Connected Real Estate

Changing the way we Design, Build and Manage Real Estate

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Green Global Trends

- Reducing energy consumption and associated greenhouse gas emissions is a **global trend/government mandate** for the 21st century.

- **Corporations and government organizations** are adopting standards and implementing initiatives to improve the energy and carbon performance of their operations.

- Intelligent Buildings can provide **carbon benefits** and support Corporate Responsibility and **energy efficiency** commitments, while also providing a strong **business case**.
Buildings and Real Estate a Key Concern

80 - 90% of all Electrical Energy is consumed by Buildings

Transportation 25%

Manufacturing 25%

Buildings 50%

IT 25%

Sources: BOMA 2006, EIA 2006, AIA 2006
Reasons Behind Green Building Increases

“The Commercial Construction Marketplace perceives the following significant business advantages”

- **Energy Reduction**: 20% - 40%
- **Operating Costs Decreases**: 8% - 9%
- **Building Value Increases**: 7.5%
- **ROI Improvement**: 6.6%

McGraw Hill Construction
2007 SmartMarket Report
**Green Building Standards**
“Leadership in Energy and Environmental Design” (LEED)

LEED is a third-party certification program and the internationally accepted benchmark for the design, construction and operation of high performance green buildings.

Source: www.usgbc.org

- Launched: 2000
- Accredited Professionals: 70,000
- SF of LEED Space: 3.6 Billion SF
Average Savings of Green Buildings

Energy Savings 30%

Carbon Savings 35%

Water Use Savings 30%–50%

Waste Cost Savings 50%–90%

Source: www.usgbc.org
On average, actual energy performance in Green buildings is only 25% of what was predicted in design due to inadequate operational systems and procedures.

Source: National School Board Association and U.S. Department of Energy
Stop Burning the Money
Traditional Deployment Models and Costs
The Power of Convergence – Reduce TCO

- Data
- Voice
- Video Streaming
- Video Conferencing
- PA (Intercom)
- Video Monitoring
- Building Controls
- Clocks and Bells

IP Network
Information Network: A catalyst for the “Intelligent Building”

Reduce Cost and Complexity by Replacing Disparate Networks with One Simplified, Flexible, and Scalable IP Network
The “Building Information Network”

Tenant/Employee Services

High-Speed Internet  
Wireless  
Mobility – Remote Access  
Unified Communication  
Audio and Video Conferencing  
Telepresence  
Interactive Media  
Digital Signage

Building Services

Lighting  
Elevators  
RFID - Tracking  
HVAC – Sensors  
Fire  
Video Surveillance  
Access  
BAS – Energy
Current RZ Customers

Google Campus
Objective is energy control and demand response across entire campus

NetApp Campus
Objective is automated demand response system from PG&E, system successfully shed 1MW in 10 minutes

Walgreens Retail
Reduced energy consumption 30%+ in Austin, TX store through monitoring and automated intelligence

Wipro Campus (India)
Goal is converged systems management over IP

Simon Mall
Automated Meter Reading of thousands of check meters for energy usages

IT CAMPUS

RETAIL
EnergyWise: Managing Energy Consumption of Networked Devices

**Business Objectives:**
- Reduce grid load & peak surcharges
- Smooth and time shift power usage
- Control Laptops, PCs, APs, Phones

**Solution:**
- EnergyWise deployed on existing Cisco Catalyst Switches + PC Agent

**Business Value:**
- 51 tons GhG/$20,558 savings = 15 mid-sized cars off road for a year
- 371 tons GhG/$74,230 savings from Phase 1 power-down = 111 cars
Technology Integration:
Services:

**Smart Bathrooms**
Intelligent Lavatories, Soap Dispensers, Toilet Roll Holders, Nurse Call Integration

**Muzak**
Changing the Music Experience – White Noise, Soft Sound, Spa Experience

**Scent Air**
Injects a Scent to Enhance the User Experience – Less “Hospital” smell

**RFID Asset Management**
Location-Aware Healthcare—Minimizes time finding equipment for more efficient staff

**Digital Signage**
Way finding, Kiosks, Virtual Lobby
Dashboards - Energy Monitoring Displayed on Digital Signage

Environmental Dashboard

Carbon savings today = 3.5 tons
(each ½ ton = 1 tree)

