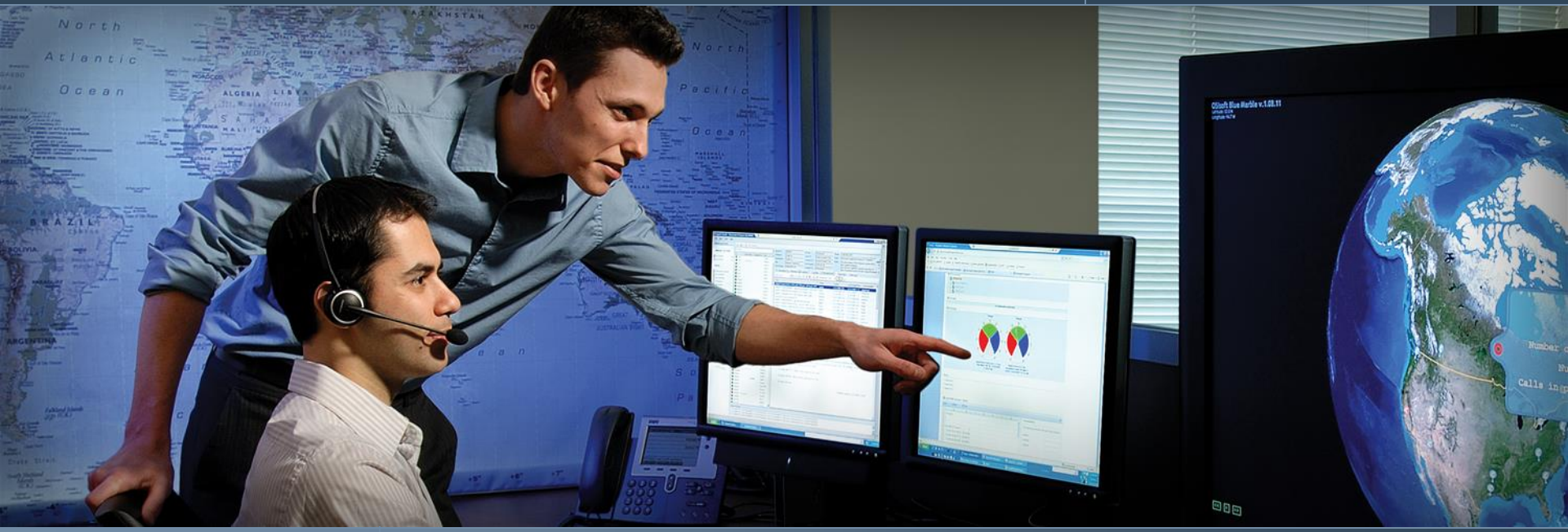
Regional Seminar Series
Orlando



Critical Facilities Update

Robert Wheatley, OSIsoft
Alexis Stobbe, OSIsoft

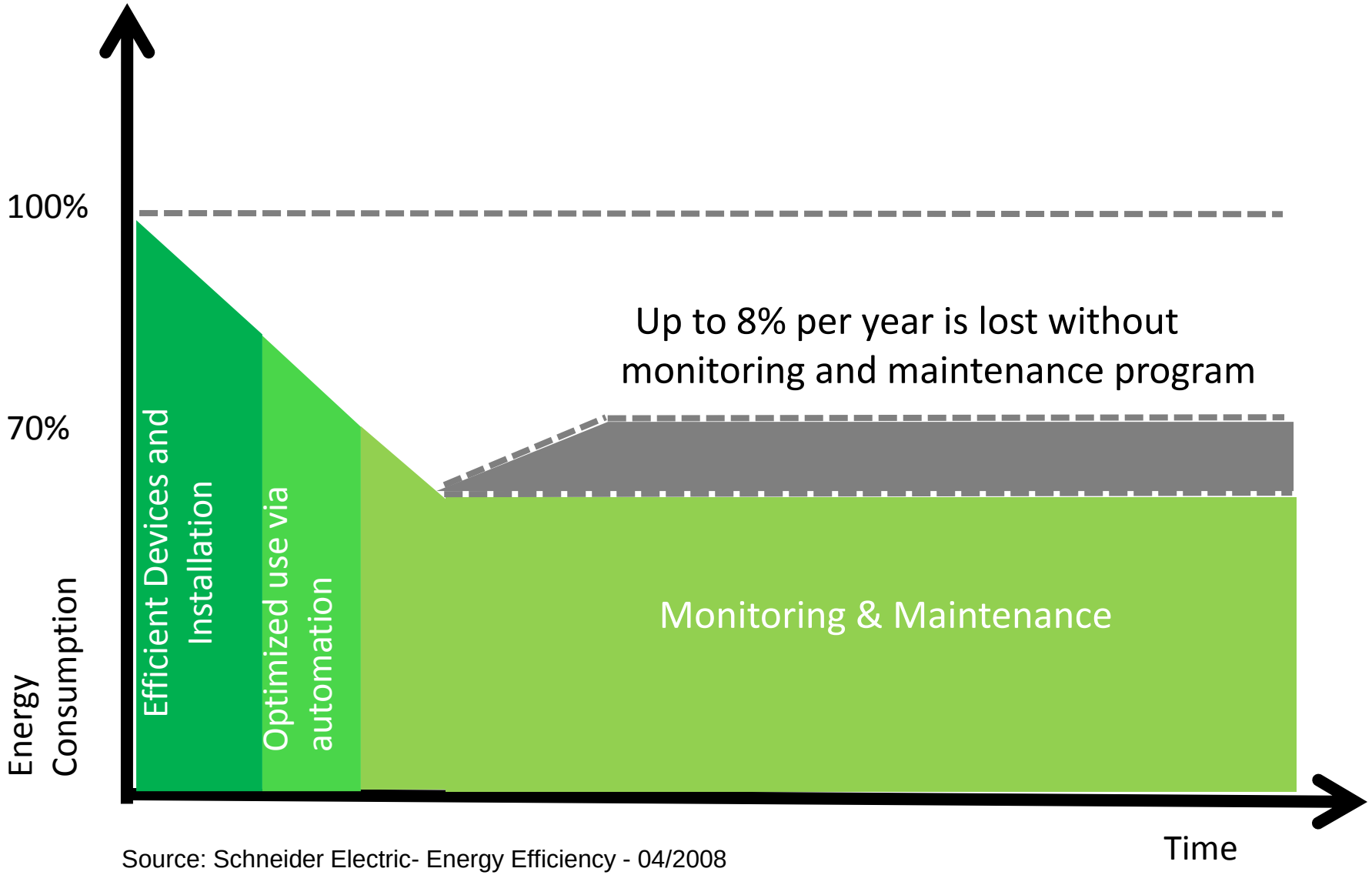
November 4, 2009

Empowering Business in Real Time.

