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Smart Grid Concepts

U.S. Commercial Service Webinar

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Agenda

- **What is the Smart Grid?**
- **What are some of the technologies?**
- **Who are some of the players?**
- **Q & A**

What is the role of the MGS?

- **Define a vision for the Modern Grid**
- **Assist in the identification of benefits / barriers**
- **Facilitate resolution of issues**
- **Promote testing of integrated suites of technologies**
- **Communicate and educate stakeholders**
- **Support Smart Grid implementation**

MGS has been an "Independent Broker" for the Smart Grid

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What is the Smart Grid?

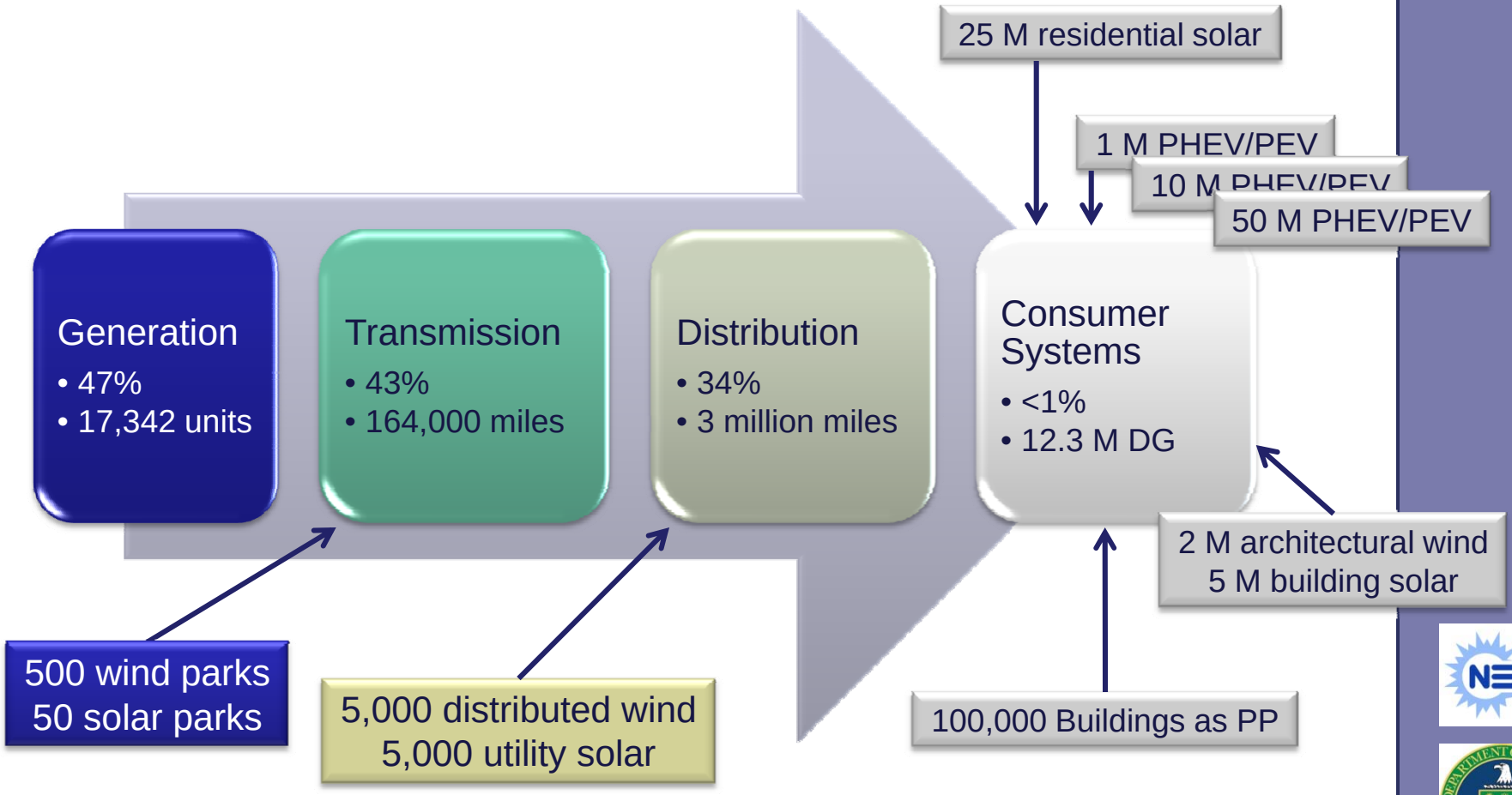
Smart Grid Key Success Factors

The Smart Grid is MORE:

