STANDARDS FOR ARCHITECTURE

An 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
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
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
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
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
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.
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)
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?