The Role and Task of the System Architect

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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

- Report
- Report
- Report
- Spec
- Spec
- Spec
- Design
- Design
- Design
Customer and Life-Cycle Needs (*what is needed*)

System Specification (*what will be realized*)

Design Specification (*how the system will be realized*)

Verification Specification (*how the system will be verified*)

Verification Report (*the result of the verification*)

Feasibility Report (*the results of a feasibility study*)

Roadmap
Responsibilities of the System Architect

Balance Consistency Decomposition Integration Overview

KISS Elegance Simple Integrity Fitting

satisfied stakeholders context

system

module subsystem system

Requirement Spec Design Realization

Quality Function

modules

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RSAResponsibilities

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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, saleability</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

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RSAactivities
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From Detail to Overview

<table>
<thead>
<tr>
<th>consolidation in deliverables</th>
<th>Quantity per year (order-of-magnitude)</th>
<th>architect time per item</th>
</tr>
</thead>
<tbody>
<tr>
<td>meetings</td>
<td>10</td>
<td>100 h</td>
</tr>
<tr>
<td>informal contacts</td>
<td>$10^2$</td>
<td>1 h</td>
</tr>
<tr>
<td>sampling scanning</td>
<td>$10^4$</td>
<td>0.5 – 10 min</td>
</tr>
<tr>
<td>touched details</td>
<td>$10^5 - 10^6$</td>
<td>0.1 – 1 sec</td>
</tr>
<tr>
<td>seen details</td>
<td>$10^7 - 10^{10}$</td>
<td></td>
</tr>
<tr>
<td>product details</td>
<td>infinite</td>
<td></td>
</tr>
<tr>
<td>real-world facts</td>
<td>infinite</td>
<td></td>
</tr>
</tbody>
</table>
Abstractions only exist for concrete facts.
Visible Output versus Invisible Work

From Manager perspective

Decreasing Visibility

Deliverables

Responsibilities

Activities

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