



Developing the Smart Grid – An Approach for California

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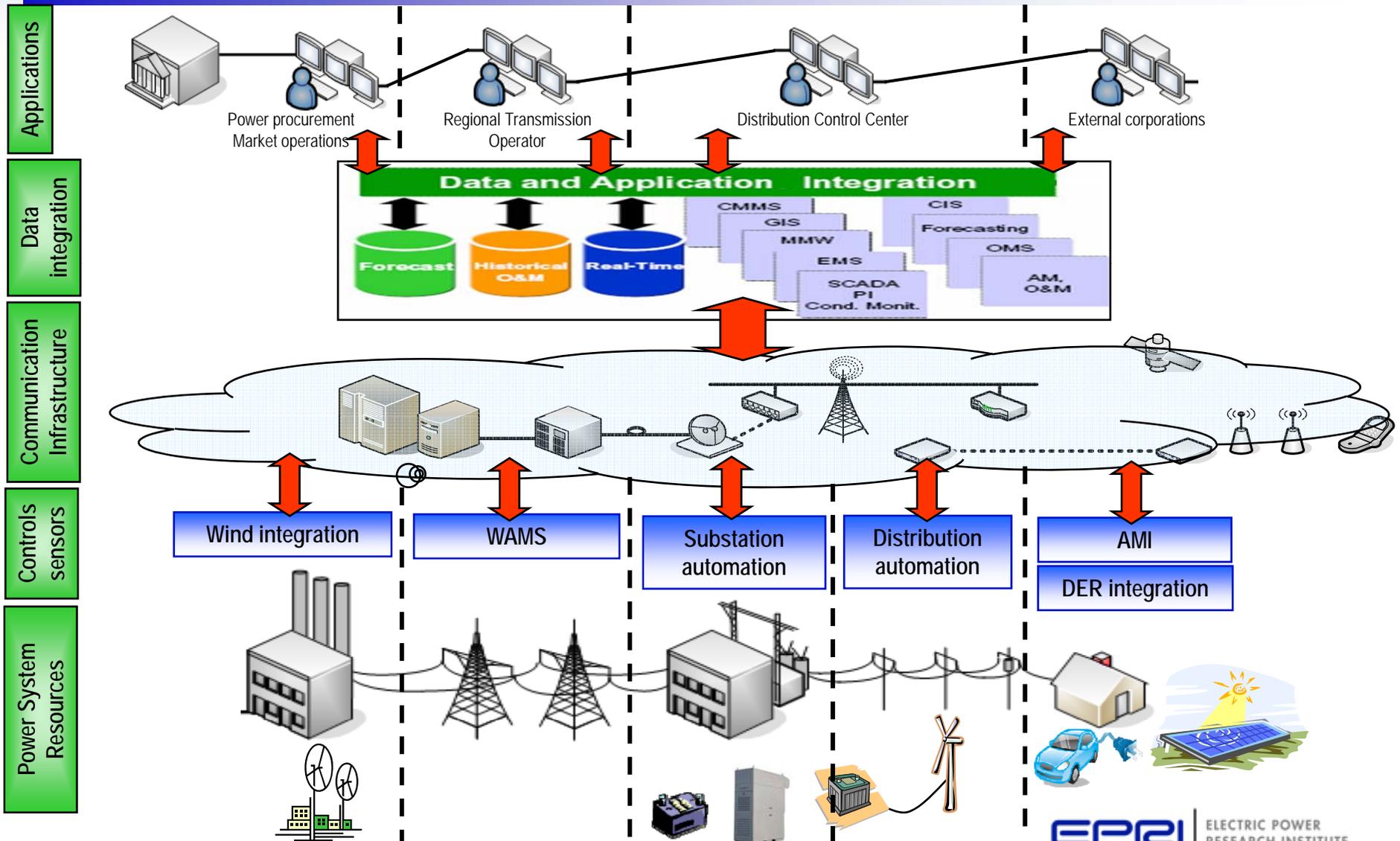
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Smart Grid Technology Assessment – CEC Project

1. What is the current status of the Smart Grid?
2. New technologies that will be part of the smart grid
3. How to achieve interoperability and integrate with legacy systems
4. Fostering open access and California energy efficiency goals.
5. Smart Grid infrastructure priorities
6. Recommended approach and roles

