



INTERNATIONAL AIR-CONDITIONING • HEATING • REFRIGERATING EXPOSITION

AHR EXPO[®]

January 31-February 2, 2011

Las Vegas Convention Center
Las Vegas, Nevada

Co-sponsors:



Connecting Building Automation to Everything

9:00 am Monday, January 31st

- **Jim Sinopoli PE, RCDD, LEED AP**
Managing Principal,
[Smart Buildings LLC](#)
- **Ken Sinclair Publisher/Owner**
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About

In an ideal world, we will be able to be vendor and protocol independent. Everything will talk to everything.

We need to make open the connections to the cloud

Networks (BACnet, LonWorks, ZigBee, an others) use different communication services as well as different data.

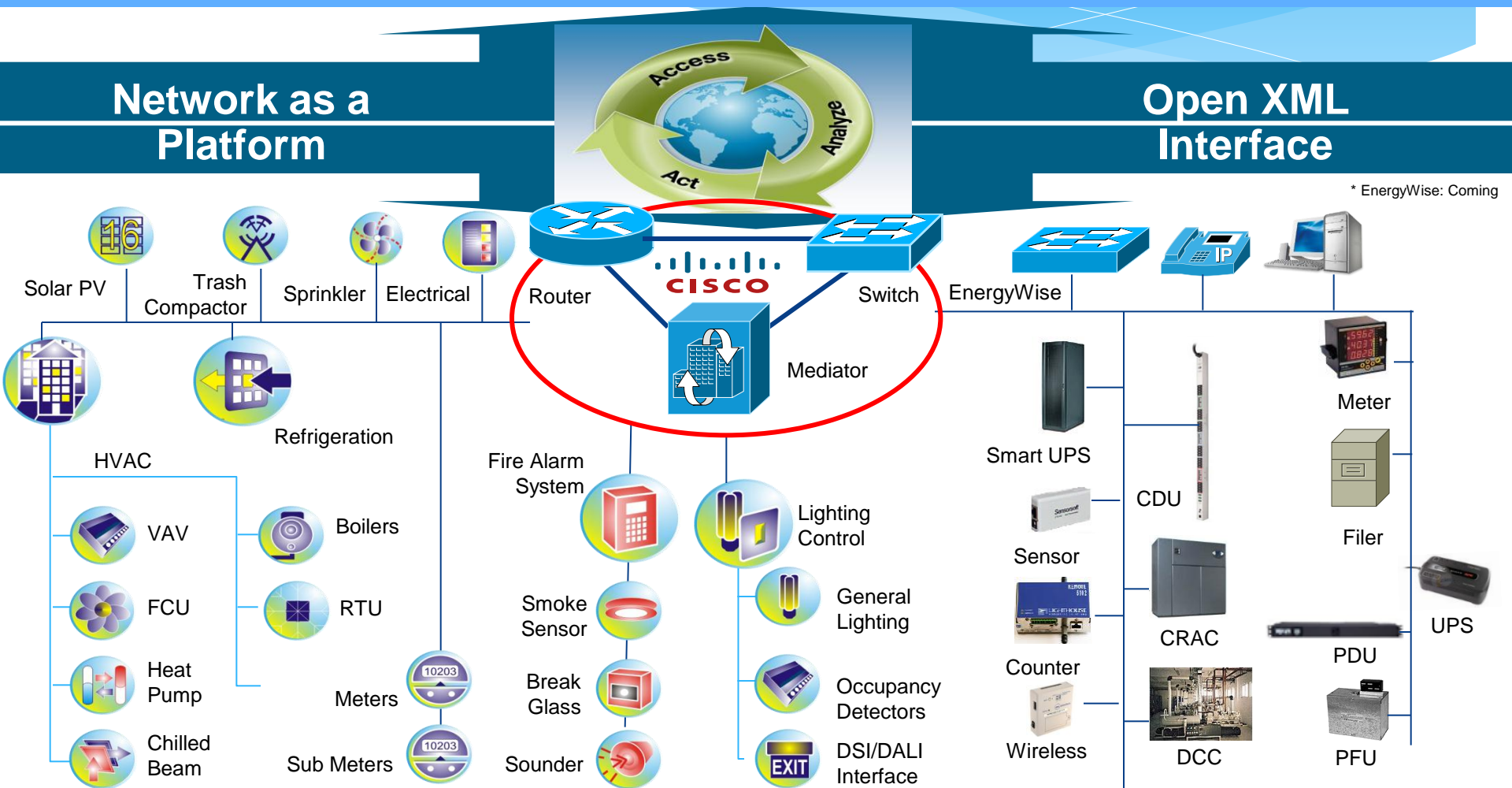
Mapping between different models is the way for integration of dissimilar systems.

This has been the solution for anywhere connectivity of the information technology industry.

