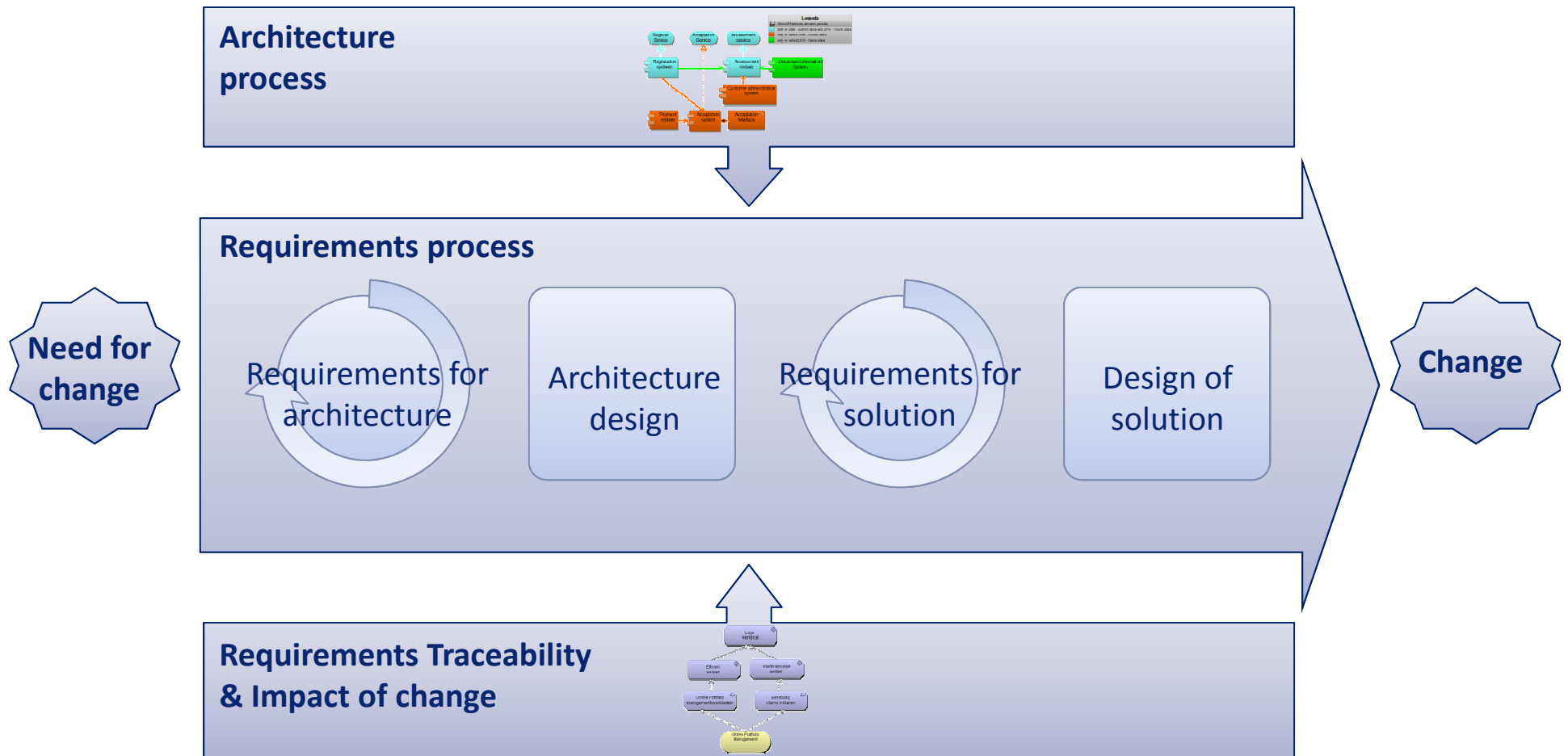
Requirements engineering cycle

▶ 'Solution investigation' in two steps
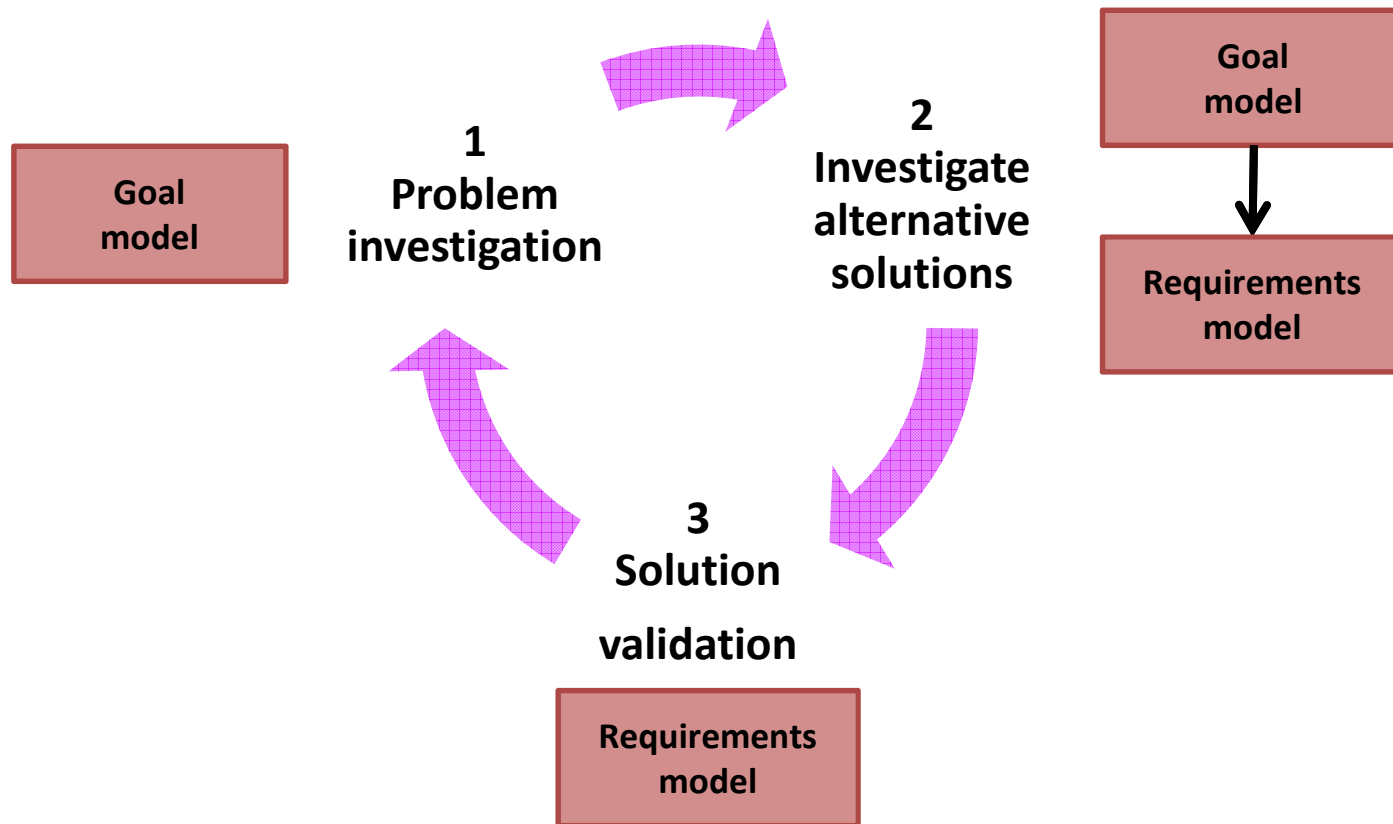
```
          ┌──────────┐
          │   Goal   │
          │  model   │
          └──────────┘
               │
               ▼
          ┌──────────┐
          │Requirements│
          │  model   │
          └──────────┘
```

1 Problem investigation

2 Investigate alternative solutions

3 Solution validation

┌──────────┐
│   Goal   │
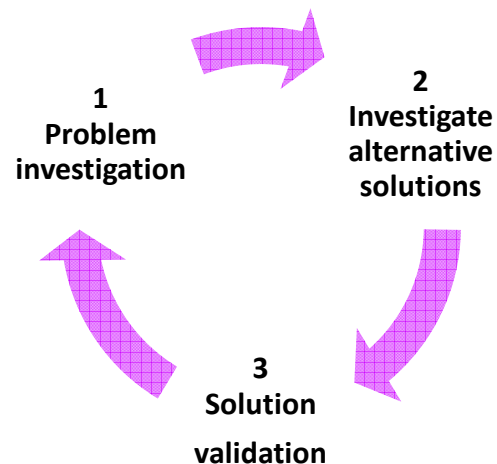│ model   │
└──────────┘

