

The background features a blue-tinted aerial view of a modern, multi-story office building with a central courtyard. In the foreground on the right, there are several large, vibrant green leaves with prominent veins, partially overlapping the blue area.

Intelligent Communities & Broadband

Connected Real Estate and Its Effect on Sustainability

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Connected Real Estate

October 25, 2007

Global Trends

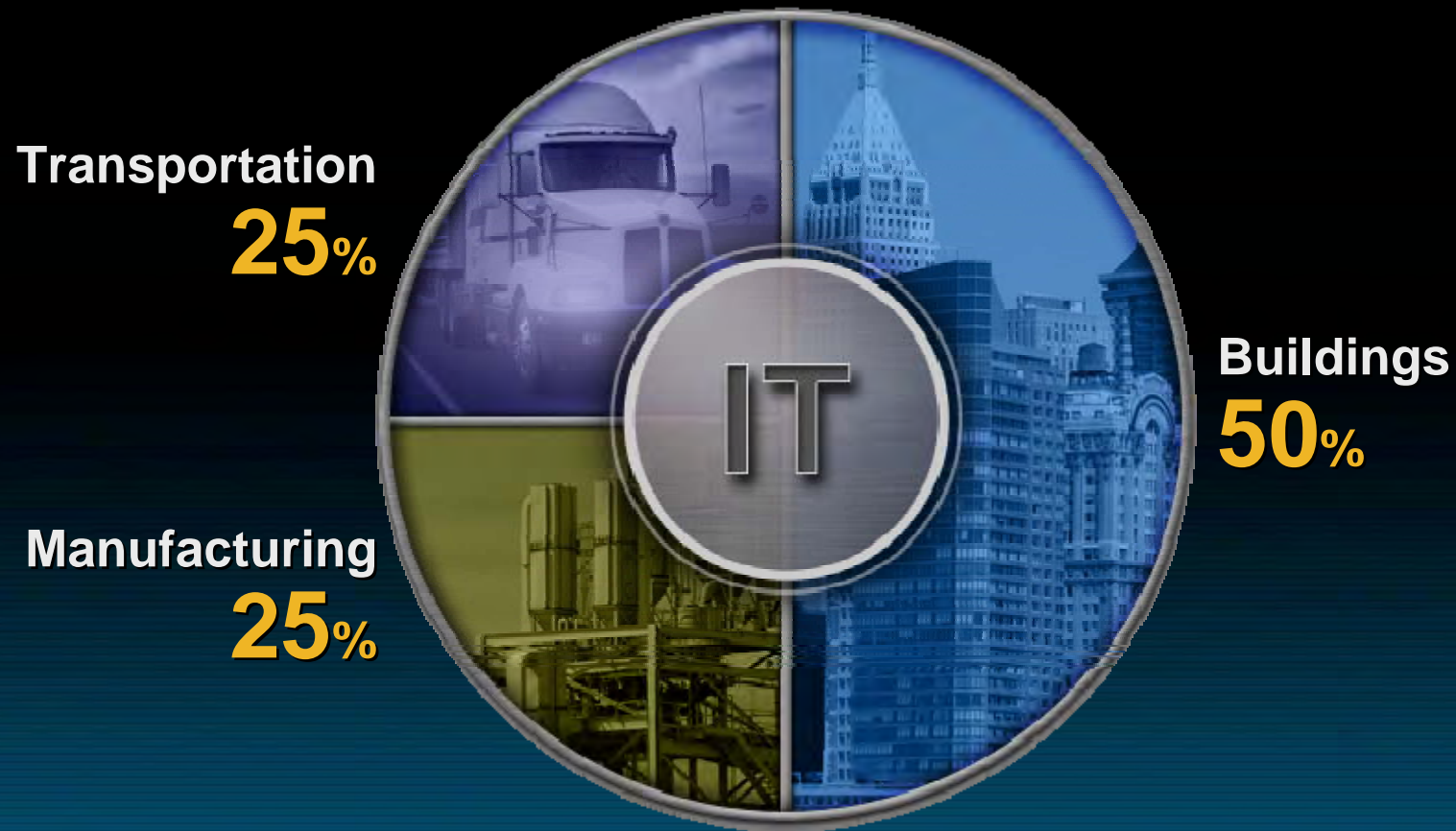
Governments, companies and consumers are more aware and taking action on:

- Energy and climate change
- Air and water pollution
- Resource depletion
- Human health and safety issues
- Waste disposal
- Biodiversity



Buildings Consume 50% of the World's Energy

The Energy Consumption of IT Equipment in Buildings is Increasing Significantly



Sources: BOMA 2006, EIA 2006, AIA 2006

Shareholder Concerns

Investors are increasingly aware that environmental policies and regulations can affect shareholder value

CARBON DISCLOSURE PROJECT

The CDP4 information request was signed by 211 institutional investors with assets of more than \$31 trillion; six times more than 2003. CDP points to a continued elevation of climate change as a critical shareholder value issue in the minds of investors and corporations alike.



