GridWise™ Architecture Council

A Framework for Addressing Interoperability Issues

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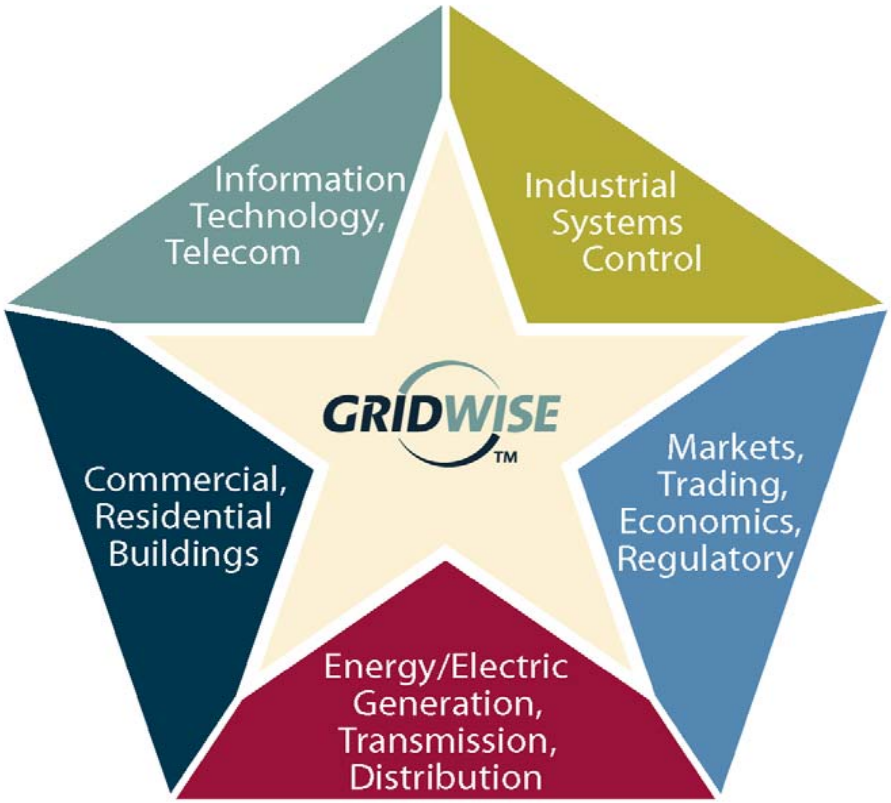
GRIDWISE

Topics

- GridWise Architecture Council (GWAC) background
- Why tackle interoperability?
- Interoperability framework introduction
- Future of framework & interoperability progress

