

**Enabling smarter power
for a smarter planet**



The Role of Smart Grid Technologies in Enabling Cleaner Energy

Guido Bartels

General Manager, Energy and Utilities Industry, IBM
Chairman, Global Smart Grid Federation
Board Member and Former Chairman, GridWise Alliance
Member, Electricity Advisory Committee, U.S. DOE



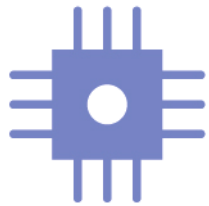


The world's electricity network will change more in the next 20 years than it has in the last 100



The decisions made in the next five years will determine whether or not the transition is considered a success

Intelligence is being infused into the way the world works



Our world is becoming

INSTRUMENTED



Our world is becoming

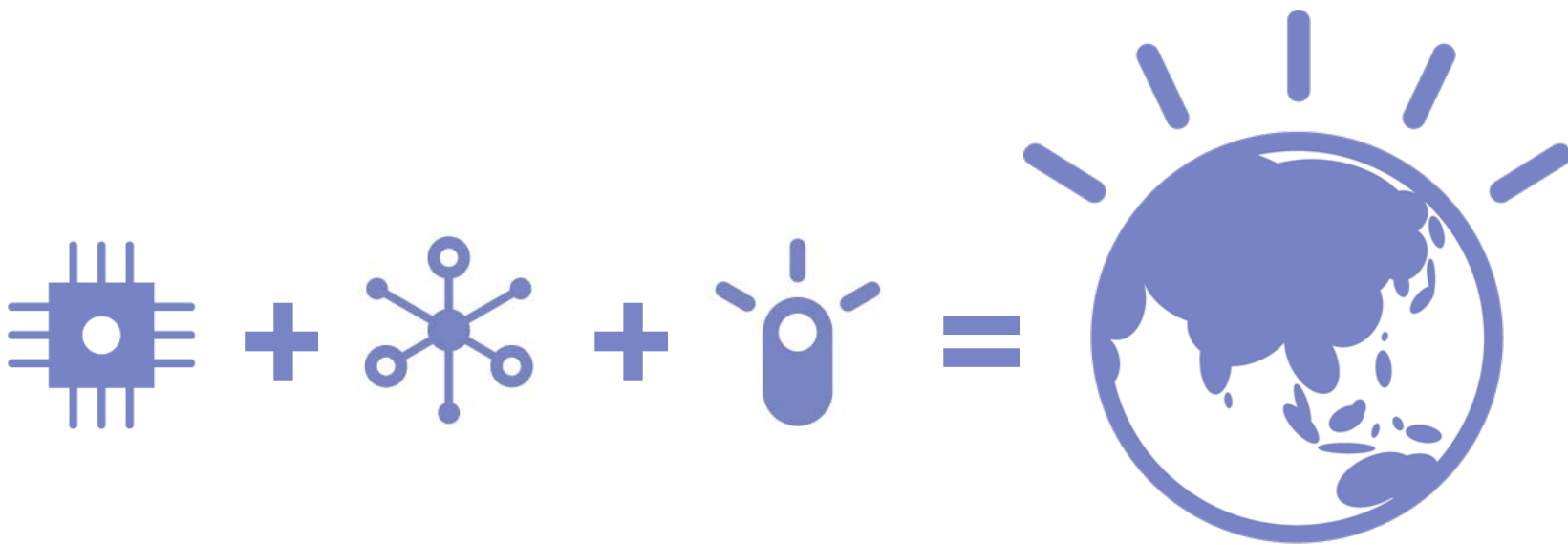
INTERCONNECTED



Virtually all things, processes, and
ways of working are becoming








INTELLIGENT

There is an incredible opportunity at stake



The explosion of new information generated by an instrumented world, when integrated, analyzed, and acted upon using new types of intelligence, will enable us to build smarter energy and utilities systems.

Market forces, impacting the landscape of utilities around the world, require the transformation of industry business models

-  Climate change and environmental concerns
-  Growth in renewable generation and distributed resources
-  Aging asset performance with increased expectations on reliability
-  Increased demand vs. pressure for operational efficiency
-  Workforce productivity
-  Growing Importance of consumers taking a role in energy management and conservation
-  New entrants and disruptive technologies



The energy and utilities industry faces new challenges and opportunities

36.8%

projected growth in worldwide energy demand by 2030

\$150 billion/year

lost due to outages and interruptions in electric power (just in the U.S.)

170 billion

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



1/4

proportion of worldwide CO₂ emissions created by power generation, the largest man-made source

15% reduction in peak loads

when consumers were offered the opportunity to save and average of 10% on their electric bills

\$70 billion

in infrastructure spending could be saved over the next 20 years through better management of existing assets (in the U.S. alone)



Significant impact of ICT

Storage
Consumption
Generation





The evolution of high performance computing...

