

# Role and Task of the System Architect

by *Gerrit Muller* University of South-Eastern Norway-NISE

e-mail: `gaudisite@gmail.com`

`www.gaudisite.nl`

## Abstract

The role and the task of the system architect are described in this module.

### Distribution

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draft

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# The Role and Task of the System Architect

by *Gerrit Muller* Buskerud University Collge

e-mail: [gaudisite@gmail.com](mailto:gaudisite@gmail.com)

[www.gaudisite.nl](http://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.

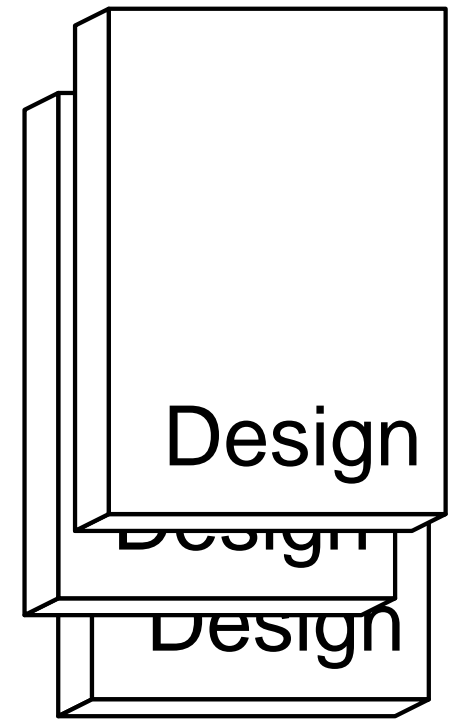
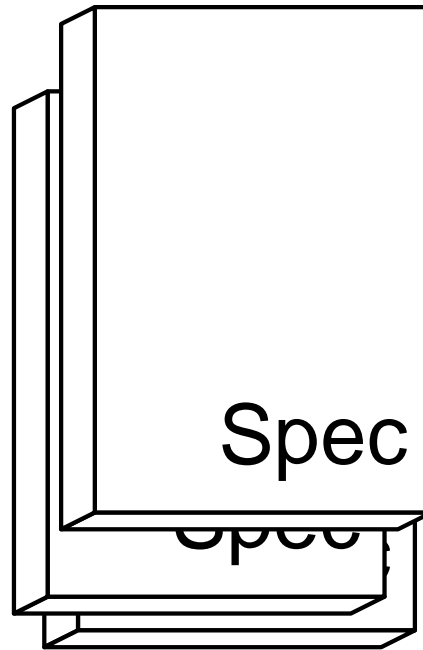
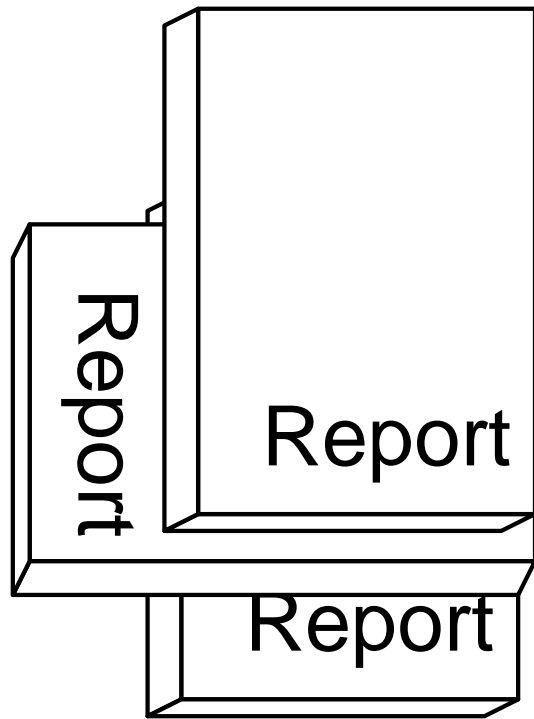
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# Deliverables of the System Architect



# List of Deliverables

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

System Specification (*what will be realized*)

