

GRIDWISE Architecture Council

Interoperability: **Enabling all elements of
the smart grid to interact**

FERC-NARUC Smart Grid Collaborative Meeting

Portland, Oregon

Jack Mc Gowan

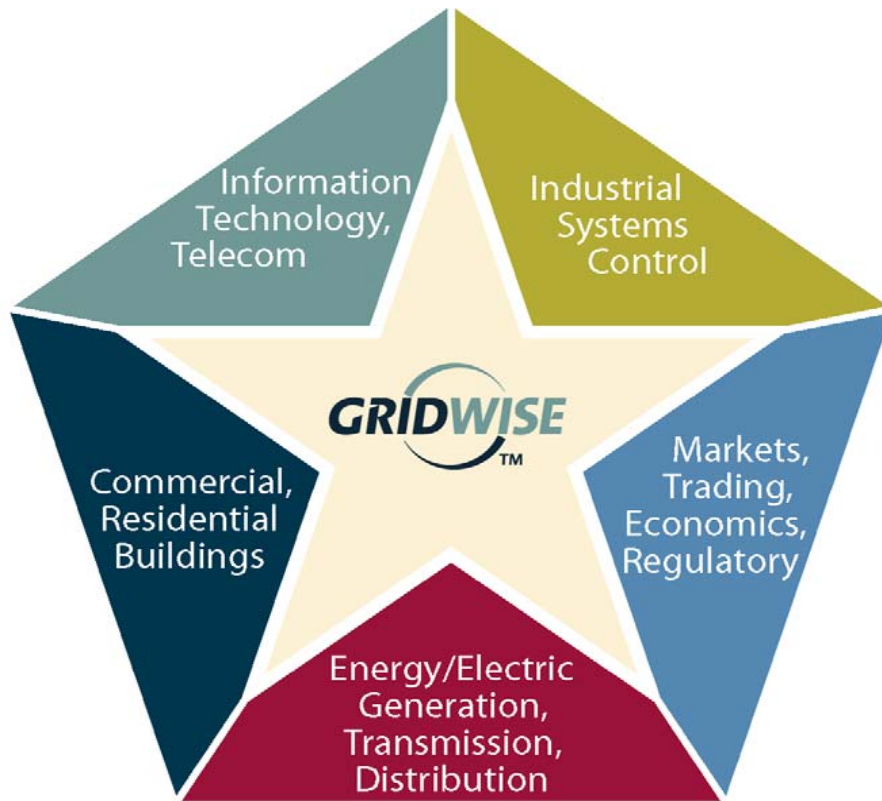
Chair, GridWise Architecture Council

6 May 2008

Smart Grid Key Points

- Optimization
 - Digital Technology: about applications not hardware (i.e. *meters*)
 - Interoperability can enable choice, price, reliability, opportunity, etc.
- Flexibility
 - Future energy “mix” predictions are uncertain, but are certain to change over time
 - Technology & methods will evolve
- Focus on the interfaces
 - Electric system too big for central design or control
 - Coordinate at boundaries – organizations take internal responsibility
- Balance alignment
 - Across industries: IT/internet, automated factories-buildings-residences-distributed resources- renewables, & power industry
 - Across policy, business, & technology

