

Role and Task of the System Architect

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

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Abstract

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

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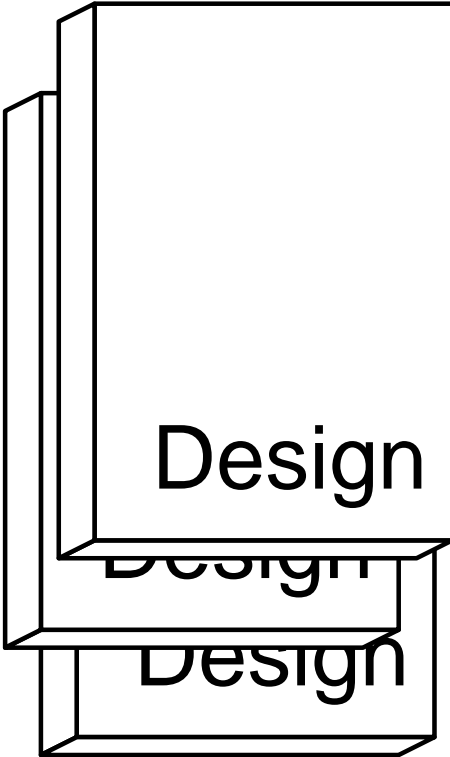
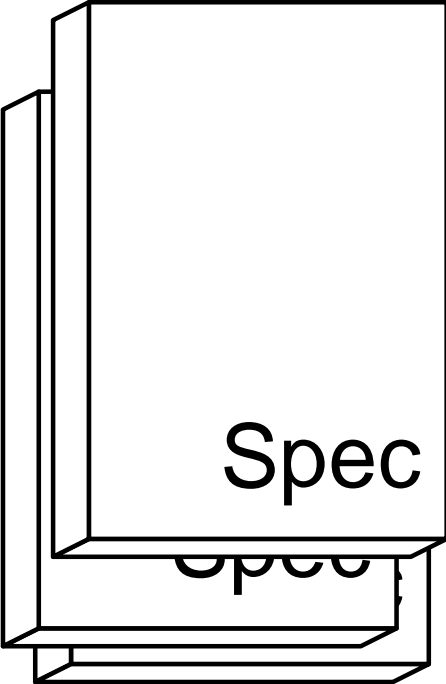
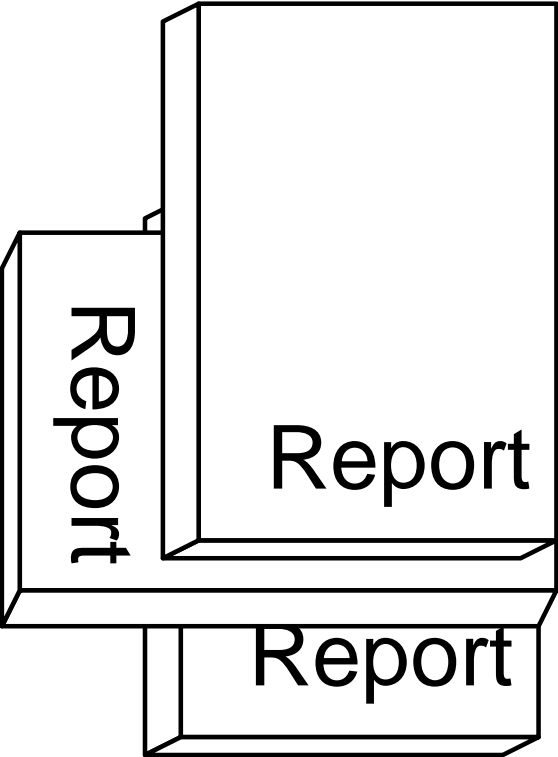
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status: preliminary

draft

version: 1.0

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*)

