

# System Architecting Forum Introduction

by *Gerrit Muller* Buskerud University College

e-mail: `gaudisite@gmail.com`

`www.gaudisite.nl`

## Abstract

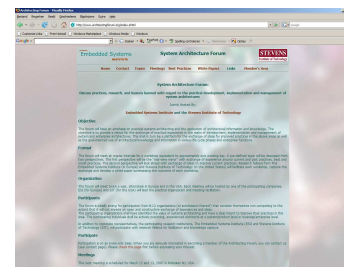
The System Architecting Forum (SAF) is an international group of architecting practitioners that meet twice a year. Every meeting one major topic is discussed. The results of the discussion are consolidated in a white paper and a number of *best practices*.

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.

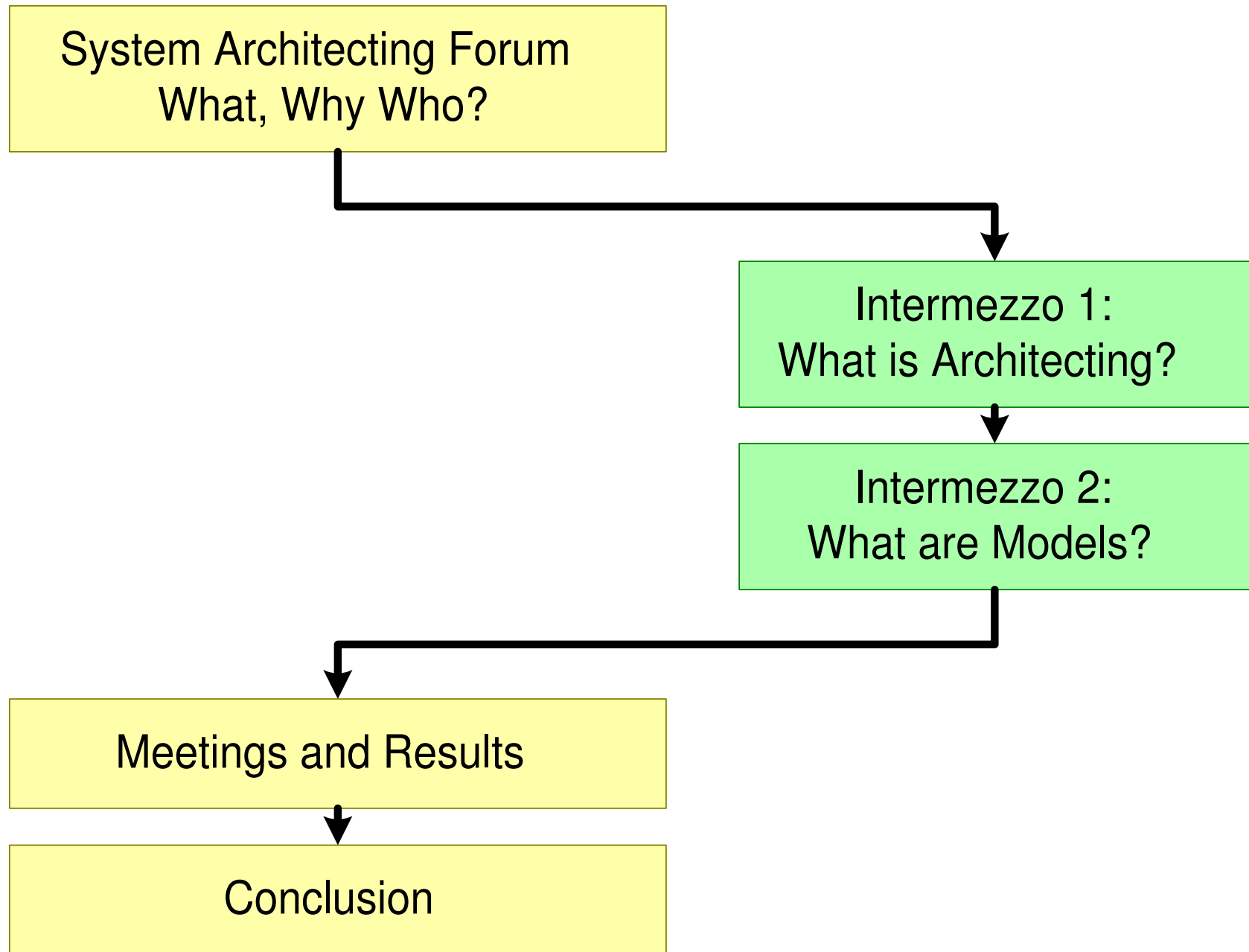
### Distribution

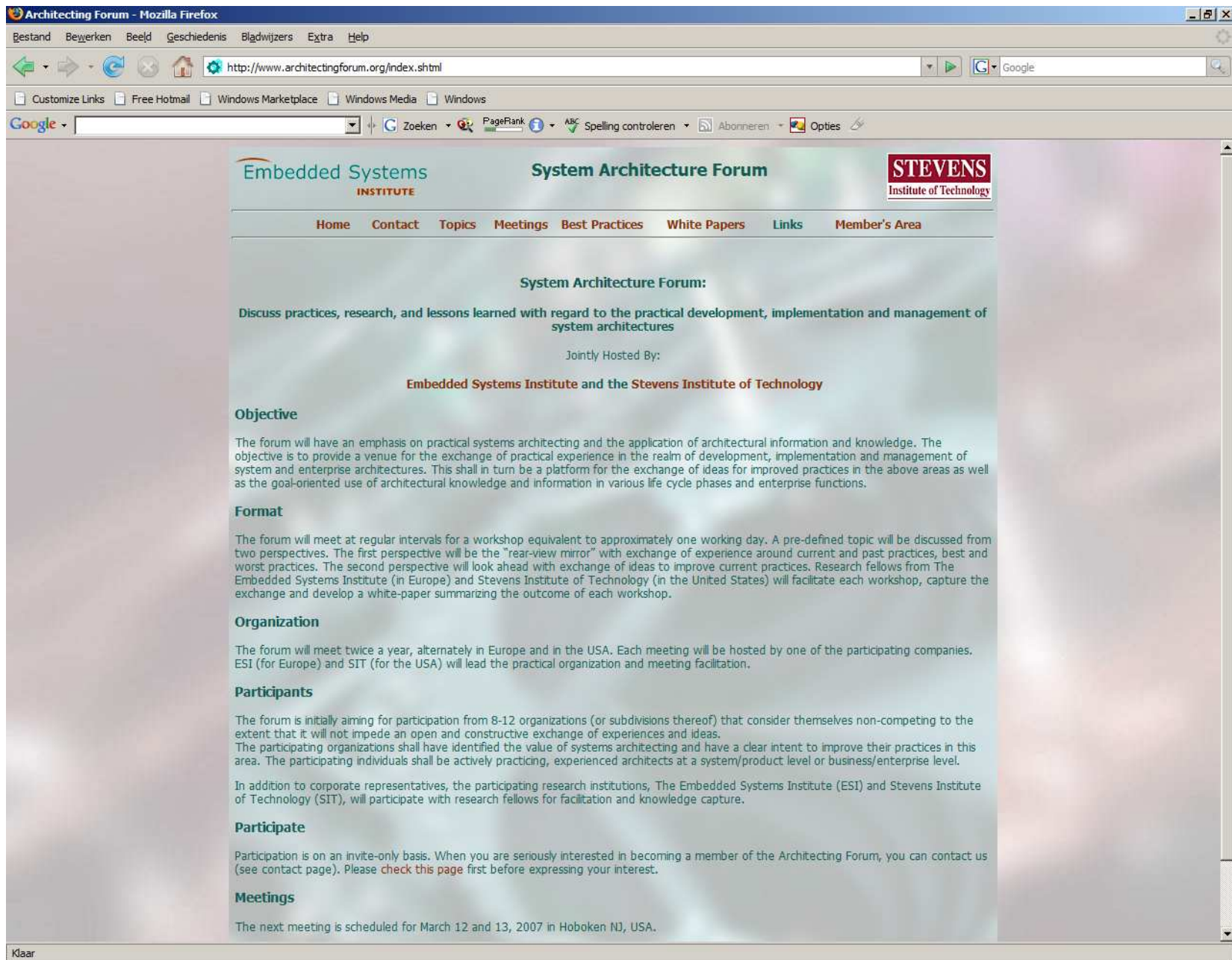
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October 20, 2017  
status: preliminary  
draft  
version: 0.1



