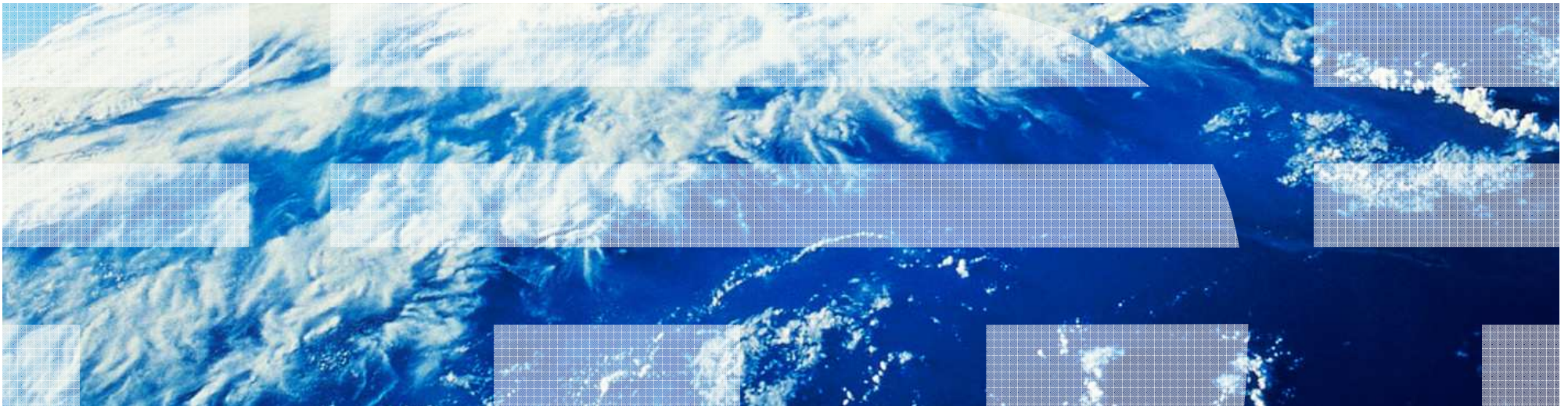


## IBM Solutions for the Digital Smart Grid

**Mickey Nix**

Executive Solutions Architect, Tivoli Industry Solutions

*Tivoli Netcool Development, IBM Software Group*



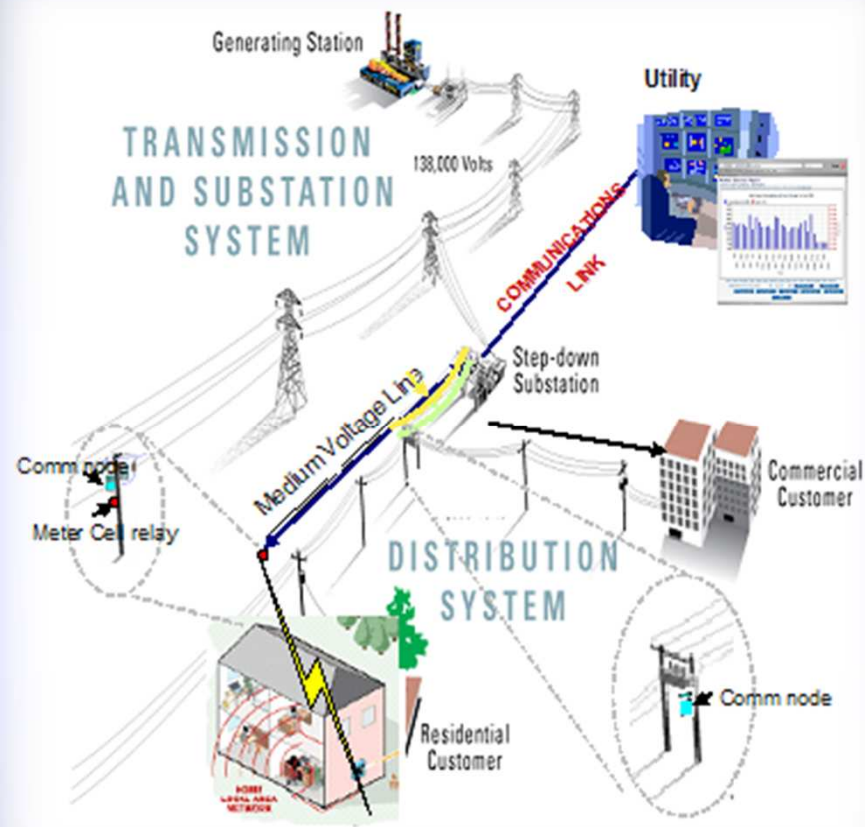
# Moving the World's Largest 20<sup>th</sup> Century Analog Machine Toward the Intelligent Network - a 21st Century Grid

