The View From Here – Human Views in Architecture Models.

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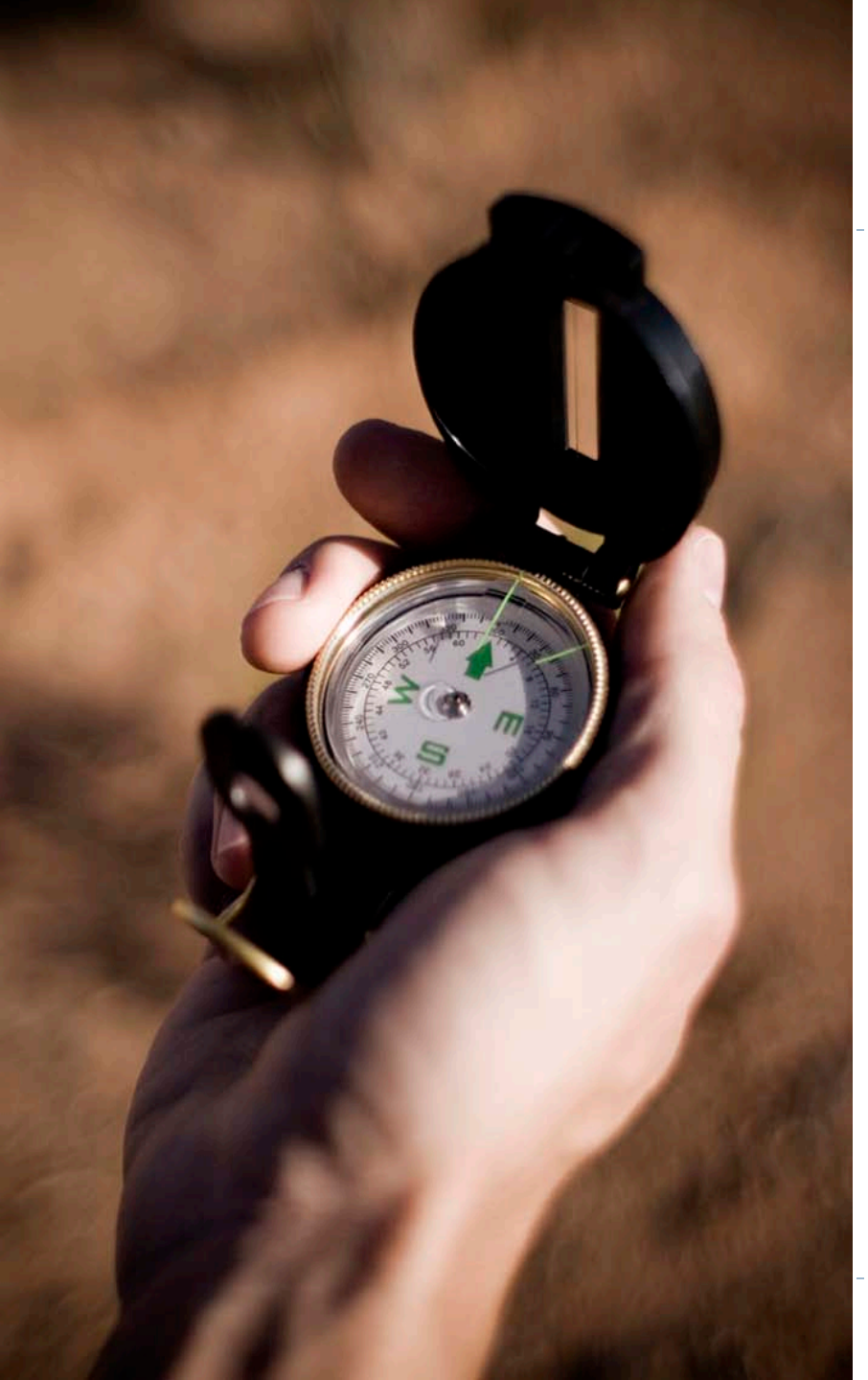


I left to go find myself.
If I get back before I return –
keep me here.

Background

- DODAF2.0 injects a stronger focus on viewpoints
- The goal of various viewpoints is to provide a mechanism for:
  - Visualizing
  - Understanding
  - Compiling

the complexities associated with complex system structure and behavior

- Models are developed to bring a dispersed focus onto a multifaceted problem space

The Existence of Systems

- No system is ever developed except for use by people.
- People add constraints to the engineering design space
- There would be no engineering design space without the people - leaving the people out of the representation completely misses the point!

Where Do You Put The People?

- Human Views
  - MoDAF and NATO
  - Multiple approaches represent attempts to provide a framework for capturing detailed information about the human elements of the system
- Human-in-the-View
  - Consistent with DoDAF 2.0 vision of the “system”
  - Translate human capabilities and limitations directly into the language used by systems engineers to describe the system.

