

Standards and Interoperability

Key Issues ?

1. What is interoperability and why do we need it?
2. Why standards?
3. How can we visualize the smart grid to evaluate interoperability?
4. Where are standards needed?
5. What are the key standards challenges?
6. What should be specified in regulatory action?
7. What do we do about cyber security?

What Is Interoperability:



For the applications of interest, can we agree on:

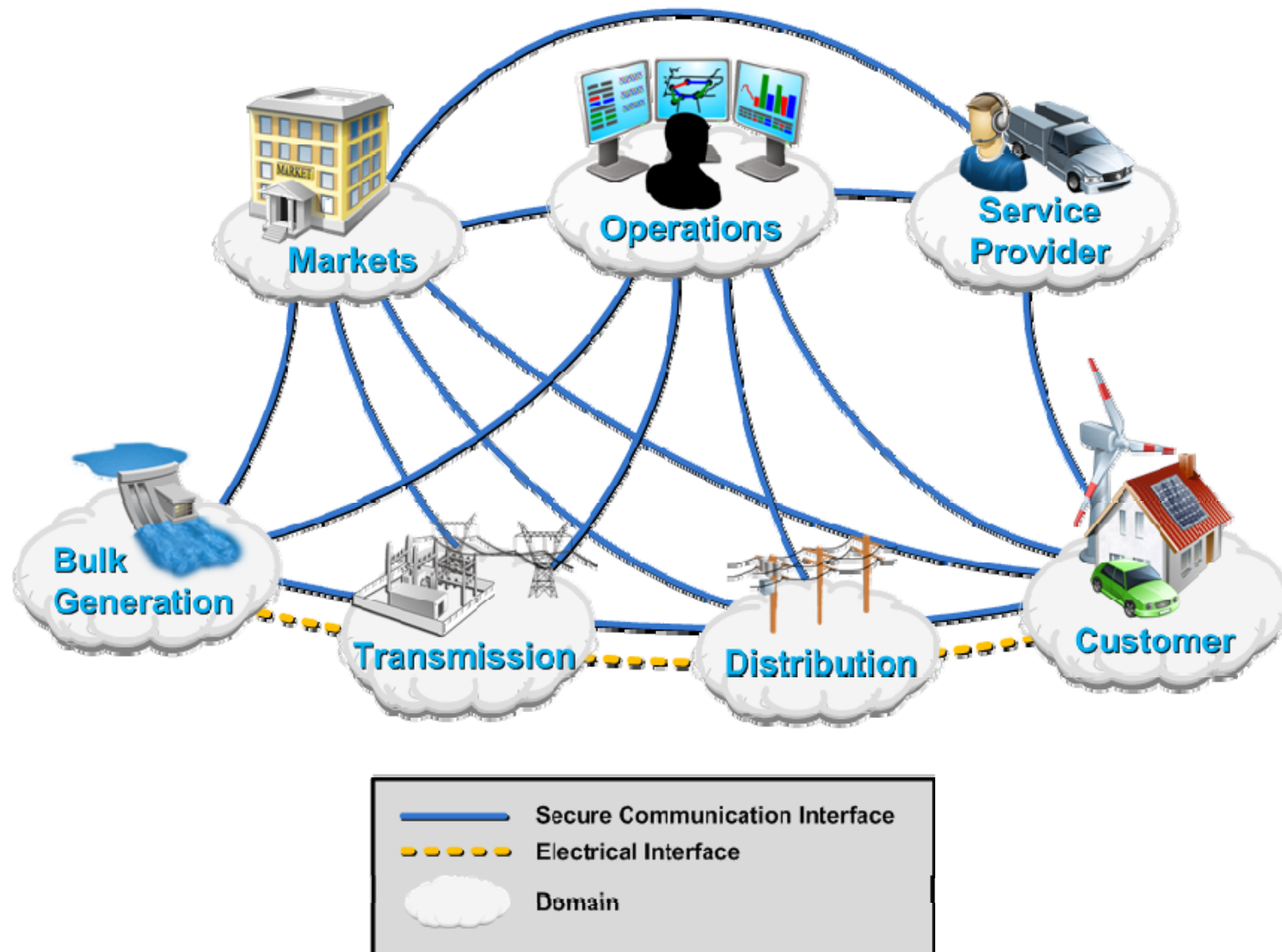
- What information is to be exchanged?
- What is the data to be named?
- Who is permitted to talk?
- In what format are messages transmitted?
- What frequencies and signals are used?
- What the connector looks like?