- **Reliable**
- **Secure**
- **Economic**
- **Efficient**
- **Environmentally friendly**
- **Safe**

Improved performance in each of these areas supports “a case for action” to invest in a Smart Grid

Today's Grid vs. Tomorrow's



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Smart Grid Characteristics

The Smart Grid is "transactive" and will:

- *Enable* active participation by consumers
- *Accommodate* all generation and storage options
- *Enable* new products, services, and markets
- *Provide* power quality for the digital economy
- *Optimize* asset utilization and operate efficiently
- *Anticipate & respond* to system disturbances (self-heal)
- *Operate* resiliently against attack and natural disaster

…the enabler

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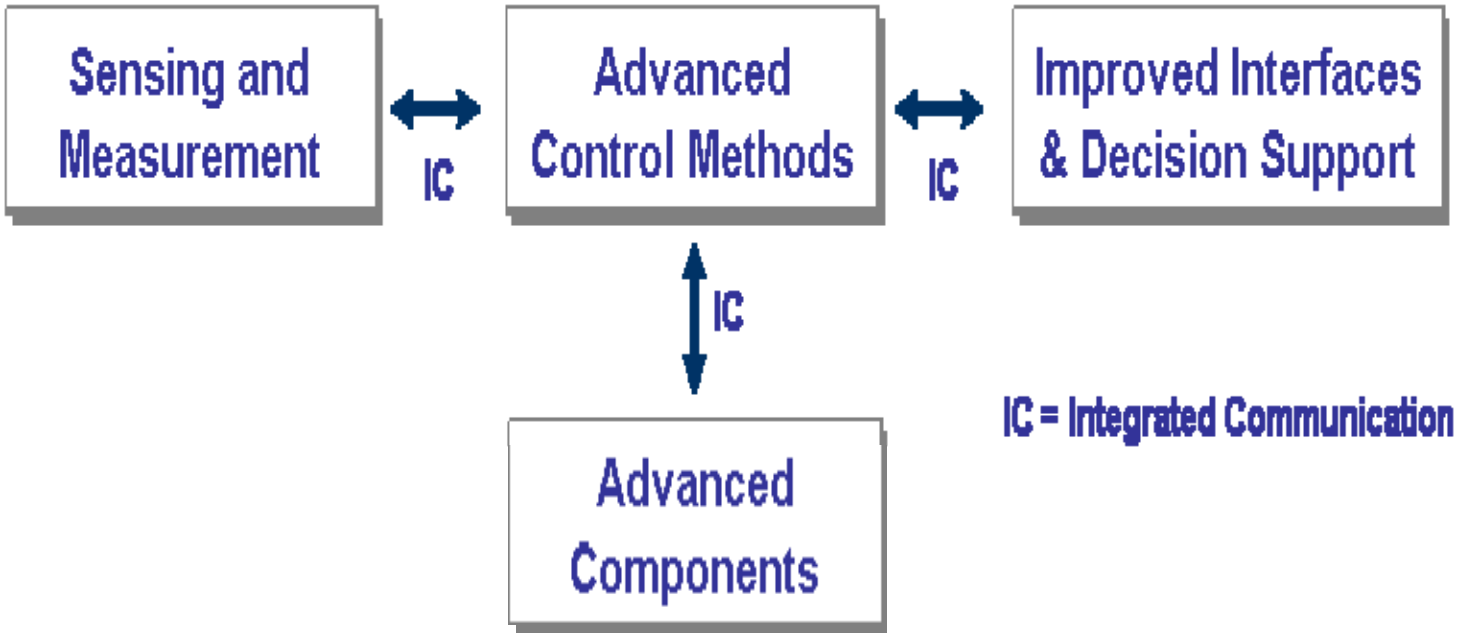
Some Key Technologies

