

Smart Grid Dictionary: A Common Information Model

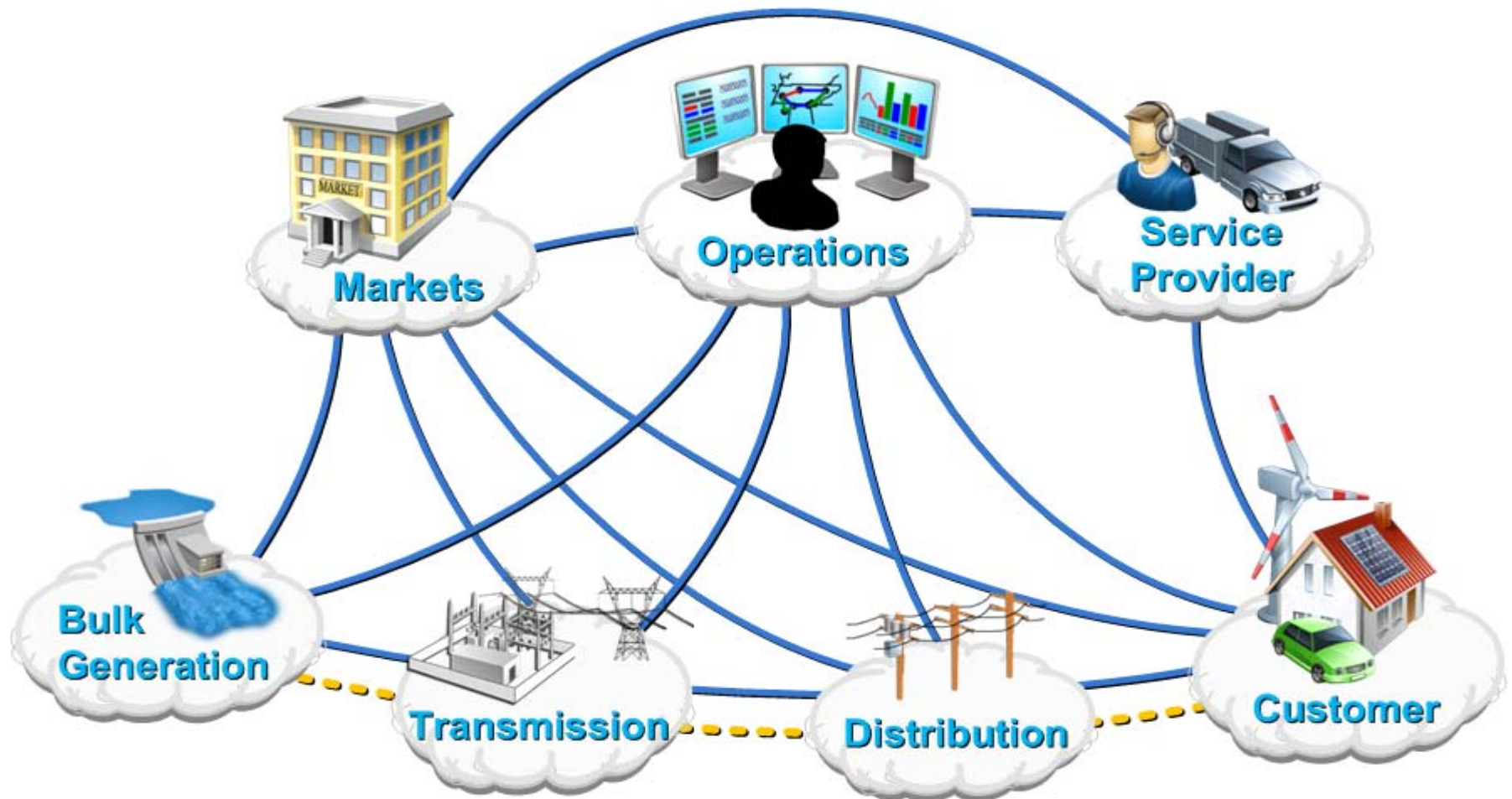
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January 2010

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Smart Grid Conceptual Model



Siloed Definitions

- Each Smart Grid domain has its own language
 - Electrical industry
 - Operational terms
 - Technical terms
 - Regulatory terms
 - Telecommunications
 - Same as above
 - Acronym-rich environment
 - Difficult to sift through data to get correct definition
 - New terms coined at every conference



