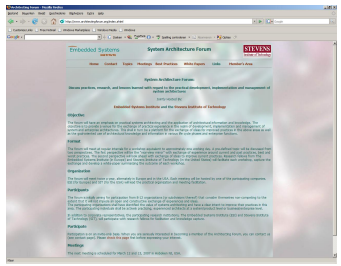
System Architecting Forum Introduction

by *Gerrit Muller* University of South-Eastern Norway-NISE
e-mail: gaudisite@gmail.com
www.gaudisite.nl

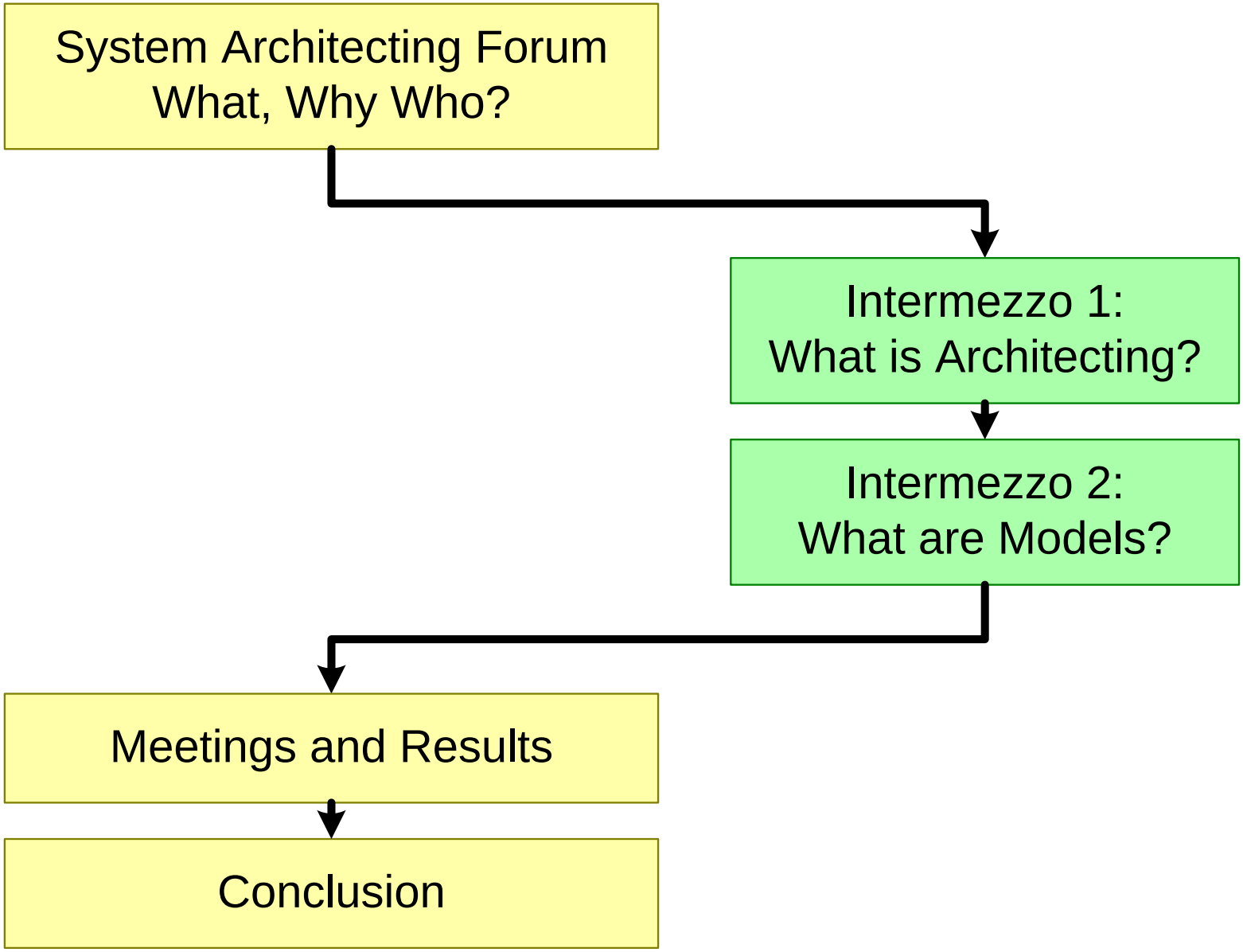
Abstract

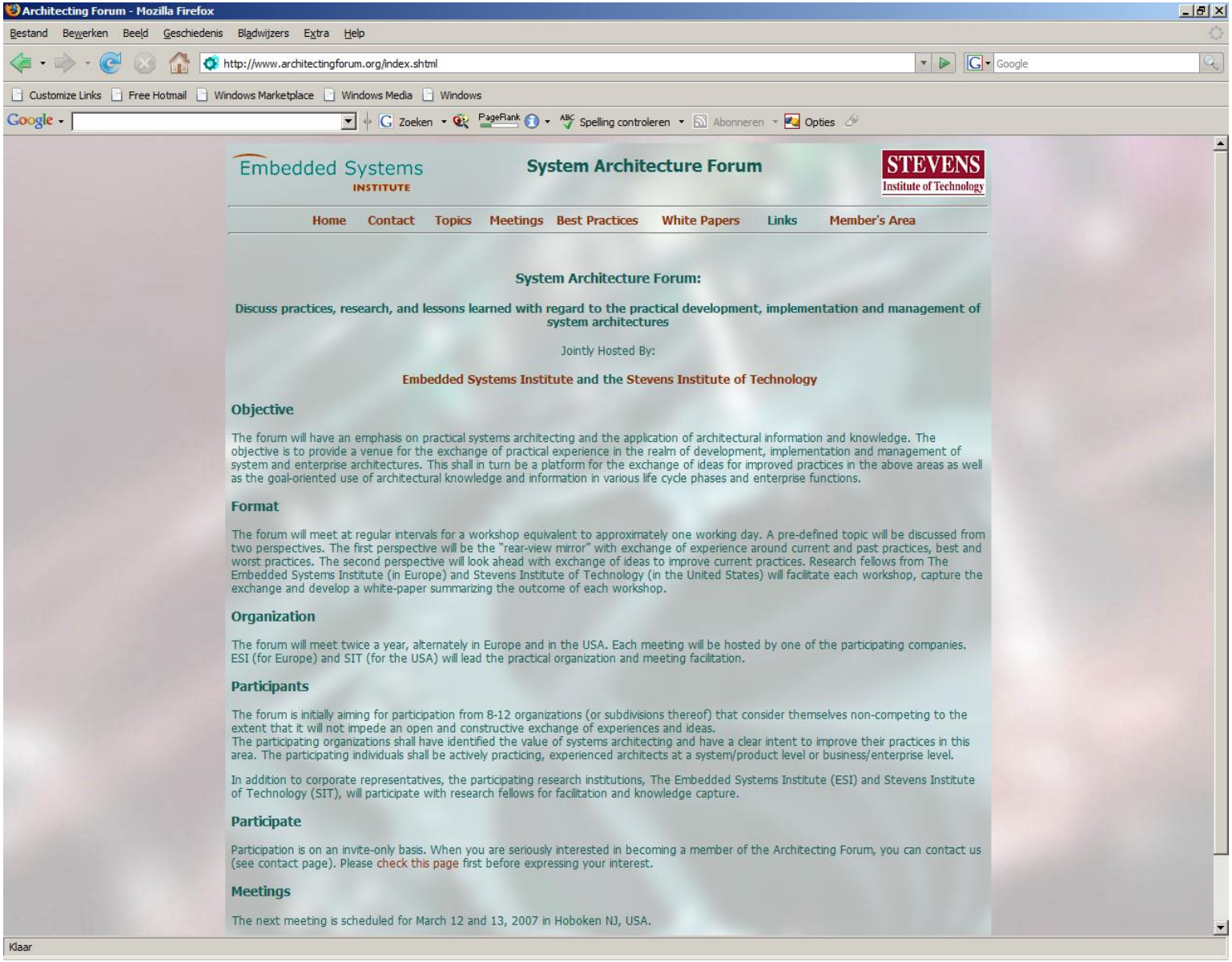
The System Architecting Forum (SAF) is an international group of architecting practitioners that meet twice a year. Every meeting one major topic is discussed. The results of the discussion are consolidated in a white paper and a number of *best practices*.
The objective is to provide a venue for the exchange of practical experience in the realm of development, implementation and management of system and enterprise architectures. This shall in turn be a platform for the exchange of ideas for improved practices in the above areas as well as the goal-oriented use of architectural knowledge and information in various life cycle phases and enterprise functions.