Smart Grid applications at all levels



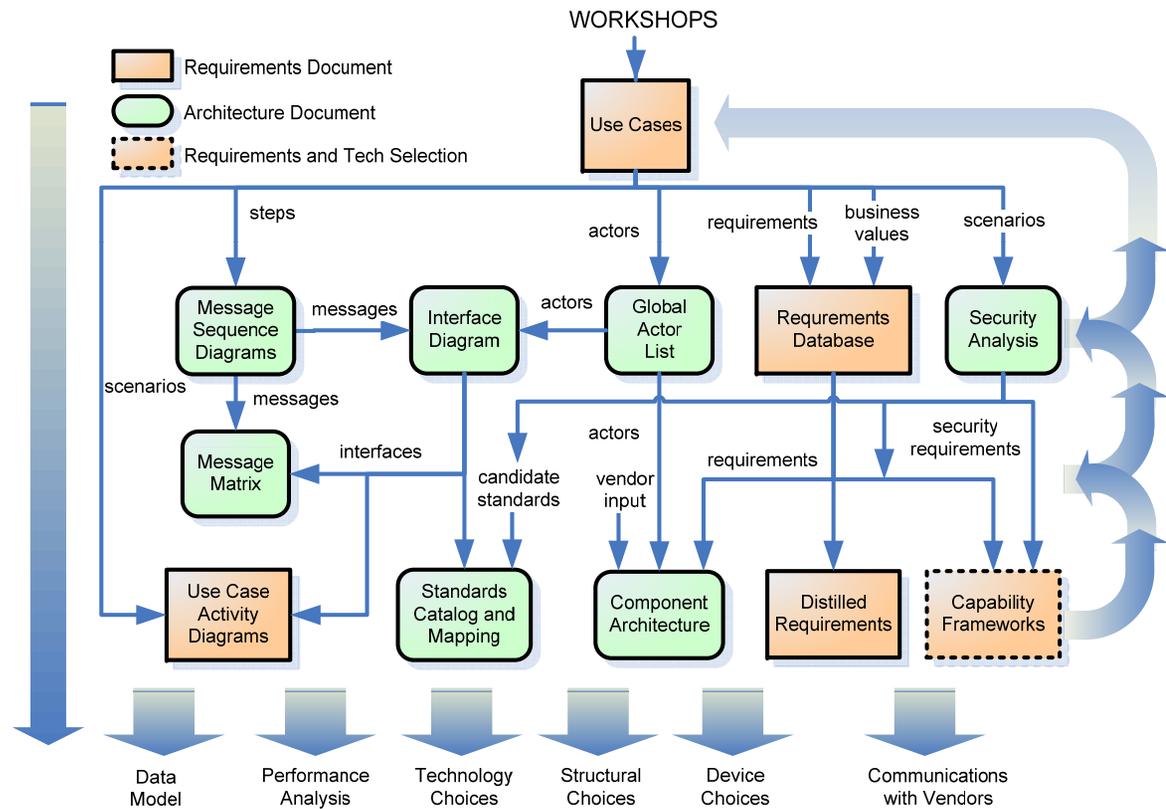
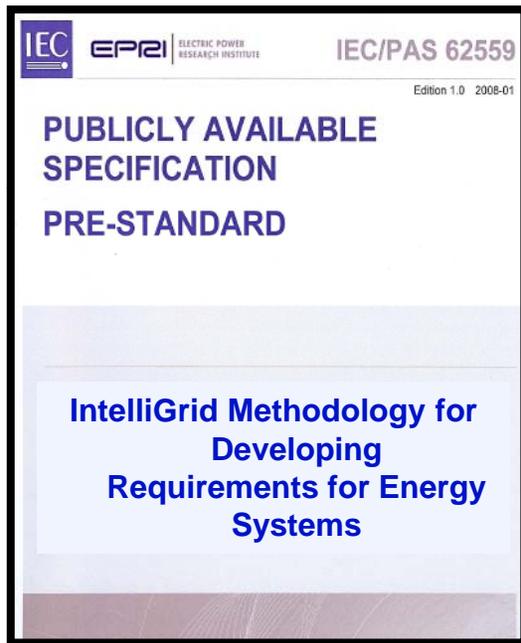
The benefits of the smart grid derive from the applications

- Reliability
- Efficiency
- Demand Management
- Managing the utility infrastructure investment
- New Energy Services

