The Importance of System Architecting for Development

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Abstract

The importance of system architecting for development of products is explained. Current trends show an exponential growth of development teams, product complexity. Team size and product complexity are problematic from cost, time to market and risk point of view. The challenge is to create new products with manageable sized teams. System architecting is one of many measures to cope with this problem.

Architecting is explained in its context and a few main concepts are shown. A curriculum is being developed for (potential) system architects. The next step is to address the managerial context of the system architect. For this purpose a 2 day Management SARCH is developed.

Distribution

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September 6, 2020
status: concept
version: 0.3
The Challenge

- Manage large PCP teams of > 1000 people
- or
- Significantly increase SW productivity

from: Ad Huijser
Philips Software Conference 2001
When all pieces fit ...

- Business Orientation
- Application Know-how
- Integral approach: value chain, roadmap
- Research
- Architecture and Component approach
- Make, Buy Partnering
- Education
- Open Source InnerSource
- Effective Processes (SPI)

Diagram: The Importance of System Architecting for Development

- Market products
- Technology
- People and Process
- Drives
- Enables

Basic
Enabling
Decision Process

Ad Huijser Philips Software Conference 2001

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AHsolutionJigsaw
Simplified process view

Philips business

- policy and planning
- customer oriented process (sales, service, production)

PCP

people and technology management process

customer

value
System architecture process

Philips business

policy and planning

reality check

customer oriented process
(sales, service, production)

stakeholder interaction

comparable with:
+ project management
+ marketing

people and technology management process

context, vision

system architecture process

customer

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ISADsystemArchitectureProcess
Do the right things

Do the things right
"CAFCR" model

What does Customer need in Product and Why?

Customer What
Customer How
Product What
Product How

Customer objectives
Application
Functional
Conceptual
Realization

drives, justifies, needs
enables, supports
The Importance of System Architecting for Development

1. **Functional Decomposition**

2. **Construction Decomposition**

3. **Allocation**

4. **Infrastructure**

5. **Choice of integrating concepts**

- Acquisition
- Compress
- Encoding
- Storage

- Display
- Decompress
- Decoding

- View
- Play

- Audio
- Video
- TXT etc.

- Drivers
- Frame-buffer
- MPEG
- DSP

- Network
- File-system
- OS

- CPU
- RAM
- etc.

- Resource usage
- Exception handling
- Performance

**Guiding how**
Gaudi ambition

- certainty
- predictability

"informatica" curriculum in the Netherlands

SEI (CMU)

INCOSE IEEE1471

Gaudi ambition

- optimization
- agility

- technology only
- including process
- including stakeholders full life cycle
- including business and human factors

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MSbenchmarking
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PCPOperationalOrganization
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MSArchitectingScope
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ISADstakeholdersArchitect
Profile of System Architect

Current Architects

Required Architects

customer objectives application functional conceptual realisation

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CAFCRprofileSA
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## Course status in Philips

<table>
<thead>
<tr>
<th>Course</th>
<th>Abbreviation</th>
<th>number of courses upto May 2002</th>
<th>appr. total participants</th>
<th>Lecturers</th>
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<tbody>
<tr>
<td>System Architecture</td>
<td>SARCH</td>
<td>15</td>
<td>230</td>
<td>Gerrit Muller 2002 H2: others</td>
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<td>Embedded Systems Architecting; Stakeholders</td>
<td>ESA</td>
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<td>80</td>
<td>Pierre America Frank Pijpers</td>
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<td>System Architecting for Managers</td>
<td>MSARCH</td>
<td>1</td>
<td>12</td>
<td>Gerrit Muller</td>
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</table>
Goals of 2-day Management SARCH course

managerial awareness of:

+ what is architecting
+ business impact of architecting
+ role and profile of an architect

to

+ enable integral approach
+ stimulate architects to substantially contribute:
  * at business level
  * to strategic goals
  * from technological strength
## Program of 2-day Management SARCH

<table>
<thead>
<tr>
<th>session</th>
<th>subject</th>
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<tr>
<td>day 1 morning</td>
<td>positioning the System Architecture Process</td>
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<tr>
<td></td>
<td>Product Creation Process</td>
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<td>product families, generic developments</td>
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<td>day 1 afternoon</td>
<td>role and task of the system architect</td>
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<td>profile of the system architect</td>
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<td>documentation, reviewing and other supportive processes</td>
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<td>day 2 morning</td>
<td>requirements capturing, roadmapping</td>
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<tr>
<td>day 2 afternoon</td>
<td>HRM aspects; selection, appraisal, career path, etcetera</td>
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<tr>
<td></td>
<td>wrap up, expectations, how to continue, evaluation</td>
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