State of Critical Facilities – Data Centers

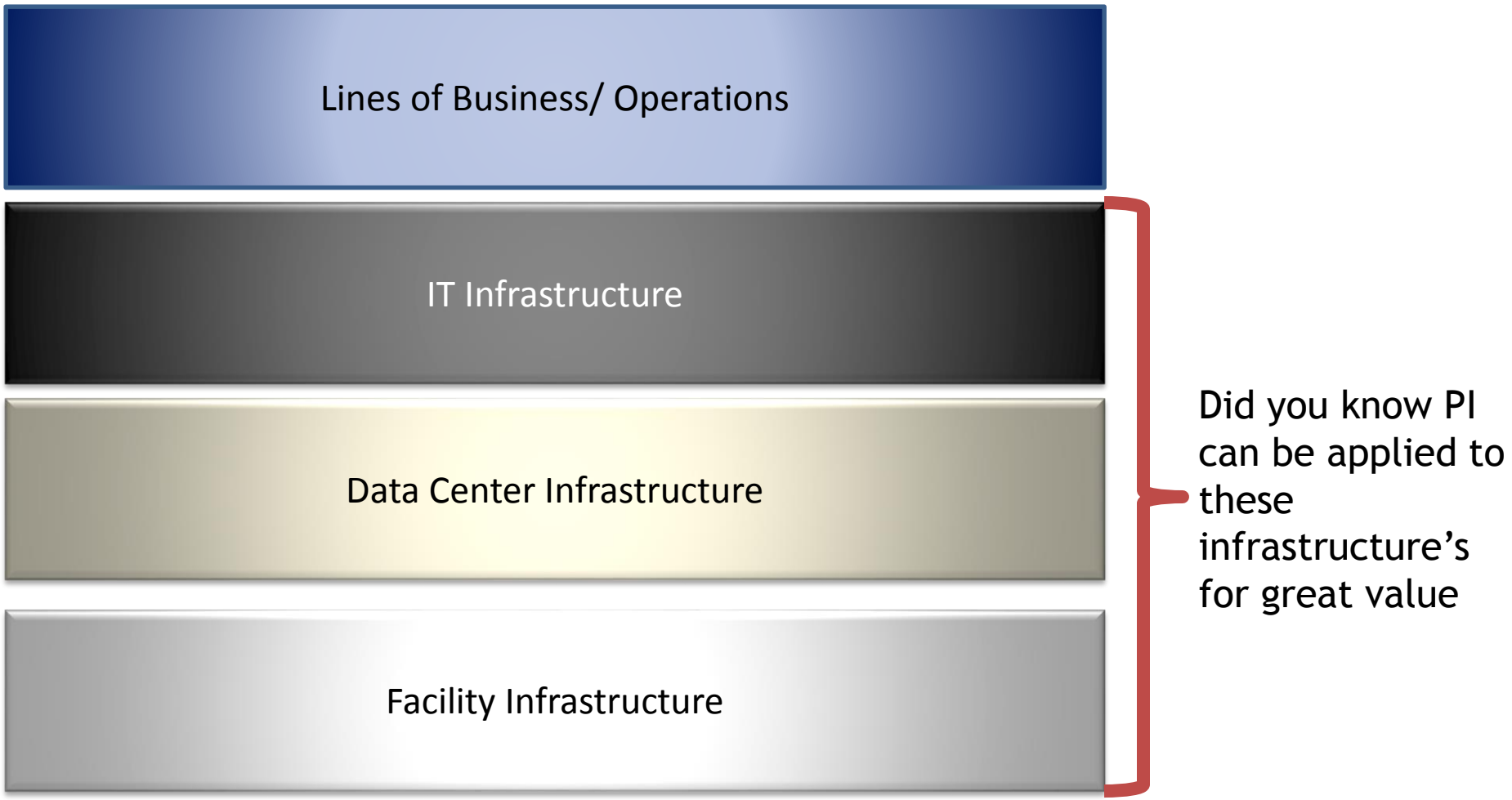
- Maintaining Availability Still the Top Priority
- Reducing Operational Costs
- Improving Energy Efficiency
- Potential Government Regulations