New Technologies and Markets

- Emerging technologies
 - Renewables
 - Energy Storage
 - Home Energy Management Systems
- Existing technologies - new domain applications
 - Security
 - IP
- Expanding markets for information and power trading
 - New business entrants
 - Consumers
 - New policy considerations such as privacy



Popular Analogies for the Smart Grid



Plus 7 blind men

Minus the tower



Benefits of A Common Information Model

- Basic building blocks
 - Everyone speaks the same language
 - Vendor-agnostic
- Standardized language for easy exchange of information between all domain players
- Consistent description of entities, terms and jargon across Smart Grid domains
- Solid foundation for training
- Subject to review and approval
- Common to many business sectors

Information Sources

**Department of Energy &
National Labs**

NERC

EPRI

FERC

**Industry
Associations**

**Industry conferences
seminars & webinars**

**SDOs: IEEE, ANSI,
NEMA, NIST, ISA,
IETF, IEC, etc.**

Utilities

**ISOs/RTOs, state PUCs and Energy
Commissions**

Dictionary Principles

- Create definitions to eliminate confusion and accelerate Smart Grid progress
 - Synthesize disparate definitions
 - Reflect Smart Grid scope
 - Avoid vendor jargon
- Reflect different meanings wherever necessary
 - CSP: Curtailment Service Provider and Concentrating Solar Power
 - IEC: International Electrotechnical Commission and International Engineering Consortium
 - OASIS: internet tool and non-profit organization



More Than Just Definitions

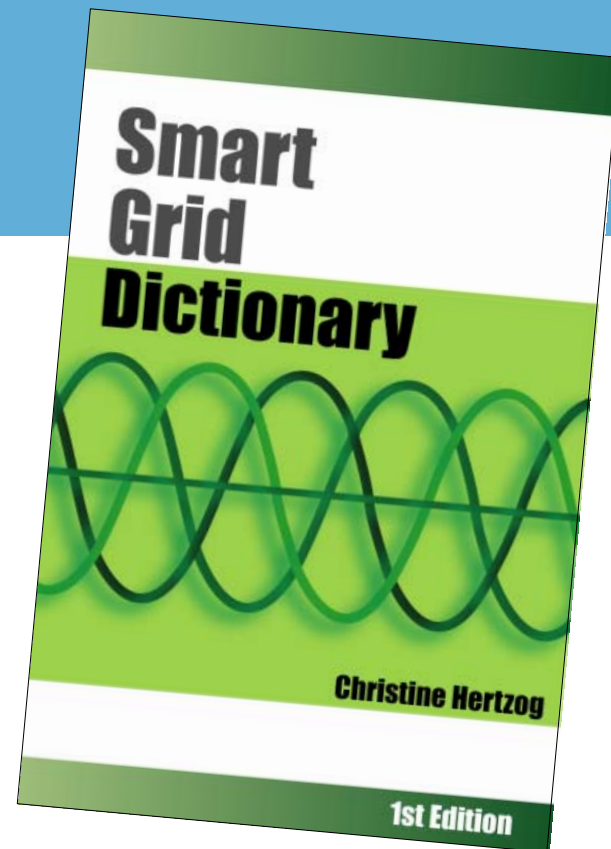
- Entries include websites for easy access to important governmental agencies, organizations and associations
 - The “A” List: ACEEE, ACORE, AEE, AEIC, AESO, AESP, ANSI, APPA, ARRA, ARAM, ASE, ASERTTI, ASHRAE, ASPRS
- Inventory and description of pertinent standards across Smart Grid domains including
 - ANSI, IEC, and IEEE
- Technology-neutral descriptions
 - No winners or losers



Basic Definitions

The Smart Grid is a bi-directional electric and communication network that improves the reliability, security, and efficiency of the electric system for small to large-scale generation, transmission, distribution, and storage.

It includes software and hardware applications for dynamic, integrated, and interoperable optimization of electric system operations, maintenance, and planning; distributed generation interconnection and integration; and feedback and controls at the consumer level.