## Digitization of "World's Largest Machine"

- Rich source of information
- Communications, IT infrastructure to manage information across enterprise & with customers
- Advanced tools to create value from information

## Expanding Virally ...

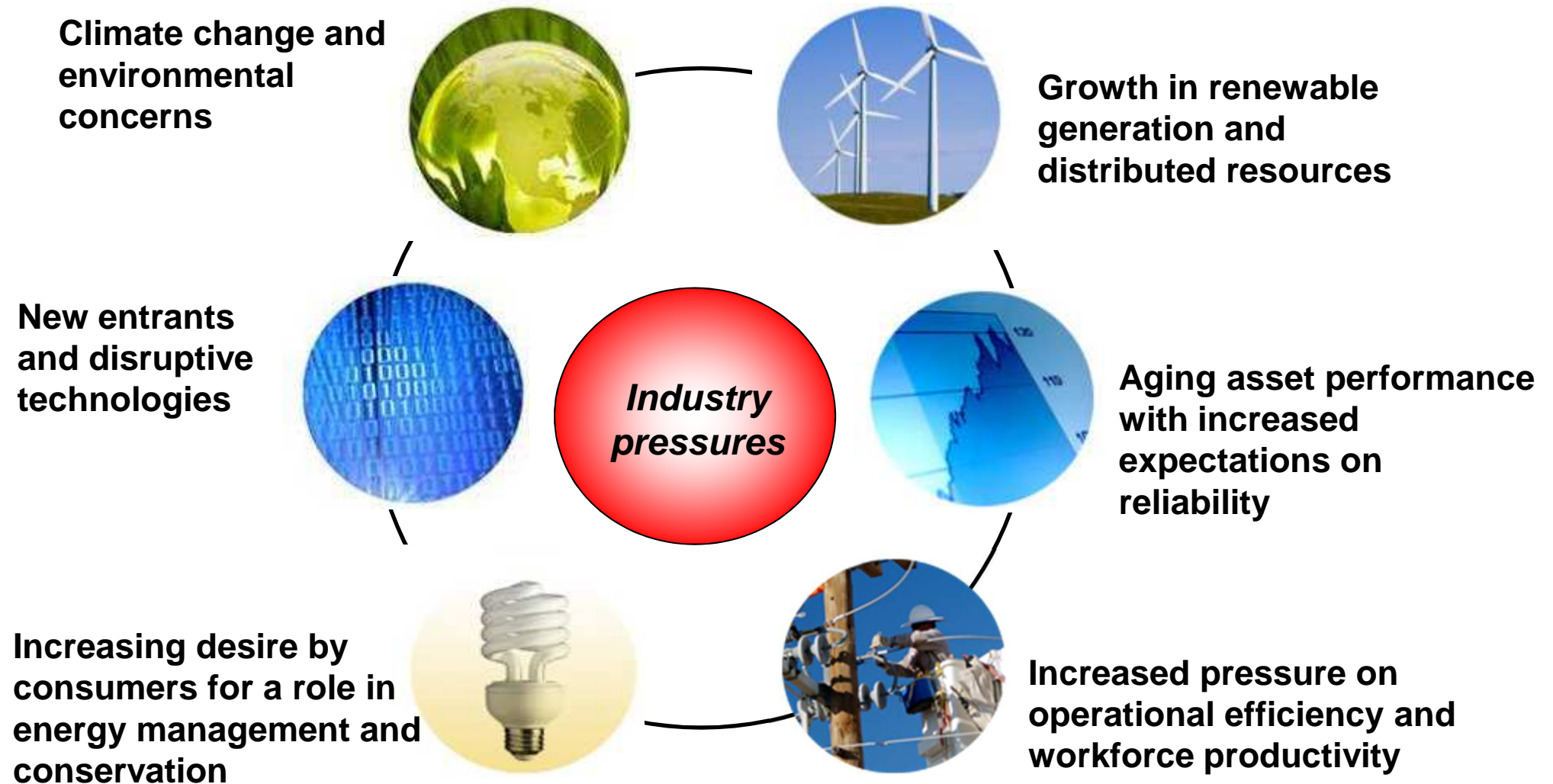
- Billions of linked devices
- Highly complex energy flows
- Highly complex information flows
- Elevated role of consumer as producer



