

IBM Investments

IBM's Intelligent Utility Network (IUN) is a component of IBM's Energy and Environment Initiative

Applying innovative information technology and services that really matter to businesses, governments, people and the planet

Intelligent Transportation Systems

Measure & improve transportation usage

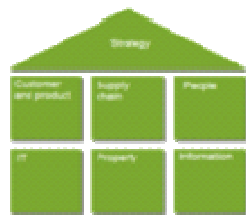
- Reduce traffic congestion
- Reduce CO2 emissions
- Increase mass transit usage
- Reduce energy usage
- Improve environment



Carbon Management

Measure & reduce carbon emissions

- Carbon Mgmt Strategy
- Carbon Mgmt Intelligence
- Supply chain management
- Property, buildings, workplace



Energy Efficient Technologies & Services

Create & manage efficient IT

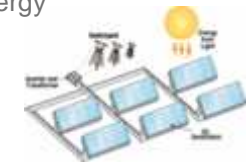
- Active energy management
- IT facilities infrastructure efficiency
- IT operations efficiency
- Monitoring and verification of efficiency goals
- Demand-side efficiency



Intelligent Utility Networks

Measure & improve energy mgmt

- Advanced metering
- Improve efficiency usage,
- Reduce outages
- Improved grid management
- Mangle distributed energy



Advanced Water Management

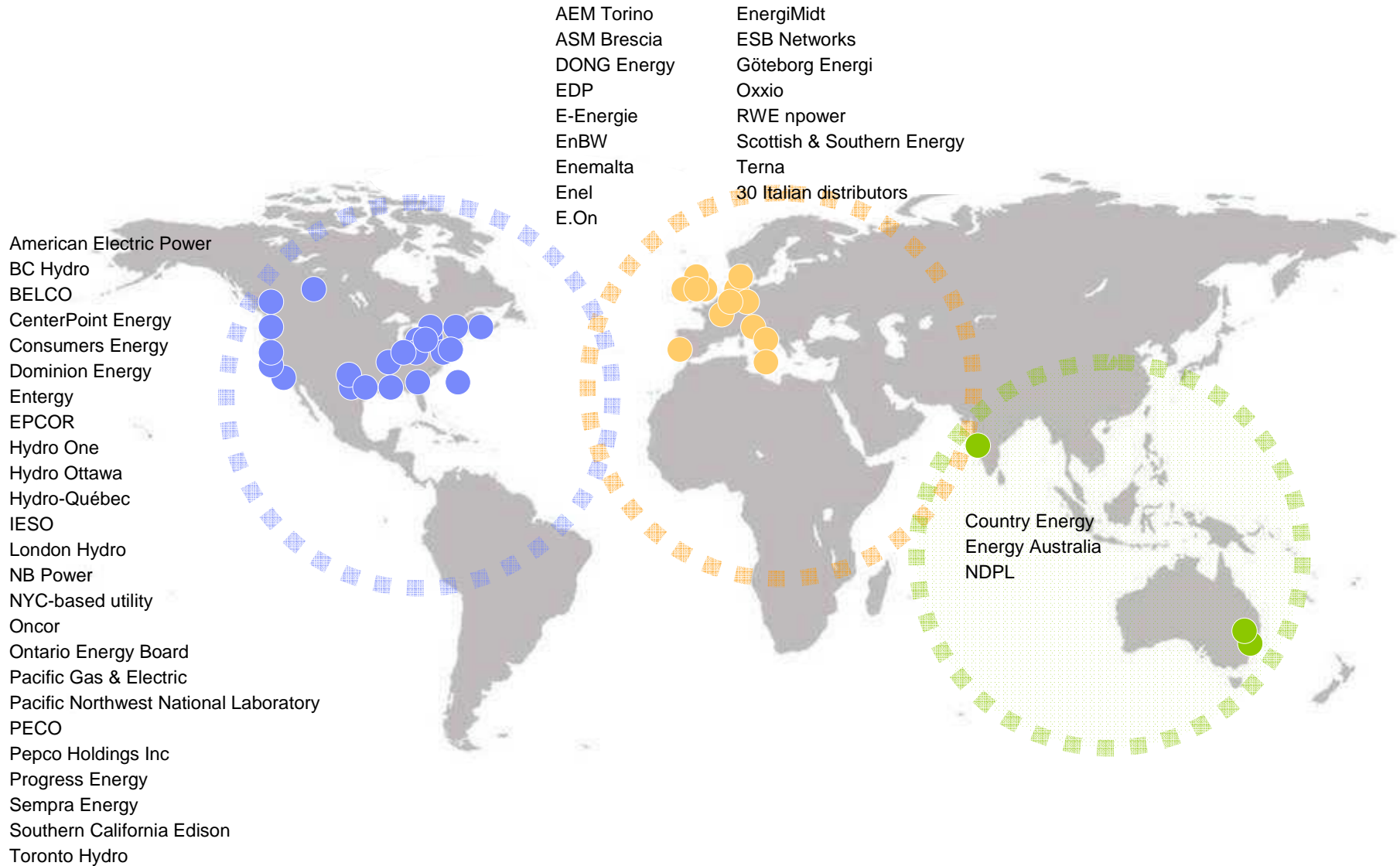
Measure and manage water systems usage and quality with real-time knowledge

