

The background of the slide is a photograph of an offshore wind farm. Several white wind turbines with three blades each are visible, extending from the foreground into the distance over a blue sea under a clear blue sky. The turbines are arranged in a line, receding towards the horizon.

# The role of EDISON, and Energy & Utilities in a Global IT business

**Gavin Jones**  
**IBM NE Europe**  
**Smart Grids Leader**

September 2011

# The need for progress is clear.

**36.8%**

Projected growth in worldwide energy demand by 2030.

**170 billion**

Kilowatt-hours wasted each year by consumers due to insufficient power usage information.

**1/4**

Proportion of worldwide CO<sub>2</sub> emissions created by power generation, the largest man-made source.

# *The Energy and Utilities industry will change more in the next 20 years than it has in the last 100*



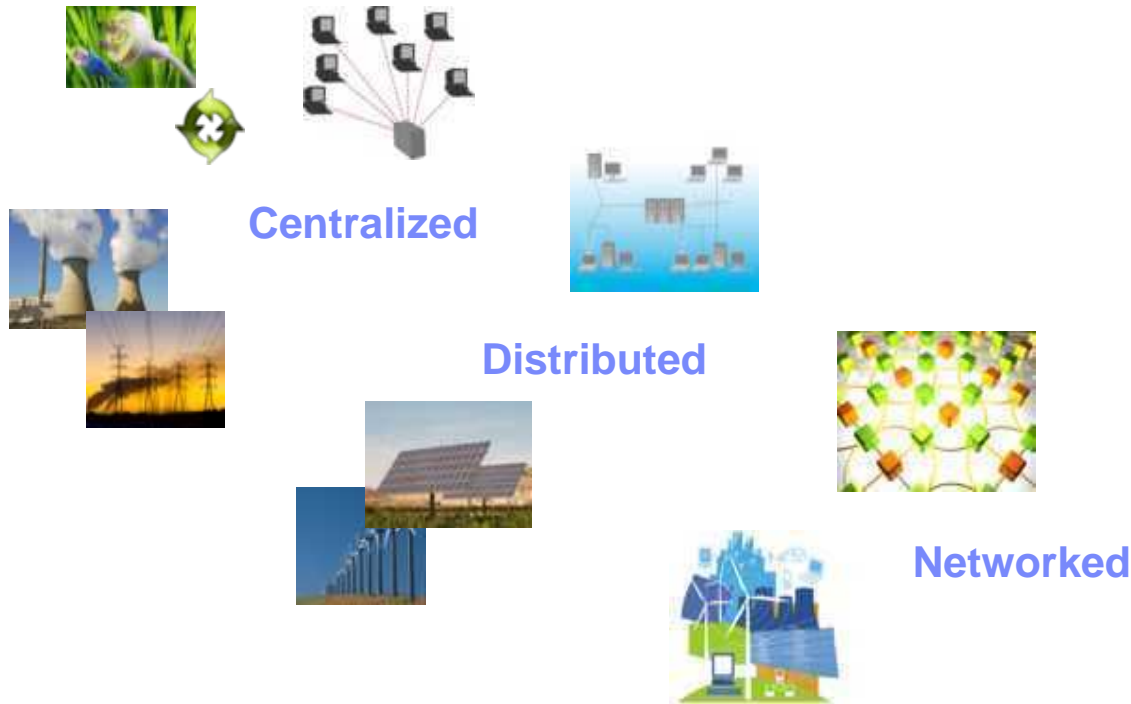
**Deliver higher quality, more reliable power, while keeping rates low.**



**Manage more "green" energy and a more bi-directional, less predictable network.**



**Deliver energy management to customers, not just energy.**



## Market Forces

*Market forces, impacting the landscape of utilities around the world, requiring the transformation of industry business models.*