Why PI FOR Energy Management



Source: Schneider Electric- Energy Efficiency - 04/2008

Expand your PI for the infrastructure



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Facilities, Data Center and IT Interfaces

- OPC, RDBMS
- Modbus, Perfmon
- SNMP, Windows Event Log, Ping
- SNMP Traps, TCP Response, Syslog
- IP Flow (NetFlow)
- IPMI (in development)
- BACnet

BACnet Overview

- BACnet stands for building automation and control network

- BACnet provides a common protocol to interface with building automation and control systems. Typical building devices that can provide data are HVAC, lighting, and fire/safety systems

- BACnet is supported by many leading building control systems vendors:
  - Automated Logic Corporation
  - Johnson Controls Incorporated
  - Siemens Building Technologies
  - Tridium

BACnet Overview continued

- The BACnet protocol defines a number of services that are used to communicate between building devices
- The PI BACnet interface supports **BACnet/IP** over Ethernet
- The interface supports a BACnet Query Tool
  - Allows “Who-Is” query which returns a list of any listening BACnet devices
  - The returned list can be used to directly configure PI tags

Example Customers

Facility Customers

Data Center Customers

University of Rochester

BUSINESS SITUATION

Campus purchasing over $30M in utilities. Decision making is based on dated information that's hard to access.

SOLUTION

PI System with interfaces to plant control system and meters, building submeters, and building automation systems.

Measurements include hot water meters, electric meters including substations, assorted gas and oil meters, chilled water meters, and steam meters.

University of Rochester

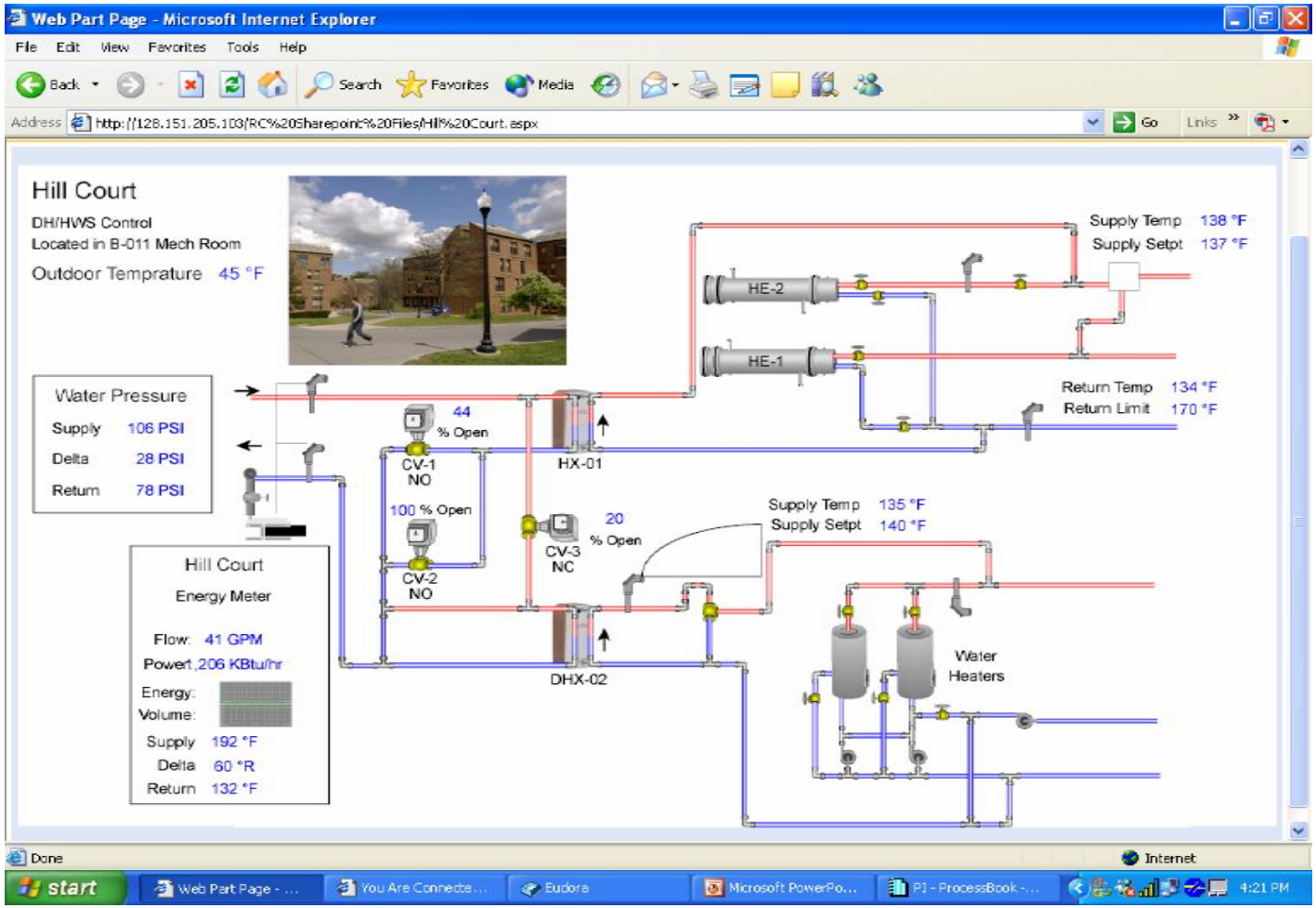
BENEFITS

Faster Decision Making – Data that took a month to access now available in real time. Information manually distributed to 80 cost centers now available electronically

Continuous Process Improvement – Facilities and financial analysts collaborating to make profitable decisions

Reduced Costs – Manual data management automated. Invaluable in commissioning 120 new heat exchangers

University of Rochester



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Cornell Medical School

BUSINESS SITUATION

Executive management set a vision for creating a world class computational resource for the research staff

SOLUTION

PI System with IT Monitor interfaces (PI PerfMon, PI Ping, PI TCPResponse, PI SNMP, etc.)