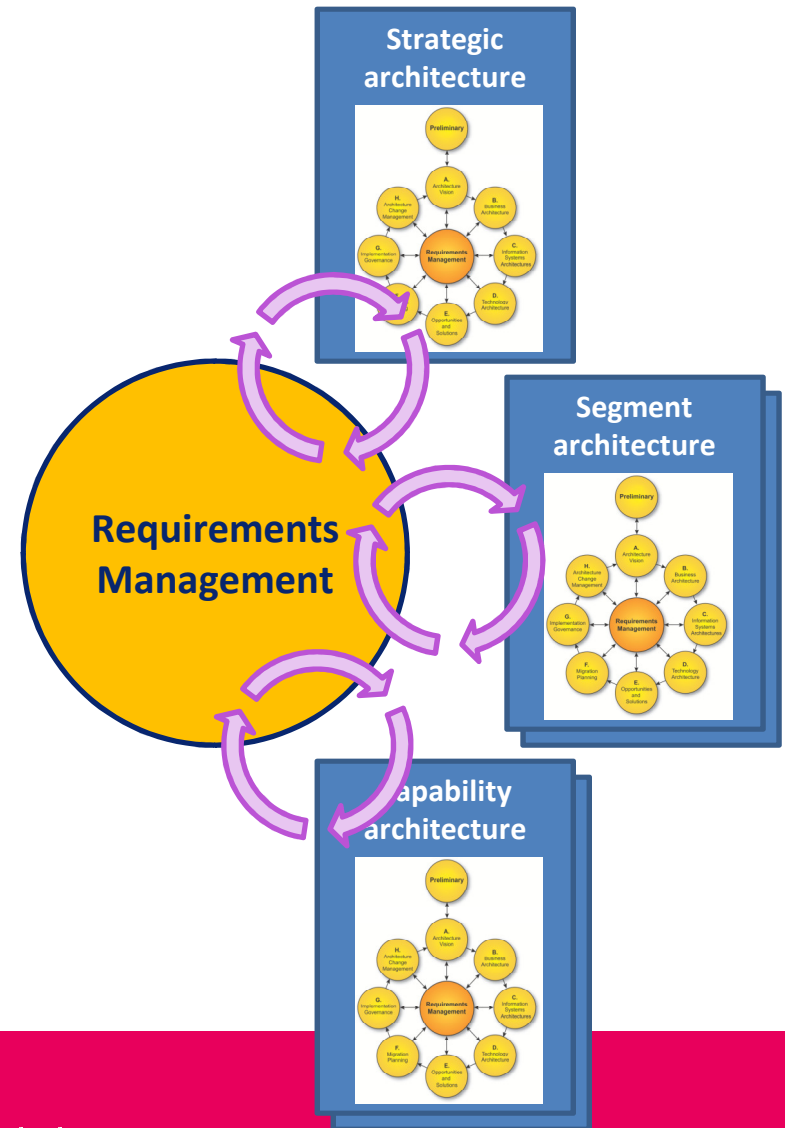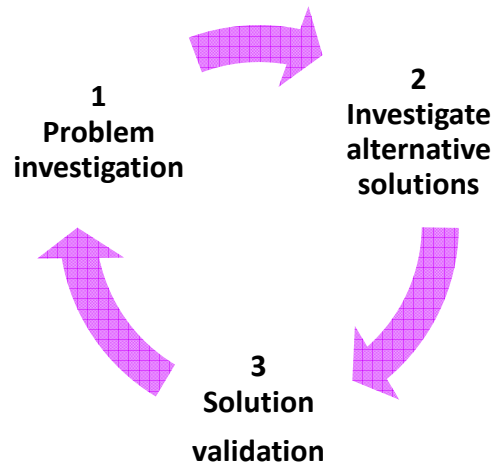┌──────────┐
│Requirements│
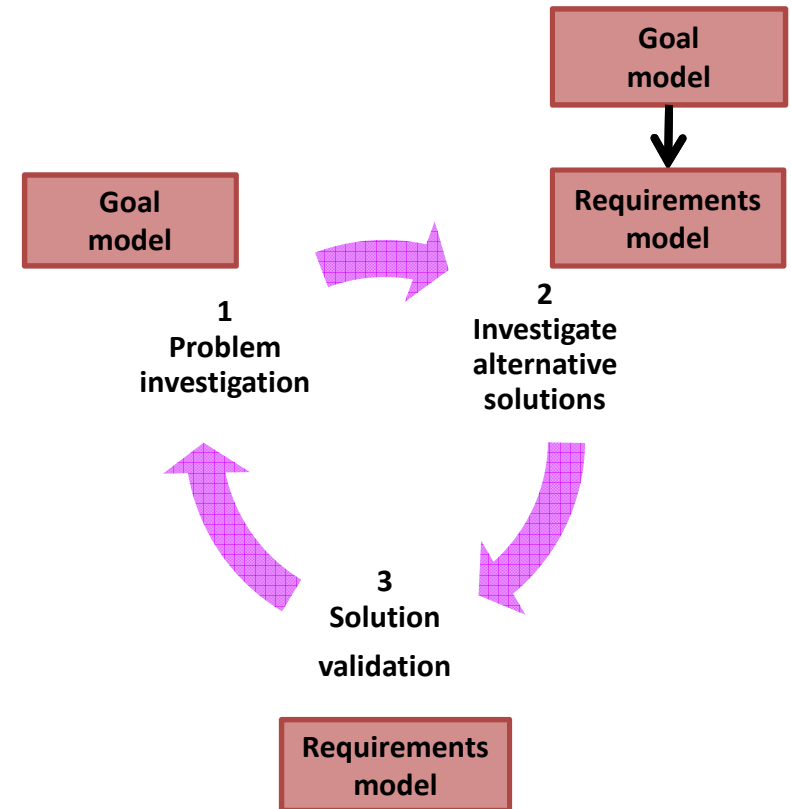│ model   │
└──────────┘
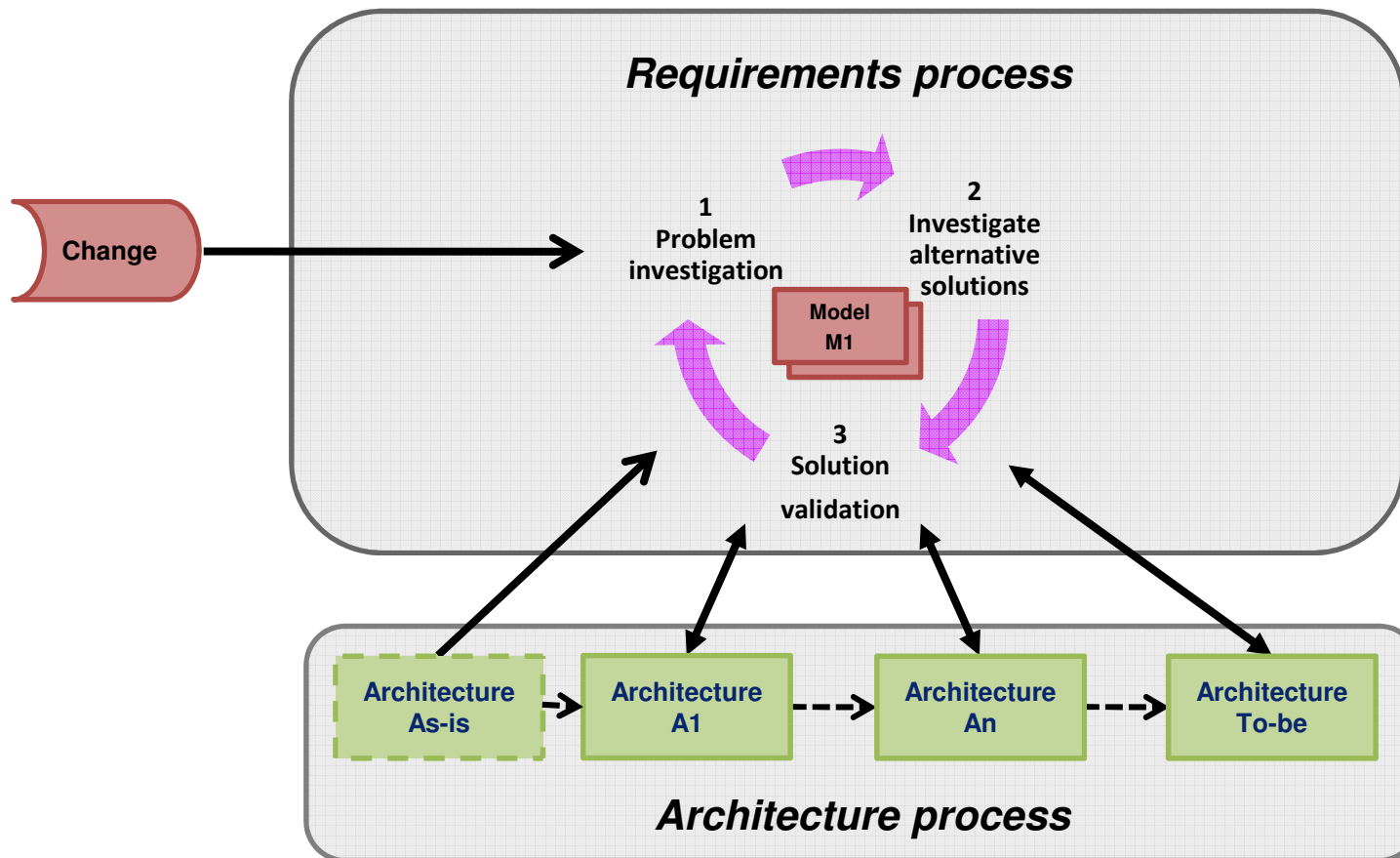
Support for BRM - Method
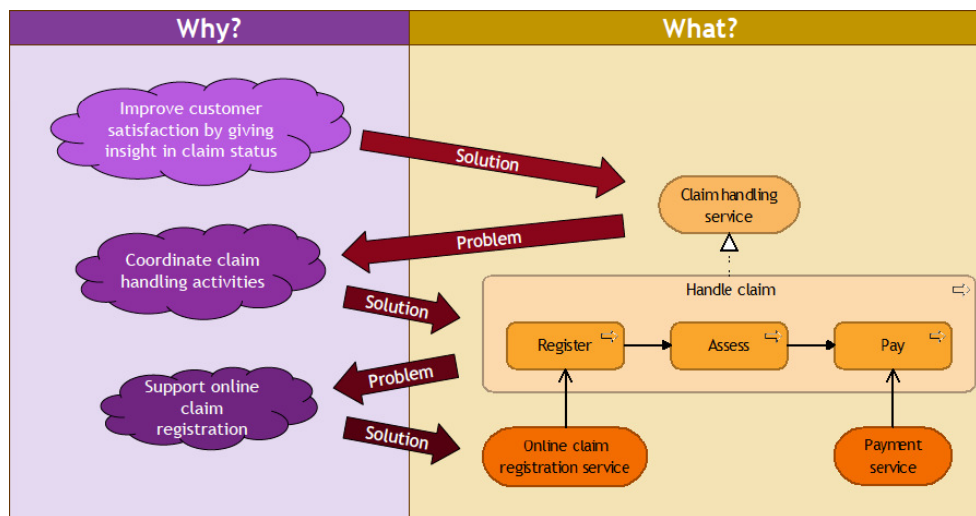
- Method
  - Requirements Engineering Cycle
  - Relation to TOGAF

Support for BRM - Method

- Method
 - Requirements Engineering Cycle
  - Relation to TOGAF

1
Problem
investigation

2
Investigate
alternative
solutions

3
Solution
validation

Strategic architecture

Segment architecture

Requirements Management

apability
architecture
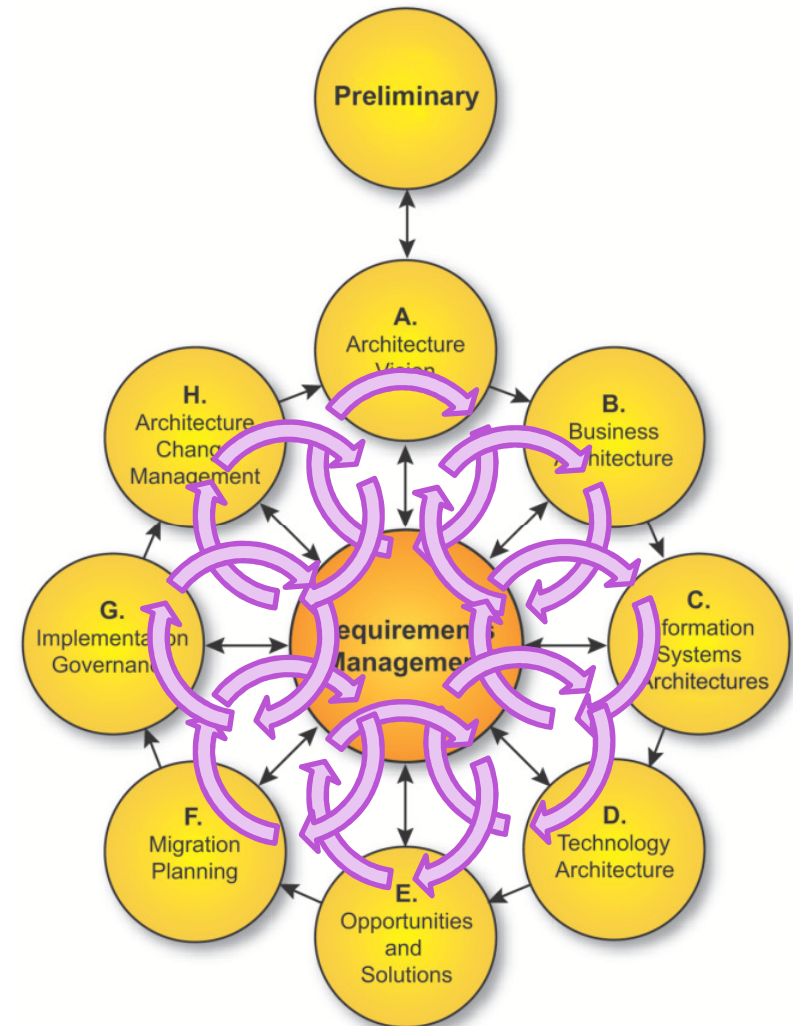
Summary BRM – the method

- **Method**
  - Requirements Engineering Cycle
  - Related to EA process

Goal model → Requirements model

1 Problem investigation

2 Investigate alternative solutions

3 Solution validation

Goal model

Requirements model

Why? | **What?**

Improve customer satisfaction by giving insight in claim status

Solution

Problem

Coordinate claim handling activities

Solution

Support online claim registration

Problem

Solution

Claim handling service

Handle claim

Register → Assess → Pay

Online claim registration service

Payment service

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!

