OSIsoft

Regional Seminar Series

# Sustainability: The Key to Success

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Empowering Business in Real Time.

# Sustainability

- Sustainability is about your company's long term survival
  - Not just carbon, Green House Gas (GHG) or other "green" initiatives
- Increase profits
  - Manage economic, social and environmental risks and opportunities
- Corporate initiative
  - engage in a culture of continuous improvement
  - improve  compliance, public perception, and profitability

- This is just good business

# A.T. Kearney Study

- They studied the performance of sustainability-focused companies during financial crisis of 2008/2009
  - Some continued to focus on long-term health vs. just short term survival
  - Difficult to have this discipline
- Results
  - Stock market performance was 15% higher for these companies vs. their peers

- Let's look at some examples

# IBM Case Study

- IBM Burlington (Vermont, USA) is a large semiconductor manufacturing site
  - consumes 3.2 million gallons per day of water and 446 million kilowatt hrs of electricity annually
  - 3.5 million square feet of manufacturing space
- Challenge
  - Reduce water consumption to reduce cost
  - Less water means less energy, chemicals, maintenance and labor
  - Will also minimize environmental impacts
  - Leverage data acquisition, storage and visualization tools to monitor water usage and improve efficiency

# IBM Case Study

- Approach
  - Used PI to collect/store data from sensors, IT network and servers
  - Statistical process control techniques used to continually analyze operational data
  - Identifies process improvements that reduce water consumption, electrical consumption, and cooling load
- Results
  - IBM achieved over $3.6M in annual savings
  - Reduced water usage 27% while increasing manufacturing capability 30% in last 10 years

- Case study available on OSIsoft website

# Kodak Case Study - Energy

- Fuel and purchased power are significant cost at Kodak Park (Rochester, NY, USA)
  - Engaged everyone in conservation efforts
  - PI system: 100K tags, 150 Webpart users, 250+ SAP iView pages, 30 interfaces
  - Now correlate production volume to energy
- "There was no 'Big Bang.' Rather, there were 1,000 little bangs
  - Established a culture of continuous process improvement
  - Everyone can see the data via browser

# Kodak Case Study - Energy

- Reduced utility costs with improved "Demand Side Management"

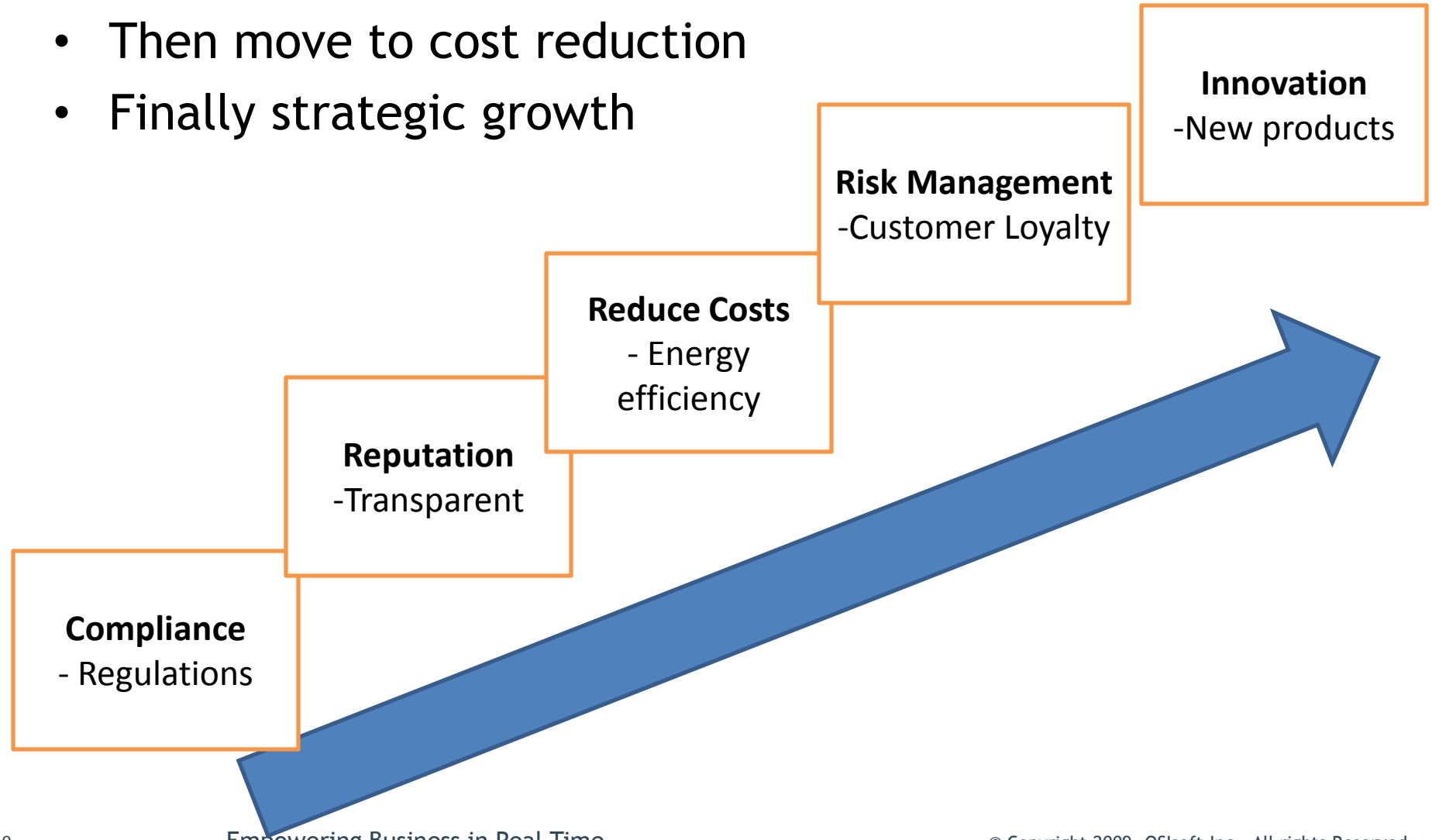
- Saved $100 million total since 2007 – more than 50% are from ongoing operations
  - Heating and cooling at the same time
  - Conditioning process air when machine is idle or shutdown
  - Left some pumps running between product runs
  - Consolidate two High Purity Water Systems and a de-mineralized water system down to just one High Purity Water System