- Weather event mgmt; flood management
- Real-time monitoring and analytics for water usage and water quality



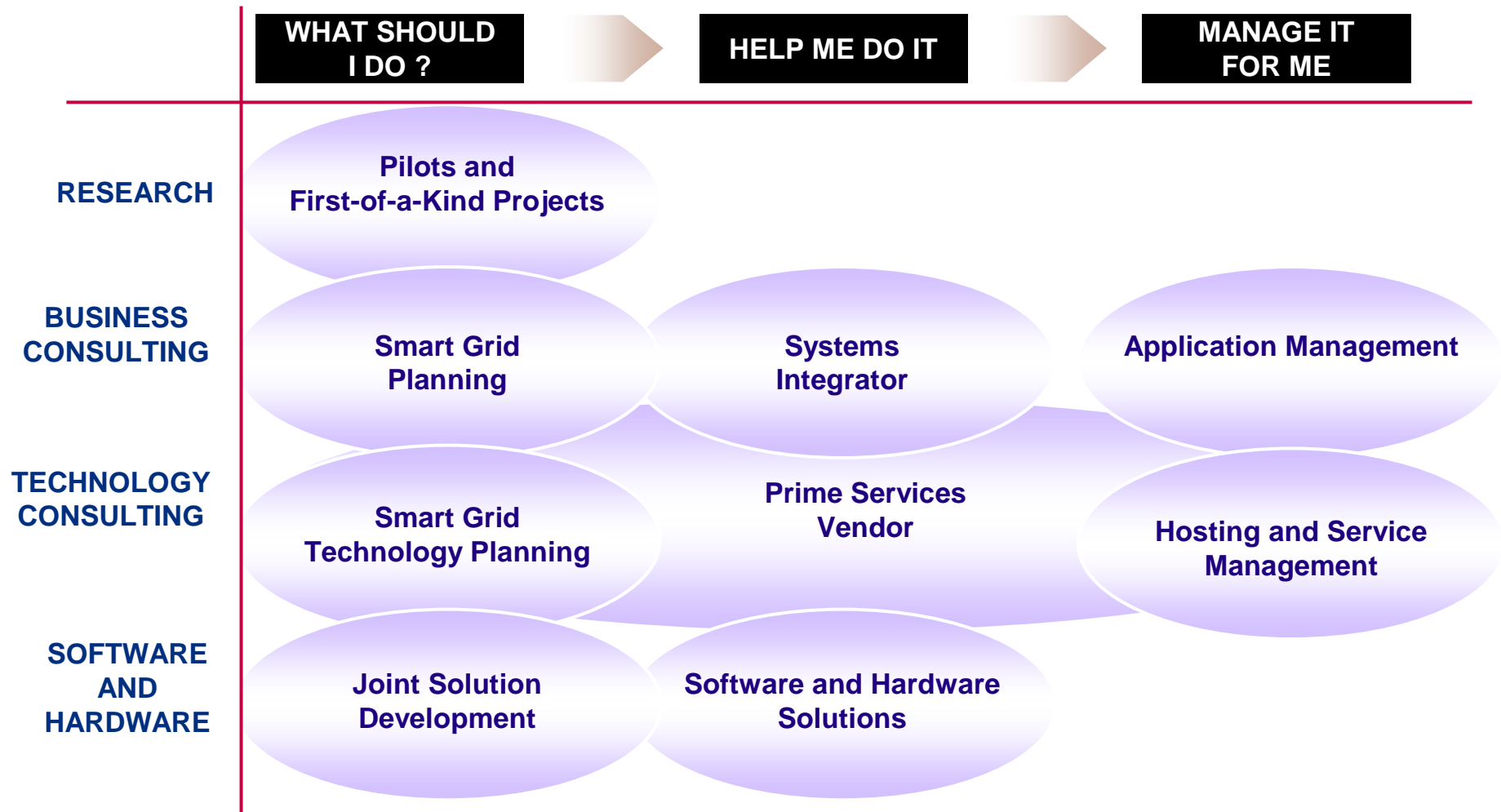
Relevant Capabilities and Experience

IBM's Global Smart Metering and Smart Grid Engagements



IUN Solutions

IBM Smart Grid Engagement Models



Client Successes

Recent media coverage attests to the breadth of IBM's leadership in smart grid developments

IBM Sheds New Light on the Smart Energy Consumer

Dow Jones New Service 25 February 2009, IBM surveyed over 5,000 energy consumers in twelve countries: Australia, Belgium, Canada, Denmark, Germany, France, Ireland, Japan, the Netherlands, New Zealand, the UK and the U.S. Exploring some of the most important issues facing consumers today.

IBM Joins EDISON Project to Build Smart Grid for Electric Cars

Dow Jones News Service, 25 February 2009, IBM today announced its membership in the EDISON research consortium, a Denmark based collaborative aimed at developing an intelligent infrastructure that will make possible the large scale adoption of electric vehicles powered by sustainable energy.

IBM Study Links Nearly 1 Million Jobs to Smart Grid

Business Week, 7 January 2009, The study yielded three specific recommendations of where the U.S. Government should invest for maximum, high value job creation: Broadband, Health IT and Smart Energy Grids.

Let's Spend on Broadband and the Power Grid

Wall Street Journal Opinion, 12 January 2009. A \$10 billion per year smart grid stimulus investment could yield almost a quarter of a million jobs digitizing the grid and in related industries, such as alternative energy and automotive

IBM Unveils Partnership With EDF To Study Power Efficiency

Dow Jones International News 21 November 2008, IBM is teaming up with French power giant Electricite de France SA to develop improved and more-efficient computing solutions for electricity production and power ...

IBM, Consumers Energy Sign Service Agreement To Test Smart Metering Pilot Program

Dow Jones News Service, 25 November 2008

IBM, Australia Team Up To Develop 'Smart' Power Grid

Dow Jones News Service, 17 April 2008, IBM and Country Energy, Australia's biggest power system operator, announced Thursday they have teamed up to develop "smart" grids, putting energy-saving technology to work when ..

IBM To Help AEP, Consumers Modernize Electric Grids

Dow Jones News Service, 25 November 2008



Client Successes

Malta will become the first country to implement an end-to-end electricity and water smart utility system

What's smart?