**New entrants and disruptive technologies**



**Climate change and environmental concerns**



**Growth in renewable generation and distributed resources**



**Aging asset performance with increased expectations on reliability**



**Increased pressure on operational efficiency and workforce productivity**

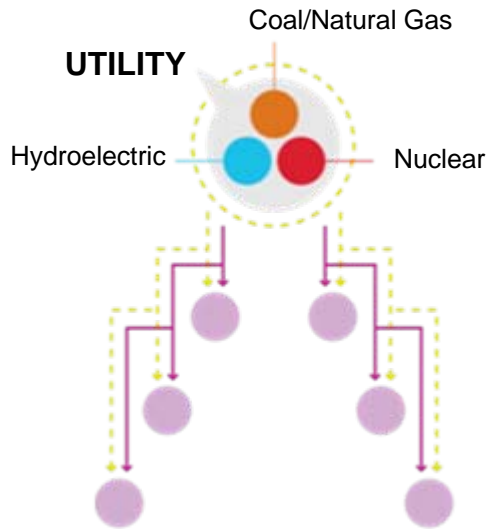


**Increasing desire by consumers for a role in energy management and conservation**

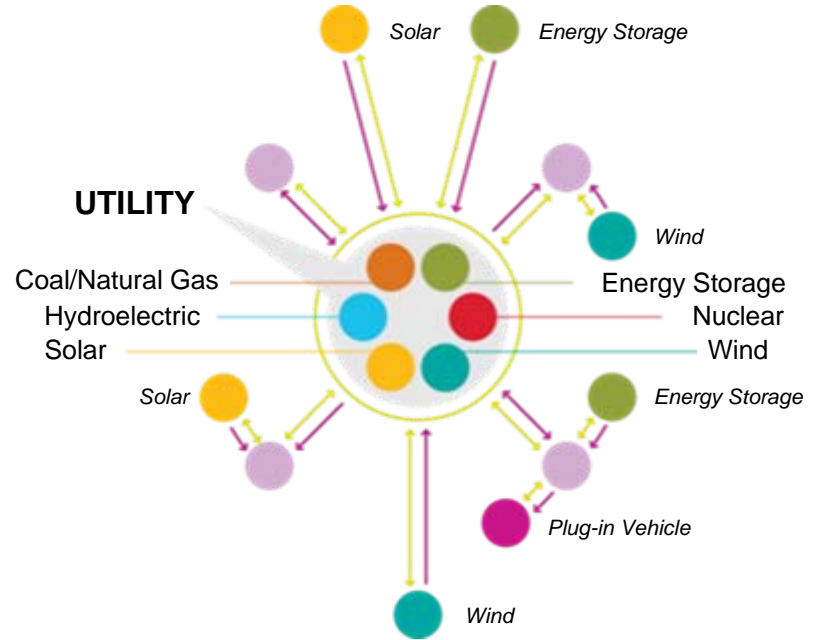


**Importance of Smart Grid for global competition with developing countries**

# Energy and Utilities