GridWise Architecture Council



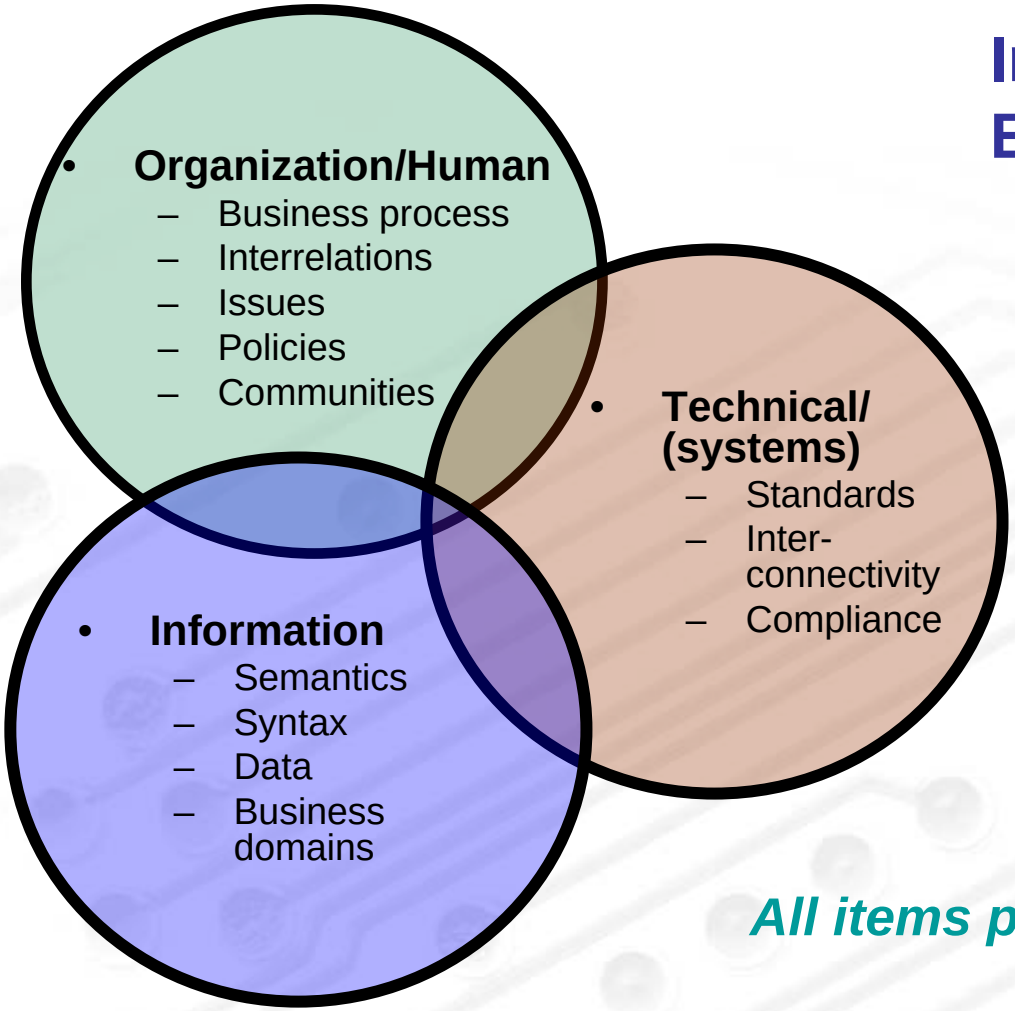
- Who
  - Respected experts
  - Volunteers
  - Cross-sector organizations
- What
  - Principles of interaction
  - Interoperability

Developing
Communicating
Guiding

The Electricity Community

→ Enabling all elements of the electricity chain to interact.

GWAC Mission - Interoperability