—○ GridWise Architecture Council



- Who
 - Respected experts
 - Volunteers
 - Cross-sector organizations

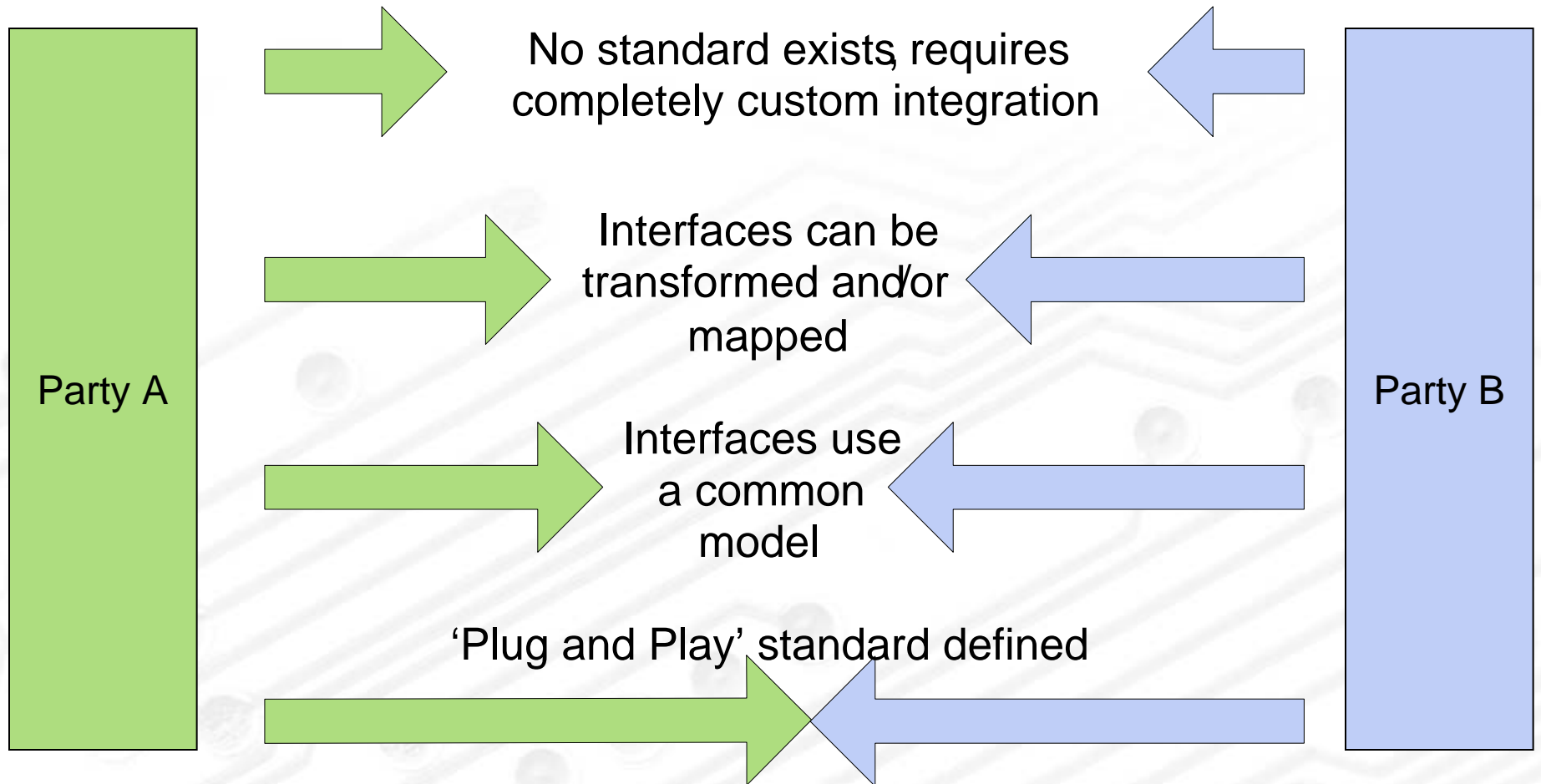
- What
 - Principles of interaction
 - Interoperability