Smart Grid Technologies



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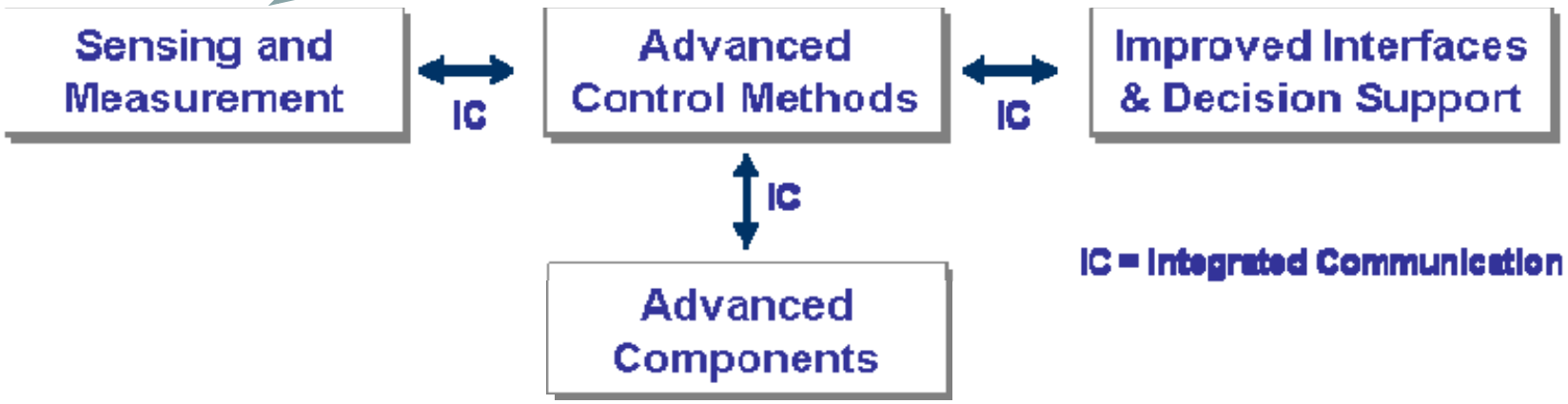
Smart Grid Key Technology Areas

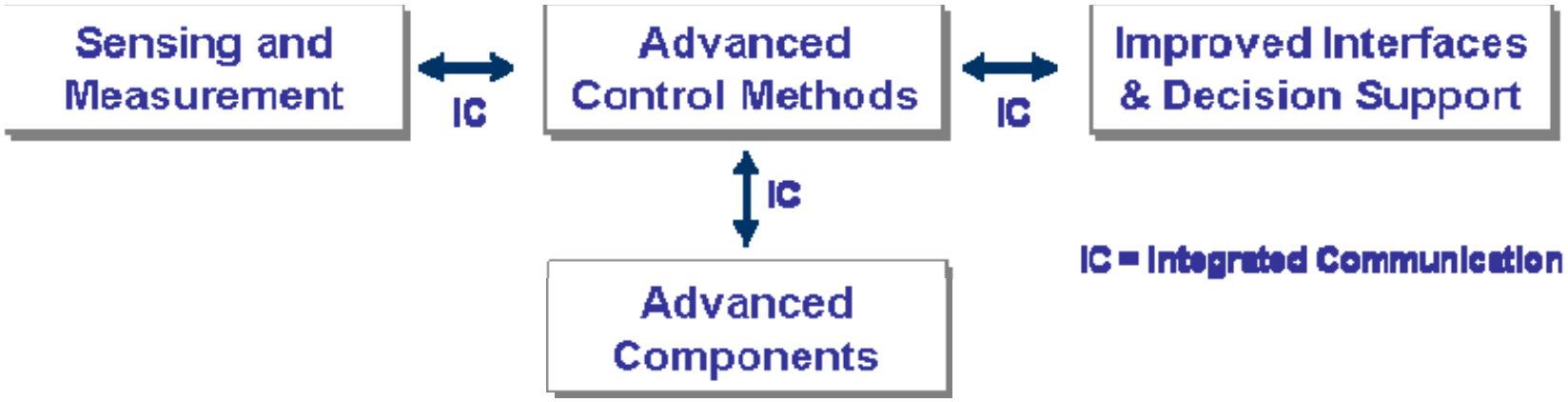
Smart meters
Smart sensors
- Operating parameters
- Asset Condition

