The Role and Task of the System Architect

by Gerrit Muller       Buskerud University Collge
                        e-mail: gaudisite@gmail.com
                        www.gaudisite.nl

Abstract
The role of the system architect is described from three viewpoints: deliverables, responsibilities and activities. This description shows the inherent tension in this role: a small set of hard deliverables, covering a fuzzy set of responsibilities, hiding an enormous amount of barely visible day-to-day work.
Deliverables of the System Architect

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RSAdeliverables
<table>
<thead>
<tr>
<th>Deliverable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer and Life-Cycle Needs</td>
<td>(what is needed)</td>
</tr>
<tr>
<td>System Specification</td>
<td>(what will be realized)</td>
</tr>
<tr>
<td>Design Specification</td>
<td>(how the system will be realized)</td>
</tr>
<tr>
<td>Verification Specification</td>
<td>(how the system will be verified)</td>
</tr>
<tr>
<td>Verification Report</td>
<td>(the result of the verification)</td>
</tr>
<tr>
<td>Feasibility Report</td>
<td>(the results of a feasibility study)</td>
</tr>
<tr>
<td>Roadmap</td>
<td></td>
</tr>
</tbody>
</table>
Responsibilities of the System Architect

- Balance
- Consistency
- KISS
- Elegance
- Simple
- Integrity
- Fitting
- satisfied stakeholders
- system
- context
- Overview
- Decomposition
- Integration
- Quality
- Function
- modules
- Requirement
- Spec
- Design
- Realization
- module
- subsystem
- system

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RSA responsibilities

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Examples of Secondary Responsibilities

<table>
<thead>
<tr>
<th>responsibility</th>
<th>primary owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>business plan, profit</td>
<td>business manager</td>
</tr>
<tr>
<td>schedule, resources</td>
<td>project leader</td>
</tr>
<tr>
<td>market, salability</td>
<td>marketing manager</td>
</tr>
<tr>
<td>technology</td>
<td>technology manager</td>
</tr>
<tr>
<td>process, people</td>
<td>line manager</td>
</tr>
<tr>
<td>detailed designs</td>
<td>engineers</td>
</tr>
</tbody>
</table>
What does the System Architect do?

- think, analyze
- listen, talk, walk around
- design, brainstorm, explain
- assist project leader with work breakdown, schedule, risks
- present, meet, teach, discuss
- test, integrate
- write, consolidate, browse
- read, review
- travel to customer, supplier, conference
- provide vision and leadership
### From Detail to Overview

<table>
<thead>
<tr>
<th>Details</th>
<th>Quantity per year (order-of-magnitude)</th>
<th>architect time per item</th>
</tr>
</thead>
<tbody>
<tr>
<td>driving views</td>
<td>10</td>
<td>100 h</td>
</tr>
<tr>
<td>shared issues</td>
<td>$10^2$</td>
<td>1 h</td>
</tr>
<tr>
<td>touched details</td>
<td>$10^4$</td>
<td>0.5 – 10 min</td>
</tr>
<tr>
<td>seen details</td>
<td>$10^5$ – $10^6$</td>
<td>0.1 – 1 sec</td>
</tr>
<tr>
<td>product details</td>
<td>$10^7$ – $10^{10}$</td>
<td></td>
</tr>
<tr>
<td>real-world facts</td>
<td>infinite</td>
<td></td>
</tr>
</tbody>
</table>

Consolidation in deliverables, meetings, informal contacts, sampling scanning.

**The Role and Task of the System Architect**

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RSAdetailHierarchy
Abstractions only exist for concrete facts.
Visible Output versus Invisible Work

From Manager perspective

Decreasing Visibility

Deliverables

Responsibilities

Activities

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RSApyramid