Corporate Responses

Major corporations are aligning global business strategies to address these trends through:

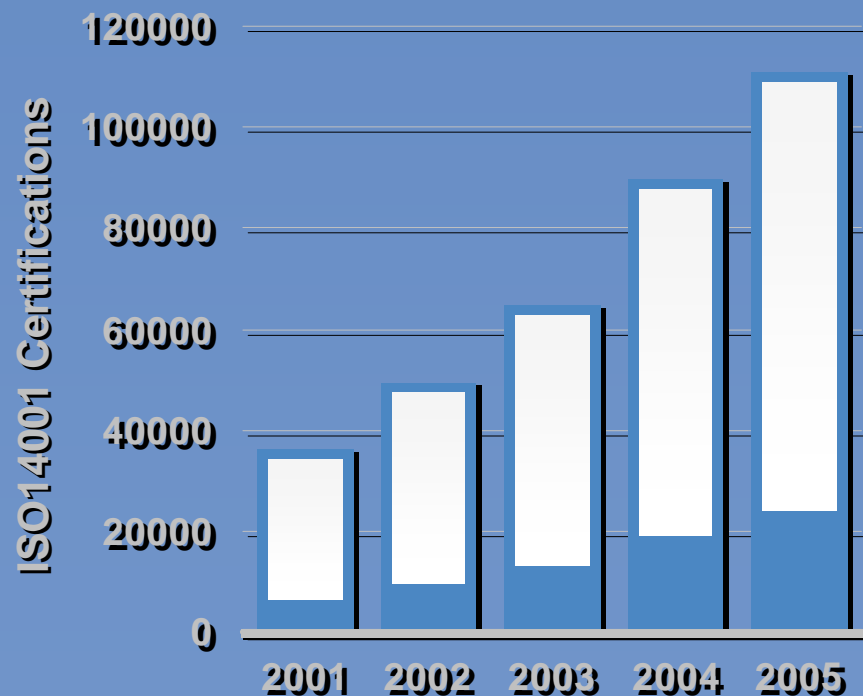
- Green building standards
- Environmental management systems
- Citizenship, corporate responsibility and reporting
- Environmental initiatives



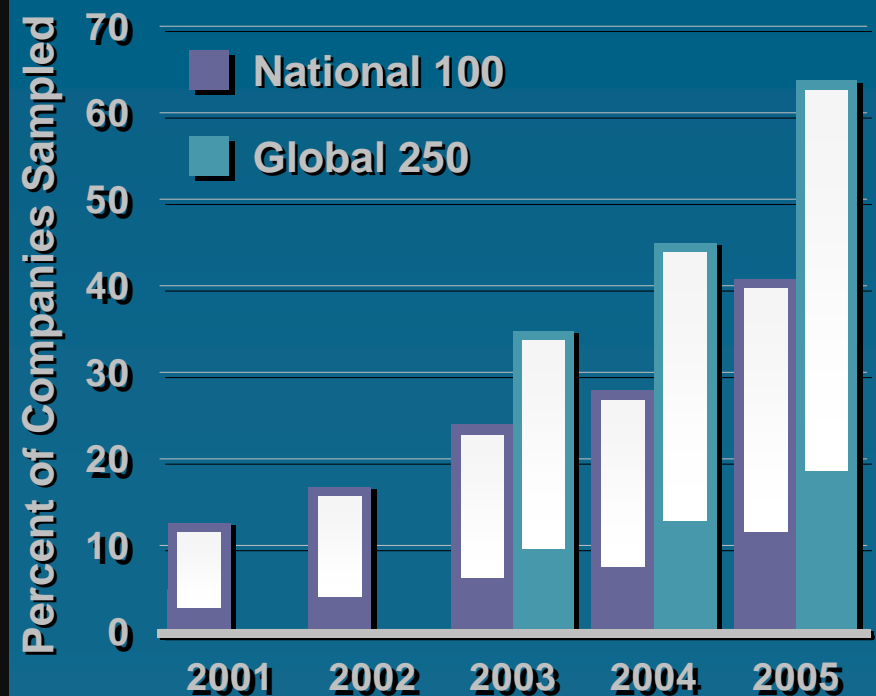
Environmental Management Systems & Corporate Reporting

Use of environmental management systems and corporate responsibility reporting is increasing worldwide at 30%+ pa

Worldwide ISO14001 EMS Certifications



Growth in Corporate Responsibility Reporting



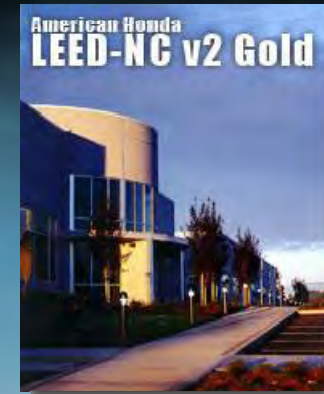
Green Building Standards

“Leadership in Energy and Environmental Design” (LEED)



“It’s getting to the point where if you’re not LEED certified, you won’t have the anchor tenants you need to start the building. ...When an idea like this becomes mainstream, the power of the market is enormous.”