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

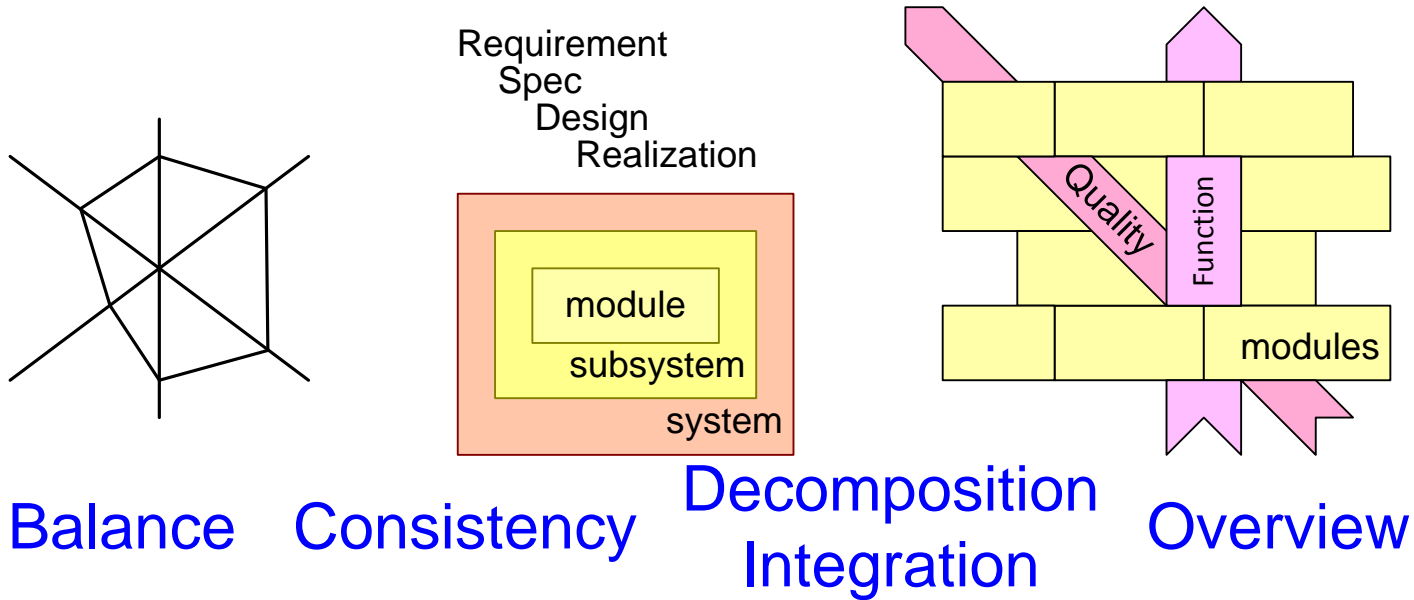
Verification Specification (*how the system will be verified*)

Verification Report (*the result of the verification*)