Business Requirements Management

Method, language and tools
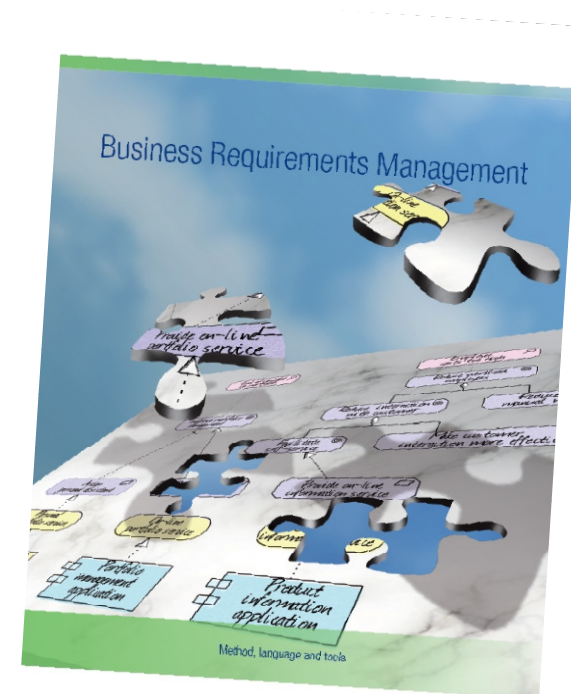
Building strong organizations

EA-based portfolio valuation

Using BRM and EA to valuate your
IT and project portfolio

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Motivation (ArchiValue project)

▶ "IT innovation squeeze"

▶ Increasing part of IT budget spent on maintenance

▶ Leaving less room for innovation
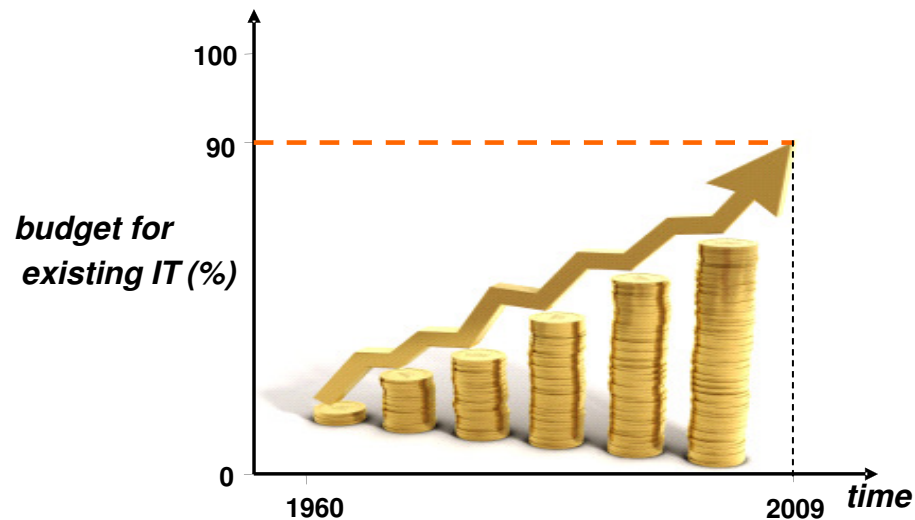
▶ Observation

- ▶ 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
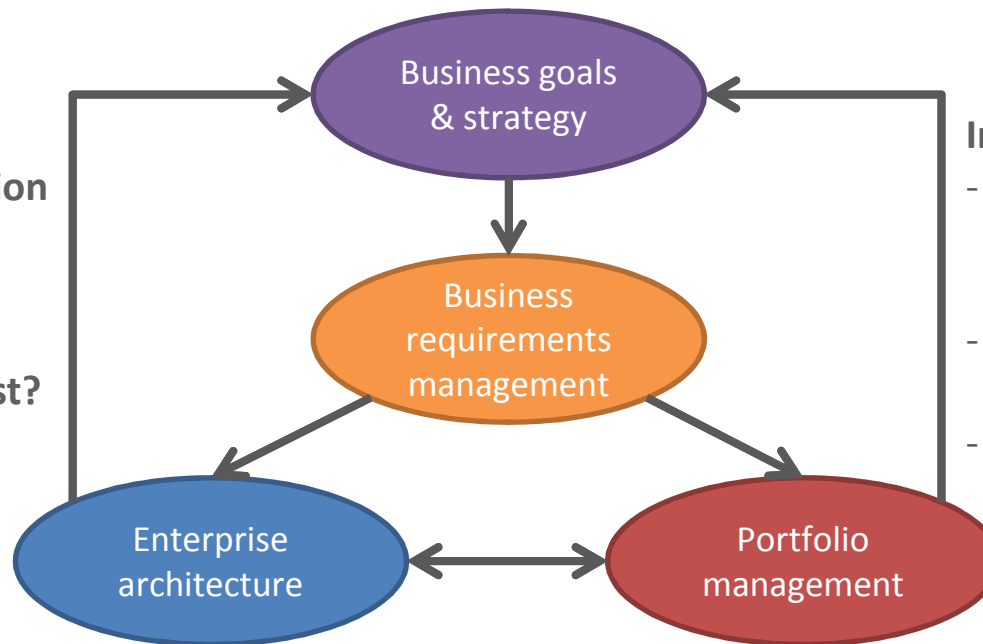
Alternative sources of value [Venkatraman]

- Cost center

- Service center
  - Support current business strategy
  - Minimize risk

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

- Profit center
  - Deliver IT services
  - Knowledge and experience
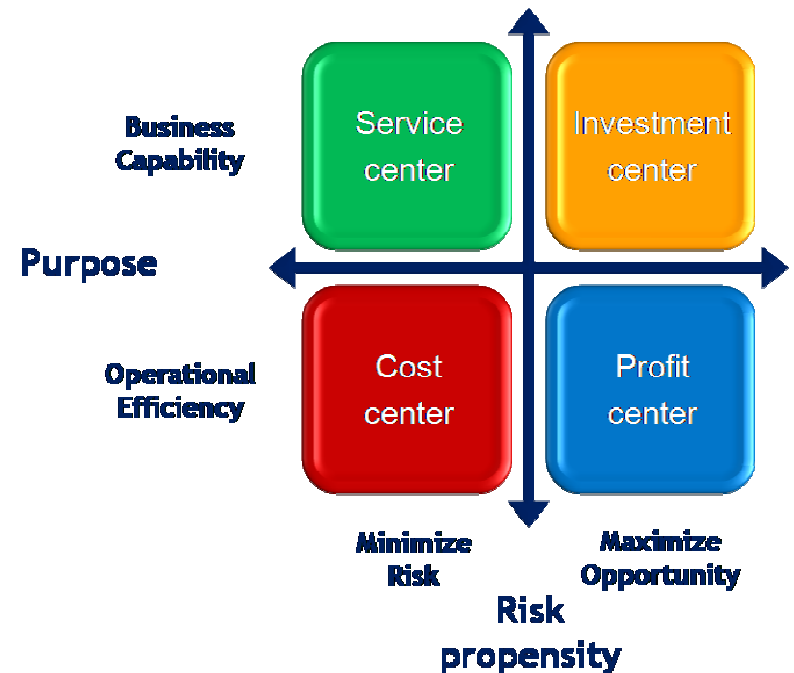
► Contribution to business goals/strategy

Implements strategy

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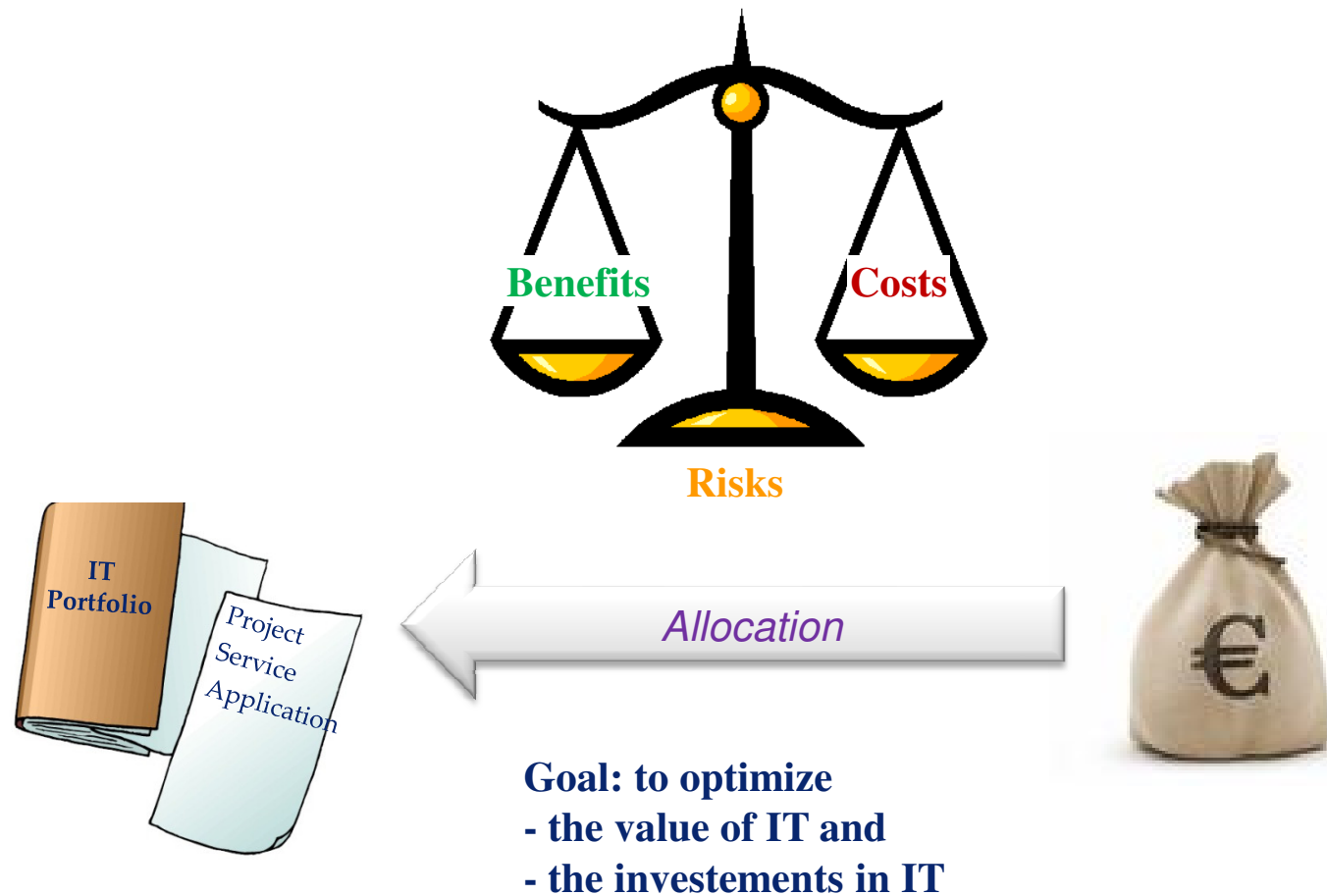- **In which processes, applications or infrastructure to invest?**
- **...**