Chicago Sun Times, 2-20-06
“Eco-friendly builders starting to grow”



Government Responses

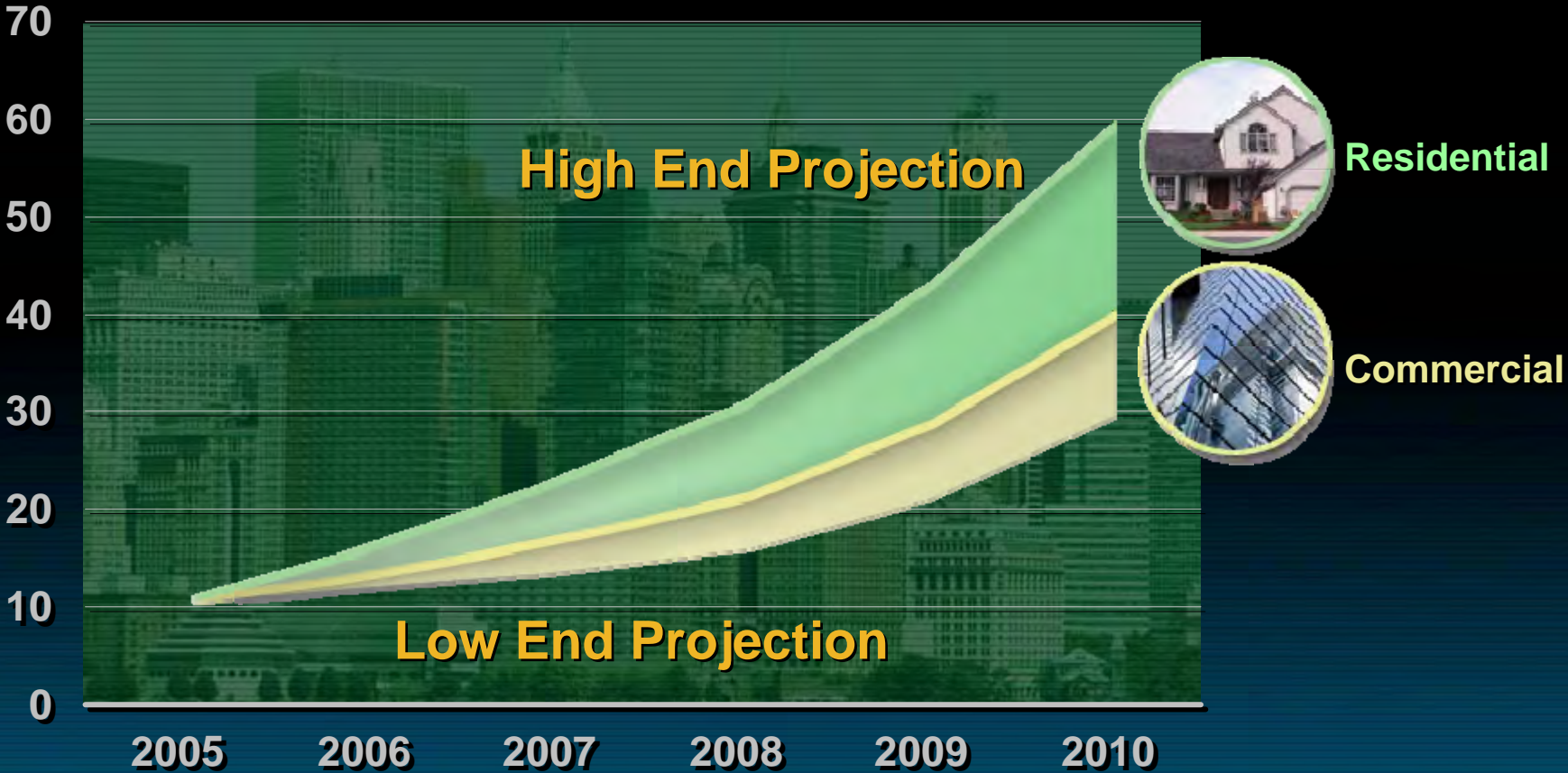
Government intervention to promote environmental sustainability is increasing around the world:

- International Agreements
- National Policies
- Regulatory Mandates & Standards
- Government Purchasing



US Green Building Market Growth

\$ (in Billions)



Source: Mc Graw-Hill Construction, 2006



Connected Real Estate: Environmental Benefits For Commercial Buildings

CRE and Environmental Benefits

Connected Real Estate can help owners and operators of commercial real estate improve their environmental performance through:

- Reduced consumption of materials and equipment
- Energy efficiency and greenhouse gas emissions reductions
- Reduced space needs
- Reduced electronic and office waste



Connected Building



Connected Building Vision

Connect and Simplify

- One Wire (Cat5)*
- One Protocol (IP)
- One Data Framework (XML)
- One Application Interface (Service Oriented Network)