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

Roadmap

# Responsibilities of the System Architect

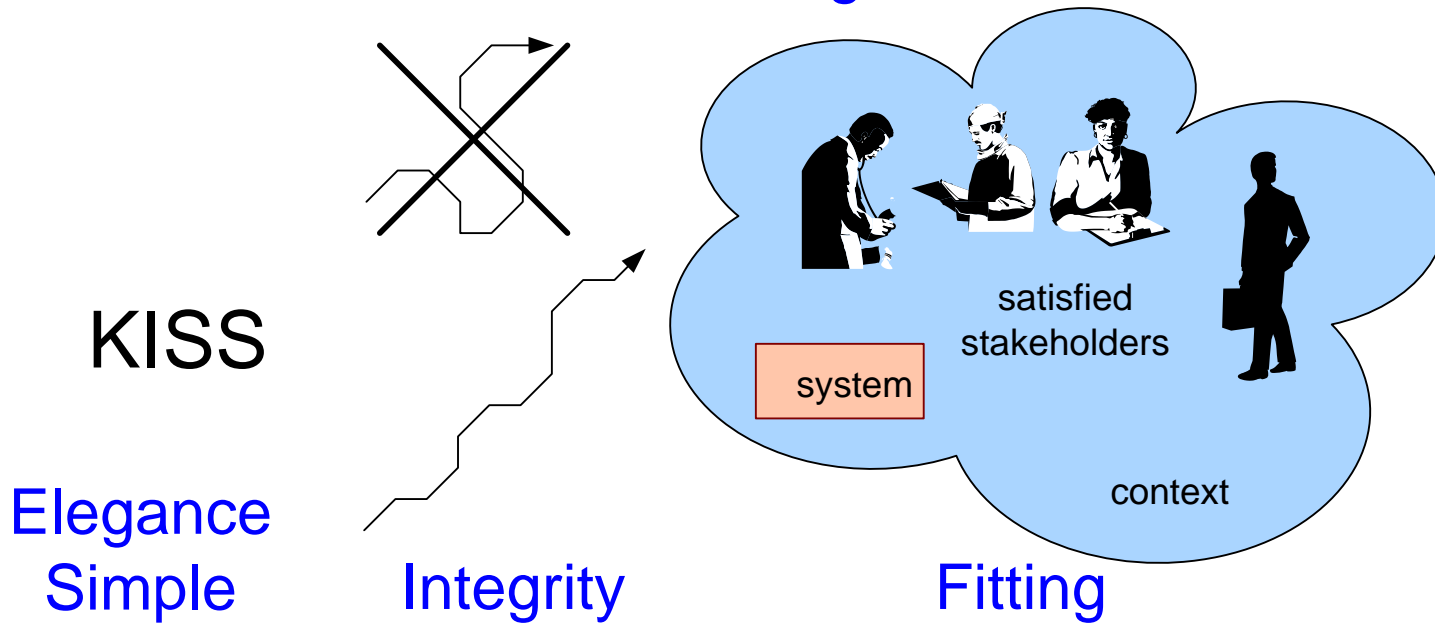


Balance

Consistency

Decomposition  
Integration

Overview



KISS

Elegance  
Simple

Integrity

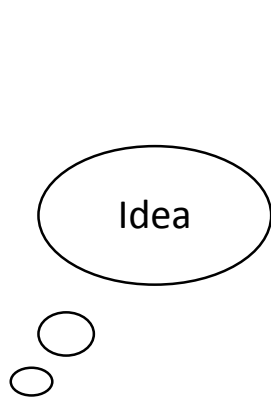
Fitting

# Examples of Secondary Responsibilities

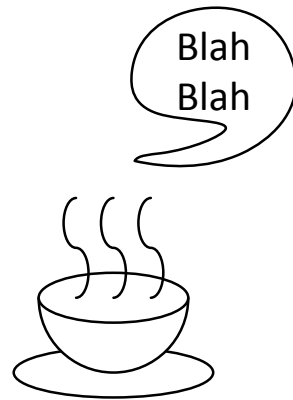
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responsibility	primary owner
business plan, profit	business manager
schedule, resources	project leader
market, saleability	marketing manager
technology	technology manager
process, people	line manager
detailed designs	engineers

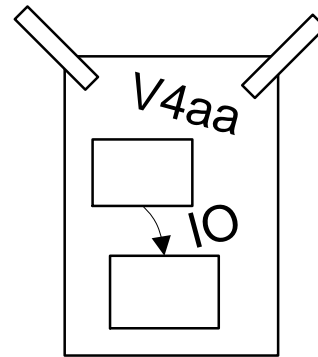
# What does the System Architect do?



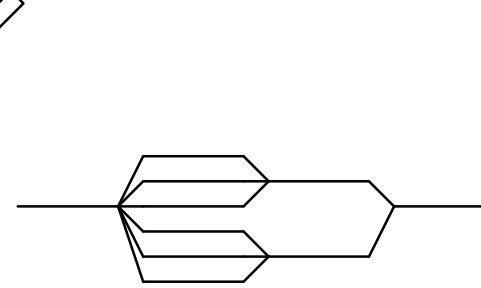
think,  
analyze



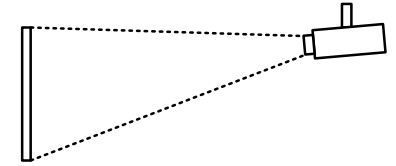
listen, talk,  
walk around



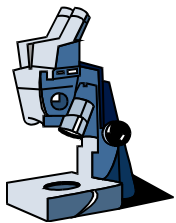
design,  
brainstorm,  
explain



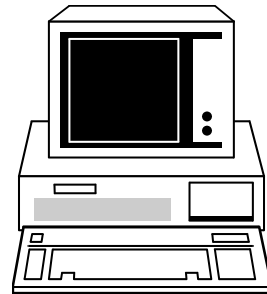
assist project leader  
with work breakdown,  
schedule, risks



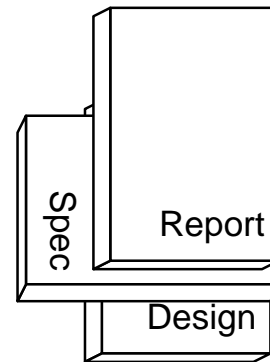
present,  
meet, teach,  
discuss



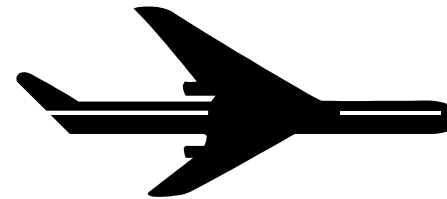
test,  
integrate



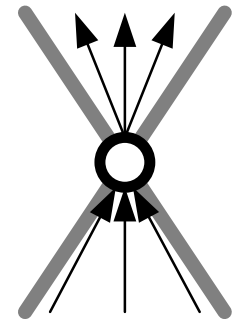
write,  
consolidate,  
browse



read,  
review



travel to  
customer,  
supplier,  
conference



provide  
vision and  
leadership

# From Detail to Overview

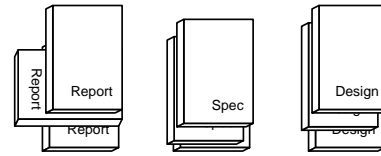
		Quantity per year (order-of- magnitude)	architect time per item
consolidation in deliverables meetings informal contacts sampling scanning	→ driving views	10	100 h
	→ shared issues	$10^2$	1 h
	→ touched details	$10^4$	0.5 – 10 min
	→ seen details	$10^5 - 10^6$	0.1 – 1 sec
	→ product details	$10^7 - 10^{10}$	
	real-world facts	infinite	



