GridWise™ Architecture Council

Interoperability

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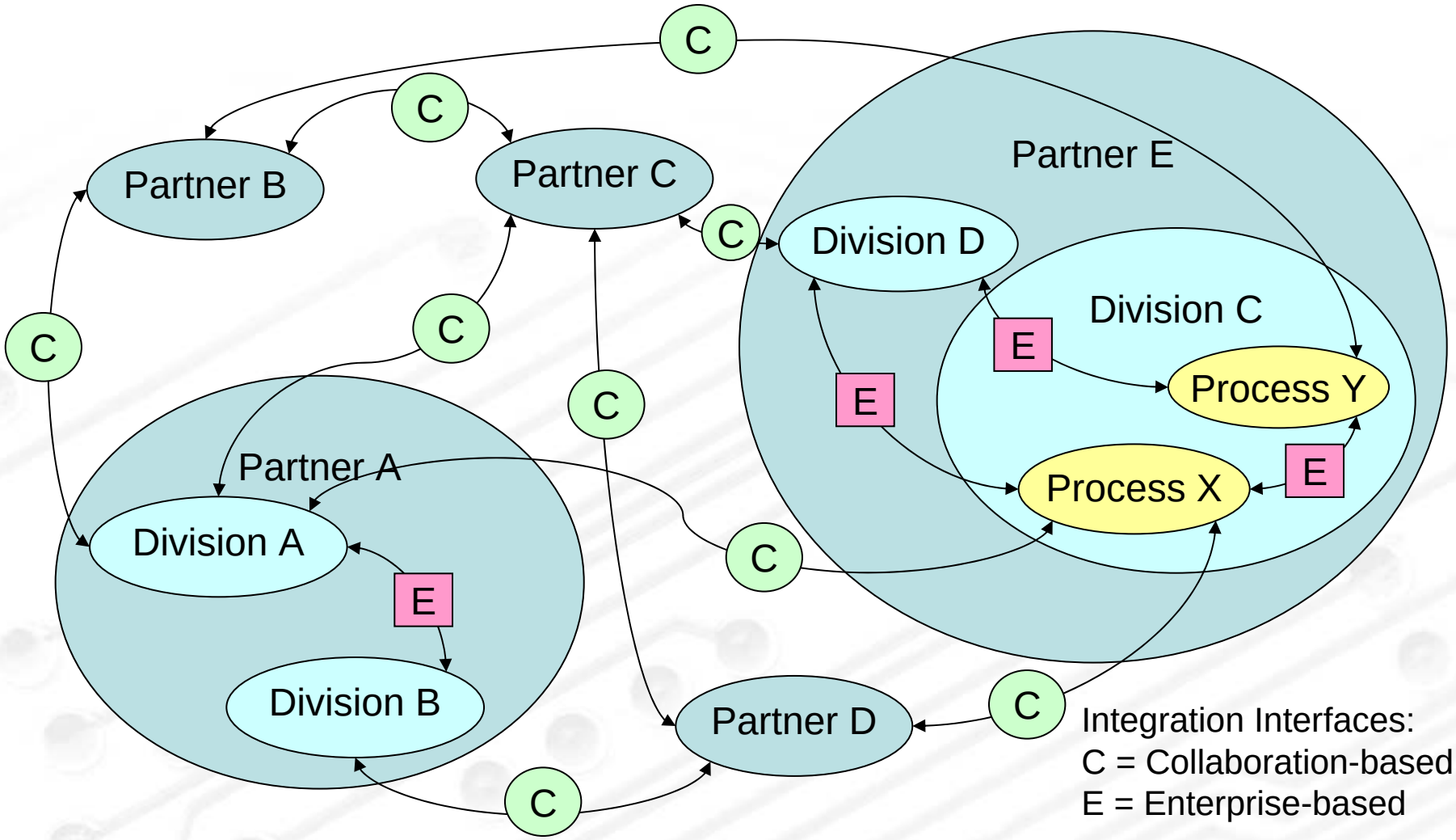
Definition of Interoperability