*“To get an idea of what the future electricity grid will look like, think of the Internet. Like the Internet today, the electricity network needs to be able to connect billions of devices and still operate reliably.”*

— Martin LaMonica, CNet News, May 17, 2007

# Global market forces are impacting the landscape of utilities, requiring the transformation of business models





## Smart Grid Vision – Streamlining Operations and Creating *Visibility* Throughout the Grid



**Opportunity:** Maximize investment in infrastructure modernization to integrate operations and improve energy delivery and customer service

### What's Smart?

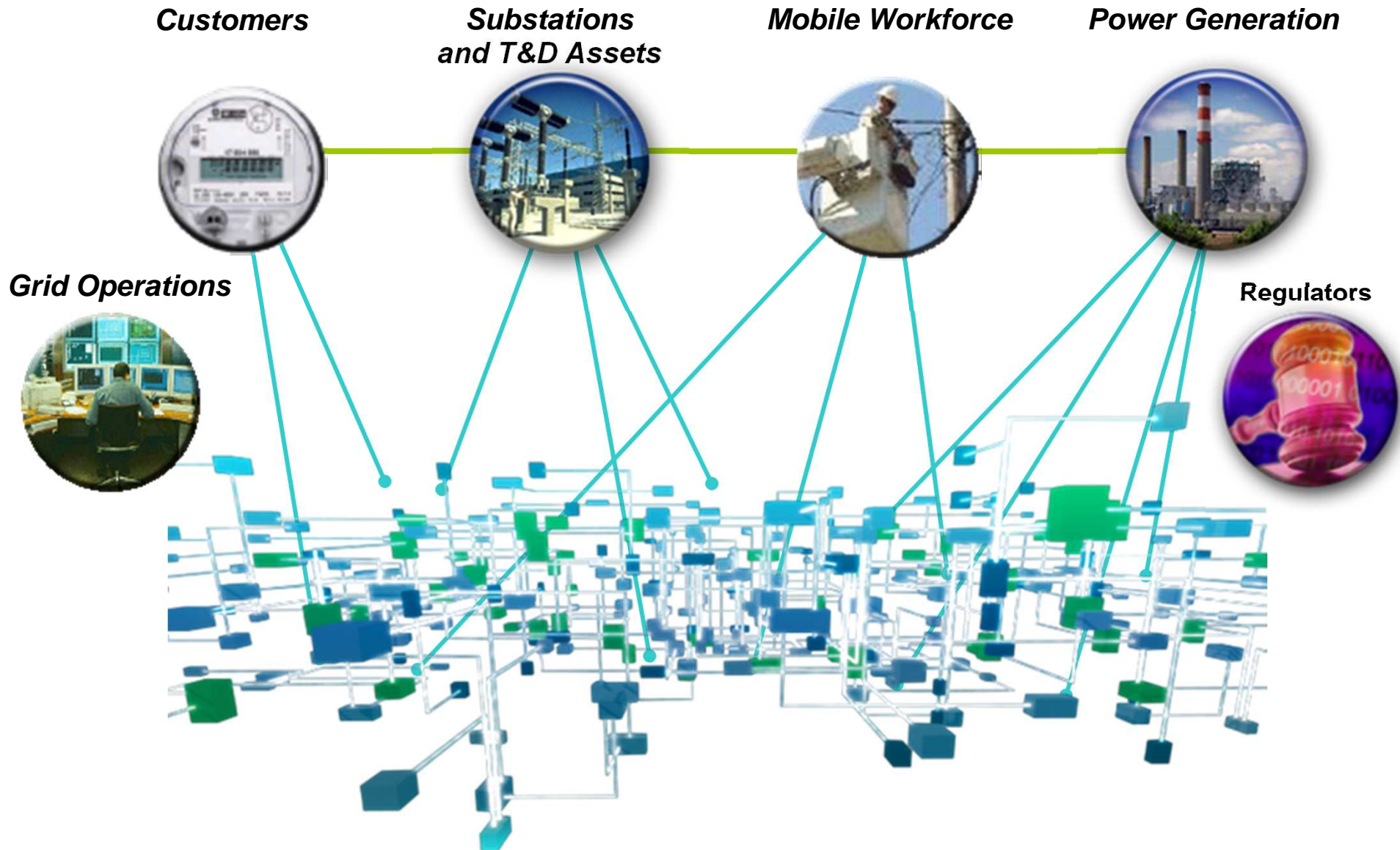
- Smarter Utilities . . . . Advance Metering System / Infrastructure
- Integrated Network and Service Management using event correlation across Grid and IT
- Coordinated real-time information flows for timely cross-organizational response
- Visibility throughout the Grid
- Manage a self-healing grid that can reconfigure to minimize outage impact
- Smart Dashboards