# Figure Of Contents™





# Goals of the System Architecting Forum

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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*

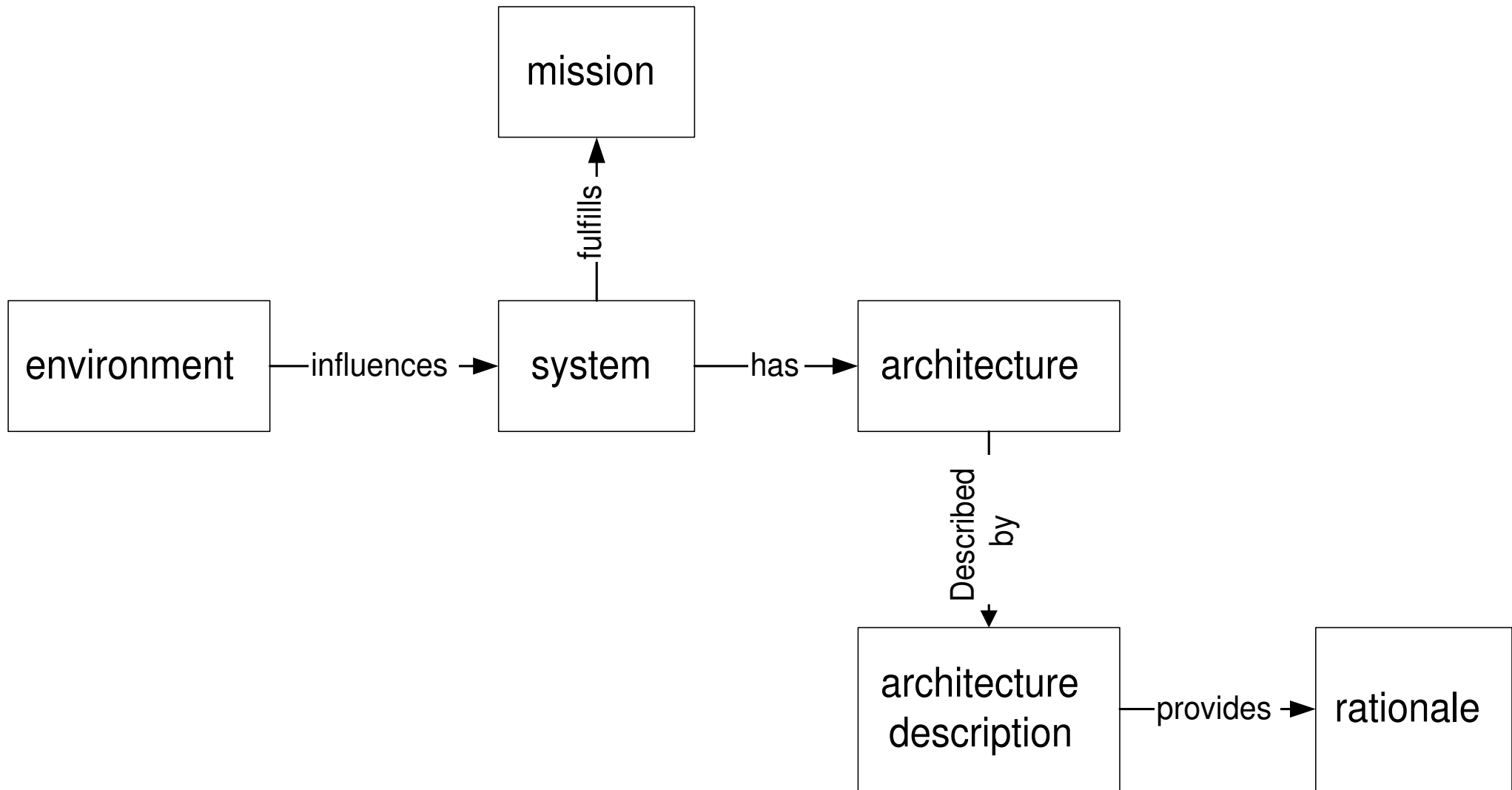
# What is Architecture?