Smart electricity and water meters, advanced IT applications enabling remote monitoring, management, meter readings and meter suspensions, customer energy management portal



Smarter Outcomes

- Customers will pay only for the energy they actually use
- Customers will be able to switch to a pre-pay service, similar to mobile phone pre-payment
- Commercial losses will be reduced through monitoring of electricity and water grids
- Remote management of electricity supply
- Sophisticated analysis of consumption patterns, enabling a real-time view of energy use to identify opportunities for reduction
- Customers will have an Internet portal to track energy consumption

EDISON project will develop an intelligent infrastructure that will make possible the large scale adoption of electric vehicles powered by sustainable energy



*EDISON = Electric Vehicles in a Distributed and Integrated Market using Sustainable Energy and Open Networks

What's smart?

EDISON* research consortium, a Denmark-based collaborative aimed at developing an intelligent infrastructure that will make possible the large scale adoption of electric vehicles powered by sustainable energy

Smarter Outcomes

- Upward of 10% of the country's vehicles to be all electric or hybrid electric during the coming years
- Minimize CO₂-emissions linked to electrified transport
- Maximize the use of renewable energy
- Enable smart technologies to control electric vehicle charging and billing and to ensure the stability of the overall energy system

Client Successes**Italian utility, ASM Brescia, streamlines processes and enhances service offerings with the help of smart metering****What's smart?**

Integration of more than 200,000 smart meters in an end-to-end solution that links the meters directly to billing and customer service systems

Smarter Outcomes

- Enables highly customized, flexible commercial service packages and pricing options
- Improved compliance with network monitoring and optimization regulations
- Increased service reliability
- Improved fraud/loss management, faster revenue collection
- Improved customer service

Client Successes

DONG Energy Optimizes Operations to Respond to Outages Faster



What's Smart?

- Retrofit remote monitoring and control devices
- Quickly locates and isolates faults

Smarter Outcomes

- Potential to reduce outage minutes by 25-50%
- Fault search time reduced by one-third
- Potential capital savings up to 90 %

Client Successes

Ontario Energy Board demonstrates the value of time-sensitive rates



What's smart?

Innovative trial of time-of-use and critical peak electricity tariffs enabled by smart meters

Smarter Outcomes

- Up to a 25% shifting away from summertime critical peak times
- 6% lower energy consumption overall
- 75% of participants saved money
- 83% of participants wanted to stay on the program

Client Successes**Energie Baden-Württemberg lays the groundwork for “smarter” energy consumption and generation****What's smart?**

Energy customer display showing energy pricing (employs a “traffic light” motif, in which the “best” (i.e., lowest priced) time intervals are displayed with a green background, the most expensive with a red background, and intermediate or “normal” prices in yellow)

Smarter Outcomes

- Lower cost and more efficient power generation through reductions in peak energy consumption
- Improved ability to absorb alternative energy sources into the power grid
- Lower energy costs for the customer

Client Successes

CenterPoint Energy breaks new ground in grid reliability through the power of automation



What's smart?

Smart meters, first-of-a-kind failure detection, and home area networking enabling a smart home

Smarter Outcomes

- Reduction in frequency and duration of power outages
- Increase in meter reading and grid management efficiency
- Near real-time electric use data to utility and consumer
- Extended asset life

Client Successes

Pacific Northwest National Laboratory changes the business model for energy delivery



What's smart?

- Smart appliances, meters, and sensors adjust consumption dynamically based on real-time pricing for residential consumers

Smarter Outcomes

- 10% lower electricity bills
- 50% reduction short-term peak loads
- \$70B projected savings though better use of existing infrastructure

Client Successes

AEP's gridSMART program will improve their grid reliability and give consumers more control over their energy usage

What's smart?

New energy delivery system technologies, local generation and storage devices, and additional efficiency enhancements, new customer programs

Smarter Outcomes

- Fewer outages
- Improved service and reliability
- Ability for consumer to better manage their energy use
- Improved service quality
- Improved grid reliability and efficiency
- Proactive outage notification

