

System Architecting Forum Introduction

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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

This article or presentation is written as part of the Gaudí project. The Gaudí project philosophy is to improve by obtaining frequent feedback. Frequent feedback is pursued by an open creation process. This document is published as intermediate or nearly mature version to get feedback. Further distribution is allowed as long as the document remains complete and unchanged.

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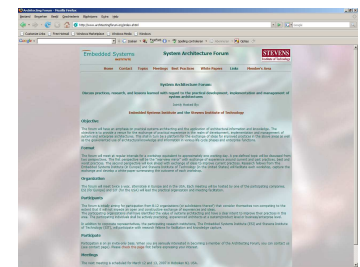
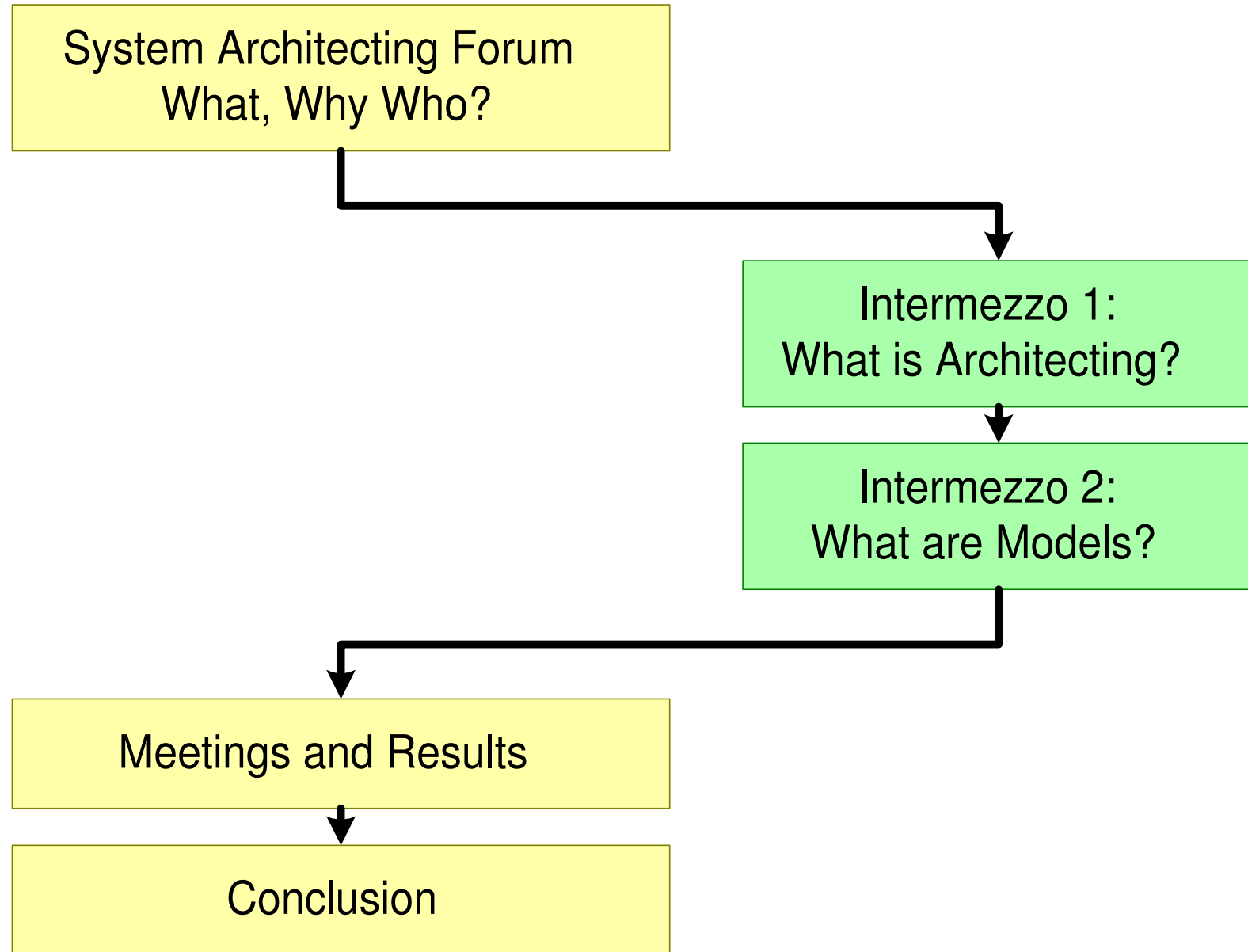