- Exchange of meaningful, actionable information between two or more systems across organizational boundaries
- A shared meaning of the exchanged information
- An agreed expectation for the response to the information exchange
- Requisite quality of service in information exchange: reliability, fidelity, security

Connect *Evolving* Islands of Interoperability



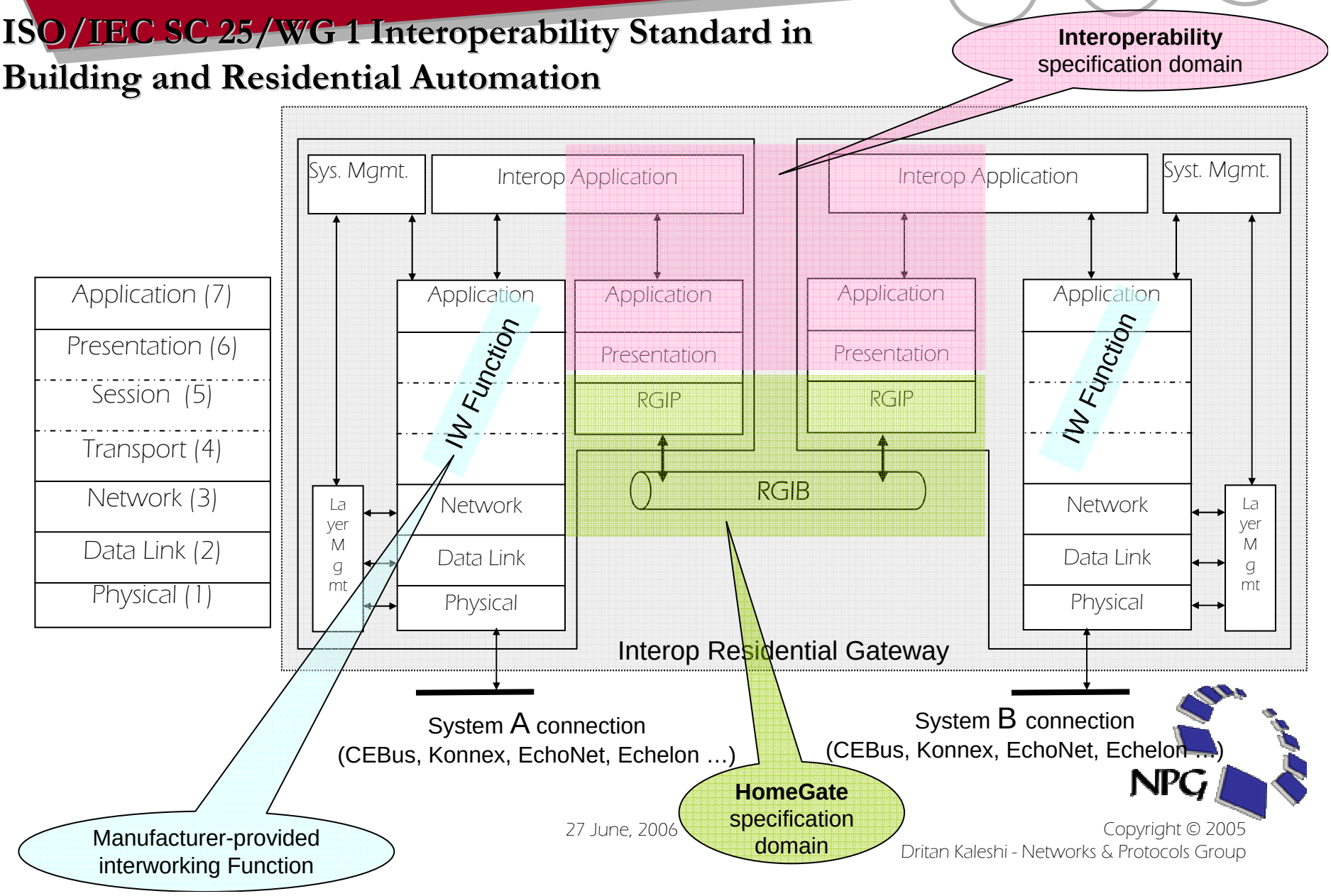
Characteristics we'd like to achieve

- Respect organizational boundaries and security across the electric system supply chain
- Embrace the evolutionary dynamics of business processes, technologies, and interfaces
- Enable the discovery and creation of new value chains and participants
- Enhance the resilience of the system to natural or deliberate attacks