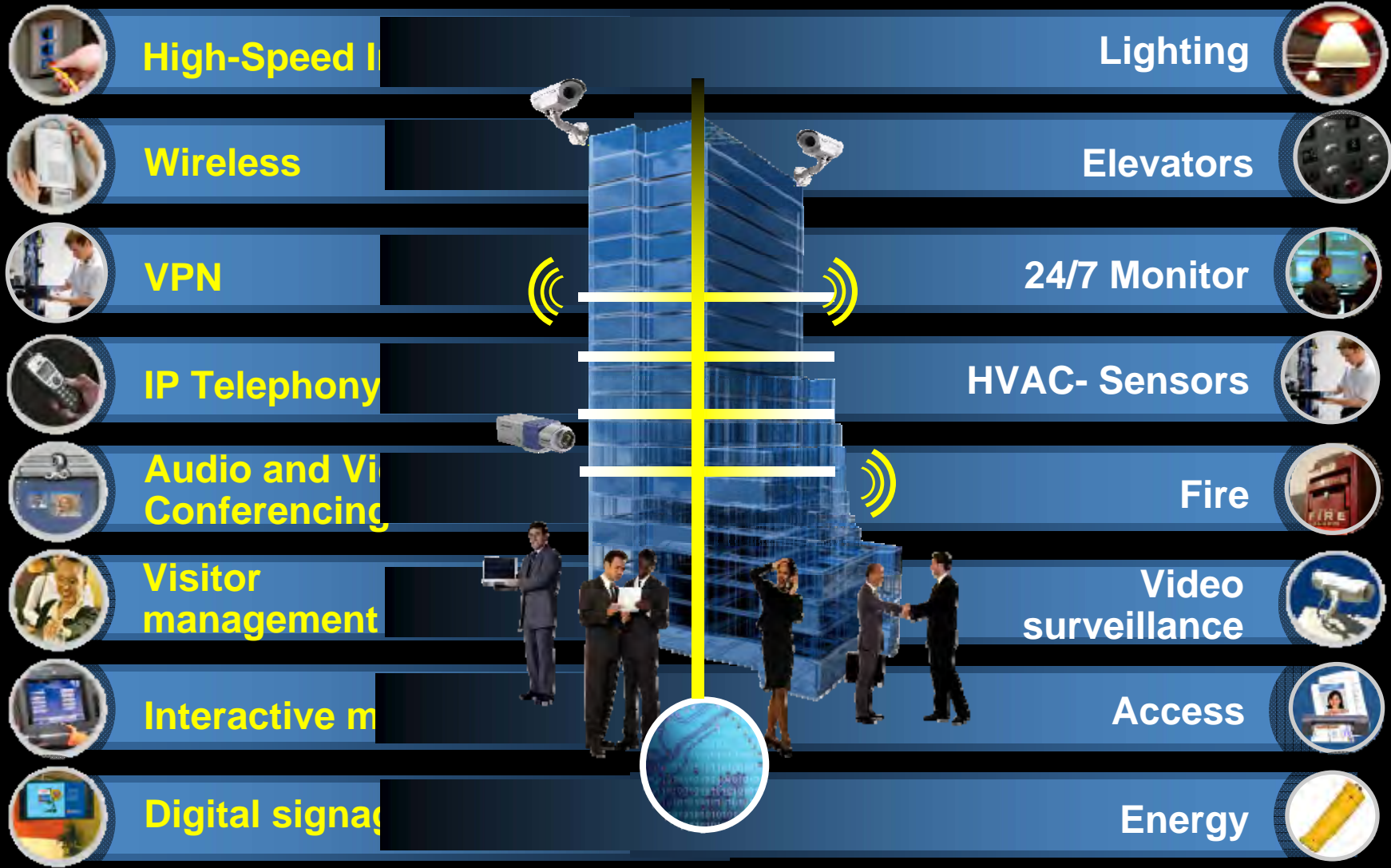
- Everything becomes a building device
 - RE & IT merge
- Ease of building applications will drive new services
- Sensors are put everywhere as value goes up & cost goes down
 - Metcalf's Law
 - Wireless mesh

* Local fire & safety code often requires hardwiring and/or redundancy in critical life & safety systems

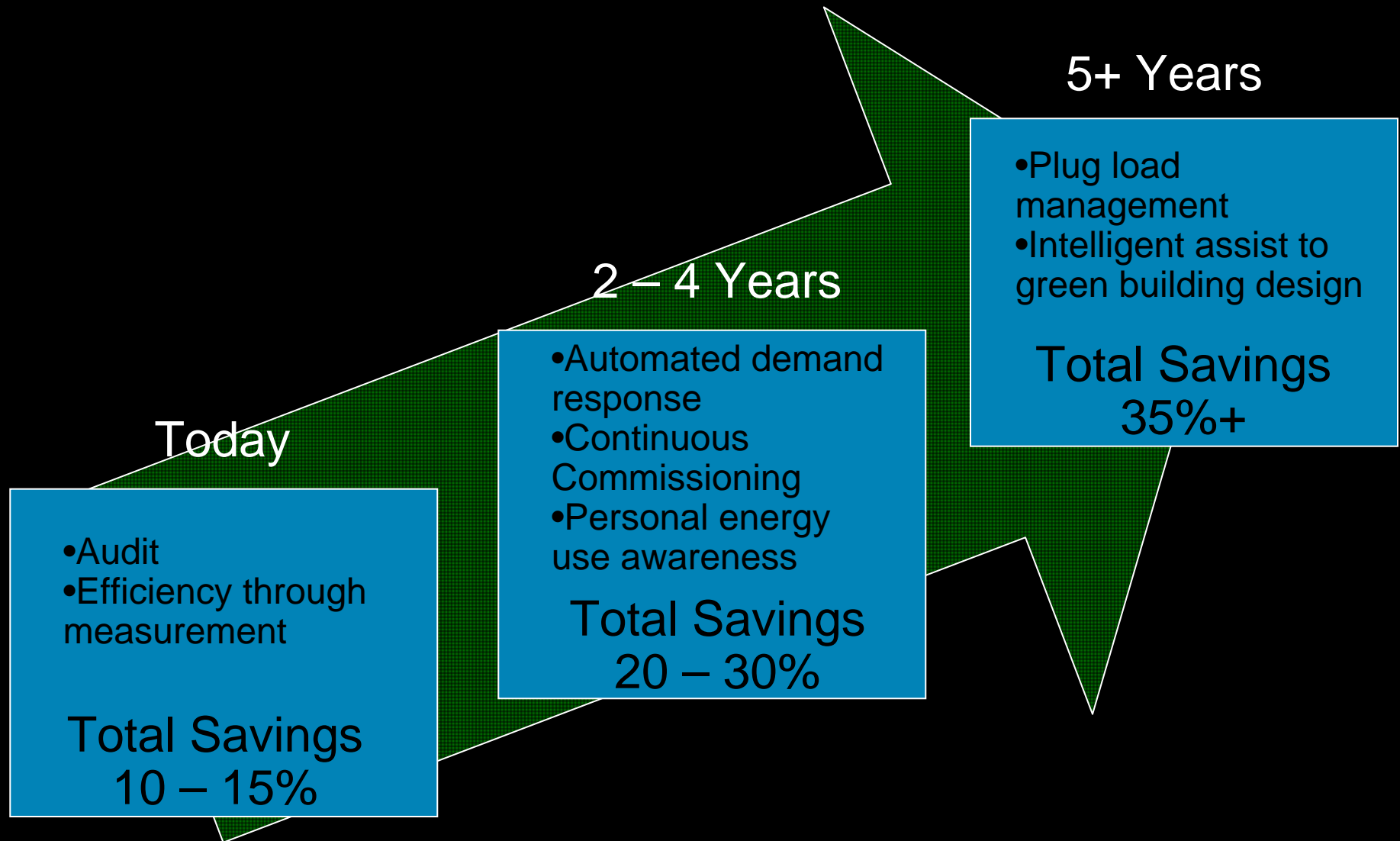
Building System Convergence Creates the Potential for Energy & Material Savings