Mark all applicable boxes

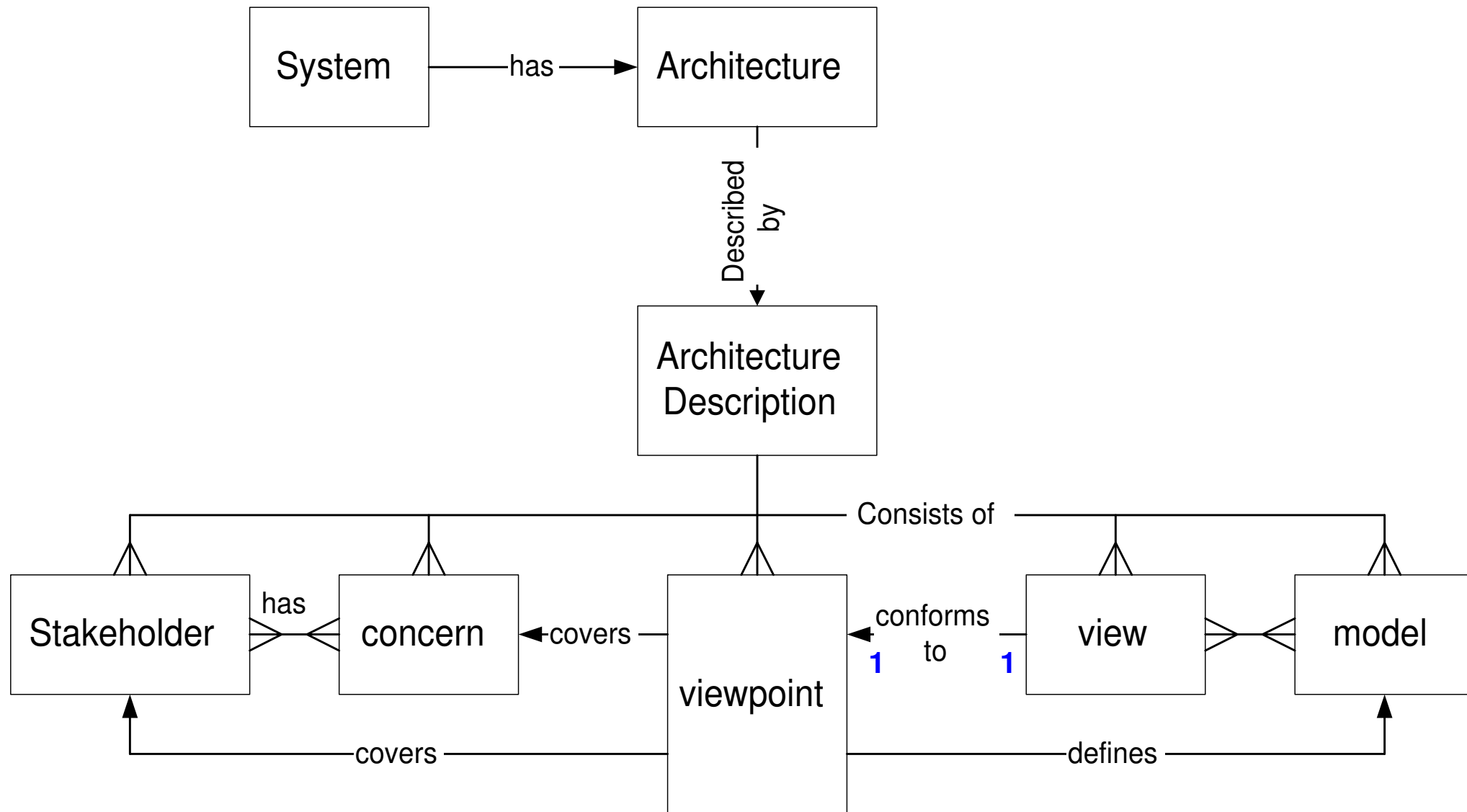


<input type="checkbox"/>	<p><b>specifications</b></p>	<input type="checkbox"/>	<p><b>indicators</b></p>	<input type="checkbox"/>	<p><b>overarching vision</b> market, business, technology process, product</p>
<input type="checkbox"/>	<p><b>API's</b></p>	<input type="checkbox"/>	<p><b>high level rules</b> layer n !calls n-k; k&gt;1 layer n !calls n+k; k&gt;0</p>	<input type="checkbox"/>	<p><b>guidance monitoring</b></p>
<input type="checkbox"/>	<p><b>components (implementations)</b></p>	<input type="checkbox"/>	<p><b>concepts</b> audio pipeline, message routing, whit communication</p>	<input type="checkbox"/>	<p>customers environment</p>
