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Knowledge that Works

CASA – Cone of Advanced Systems Architecting

Ger Schoeber

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Agenda

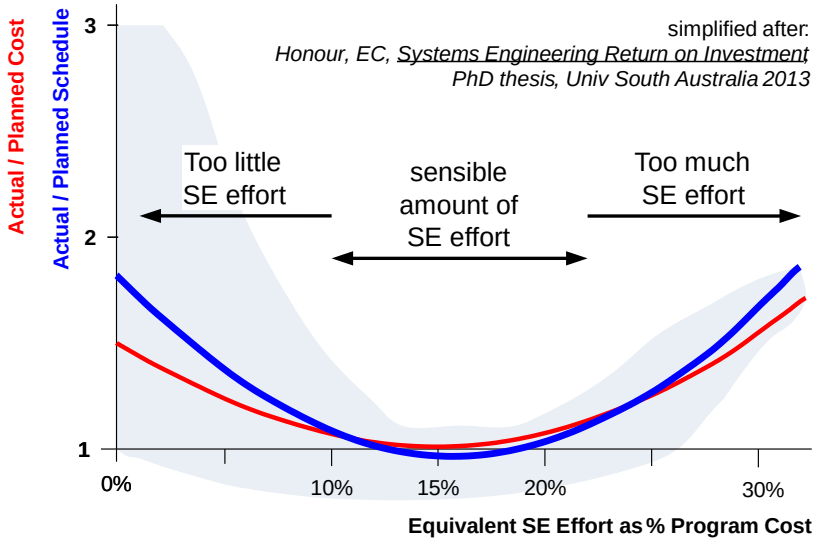
Systems Engineering –
control + adaptability + value

- "Cone" of Advanced Systems Architecting / Engineering

Case: challenges, opportunities

2

Eric Honour's Research



simplified after:
Honour, EC, Systems Engineering Return on Investment
PhD thesis, Univ South Australia 2013

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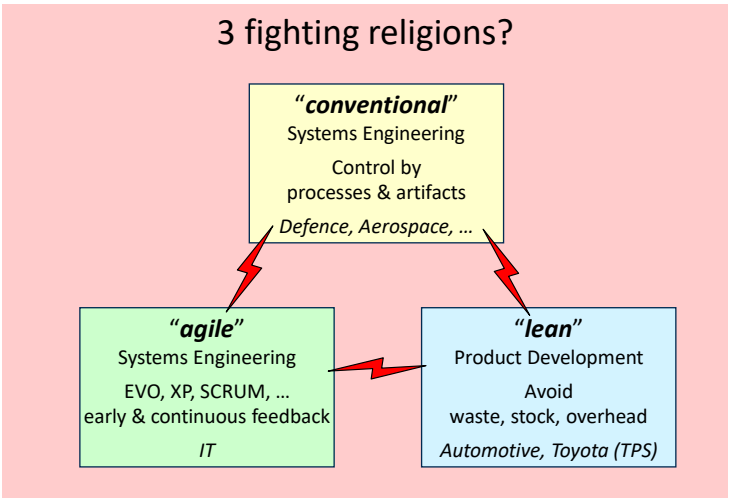
Differentiation or Complementing



3 sets of **complimentary** principles?

+ control
+ feedback
+ avoid waste

Lean Architecting, the Way of the Future?
Gerrit Muller

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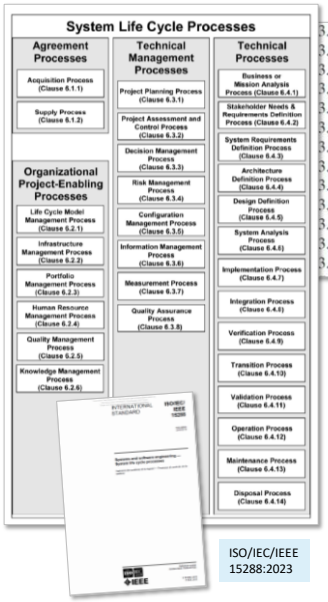
Systems Engineering standards & processes



ISO/IEC/IEEE 15288:2023

3.1.1 Introduction to Quality Characteristics
3.1.2 Affordability Analysis
3.1.3 Agility Engineering
3.1.4 Human Systems Integration
3.1.5 Interoperability Analysis
3.1.6 Logistics Engineering
3.1.7 Manufacturability/Producibility Analysis
3.1.8 Reliability, Availability, Maintainability Engineering
3.1.9 Resilience Engineering
3.1.10 Sustainability Engineering
3.1.11 System Safety Engineering
3.1.12 System Security Engineering
3.1.13 Loss-Driven Systems Engineering