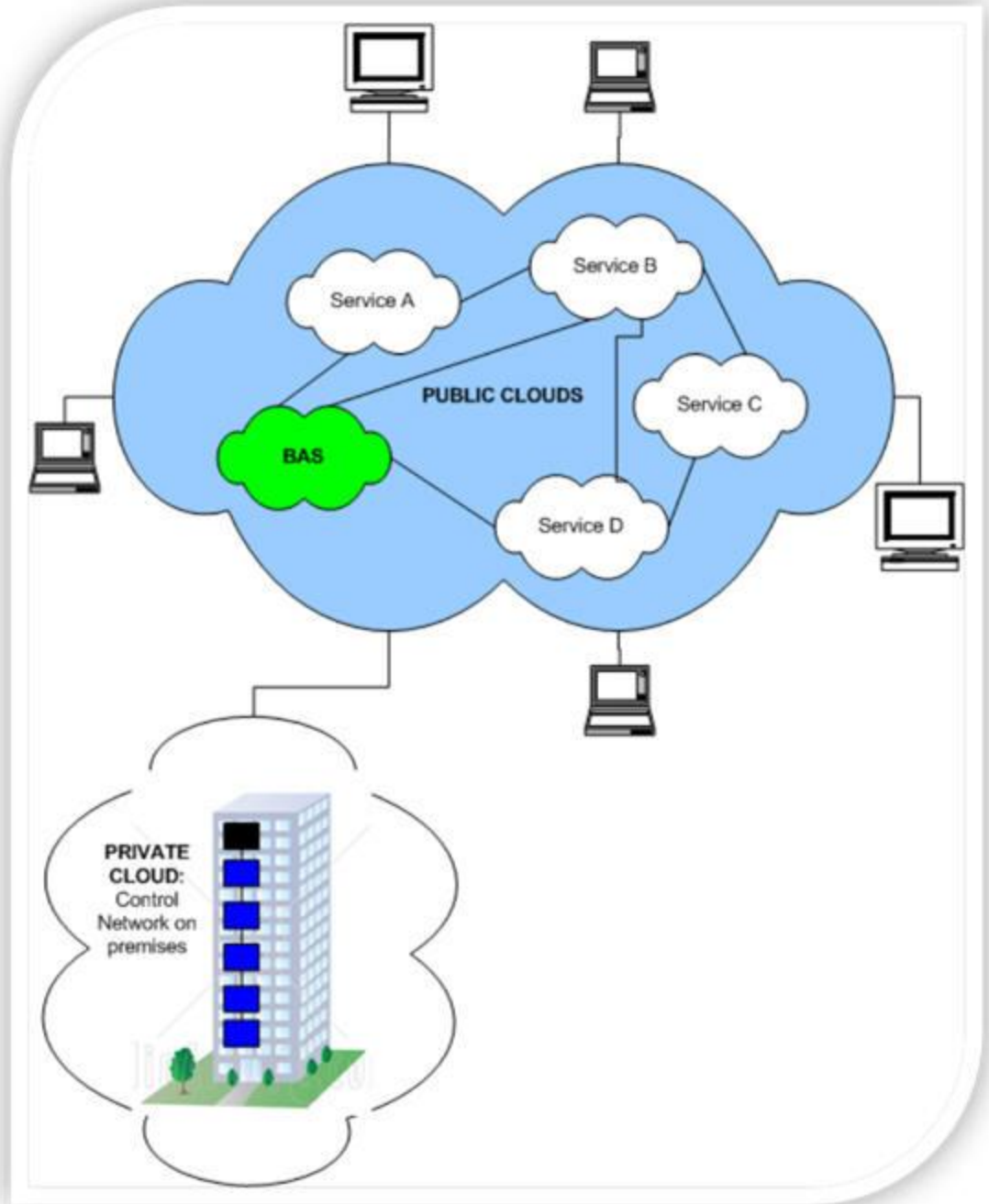
System Architecture

Enterprise or Cloud Applications:

Energy Dashboards, EEM, Demand Response, Fault Detection, Event Reporting, SmartGrid, etc.

