Sustainability—It Is Just Good Business
Ted Gorrie, VP Americas Sales

OSIsoft Overview

Empowering Business in Real Time

OSIsoft Corporate History

- **Corporate – Founded 1980, Private**
  - Dr. J. P. Kennedy, Founder and CEO
- **Employees – 700**
  - Engineering – 225   Tech Support – 200
  - Sales & Mktg – 175 Operations - 100
- **Sales**
  - $ 190 MM (FYE 2009)
  - 15 % CAGR – last 10 years
- **23 Offices – HQ in San Leandro, CA**
  - Americas Sales – Cleveland, OH
  - EMEA Sales – Frankfurt, DE
  - APAC Sales – Singapore , SG
- **Installed Base**
  - Doing business in 110 Countries
  - 2 800 + Active Customers
  - 10 000 + Active System licenses (excluding OEM)
  - 32 000 + I/F licenses (connection, node, server, site)
  - 250 000 + clients licenses (individual, concurrent, enterprise)
  - 250 000 000 + Data Streams
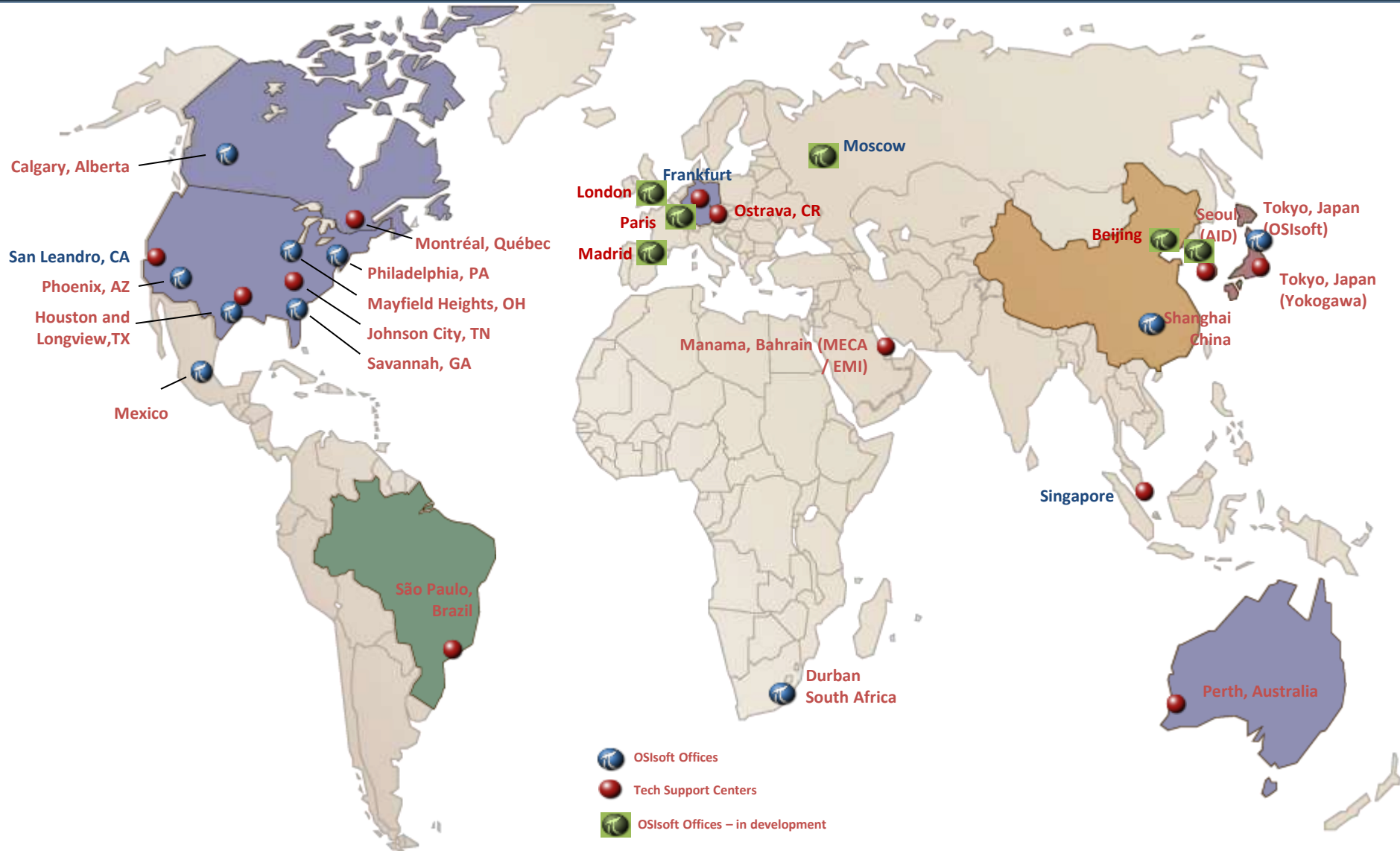 - Monitor 500 PI servers, 1 500 Host computers & 8 000 interfaces

Mission

"We are rewarded when we deliver superior value. This means delivering and implementing an infrastructure through which our customers can continuously improve their business performance"

Dr. J. Patrick Kennedy CEO & Founder

Value now. Value over time.

2009-2010 – Global Presence

OSIsoft

Calgary, Alberta

San Leandro, CA

Phoenix, AZ

Houston and
Longview, TX

Mexico

Montréal, Québec

Philadelphia, PA

Mayfield Heights, OH

Johnson City, TN

Savannah, GA

São Paulo,
Brazil

Moscow

London
Frankfurt
Paris
Madrid
Ostrava, CR

Manama, Bahrain (MECA / EMI)

Beijing
Seoul (AID)
Shanghai China

Tokyo, Japan (OSIsoft)

Tokyo, Japan (Yokogawa)

Singapore

Durban
South Africa

Perth, Australia

OSIsoft Offices

Tech Support Centers

OSIsoft Offices – in development

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OSIsoft = Mission Critical Infrastructure

PI System at CA-ISO

What do we make?

OSIsoft sells the PI System

The PI System is a software infrastructure that manages time series data and events

Interfaces to over 500 different systems

What is Infrastructure?