The answers are different for:

- Different physical areas of the grid
- Different functions to be performed
- Different policy goals to be achieved



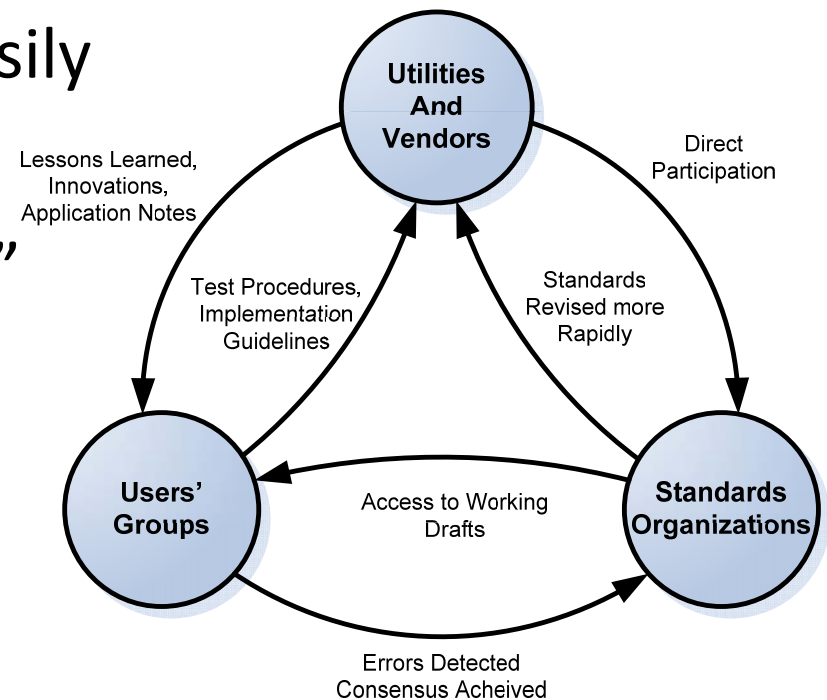
NIST Conceptual Model:



Why Standards:



- Avoid re-inventing the wheel
- Learn from industry best practices
- Specify requirements more easily
- Reduce integration costs
- Prevent single vendor “lock-in”
- Vendors share a much larger market