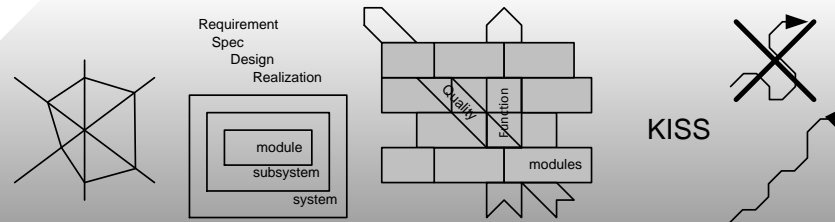
Abstractions only exist for concrete facts.

# Visible Output versus Invisible Work

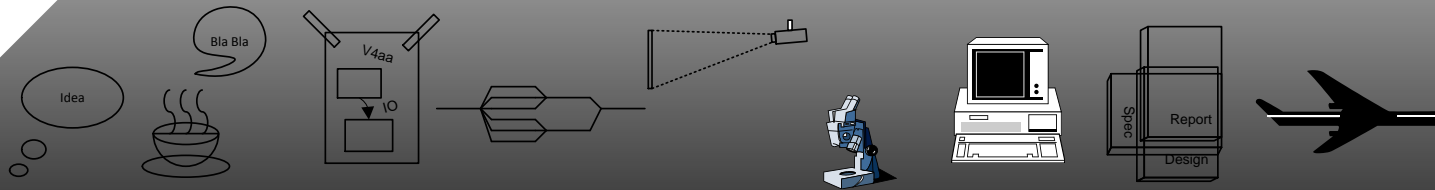
From Manager perspective



Deliverables



Responsibilities



Activities

# The Awakening of a System Architect

by *Gerrit Muller* University of South-Eastern Norway-NISE

e-mail: `gaudisite@gmail.com`

`www.gaudisite.nl`

## Abstract

The typical phases of a system architect development are described, beginning at the fundamental technology knowledge, with a later broadening in technology and in business aspects. Finally the subtlety of individual human beings is taken into account.

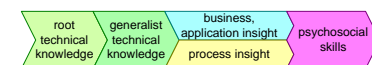
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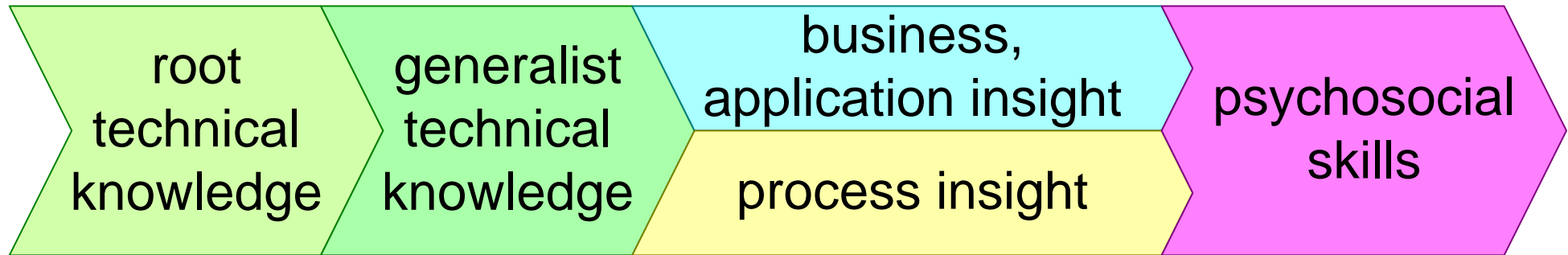
September 9, 2018