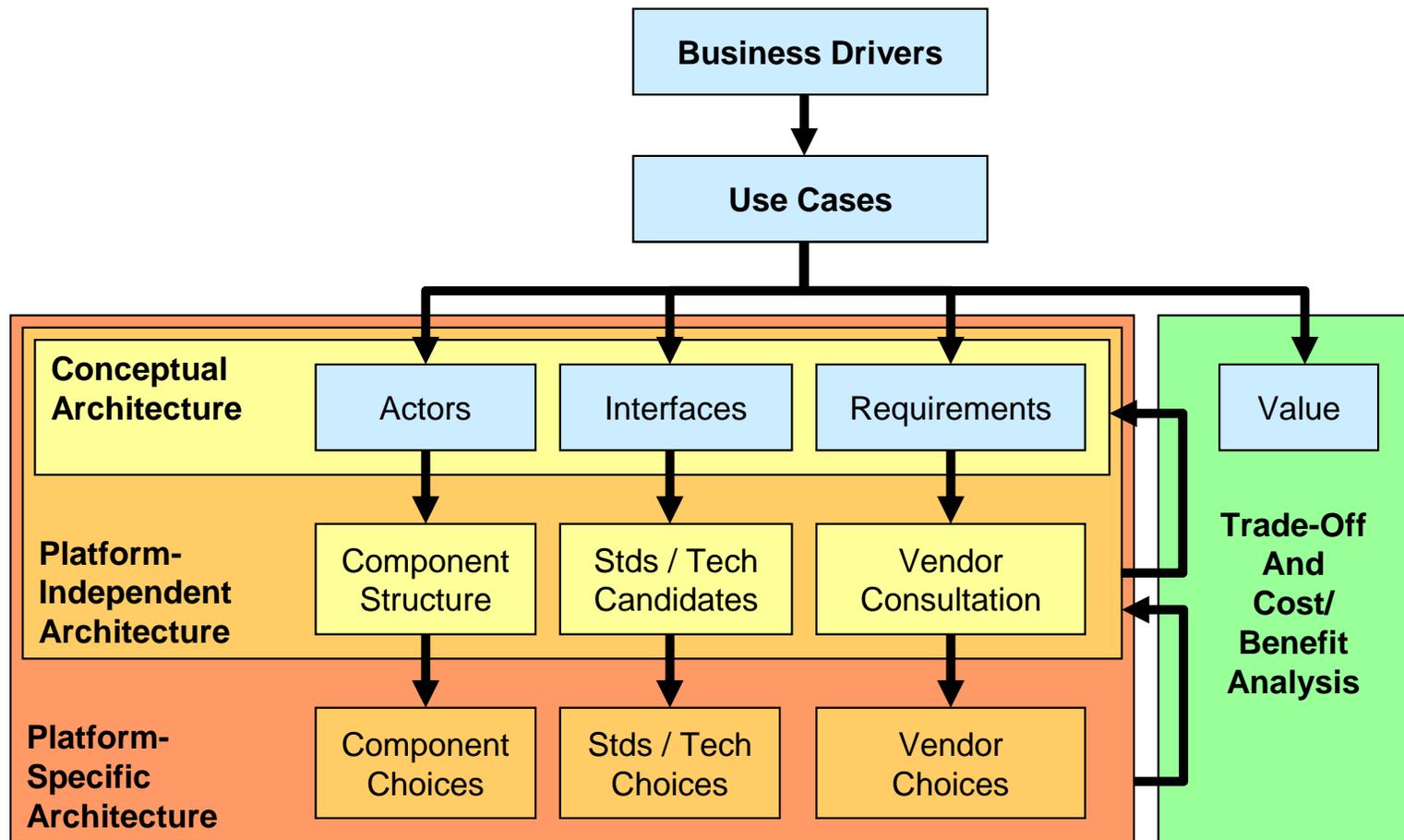
Key new drivers:

- **Integration of renewables (intermittent resources)**
- **Distributed resources, microgrids**
- **Facilitating customer participation in markets**
- **New technologies (PHEV, new batteries, smart loads)**

Use a consistent methodology to develop requirements (based on the applications)



Combine the requirements from important applications to determine the requirements for the INFRASTRUCTURE



Collaborate

- DOE
- EPRI
- Other states (Texas, Ohio, Michigan, Massachusetts, New York)
- European SmartGrids
- Others (Korea, Singapore, China, Taiwan)

- IEEE Intelligent Grid Standards Coordinating Committee
 - Opportunity to consolidate use cases and requirements derived from the use cases in a use case and requirements library
 - Leads to better consensus and actual use of the information for technology and standards development
 - California Use Cases can be a subset of the total library