Those Pesky People – Human Views Pros…

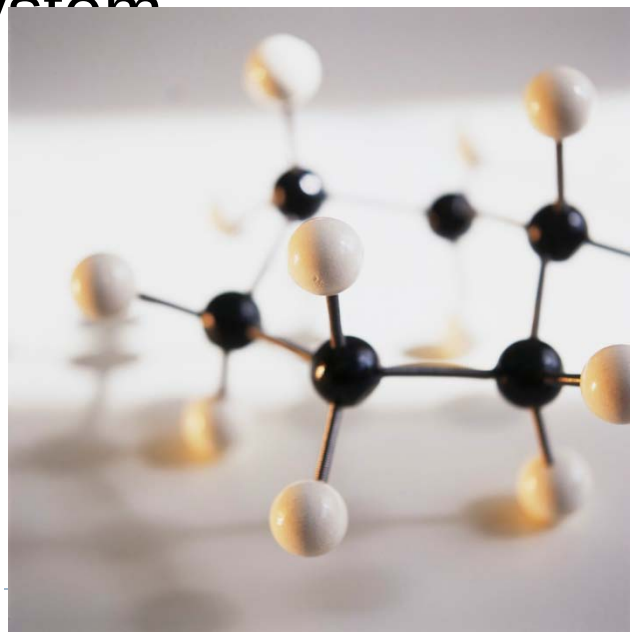
- Development of the system model would be (arguably) easier
  - Divide responsibility for defining and managing system data
  - One less element to represent in already complex models
- Supports the notion of “Fit-for-Purpose”

…and Cons

- However, development of the architecture illustrates the elements of the system and their relationships
  - Missing or misidentifying the human interfaces is a greater risk in separate views
  - It is these interface errors that are so costly later in design, development, and delivery of the system
- Segregation perpetuates incomplete understanding of the problem
  - "Human View" leads users to think of only part of the total system, a unique presentation focused on HSI-related concerns, not an integrating architecture development and specification

All Views Are Human Views

- Systems without human elements do not exist
  - Data and Information, Services and Standards all impact and are impacted by human capabilities and limitations
  - Capabilities exist to provide outcomes for human support
- A separate human view does not facilitate a complete understanding of the system
  - Humans constrain technology solutions
  - And sometimes technologies constrain human performance



All Views Are Human Views

- Existing Viewpoints include much of the information the HSI community is interested in:

AV's
–1 CONOPS, Environment, OPTEMPO, etc
–2 Performers and Skills

CV's
– 2 Quantitative performance attributes
– 3 Phasing info for MPT planning
– 6 Operational activities

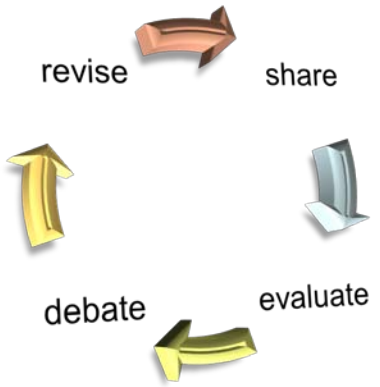
OV's
– 1 Interactions between major elements
– 2 Pattern of resource flows
– 4 Org relationships
– 5a & b Operational Tasks
– 6b Activity/work flow

SV's
– 1 Interconnections between services & service items
– 2 Resource flows between systems
– 4 I/O for functional connectivity
– 5a & b Performers executing activities
– 9 Technology and skill availability
– ….

- But, representation may need to be enhance

Is You Is, or Is You Ain't?

- Either the human is part of the system (represented as an integrated part of existing viewpoints) or the human remains outside the system, risking the continuation of the legacy of:
  - System failures
  - Errors
  - General inability to reap the benefits of technology system implementation.
- Incorporating the human into existing viewpoints will require a fundamental change in the way systems engineers conceptualize both problems and solutions – it won't be easy.
  - Data needs must be clearly defined
  - A comprehensive systems perspective will need to be maintained
  - Language and approaches will need to be synchronized
  - Human performance will need to be quantified
  - Collaboration mechanisms will have to be developed



Way Ahead

- Continue ongoing work:
  - MODAF continues to move to incorporating HV into overall architecture
  - Continue work to develop UML elements to support model development
  - Continue work demonstrating interconnection abilities of architecture models and other modeling tools
- Persist in thoughtful effort to define the data (which should be the focus of architecture development), that would be represented in products
  - Early work is not always based on known questions, known system design effort , known data needs
  - Development of a architectural model or fit for purpose view implies creating a display of architectural data for a specific purpose
  - If we don't understand and specify the purpose (or data needed to fulfill that purpose), then we can't specify the views/models.
- Adding human views (to an already long list of possible views) doesn't help get more integrated
  - JCDIS already requires certain views to be developed and populated
  - The need exists to link data needed for human related design considerations to data already captured/represented in other viewpoints to provide consistent and integrated representation of human considerations in requirements.