Gaudi Project; from Incremental Growth towards Publication

by Gerrit Muller    University of South-Eastern Norway-NISE

    e-mail: gaudisite@gmail.com
    www.gaudisite.nl

Abstract

The Gaudí project has been ongoing for 10 years. The philosophy of the project is described, and the status after 10 years of incremental development. Next challenge is to consolidate some of the work in the form of published book.

Distribution

This article or presentation is written as part of the Gaudi project. The Gaudi project philosophy is to improve by obtaining frequent feedback. Frequent feedback is pursued by an open creation process. This document is published as intermediate or nearly mature version to get feedback. Further distribution is allowed as long as the document remains complete and unchanged.

September 9, 2018
status: preliminary draft
version: 0
Background Gerrit

CT OSS NM X-ray

MR

EasyVision

management system engineering

Gaudí

Philips Medical

ASML

Philips NatLab ESI

1980 1990 2000

industrial experience

time pressure pragmatics sales

cost constraints products

lots of people

research reflection evidence

exposure education

Buskerud
2. Goals

3. Process and Concepts

4. Results

5. Future

6. Published Book
Companies need more Systems People!

<table>
<thead>
<tr>
<th>Trends</th>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required time to market</td>
<td>Overview</td>
</tr>
<tr>
<td>Development cost</td>
<td>Feature interaction</td>
</tr>
<tr>
<td>Features</td>
<td>Complexity</td>
</tr>
<tr>
<td>Performance expectations</td>
<td>Amount of software</td>
</tr>
<tr>
<td>Number of products</td>
<td>Integration effort</td>
</tr>
<tr>
<td></td>
<td>Reliability</td>
</tr>
<tr>
<td></td>
<td>Uncertainty</td>
</tr>
<tr>
<td></td>
<td>Dynamics</td>
</tr>
</tbody>
</table>

- Release cycle time
  - Years → months

- Hype and fashion
- Globalization use
- Globalization in development and logistics
Goals of the Gaudí Project

- Consolidate existing Systems Architecting Methods
  
  evaluate, reflect, generalize

- Make the Systems Architecting art more accessible
  
  case descriptions

- Enable the education of (future) System Architects
  
  curriculum, course material

- Research new or improved Systems Architecting Methods
  
  industry as laboratory
1. Who is Gerrit

Gaudi Project

2. Goals

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Show Early to Get Feedback

leading principle:

show documents under construction but clearly show their status
Modular approach
Example Book “Systems Architecting”

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GTPpageSystemsArchitecting
Process Decomposition of a Business

Abstract
This article describes the process of achieving system architecture of a business. It is intended to help understanding the processes in which an architect (or team of system architects) is involved.

It focuses on an organization that creates and builds systems consisting of hardware and software. Although other product areas such as solution providers, services, and systems also need system architects, the process structure will deviate from the structure presented here.

The abstract for the process decomposition is as follows:

- Download article
- Link + Size
- Paper + Slides + Sources
- Status: Draft
- Download statistics:
  - Slides
  - Paper

Change History
- 0.1 March 7, 2000: Gerrit Muller
  - Some visualization improvements

- 0.2 September 21, 2001: Gerrit Muller
  - Minor changes only

- 0.3 April 9, 2002: Gerrit Muller
  - Abstract added

Figure
Process Decomposition
Growth of the System Architect

root technical knowledge generalist technical knowledge business, application insight process insight psychosocial skills
1. Who is Gerrit

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Positioning Courses

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PEVOCposition
Positioning Books

root technical designer

technical generalist

business, application insight

process insight

psycho-social interests

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Productivity: number of new entries

- SARCH
- CAFCR
- Modeling
- Evolvability

Performance:
- 1999: 16
- 2000: 22
- 2001: 25
- 2002: 36
- 2003: 30
- 2004: 8
- 2005: 32
- 2006: 28
- 2007: 6
- 2008: 15

Average productivity:

1999: 16
2000: 22
2001: 11
2002: 25
2003: 36
2004: 30
2005: 8
2006: 32
2007: 28
2008: 6
2009: 15

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Gerrit Muller
## Different Perspectives