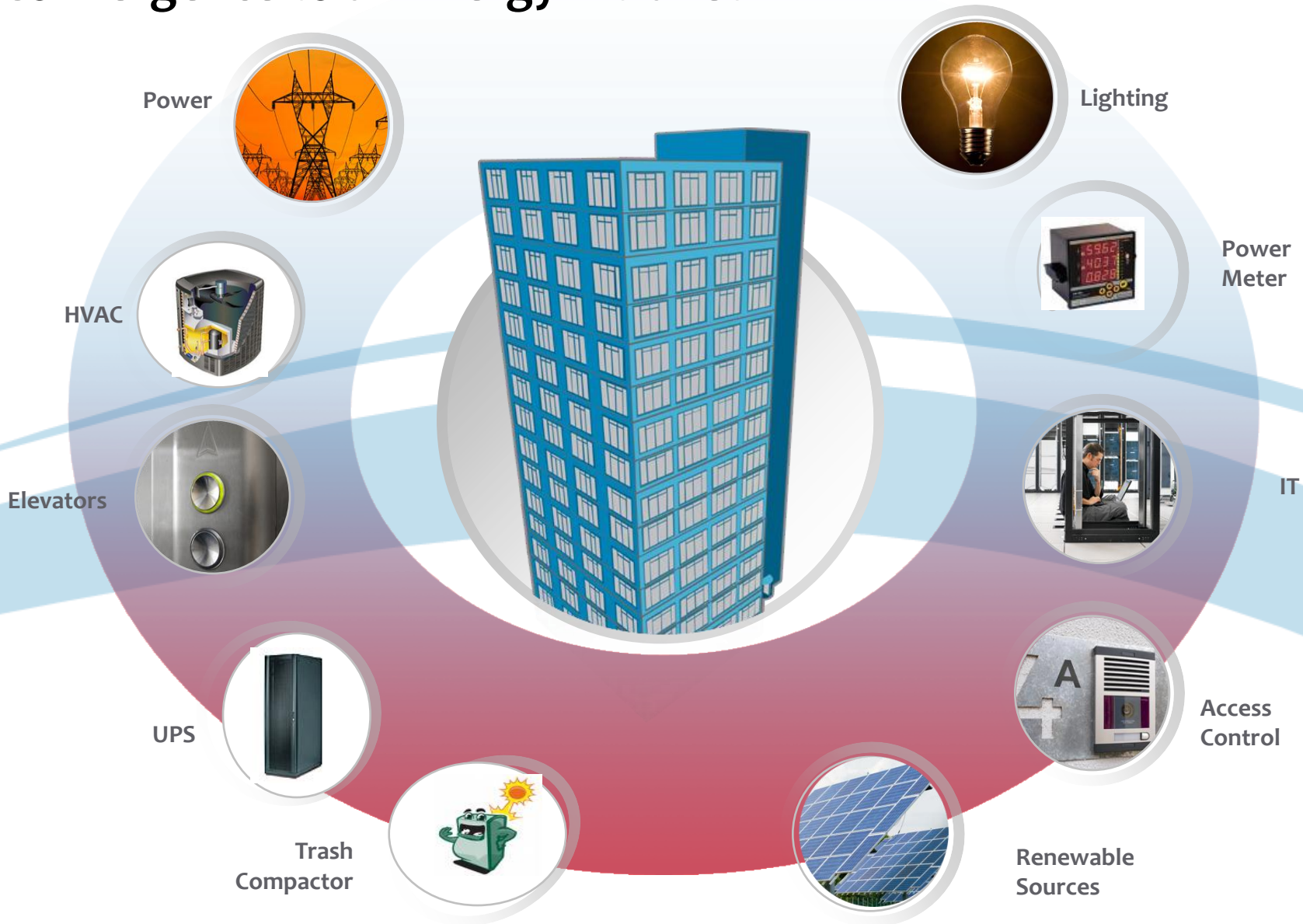


managing building systems all the time from anywhere with a continuously connected open web environment allows the user to complete all tasks including engineering, commissioning and facility maintenance.