September 6, 2020
status: preliminary draft
version: 0.1

Figure Of Contents™




Architecting Forum - Mozilla Firefox
Bestand Bewerken Beeld Geschiedenis Bladwijzers Extra Help
http://www.architectingforum.org/index.shtml
Customize Links Free Hotmail Windows Marketplace Windows Media Windows
Embedded Systems INSTITUTE
System Architecture Forum
STEVENS Institute of Technology
Home Contact Topics Meetings Best Practices White Papers Links Member's Area
System Architecture Forum:
Discuss practices, research, and lessons learned with regard to the practical development, implementation and management of system architectures
Jointly Hosted By:
Embedded Systems Institute and the Stevens Institute of Technology
Objective
The forum will have an emphasis on practical systems architecting and the application of architectural information and knowledge. The objective is to provide a venue for the exchange of practical experience in the realm of development, implementation and management of system and enterprise architectures. This shall in turn be a platform for the exchange of ideas for improved practices in the above areas as well as the goal-oriented use of architectural knowledge and information in various life cycle phases and enterprise functions.
Format
The forum will meet at regular intervals for a workshop equivalent to approximately one working day. A pre-defined topic will be discussed from two perspectives. The first perspective will be the "rear-view mirror" with exchange of experience around current and past practices, best and worst practices. The second perspective will look ahead with exchange of ideas to improve current practices. Research fellows from The Embedded Systems Institute (in Europe) and Stevens Institute of Technology (in the United States) will facilitate each workshop, capture the exchange and develop a white-paper summarizing the outcome of each workshop.
Organization
The forum will meet twice a year, alternately in Europe and in the USA. Each meeting will be hosted by one of the participating companies. ESI (for Europe) and SIT (for the USA) will lead the practical organization and meeting facilitation.
Participants
The forum is initially aiming for participation from 8-12 organizations (or subdivisions thereof) that consider themselves non-competing to the extent that it will not impede an open and constructive exchange of experiences and ideas.
The participating organizations shall have identified the value of systems architecting and have a clear intent to improve their practices in this area. The participating individuals shall be actively practicing, experienced architects at a system/product level or business/enterprise level.
In addition to corporate representatives, the participating research institutions, The Embedded Systems Institute (ESI) and Stevens Institute of Technology (SIT), will participate with research fellows for facilitation and knowledge capture.
Participate
Participation is on an invite-only basis. When you are seriously interested in becoming a member of the Architecting Forum, you can contact us (see contact page). Please check this page first before expressing your interest.
Meetings
The next meeting is scheduled for March 12 and 13, 2007 in Hoboken NJ, USA.
Klaar

Goals of the System Architecting Forum

practical systems architecting

application of architectural information and knowledge

exchange of practical experience

development, implementation and management of system and enterprise architectures.

to improve practices

the goal-oriented use of architectural knowledge and information in various life cycle phases and enterprise functions

Participants and Domains

non-competing organizations
actively practicing, experienced architects
at a system/product level or business/enterprise level

Defense, Government and Space systems — Raytheon, ANSER/HSI

Power infrastructure — Kongsberg Defence & Aerospace

Healthcare equipment — Philips Medical Systems, Asset Inc.

Measurement equipment — FEI

Consumer electronics — Philips Research

Telecommunications — Nokia

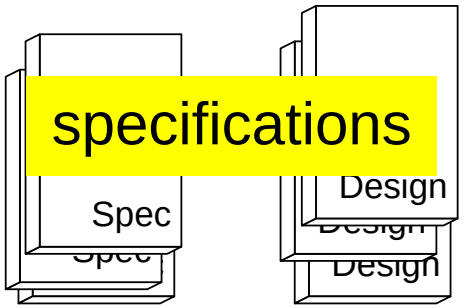
Semiconductors

facilitation and organization
Stevens Institute
Embedded Systems Institute

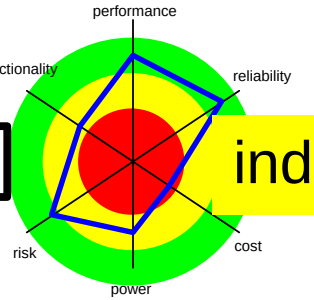
What is Architecture?

Mark all applicable boxes ☒

☐ specifications



☐ indicators



☐ overarching vision

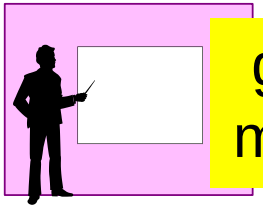
market, business, technology
process, product

☐ API's

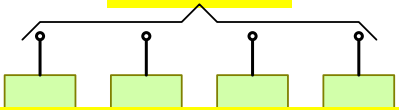
☐ high level rules

layer n !calls n-k; k>1
layer n !calls n+k; k>0

☐ guidance
monitoring

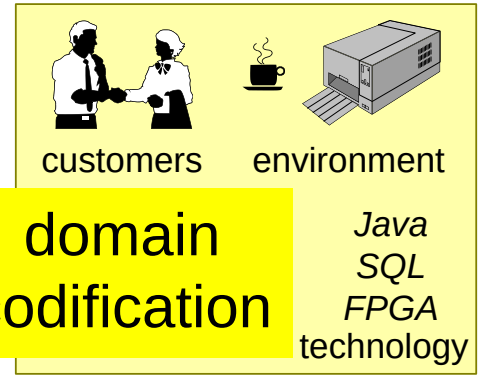


☐ components
(implementations)