Business goals & strategy

Business requirements management

Enterprise architecture
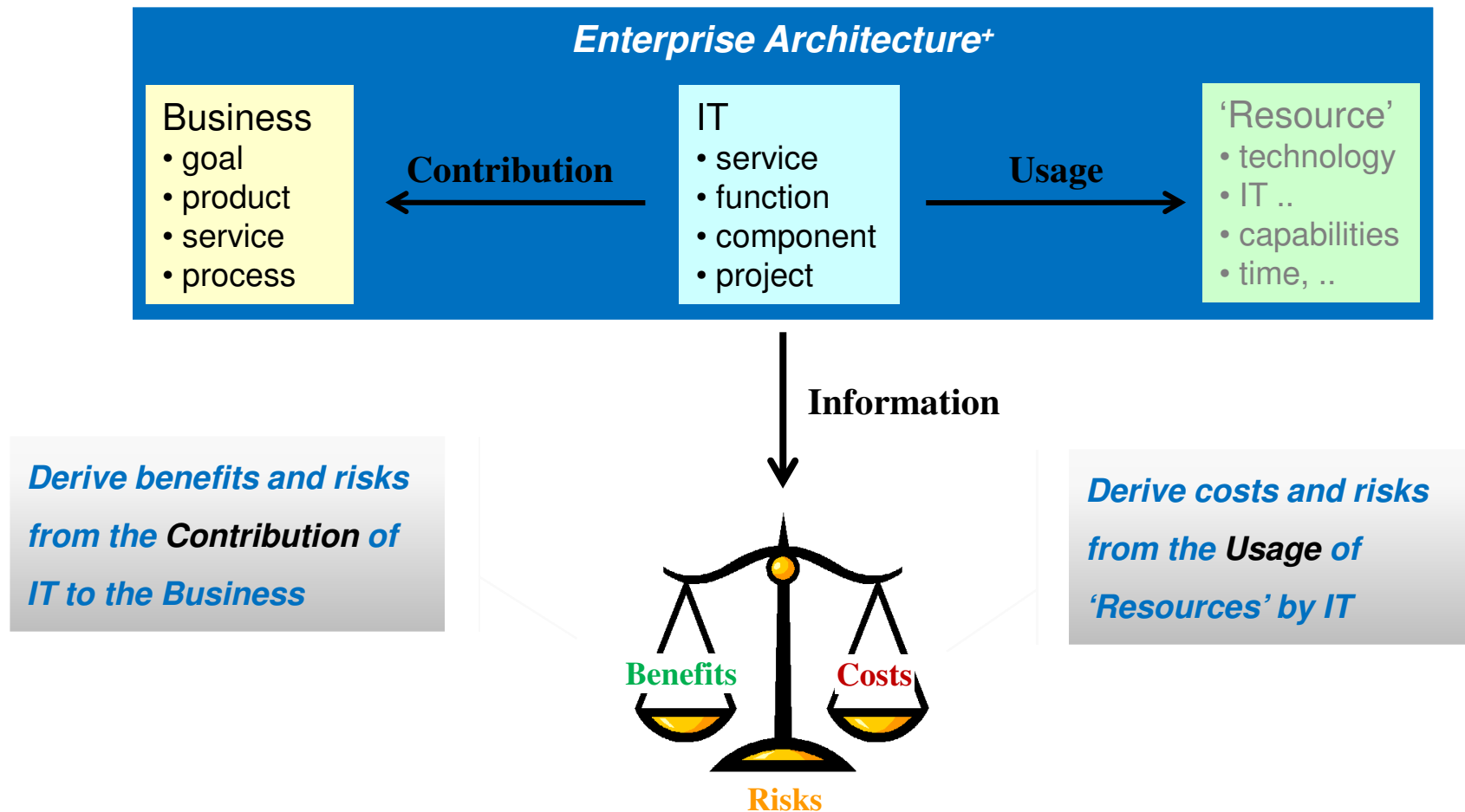
Portfolio management

Implements strategy

- **What is the contribution of some project?**
- **In which projects to invest?**
- **...**

What dependencies among projects and IT artefacts do exist?

IT Portfolio Valuation

Benefits **Costs**

Risks

IT Portfolio

Project
Service
Application

Allocation

€

Goal: to optimize
- **the value of IT and**
- **the investements in IT**

Role of Enterprise Architecture

Enterprise Architecture⁺

Business
- goal
- product
- service
- process

← **Contribution**

IT
- service
- function
- component
- project

Usage →

'Resource'
- technology
- IT ..
- capabilities
- time, ..

↓ **Information**

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

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

Benefits   **Costs**

Risks

Valuation of IT artifacts and IT projects

1. Valuation of IT artifacts (applications, services) based on 'As-is' architecture

2. Determine change goals

3. Develop projects to realize change goals

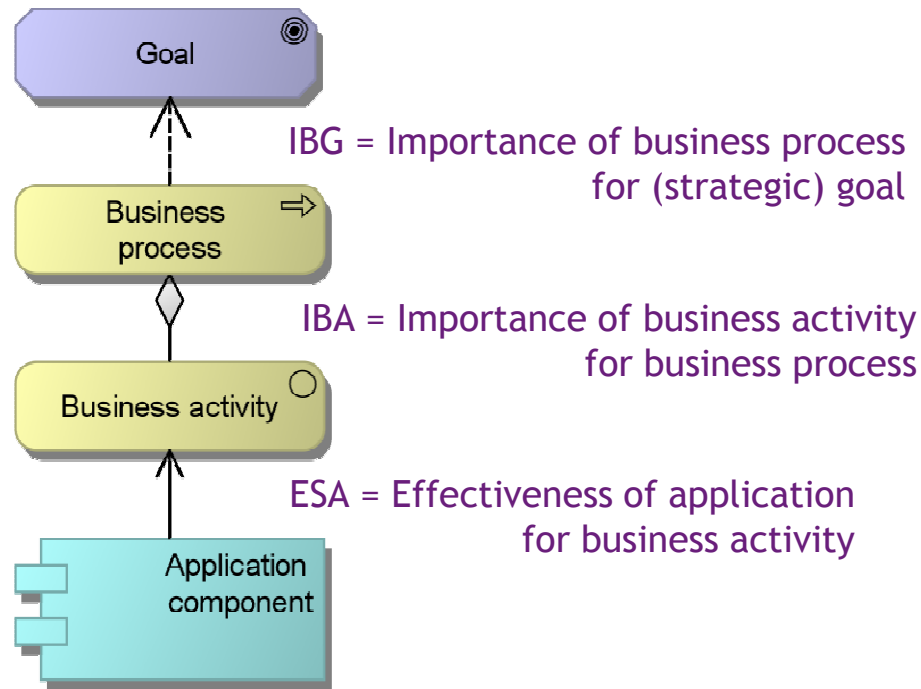**4. Projects implement the 'To-be' architecture**

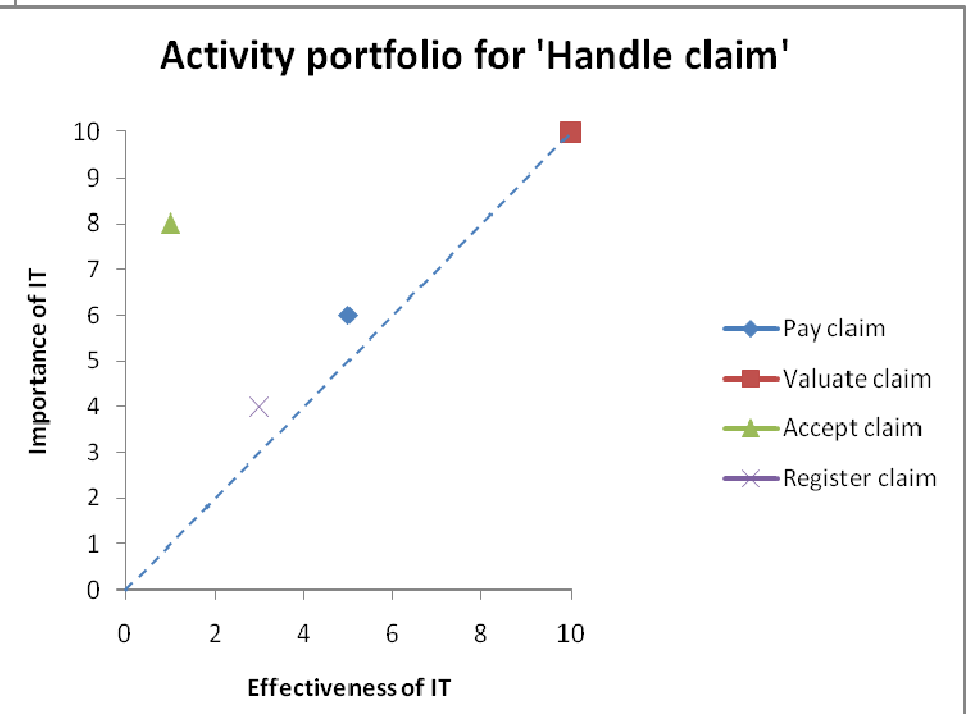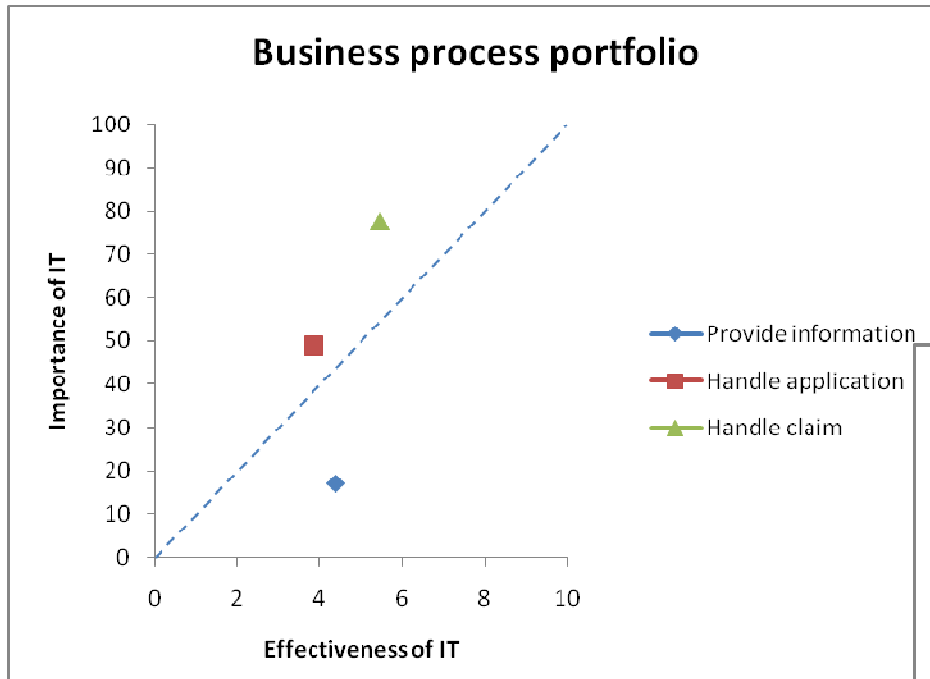**5. Valuation of projects based on comparison of 'As-is' and 'To-be' architecture**

Organisation (O)

IBO = Importance of B for O

Business process (B)

IAB = Importance of A for B

Business activity (A)

ESA = Effectiveness of S for A

Information system (S)

Derived **Importance of A for O**

Derived **Effectiveness of S's for B**

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)

Goal

Business process

Business activity

Application component

IBG = Importance of business process for (strategic) goal

IBA = Importance of business activity for business process

ESA = Effectiveness of application for business activity

Importance   Effectiveness

Strategic importance

High priority

Fund to maintain performance

Financieel systeem

Claim registratie

Fund projects to prevent failure

Lowest priority

Call center support

Effectiveness

Step 1: Results

Business process portfolio

Importance of IT (y-axis: 0–100)
Effectiveness of IT (x-axis: 0–10)

- Provide information
- Handle application
- Handle claim

Activity portfolio for 'Handle claim'

Importance of IT (y-axis: 0–10)
Effectiveness of IT (x-axis: 0–10)

- Pay claim
- Valuate claim
- Accept claim
- Register claim

Step 2: Valuation of IT projects

Step 2: Result

Project score (PRI)

Added effectiveness * Importance (y-axis): 0, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500