Sustainable Energy Management

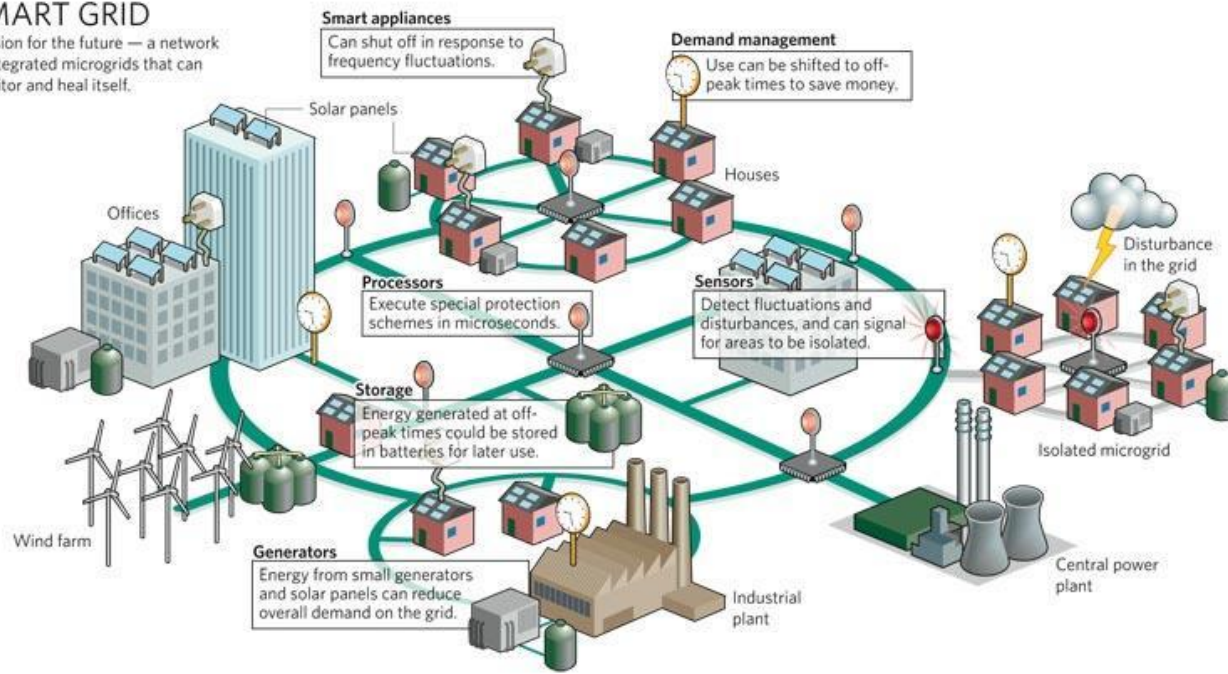
Convergence to an Energy Intranet



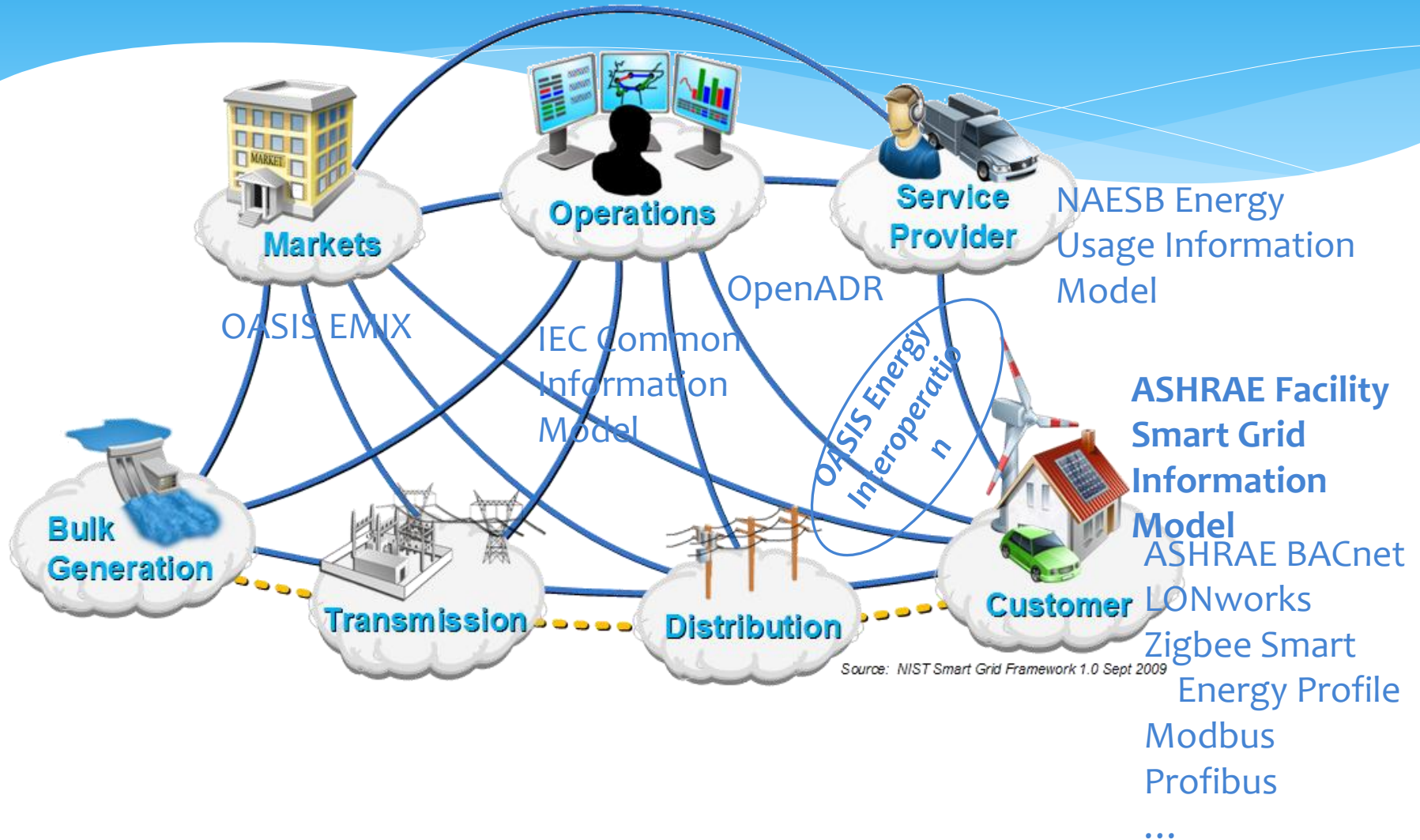
Building Automation gets “Griddy” while colliding with the Corporate Enterprise