Figure Of Contents™



The screenshot shows a Mozilla Firefox browser window displaying the website <http://www.architectingforum.org/index.shtml>. The page features the logos for Embedded Systems INSTITUTE and STEVENS Institute of Technology. A navigation menu includes Home, Contact, Topics, Meetings, Best Practices, White Papers, Links, and Member's Area. The main content area is titled "System Architecture Forum" and describes the forum's purpose: "Discuss practices, research, and lessons learned with regard to the practical development, implementation and management of system architectures". It is jointly hosted by Embedded Systems Institute and the Stevens Institute of Technology. The page outlines the forum's objective, format (workshops), organization (alternating between Europe and the USA), participants (8-12 organizations), and participation details (invite-only basis). The next meeting is scheduled for March 12 and 13, 2007, in Hoboken NJ, USA.

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

facilitation and organization

Stevens Institute

Embedded Systems Institute

Semiconductors

What is Architecture?

Mark all applicable boxes



specifications

indicators

overarching vision
market, business, technology
process, product

API's

components (implementations)

high level rules
layer n !calls n-k; k>1
layer n !calls n+k; k>0

guidance monitoring

infrastructure

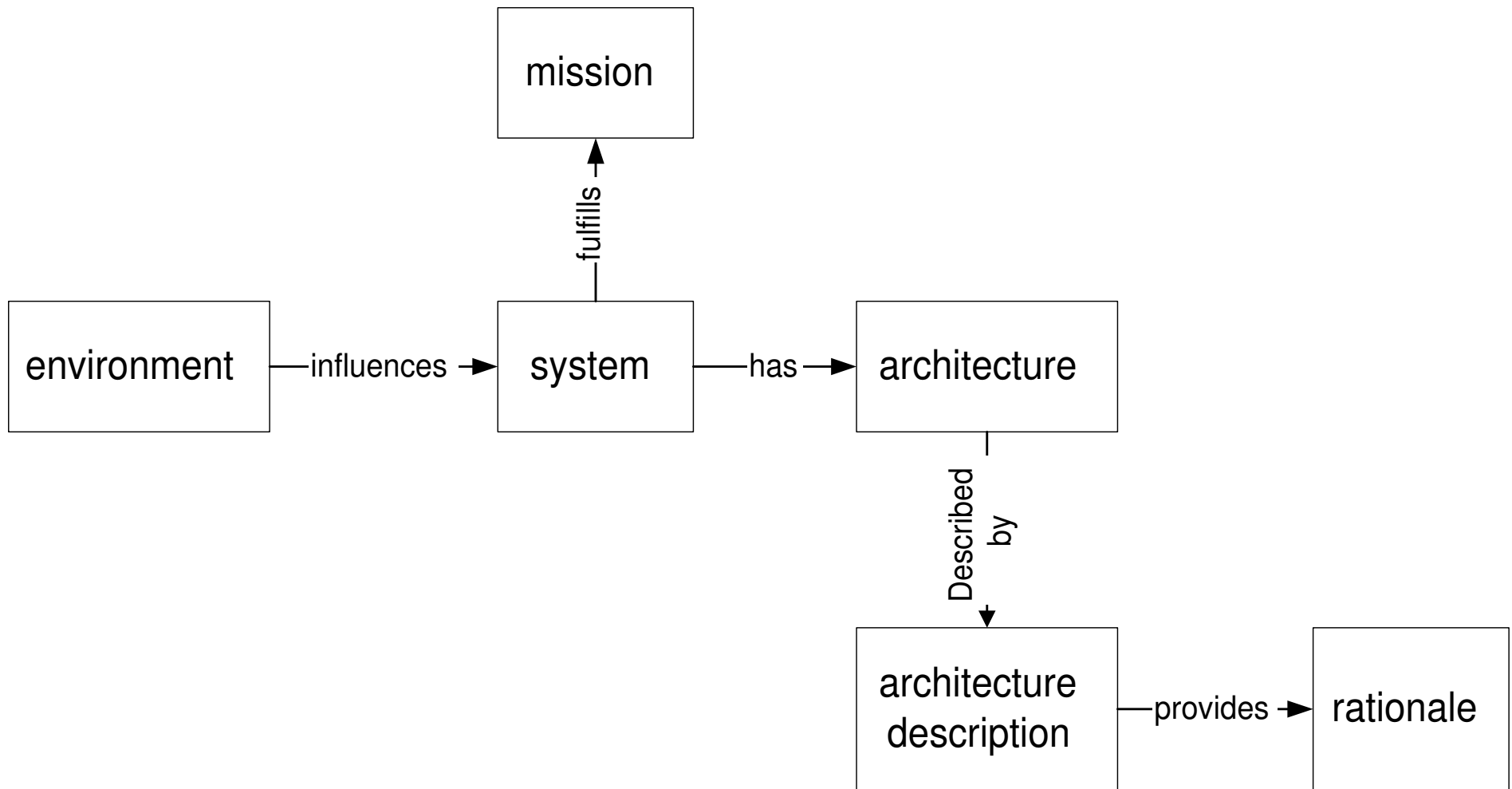
concepts

domain codification

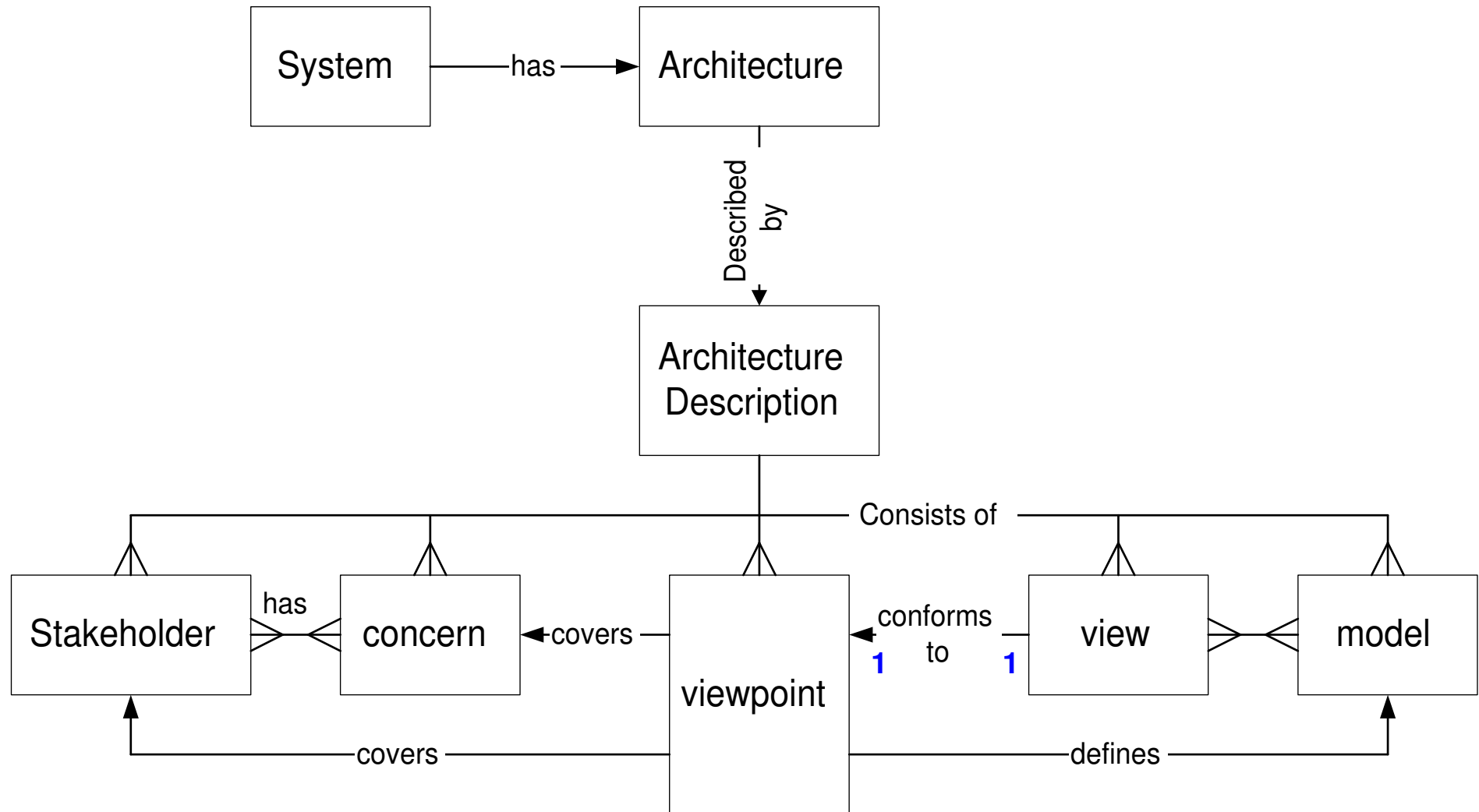
standards

other...

IEEE 1471 top level



IEEE 1471 view level

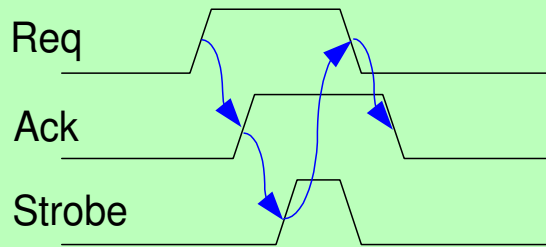


What is a Model?

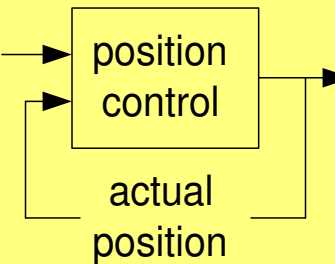
formal analytical model

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

synchronization model



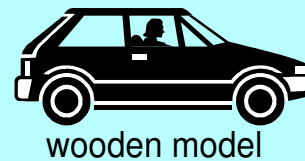
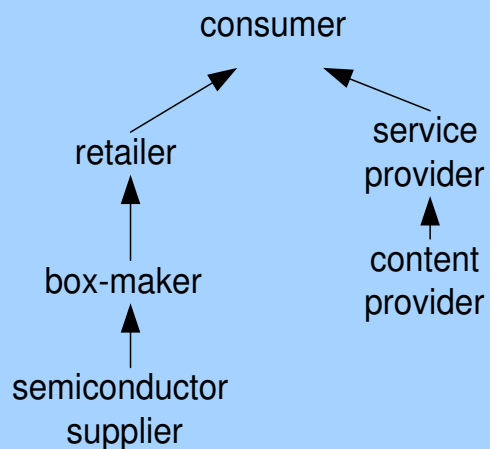
required
position
(time)



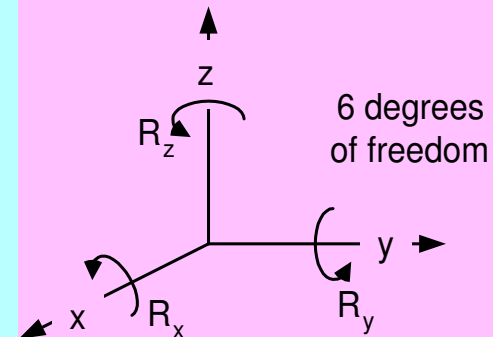
feedback frequency:
4 kHz (0.25 msec)