<input type="checkbox"/>	<p><b>infrastructure</b> OS, file system, bus, memory, I/O</p>	<input type="checkbox"/>	<p><b>standards</b> http, DVB, IPTV, WMA, MP3, JPEG</p>	<input type="checkbox"/>	<p><b>domain codification</b> Java, SQL, FPGA technology</p>
					<p><b>other...</b></p>

# IEEE 1471 top level



# IEEE 1471 view level



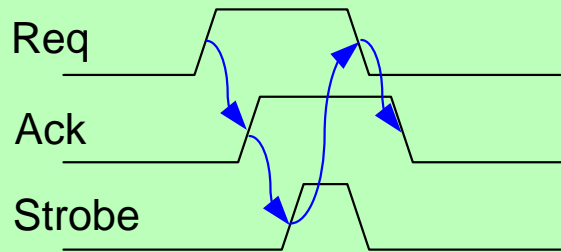


# What is a Model?

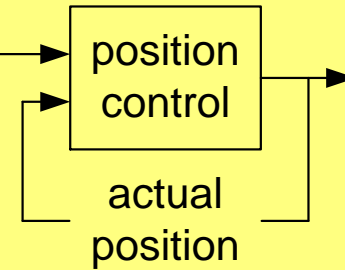
## formal analytical model

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

## synchronization model



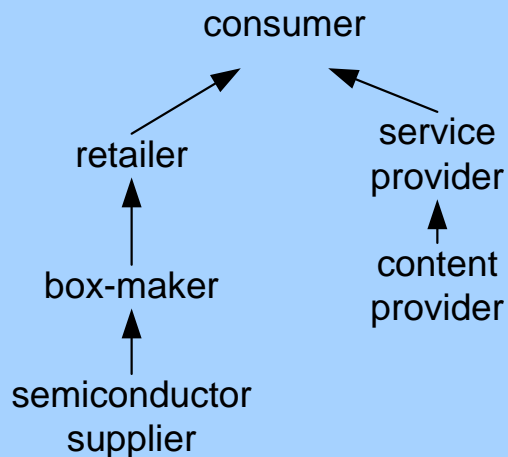
required  
position  
(time)



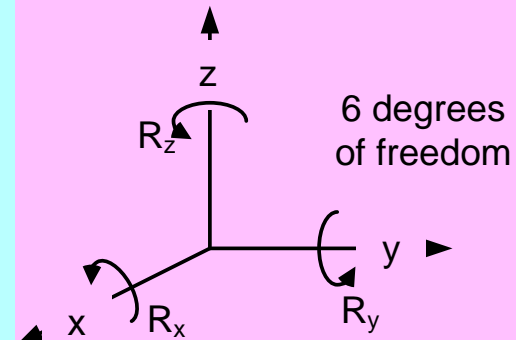
feedback frequency:  
4 kHz (0.25 msec)