Interoperable Software - Expected Impact:

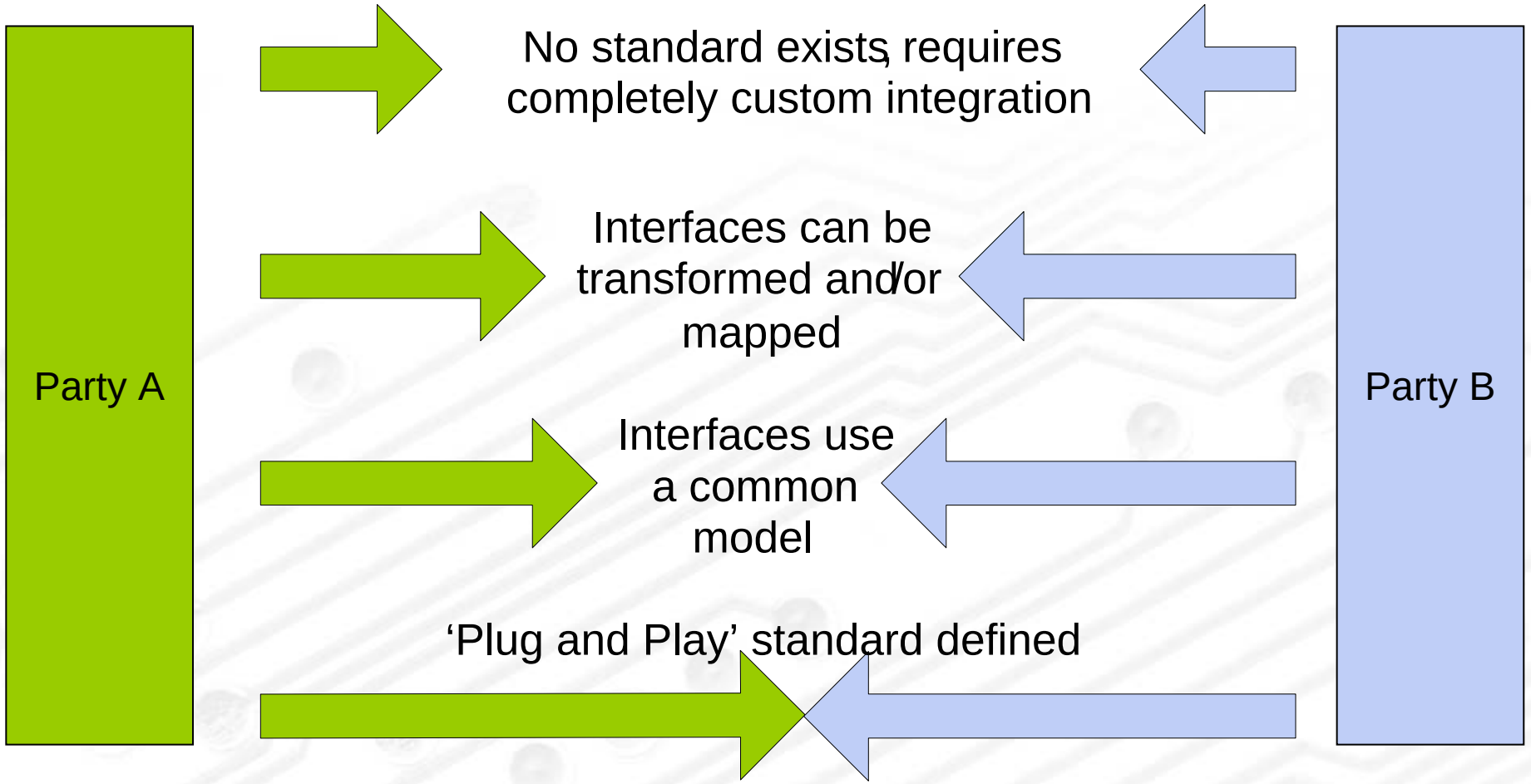
- **Reduces integration cost**
- **Reduces cost to operate**
- **Reduces capital IT cost**
- **Reduces installation cost**
- **Reduces upgrade cost**
- **Better security management**
- **More choice in products**
- **More price points & features**