Costs (x-axis): 0, 2000, 4000, 6000, 8000, 10000

- Project 1
- Project 2
- Project 3
- Project 4
- Project 5
- Project 6
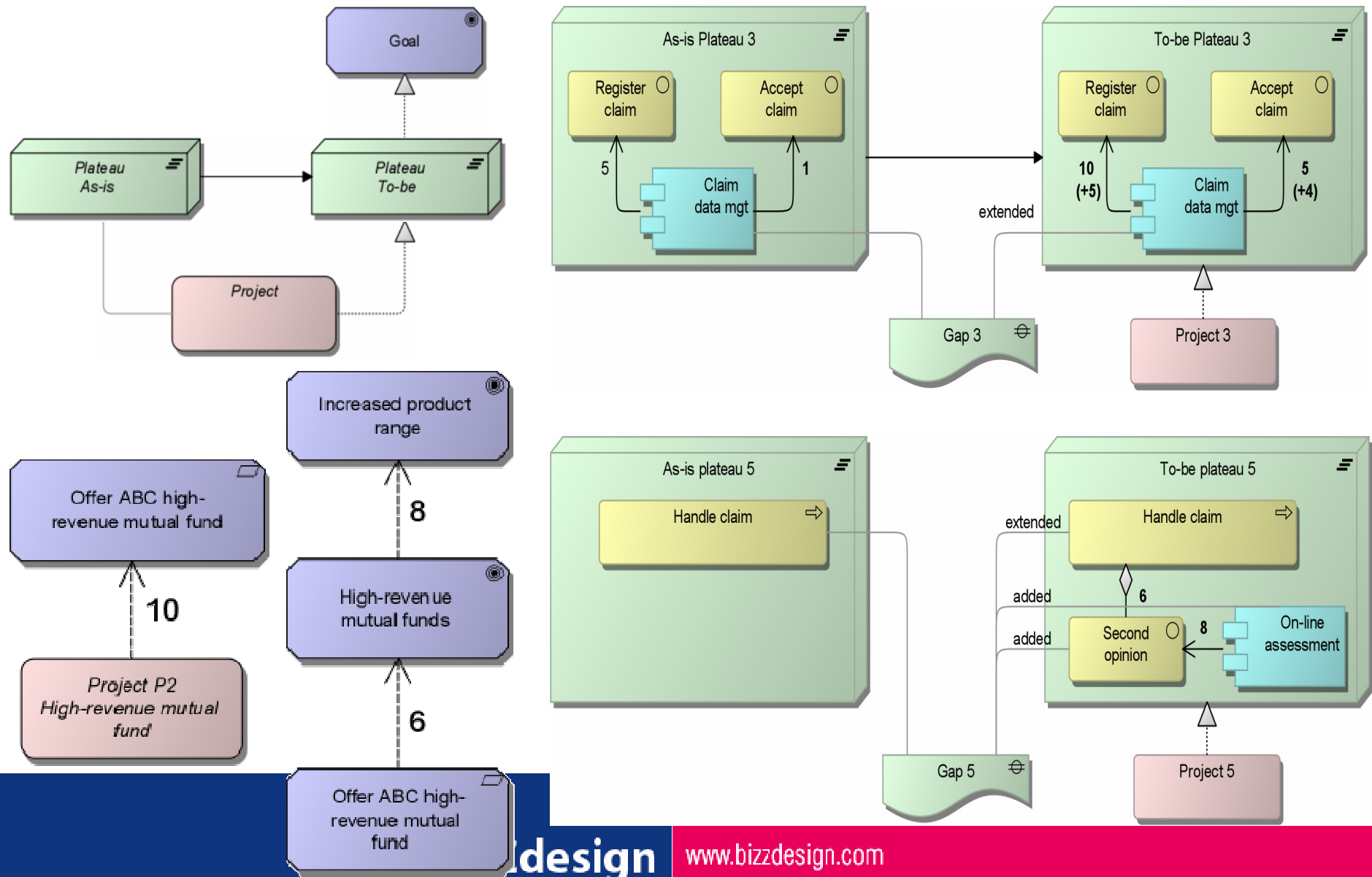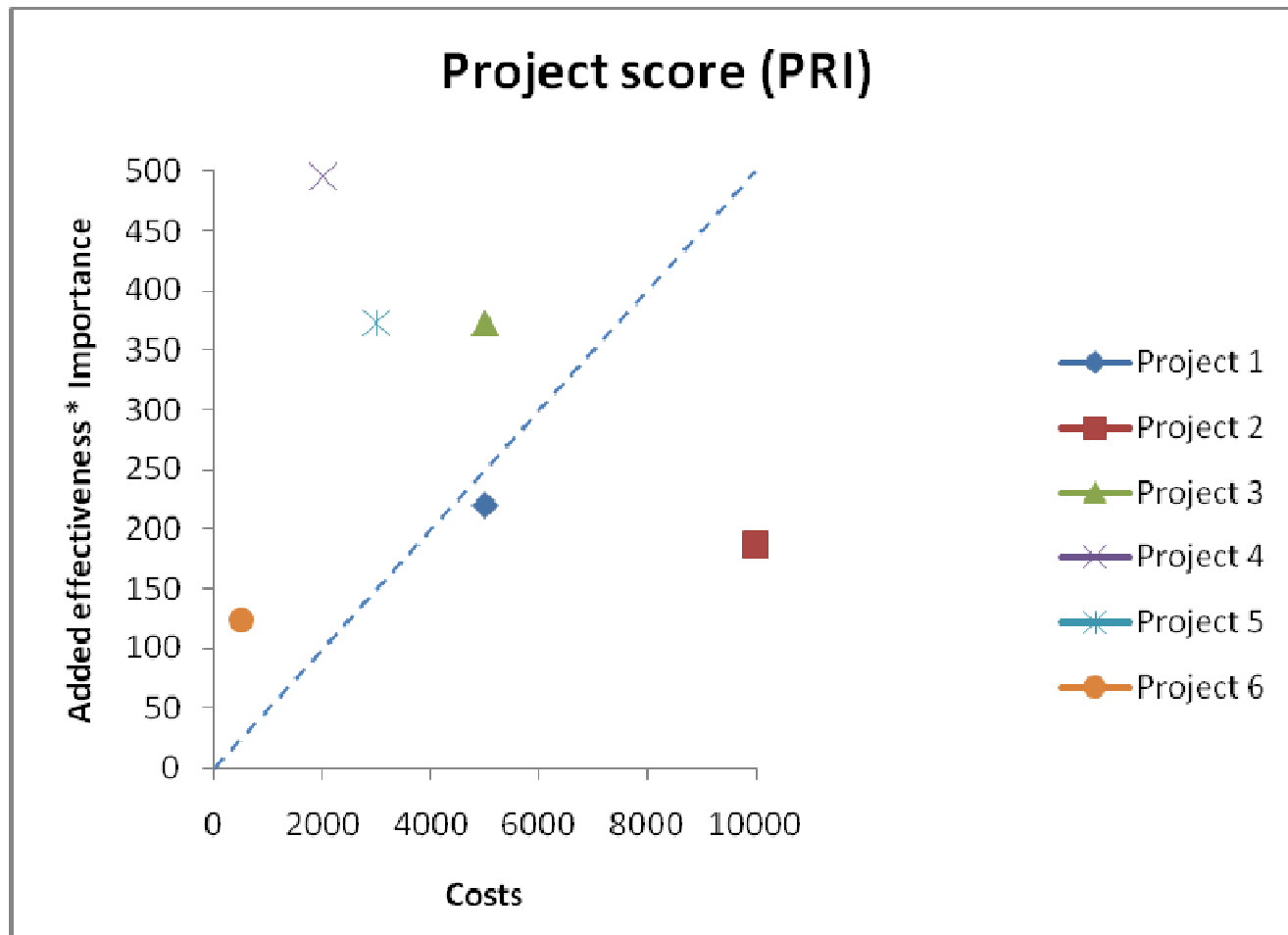
Added value of projects

Project scores

Project return index

Project	Score	Costs
Project P2 High-revenue mutual fund	713.504	75000.000
Project P3 Set-up integrated asset...	680.096	40000.000
Project P5a Enable internet as a ch...	227.344	40000.000
Project P8 Real-time asset reporting	725.120	25000.000
Project P9 Real-time asset monitoring	582.896	150000.000
Project P5b Add internet as a chan...	440.688	40000.000
Project P4 Integrate asset manage...	512.072	80000.000
Project P1 High-revenue mutual fu...	889.880	50000.000
Project P6 Integration of local orde...	283.472	60000.000
Project P7 Integration of local repo...	283.472	30000.000

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
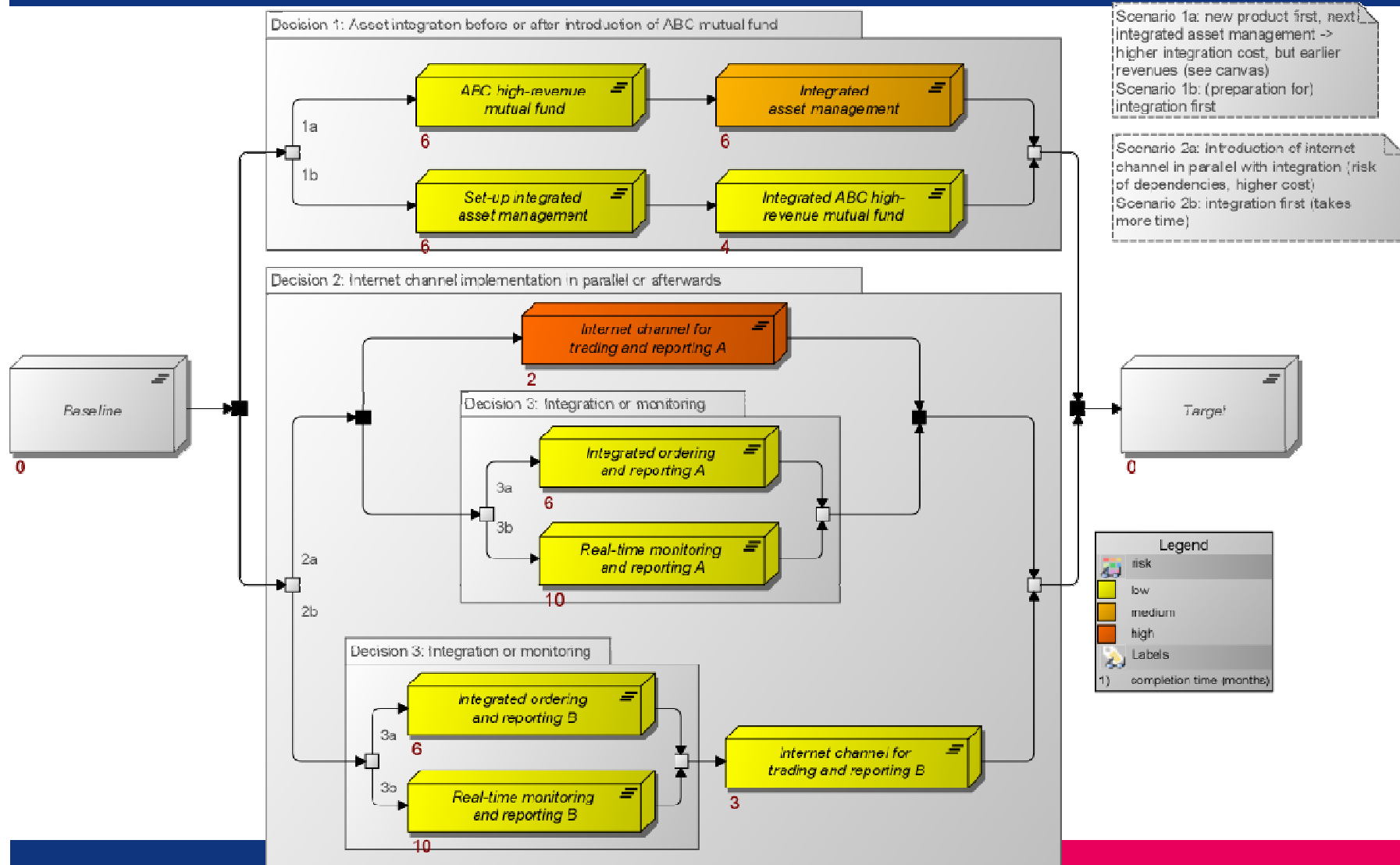
▶ Compare scenario's