Smart Grid Roadmap Workshop

Workshop –

Developing the Utility Roadmap for the Smart Grid

June 5-6, 2008

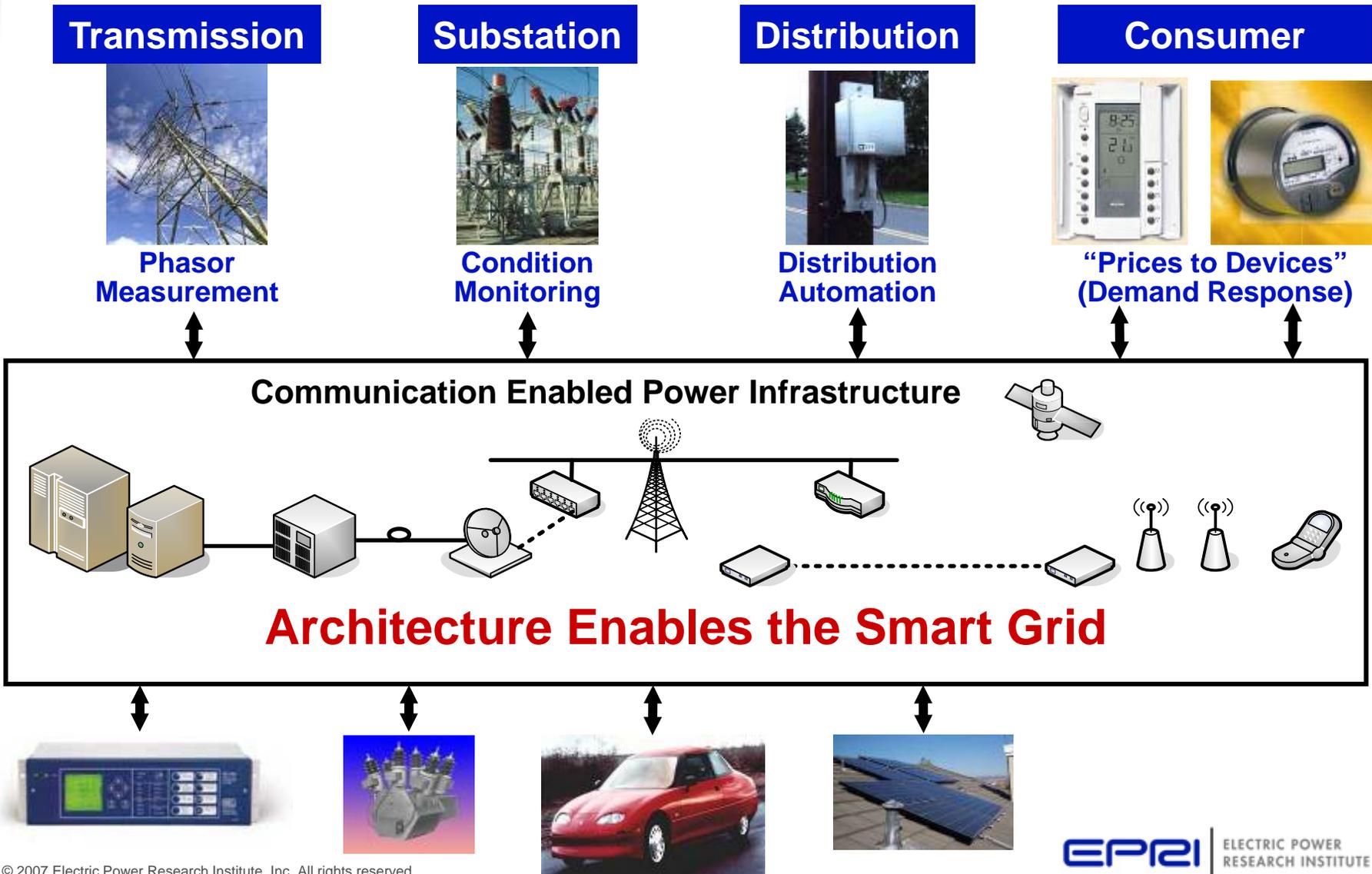
Akron, Ohio (hosted by FirstEnergy)

Background

Many utilities are somewhere in the process of developing a roadmap for implementation of a communications, control, and data management architecture that can facilitate monitoring, control, and automation functions at all levels of the power system. This “smart grid” will provide opportunities for improving reliability, energy efficiency, management of assets, customer services, and demand management.