feedback model

value chain model



mockup



model of coordinate system

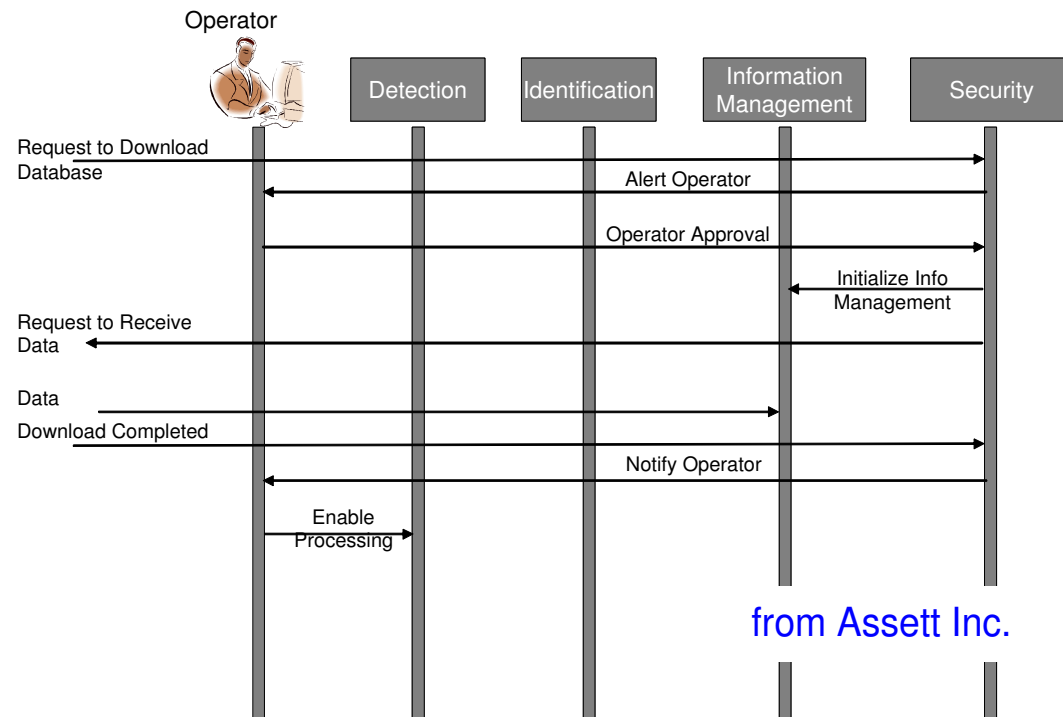
Standardized or Formalized Models and Views