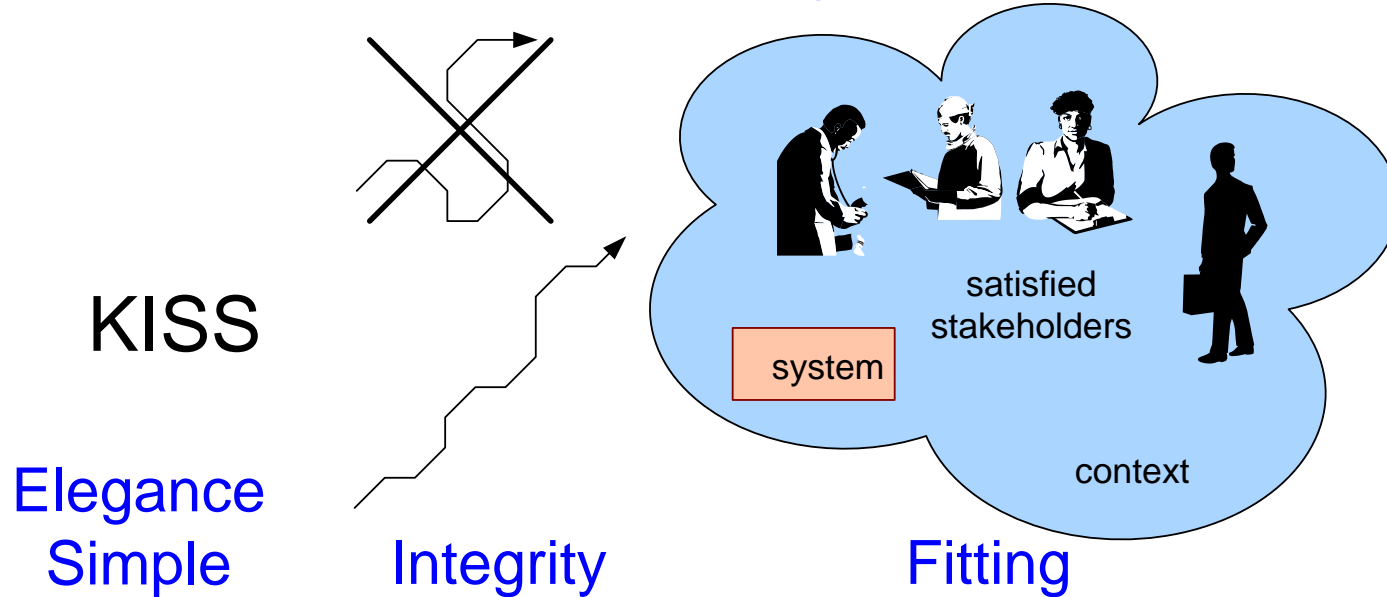
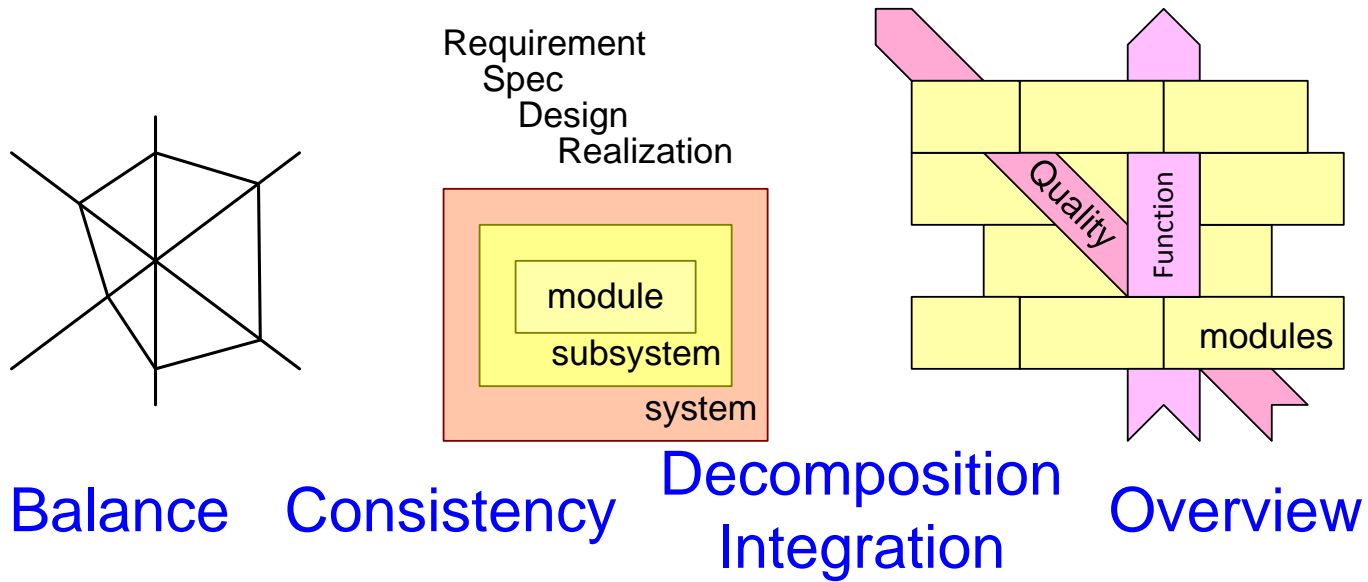
Verification Specification (*how the system will be verified*)