☐ concepts

audio
pipeline
message
routing
whit
communication
http
DVB
IPTV



☐ infrastructure

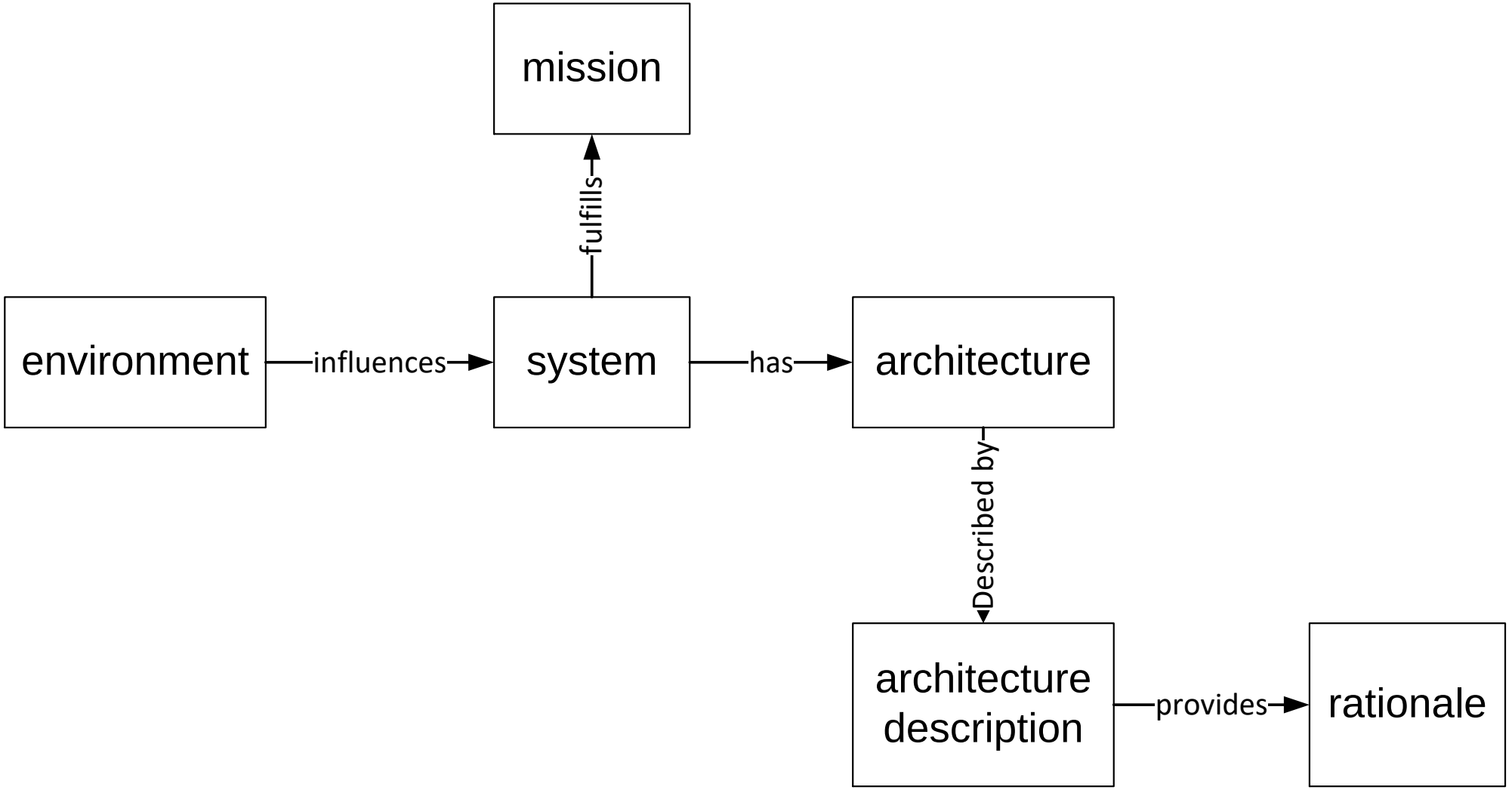
OS
file system
bus
memory
I/O

☐ standards

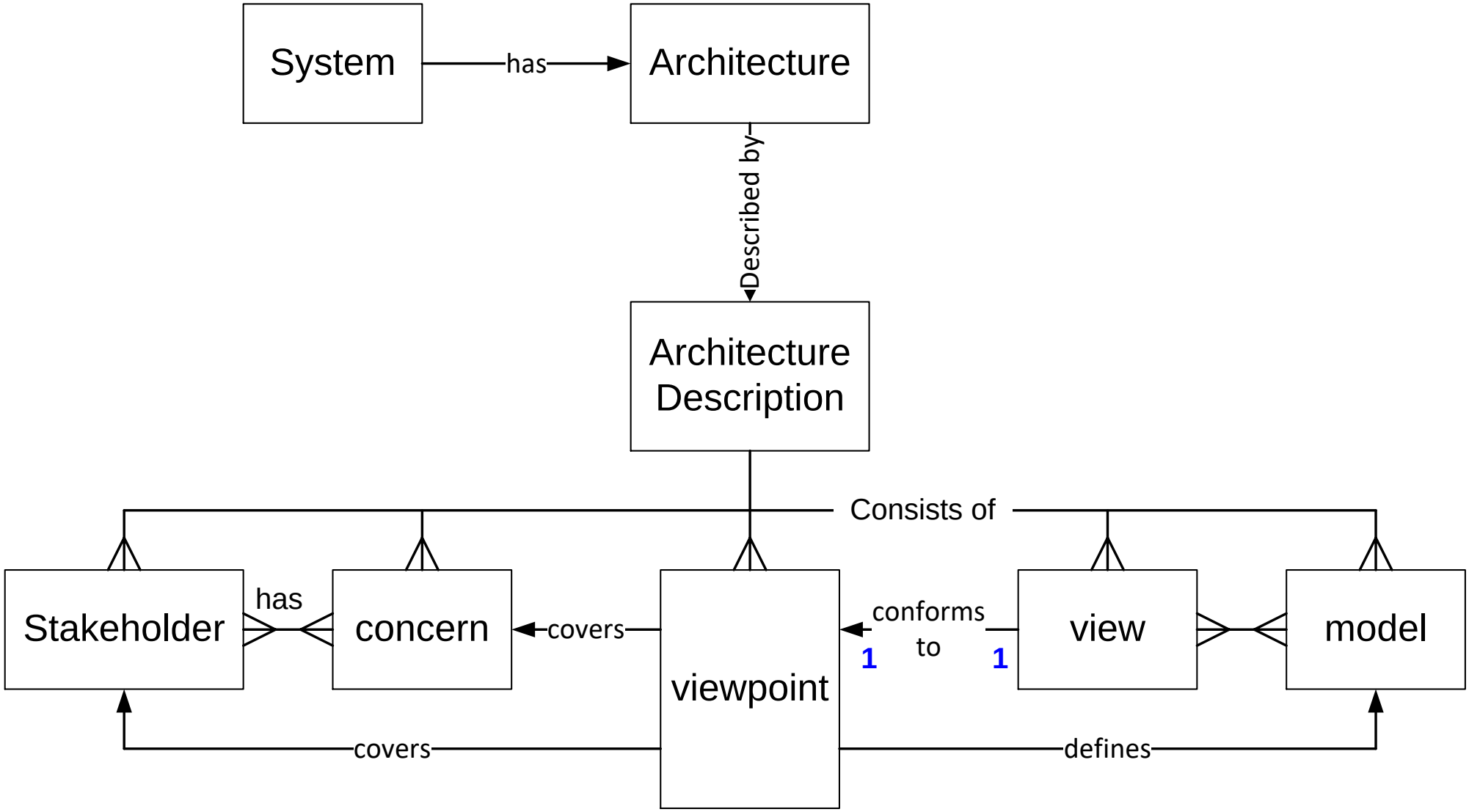
WMA
MP3
JPEG

☐ other...

IEEE 1471 top level



IEEE 1471 view level