SMART GRID

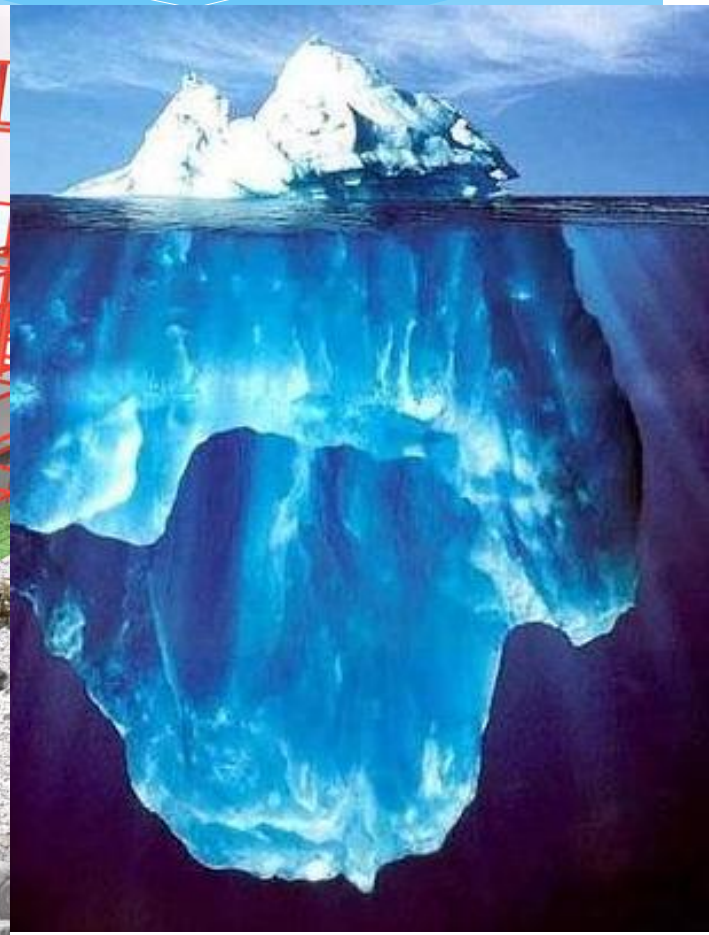
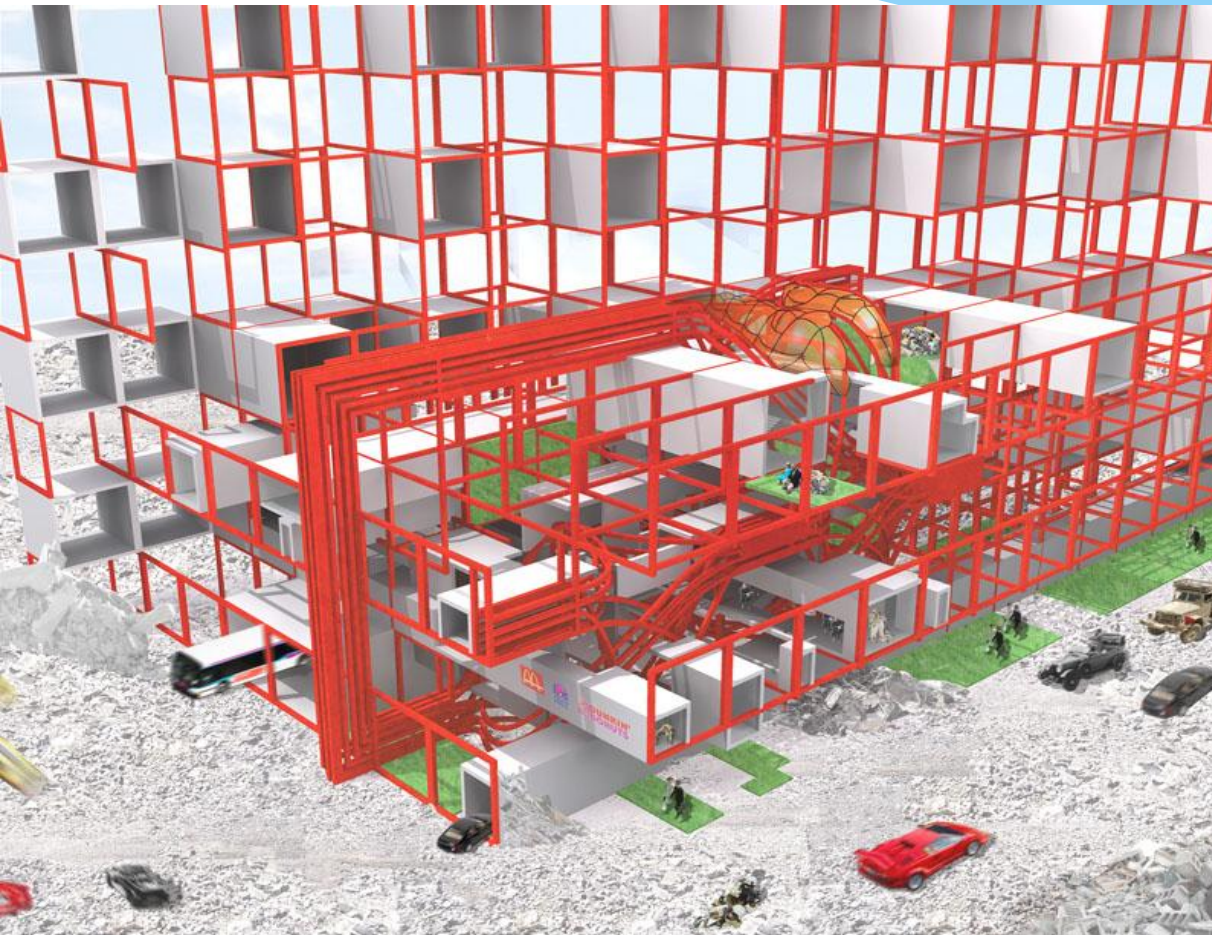
A vision for the future — a network of integrated microgrids that can monitor and heal itself.