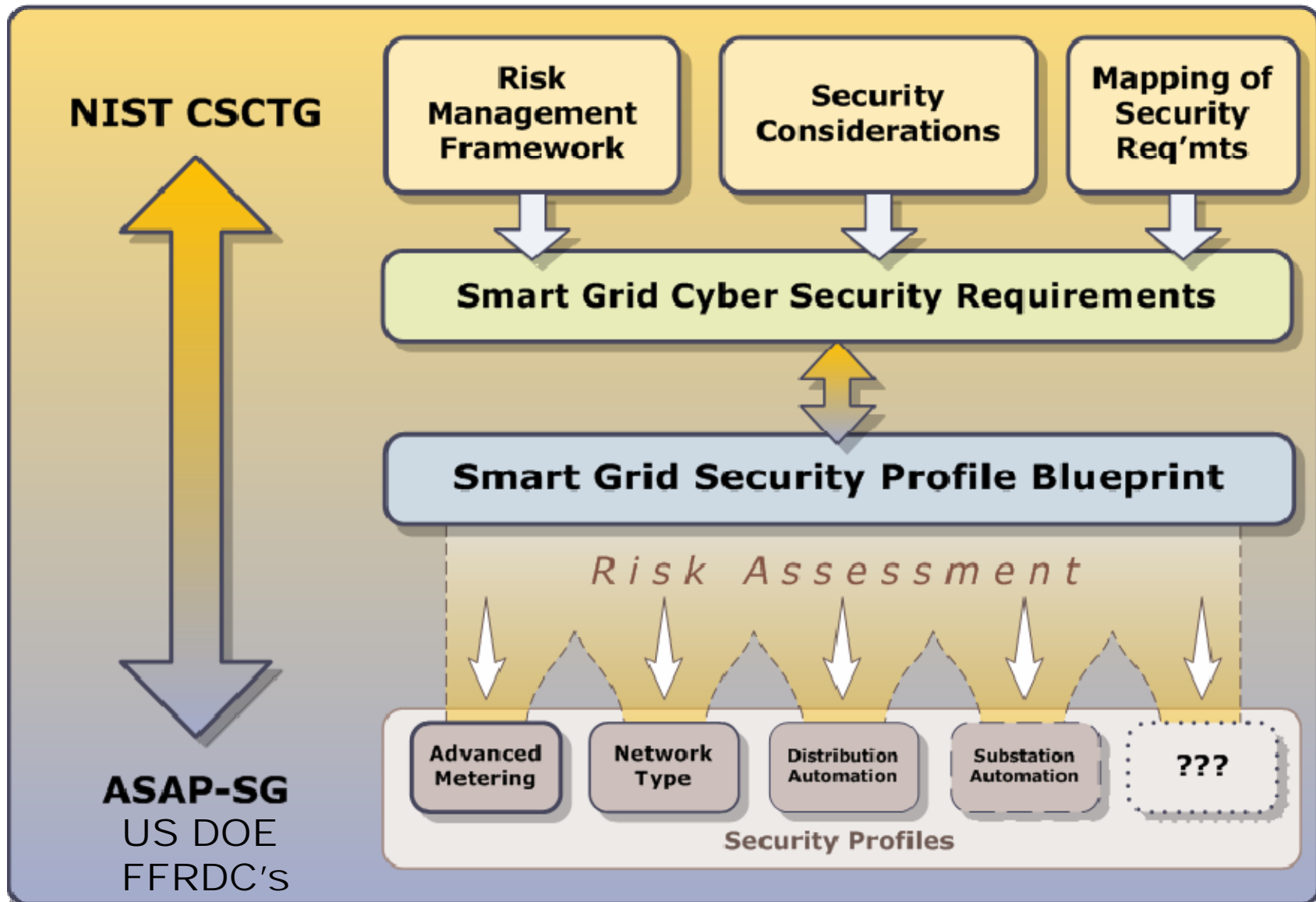


Major Challenges:



- Pervasive deployment of variable generation (wind and solar) requires smart grid elements to enable it
- Pervasive deployment of distribution connected DG and PEV affects distribution planning, upgrades, operation and protection dramatically
- Pervasive deployment of demand response impacts control system stability
- New standards, technologies, and best practices are required to address all of these – once the requirements are known

A few words on security:



Guidance and Discussion Points:



- Standards provide the most benefit when implemented frequently and pervasively
- Many of the standards we need are already here – it is likely more damaging to delay implementations – PC maturity effect
- Specify requirements not specific technology or standards
- Engineers and technologist should try and match stated requirements to NIST LHF standards first
- Encourage the application of industry best practices for interoperability as defined by NIST
- Utilize GWAC decision makers checklist for interoperability when evaluating proposals
- Participate in NIST efforts aimed at regulators to codify models and methods for tariff description
- Watch DOE/NIST/UCAIug security efforts and be ready to encourage application of results