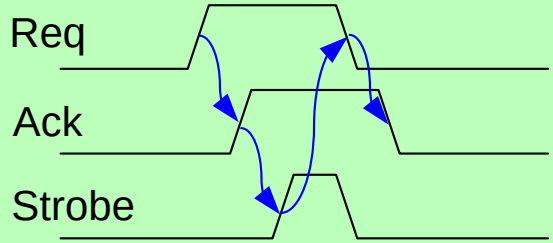


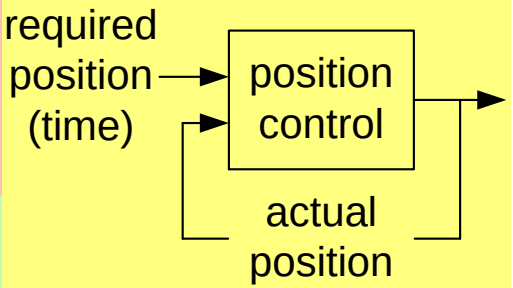
What is a Model?

formal analytical model

$t_{processing} = t_{overhead} + n_{rows} * t_{row} + n_{row} * n_{col} * t_{pixel}$

synchronization model

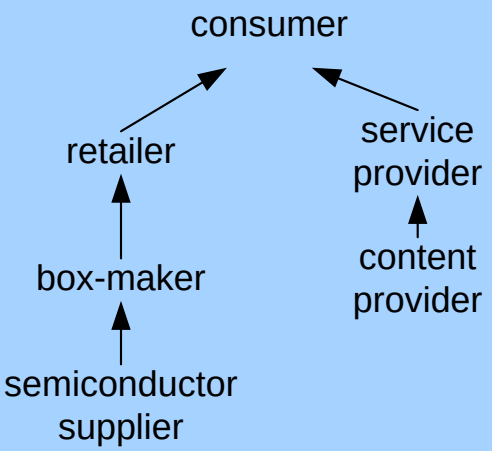




feedback frequency:
4 kHz (0.25 msec)