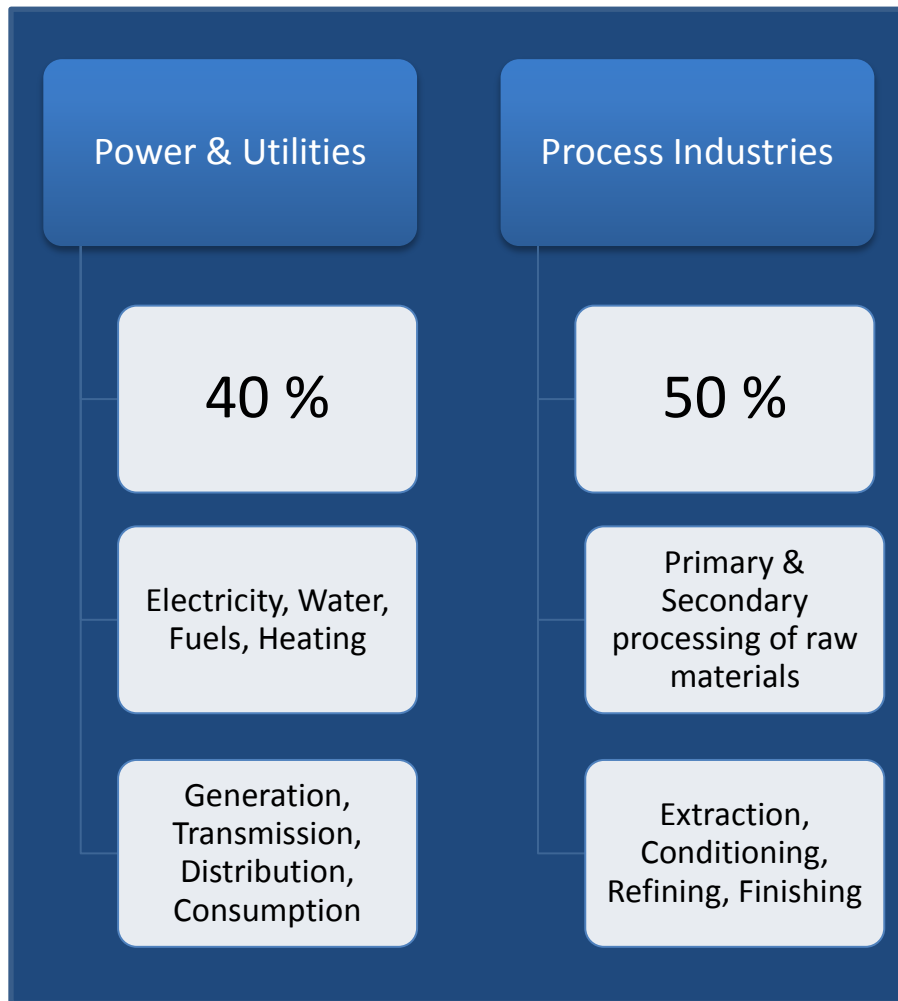Software that enables the creativity of our users to act in a sustainable way

How Do We Do This?

We build robust products that continually deliver new data & functionality

PI eliminates the time and distance barriers between a company and its assets

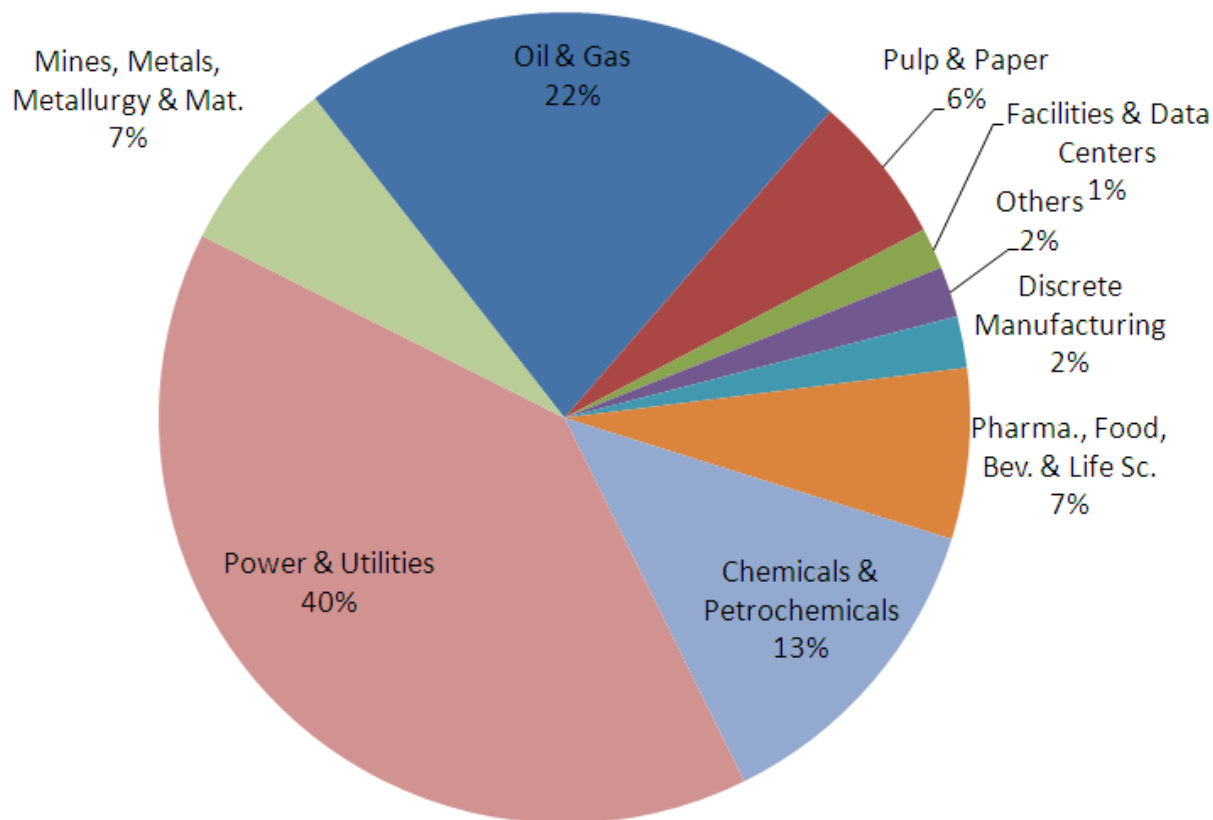PI dramatically reduces the marginal cost of curiosity

Value now. Value over time.

OSIsoft.