Tenant Services and Technologies

Building Services and Technologies



Connected Building Will Allow for an Evolution of Network Based Energy Solutions



Connected Building Also Reduces Electronic Waste

In much of the industrial world, ICT equipment and its by-products are classified as hazardous waste that cannot be landfilled or exported



CRE reduces e-waste at the source by consolidating building and ICT systems into fewer components that have longer, more productive lives



<http://cisco-returns.com>

Connected Building at Our Bangalore Campus

Energy Savings

- Uses Day-light harvesting & Passive Infra Red (PIR) in office
- Converged building energy solution (Phase 2)
- Solar Lighting for External Area.
- Energy efficient lamps

Air Conditioning and Mechanical Ventilation

- Environ friendly R134a (ZODC) refrigerant
- HVAC through BMS to optimize the energy utilization

Other Measures (Water conservation, waste treatment, etc)

- Rain water harvesting. Water supply from onsite bore well
- Sewage treatment plant
- Cisco Transportation subsidies for employees of USD 450K per annum.
- CCRE implementation to optimize energy utilization
- Planting of trees, landscapes
- Solar power street lightings

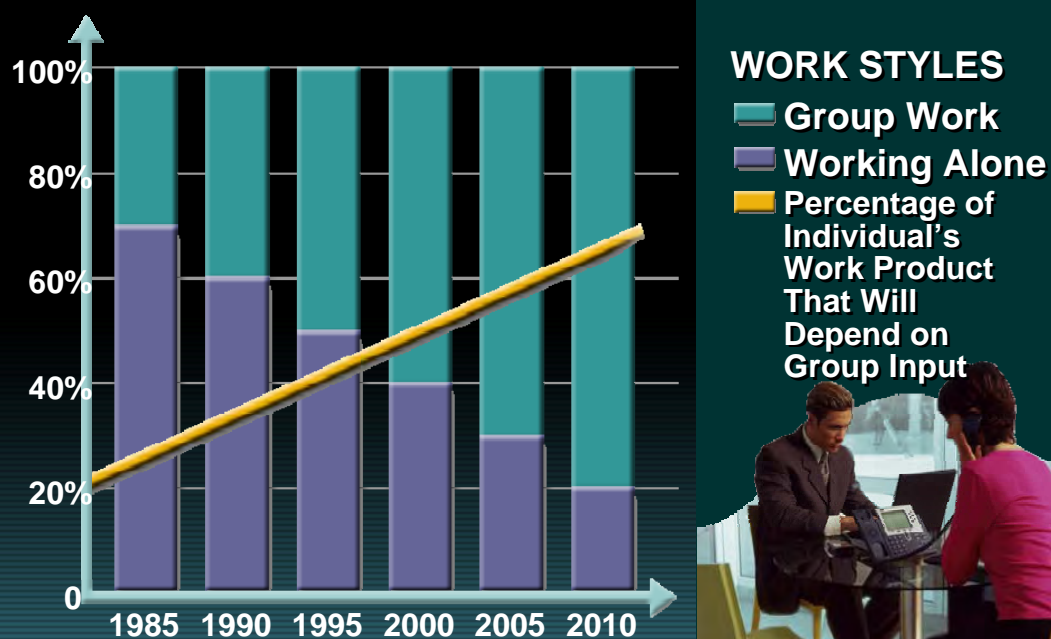
Annual avoidance of approximately 3000 tons of CO2. This is the equivalent of 900 homes or 1,100 cars per year