- Road Runner
- Blue Gene
- Watson





Collaboration is essential for this industry transformation to succeed



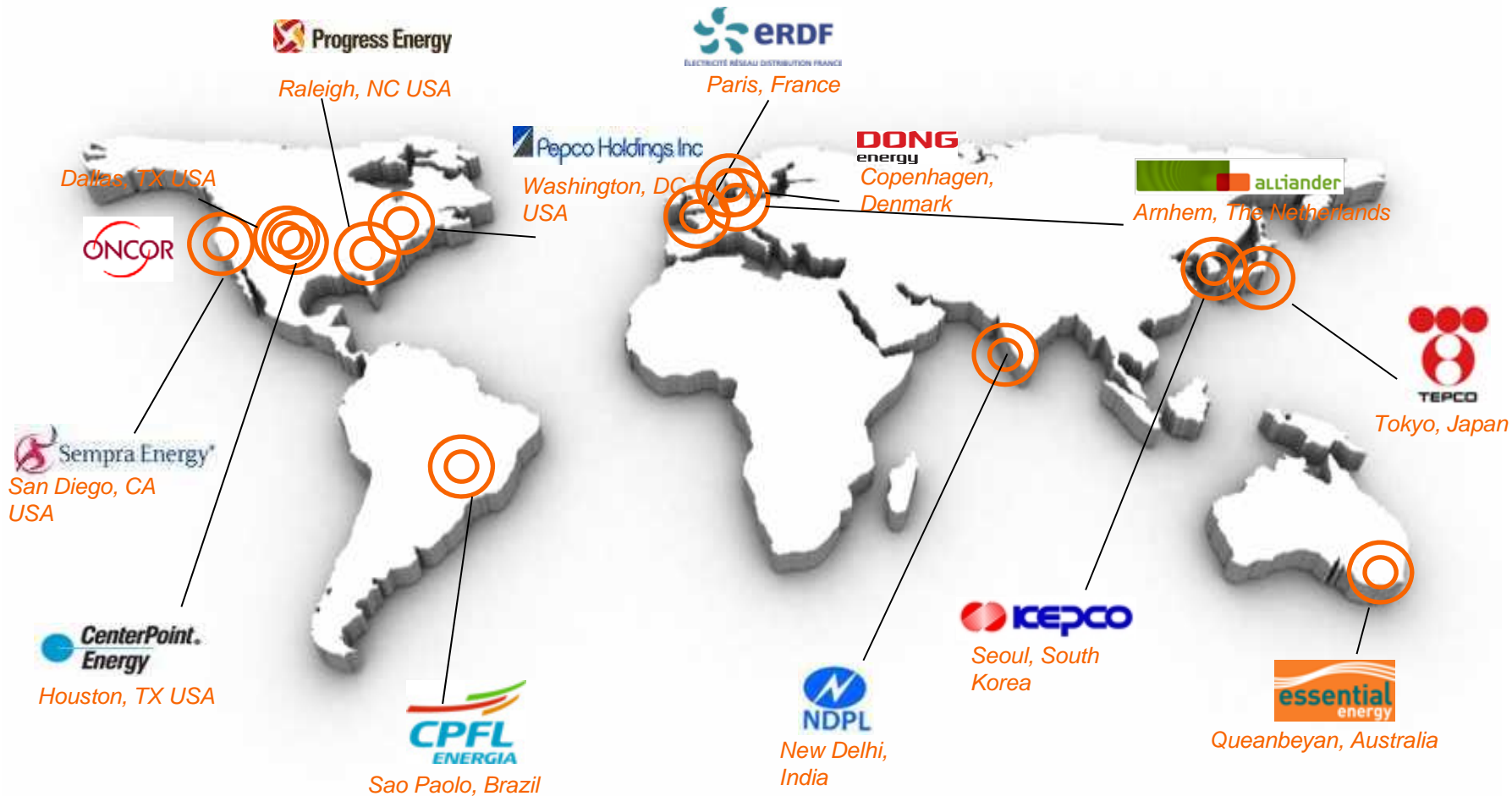
सत्यमेव जयते

Ministry of Power





The Global Intelligent Utility Network Coalition: advancing smart grid progress for over 160 million consumers around the world





The four collective responsibilities for the energy eco-system

- 1. Create smart systems by design**
- 2. Collaboration is critically important for this transformational journey**
- 3. Develop sound policy**
- 4. Continue to emphasize standards**



We've only just begun to uncover what is possible on a smarter planet



Let's work together to drive real progress in our world