or UML and SysML

or DoDAF

or Zachman

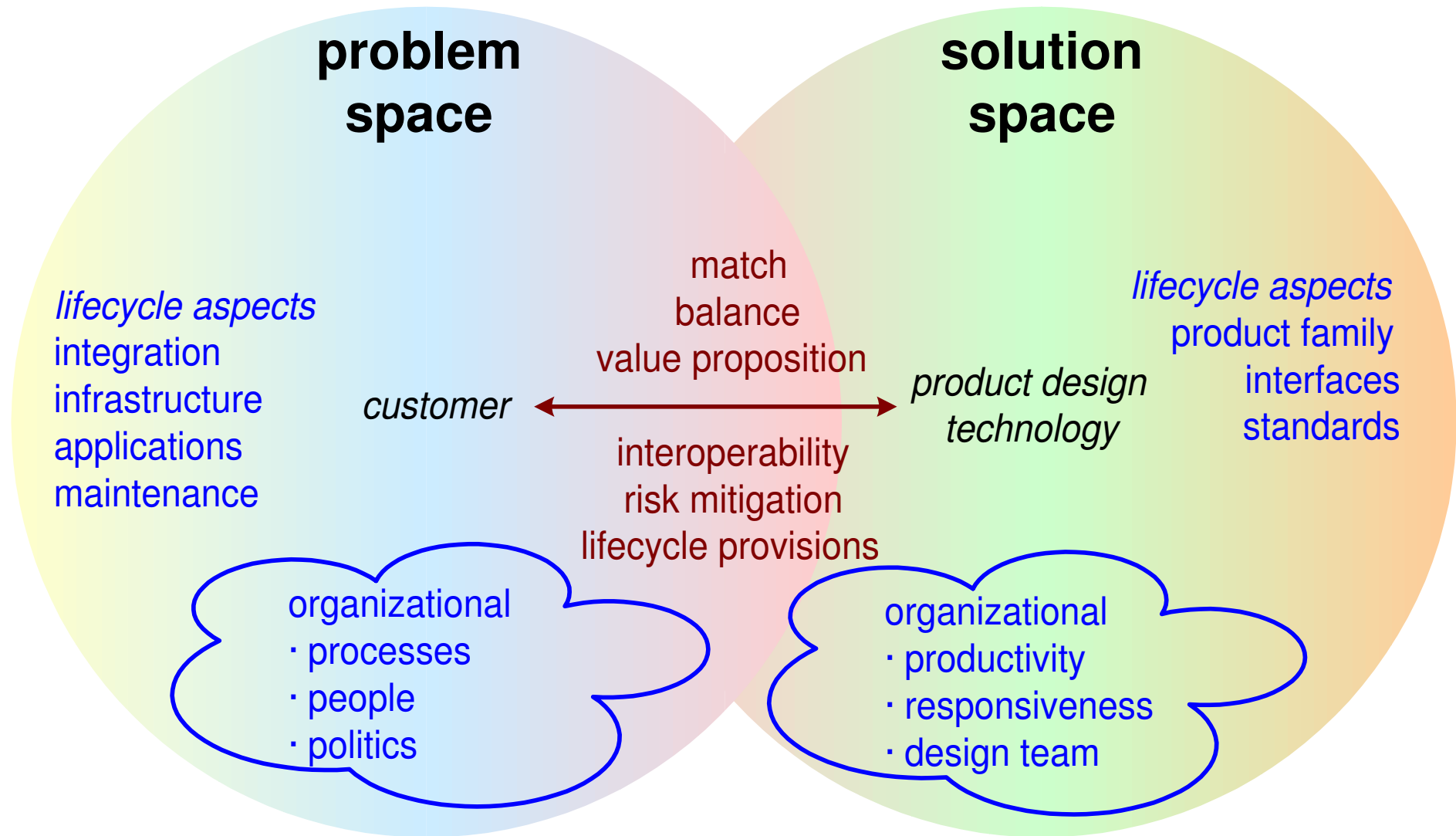
or....