# Kodak Case Study - Water

- Water Conservation effort project started 15months ago
  - Use 18 million gal/day of water
  - It's free from lake, but pay to pump uphill 200 ft.
  - Saved $10K/day in electricity by reducing amount of water used
- Project goal was 5% reduction
  - Achieved 16.5% reduction in 2009
  - Was 18 MGD, now 15 MGD – total of 1 billion gallons saved
- Examples
  - Synthetic chemical manufacturing
  - water should be zero on holiday – found valves failed open
  - Water down 43% from the 3 largest buildings

# Sustainability Approach

- Start with accurate/credible reporting
- Then move to cost reduction
- Finally strategic growth



# ISO 50001 Energy Management Standard

- Can be used to support sustainability initiatives
- Establish framework for companies to manage energy
- Future national cap and trade programs; carbon or energy taxes; increasing market value of “green manufacturing”
- Similar to LEED certification for buildings
  - take advantage of rebates from utilities, GHG credit, etc
- Requires energy management system
  - continual improvement in energy performance, energy efficiency, and energy conservation

# ISO 50001 Energy Management Standard

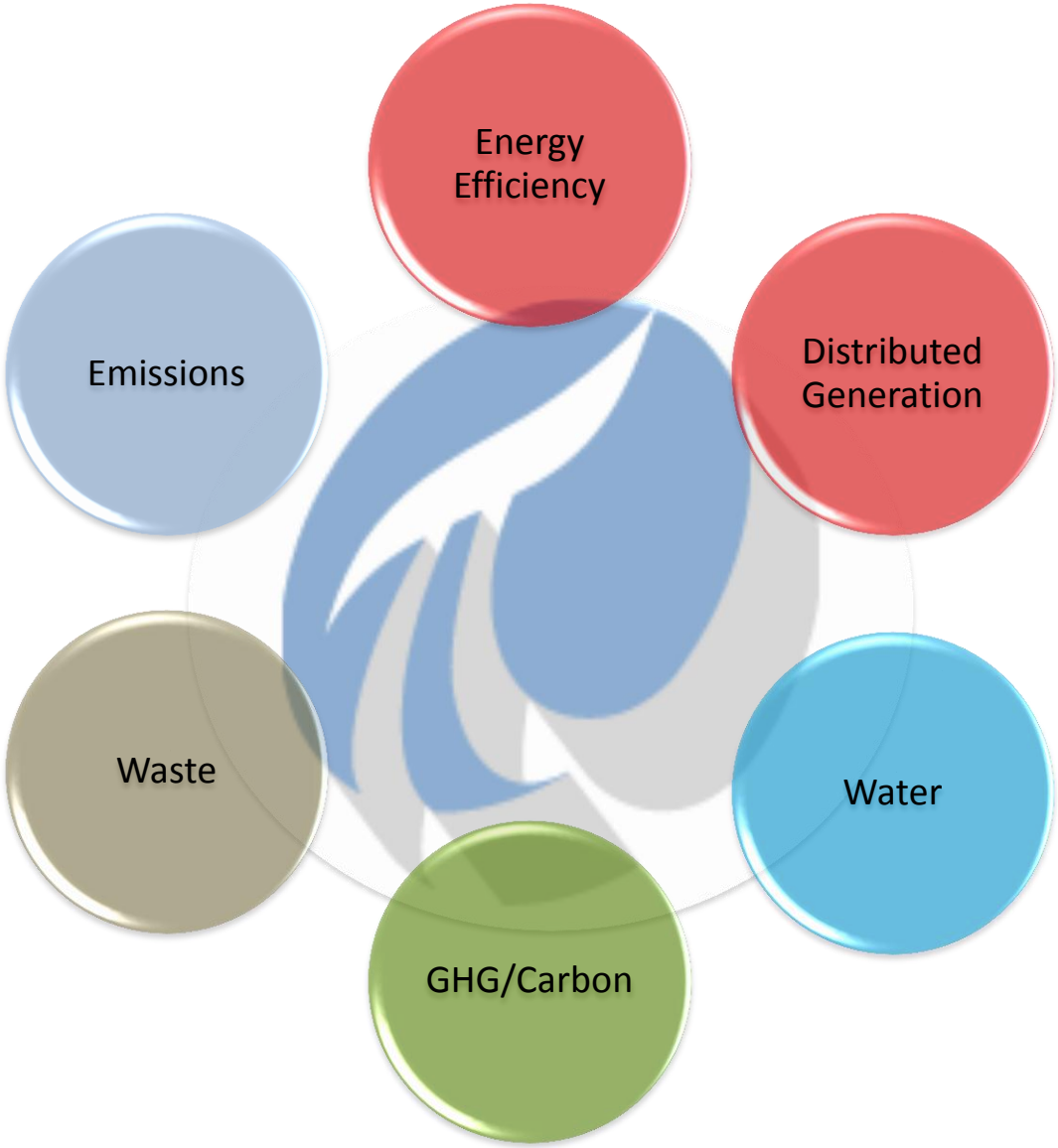
- Imposes requirements on energy supply and consumption:
  - Measurement
  - Documentation and reporting
  - Design and procurement practices for energy-using equipment and systems
  - Processes and personnel
  - Applies to all factors that can be monitored and influenced by the organization to affect energy use

- What role does OSIsoft have?

# Sustainability – Needs Data

- OSIsoft has helped customers address resource conservation & utilization for 30 years
- PI infrastructure to measure and report
  - enables ongoing, easier, and transparent aggregation of the metrics needed for any successful sustainability strategy
- Sustainability needs information and collaboration
  - Must improve situational awareness
  - Change direction when external influences change
  - Respond faster and adapt
- Requires flexible infrastructure instead of isolated specific solutions

# Need Data Infrastructure






Empowering Business in Real Time.

# Requirements

- Verifiable and Auditable data input/output
  - Basis for transparency
- Gathers data from sources throughout the organization
  - Independent of automation, technical source & geography
- Provides access for users at all levels of organization
- Scales with unknown regulations
- Integrates with operations and business systems
- Monitoring actual performance against targets and benchmarks
  - Performance reporting
  - Root cause analysis
- Provides a complete system of record for sustainability

# Manufacturing Changes

- Dramatic changes are coming
  - Not just amount and speed of data
  - Nature of data is changing
  - Manage information across wider scope
- 2009 was all about survival
  - Everyone focus on short-term goals
- 2010 must refocus on long-term
  - This will be harder part of recovery
  - Requires true corporate leadership
  - Sustainability is a business driver