Cornell Medical School

BENEFITS

Faster Processing – Real time dashboard now available to research staff to optimize job scheduling

Continuous Process Improvement – Historical information available to drive future improvements

Reduced Costs – A 16% reduction in data center energy costs while maintaining a high service level

Cornell Medical School

Empowering Business in Real Time.

Eastman Kodak

BUSINESS SITUATION

Kodak Park needed to find a way to get real-time data on the web in a way that was consistent with its corporate information requirements.

SOLUTION

PI System with interfaces to control systems (Westinghouse WDPF and Ovation, Emerson Provox and DeltaV) and building automation systems, ProcessBook/DataLink, and BusinessPackage iViews.

Measurements include 600 electric distribution meters and 600 additional distribution meters for steam, chilled water, brine, compressed air, process water, nitrogen, natural gas, etc.

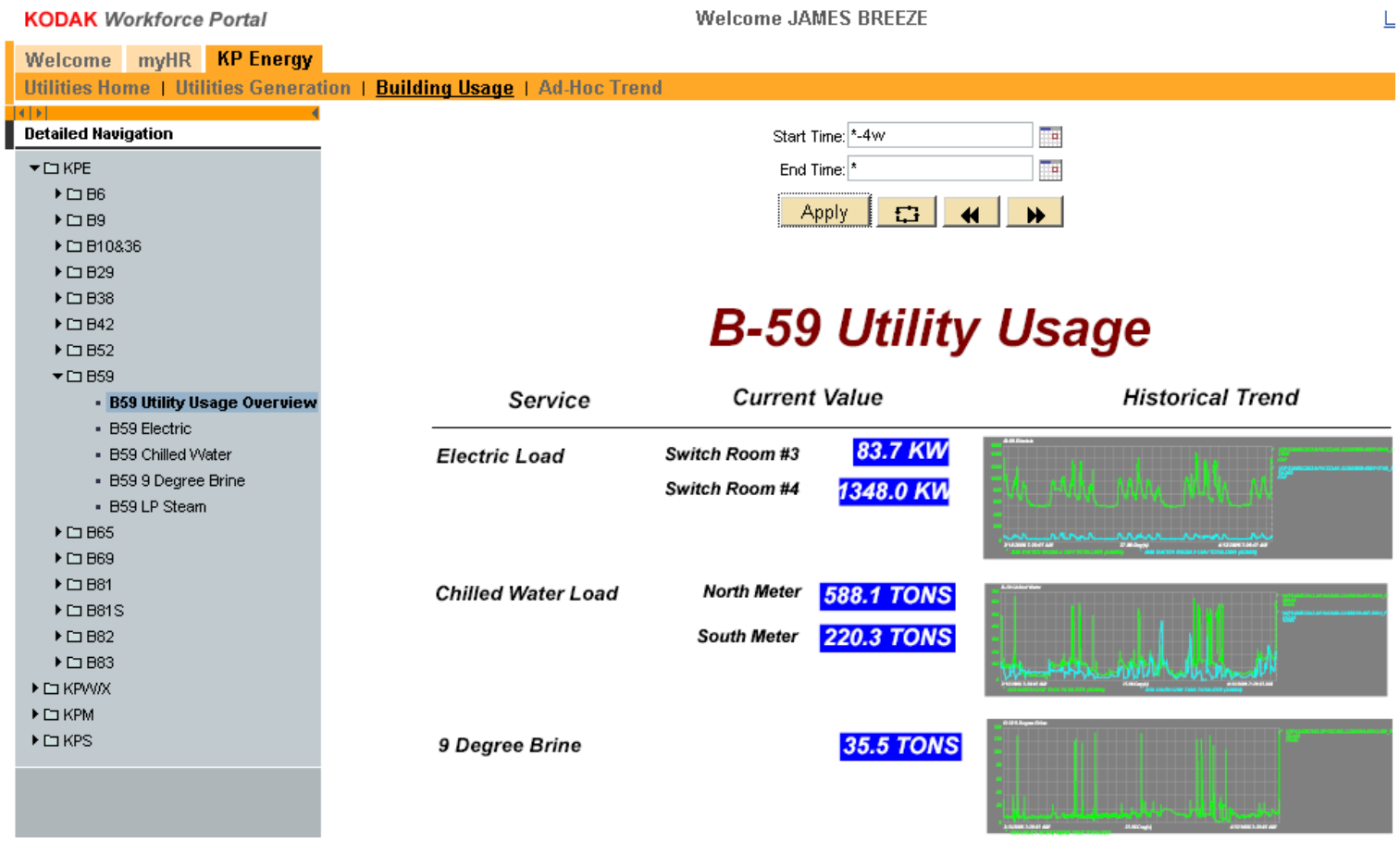
Eastman Kodak

BENEFITS

Significant ROI – Millions of dollars in savings . Improved demand side management and optimization of generation assets.

Continuous Process Improvement – Identified opportunities in manufacturing to implement an energy conservation mode between product runs

Eastman Kodak



Empowering Business in Real Time.