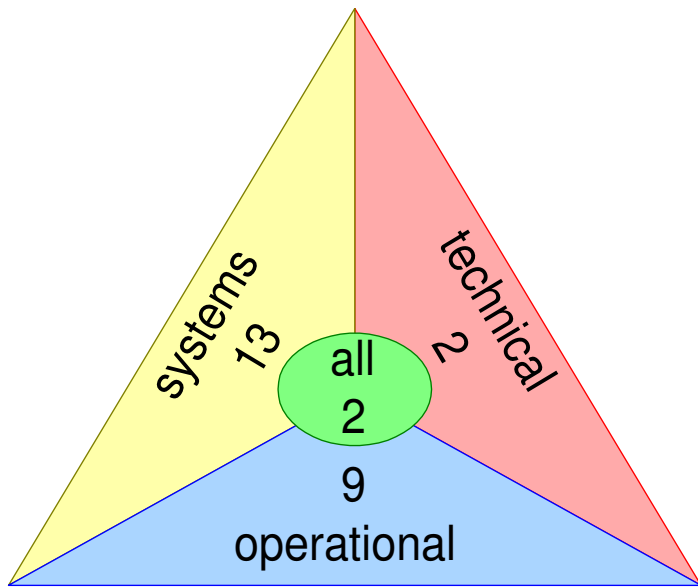
Subjects of First Meetings

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	

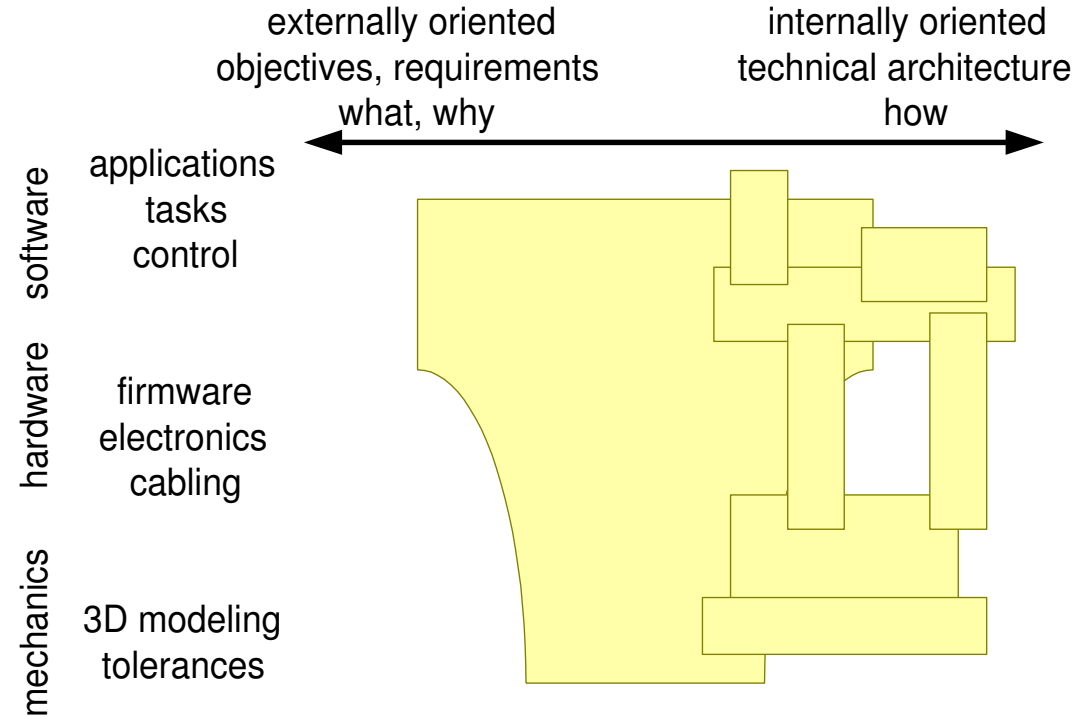
First Meeting: State-of-Practice



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

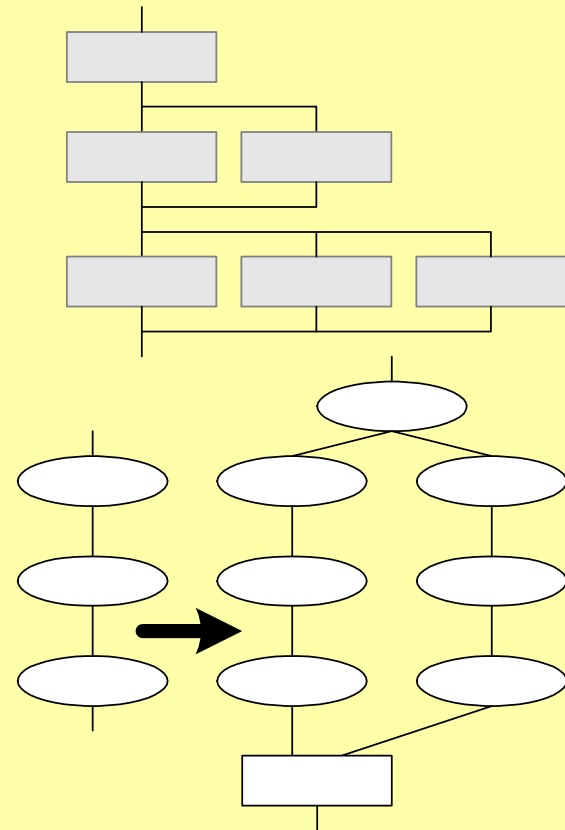
documenting problems

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