Core Markets

Developing Markets

Power & Utilities

40 %

Electricity, Water, Fuels, Heating

Generation, Transmission, Distribution, Consumption

Process Industries

50 %

Primary & Secondary processing of raw materials

Extraction, Conditioning, Refining, Finishing

Discrete Manufacturing

5 % ↑

CPG
Automotive
Semi Conductors

RA Partnership
OSIsoft Sales

Facilities & Data Center (incl. Non- industrial)

5 % ↑

Financial, Software, Retail, On line businesses, Telecom

Energy, Asset Mgt Real-time monitoring

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Sales by verticals

Invoices by Industry (%)

Mines, Metals, Metallurgy & Mat. 7%

Oil & Gas 22%

Pulp & Paper 6%

Facilities & Data Centers 1%

Others 2%

Discrete Manufacturing 2%

Pharma., Food, Bev. & Life Sc. 7%

Power & Utilities 40%

Chemicals & Petrochemicals 13%

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Diverse Customer Base Across Industries

Chemicals and Petrochemicals

EASTMAN
ALBEMARLE CORPORATION
PolyOne
PPG
Ciba
FMC
Celanese
ARKEMA
DOW CORNING
Millennium Chemicals
BASF
POLIMERI EUROPA
LUBRIZOL
TIMET

Oil and Gas

bp
Chevron
ExxonMobil
Shell
PEMEX
ConocoPhillips
TOTAL

Pulp and Paper

VERSO
ROCK-TENN COMPANY
MWV MEADWESTVACO
sappi
NewPage
Kimberly-Clark
IRVING
Domtar
INTERNATIONAL PAPER
abitibi bowater

Pharmaceutical and Life Sciences

JANSSEN
Bayer
Bristol-Myers Squibb
ALLERGAN
PDL Protein Design Labs™
Roche
Genentech

Utilities and Power

ALSTOM
British Energy
Saudi Electricity Company
endesa
SDGE A Sempra Energy utility
pjm
Entergy THE POWER OF PEOPLE™

Mining, Metals & Materials

ALCOA
xstrata
ALCAN
FREEPORT-McMoRAN COPPER & GOLD
Aughinish Alumina
NOVELIS ADITYA BIRLA
CEMEX Building the future™
MITSUI & CO., LTD.

OSIsoft—Thriving for 30 Years

- ❏ Oil Systems Inc. → OSI Software → OSIsoft
  - ❏ Heritage in Automation and Optimization
- ❏ Core competencies
  - ❏ Focus – know what you do, know what you don't do
  - ❏ Understanding proper technology to leverage
    - ❏ HP → DEC → Microsoft/Intel
    - ❏ Standards such as TCP/IP
  - ❏ Commitment to our customers
    - ❏ Customer Support!
    - ❏ No customer left behind
- ❏ Strong Partner Network
  - ❏ Independent Software Vendors, Service Providers, Technology Partners
  - ❏ Smart Signal and Casne Engineering
  - ❏ There is no value to infrastructure unless you use it
  - ❏ Our customers and partners create value with PI
- ❏ OSIsoft's energy and resource efficiency efforts
  - ❏ Majority of meetings using the Internet
  - ❏ Significant move to remote installs—on site is rare today
  - ❏ Less shipment of products—download are preferred by many customers
  - ❏ Electronic books
  - ❏ This is all just good business

What is Sustainability?

"A sustainable United States will have a growing economy that provides equitable opportunities for satisfying livelihoods and a safe, healthy, high quality of life for current and future generations. Our nation will protect its environment, its natural resource base, and the functions and viability of natural systems on which all life depends."

Sustainable America: A New Consensus (Washington: President's Council on Sustainable Development, 1996), p. iv.

(http://clinton2.nara.gov/PCSD/)

(http://clinton2.nara.gov/PCSD/Overview/index.html)

The United Nations' "World Commission on Environment and Development" definition of *sustainable development*: "…meet the needs of the present without compromising the ability of future generations to meet their own needs."

Our Common Future (aka Brundtland Report) (Oxford: Oxford University Press, 1987), p. 43.

(23 years old, still heavily referenced in UN documents)

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Alaska = Sustainability

- Long History of Planning for Sustainability
    - Mineral Leasing Act of 1920
    - Alaska State Constitution
    - Alaska Native Claims Settlement Act
    - Alaska National Interest Land Conservation Act
    - Magnuson – Stevens Act
- No other state provides a better environment for a meaningful dialog that addresses the variety of factors that must be considered
- In no other state are the stakes so high
    - More than 80% of state GDP is oil & gas
    - Significant remainder is Mining & Fisheries
- Credit to the Arctic Energy Summit & Institute for the North

Alaska Crude Oil Reserves (millions of barrels)

Alaska Crude Oil Production (thousand barrels per day)

THE ARCTIC ENERGY SUMMIT

TECHNOLOGY CONFERENCE

ANCHORAGE, ALASKA • 15-18 OCTOBER 2007
— An International Polar Year Event —

AGENDA

ARCTIC COUNCIL • U.S. DEPARTMENT OF STATE • INSTITUTE OF THE NORTH
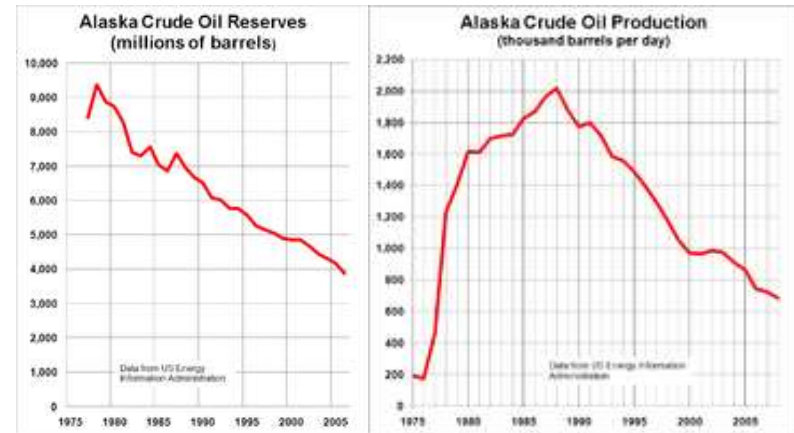
What is Sustainability?

- ❑ Meet current needs…
- ❑ While growing the Economy…
- ❑ Without compromising the future