Stay Tuned for More Information

- Active member of Green Grid
- Sponsoring Data Center Operations research at Georgia Tech
- Active Industry Group Member
  - Datacenter Dynamics
  - Uptime Green Symposium
  - Regional participation in Association For Computer Operations Management (AFCOM) chapters
- Chill OFF II – Data Center Pulse

Take Aways

- First step is understanding and benchmarking your operations
- PI has capabilities to help you in the areas of Critical Facilities and IT
- We would be happy to talk with you further and understand your situation to see how PI could create value
- Stay up to date by visiting our Critical Facilities and IT industry page

Microsoft on PI in the Data Center

"We are using the **OSIsoft PI System to monitor all the critical points within our data centers**, and in turn are laying the foundation for a **high-availability, global Live infrastructure**,"

"The return on investment is tremendous. We are enabling innovation through increased collaboration, social networking and commerce—leading to breakthroughs in software plus services. We are setting industry standards **with increased utilization of facility resources, real time business continuity, and green computing technologies**. As we continue to expand our Live services, the combination of **OSIsoft and Microsoft technologies** are bringing new levels of performance and reliability to our world-class data centers."

Displays - EMEA - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

Address http://parint01/Displays/EMEA.aspx Go Links

EMEA

EMEA KPI's

Real Time PUE

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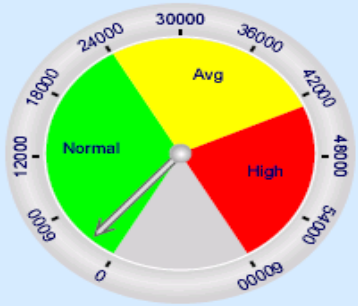
Month to Date Power kW



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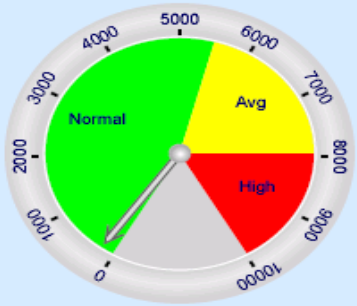
Month to Date Cost €



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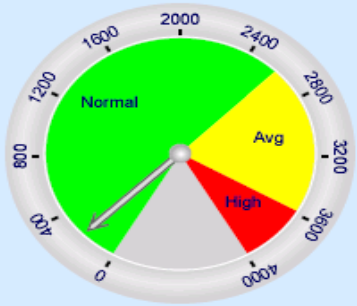
Month to Date Emission



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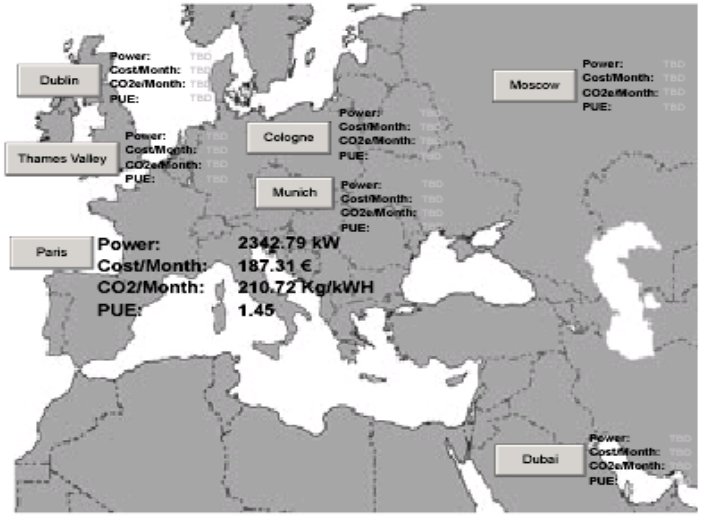
Navigation

- EMEA
  - Cologne
  - Dubai
  - Dublin
  - Munich
  - Paris
    - APC Products
      - Environment
      - InRow Coolers
      - Racks
    - Architecture
    - Networks
      - SANs
    - Servers
      - Collectors
      - PI Servers
    - Storage
      - HP Storage
  - Thames Valley