### Smarter Business Outcomes

- Reduction and prevention of customer impacting problems
- Streamlined operations
- Enabled new products and services to retail electric providers
- Improved transparency for effective communication and service to customers

# Addressing the dynamics in the Utility Industry

## *Need for a flexible and scalable infrastructure*



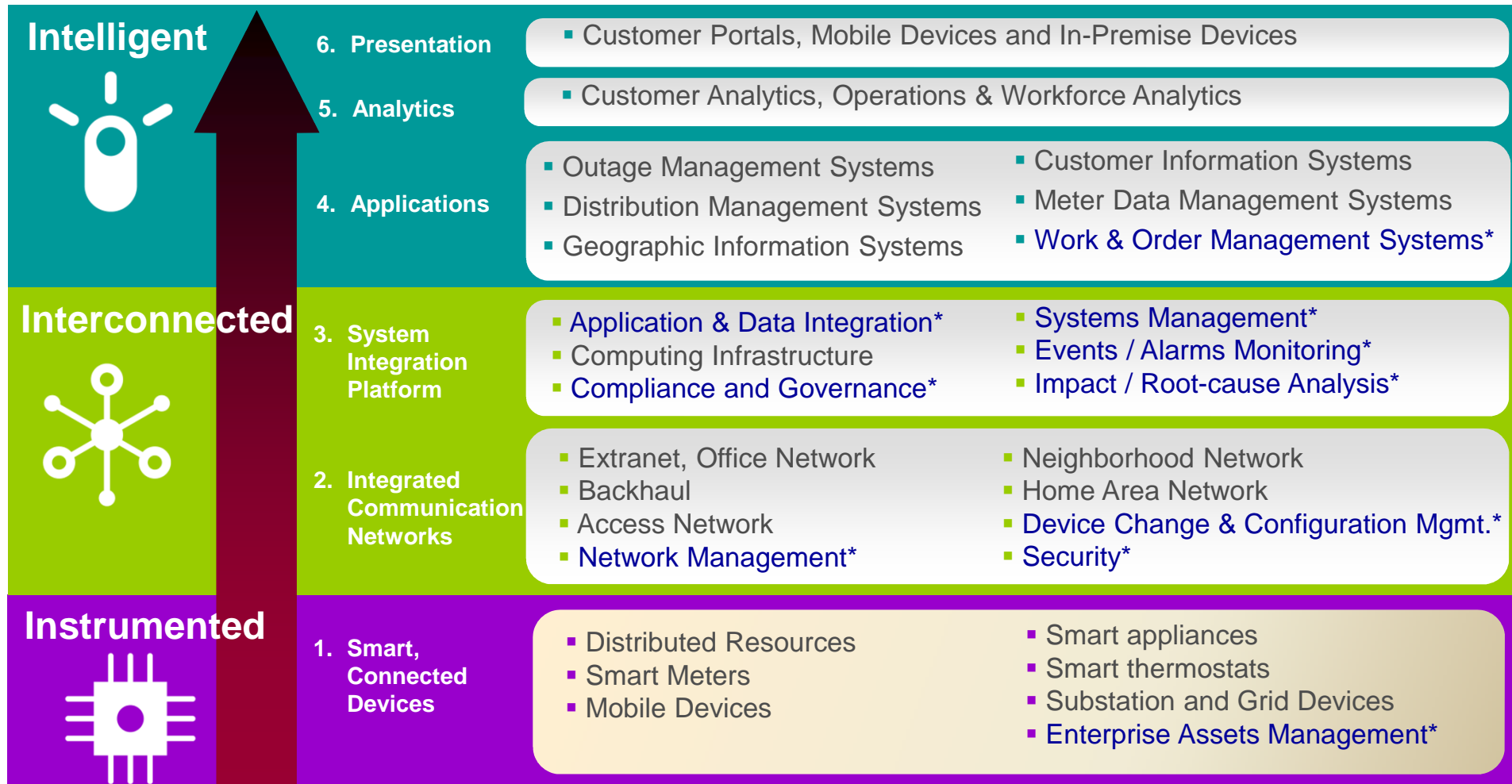
# Integrated Service Management for Smarter Energy and Utilities