Wide area monitoring systems (WAMS)
Dynamic rating of transmission lines

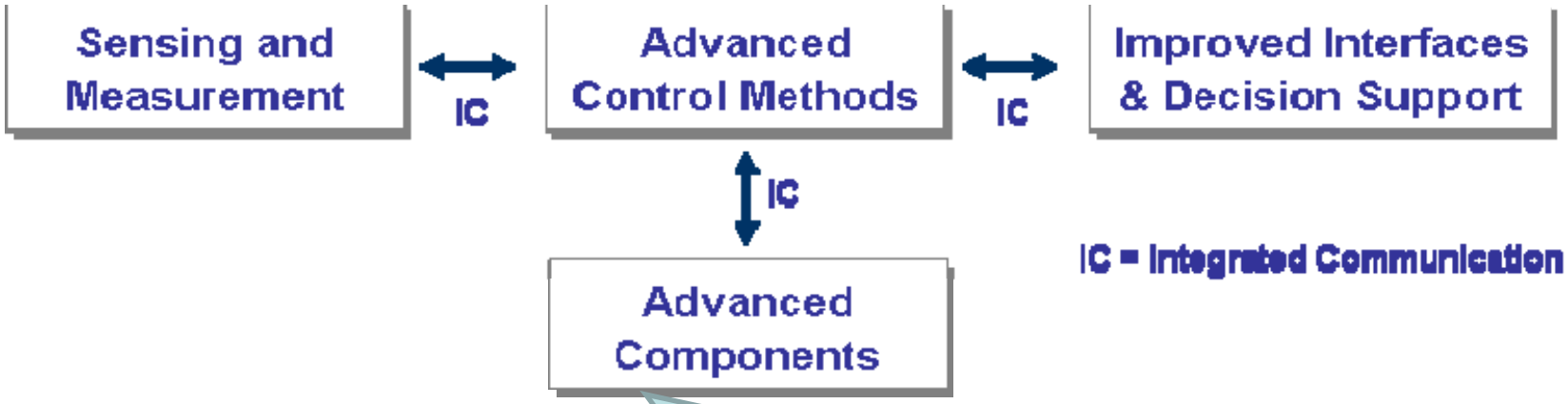


Smart Grid Key Technology Areas

Applications that:
- Monitor and collect data from sensors
- Analyze data to diagnose and provide solutions
- Real time and predictive
- Determine and take action autonomously or via operators
- Provide information and solutions to operators and consumers
- Integrate with enterprise-wide processes and technologies