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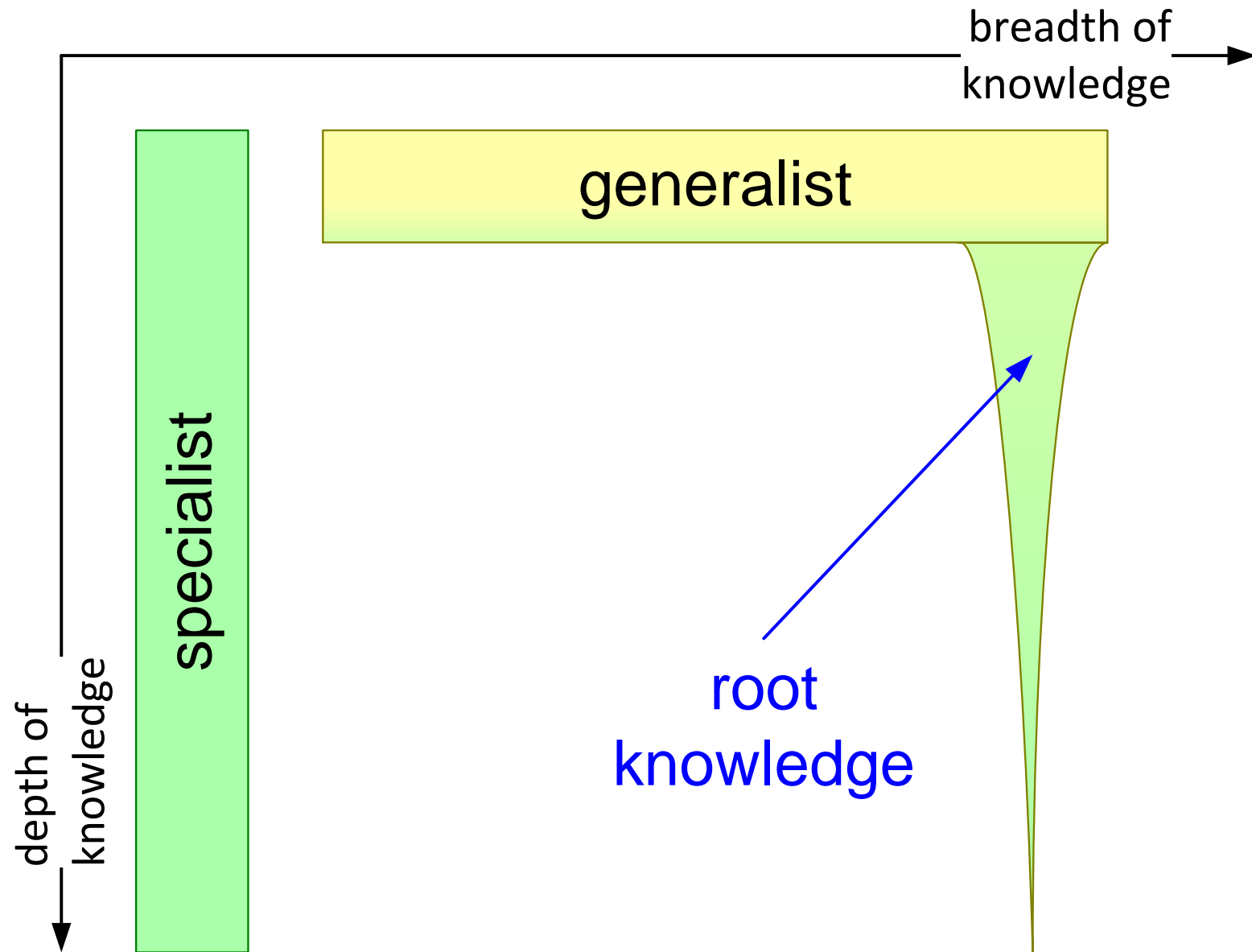