Scenario scores
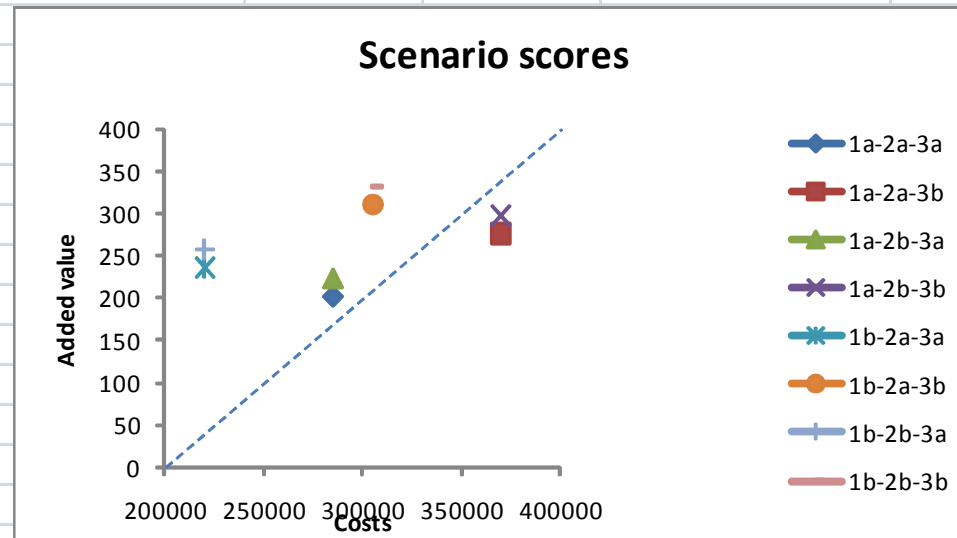
Scenario	Added value	Costs	Completion (month)	Risk
1a-2a-3a	201,9864	285000	12	high
1a-2a-3b	276,0936	370000	12	high
1a-2b-3a	223,3208	285000	12	medium
1a-2b-3b	297,428	370000	13	medium
1b-2a-3a	236,4264	220000	10	high
1b-2a-3b	310,5336	305000	10	high
1b-2b-3a	257,7608	220000	10	low
1b-2b-3b	331,868	305000	13	low

Compare scenario's – which one first?

Scenario scores
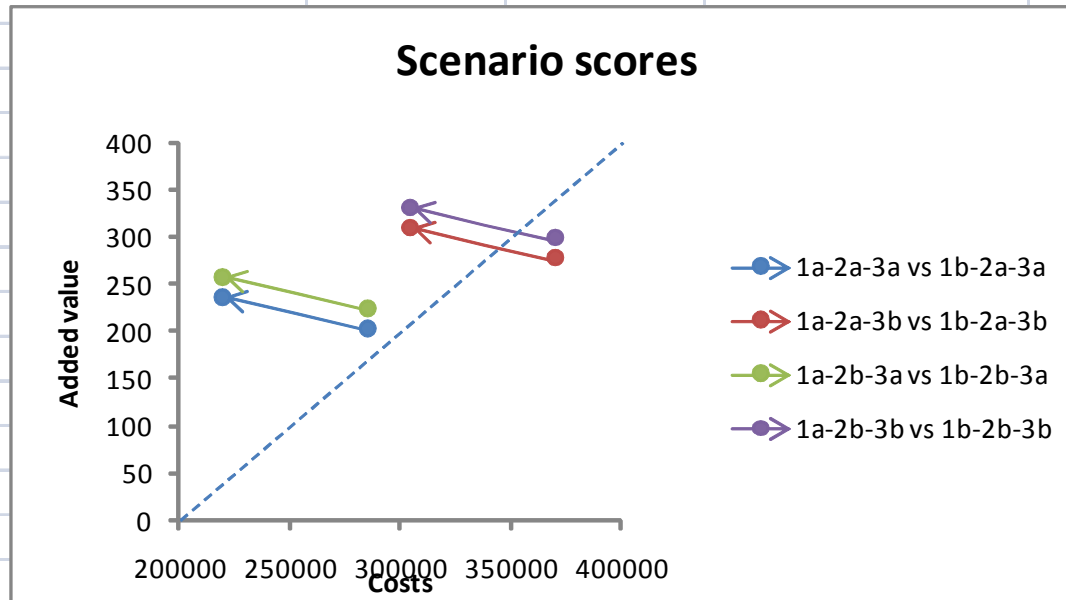
Scenario	Added value	Costs	Added value	Costs
1a-2a-3a vs 1b-2a-3a	201,9864	285000	236,4264	220000
1a-2a-3b vs 1b-2a-3b	276,0936	370000	310,5336	305000
1a-2b-3a vs 1b-2b-3a	223,3208	285000	257,7608	220000
1a-2b-3b vs 1b-2b-3b	297,428	370000	331,868	305000

Additional analyses possible

▶ Overlap between projects

▶ Cost–benefit analysis

▶ Extra dimensions: time and uncertainty

▶ Alternative migration scenarios

▶ Costs, risks, completion times

▶ …
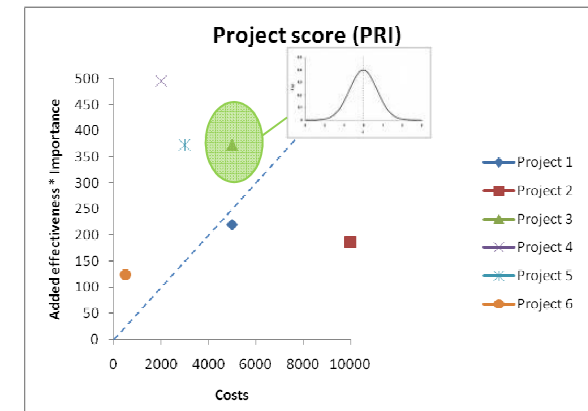
▶ Summary

- ▶ 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!

Building strong organizations

Business Model Innovation
from strategy to Enterprise Architecture

Some thoughts and observations

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Business model innovation

▶ "A *business model* describes the rationale of how an organization creates, delivers and captures value"

Key Activities

Value Proposition

Customer Relationships

Key Partners

Customers

Key Resources

Costs

Channels

Revenue

drawings by JAM

"I *love* your business model!"

Business Model Generation
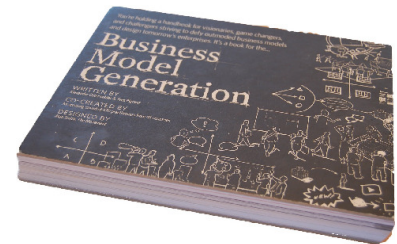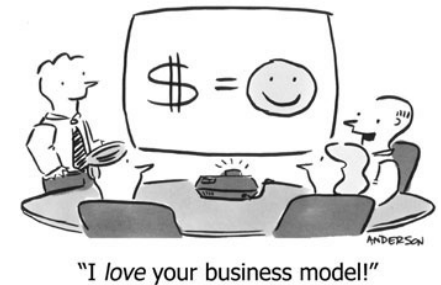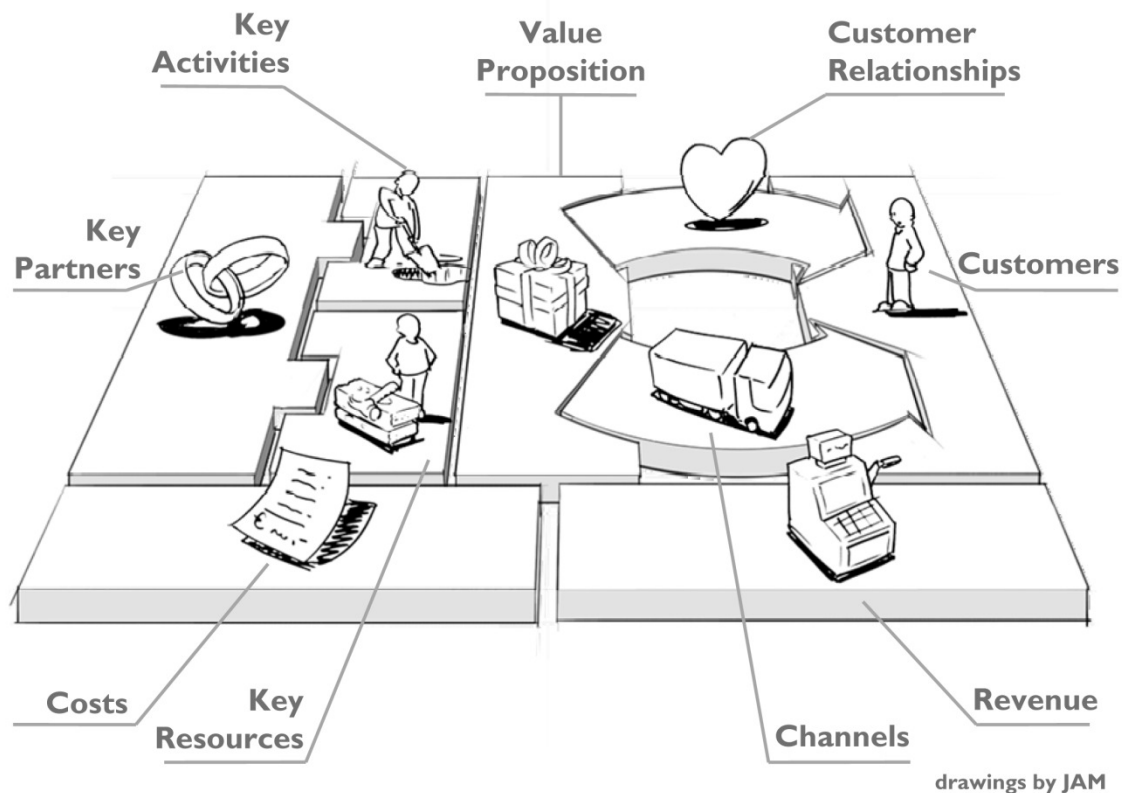
Motivation Business Models