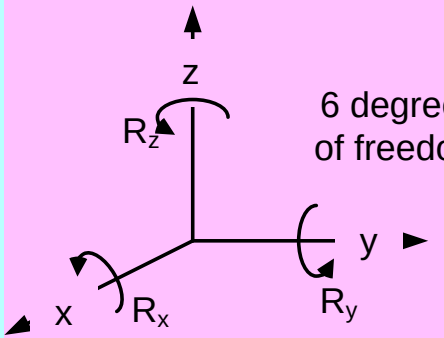
feedback model

value chain model



wooden model

mockup



model of coordinate system

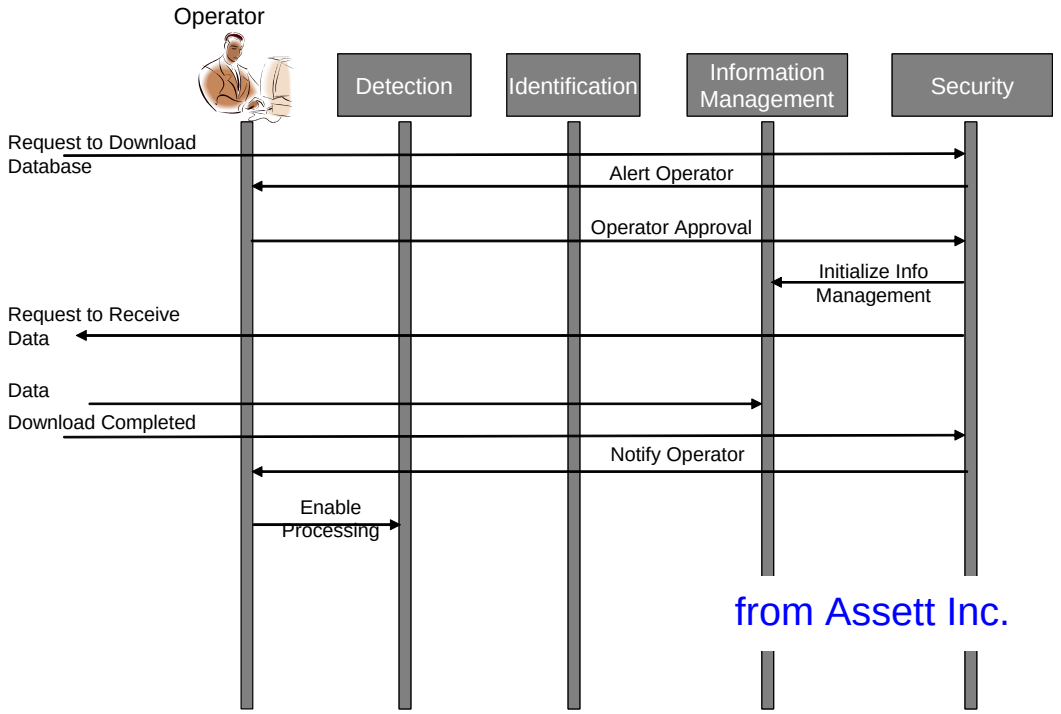
Standardized or Formalized Models and Views

or UML and SysML

or DoDAF

or Zachman

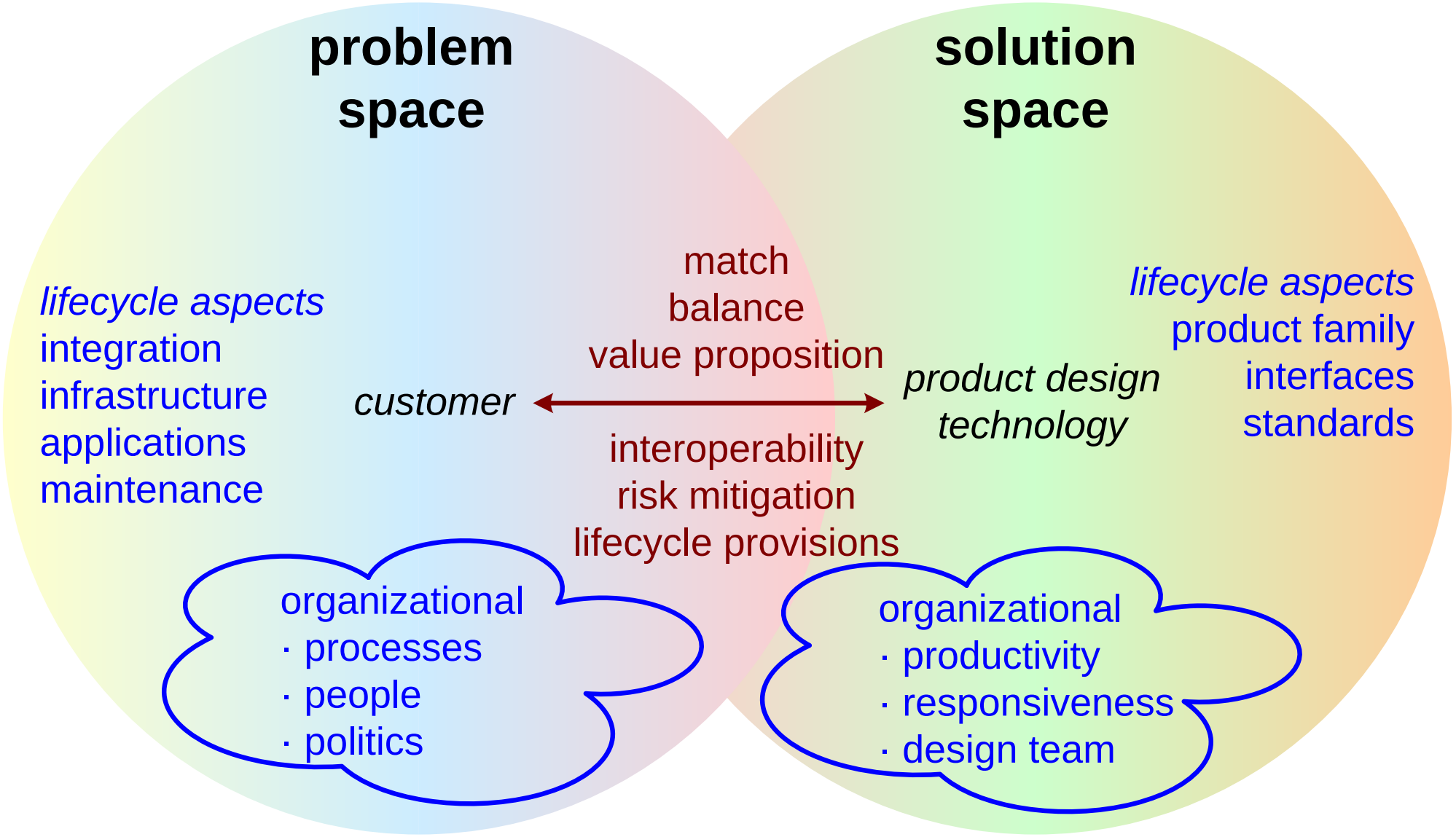
or....