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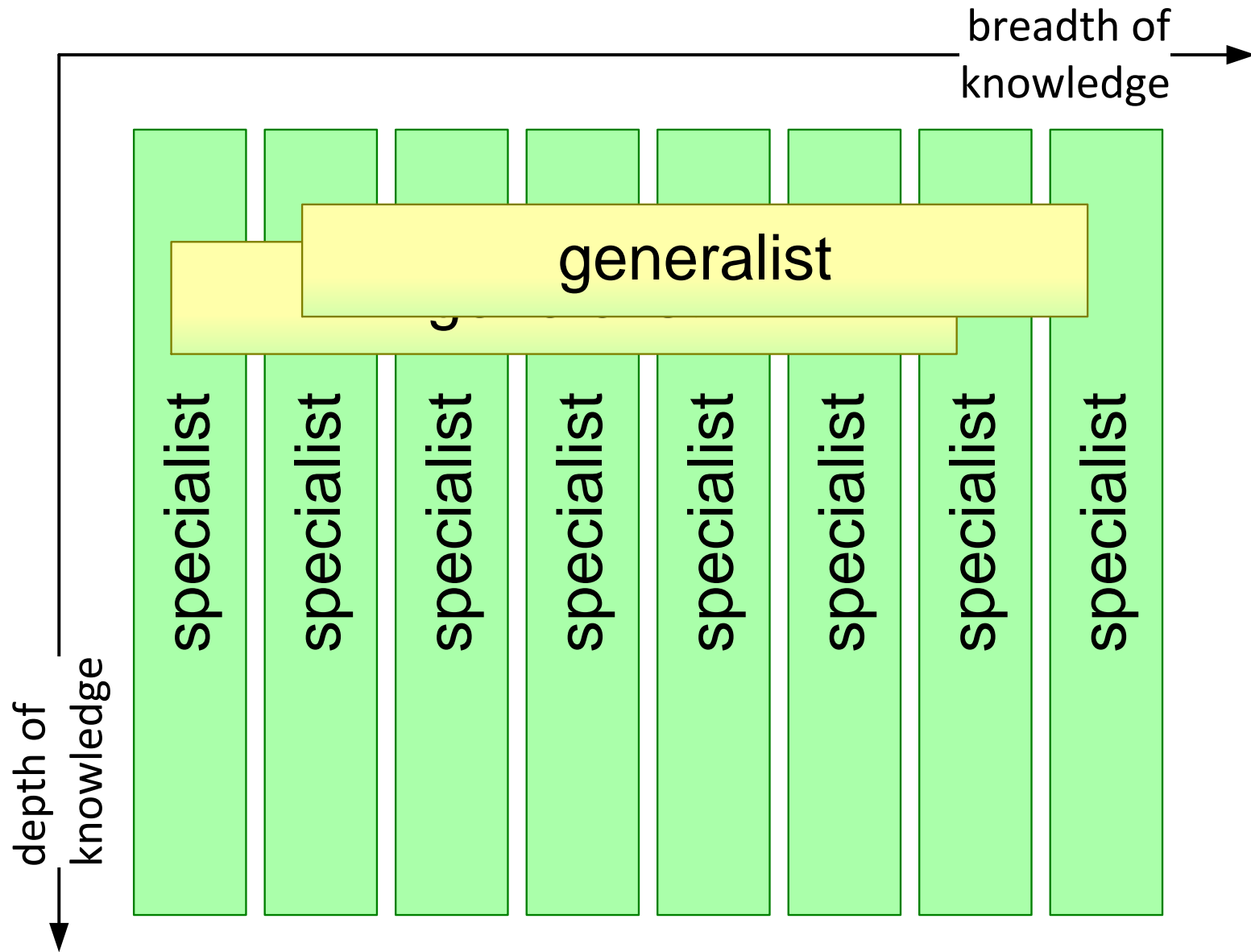
# Typical Growth of a System Architect