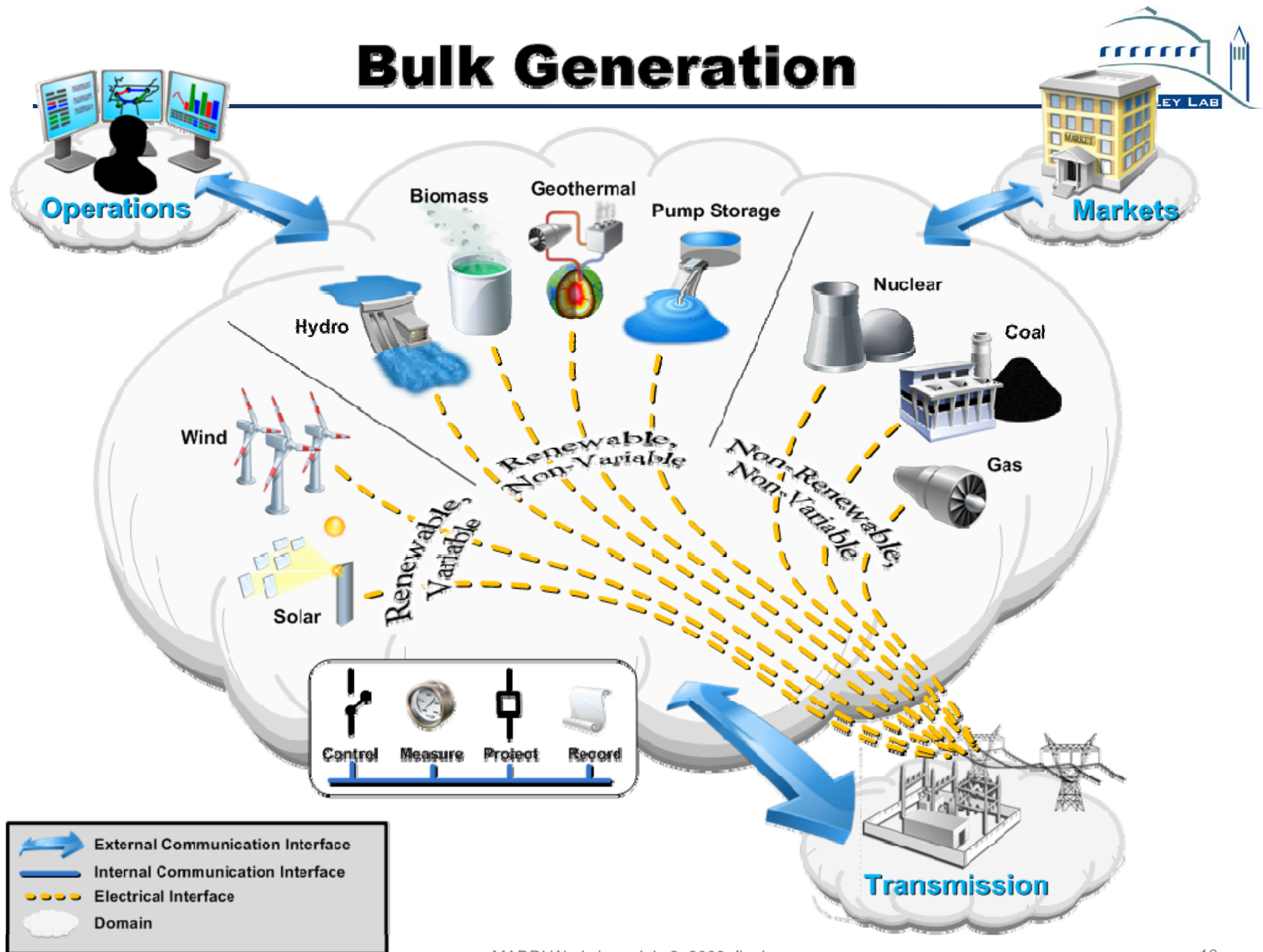
A Standards Roadmap is Needed:



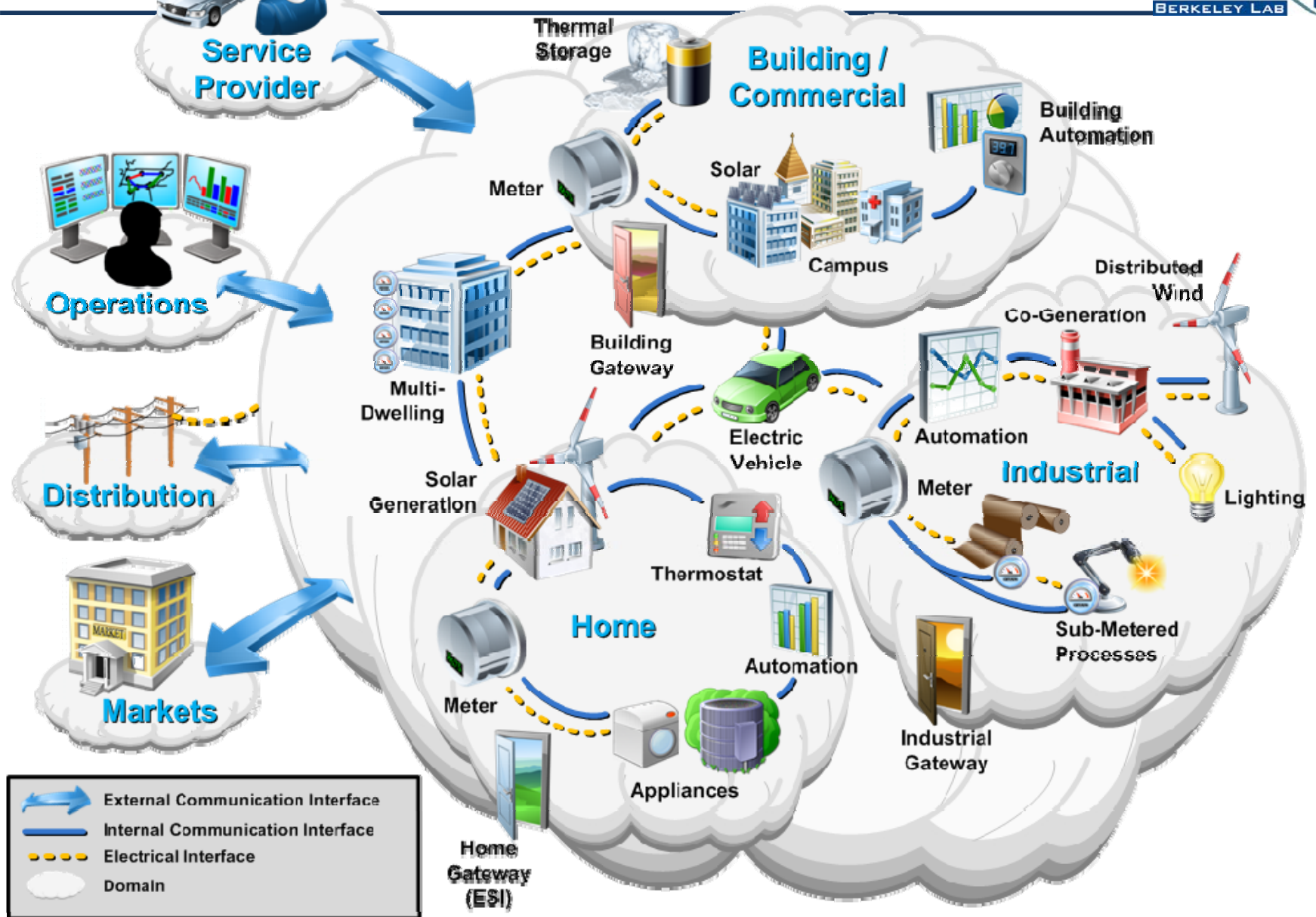
- Capabilities
- Priorities
- Reference Model
- Standards
- Release Plan
- Responsibilities
- Governance
- Testing and Certification



Bulk Generation



Customer



NIST Three Phase Plan:



PHASE 1

Identify a set of initial existing consensus standards and develop a roadmap to fill gaps

PHASE 2

Establish public/private Standards Panel to provide ongoing recommendations for new/revised standards to be included in NIST framework

PHASE 3

Testing and Certification Framework

2009

2010

March

September

2 July
2009

MADRI Workshop, July 2, 2009, final

Guidance:



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