IBM helps your IT and business operations deliver services securely, efficiently, reliably and cost-effectively



Visibility	Control	Automation
<p><b>Improve service quality and asset reliability</b></p>	<p><b>Maximize return on assets and reduce risk</b></p>	<p><b>Streamline processes and capture knowledge</b></p>
<ul style="list-style-type: none"> <li>▪ True, real time visibility into the source and resolution of issues that compromise network operations</li> </ul>	<ul style="list-style-type: none"> <li>▪ Optimized asset management allows control of resources and costs. Increased compliance and reduce operational risk. Systems control access and security</li> </ul>	<ul style="list-style-type: none"> <li>▪ Powerful workflow automates business processes on an agile technology platform backed by best practices Network monitoring manages events on the system</li> </ul>

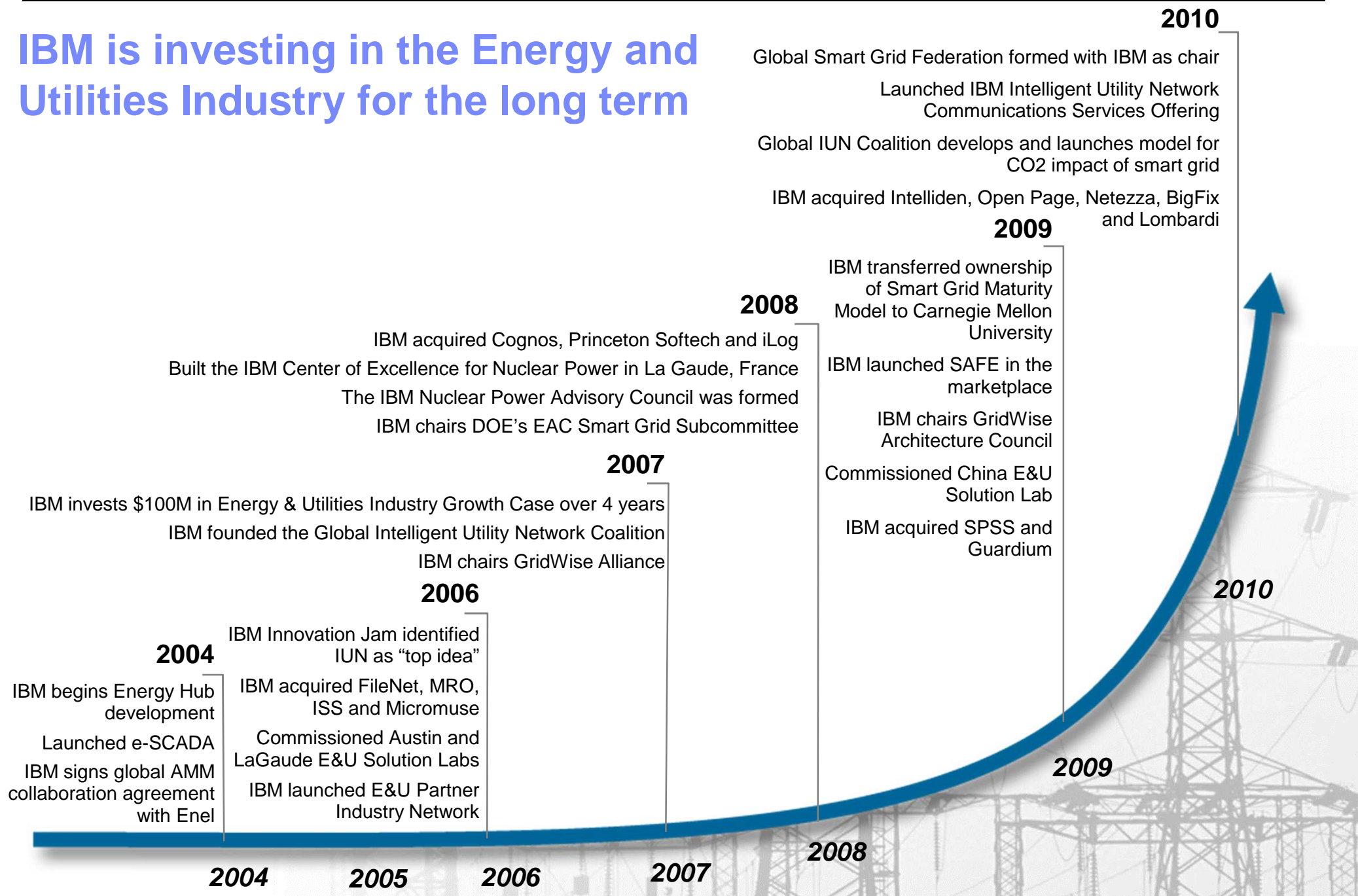
# Instrumented, interconnected, and intelligent infrastructure enabling energy & utilities to become smarter