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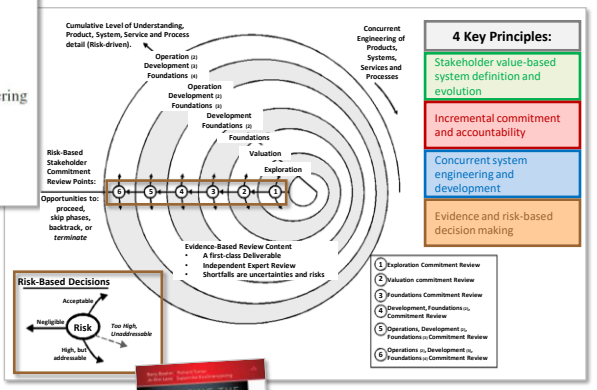

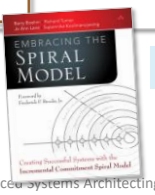

Barry Boehm – ICSM, Incremental Commitment Spiral Model, 2014

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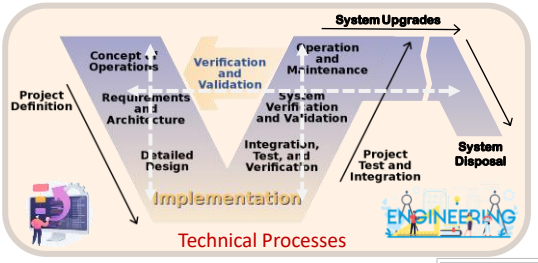