All items provide compounding benefits

Interoperability – Integration at Arm's Length

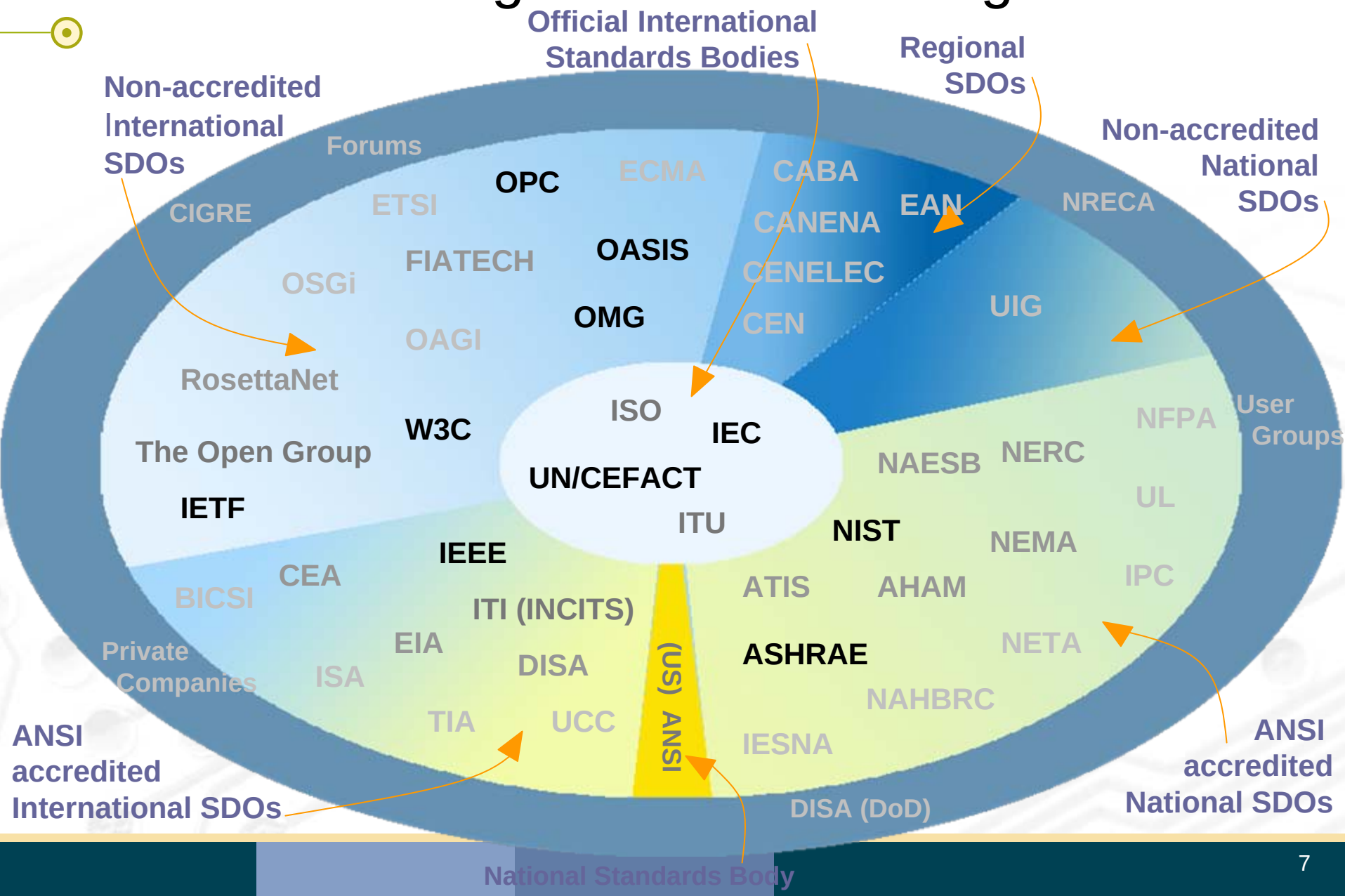
- Exchange of actionable information
  - between two or more systems
  - across organizational boundaries
- Shared meaning of the exchanged information
- Agreed expectation with consequences for the response to the information exchange
- Requisite quality of service in information exchange
  - reliability, fidelity, security