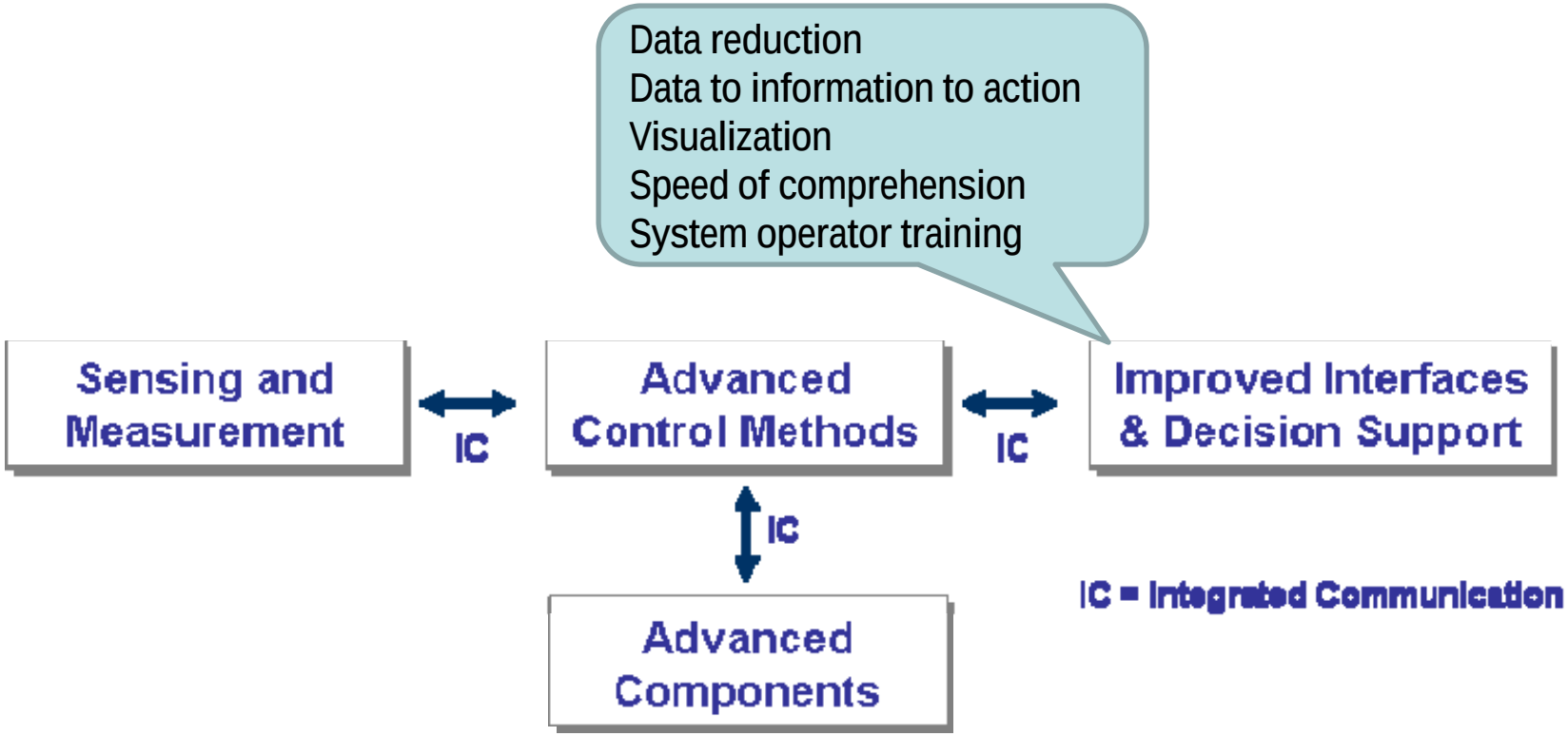


Smart Grid Key Technology Areas



Next generation FACTS/PQ devices
Advanced distributed generation and energy storage
PHEV - V2G mode
Fault current limiters
Superconducting transmission cable & rotating machines
Micro-grids
Advanced switches and conductors

Smart Grid Key Technology Areas



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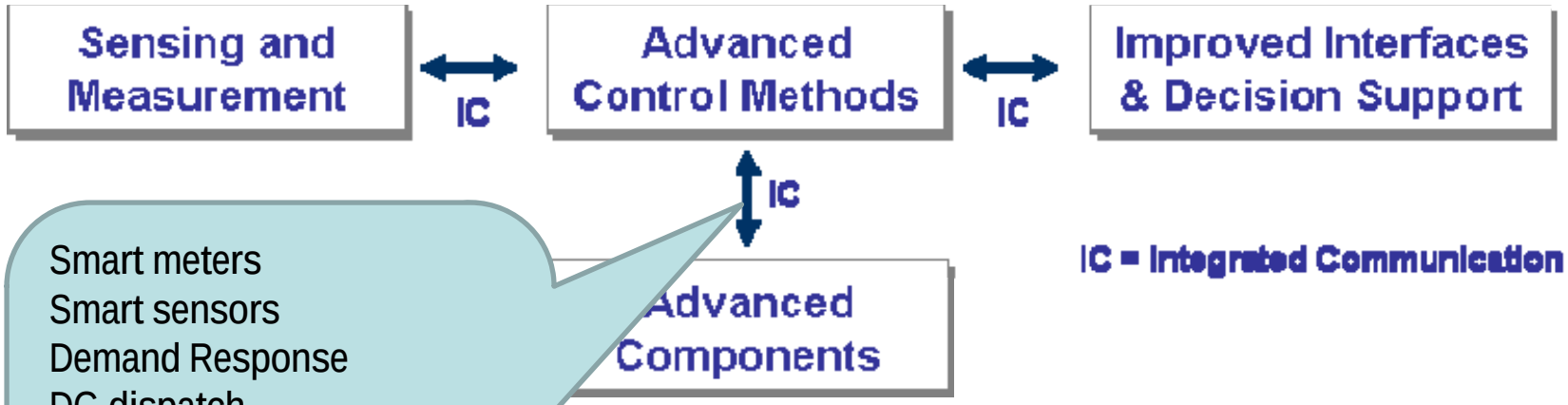
Smart Grid Key Technology Areas



Smart meters
Smart sensors
Demand Response
DG dispatch
Distribution automation
Micro-grids
Markets
Work force management
Mobile premises (PHEV's)