market forces are creating the need for an evolution in the energy value chain.



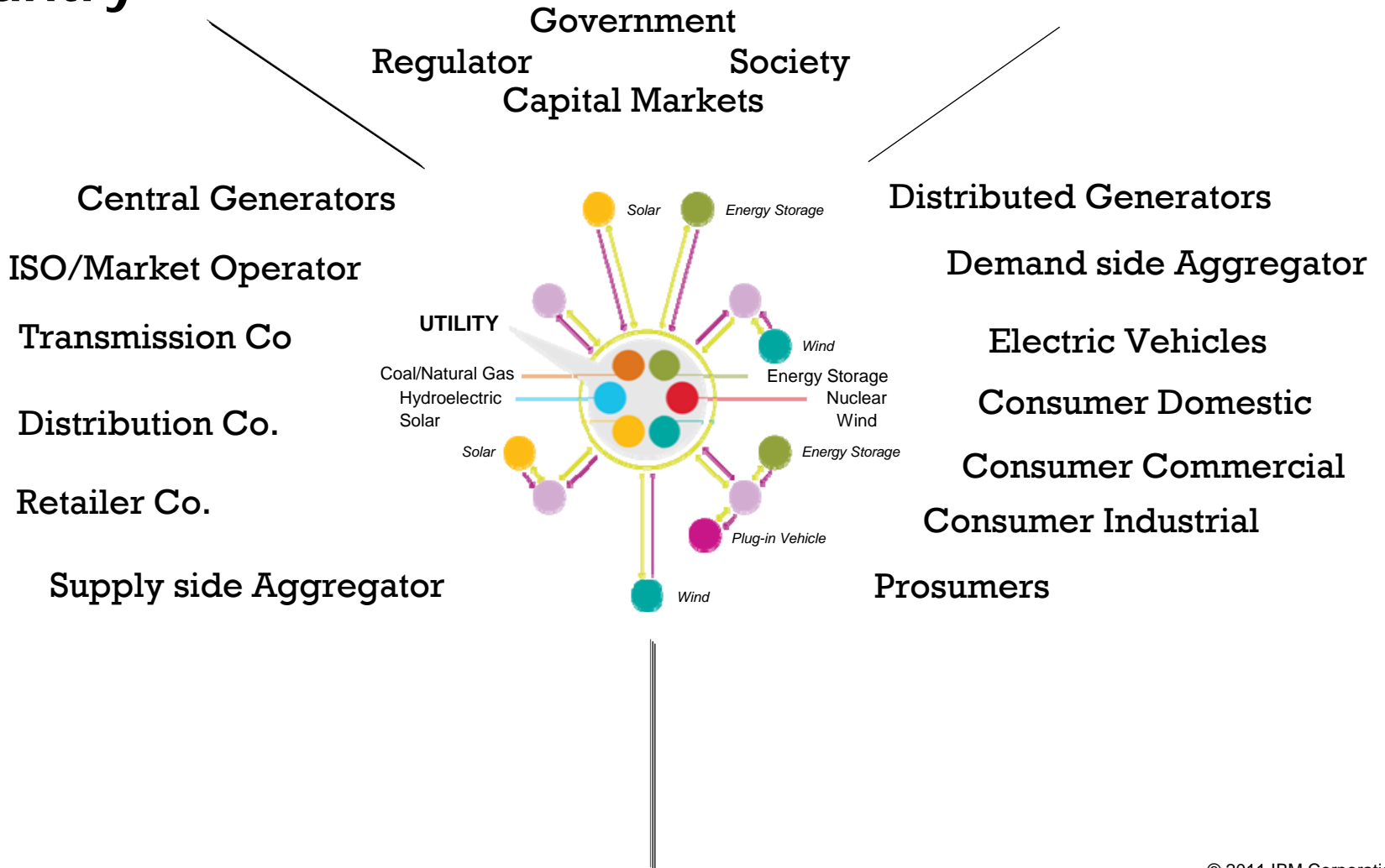
**TRADITIONAL**



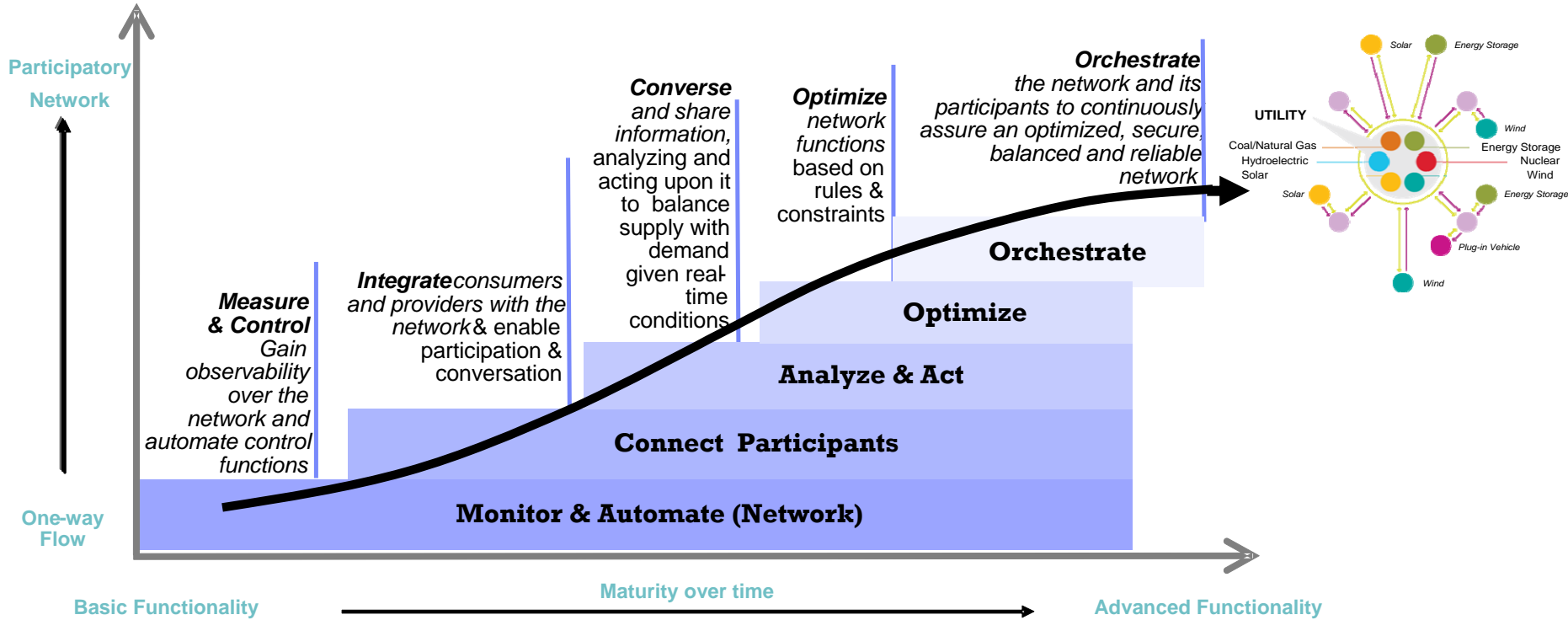
**TRANSFORMED**

- Consumer
- Power Flow
- - - Periodic Information Flow
- Continuous Information Flow