Verification Report (*the result of the verification*)

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

Roadmap

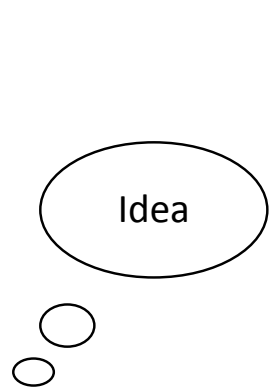
Responsibilities of the System Architect



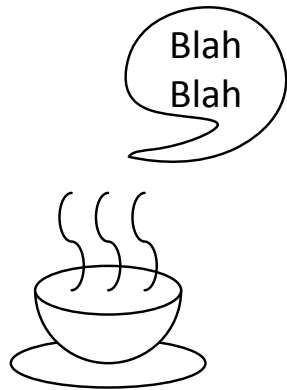
Examples of Secondary Responsibilities

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

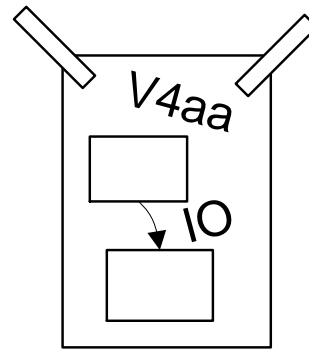
What does the System Architect do?



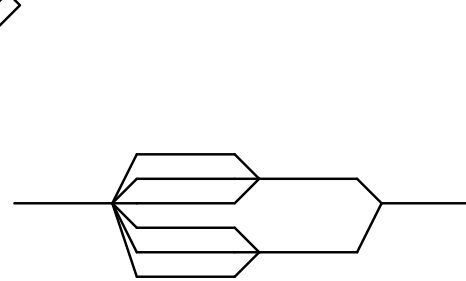
think,
analyze



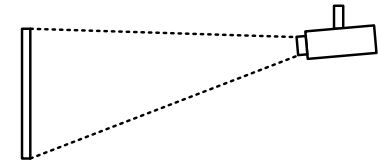
listen, talk,
walk around



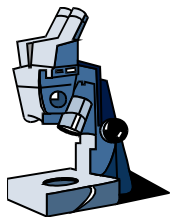
design,
brainstorm,
explain



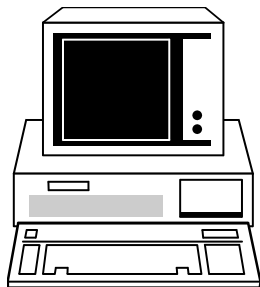
assist project leader
with work breakdown,
schedule, risks