EMEA MTC's

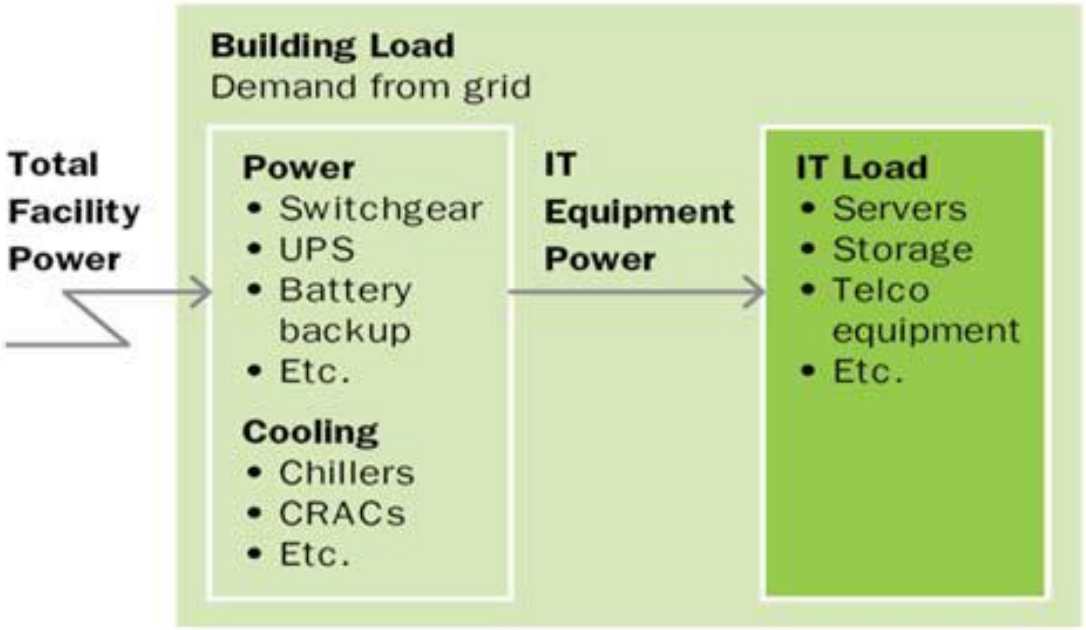
Microsoft Technology Centers — EMEA



Done

Local intranet

PUE: Power Usage Effectiveness
DCE: Data Center Efficiency

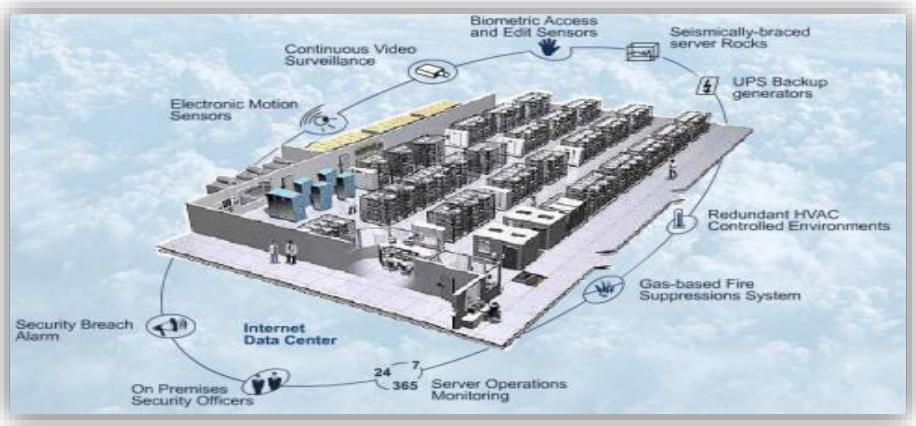


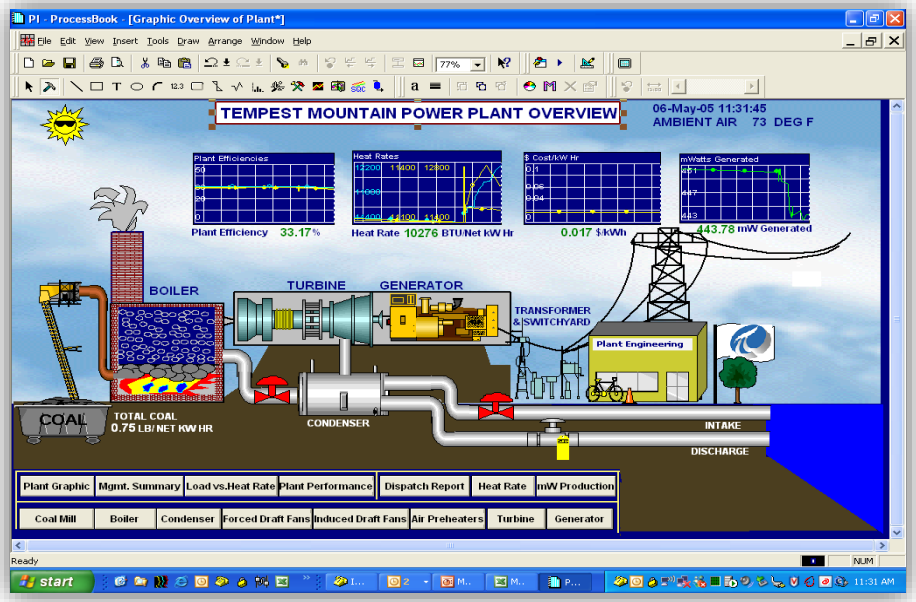
$$PUE = \frac{\text{Total Facility Power}}{\text{IT Equipment Power}}$$

$$DCE = \frac{1}{PUE} = \frac{\text{IT Equipment Power}}{\text{Total Facility Power}} \leftarrow \textit{(Multiply both terms by 100%)}$$

Data Centers - The “Plant for IT”

- Requires “holistic” monitoring for continuous improvement
- Efficient energy consumption with most profitable outcome
- Identify the bottlenecks
- Treat all individual systems as ONE
- Mechanical, Power, IT and Security as a complete system





Empowering Business in Real Time.