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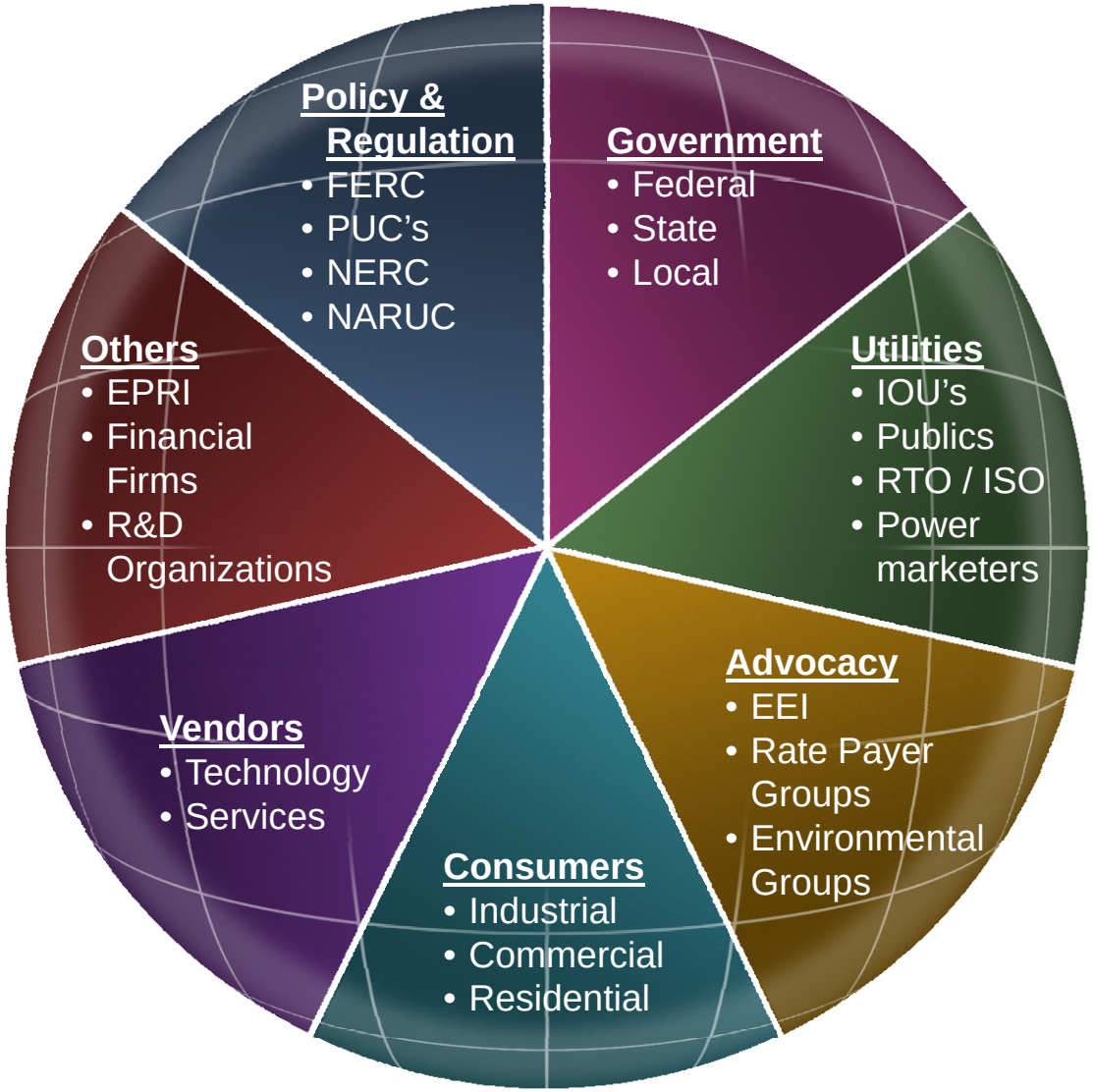
Who are some of the players?