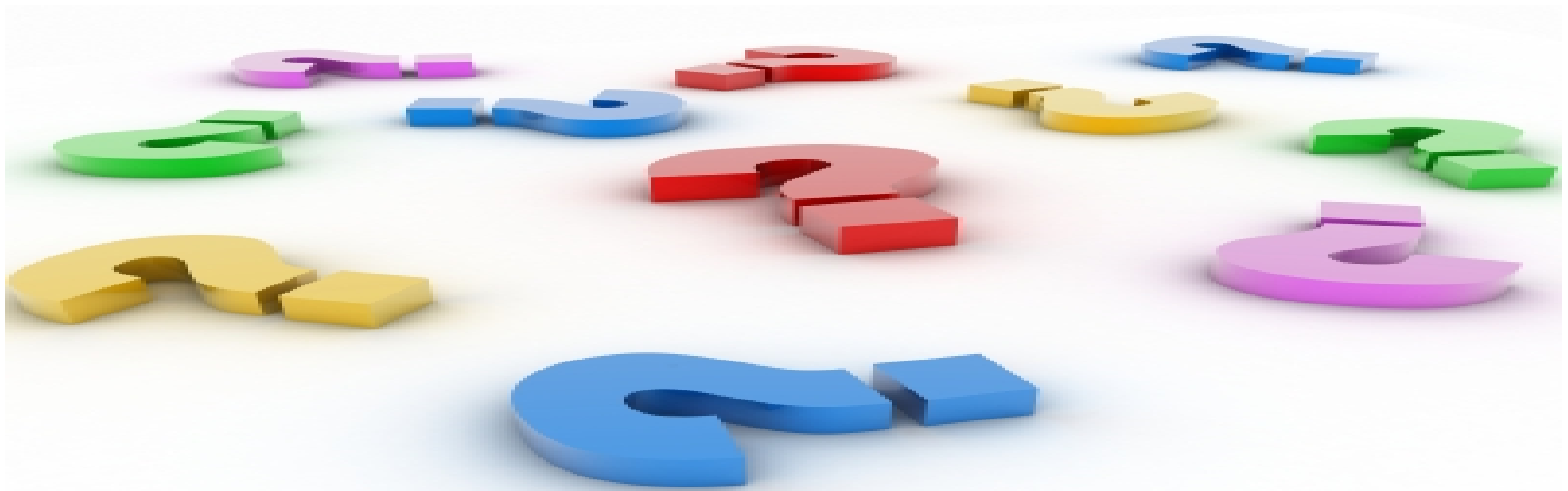
Testimonials

- “One of the greatest assets that the Smart Grid transformation could have at this critical time is the “Smart Grid Dictionary”. Having clear and comprehensive definitions of the essential terminology will bring much needed clarity and precision to this often confused and abused, but profoundly important, national initiative.”** Kurt Yeager, Executive Director, The Galvin Electricity Initiative
- “The Smart Grid Dictionary is one of the most comprehensive information resources that exists on that broad topic we call the Smart Grid. It’s an excellent Dictionary!”** Michael Ebert, Principal Research Associate, George Mason University
- “I looked over the Smart Grid Dictionary and I thought it was simply brilliant! I looked up 25 things I thought should be in there and they were all there with very succinct and clear definitions.”** Former California Public Utilities Commissioner
- “Coming from server and microprocessor chip design backgrounds, I never heard of terms like AMI and Demand Response. Smart Grid Dictionary has been a one-stop shop for me to get crucial help when climbing up the steep Smart Grid learning curve. I'll be one of the loyal readers of the Smart Grid Dictionary for the foreseeable future. It suffices to say that the Smart Grid Dictionary has become one of the most important resources I could not live without. Thank you very much for making such a valuable resource available.”** Michael Hsieh, UC Berkeley Extension Instructor and Smart Grid Enthusiast

Where To Buy

- www.SmartGridLibrary.com
 - Ebook = \$24.95
 - Hyperlinked for cross-referencing and drill downs
 - Print book = \$34.95
 - Same content in both formats
 - Free tools and reference information
 - Free acronym finder on site
 - Updated quarterly
- Amazon sells print book too
 - Will anyone buy the used book at \$54.93?

Questions and More Information



Thank you!

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Sneak Peek - Second Edition

- Advisory board for Second Edition
- Participation in NIST and NAESB glossary initiatives for definition alignment
- More European terms

- Some New Entries:

- | | |
|------------------|------------------|
| – Carbitrage | - Insolation |
| – ENTSOE | - Load shifting |
| – Ferroresonance | - OSHAN |
| – GAPP | - parasitic loss |
| – GO 131-D | - voltage sag |