Not Just Servers

UPS

Switch Gear

Chillers

Cooling Towers

Air Conditioners

Pumps

Generators

PDU's

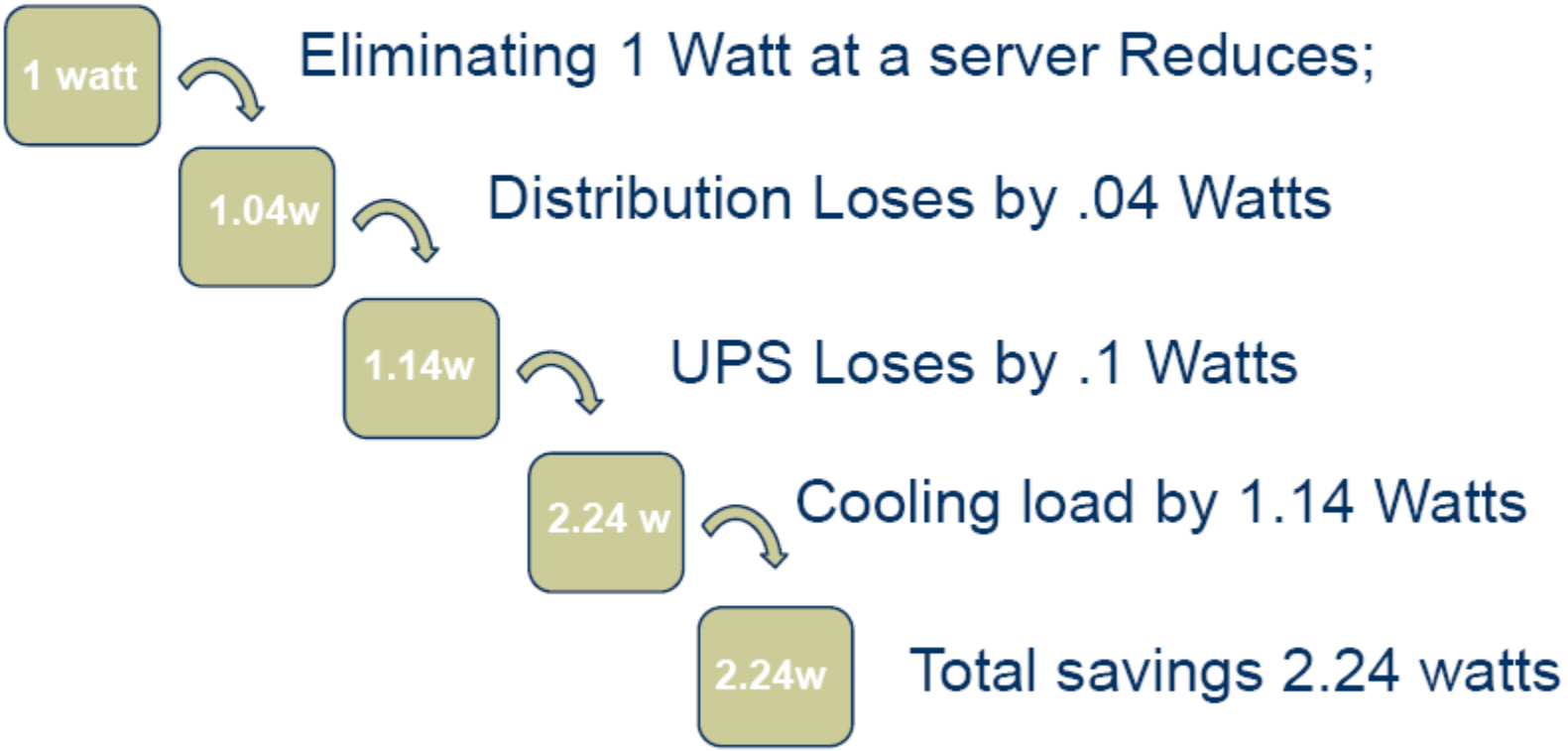
Batteries

Lighting