Smart Grid Stakeholders



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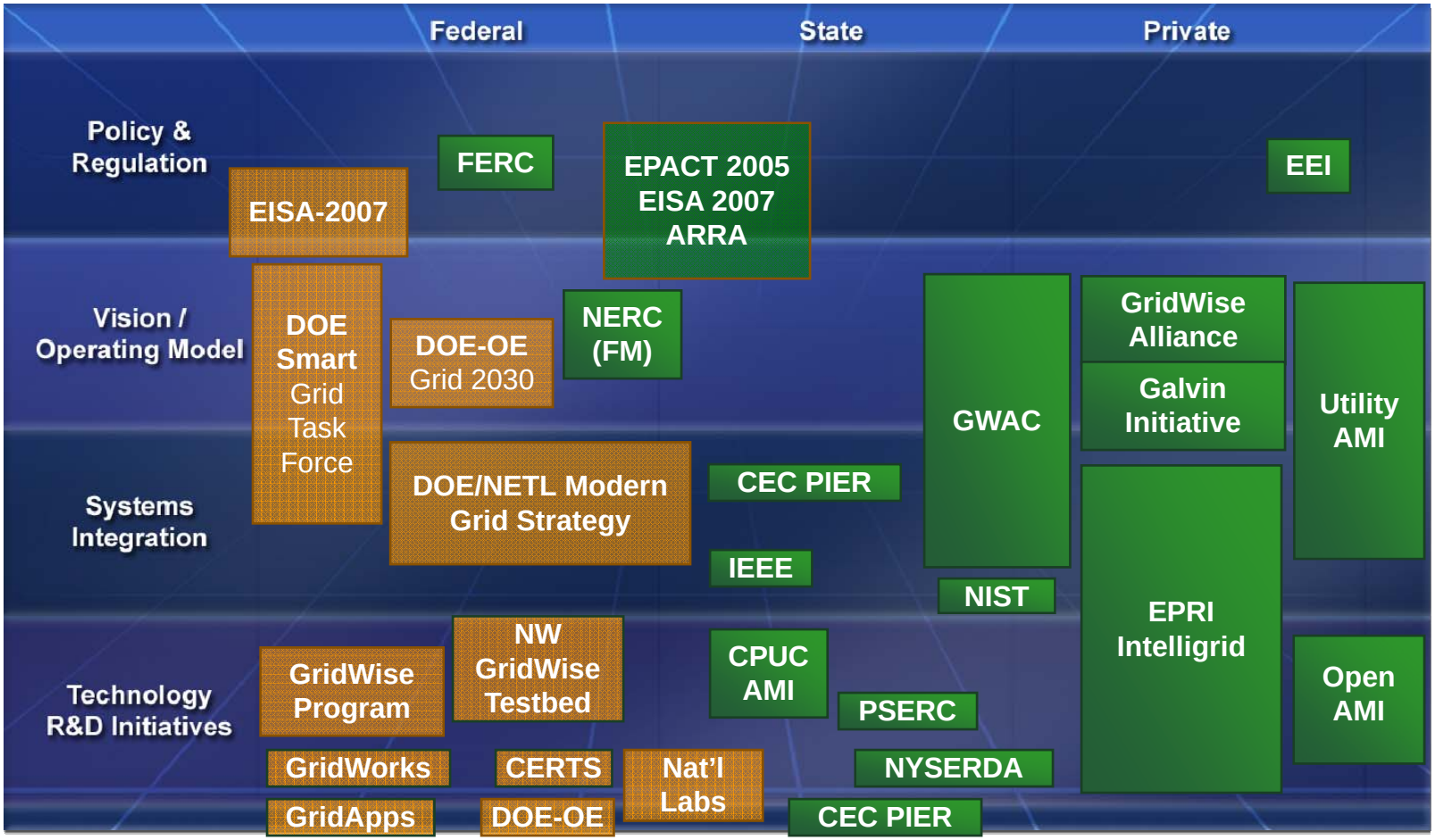
Smart Grid "Developers"