\* = ISM/Tivoli Capabilities

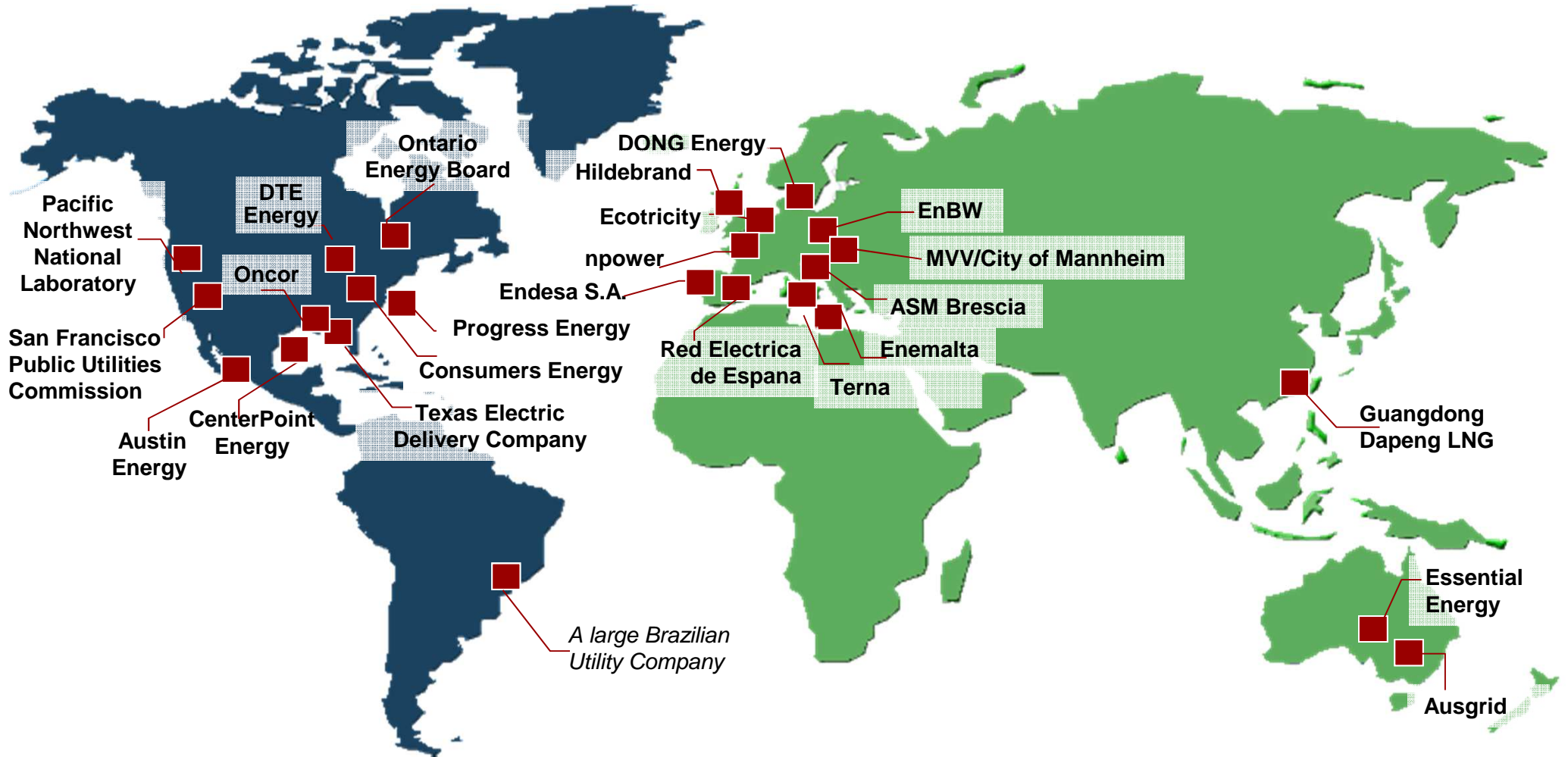


# IBM is investing in the Energy and Utilities Industry for the long term





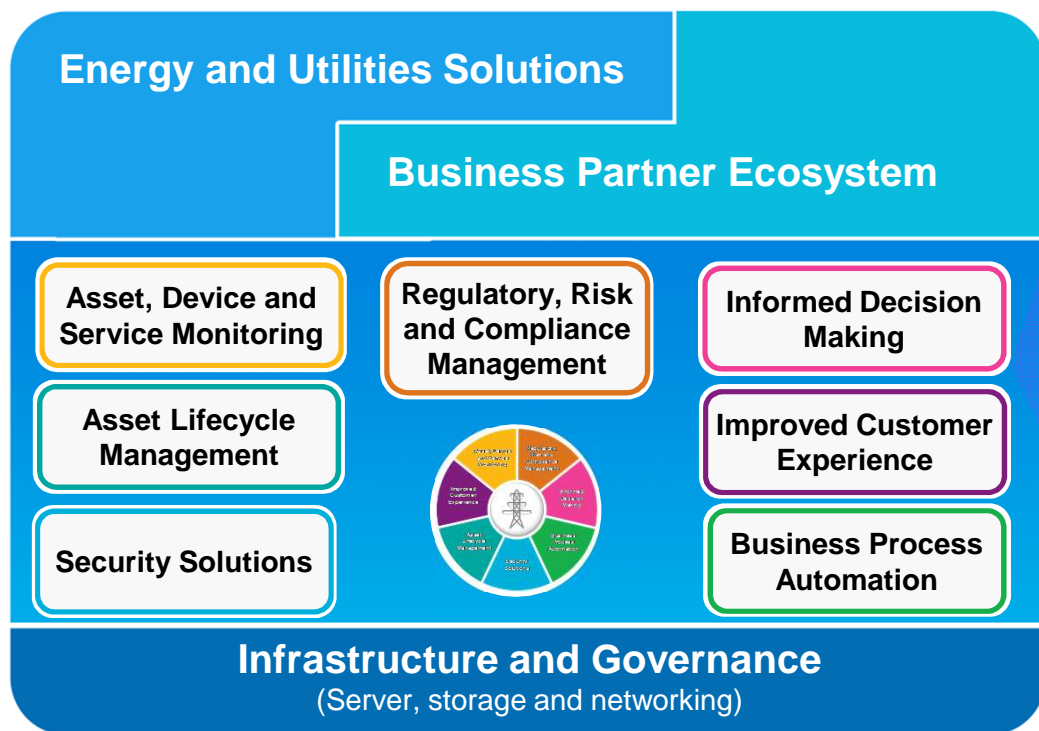
# IBM has worked with clients around the world to develop solutions which transform the energy value chain



Click on box icons to review individual customer profile.

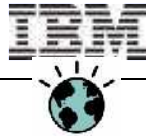
# The Solution Architecture for Energy and Utilities (SAFE) Framework delivers smarter solution deployment

*The framework gives you speed, flexibility, and choice in deploying solutions -- and it reduces cost and risk*



## The SAFE framework provides:

- An approach to **align technology** with utility business needs
- Utility industry **best practices** and **solution accelerators** to speed deployment
- **Re-usable implementation patterns** to lower risk
- Support for adoption of **open and industry-wide standards**
- A **choice** of business applications from IBM business partners



# CenterPoint Energy

Improves insight into energy distribution, delivering lower costs and better service

## The Need:

As a major U.S. energy company, CenterPoint Energy is deploying 2.4 million advanced electric meters in the Houston area to improve operations, give consumers more control over their energy consumption and provide the foundation for retail electric providers to offer new competitive services and products. CenterPoint Energy plans to complete the project over a five-year period, which began in March 2009.