<table>
<thead>
<tr>
<th><strong>industrial perspective</strong></th>
<th><strong>academic perspective</strong></th>
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<tbody>
<tr>
<td>valuable</td>
<td>new</td>
</tr>
<tr>
<td>useful</td>
<td>original</td>
</tr>
<tr>
<td><strong>industrial relevance of subject</strong></td>
<td><strong>scientific relevance of subject</strong></td>
</tr>
<tr>
<td>goal, solution oriented</td>
<td>knowledge oriented</td>
</tr>
<tr>
<td>how to practical</td>
<td>deep</td>
</tr>
<tr>
<td>broad</td>
<td>why, what</td>
</tr>
<tr>
<td>integral</td>
<td></td>
</tr>
<tr>
<td><strong>other contributors are reviewers</strong></td>
<td><strong>including reviewers</strong></td>
</tr>
<tr>
<td>single author</td>
<td>all contributors are authors</td>
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<tr>
<td>clear responsibility</td>
<td></td>
</tr>
<tr>
<td><strong>pointers to related relevant information</strong></td>
<td><strong>pointers to related scientific work</strong></td>
</tr>
<tr>
<td>clear description</td>
<td>clear argumentation</td>
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<tr>
<td>juicy description</td>
<td>every statement is supported by</td>
</tr>
<tr>
<td>understandable</td>
<td>reference, verifiable facts</td>
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<tr>
<td>lots of signal, very low noise level</td>
<td>correct language</td>
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<tr>
<td></td>
<td>clear positioning, well linked in</td>
</tr>
<tr>
<td></td>
<td>with existing scientific work</td>
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<tr>
<td></td>
<td><strong>strong cultural filter in scientific magazines and conferences</strong></td>
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GTPacademicVsIndustrial
<table>
<thead>
<tr>
<th>Productivity</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>low overhead (e.g. reviews)</td>
<td>practitioners appreciate info</td>
</tr>
<tr>
<td>few constraints (e.g. academic musts)</td>
<td>academics appreciate info</td>
</tr>
<tr>
<td>immediate feedback (especially through courses)</td>
<td></td>
</tr>
<tr>
<td>80/20 principle (80% of value in 20% of effort)</td>
<td></td>
</tr>
<tr>
<td>no territorial problems (co-authors)</td>
<td></td>
</tr>
<tr>
<td>free choice of tooling (Visio, Latex, Python)</td>
<td></td>
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<tr>
<td>modular, incremental and evolutionary approach</td>
<td></td>
</tr>
</tbody>
</table>
1. Who is Gerrit

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2. Goals

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## Ideas for Near Future

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
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<tr>
<td><strong>Education</strong></td>
<td>SE master program</td>
<td>Reflective Practice yr 3</td>
<td>SE PhD program</td>
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<td>Reflective Practice yr 2</td>
<td>System Design</td>
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<td>Master Project</td>
<td>Systens Engineering</td>
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<td>Modeling and Analysis</td>
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<td>Bachelor level</td>
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<td>staffing</td>
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<td>Methodology</td>
<td>research model</td>
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<td>Research Agenda</td>
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<td>broadening</td>
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<tr>
<td><strong>SE Networks</strong></td>
<td>local: SESG, BUC alumni, strategy&amp;roadmapping, KSEE ESI Sr architecten</td>
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<tr>
<td></td>
<td>global: architectingforum.org, SoSE network INCOSE academic forum, symposium, CSER, SEANET</td>
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<tr>
<td><strong>Tools, website</strong></td>
<td></td>
<td>navigation and search</td>
<td>ideas are welcome!</td>
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<tr>
<td><strong>Book publication</strong></td>
<td></td>
<td>Systems Architecting in Context</td>
<td>Multi-view Architecting and Modeling</td>
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</tbody>
</table>

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GPoutlook20102012*
1. Who is Gerrit

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Stakeholders

**Publisher**
- acquisition
- sales
- support

**Readers**
- industrial system engineers (junior..senior..fellow)
- managers (e.g. project leader, line manager)
- students (bachelor, master, PhD)
- academics (e.g. professor, teacher, researcher)

**Author**
Value Proposition

**Publisher**
- paper book
- high quality
- (content, index, language, ...)

**Author**
- web site
- work in progress
- early feedback

need mutual understanding to ensure that web site and book are re-enforcing and not competing
1. How does systems architecting fit in the organization and its processes?

2. What are deliverables, responsibilities, and activities of the system architect?

3. How to elicit requirements?

4. What methods, tools, and techniques are available for the architect?

5. How to anticipate on future needs, trends, and changes?

6. How to harvest synergy?

7. How to present to less technical management teams?

8. What human factors impact systems architecting?

9. How to apply this material in the own organization, short term and long term.
Work to Do

to do

find publisher, agree on approach
integrate all chapters
remove duplications
make consistent
determine order
unify terminology
add foreword, glossary, index, ...
improve language quality
ensure greylevel quality images

current status

1 chapter
8 chapters
7 chapters
4 chapters
0 chapters
Conclusions

Open development yields high productivity.

Feedback mainly through teaching and presentations.

Practitioners appreciate material.

Academics appreciate material, but don't know how to cope with unconventional model.

The final 20% to finish is a lot of work.

Paper books will be around for a few more decades.

Your feedback is highly appreciated and always welcome!