Conceptual Model of the Smart Grid



How do you make the invisible visible?



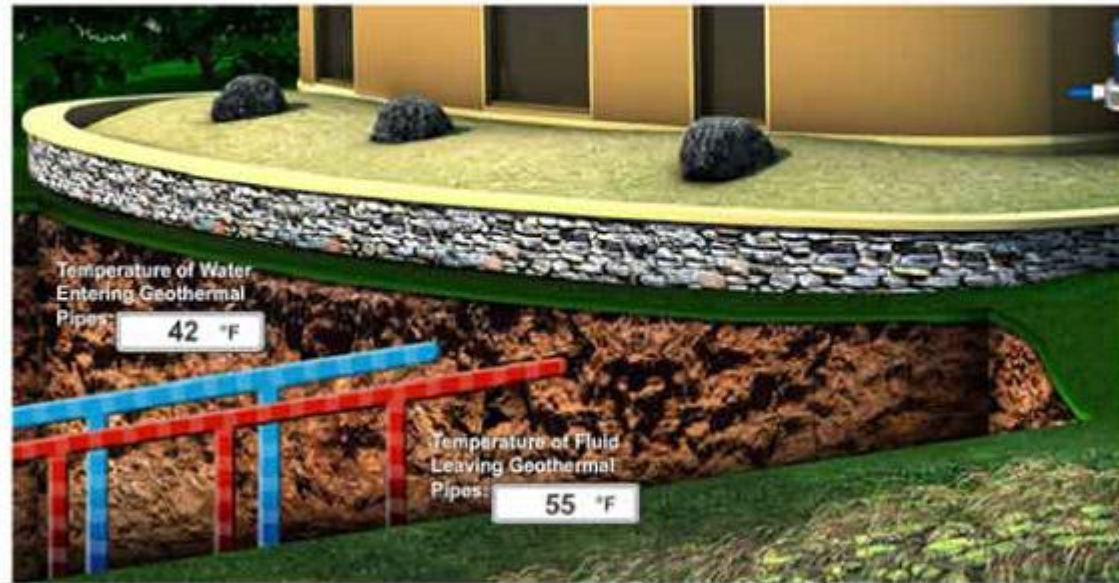
Anywhereness & Visible



GEOHERMAL SYSTEM

Touch each label below to learn more about the geothermal system in the building.

Geothermal Well Network



Temperature of Water
Entering Geothermal
Pipes:

42 °F

Temperature of Fluid
Leaving Geothermal
Pipes:

55 °F

Well Pump Speed:

36 %

Geothermal wells run underground, where the earth's temperature remains constant throughout the year. A solution circulates through the wells: before being pumped back into the building to help heat or cool, depending on the season.