Distance to Integrate



Credit: Scott Neumann, UISol position paper

Standards Organizations: a Tangled Web



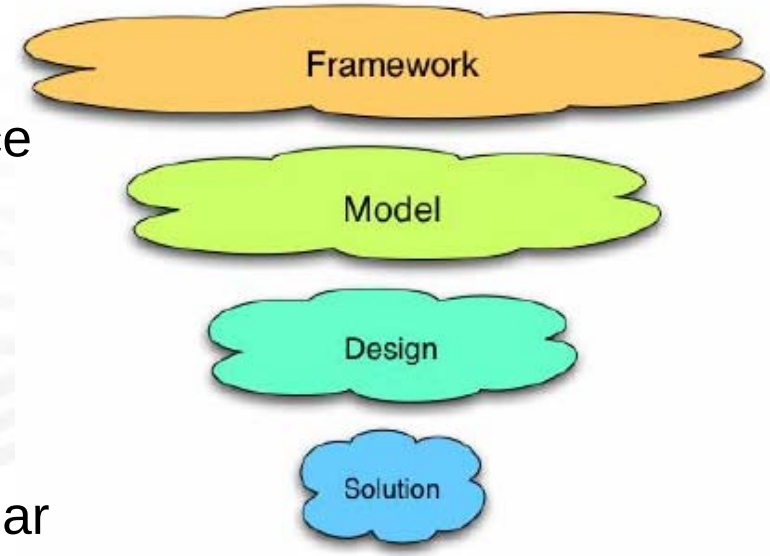
The Framework:
Context for Interoperability Dialog

Interoperability Framework

- Organizing concepts
  - Taxonomy, definitions, levels, tenets
- Attempts to simplify the complex
  - Warning – it's still complex
- Aids communication between community members
  - Careful – semantics remain a stumbling block
- Provides perspective from selected viewpoints
- Reveals points where agreement simplifies integration
- Focus plight of integrator, not component developer

What do we mean by “Framework”?

- *Framework* organizes concepts and provides context for discussion of detailed technical aspects of interoperability
- *Model* identifies a particular problem space and defines a technology independent analysis of requirements
- *Design* maps model requirements into a particular family of solutions
  - Uses standards and technical approaches
- *Solution* manifests a design into a particular developer software technology
  - Ensures adherence to designs, models, and frameworks.