Tolk Levels

No.	Technical Interoperability	Conceptual	Organizational
5		Conceptual Interoperability	Aligned Procedures
4	Sharing of Information (universal interpretation of information)	Dynamic/Pragmatic Interoperability	Knowledge Awareness
3	Automated Sharing of Data (common exchange model)	Semantic Interoperability	Information Interoperability
2	Structured Data Exchange (requires manual compilation)	Syntactic Interoperability	Data/Object Model Interoperability
1	Unstructured Data Exchange (free text)	Technical Interoperability	Protocol Interoperability
0	No Data Exchange	No Interoperability	Physical Interoperability

ISO/IEC SC 25/WG 1 Interoperability Standard in Building and Residential Automation



Constitution Principles: Business

- B01- (v2.0) Subject to regulatory monitoring requirements, interoperability approaches should focus on the information exchange and the interaction at the boundary between transacting parties while respecting the privacy of the internal aspects of their business (technology choice and processes).
- B02- (v2.0) Interoperability approaches must support the ability to roll out changes to contracts or market rules while preserving stable operation of the overall electric system.
- B03- (v2.0) Interoperability approaches must address the common types of marketplace transactions among parties along the path between producers and consumers appropriate to the level of service provided.
- B04- (v2.0) Interoperability approaches must consider implementation costs/benefits and impacts to the parties involved in the transaction.
- B05- (v2.0) Interoperability approaches must support verification and auditability of transaction completion and be able to validate that contract terms have been met.

Subject to the regulatory environment in which they operate, organizations are free to structure themselves in the manner they see fit to best deliver goods and services and compete with other businesses. They interact with other organizations through contracts of their own choosing in as open a marketplace as possible. Enterprises can be categorized into wholesale and retail segments; however, the path from producer to consumer may pass through a variety of businesses each providing their unique value added contribution. There is no standard process of running a business.

Constitution Principles: Technology

- 106- (v2.0) Interoperability strategies shall address the ability to set up (i.e., discover and configure) system components so they can join, modify (e.g., upgrade), and terminate their positions in the system.
- 107- (v2.0) An interoperability framework must address information system security and privacy concerns, balance them appropriate to the service provided, and support adaptation to future risks.
- 108- (v2.0) As appropriate to each interaction, an interoperability framework should address strategies for e-business transactions that may include creation of a transaction, negotiation, scheduling, operations, settlement, billing and financial transfers.
- 109- (v2.0) An interoperability framework must be practical and achievable:
  - Meets performance requirements.
  - Is reliable.
  - Is scalable.
  - Has sufficient breadth to meet the range of business needs.
- 110- (v2.0) An interoperability strategy must accommodate the coexistence of and evolvement through several generations of IT standards and technologies that will reside at any point in time on the Grid.

Advances in information technology empower electronic business and intelligent machine connectivity. Large sectors of the economy rely on information technology to enable greater levels of productivity, efficiency, and reliability of service. This provides a vast marketplace for the application of information technology and reduces the need for industry specific information technology approaches. Information technology is characterized by a high rate of innovation with impacts to large scale systems of systems that must cope with the deployment of new solutions as legacy approaches continue to operate in tandem.

Constitution Principles: Regulatory

- R01- (v2.0) Interoperability strategies and issues must be communicated in a form to be understood by regulators and policy makers.
- R02- (v2.0) Interoperability approaches among organizations must allow regulators the ability to verify that business is conducted within established rules and that all relevant transactions are auditable.

Business is conducted under a formal set of rules or laws meant to follow policy guidelines. The rules are set, maintained, and enforced by various local, state, and federal agencies in accordance with their jurisdictions. Business interactions associated with the electric industry are reviewed and monitored by those regulatory bodies whose role is to ensure a viable electric system environment that supports our economy and balances issues of social equity.

Reference

- Constitution - www.gridwise.com
- Architecture Council - www.gridwiseac.org