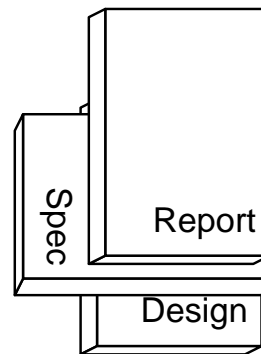
present,
meet, teach,
discuss



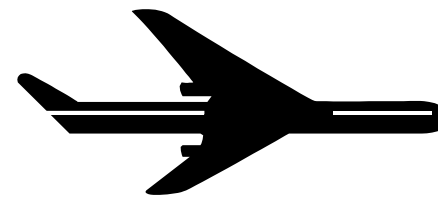
test,
integrate



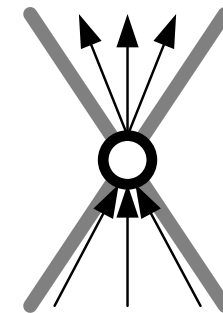
write,
consolidate,
browse



read,
review



travel to
customer,
supplier,
conference



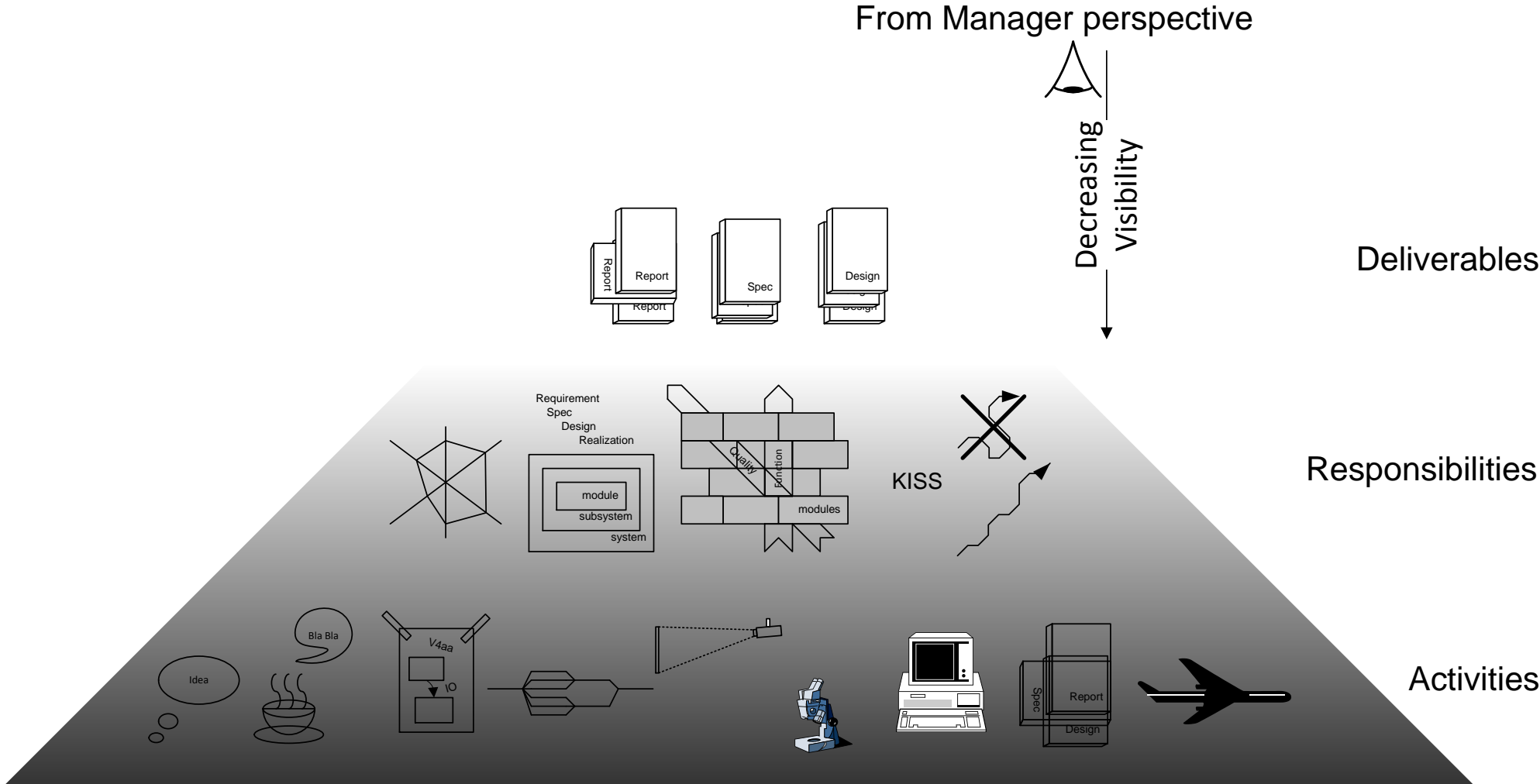
provide
vision and
leadership

From Detail to Overview

	Quantity per year (order-of- magnitude)	architect time per item
consolidation in deliverables	10	100 h
meetings	10 ²	1 h
informal contacts	10 ⁴	0.5 – 10 min
sampling scanning	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



The Awakening of a System Architect

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

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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.