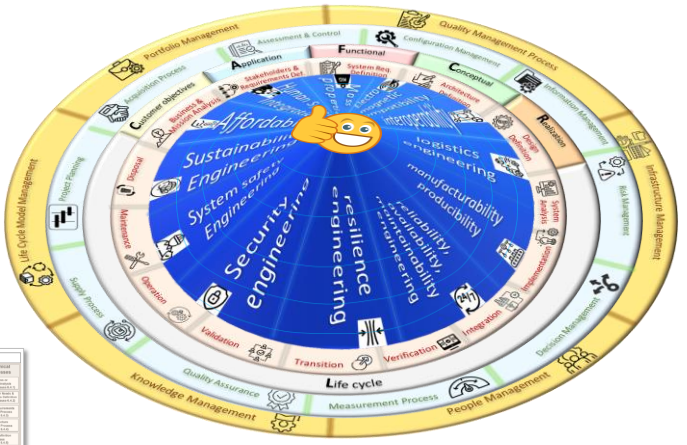

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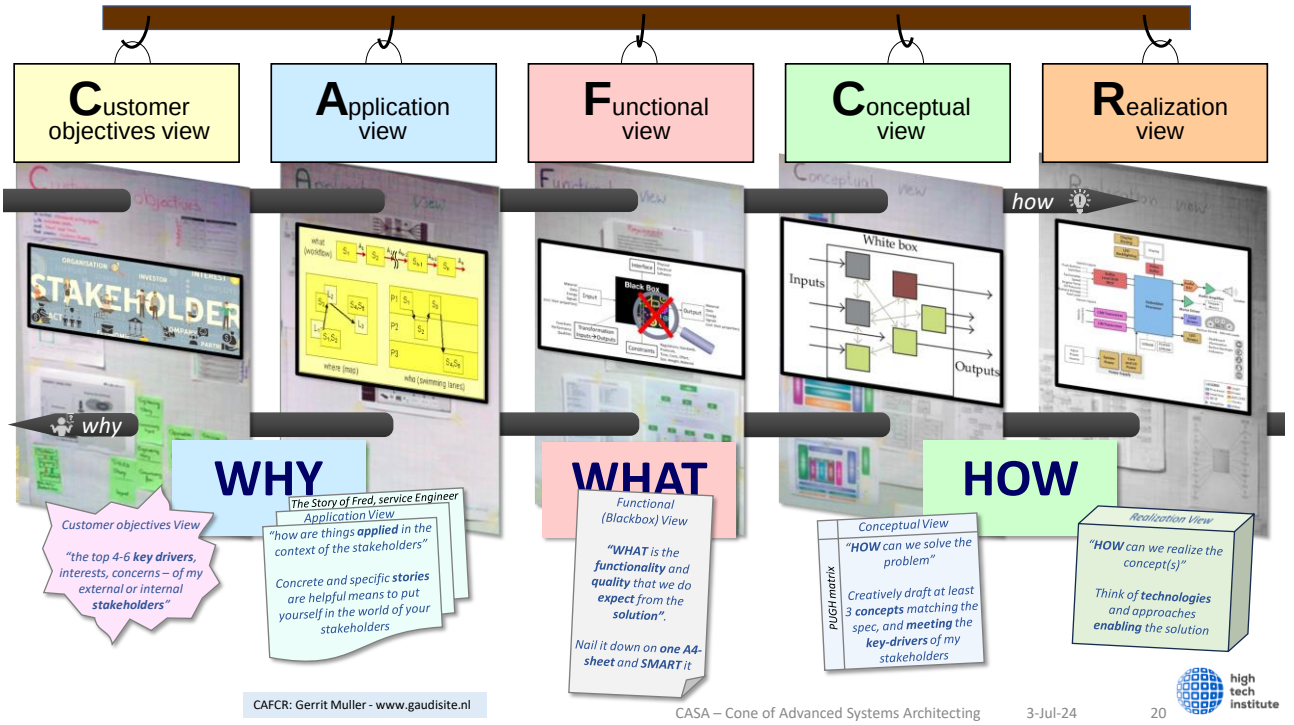
Customer objectives view
Application view
Functional view
Conceptual view
Realization view
why
how
WHY
WHAT
HOW
Customer objectives View
"the top 4-6 key drivers, interests, concerns – of my external or internal stakeholders"
The Story of Fred, service Engineer
Application View
"how are things applied in the context of the stakeholders"
Concrete and specific stories are helpful means to put yourself in the world of your stakeholders
Functional (Blackbox) View
"WHAT is the functionality and quality that we do expect from the solution".
Nail it down on one A4-sheet and SMART it
Conceptual View
"HOW can we solve the problem"
Creatively draft at least 3 concepts matching the spec, and meeting the key-drivers of my stakeholders
PUGH matrix
Realization View
"HOW can we realize the concept(s)"
Think of technologies and approaches enabling the solution
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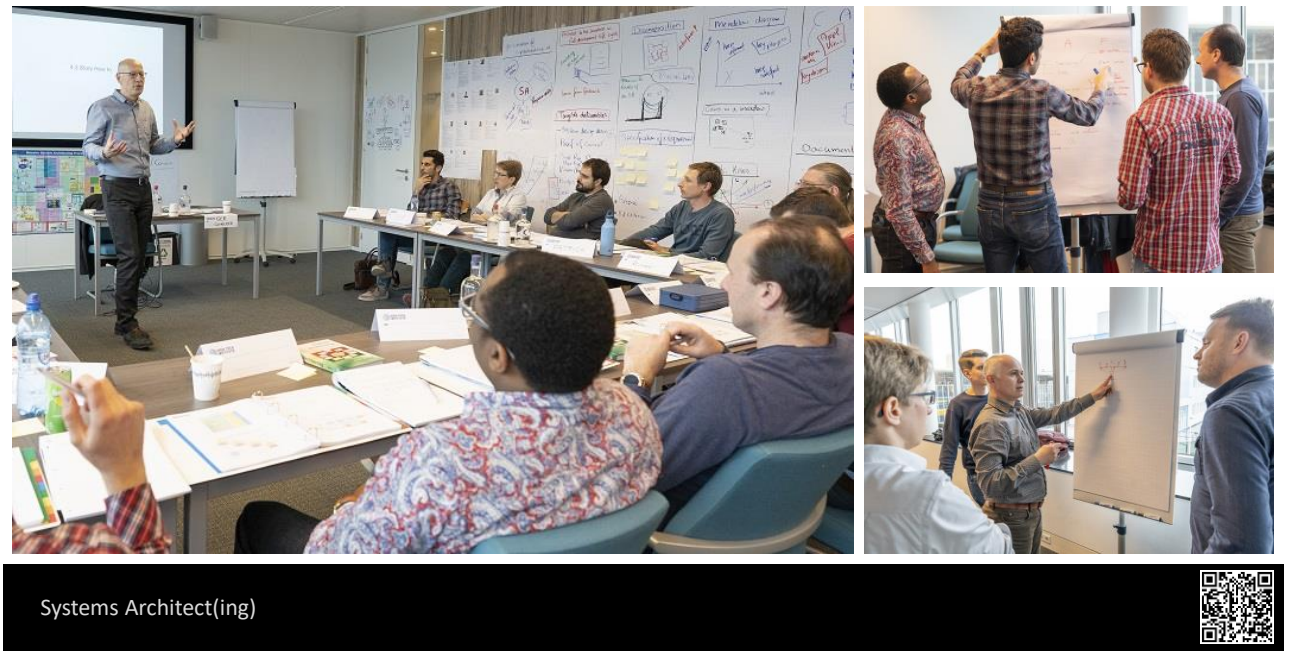
Systems Architect(ing)

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Thanks for your attention!