## The Solution:

Working with IBM Global Business Services and IBM Global Technology Services, CenterPoint Energy is deploying an advanced metering solution supported by IBM Tivoli® Netcool®/Impact software. The new system delivers near-real-time data on energy usage and supports dynamic time-of-use rates and other pricing options. This encourages energy conservation and new offerings, such as monthly prepaid electric service for the budget minded.

## What Makes it Smarter:

- Increases energy efficiency and savings due to customers' ability to monitor electricity usage in near real time
- Improves outage response times because smart meters notify CenterPoint Energy about power outages
- Features remote meter reading, which practically eliminates the need to go from house to house

*“These new technologies will give customers insight into their energy usage and allow them to make smart energy choices, while allowing us to monitor our system status in real time.”*

*—Kenny Mercado, senior vice president, AMS Deployment*

## Solution components:

- IBM Global Business Services
- IBM Global Technology Services
- IBM Tivoli® Netcool®/Impact



## A large Brazilian Utility Company

### What if intelligent sensors could shorten the time it took to repair electrical outages?

A large Brazilian energy company is installing sensors, remote terminal units and meters in its electrical grid to improve service delivery.

### The Opportunity

The utility company needed to find a way to locate problems in its complex underground electric mesh network in order to shorten the time it took it to repair outages.

### Solution Components

- IBM® System x® 3500
- IBM Tivoli® Monitoring, Tivoli Netcool®/OMNIbus
- IBM Global Technology Services

### What Makes it Smarter

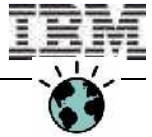
An interconnected and sensed network brings smart solutions. Working with IBM, the company deployed a system that incorporates sensors, meters and intelligent devices across its energy grid to monitor a range of indicators and send alarms when thresholds are reached. The solution automates real-time reports, which allows problems to be detected quicker. And facilitating analysis of multiple variables (temperature, level of O<sub>2</sub>, status of transformers...) helps staff determine the appropriate tools to dispatch for repair, improving productivity and lowering costs.

### Real Business Results

- Increase speed of repair times
- Decreases of system outages

*“Our underground electrical network is vast and complex. The IBM solution allows us to sense when and where faults occur, enabling us to repair outages much more quickly than before.” - Customer*





# Southern Europe Electricity Supplier

Integrated Grid Management enables smarter electric service provision

## The Need:

IBM had previously implemented an automated meter management solution (AMM) at the client. The AMM solution integrated more than 230,000 automated electronic meters in an end-to-end solution that links the meters directly to the company's billing and customer service systems. IBM Global Business Services was asked to build on the existing AMM solution in order to help the company measure and improve its service quality.

## The Solution:

IBM Global Business Services implemented an Integrated Grid Monitoring (IGM) solution that captures and elaborates data related to service quality and regulatory compliance. The solution acquires data from the electric distribution grid and transforms it into information meaningful to, and usable by, the utility company. It's like a "Big Brother" for the Grid, able to measure service quality and overall Grid performance. The IGM solution is based on Tivoli NetCool technology, and runs on UNIX platforms and IBM System x already installed at the client.

## What Makes it Smarter:

- The solution allows the company to monitor and use data to predict energy consumption, making it more forward looking and proactive in managing the Grid
- Improved monitoring helps reduce outages and better regulate electric tension in the Grid, reducing damage to electronic devices in homes and businesses
- The system helps the company visualize and capture real data about consumption, outages and service levels using this unique platform



### Solution components:

- IBM Global Business Services
- IBM Tivoli NetCool
- System x – Windows OS
- IBM Cognos 8 BI

## Next steps



- 1. Establish a Vision for Your Organization**

→ Check our *ISM Live Demonstrations* to See the Value

- 2. Conduct an Assessment on Where You Are and Where You Can Go**

→ Engage our *ISM Consulting Services*

- 3. Build a Plan to Get There**

→ Leverage our *ISM Deployment Services*

To learn more about IBM Integrated Service Management Solutions visit [ibm.com/servicemanagement/industry](http://ibm.com/servicemanagement/industry)