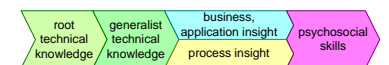
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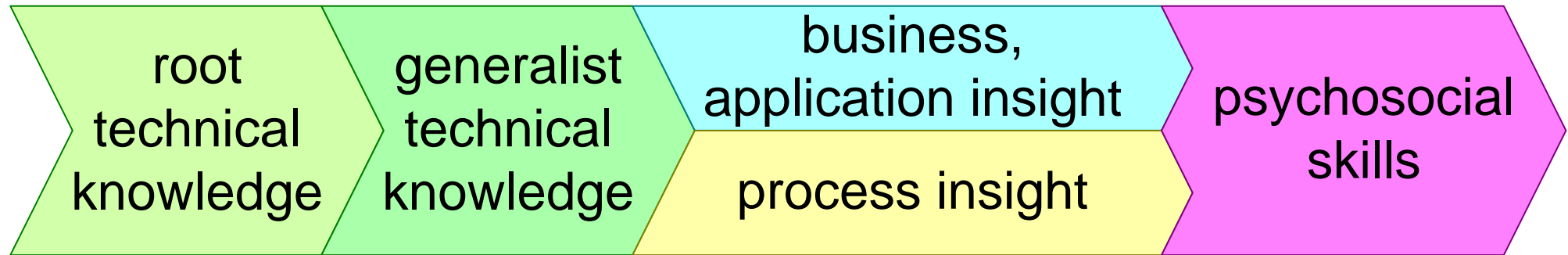
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