## feedback model

## value chain model



## mockup



## model of coordinate system

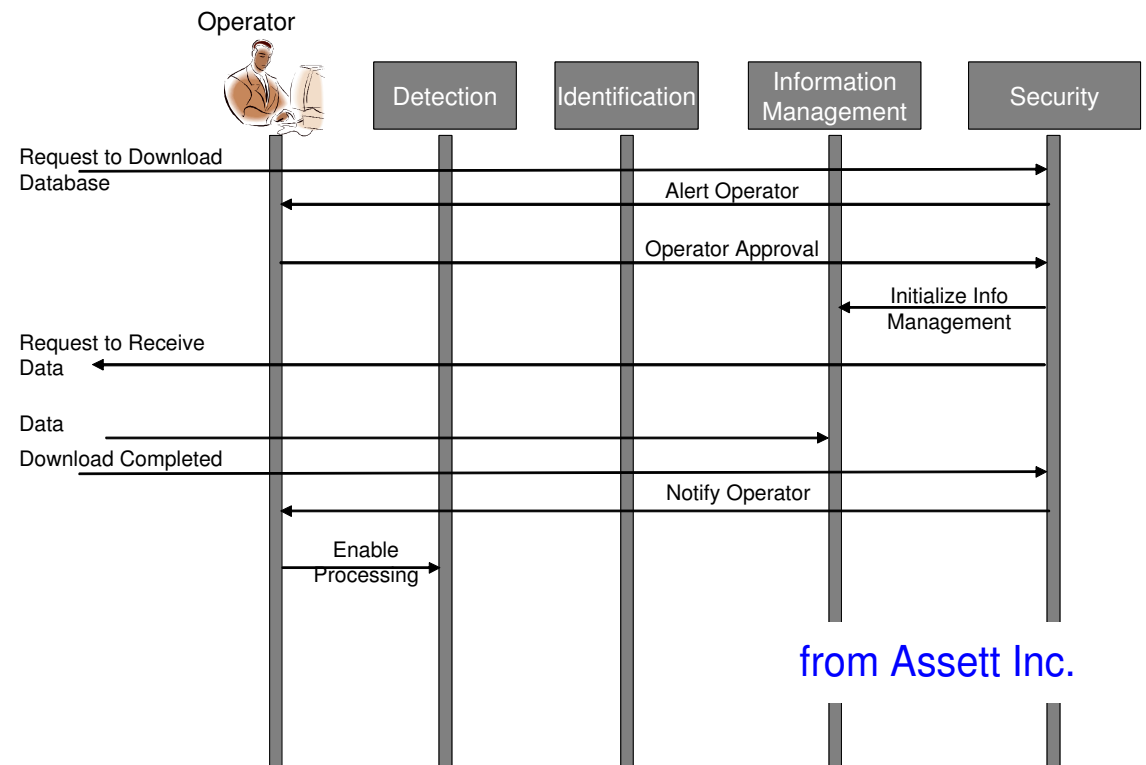