Connected Workplace



Two Major Changes Are Driving The Need For a New Workplace Design

The Way People Work Is Changing Work Done in the Office Is Increasingly Collaborative



Source: Gartner
Dataquest, 2002

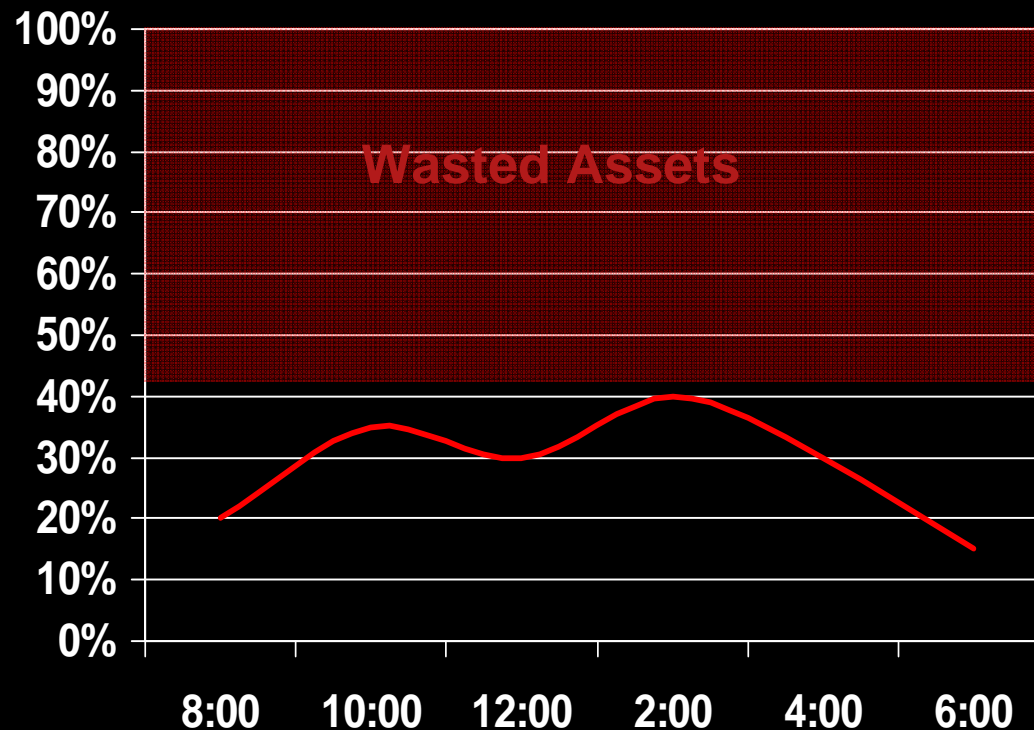


Infrastructure is More Mobile You no longer need to be in one place to be productive

- Lap-tops & other mobile devices
- Web-based applications
- Wireless Network
- Internet Based Telephony and Video
- Collaboration Software
- VPN and Network Security

The Workplace is Broken

Utilization is Poor



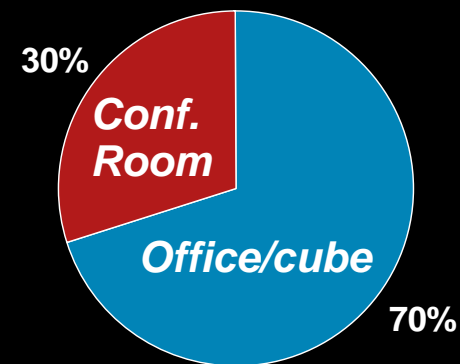
- Utilization commonly peaks at 40% (need to get external data. BoA, Capital One, Nokia)
- Given the workplace is the largest LT asset on most balance sheets, this probably represents the largest area of waste left in corporations
- Offices/cubes are only utilized 30-35% while conference rooms are overbooked.

Why Do You Still Come to Work?