- ❑ Sustainability cannot exist without a strong, efficient industrial base

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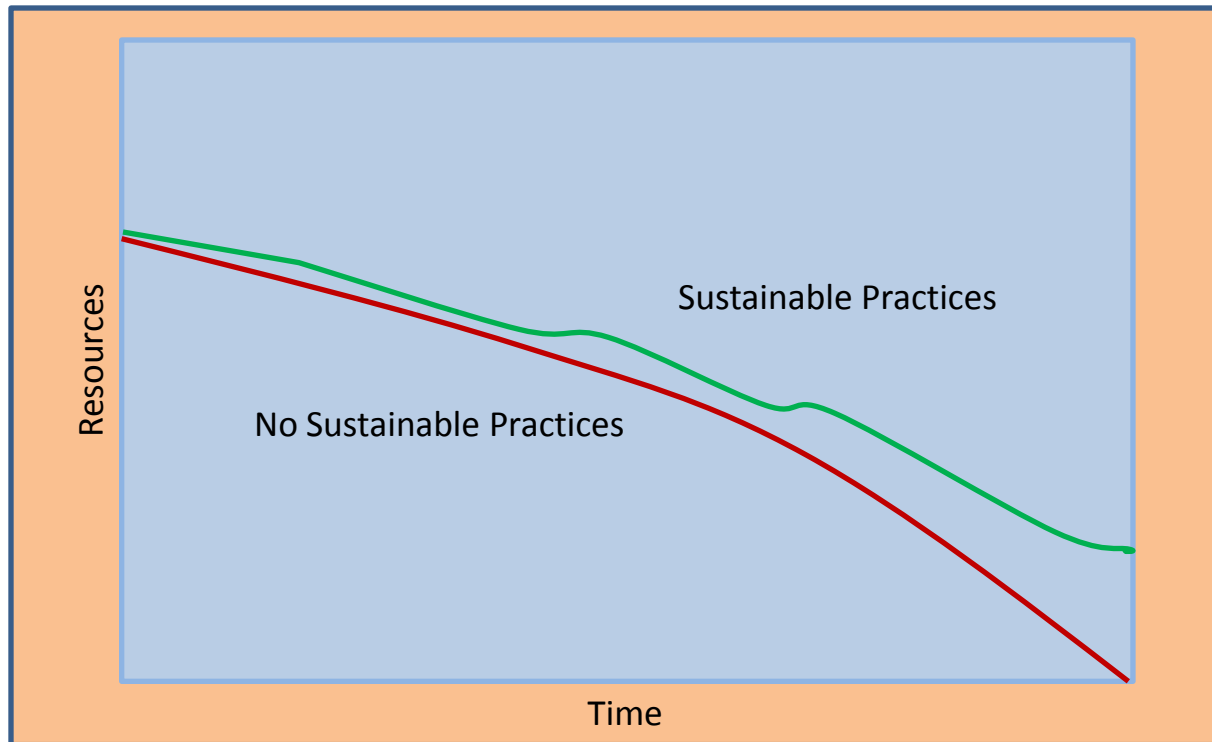
Industry Roles in Sustainability

POWER & UTILITIES

Utilities supply the electrical energy and water infrastructure society cannot function without

OIL & GAS

Oil and Gas supply the energy source for many uses

Very important in transportation

CHEMICALS & PETROCHEMICALS

Strong light-weight polymers and fibers required for efficient transportation, renewable generation and many other structures

PHARMACEUTICALS, FOOD & LIFE SCIENCES

Extremely important for quality of life
Natural resources saved through disease prevention and cure

MATERIALS, MINES, METALS & METALLURGY

Fundamental to the modern infrastructure. Mechanical structures, electrical conductors, catalysts.

PULP & PAPER

True renewable resource. Very important to packaging and communication.

DATACENTERS, IT & TELECOM

Data and transactions for the information driven economy

☐ Fundamental strategies of innovative products and innovative management
http://www.ge.com/company/history/index.html

"Why Predict the future when you can create it?"

- ☐ Light bulb
- ☐ Dynamo
- ☐ Electric fan
- ☐ Commercial finance
- ☐ Resins
- ☐ X-ray tube
- ☐ Refrigeration
- ☐ Supercharger
- ☐ Radio station
- ☐ Television
- ☐ Silicones
- ☐ Jet engine
- ☐ Radar
- ☐ Medical imaging

Founded late 19th century by Thomas A. Edison

- ☐ Created a business based on research
- ☐ Diversification
- ☐ Innovative use of capital
- ☐ Decentralized management

"natural aggregate of many individually sound decisions will be better for the business than centrally-planned and controlled decisions"

- ☐ Six-sigma

Sustainability Example: Intel and Moore's Law

❑ Moore's law:

"In 1965, Intel co-founder Gordon Moore predicted that the number of transistors on a chip would double about every two years. Since then, Moore's Law has fueled a technology revolution as Intel has exponentially increased the number of transistors integrated into its processors for greater performance and energy efficiency."

❑ More of a challenge that Intel lives by than a law.

   ❑ F = ma is a law of nature

   ❑ Moore's law is based on sustained human innovation

❑ Trends of Intel process or technology

Legend:
- Clock speed (MHz)
- Number of transistors (MM)
- Manufacturing Technology (nm)

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Intel and Moore's law
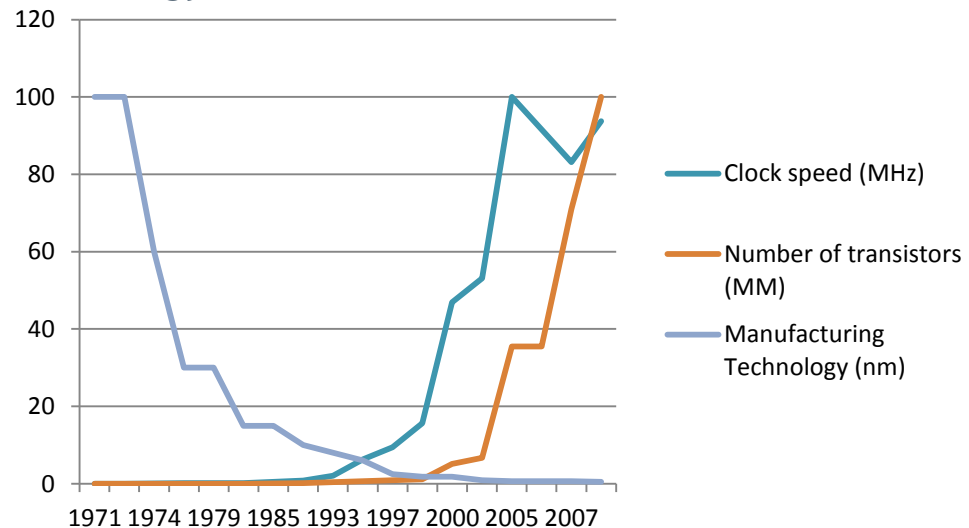
❑ Created a set of business and technology processes
   http://www.intel.com/technology/tick-tock/index.htm
❑ Chip technology is governed by two main factors:
   ❑ Chip fabrication technology
   ❑ Chip architecture
❑ Two year cadence
   ❑ Tick: on even years deliver new silicon process technology
   ❑ Tock: on odd years deliver entirely new processor microarchitecture

"Intel has successfully implemented a product development strategy that has truly transformed the industry and created a *sustainable* competitive advantage"
Diane Bryant, VP/CIO, Intel Corporation

Intel Tick-Tock
Innovation driven by manufacturing process and microprocessor advances

PERFORMANCE
NEW CAPABILITIES
ENERGY EFFICIENCY
FORM FACTOR ADVANCES

Tick Tick Tock Tick Tock Tick Tock Tick Tock

| 65nm | Intel Core micro-architecture | 45nm | Intel micro-architecture codename Nehalem | 32nm | Intel micro-architecture codename Sandy Bridge | 22nm |

Source: http://www.intel.com/technology/tick-tock/index.htm

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eBay, Intel, and Sustainability

