

# STANDARDS FOR ARCHITECTURE

An Assessment

# STANDARDS AND ASSESSMENT

- This is a workshop
  - So, the main object is discussion and sharing of views. Maybe even building consensus
- The topic is assessment of architecture standards
  - Recent years have brought about quite a few architecture-related standards. Some of them even agree with each other.
  - How well are they doing? Are we getting what we need?

# THOUGHTS ON ASSESSMENT

- Who would use the standard, and what would they use it for?
  - How is the user-audience defined, and is who is left out important? Is it narrow or broad?
- Is it generally “fit for use?” How do we know?
- How does it fit with other standards? Are there building blocks or is it all-or-nothing?

# ANSI/IEEE 1471

A Theoretical Assessment

# SESSION OBJECTIVES

- Present key theoretical concepts from ANSI/IEEE 1471 with relevance to other architecture-related standards
  - The “Big Ideas”
- Suggest the interrelationship of ideas and other standards
- Solicit Workshop discussion on the fitness of these ideas, and alternatives

# 1471 BIG IDEAS

- Architecture and Architecture Description are different
- There is no “master” description, architecture descriptions are fundamentally multi-viewed
- Viewpoints are distinguished from Views, and we need both
- Stakeholders and concerns are “inside” architecture descriptions

# 1471 AUDIENCE

- First, architects
  - Provides guidance to architects in writing description documents
- Second, framework developers
  - Guidance in developing domain-specific description standards
- Third, evaluators or assessors of architectures

# ARCHITECTURE VS DESCRIPTION

- The architecture of the DC-3 is....
  - Two engine passenger airplane?
  - A set of plans?
  - A set of decisions contrasting it to the Boeing 247?
- 1471 distinguishes architecture from architecture description



# WHY DISTINGUISH?

- Good practice is to focus on the decisions, and not substitute description process. Bad decisions make bad systems, and are not rescued by documents
- Multiple, different AD's can exist for one system
- Both architectures and descriptions can have standards, but they are different
- Deals with the concern over standards to increase success versus concern over scope of standard

# ANSWERING THE QUANDARY

- Challenge and answer
  - “If I follow your standard I want to be immune to big development failures”
  - Answer: Impossible for a widely applicable standard. But, if you follow the standard you can assess the fitness of your architecture
- So, 1471 is focused on supporting the development of good architectures through description

# DESCRIPTIONS ARE MULTI-VIEW

- If architecture is the set of decisions that mostly defines value cost and risk, the scope of such decisions can be diverse
  - Function, data, physical structure, software structure, development environment, cost, management approach, etc.
- There is no single language that captures all, the concerns are diverse

# THE “WAY OUT”

- Use the good modeling techniques that are known to work and make sense, stop looking for a “holy grail” language
- Instead start focusing on intra-view and inter-view consistency and completeness criteria
- “Viewpoints” standardize how to build a “View.” A View is a specific instance of models that describe the whole system from the perspective of a set of related concerns

# STAKEHOLDERS INSIDE

- Structural decisions about a system (e.g. a floor plan, functional decomposition, cost) cannot be meaningfully assessed absent requirements/objectives/concerns
  - A decision to do A versus B has merit only in the light of objectives
- So, if a description will support **architecture** assessment it must incorporate knowledge of the objectives against which the decisions can be assessed

# 1471 POSITION

- Standardize descriptions, not architectures
  - Actually, standardize how a description is defined, not a particular description
- Stakeholders, Concerns, Views. Views conformant to explicit Viewpoints.
  - No pre-specified Viewpoints, but pre-specified stakeholders (carries implications)

# WORKSHOP DISCUSSION

- Architecture is not Architecture Description: Sound or Unsound? What alternatives are there that address the same concerns?
- Should there be generally applicable architecture descriptions that are more prescriptive than 1471? If so, what should they prescribe? If not, how do we create a hierarchy of domain specifics?
- How do we reconcile the interests of different architecture research approaches in this framework?