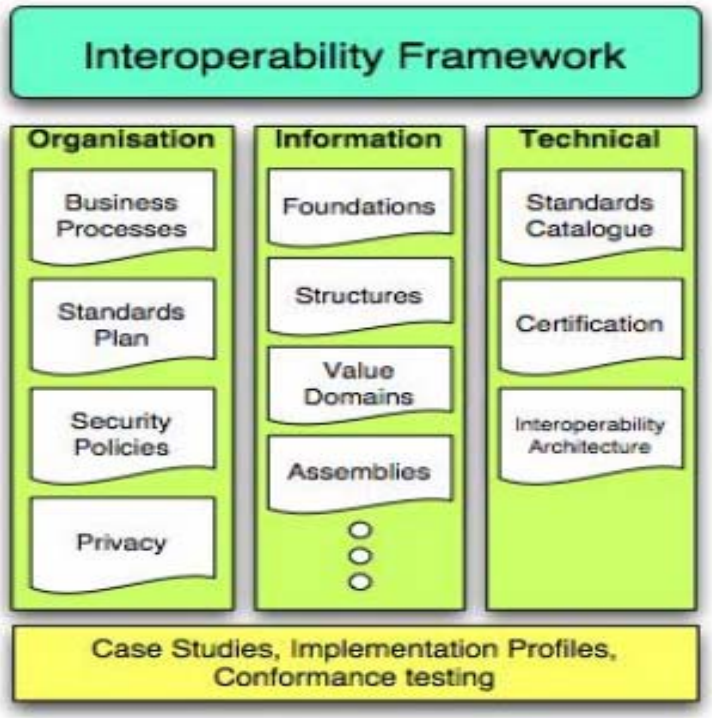
Borrowed from NEHTA: Australian National E-Health Transition Authority

System Integration Philosophy

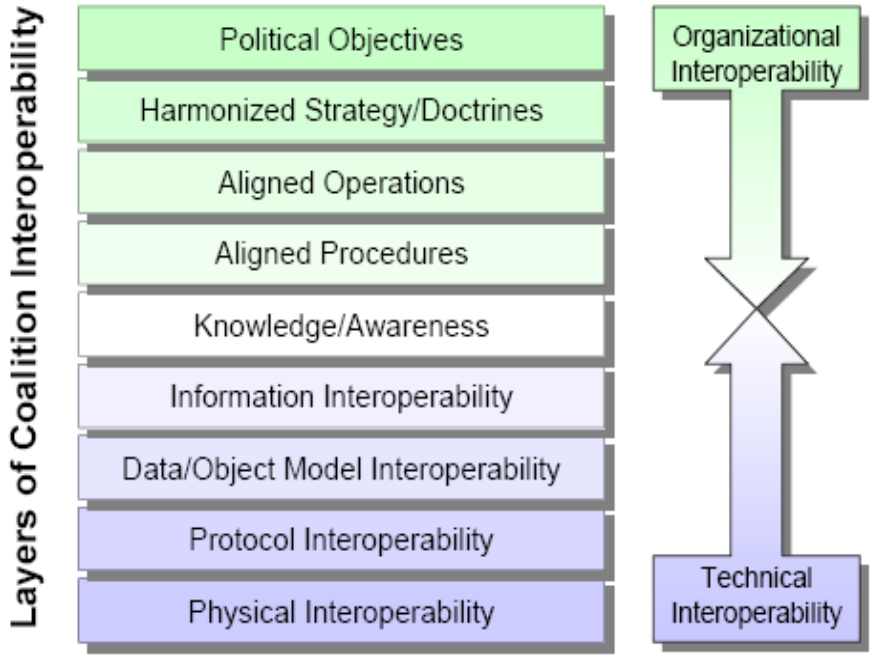
- Agreement at the interface
  - Create an interaction contract
  - Terms and conditions, consequences for failure to perform…
- Boundary of authority
  - Respect privacy of internal aspects on either side of the interface (technology choice and processes)
- Decision making in very large networks
  - Decentralized/autonomous decision-making
  - Multi-agent v. hierarchical approach
  - Addresses scalability, evolutionary change, eases integration
- Role of standards in the framework
  - Encourages standards for improving interoperation
  - Agnostic to specific standards and technologies

Framework Inspirations

NEHTA Interop Framework



Layers of Coalition Interoperability



A. Tolk, *Beyond Technical Interoperability*, 8th CCRTS, National Defense University, Jun 03

Interoperability Categories

Organizational (Pragmatics)