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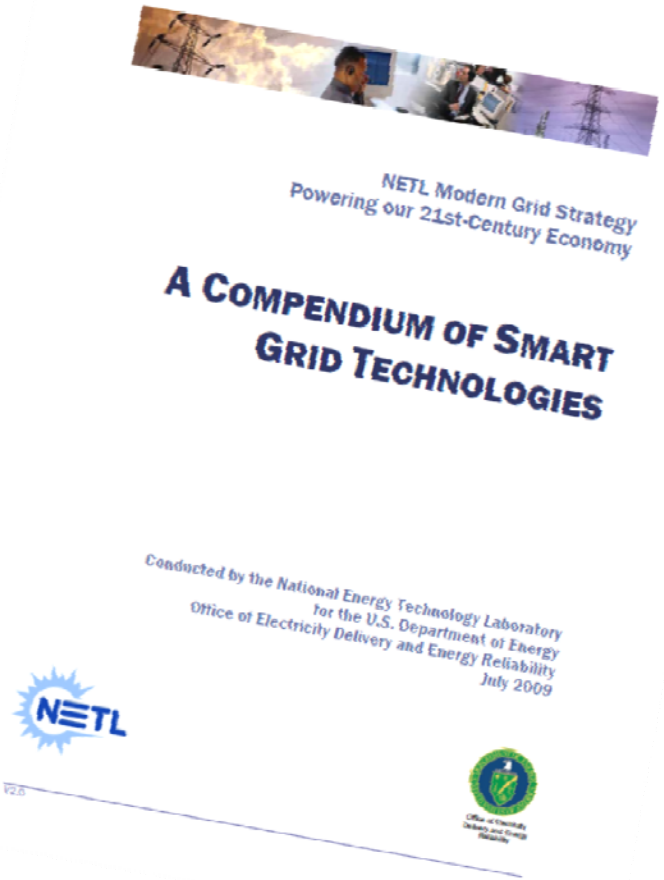
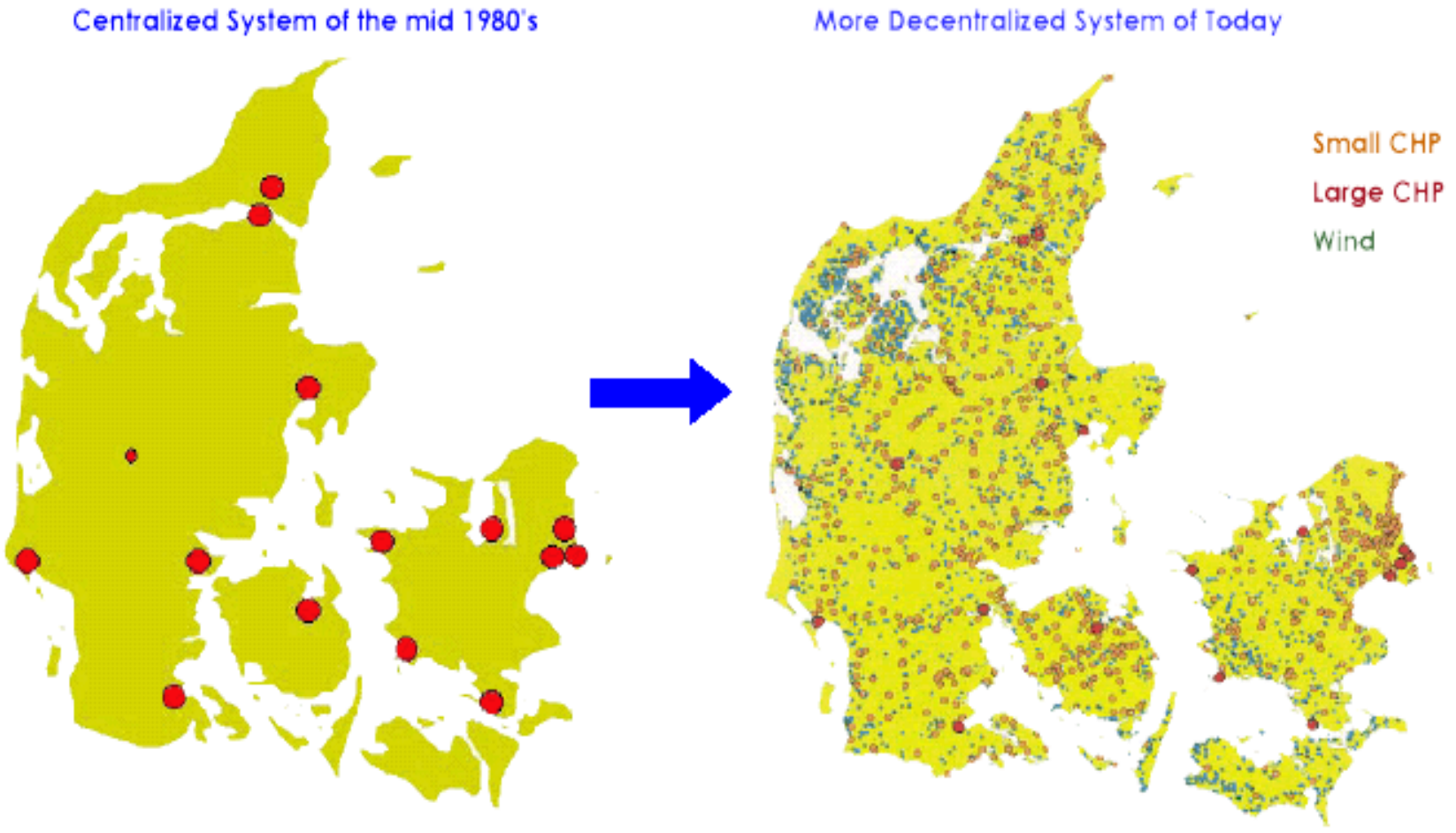
Compendium of Smart Grid Technologies

- **By KTA**
- **Lists SG technologies**
- **Identifies vendors**
- **Provides links**
- **Updated July 2009**



Denmark Changed in Two Decades



Source: Danish Energy Center

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For additional information, contact

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Questions?