1200 PC’s, Servers and other IT equipment

Energy Consumption

Energy Consumption Month to Date

I.T. Systems  Lighting  Air Conditioning

17.2 tons  9.4 tons  12.2 tons
Value of Centralized Operations

- Multi – Building Control – TCO
- Combine NOC, SOC, FOC
- Sustained Regulation Compliance
- Continuous commissioning
- Energy conservation
- Operations reduction
- Visibility to Critical Infrastructure
  - Data Centers, Command Center,
  - Fire systems, extinguishers
  - UPS, PDUs, Generators
# State of Missouri, USA

## Situation
- 1,000 Public Buildings
- 28M Sq Ft Space
- Multitude of Building Control Systems
- Existing Cisco Infrastructure

## Solution
- Installed an Interoperability Layer
- Integrated with Maintenance, Security, Energy and Supply Chain Business Applications
- Aggregated 9,000 utility bills

## Benefits
- $0.27 - $1 Sq Ft annual cost savings across the portfolio
- Funded from Energy Savings
- ROI within 18 Months
- Future $20M Saving per annum purely on ENERGY
Where did the savings occur?

**Energy Management. (20%-30% savings)**
- Continuous re-commissioning of control systems
- Automatic Meter Reading (AMR)
- Demand response
- Real-time monitoring of energy consumption compared to budget
- Accurate forecasting of energy requirements
- Management of co-generation
- Monitoring and control of “Green” energy generation
- Emissions tracking and management
- Automated utility bill audit and electronic payment

**Asset/Maintenance Management (40%-50% savings)**
- Real-time integration of all facilities with Asset Management
- Automated Work Orders
- State wide Alarm management

**Supply chain integration (10%-20% savings)**
- Utilities
- Automated utility bill audit and payment
- ESCO’s
- Homeland Security
- Emergency responders.
The Backbone of the State of Missouri
The Network as the Platform

Facility Information Management

- Archibus Space Management
- VFA Capital Planning
- Archibus CMMS
- Work Order Automation
- Building 2.0
- Digital Signage
- Utility Bill Pay (Ameren)
- Automated Enterprise Monitoring
- Cisco IPICS
- Cisco Video Surveillance
- Appian Business Process Management
Intelligent Buildings: Lowering Customers GhG Emissions
Intelligent Buildings: Lowering Customers Operations Costs

Operational Efficiency
- Extended Lifecycle
- Optimized Processes
- Simplified Architectures

Energy Savings
- Power Management Tracking and Reporting
- Infrastructure Consolidation
Intelligent Buildings: Increases Employee Productivity

Virtual Worker
Remote Collaboration
Resource Virtualization

Innovative Business Practices

Energy Savings
Power Management Tracking and Reporting
Infrastructure Consolidation

Operational Efficiency
Extended Lifecycle
Optimized Processes
Simplified Architectures
Intelligent Buildings Value Proposition

• Going Green – LEED Enablement
• Energy Reduction / Savings / Systems Life
• Reduced TCO – Capex / Opex / IT / TCO
• Monitoring Critical Infrastructure
• Enhanced Security – Intellectual / Physical
• Virtualized Workforce – Productivity
• Employee Satisfaction / Experience
• Improved Employee Workplace / Retention
• Taxpayer Value – Increased Profitability
• “Intelligent Green” Image
CRE, Influencing LEED Credits
Business Opportunity

- Basic Facts about the State of Missouri
  - Approximately 60,000 employees
  - 30+ separate state agencies
  - 28 million square feet under management
  - Disparate systems for energy management
  - Siloed Facilities workforce for each agency
  - No coordination of technology or facilities personnel
  - Chance to leverage Connected Real Estate for Advanced Technologies (Digital Signage, Video Surveillance, and IPICS)
ESCO 2.0 – ROI contract guarantee

- Sq. Ft. – 16,336,715
- One Time Cost - $1.10 per sq. ft.
- Guaranteed Annual Savings
  - Energy - $.17 per sq. ft.
  - Operations - $.40 per sq. ft.
- Total Pay Back in 1.9 Years

The State of Missouri integrated Real-Time information from facilities, generated automatic work orders and is projected to save 40% in Maintenance costs