- ❑ eBay is a transaction intensive business
- ❑ Data centers are key
- ❑ Data centers are limited by:
    - ❑ Available electrical power
    - ❑ Power to run the computers and networks
    - ❑ Power to remove the waste heat
- ❑ Running out of capacity often means building a new data center
- ❑ eBay manages capacity by proactively replacing computers after 18-24 months
    - ❑ Moore's law brings more compute capacity for about the same power requirements
    - ❑ Most cost effective way to grow, sustain their business

Sustainability is Continuous Improvement

❑ Definition: "meet the current without sacrificing the future"

    ❑ The future starts tomorrow and continues…

❑ Sustainability is not a project

❑ Must be in the DNA of any organization that wants to sustain

❑ As demonstrated in previous examples strong companies already have the required genes to sustain

    ❑ Manage external disruptions

        ❑ Natural

        ❑ Economic

        ❑ Political

        ❑ Technology

    ❑ Innovate

    ❑ Continuously improve

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Sustainability is Continuous Improvement

- Context is internal:
    - Energy efficiency
    - Resource efficiency
    - Capital efficiency, avoidance or delay
    - Employee well being
- Context is external:
    - Environmentally responsible
    - Socially responsible
    - Society well being
    - Trust

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Continuous Improvement

- Four core phases:
    - Measure
    - Analyze
    - Improve
    - Control
- What to measure and control?
    - Disruptions force change
    - Infrastructure is only approach that can deal with change
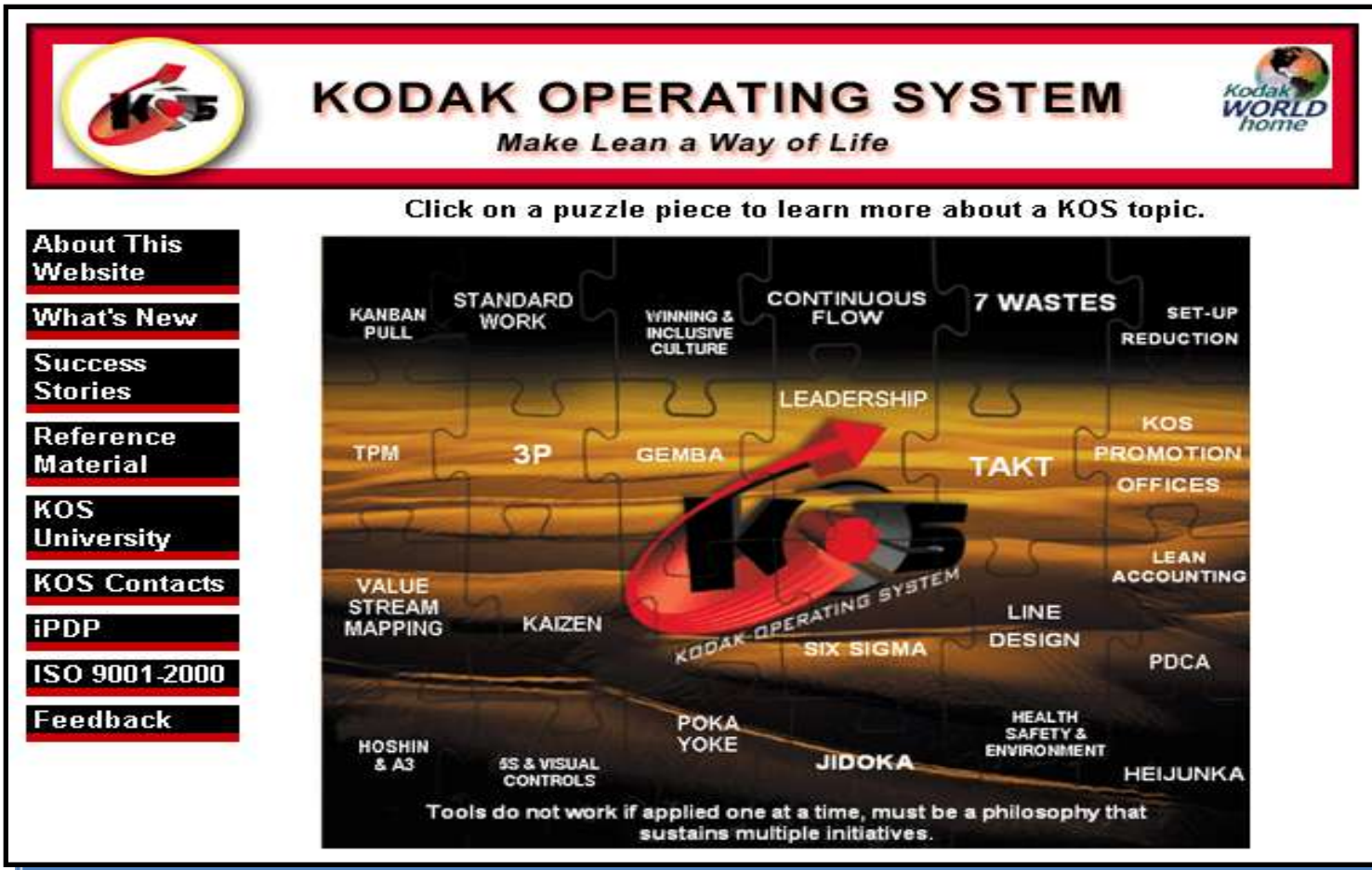
"By far, the greatest benefit to IP was Environmental Monitoring, and _this requirement wasn't even on the radar screen when we justified the Enterprise roll-out_. This came up very immediately after the deployment, and we were able to quickly respond to this operational challenge because we had a common infrastructure to integrate with. We had disguised many disparate systems under a common real-time layer, so our programs had enterprise applicability."

International Paper Company

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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

http://videostar.osisoft.com/uc2010/Sustainable_Seminar/video/SSS_UC2010_Opening_Kodak_Breeze.wmv

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Energy Kaizen: 3-5 days, 6-8 people, action rather than analysis
Energy Gemba: shorter focused Kaizen; observe abnormality take immediate action