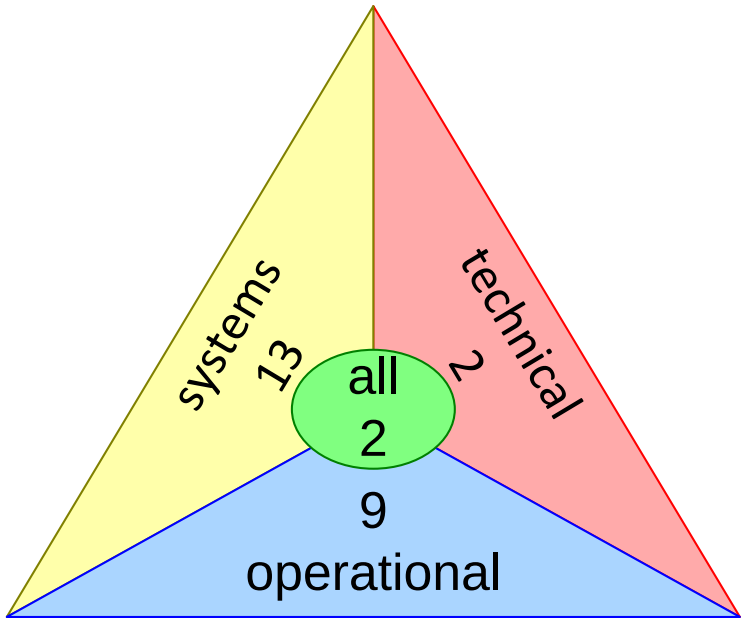
Subjects of First Meetings

October 2005 Helsinki	The State-of-Practice of Systems Architecting: Where Are We Heading?
March 2006 Washington	Architectural Descriptions and Models
October 2006 Eindhoven	Complexity and Right Sizing Architecture Descriptions Facts and Cases of the Value of Architecting
March 2007 Hoboken	Reference Architectures Value of Systems Architecting and Architectures
November 2007 Kongsberg	