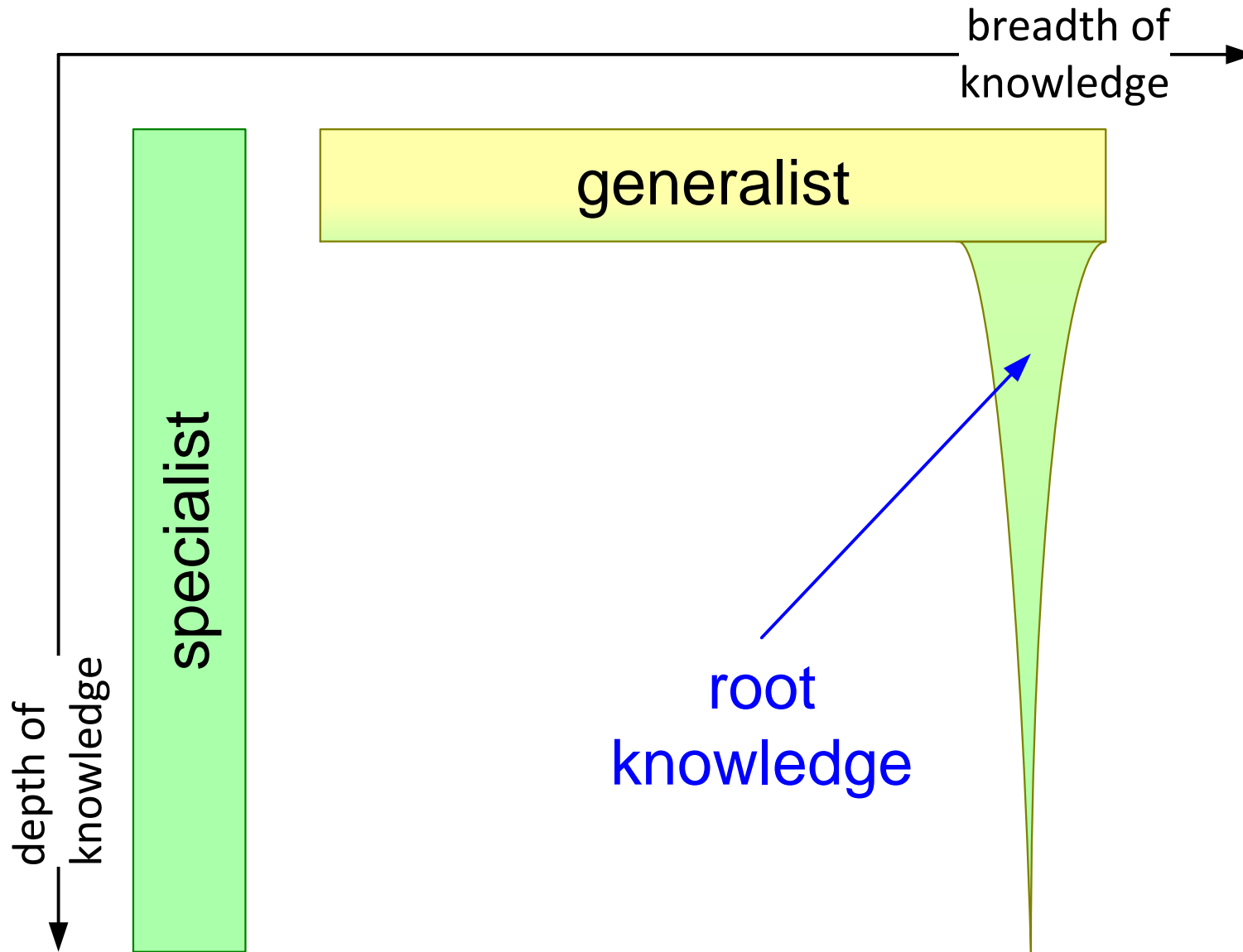
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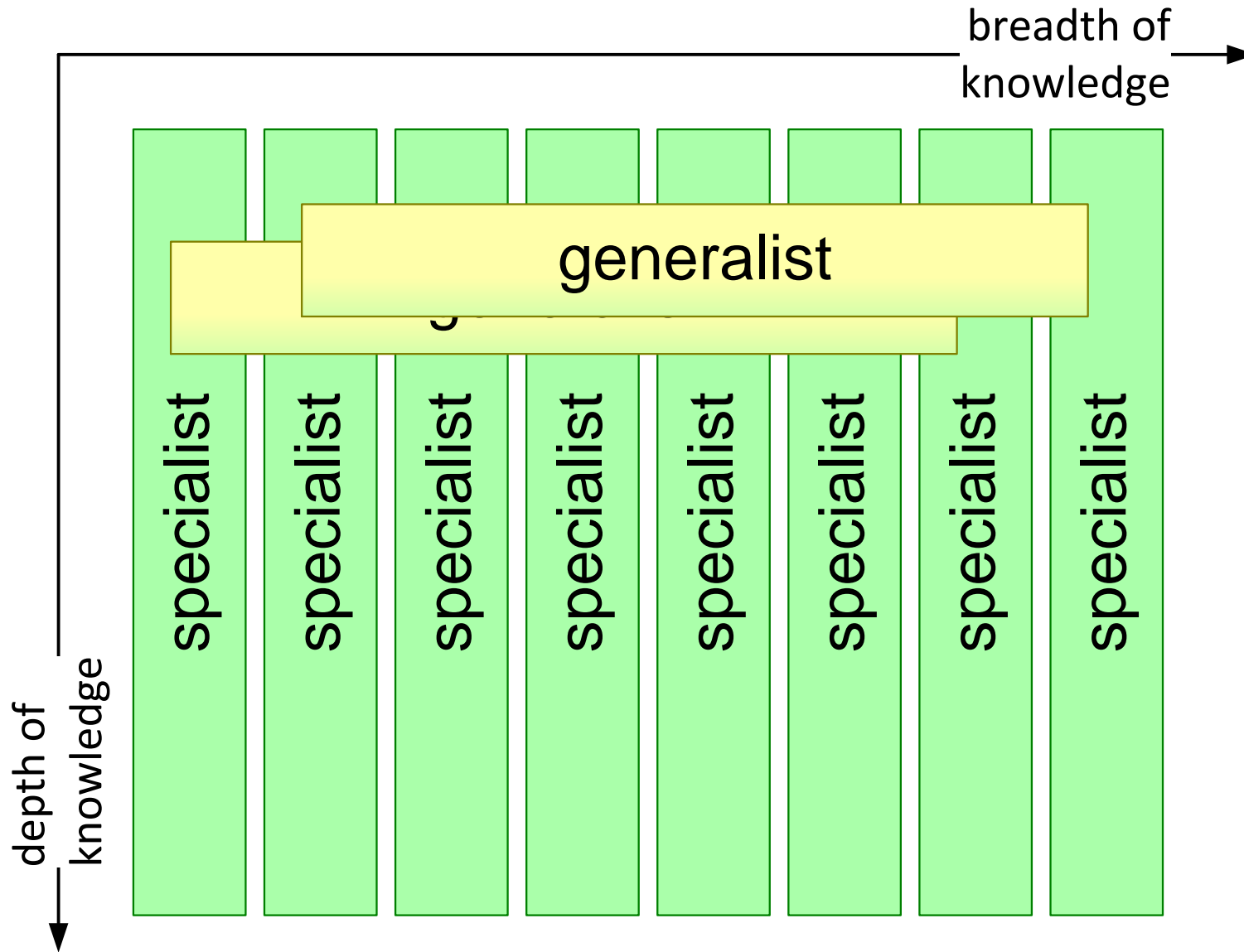
Typical Growth of a System Architect