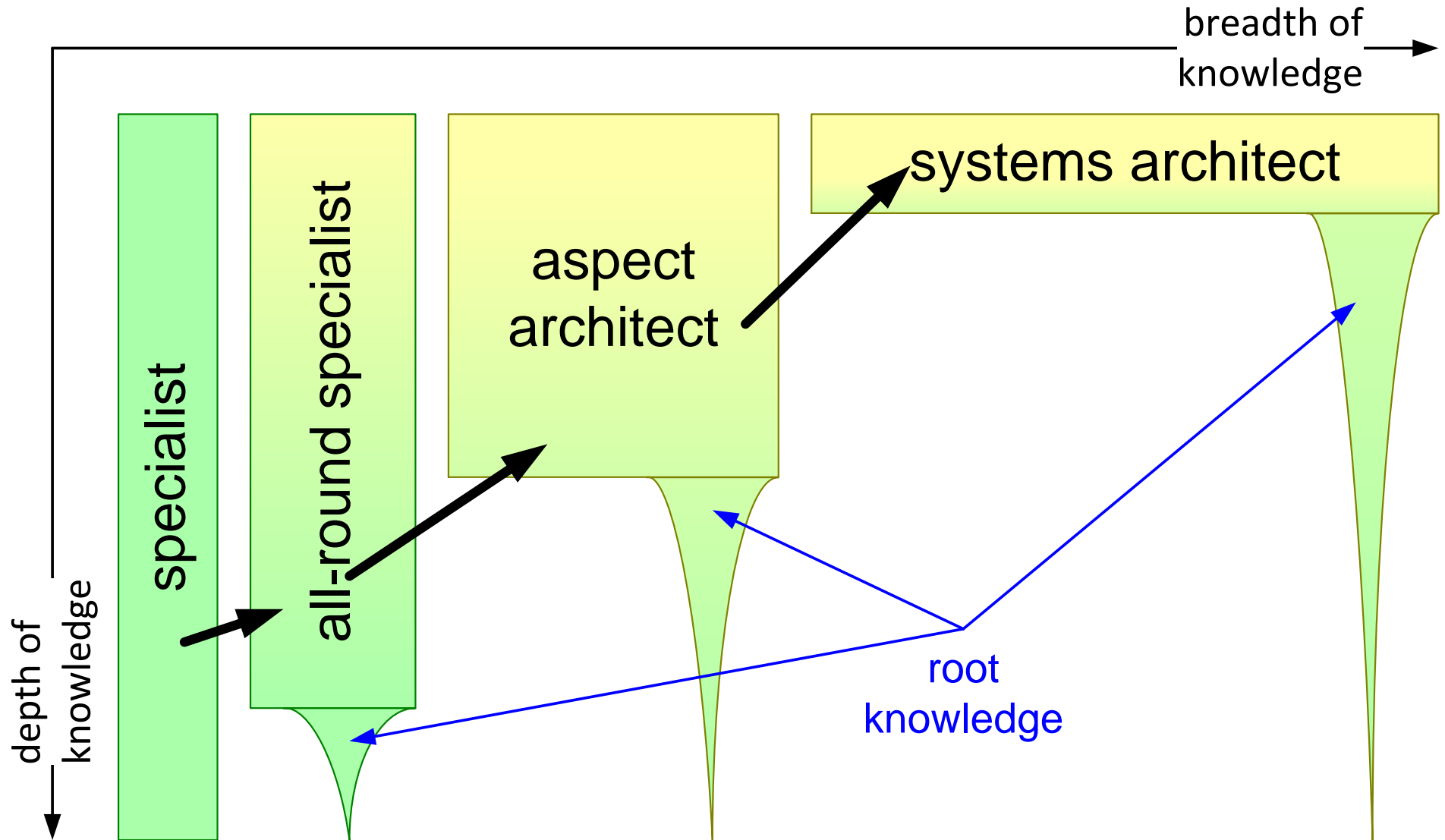
# Generalist versus Specialist



# Generalists and Specialists are Complementary



# Spectrum from Specialist to System Architect



# Architecting Interaction Styles

by *Gerrit Muller* University of South-Eastern Norway-NISE

e-mail: `gaudisite@gmail.com`

`www.gaudisite.nl`

## Abstract

A system architects needs skills to apply different interactions styles, depending on the circumstances. This document discusses the following interaction styles: provocation, facilitation, leading, empathic, interviewing, white board simulation, and judo tactics.

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provocation	when in an impasse: provoke effective when used sparsely
facilitation	especially recommended when new in a field: contribute to the team, while absorbing new knowledge
leading	provide vision and direction, make choices risk: followers stop to give the needed feedback
empathic	take the viewpoint of the stakeholder acknowledge the stakeholder's feelings, needs, concerns
interviewing	investigate by asking questions
whiteboard simulation	invite a few engineers and walk through the system operation step by step
judo tactics	first listen to the stakeholder and then explain cost and alternative opportunities



# Architecting Styles

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# Exercise Role and Task of the System Architect

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Role play with 3 roles and optional observer:

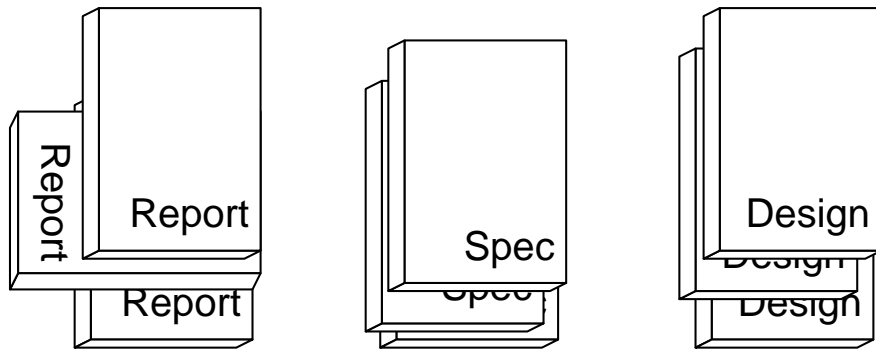
- 1 operational leader (project leader)
- 1 system architect
- 1 marketing manager
- 1 observer (optional)

Discuss the definition (business relevance, specification, and planning) of a travel e-mail mate.

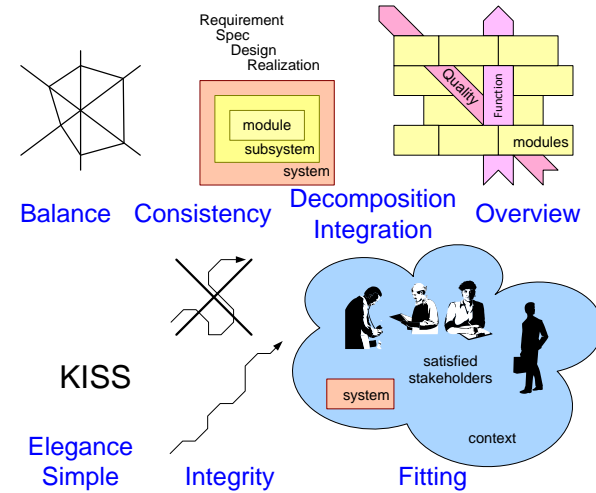
Present (max. 2 flips) the result and the process (the relation and interaction of the three roles).