***Advocating
Facilitating
Eye on the Future***

The Electricity Community

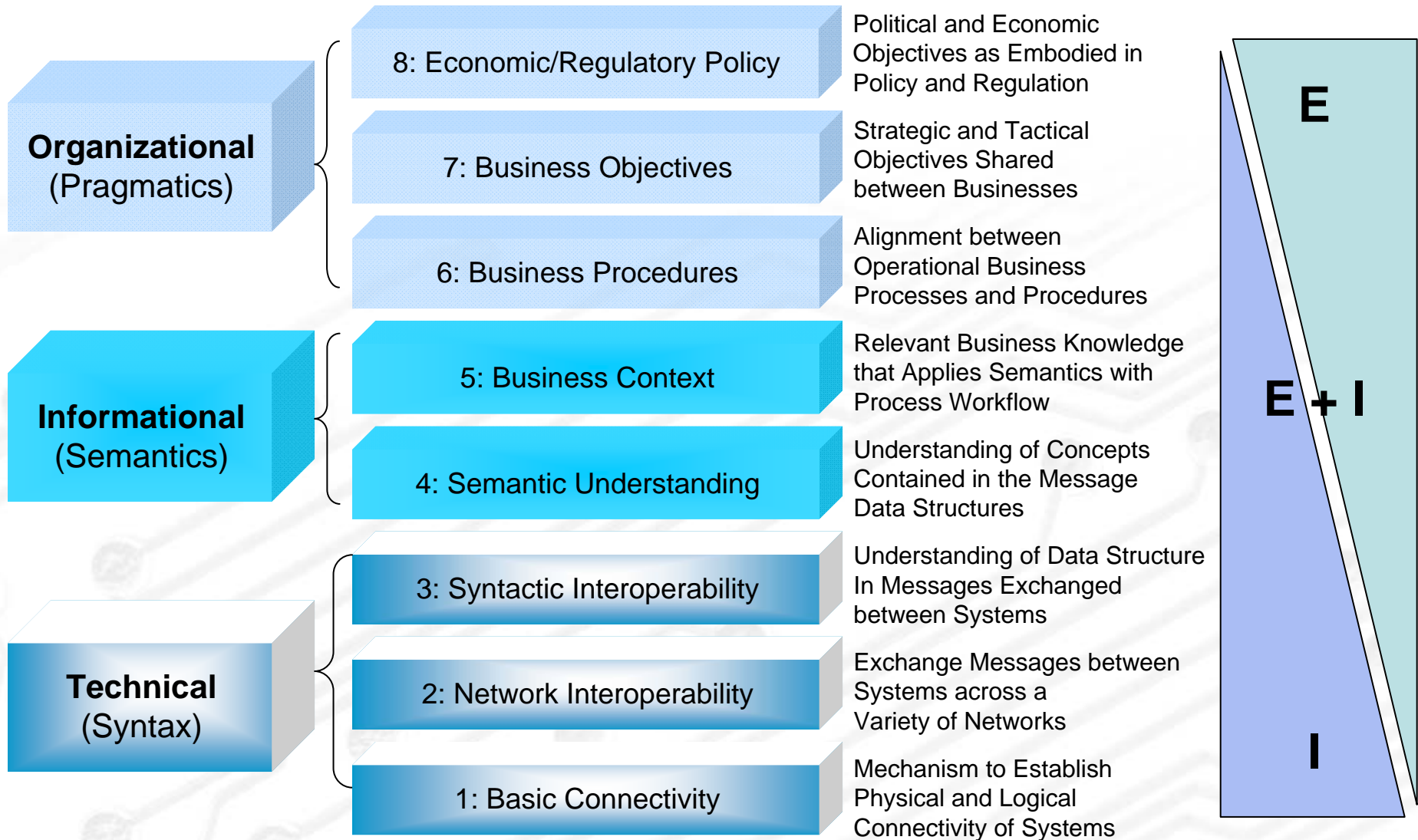
→ The future is in the linkage of sectors across the electricity chain.

— Reduce Distance to Integrate



Credit: Scott Neumann, UISol position paper

Interoperability Framework





Decision-makers Checklist

- Define “interoperability” for policy makers
- Help decision-makers understand importance of interoperability
- Guide users to recognize and implement interoperability policy
- Short and simple
- Why? Smart grid decisions that consider interoperability are better decisions

—○ What's in the Checklist?

- Introduction to and Benefits of interoperability for electric system
- Screening & evaluation tool for project or device proposals
 - Every element is a question, where Yes means that the project/device is more interoperable
- The checklist is a starting point, not an end-point



—○ Checklist Content

Architecture and design

- Points of interface
- Open architecture, avoid lock-in
- Technology neutrality, performance oriented

Interconnectivity and security

- Key data available to all authorized users
- Cyber-security measures and privacy measures
- Redundancy and failure mechanisms protects system

Evolutionary capability

- Reasonably upgradeable
- Backward-compatible with earlier equipment

Collaborator independence

- Give users, collaborators wide latitude for independent decisions and actions

—● SGC Interoperability Suggestions

- Familiarize regulatory community with interoperability issues
 - Consider interface between parties, clarify responsibilities
 - See agreement reached on technical, informational & organizational issues
- Identify and clarify social issues, such as
 - security from cyber attack
 - privacy rights - data ownership, data stewardship
 - information archival and transparency for auditing proper conduct
 - consequences for failure to perform
- Consider principles & tools such as the Decision-Maker's Checklist
 - Develop the FERC-NARUC interoperability checklist
 - Stakeholders and oversight will benefit from consistency and uniformity
 - List can be tailored to address regional and local concerns
- Use the GridWise Architecture Council as a resource to help

—● Grid-Interop Forum

- NIST developing roadmap for interoperability framework
 - Forming stakeholder working groups
 - Home, building, industrial, and T&D interfaces
 - Interop Policy WG requires FERC/NARUC participation
 - Coordinating with GWAC and standards orgs
- Grid-Interop engages electricity community for actionable steps to address interoperability
 - November 11-13 2008, Atlanta, GA
 - Roadmap workshop and panel sessions
 - www.grid-interop.com