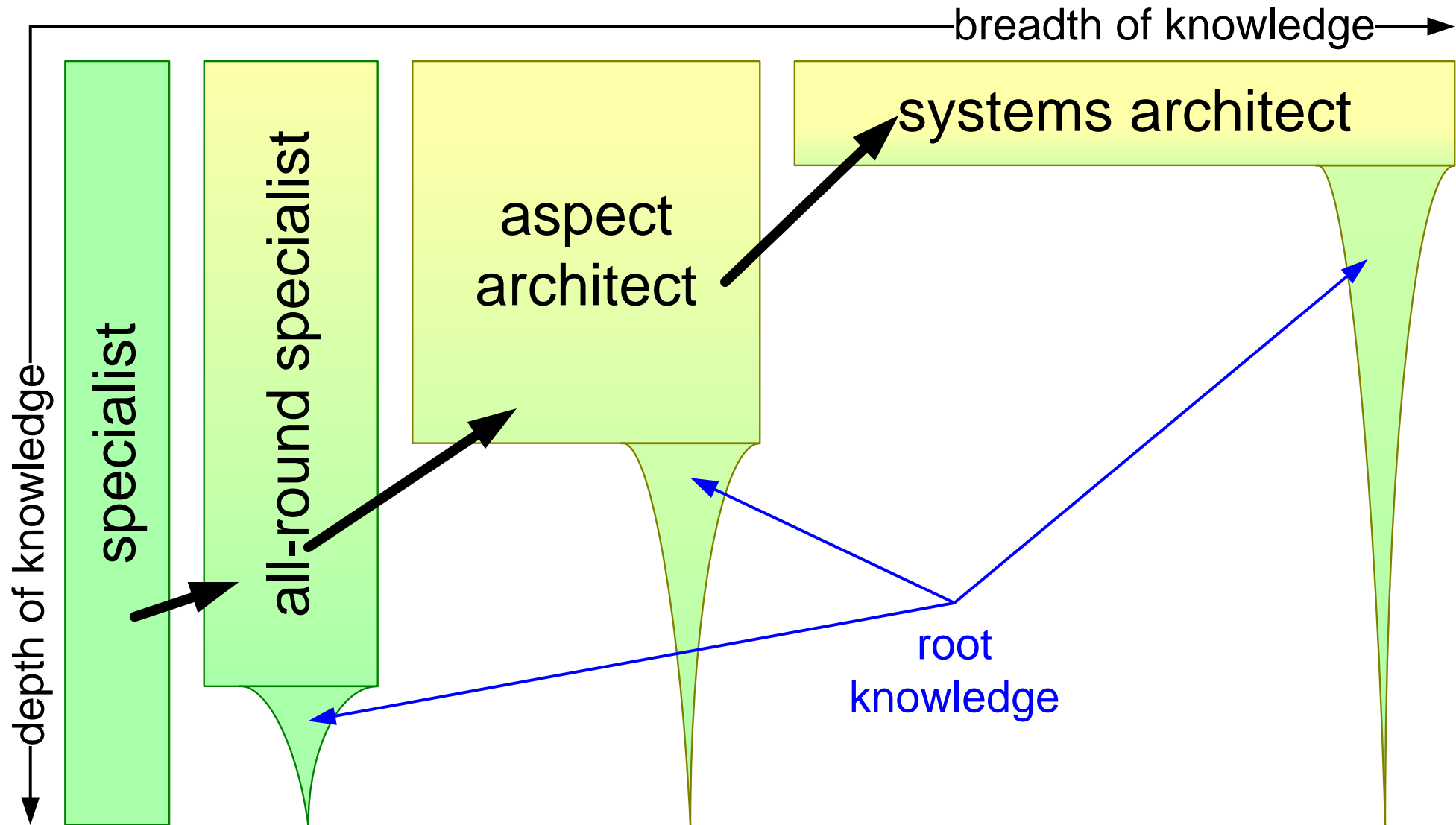
Generalist versus Specialist



Generalists and Specialists are Complementary



Spectrum from Specialist to System Architect



Architecting Interaction Styles

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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

Role play with 3 roles and optional observer:

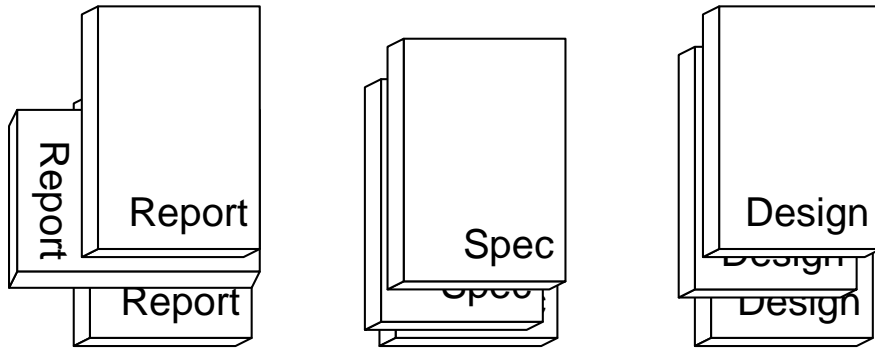
- 1 operational leader (project leader)
- 1 system architect
- 1 marketing manager
- 1 observer (optional)

Discuss the definition (business relevance, specification, and planning) of the case.