# Standardized or Formalized Models and Views

or UML and SysML

or DoDAF

or Zachman

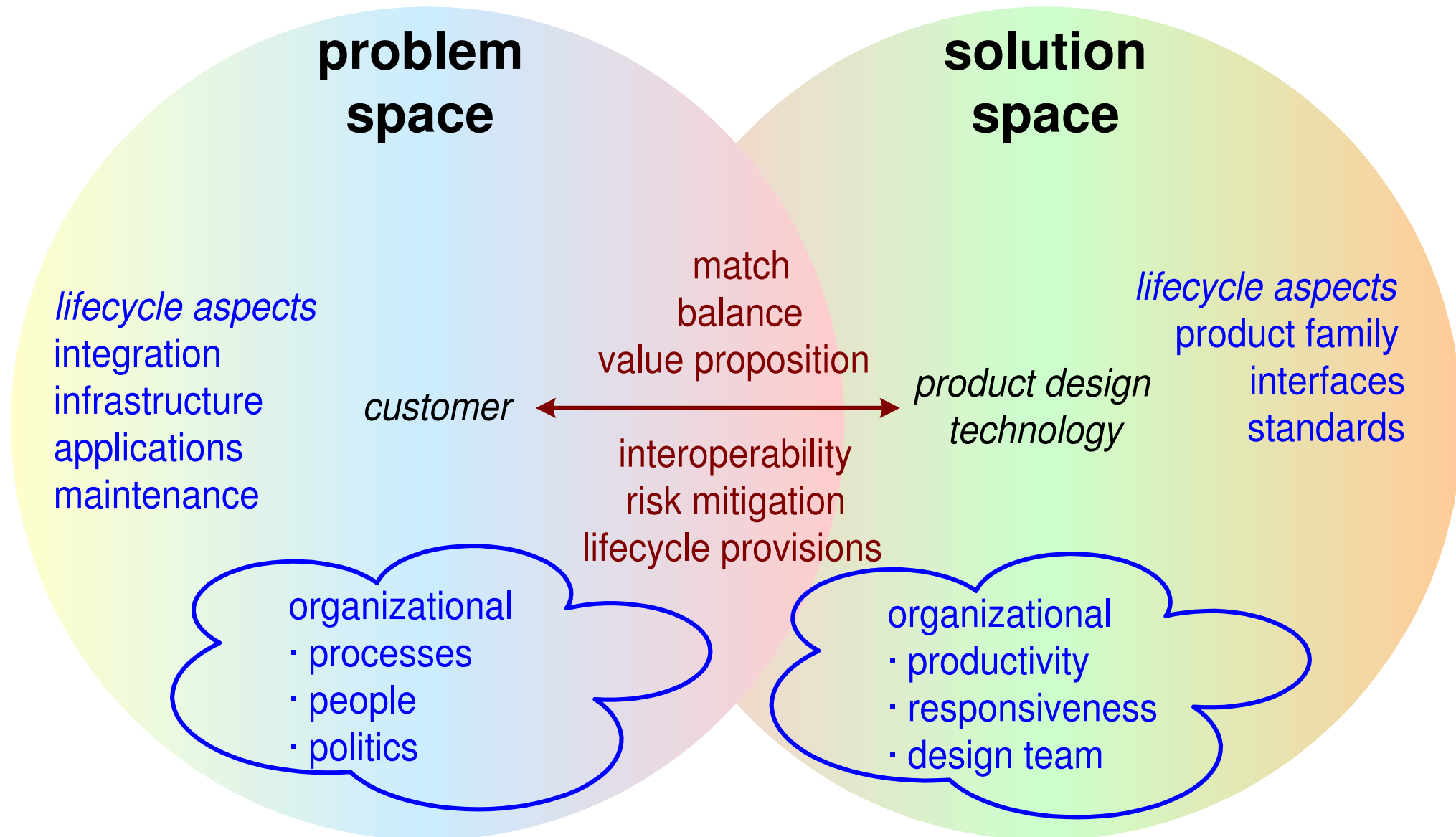
or....