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Kodak Case Study - Energy
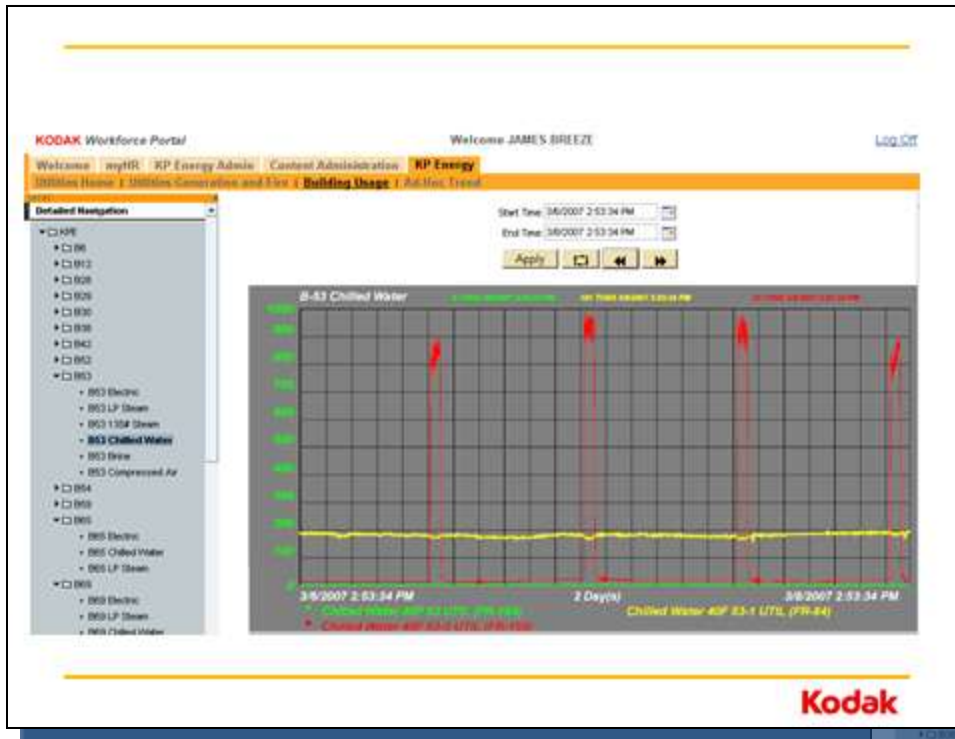
Carbon recovery regeneration

- Load on steam and chilled water system
- Awareness allowed optimization and move to off peak times

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OSIsoft.
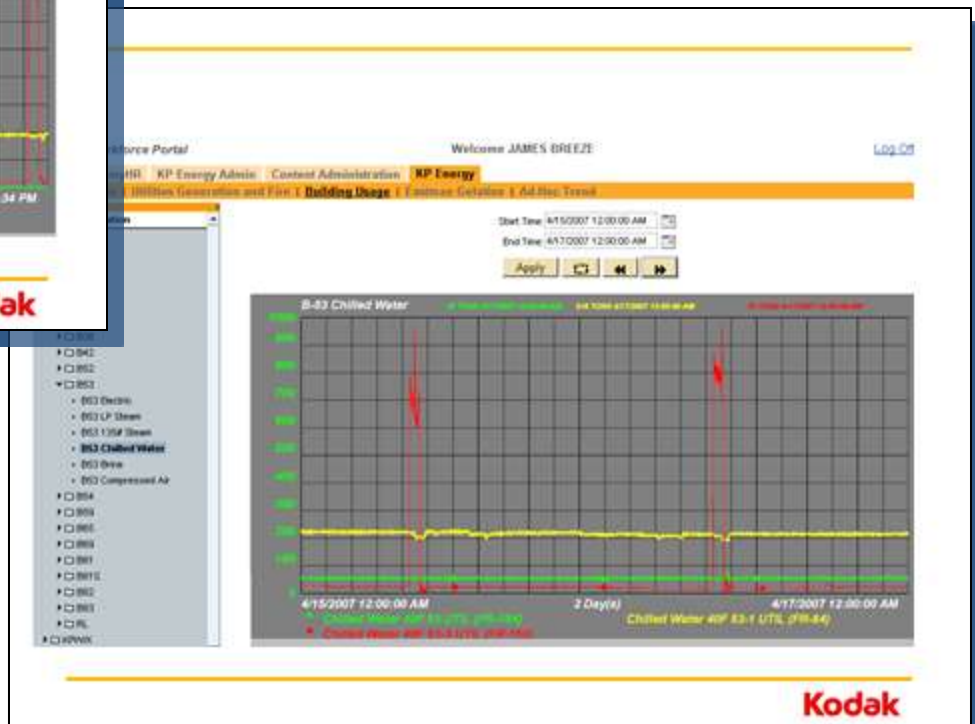
Reduced utility costs with improved
"

Kodak

S
t

ized water

Summary of Results

Generation side findings

➢ Plant loading optimization
➢ Boiler fan optimization
➢ Exhaust head improvements
➢ Better management of self generation vs. purchased power

The Energy Information System (EIS) has been an essential tool to
help us reach our Goal of:

"One Powerhouse for Eastman Business Park"

(10:41:53 March 28, 2007)

➢ Collectively the "annual" savings rate in 2007 was $27 Million

➢ Today the "annual" savings has grown to more than $30 Million

➢ The cumulative savings is now in excess of $100 Million

(>50% Savings From Ongoing Operations)

Kodak

Kaizen and Gemba applied to water conservation

Water Reduction Results

- 2009 Kodak Water Reduction was 16.5%

- 1,087,000,000 Gallons (or 1,087,000 K Gallons) saved in 2009

- 1st Quarter of 2010 – an additional savings of 450 Million gallons from the 2008 Baseline

- Roughly 1.5 Billion Gallons saved in the last 15 Months

- This is enough water to fill approximately 250 average backyard swimming pools each and every day !!!

- $0.00 In Capital Spent

- These Water Savings are calculated for only the last 15 months and are totally independent of the site's energy reductions

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- ❑ 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:
  http://osisoft.fullviewmedia.com/uc2010/12-IBM.html

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Key to Success: Consistent Process