▶ 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

KP	KA	VP	CR	CS
	KR		CH	
	C$		R$	

Business

Applications

Technology
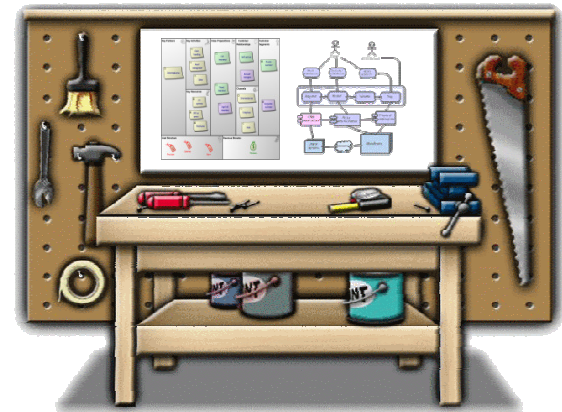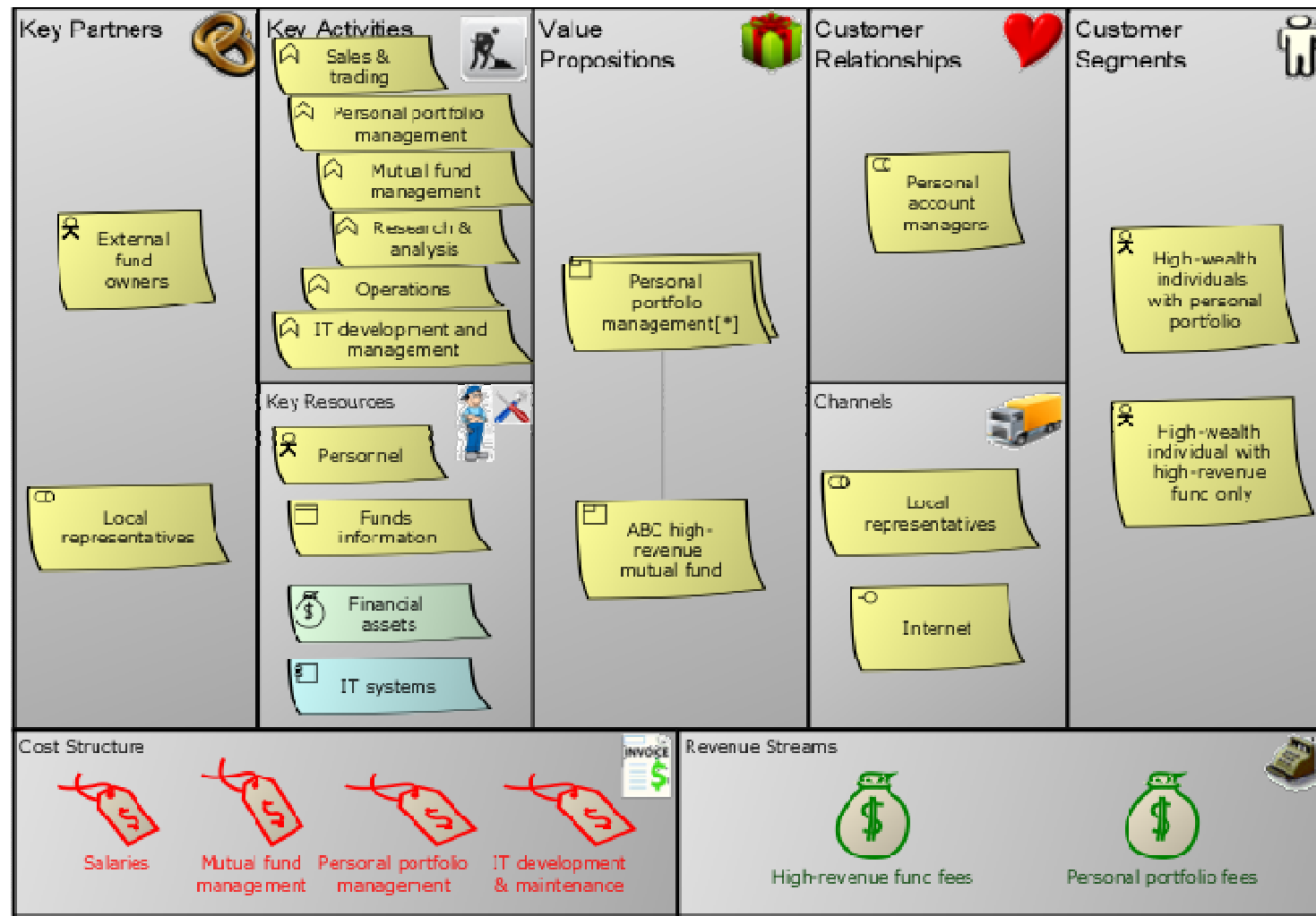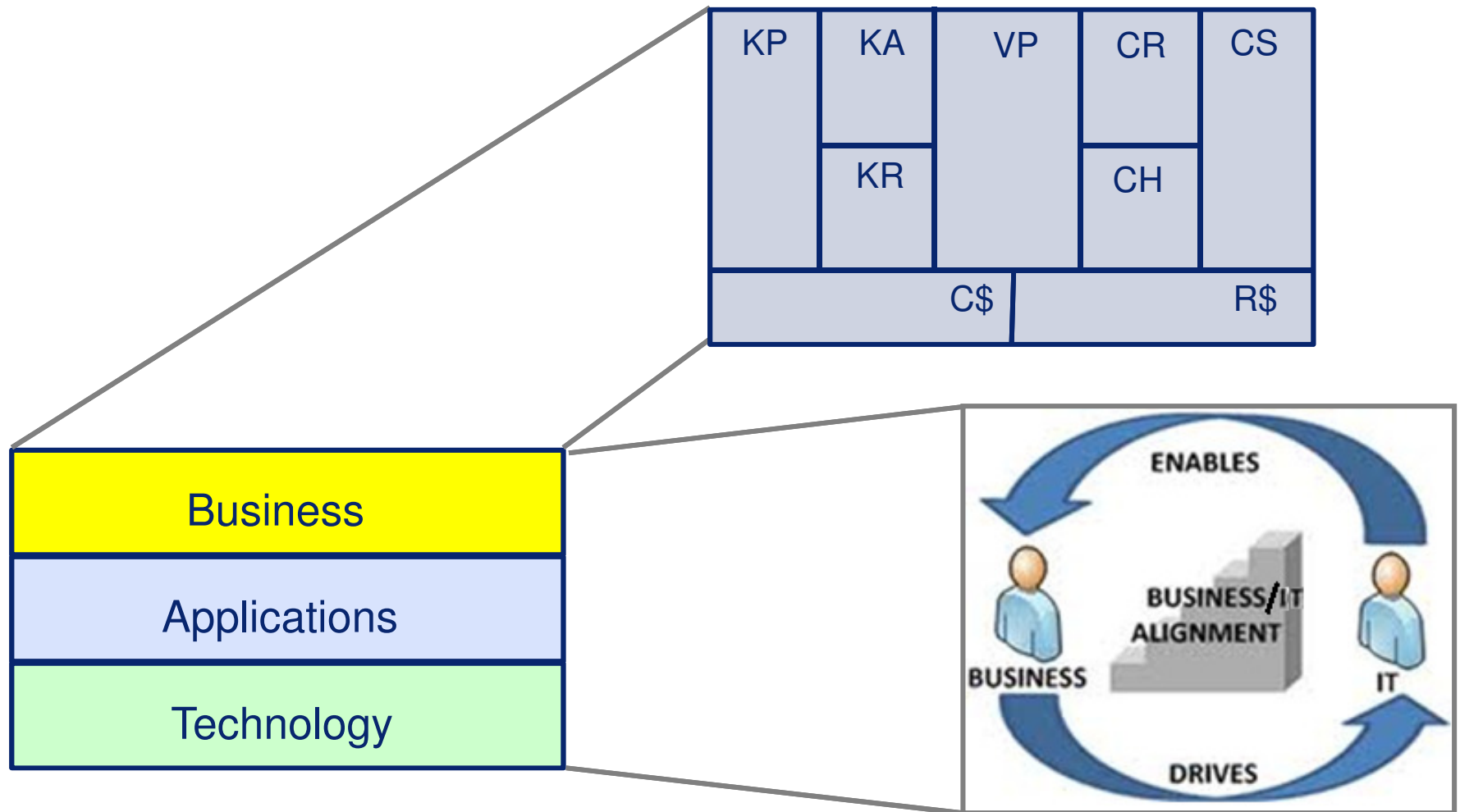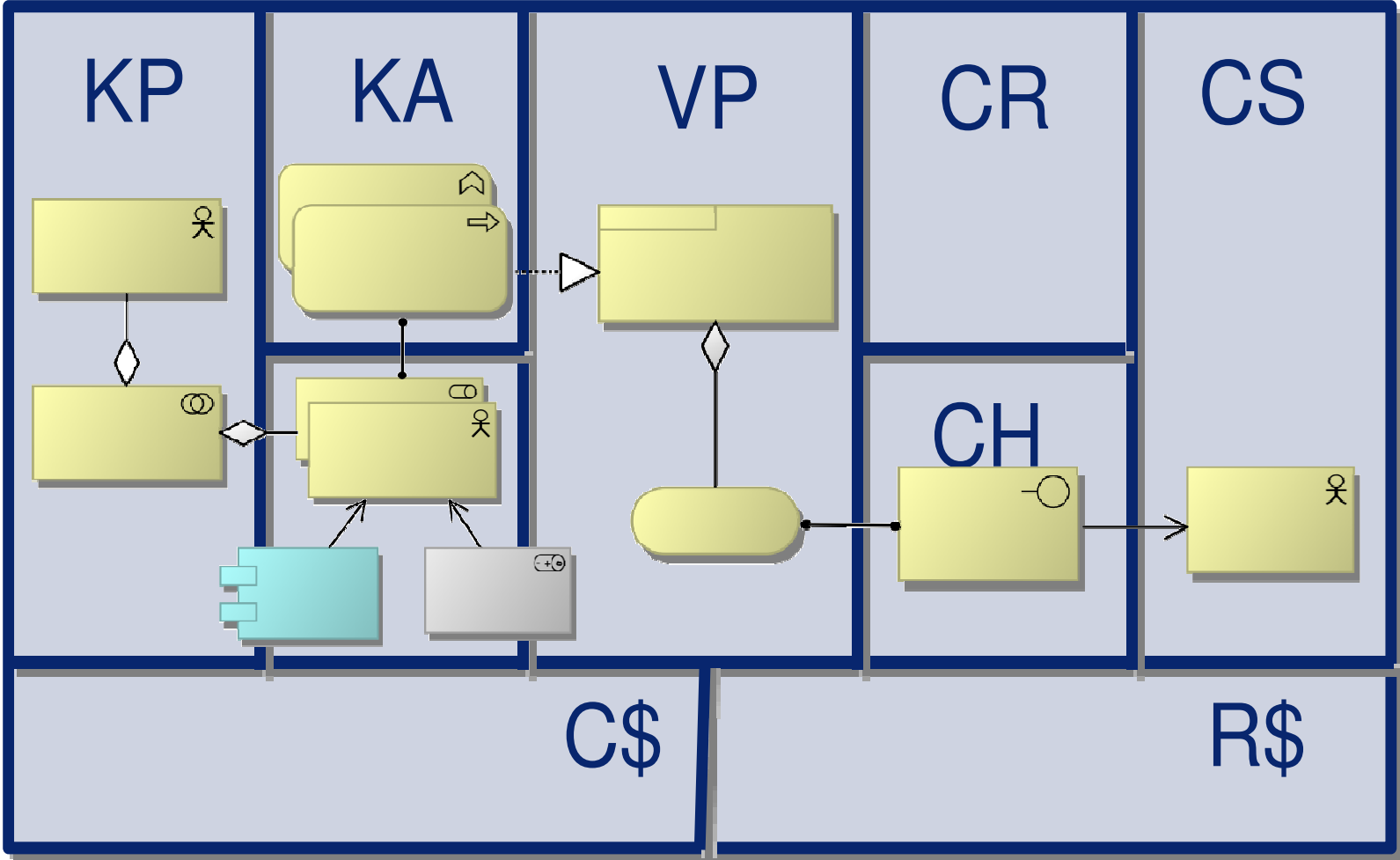
From BM to EA
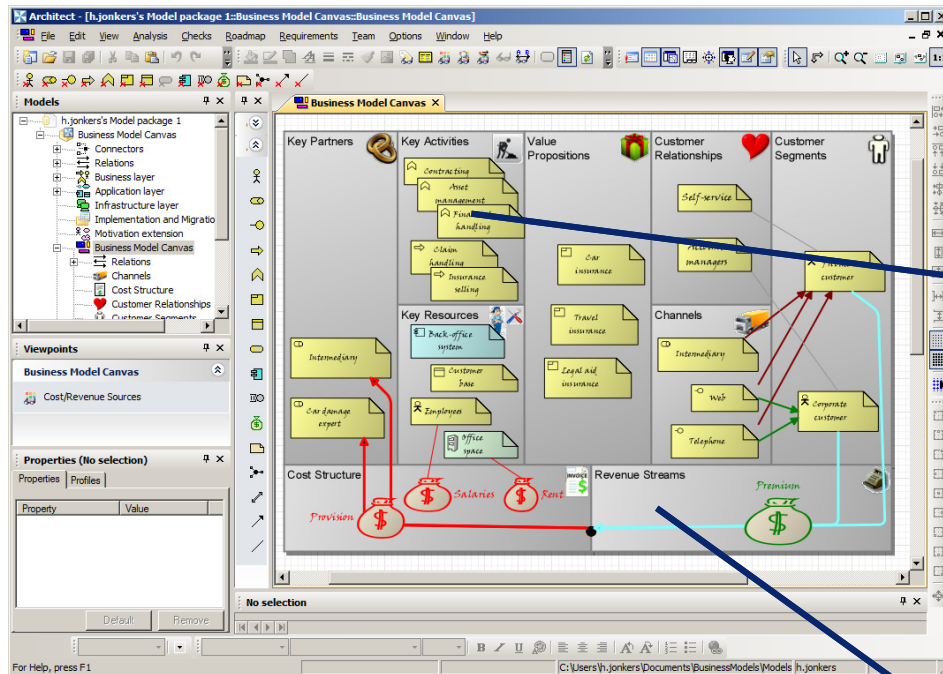
Overview of canvas
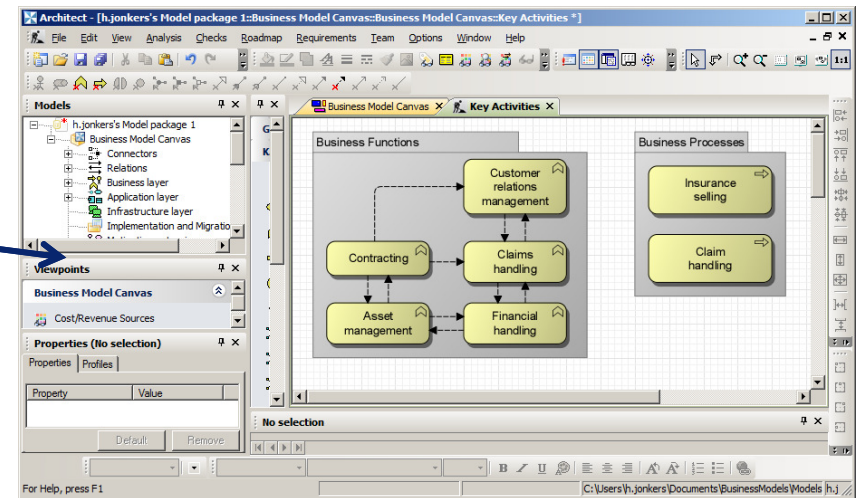
Zoom in on details
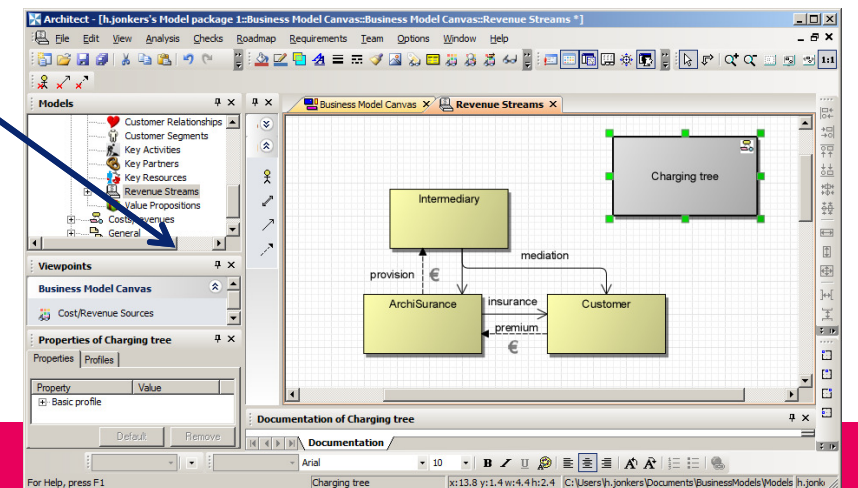
Views to highlight relationships
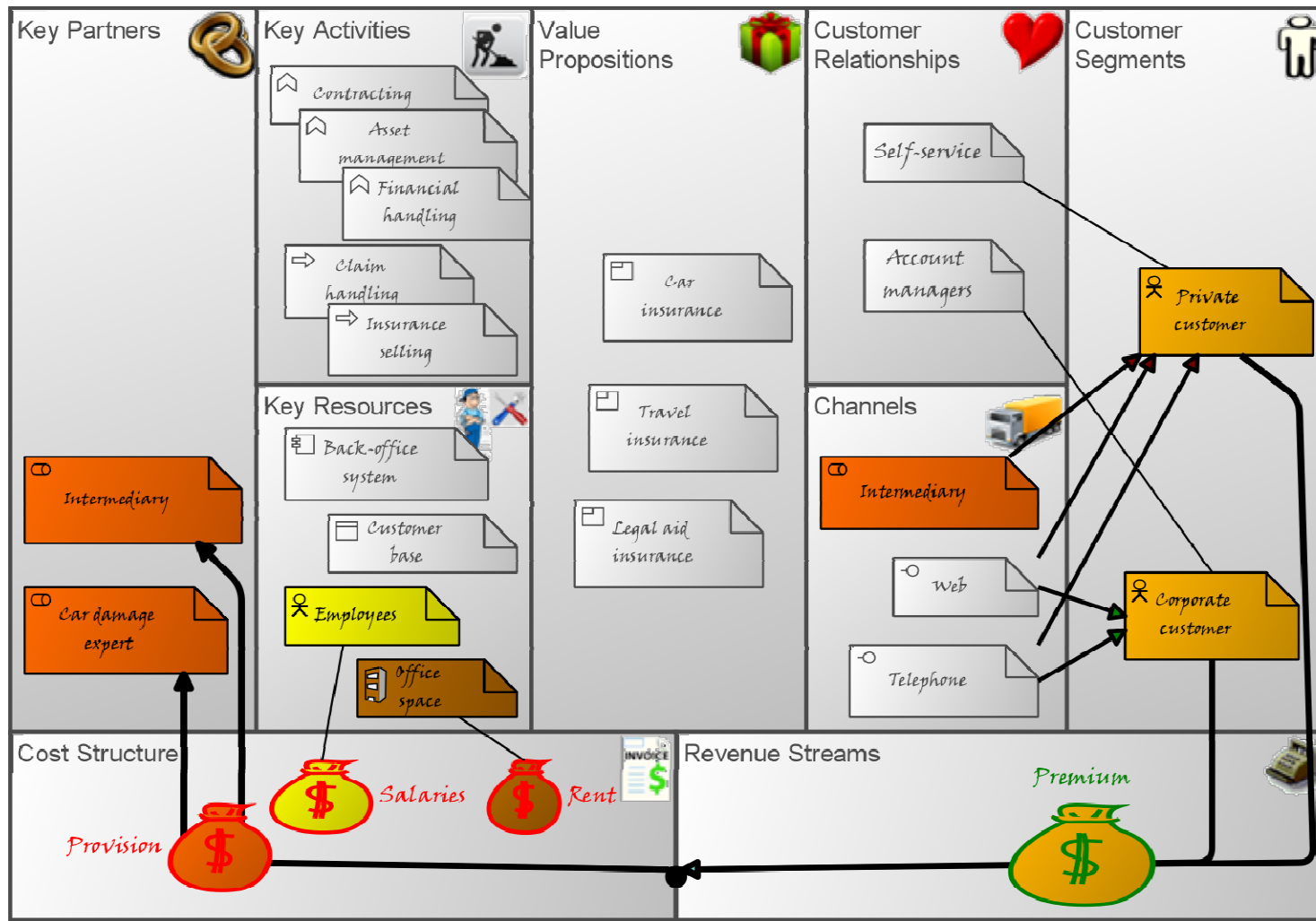
Current and future state
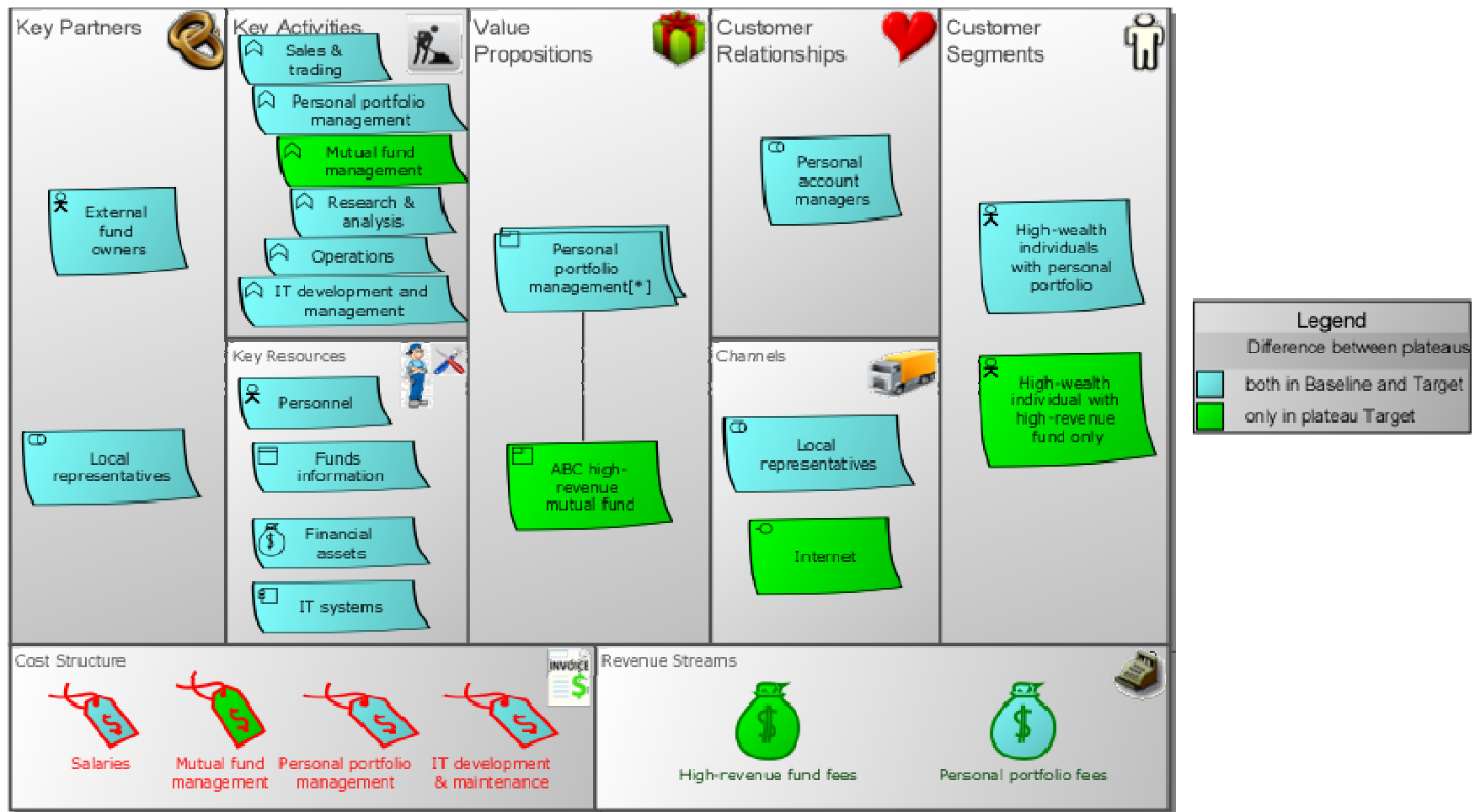
Cost and revenue calculation

Revenue/costs type	Source	Revenues baseline	Costs baseline	Revenues target	Costs target
Personal portfolio fees	High-wealth individuals with personal portfolio	10000.000		10000.000	
High-revenue fund fees	High-wealth individual with high-revenue fund only	0.000		4000.000	
IT development & maintenance	IT systems		500.000		600.000
Personal portfolio management	Personal portfolio management		800.000		700.000
Salaries	Personnel		2000.000		2500.000
Mutual fund management	Mutual fund management		0.000		250.000
		----------	----------	----------	----------
Total		10000.000		14000.000	
			3300.000		4050.000
		----------		----------	
Result		6700.000		9950.000	

Window title: Revenue/costs type, Source, Revenues baseline, Costs baseline, Revenues target, Costs target

Buttons: Print... | Copy

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!

Building strong organizations

Thank you!

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