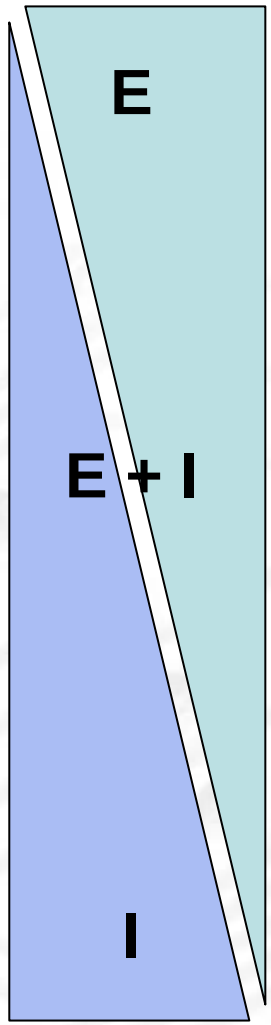
- 8: Economic/Regulatory Policy — Political and Economic Objectives as Embodied in Policy and Regulation
- 7: Business Objectives — Strategic and Tactical Objectives Shared between Businesses
- 6: Business Procedures — Alignment between Operational Business Processes and Procedures

Informational (Semantics)

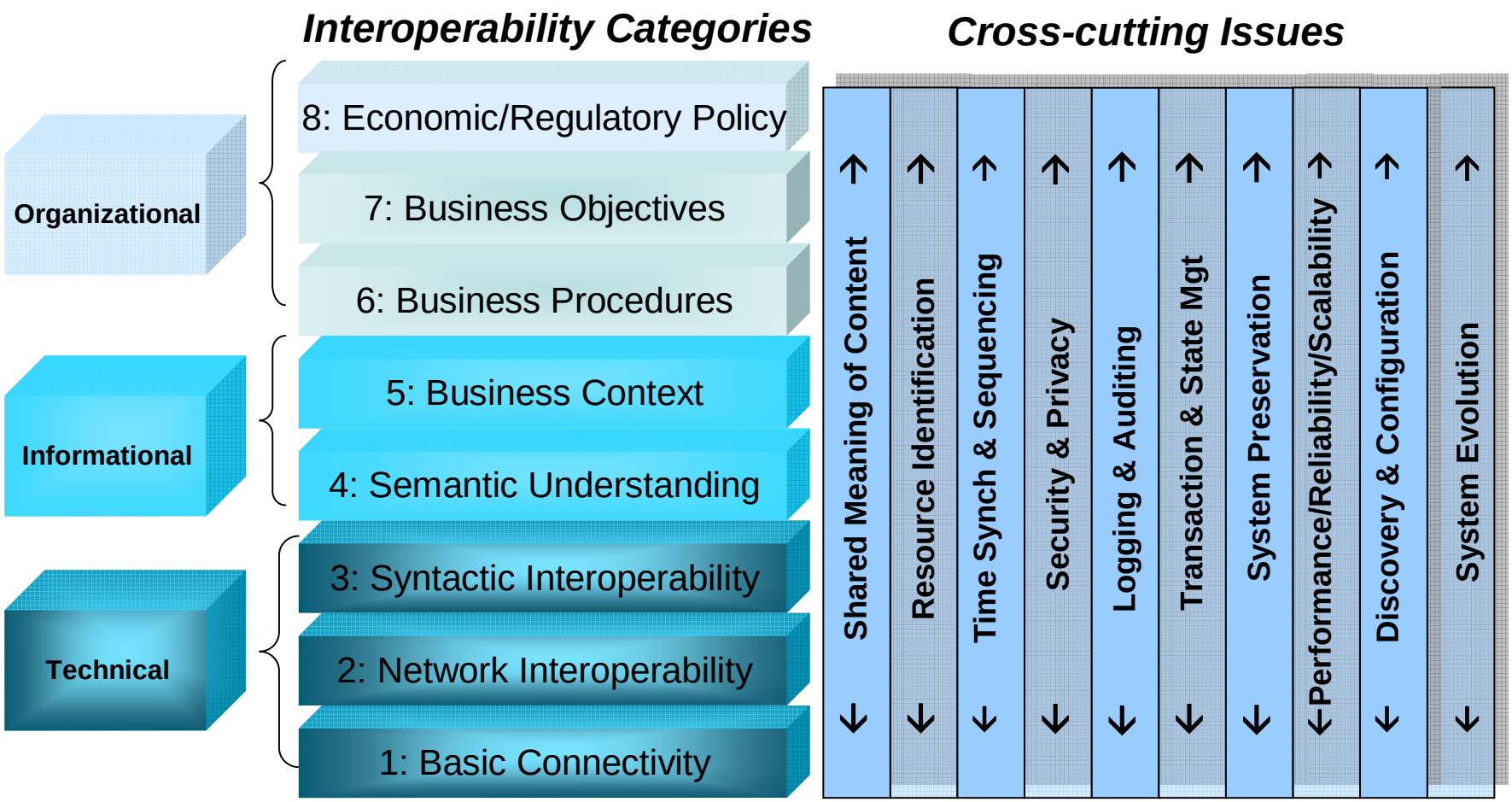
- 5: Business Context — Relevant Business Knowledge that Applies Semantics with Process Workflow
- 4: Semantic Understanding — Understanding of Concepts Contained in the Message Data Structures