Home



Green Features



Water Use



Energy

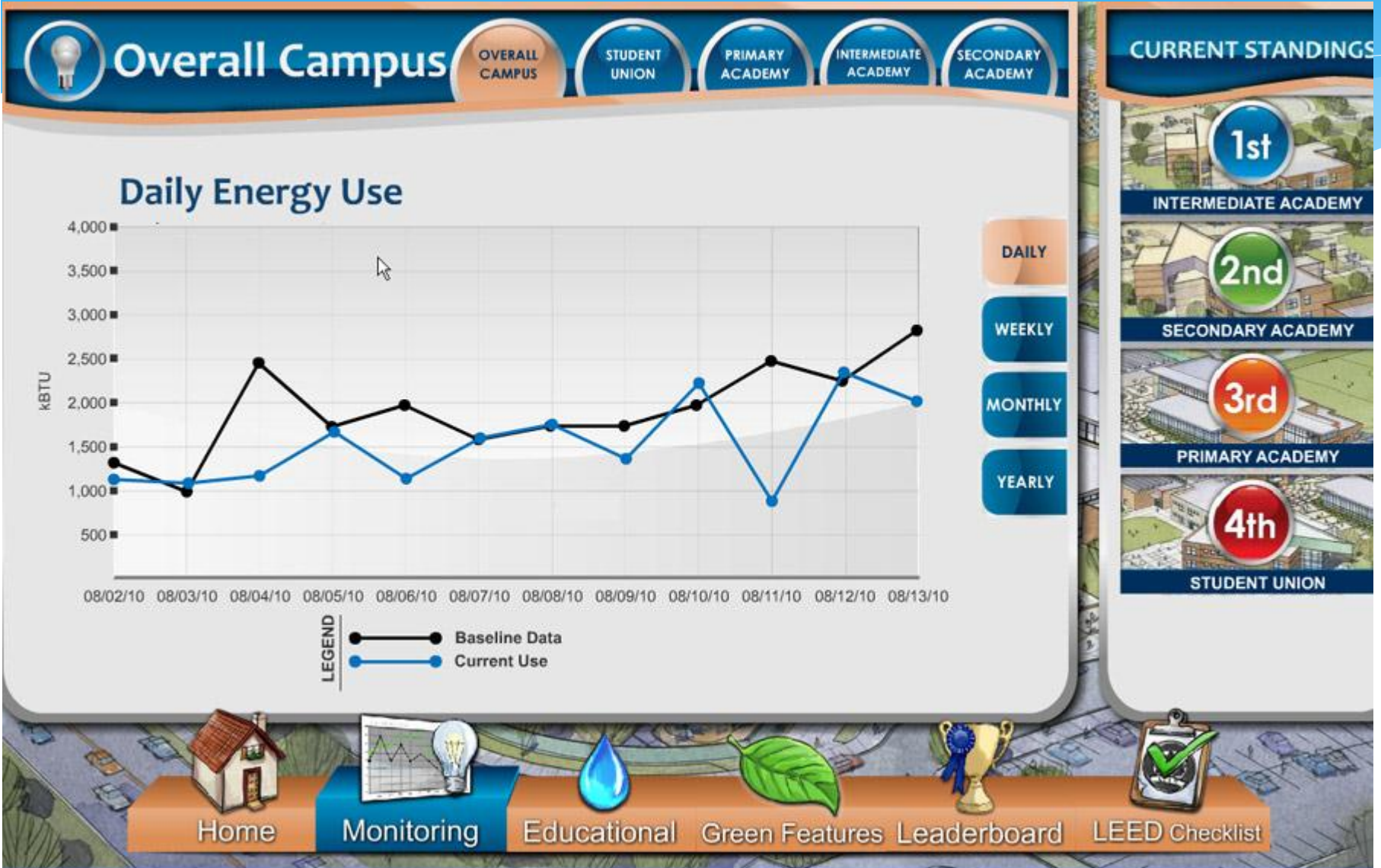


Geothermal



Weather

Invisible made visible exposes all



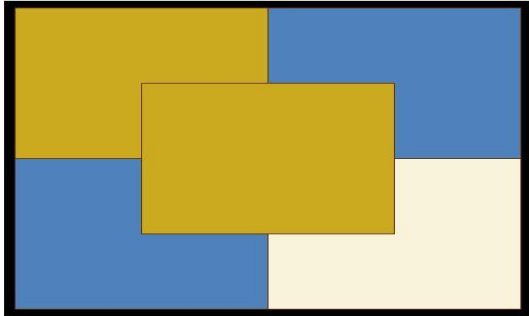
Dashboards for Buildings

“The question is not what you look at, but what you see.”

- * Data is “raw” material.
- * Its real value is being transformed into useful information.
- * The final link in this chain, and probably the most important, is the user interface (UI) or the human-machine interface (HMI), where the actionable information is presented to the person who will act upon the information.

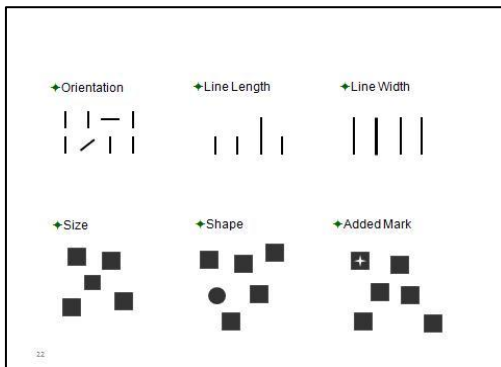
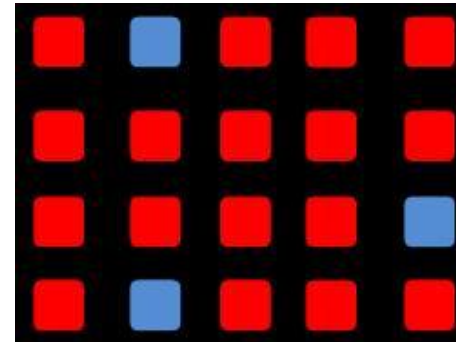


How to Present the Information



The position of the information

Color



Shapes and Sizes

Predictions for Smart Buildings in 2011

Traditional Building Management Systems (BMS) Will Become Obsolete

- Slow to adopt the latest IT
- Interfaces are not the customizable dashboards
- Applications suites aren't broad enough
- Retooled to handle demand response applications
- 3rd party developers are tapping into the BMS databases or using open communication protocols
- Major manufacturers may be left with just software configuration tools for controllers/field devices.