# The Smart Grid involves far more players than the traditional grid, and what it means varies from country to country



# Smart Grids and their use will evolve



# Our approach capitalizes on three foundational capabilities to deliver end-to-end solutions.

## SOLUTION DEVELOPMENT & DELIVERY

### Solution Development



**IBM Research**

**Global IUN Coalition**



**Nuclear Power Advisory Council**

### Solution Delivery



**Partner Ecosystem**

## POLICY



**GSGF**



**GW Architecture Council**



**SmartGridGB**

**UTC**  
UTILITIES TELECOM COUNCIL  
*The Voice of Critical Infrastructure Communications*



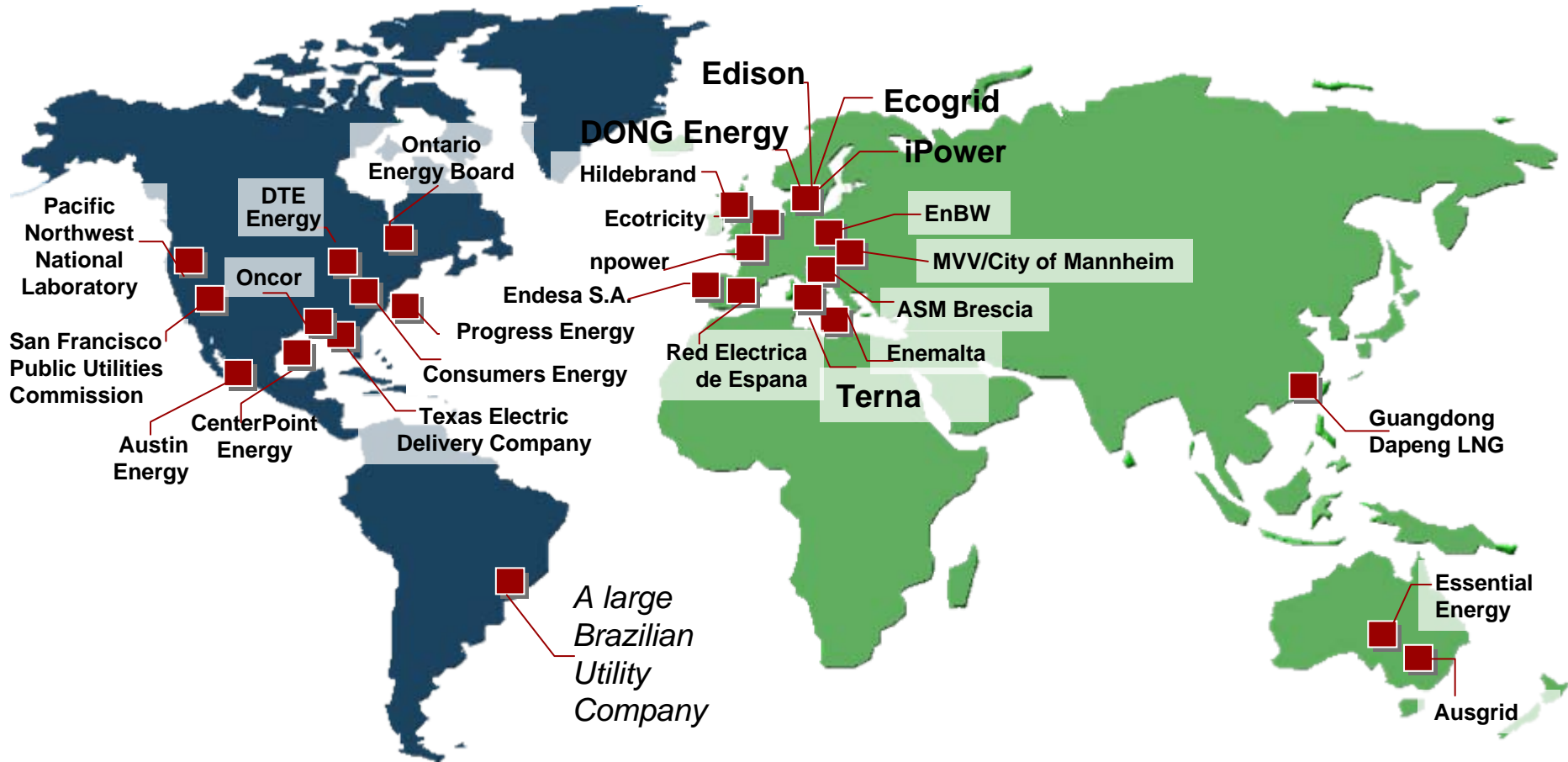
## THOUGHT LEADERSHIP



# IBM Research Worldwide



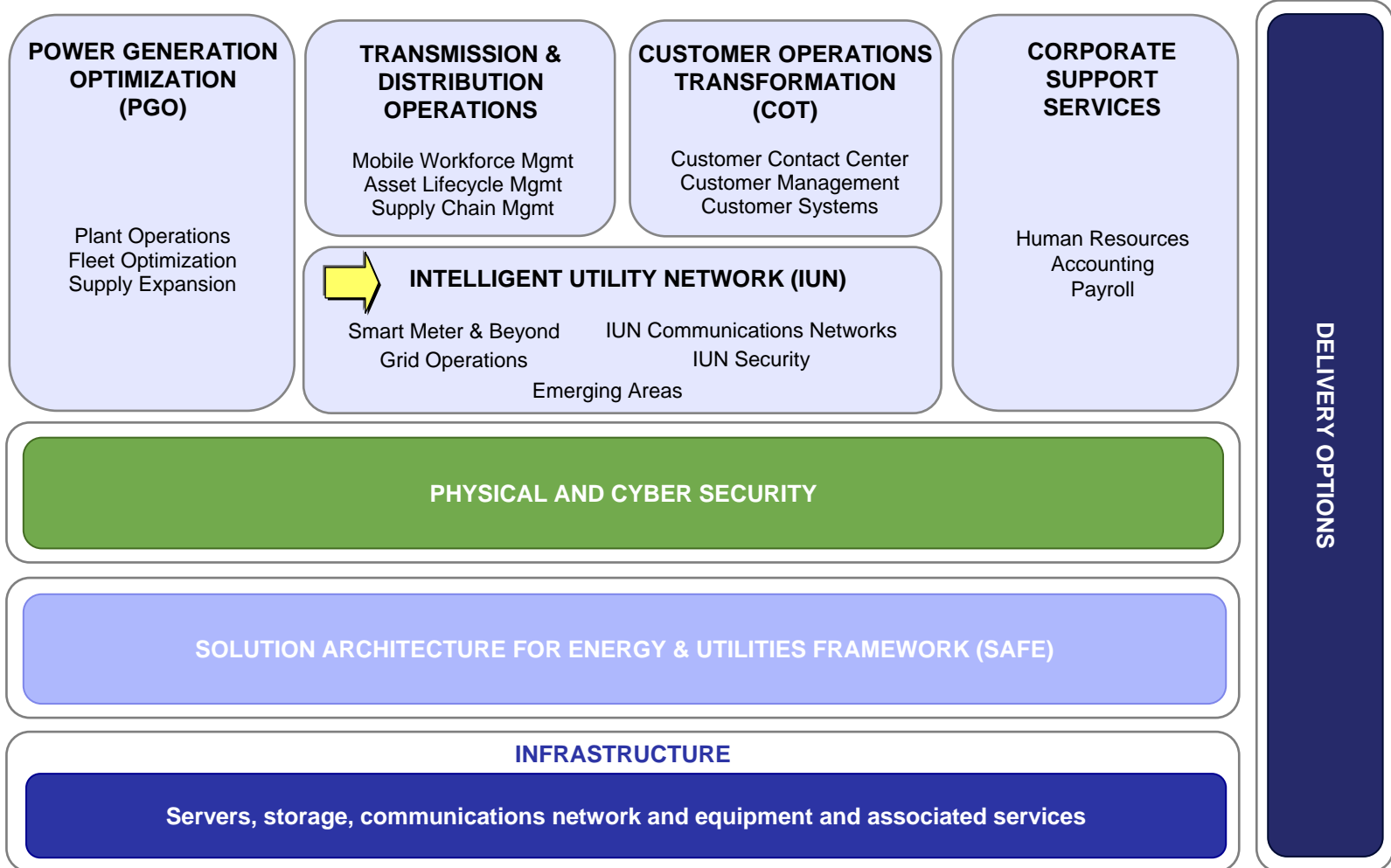
# IBM has worked with clients around the world to develop solutions which transform the energy value chain