Technical (Syntax)

- 3: Syntactic Interoperability — Understanding of Data Structure In Messages Exchanged between Systems
- 2: Network Interoperability — Exchange Messages between Systems across a Variety of Networks
- 1: Basic Connectivity — Mechanism to Establish Physical and Logical Connectivity of Systems



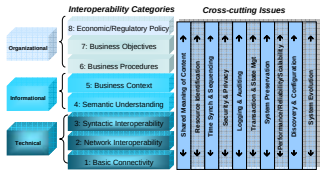
Framework Areas of Investigation



Workshop - Introductory Phase

Workshop Proceedings

Framework V1.0

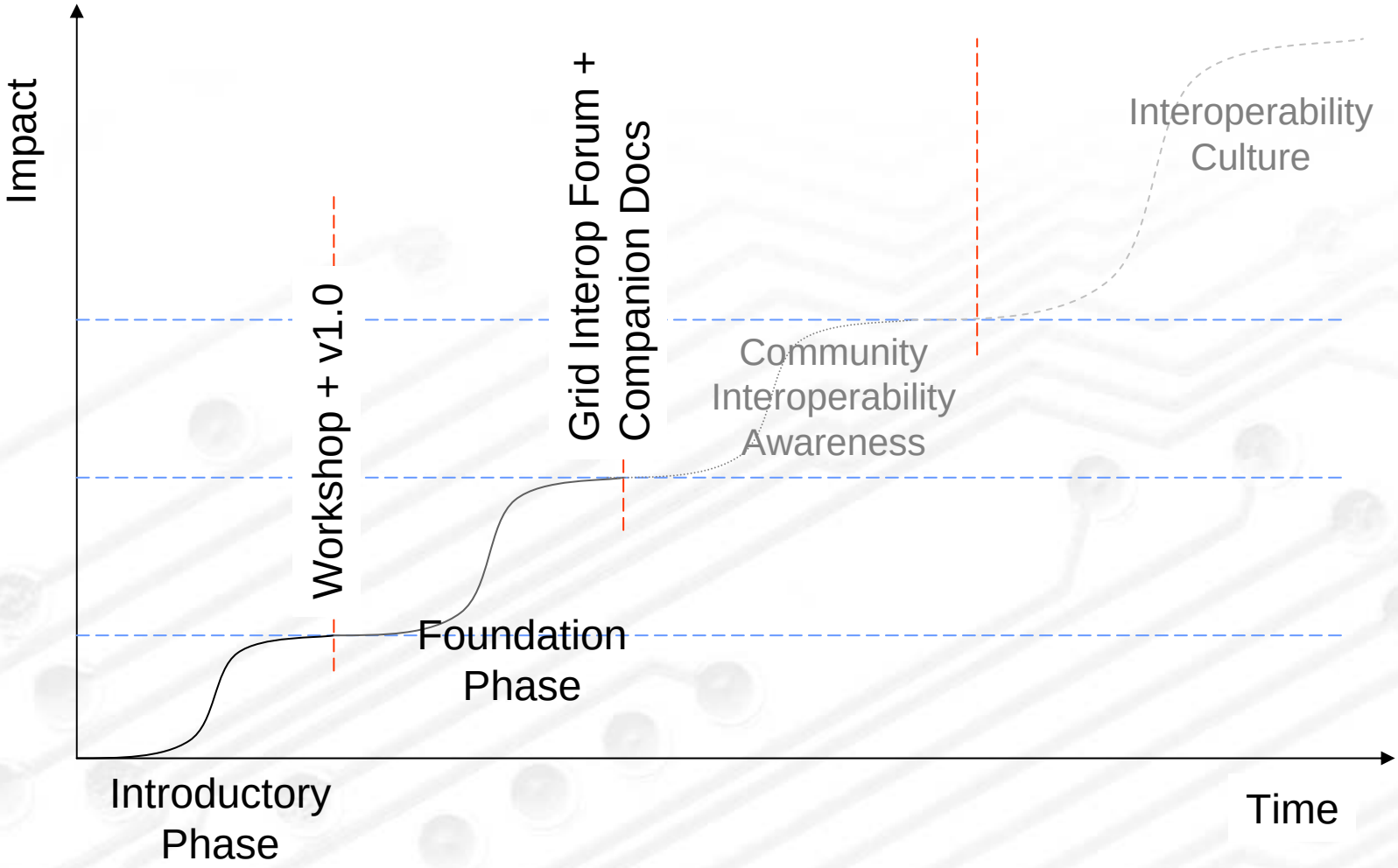


COMING SOON!

Technical Framework Introduction Document v1.0
Plus Workshop of Technical Experts

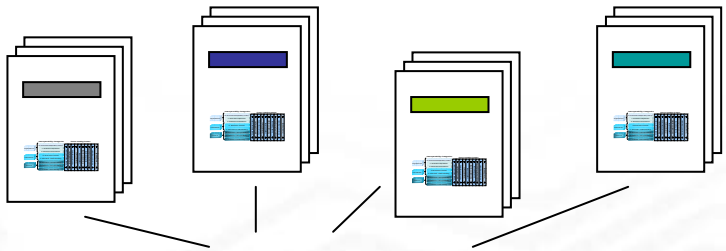
Available at www.gridwiseac.org

Framework Progression



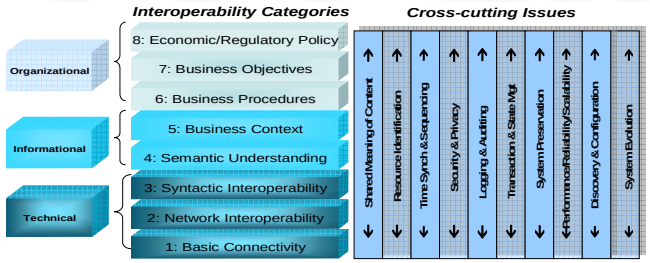
Future Framework Material

Executive Summaries
(windows onto the Framework)



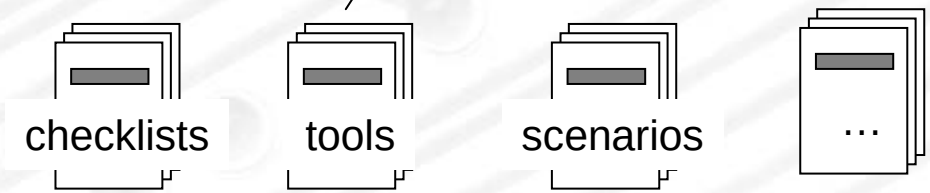
FRAMEWORK

Grid Interop Papers
(technical expertise)



Architecture Documents

Actionable Companion Documents



Grid Interop Meeting

- Objective: Engage electricity community for actionable steps to address interoperability issues
- Logistics: November 7-9, 2007, Albuquerque, New Mexico
- Call for Papers
  - Abstracts due July 30, 2007, see www.gridwiseac.org
  - Business track topics
    - Business services vision & interoperability role
    - Business constraints and barriers
    - Benefits of interoperability
    - Regulatory policy: support and impediment
    - Alignment for critical infrastructures in the information age (ensure nation's security)
  - Technical track topics
    - Cross-cutting issues
      - ID, security, time, configuration/discovery, etc.
    - Case studies of interoperability across multiple domains
    - Complex systems of systems and unintended consequences
    - Tools and methods

Get Involved!

Information:

www.gridwiseac.org

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