# Manufacturing Changes

## New Business Models : Shai Agassi company “Better Place”

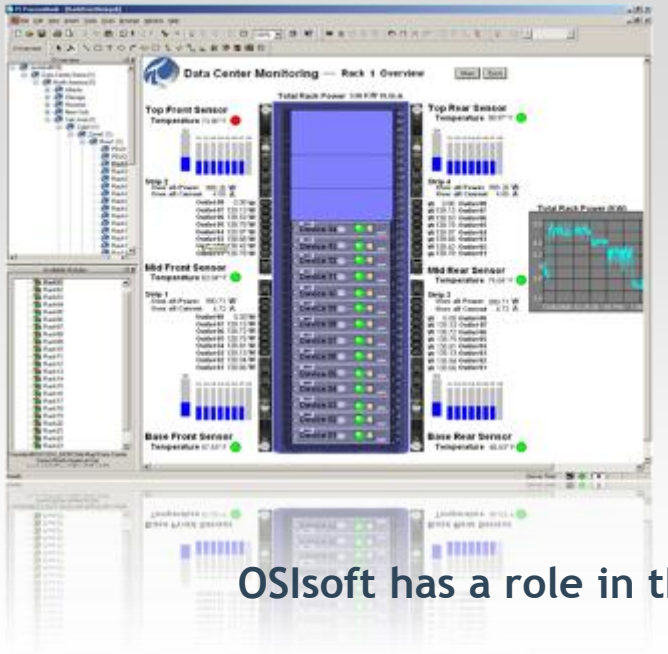
- Used to be 2,000 auto companies
- Arguably most important invention in 20th century – impacted everyone – most are gone now!
- New infrastructure for operation, infrastructure owns battery
- Environment driving force in new business model

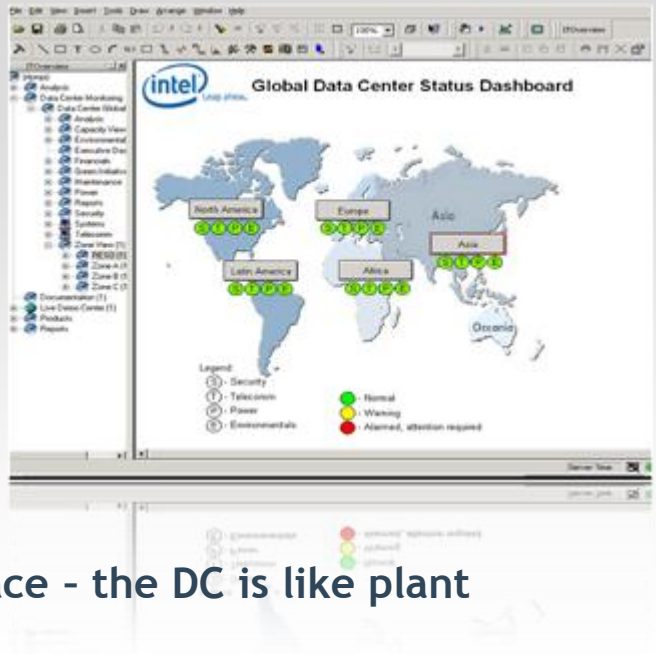
# Sensors Everywhere

## New Business – e.g. Data Center

- Consume ~2% of all energy in USA
- Google for Search, Apple for iPhone Apps, Facebook, Twitter, etc.
- Business – Amazon, E-Bay, Craig's List
- Capacity planning (power/cool) vs. physical space

# Industry – Data Centers, IT & Telecom




**OSIsoft has a role in this space – the DC is like plant**

**Microsoft was our first customer – 150,000 servers**

**Quincy, Washington - 27MW, 500K sq. ft.**
**Chicago - 60MW, 770K sq. ft.**

# Sensors Everywhere

## Cornell Medical School

- 40M variable set of differential equations
- Simulate biological systems (organs/tissues/cells/molecules)
- 3 server rooms with 1MW total load
- Saved 7% of power with 1 week project for 100-node cluster used for batch jobs (no interactive users)
- PI decides what nodes needed and turns off/on via IPMI interface
- All servers support IPMI, create thermal map of server room with no added instrumentation

# Sensors Everywhere

## New Business – e.g. Facilities

- 5 million commercial buildings in USA
- Recent Texas A&M study:  buildings degrade up to 25% after 2 years from commission date (or re-commission date)
- Less than 0.1% of existing commercial buildings and 5% percent of new ones undergo commissioning for energy efficiency

# Smart Grid - Enabler

## Largest Distributed Plant: Smart Grid

- Communication network that happens to deliver power
- Technology: Smart Equipment, Storage of renewable energy, AMI (Demand response pricing), Energy improvements
- Environment: Conservation, Renewables, Carbon Footprint
- Don’t have to size for a peak load we see just a few hours a year
- Waste less energy, create less emissions

# Value Now with OSIsoft

- Understand the Importance of the infrastructure
- Develop plan to build strategically but act tactically, measure results
- Understand the nature of pressure, take clear action to address, innovate and find new opportunities

"It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change."

Charles Darwin


# Thank you



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