Reasons typically given today

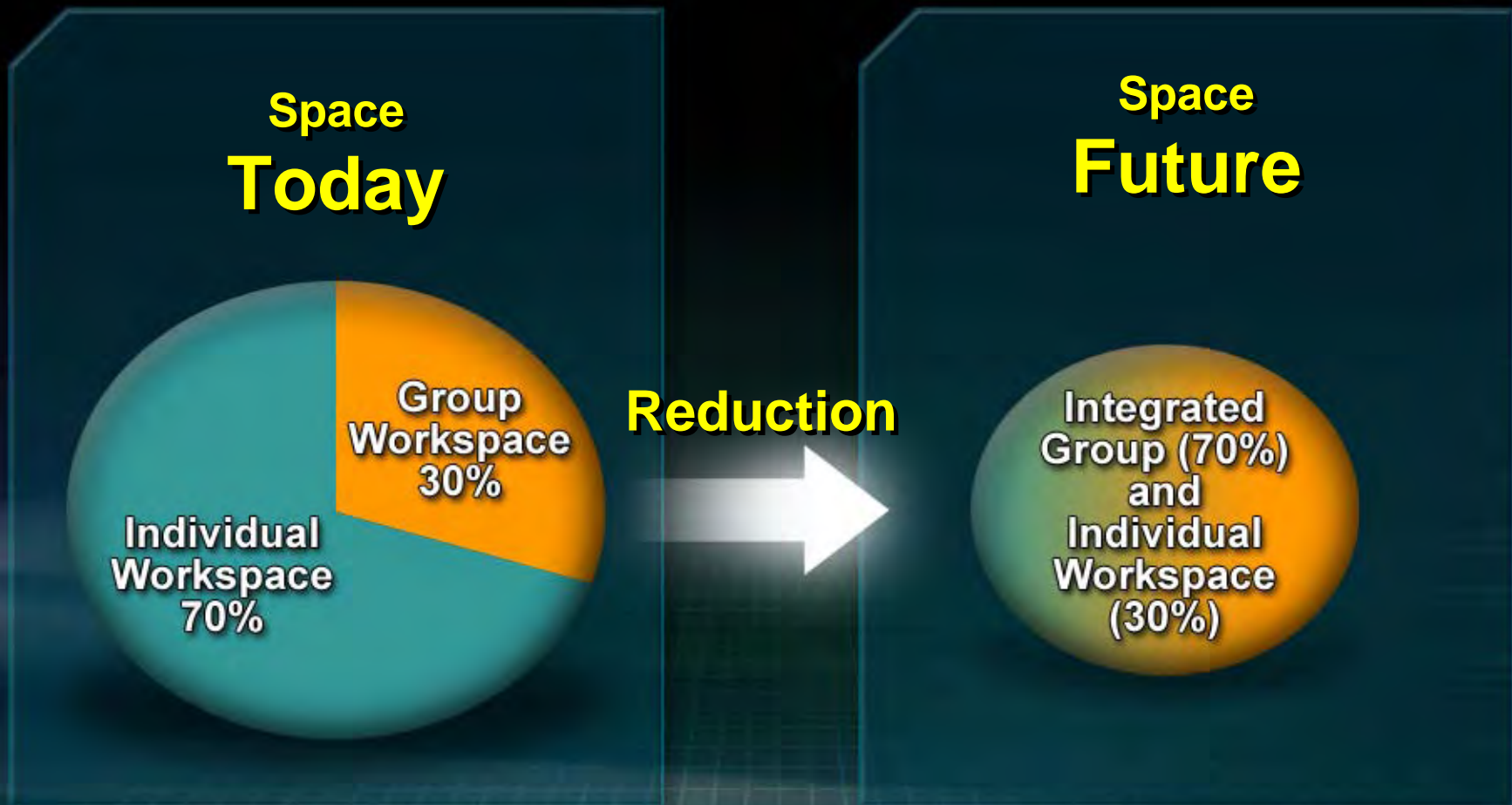
- Need to go to meetings
 - Assumes collaboration best done Face-to-Face
- Want to socialize
 - Need social activity to be happy
 - Want to feel connected
 - Need interaction to be creative
- Need access to expensive/specialized assets

Typical Space Allocation Today



In short, the primary reason is collaboration yet 70% of traditional environments is dedicated to offices and cubes that actively isolate people. This is what drives poor utilization.

Shifting Space From Individual to Collaborative Saves Money While Driving Productivity



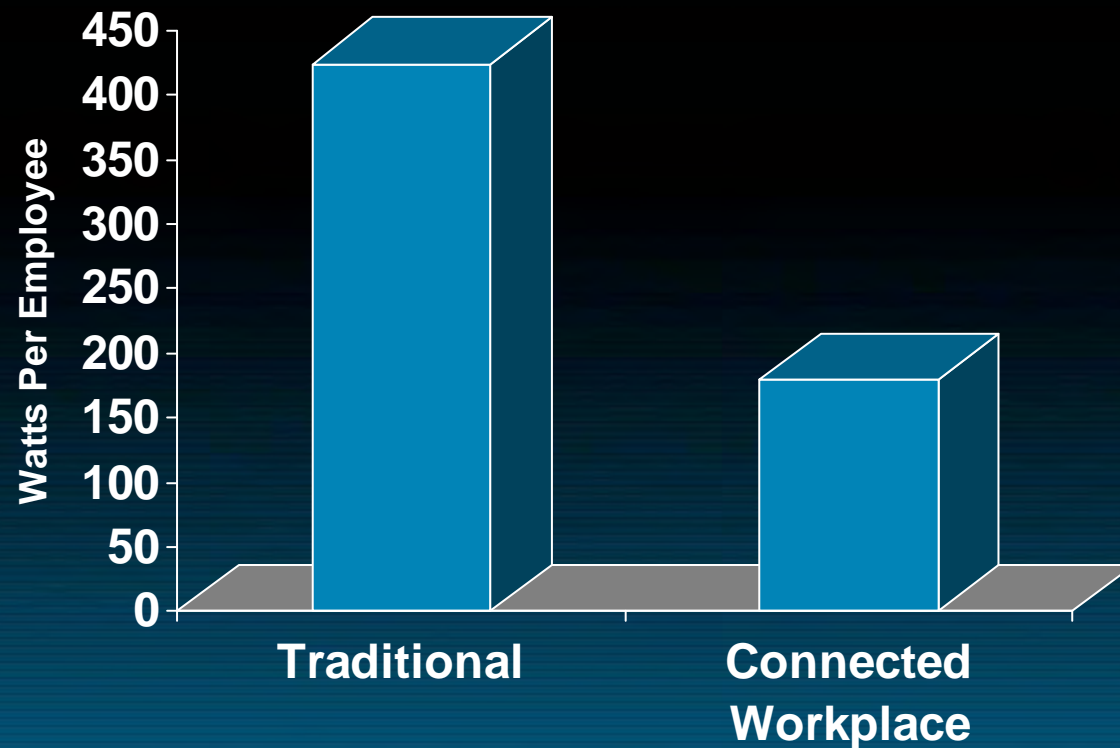
Cisco's Connected Workplace has Achieved More Than a 40% Space Reduction