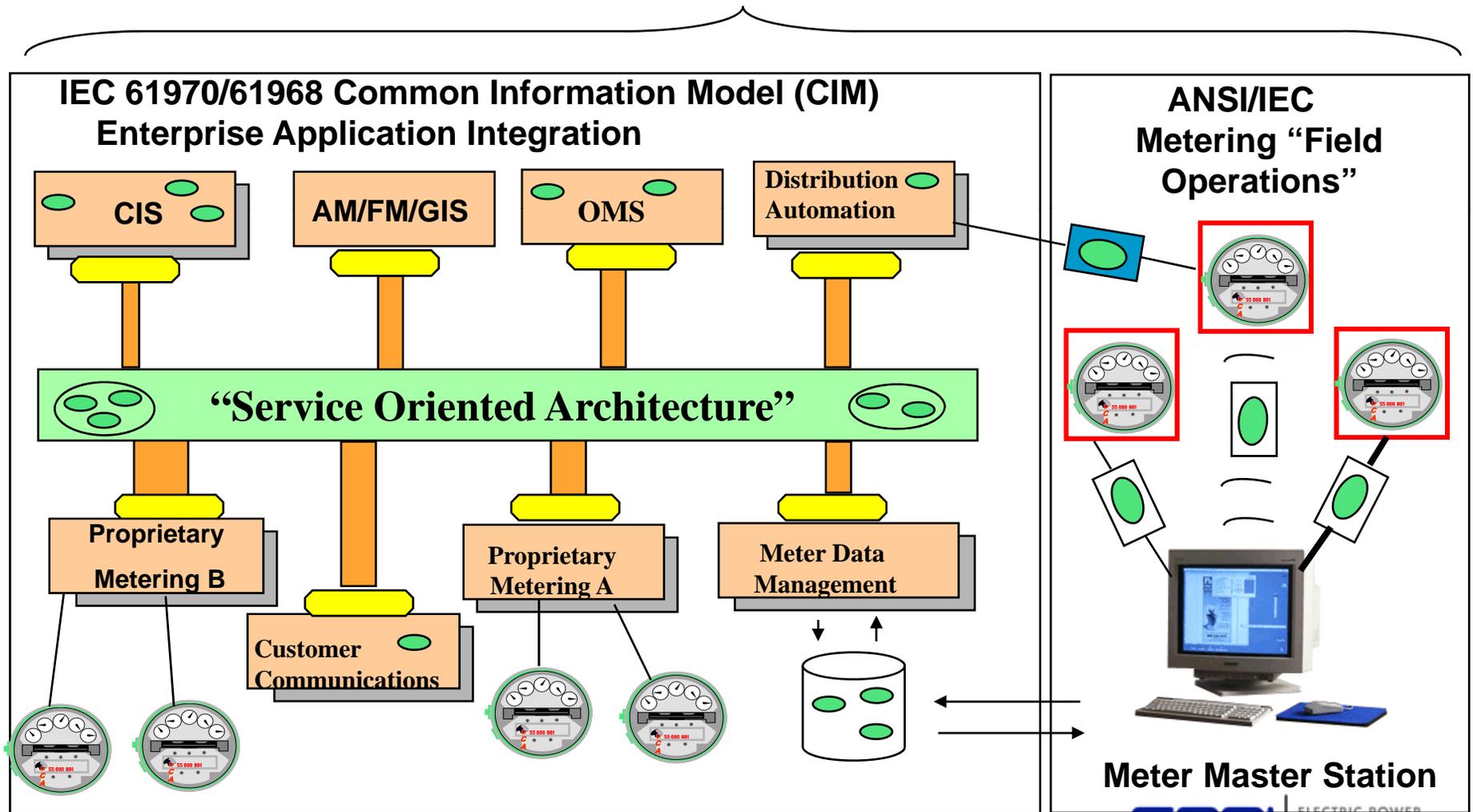
One of the keys to success in implementation of a smart grid that can enable a wide range of intelligent applications well into the future is to use a standards-based approach and focus on interoperability of technologies. Requirements for technologies and systems are being developed through the characterization of advanced applications that will use the technologies – use cases. There is an opportunity for the industry to enhance the interoperability of technologies and the development of appropriate standards through the sharing of use cases and common requirements that are developed from these use cases.

Applications at all levels will be enabled



Information architecture just as important as the communications architecture

R&D Needed: Integrate Across Standards=> Information Models



Development of Requirements - involve all stakeholders

- Distribution companies
- Transmission operator
- Generation companies
- Renewable energy technology suppliers
- Storage technology suppliers
- Communication systems
- Consumers
- Commercial and Industrial customers
- Advanced metering systems
- Automation systems
- Software and information systems
- Research organizations and government

Approach for California – California Smart Grid Requirements Development