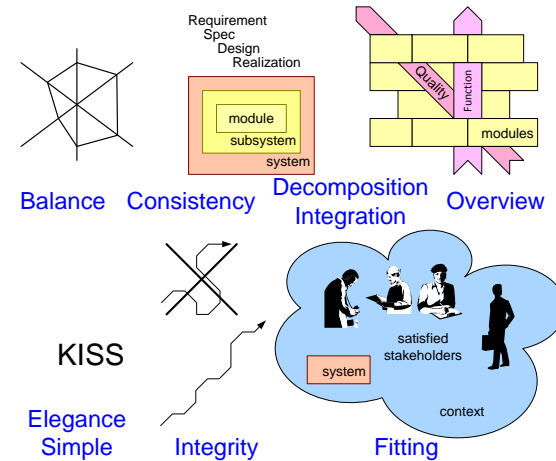
Present (max. 2 flips) the result and the process (the relation and interaction of the three roles).

Role and Task of a System Architect

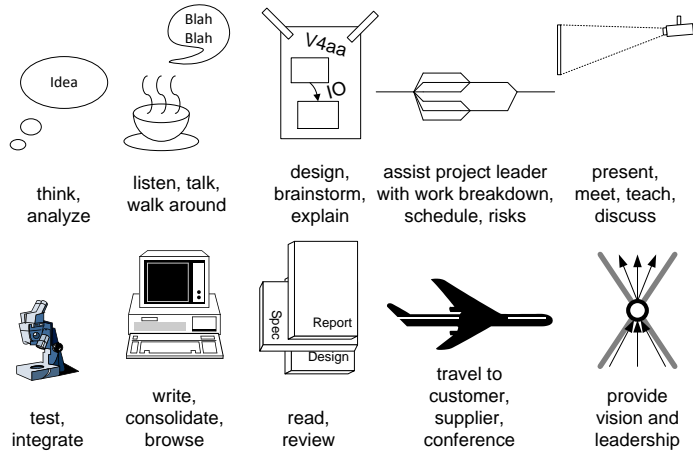
Deliverables



Responsibilities



Daily Activities

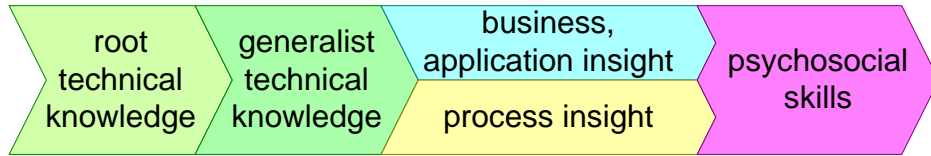


From detail to overview

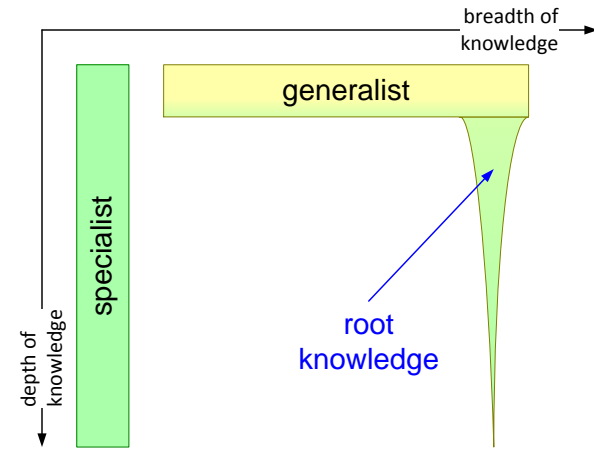
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sampling	seen details: 10 ⁵ - 10 ⁶	0.1 - 1 sec
scanning	product details: 10 ⁷ - 10 ¹⁰	
	real-world facts: infinite	

Personal characteristics of a System Architect

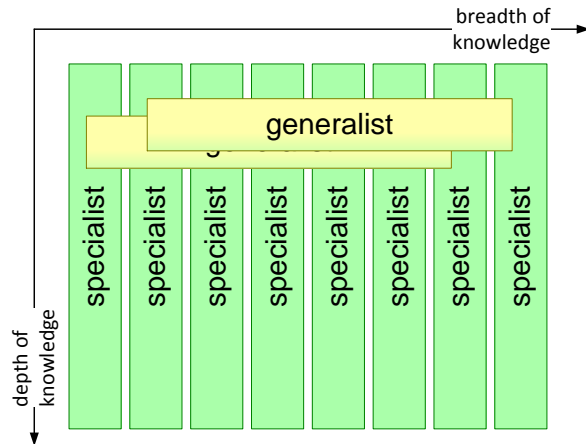
Typical growth of a Architect



Generalist vs Specialist



Complementary Roles



Role Spectrum