- Open environment
- Non-dedicated
- Multi-functional space
- Analogous to your home



Reducing Space Per Person Saves Energy

Energy Use in Cisco's Building 11 Connected Workplace Environment



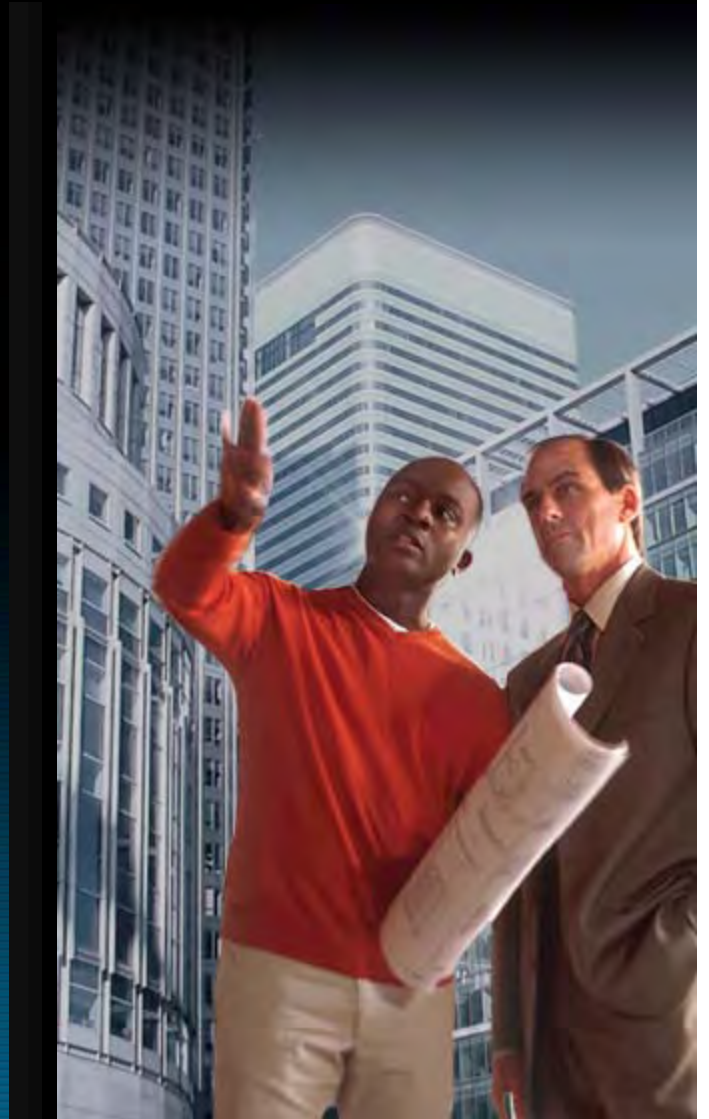
Connected Workplace Saves on Materials

Better space utilization means less building footprint and furnishings per employee...

For a 100,000sqft office, savings can be:

- **1,500 tons of concrete**
- **280 tons of steel**
- **2,850 tons of CO2 emissions**

This is the equivalent of taking 560 passenger cars off the road for a year.



Connected Workplace Has Also Reduced Office Waste

Paper and cardboard account for more than **60%** of the total waste produced by large offices...



Cisco's connected workspace reduces paper waste by enabling paperless transactions, communications, and document storage



CRE Business Process Improvement: Environmental Benefits

CRE can also deliver significant environmental benefits by changing how businesses operate:

- Less employee commute travel
- Reduced business travel
- Increased employee productivity & satisfaction for resources used

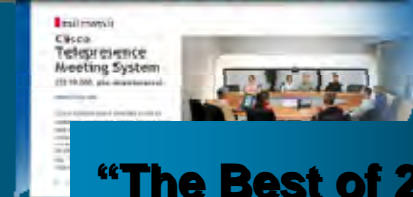


TelePresence: Converging All Forms of Human Expression



Helping Companies Become “Green”

BusinessWeek



“The Best of 2006”

Helped Cisco cut 1B miles of annual air travel by 20%

Reduced overall company emissions by 10%

Better customer service, improved quality of life

Cisco TelePresence - Transforming the Way Business Gets Done



“You forget there’s any technology going on
between you and the people you’re meeting with.”

- *Gartner*

“This is a dream come true.”

- *BusinessWeek*

Single Family Residential



Single Family Residential Requires a Different Approach

Required Parties:

- Service Providers
- Electric Utilities
- IT Companies
- Government
- Equipment and Device Manufacturers



Some Changes Needed to Make it Happen

- Changes to electricity pricing/deregulation
- Emergence of the home network
- Industry standards
 - Common protocols & data standards
 - Wireless network
- Network controls embedded into appliances
- Sensor deployment
- Intelligent applications