Ultra Pure Water 2010 Objectives

Establish & Deploy Goals	Idea Generation	Evaluate and Prioritize	Implement	Monitor	Report & Feedback
RO Eff 87% 1M kw-hrs Complete	RO & UV Oxidation Low Cost Complete	Ongoing Data Analysis Cost Model Eng Evaluations	2Q2010 3Q2010	In Place Objective Specific Dashboards Statistical Process Control	
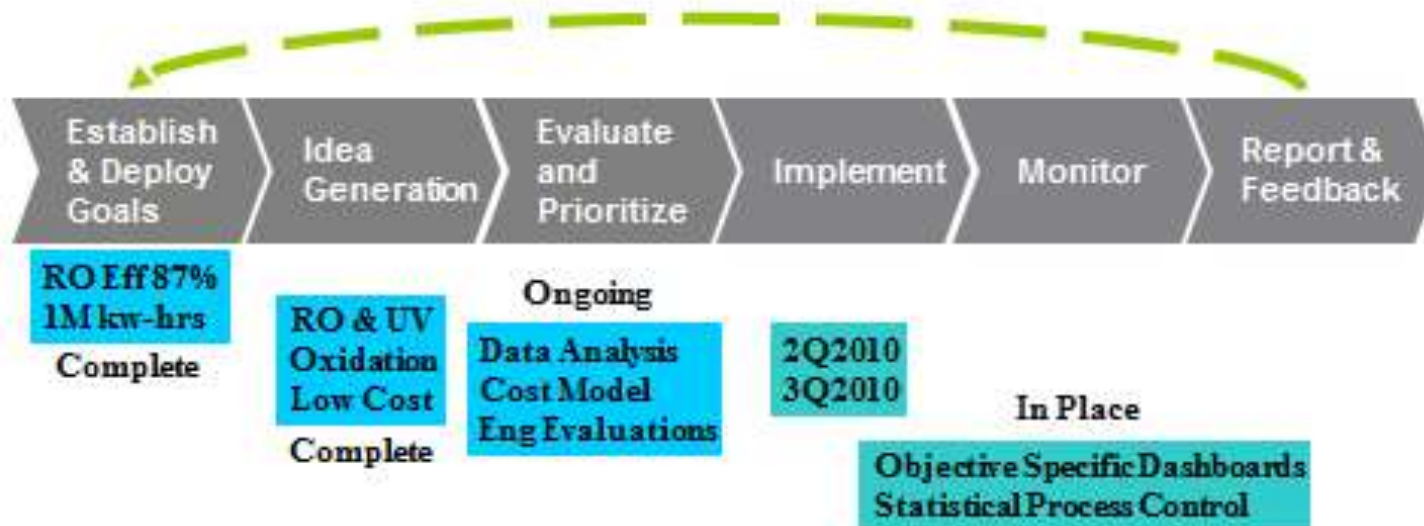
Use Structured Problem Solving Techniques for the more challenging ideas

24

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Smart Water Project
Phosphorous discharge well below compliance

Empowering Business in Real Time

Free Cooling Project
Leverage cold ambient temperatures of Vermont

Empowering Business in Real Time
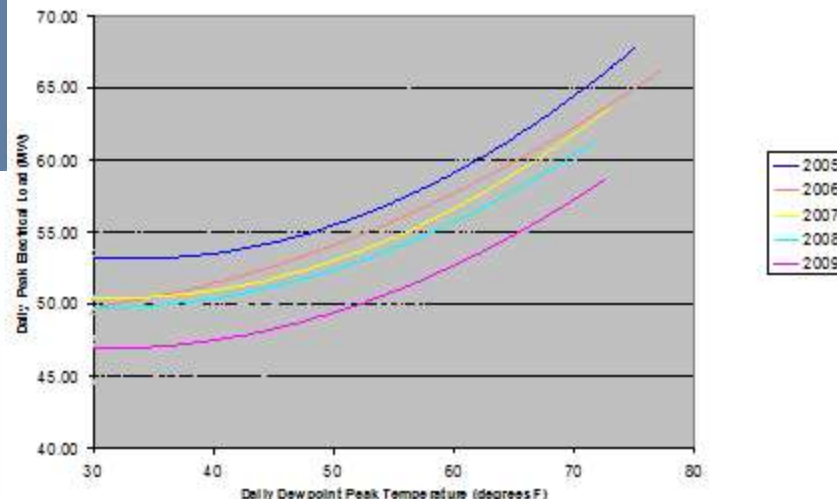
- <u>**Faced recent hardships**</u>
  - Price collapse
  - Demand destruction
  - Credit crunch
- Extremely important part of sustainability value chain
  - Supplier of light-weight, strong materials

"Throughout 2009, our industry and company experienced the most challenging economic environment that many of us can recall. Faced with a triple threat—aluminum prices crashing, broad demand destruction within our customer base, and a credit crunch that crippled our ability to initiate growth—we quickly executed our Cash Sustainability Program to strengthen our balance sheet, restore liquidity, and make Alcoa free-cash-flow neutral by the end of 2009."

"I see an amazing future for Alcoa. Strong, lightweight, energy-saving and infinitely recyclable, our miracle metal will continue to contribute to the sustainable life and health of our planet and its people."

Klaus Kleinfeld, Chairman & CEO

Alcoa

- Aggressive, transparent Sustainability Program
- Some key concepts
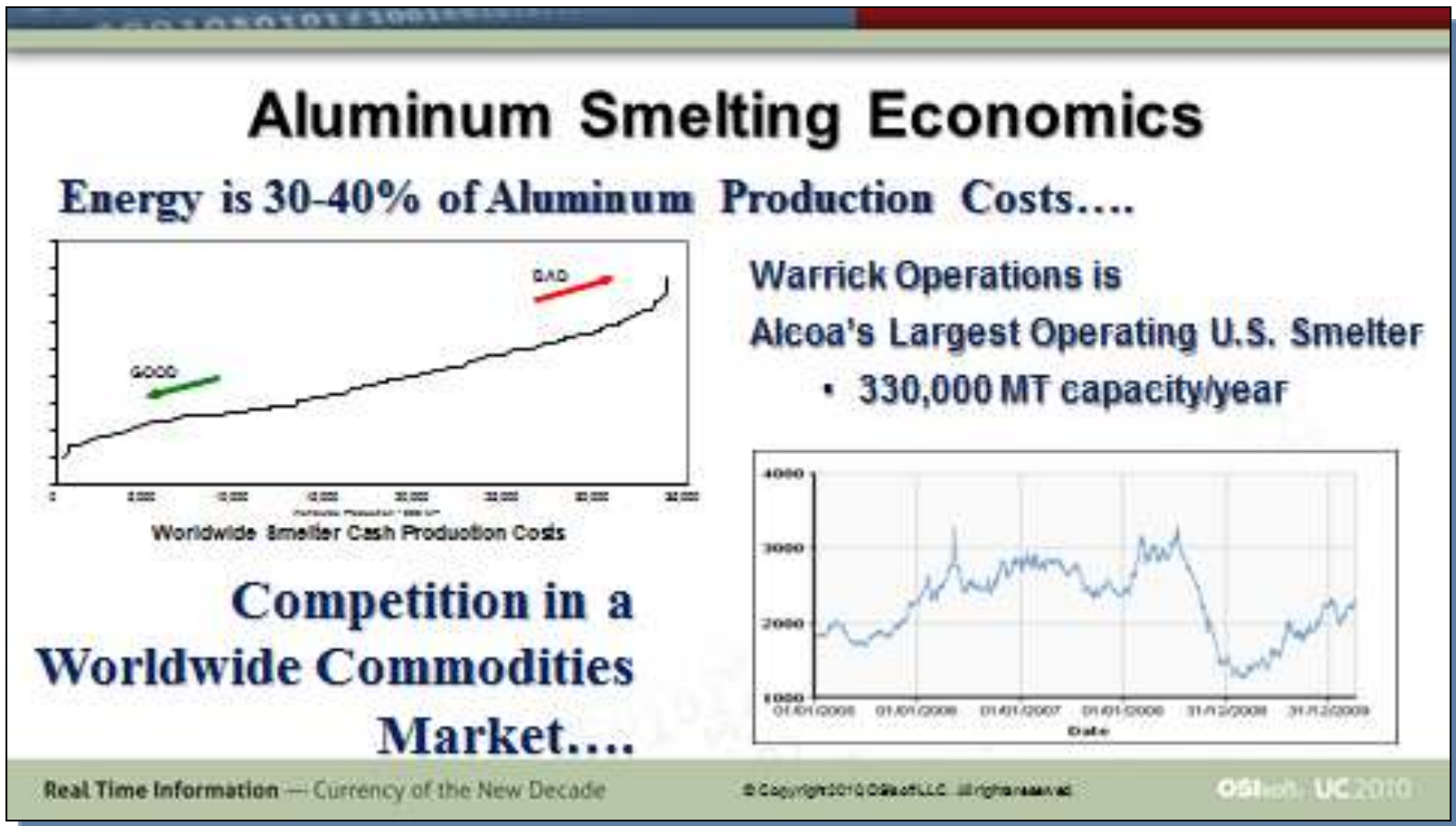   - Life cycle assessment
    - Product design
    - Economic value of products
- Industrial Demand Response
    - Provide reliability to the grid
    - Reduce energy costs