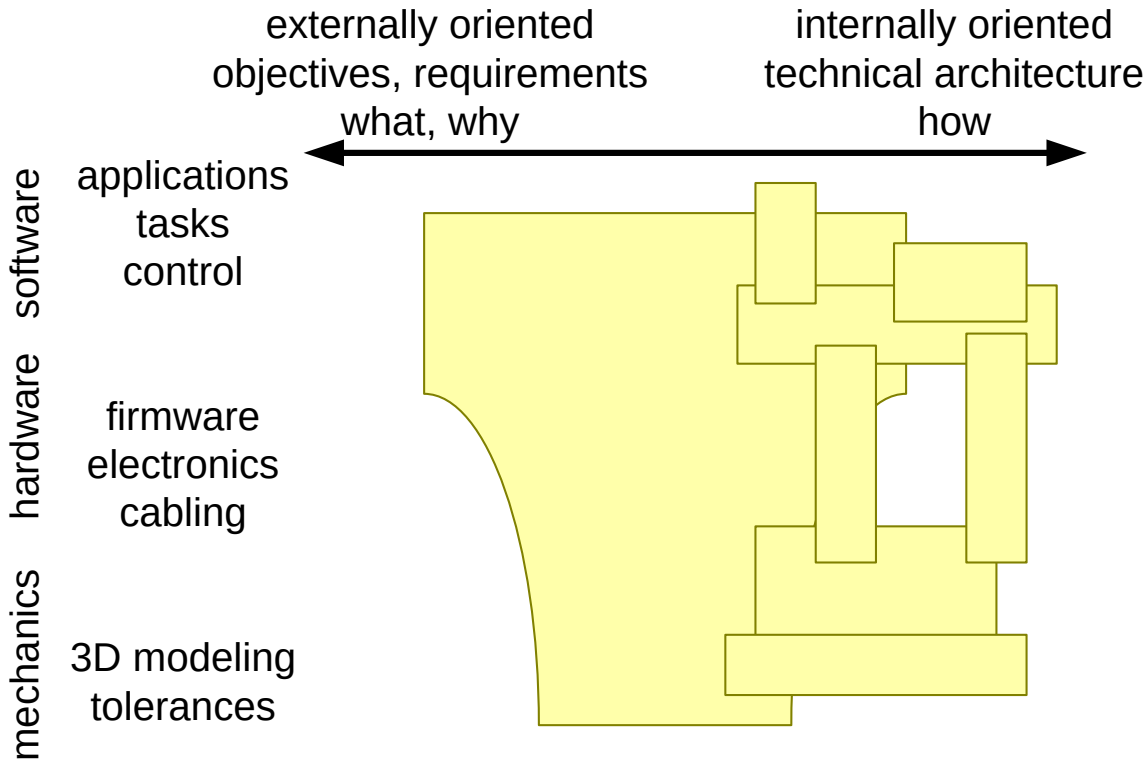
First Meeting: State-of-Practice



Second Meeting: Architecture Descriptions



26 DoDAF views

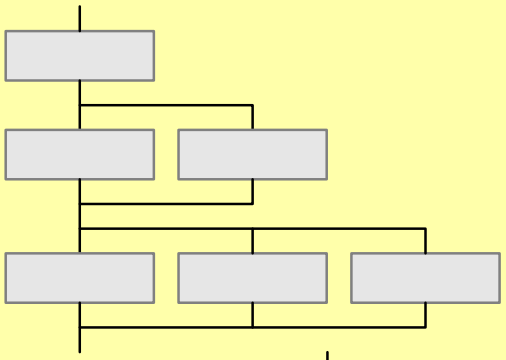


FEI architecture document coverage

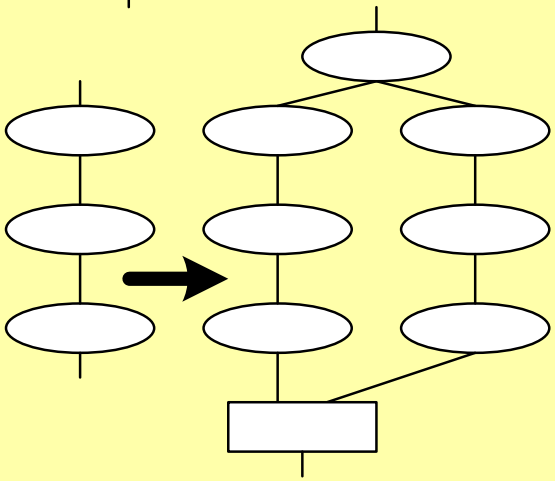
Third Meeting: Opening of the Kimono

in-depth illustrations of day to day architect struggles:

+ configuration management complexity



+ re-use and platforms



+ documentation size and content

documenting problems
Missing Resources
Missing the right resources
Process, practises and organisation
do not support

compromises legacy → complexity size, effort increase

Conclusions of first meetings

Most siginificant future value of system architecting:

facilitating innovation and evolution

A great need for better and more architects is being seen.

Architectural descriptions require balancing acts in many directions:

+ Depth versus breadth

+ Stakeholder interests, from technical expert to (naïve) consumer

+ Degree of formalism, from controllable and verifiable to understandable and usable

In all cases an optimum of 10 to 12 architecting views is perceived as optimal.
More views create too much chaos, less views oversimplifies the situation.

Best Practices

One of several *prerequisites* for *architecture creative synthesis* is the definition of *5-7 specific key drivers* that are *critical for success*, along with the *rationale* behind the selection of these items

The *essence* of a *system* can be captured in about *10 models/views*

A *diversity* of *architecture descriptions* and *models* is needed:
languages, schemata and the degree of formalism.

The *level of formality* increases as we move closer to the implementation level.

Architecting education must be *framework and standard* *agnostic*,
but architects must have seen or used *multiple frameworks* and *standards*.

Conclusion

SAF participants:

heterogeneous group of architecting practitioners.

Lots of shared struggles and best practices.

Investing in mutual relations and trust pays off:

very open and challenging discussions.

Whitepapers and consolidation of best practices brings focus.

Assess the results yourself:

www.architectingforum.org