There Will Be A Major Shakeout In The “Energy Management Software” Sector



- * Small and medium sized companies - agility and speed
- * Straightforward to read energy data from Modbus meters and create graphs, charts and tables
- * Ongoing support and additional development is different
- * A few small/medium companies to grow, some acquired, some culling will take place

Internships For Facility Management Personnel Will Dramatically Grow

- * Short on qualified people
- * Skill set and knowledge base rapidly changing
- * Academic institutions provide technical knowledge but no real world experience
- * Large organizations will team up with technical institutions to develop the talent



Telecom Carriers Will Enter The Energy Management/Building Ops Business



- * New opportunities in “network connectivity” and “managed services”
- * Manage any sensor or device on any system or network.
- * Leveraging existing assets and expanding their offerings.
- * Telemetry services
- * Already deploying command and operations facilities and “collaboration centers”
- * M2M applications

Except For California, The Trading Of Carbon Emissions Is Pretty Much Dead

- * Fraud in trading, the recession, and the infamous “scientific” emails.
- * The Chicago Climate Exchange (CCX) announced it is closing shop.
- * Fraud in the Danish emissions trading registry estimated \$7billion.
- * Similar fraud allegations are being investigated in Germany, Britain, France, Spain, Norway and the Netherlands.
- * Jan. 19th - European Union suspended most of its 72 billion euro carbon market after the suspected theft of 7 million euros of emissions permits from the Czech Republic’s carbon registry



New Companies Involved With Smart Grid And Buildings Will Flourish Post Recession



- * Recessions are transformative periods
- * Large US government funding for the smart grid, keen focus on energy, and a whole new market and industry created.
- * In 2009 only 11% of the DR market was captured.
- * Expect companies such as Enernoc, ECS and Comverge to grow and

Certification And Accreditation For Integrated Building Systems Will Increase Rapidly

- * Major transformation of how buildings are designed, constructed and operated
- * Complexity of the buildings is rising steeply
- * Skill set and knowledge base to operate a building is shifting
- * The marketplace will sort through the qualified and unqualified by accreditation.
- * Knowledge base covering everything from BIM and LEED to integrated systems, security systems, energy and much more



“White-Space” Networking Will Start To Develop Into The Next Major Wireless Standard



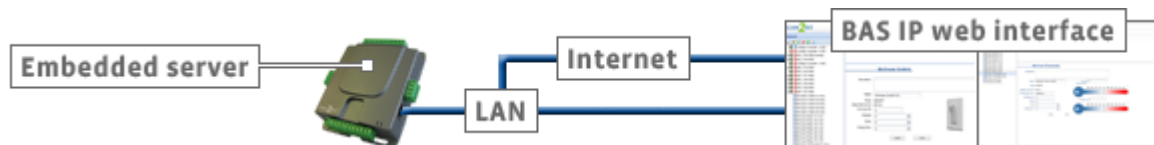
- * “guard bands” between analog radio frequencies
- * Digital broadcasting compresses more signal into less frequency
- * the guard bands are no longer needed thus “white-space networking”.
- * Network speeds should be around 50-100Mbps.
- * New devices (called “white space devices” or WSD)
- * Big technology players backing the endeavor

2011 AHR Expo Innovation Award Winners

- * **Building Automation** ecobee Energy Management System



- * **Software** CAN2GO embedded BAS IP Web Interface





"Smart Grid, beyond the grid"

meaning that there is a lot of opportunities outside of the traditional utility

With buildings accounting for up to 70% of electricity consumption, the reality of directly connecting building automation with the Smart Grid has tremendous value for building owners, energy suppliers and society at large. A key objective of the B2G Summit is to outline the value proposition of this opportunity to building automation and controls industry.

If you are a player in building automation and control systems, from manufacturers, integrators, contractors and consulting engineers, it is critical that you attend this Summit and hear first hand from key Smart Grid experts on business, technology and policy perspectives.

Our Education sessions; Continuously Connected Open Information for BAS - 5 AHR Expo Education sessions Las Vegas

- 1. Connecting Building Automation to Everything**
9:00 am Monday, January 31st
- 2. Continuous Commissioning and Today's Aggressive Energy Standards** - 1:30 pm Monday, January 31st
- 3. Key Technologies for our Connected Future**
9:30 am Tuesday
- 4. A Panel discussion – Incentives to Motivate and Connect our Industry**
1:30 pm Tuesday
- 5. A Panel discussion Creating Budget for Implementing Information Management** 3:00 pm Tuesday

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Gridwise Education Sessions at AHR Expo

- * **Green Buildings meet the Green Grid** 10:30-11:30am on Monday, Jan.31
- * **Building Automation, Demand Response and Next Frontier for Energy** 11:00 - 12 on Tuesday, Feb.1