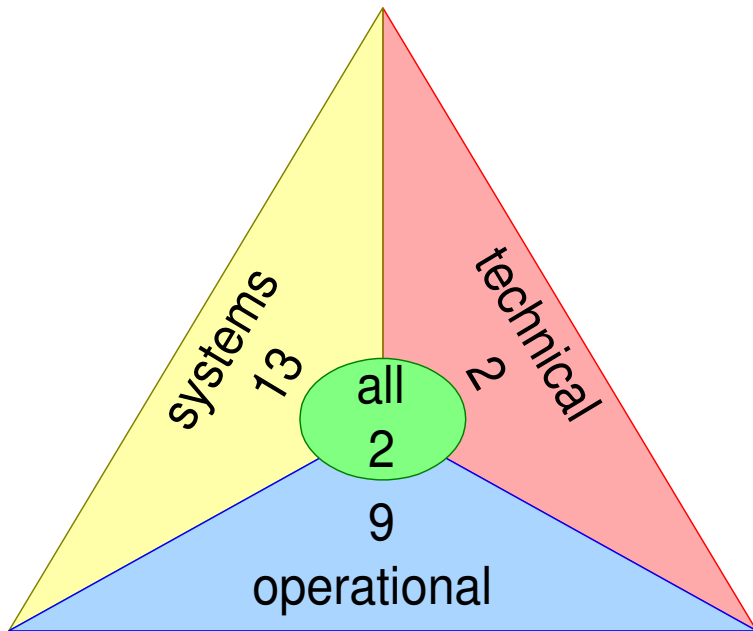
# Subjects of First Meetings

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	

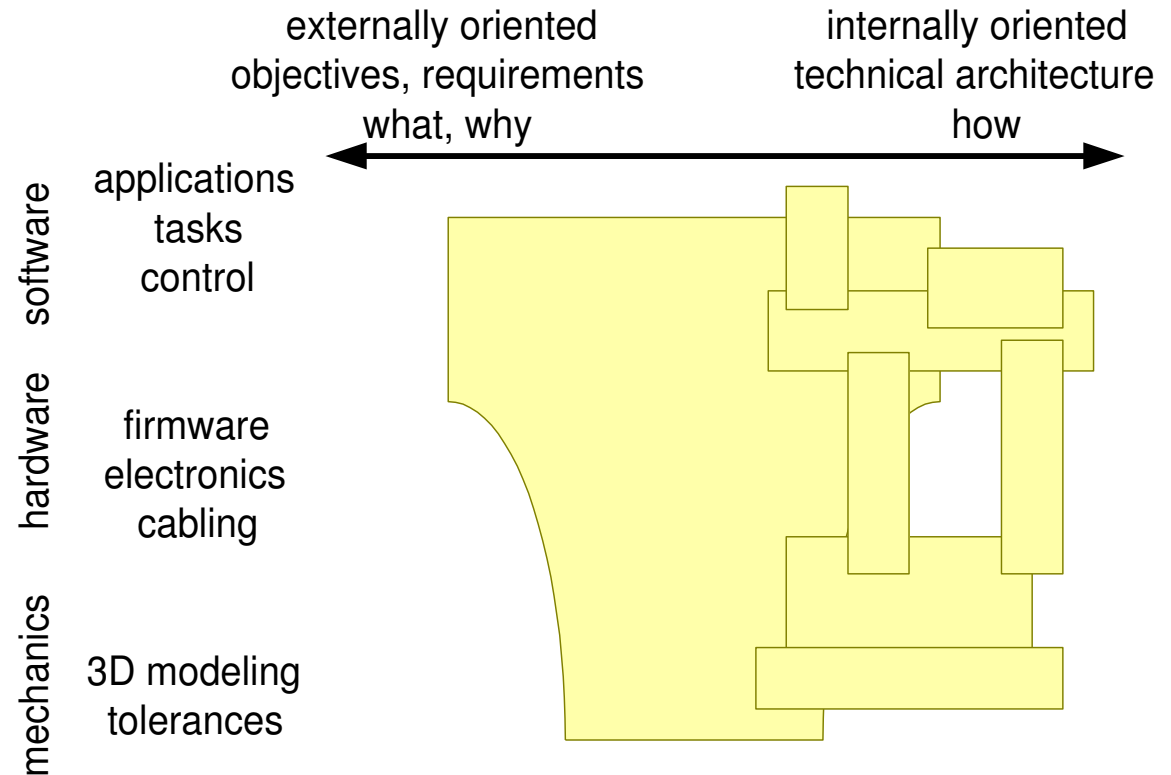
# First Meeting: State-of-Practice



# 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

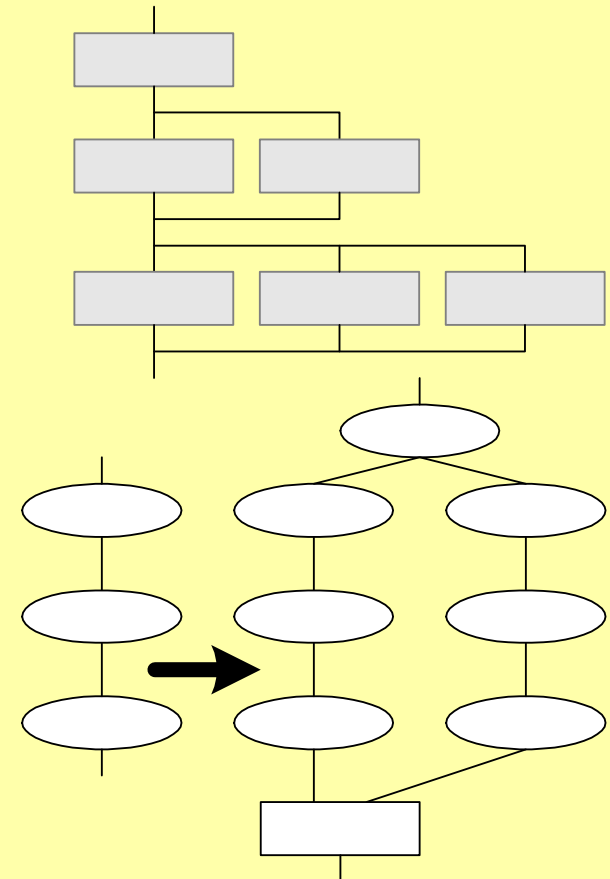
*documenting problems*

Missing Resources

Missing the right resources

Process, practises and organisation

do not support



compromises  
legacy

complexity  
size, effort  
increase

# Conclusions of first meetings

Most significant 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](http://www.architectingforum.org)