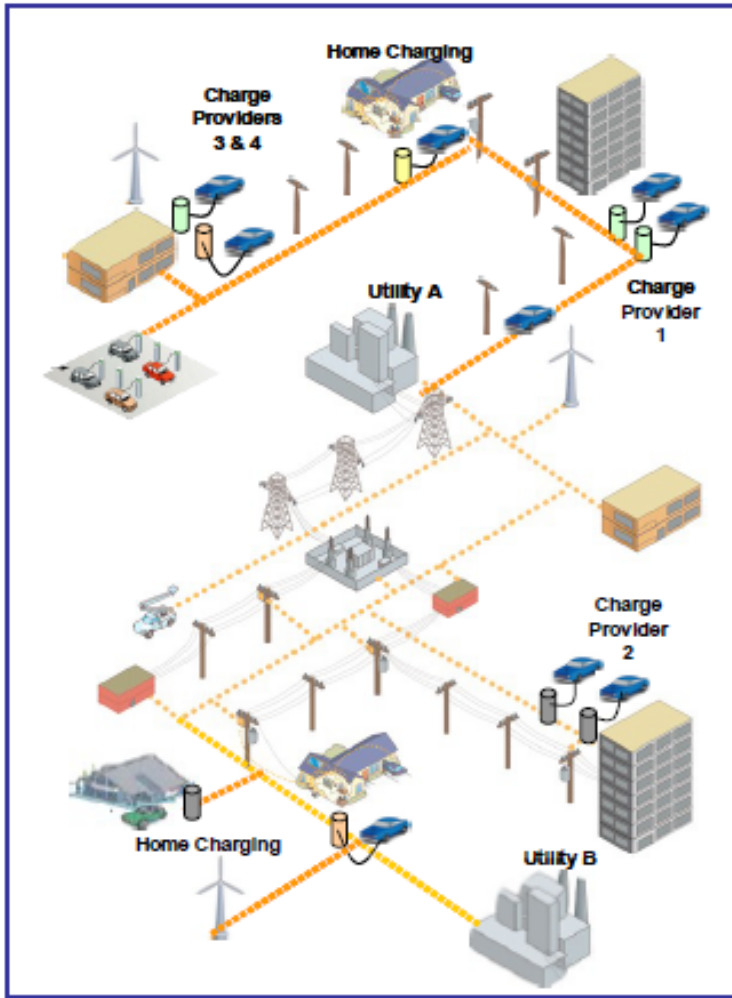
Click on box icons to review individual customer profile.

# IBM's Energy and Utility Solution Portfolio

*IBM's Energy and Utility Solution Portfolio addresses a utility's business and technology needs across the full energy value chain.*