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OSIsoft.

- ❑ Commodity business
- ❑ Competitive advantage comes from production efficiency

Aluminum Smelting Economics

Energy is 30-40% of Aluminum Production Costs....

Worldwide Smelter Cash Production Costs

Warrick Operations is
Alcoa's Largest Operating U.S. Smelter
- 330,000 MT capacity/year

Competition in a Worldwide Commodities Market....

Real Time Information — Currency of the New Decade

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OSIsoft. UC 2010

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- 780 MW Generation
- FERC License—participate in markets as a generator

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Alcoa

- ❑ MISO (Grid operator)
    - ❑ Reliability
    - ❑ Generation capacity
    - ❑ Congestion mitigation
- ❑ Alcoa
    - ❑ Sell power
    - ❑ Purchase

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A.T. Kearney Study
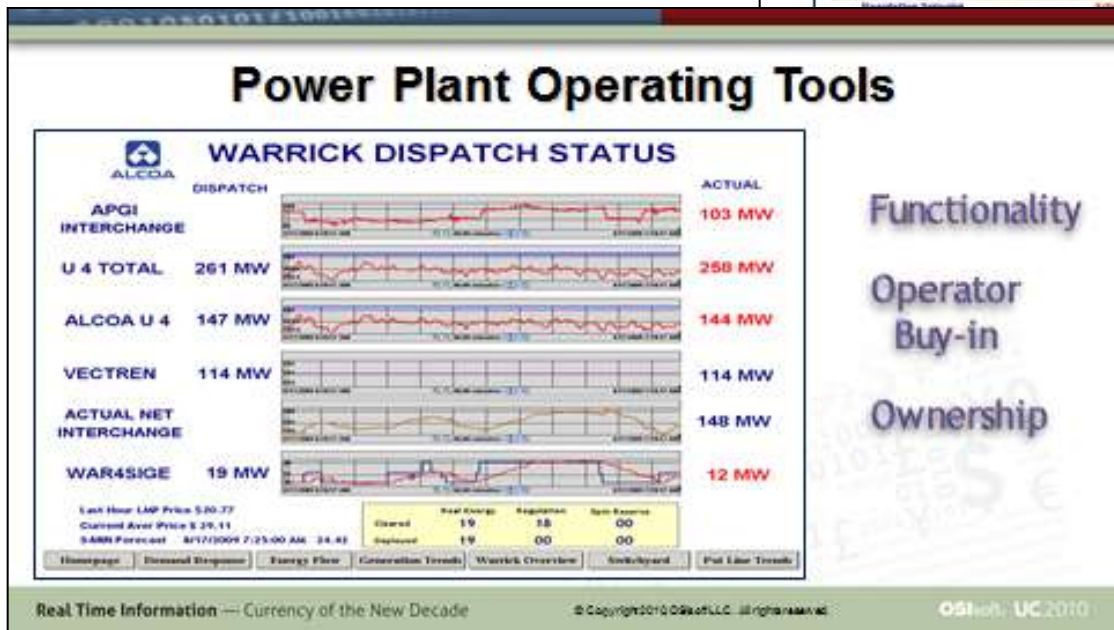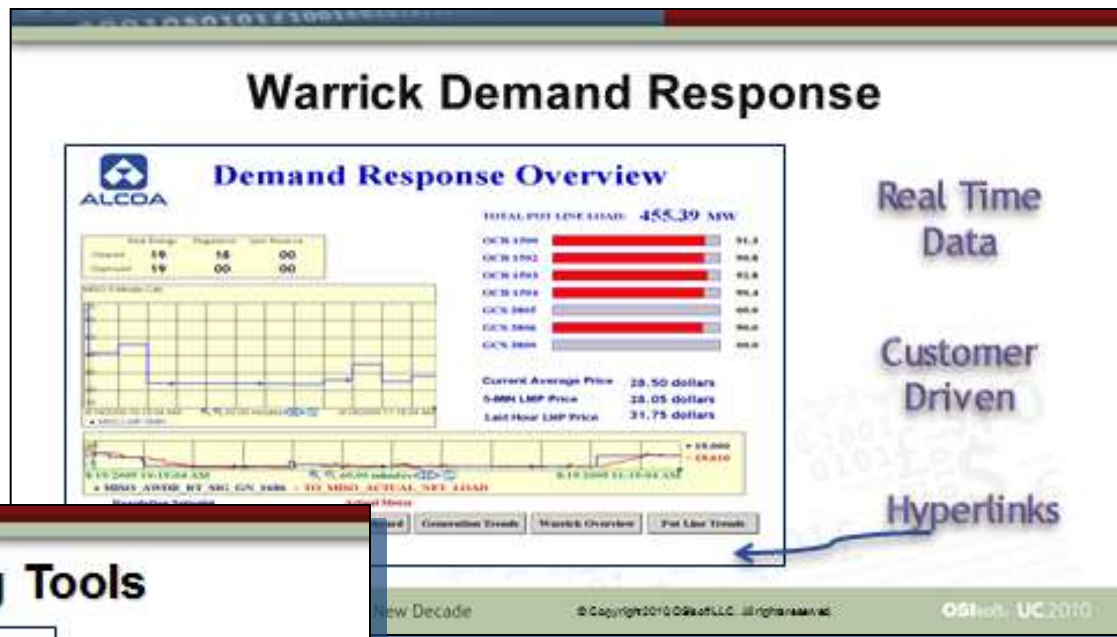
❑ They studied the performance of sustainability-focused companies during financial crisis of 2008/2009

  ❑ 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

"Create value for shareholders and society"

Sustainability

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

Thank you

777 Davis St., Suite 250 San Leandro, CA 94577