# Role and Task of a System Architect

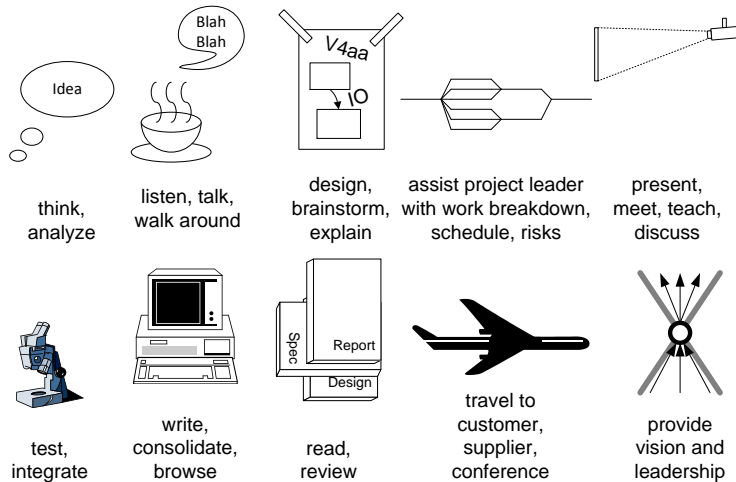
## Deliverables



## Responsibilities



## Daily Activities

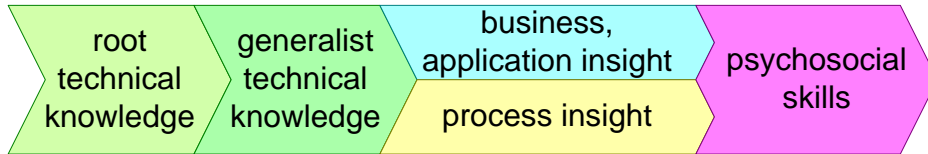


## From detail to overview

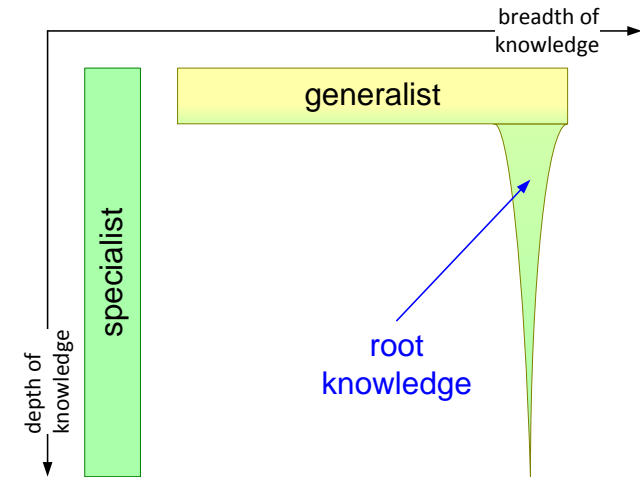
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seen details	$10^5 - 10^6$	0.1 - 1 sec
product details	$10^7 - 10^{10}$	
real-world facts	infinite	

# Personal characteristics of a System Architect

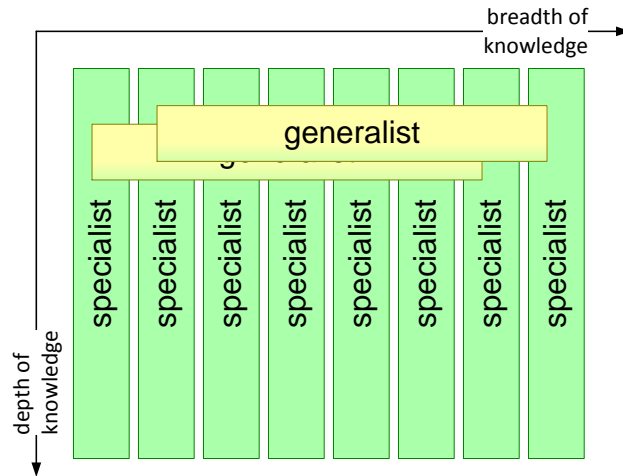
## Typical growth of a Architect



## Generalist vs Specialist



## Complementary Roles



## Role Spectrum