# The success of electric vehicles will require many players



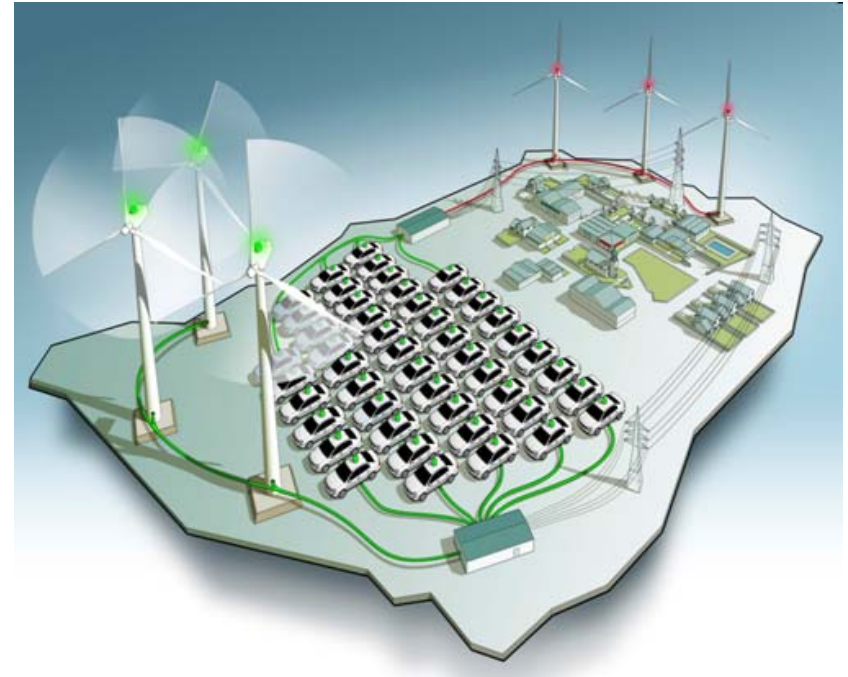
## Market Challenges

	Utility	Service Prov	Automotive	Government	Consumer
Large and mobile load requires proper management to minimize impact on grid operations	●	●	◐	◐	●
New services and customer interactions require new business processes	●	●	●	○	●
Recharging times & transactional complexity require new metering and charge calculation capabilities to support PEVs	●	◐	○	○	◐
High volume of sensitive transaction data requires data security	●	●	◐	●	●
Multiple Charge Service Operators leads to interoperability issues	◐	●	◐	○	●
Travel to different utility service territory leads to charge roaming challenge	●	●	○	◐	◐
Theft and vandalism of public charge posts	◐	◐	○	◐	○
Anticipated PEV 'fueling' taxes will require report and audit to government entities	◐	◐	○	●	○
Public charge posts will require appropriate siting, installation and maintenance	○	◐	○	◐	○
Need to capture data on vehicle and battery performance for future improvement	○	◐	●	○	○
Consumers will likely demand multiple payment options- an expensive challenge for service providers and utilities;	●	●	●	○	●
Secondary Uses for batteries, battery disposal / recycling	◐	◐	◐	○	◐
Insufficient public charge spots will lead to range anxiety	●	●	●	◐	●
Consumer anxiety on seamless payment availability & security	●	●	●	◐	●

Impact: High ● Moderate ◐ Low ○

# IBM chooses to make R&D projects in Denmark on Energy

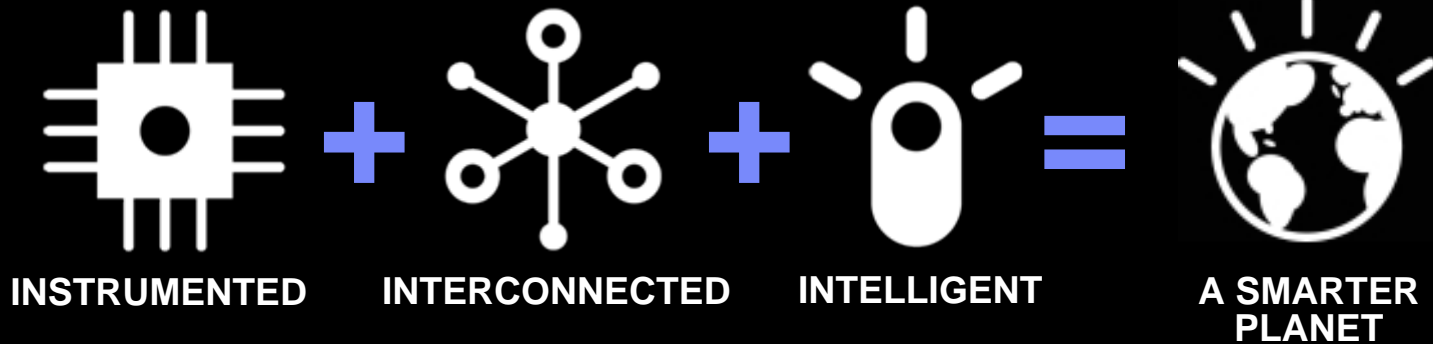
- A committed nation with green dedication
- A leading wind-power industry
- Perspectives for the future energy system based on renewable energy sources
- A government focused on climate topics, motivated to integrate wind power with early electric-vehicle role out with allocated research funding
- Increased R&D investment in Denmark
- Great vision of Bornholm as test bed for a national smart-grid



# Scenario: Green energy-driven smart charging of



# Building a smarter planet is IBM's vision of how we as a world can solve many of the complex problems that we face



EDISON is a perfect example!

## **So why is Edison important to IBM?**

- **It helps us understand what the future may look like**
- **It helps us develop the solutions of tomorrow**
- **We are able to build the partnerships we will need**
  
- **So the challenge now is:-**
- **How do we make this test bed visible to the whole world**
- **How do we move from Research to Production?**

The background of the slide is a photograph of an offshore wind farm. Several large, white, three-bladed wind turbines are visible, extending from the foreground into the distance over a blue sea. The sky is clear and blue. The turbines are arranged in a line, with the largest one on the left and smaller ones receding into the distance.

Thank You!

[jonesgc@uk.ibm.com](mailto:jonesgc@uk.ibm.com)