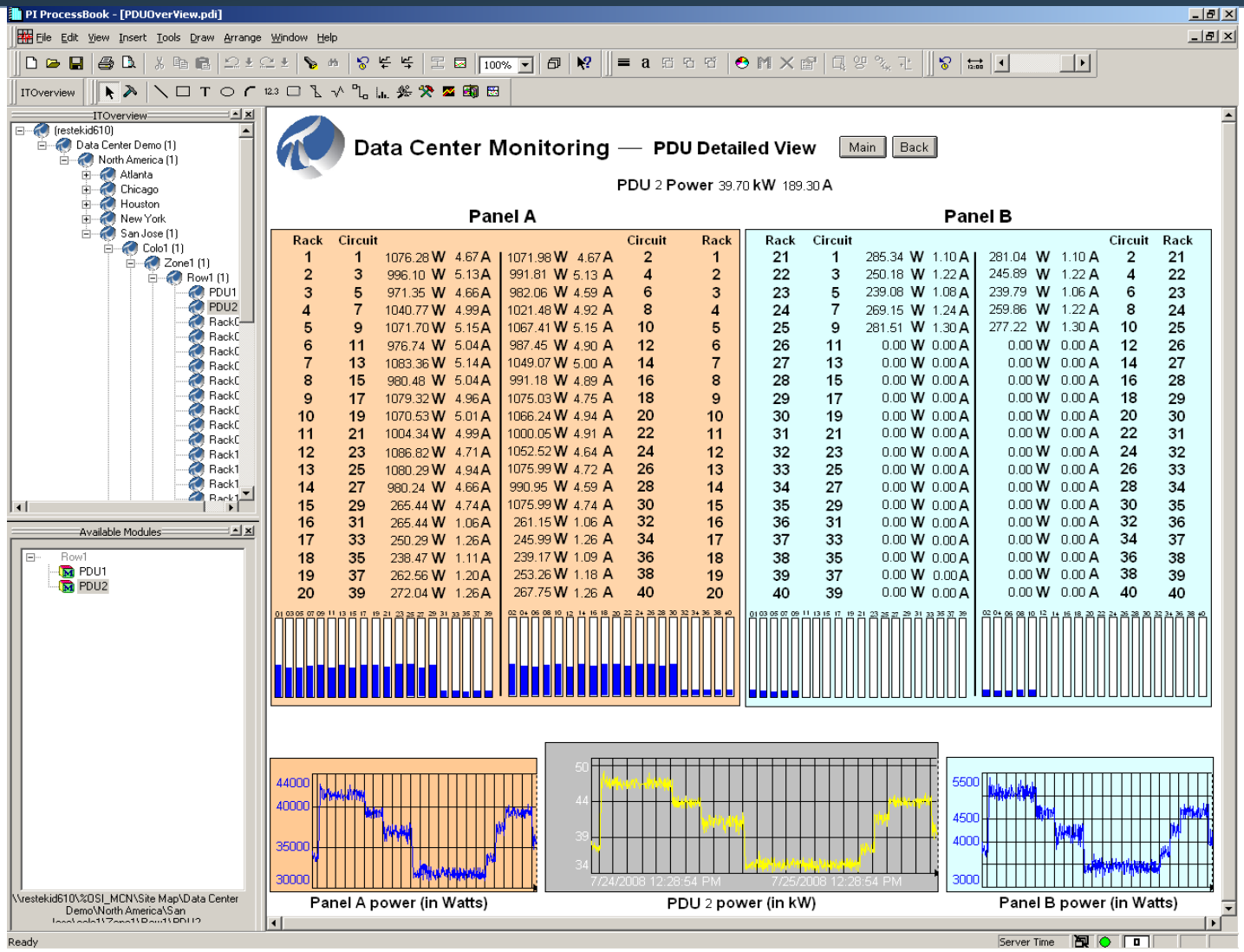
Servers

Storage

Reducing Demand First



ProcessBook – PDU Detail



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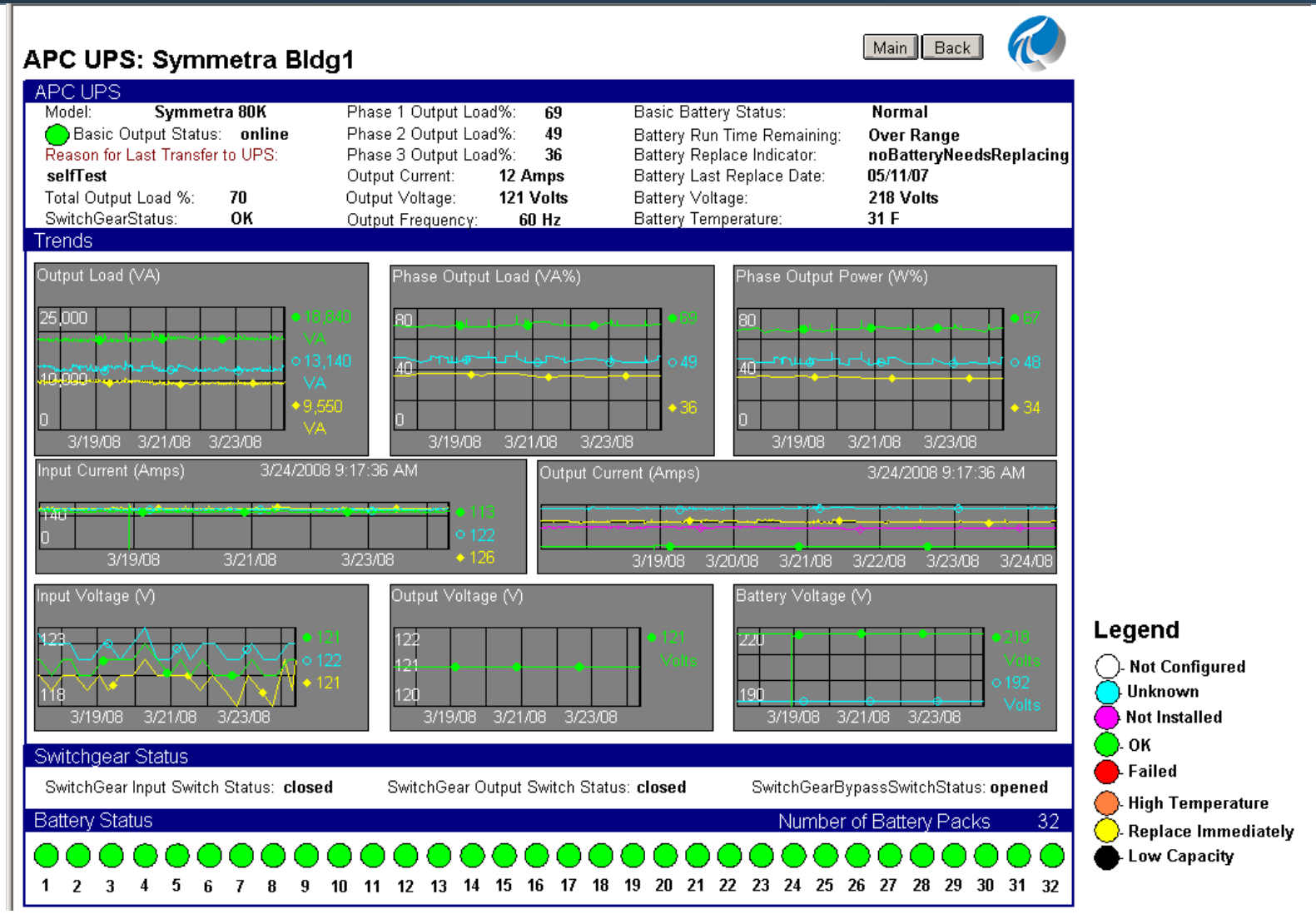
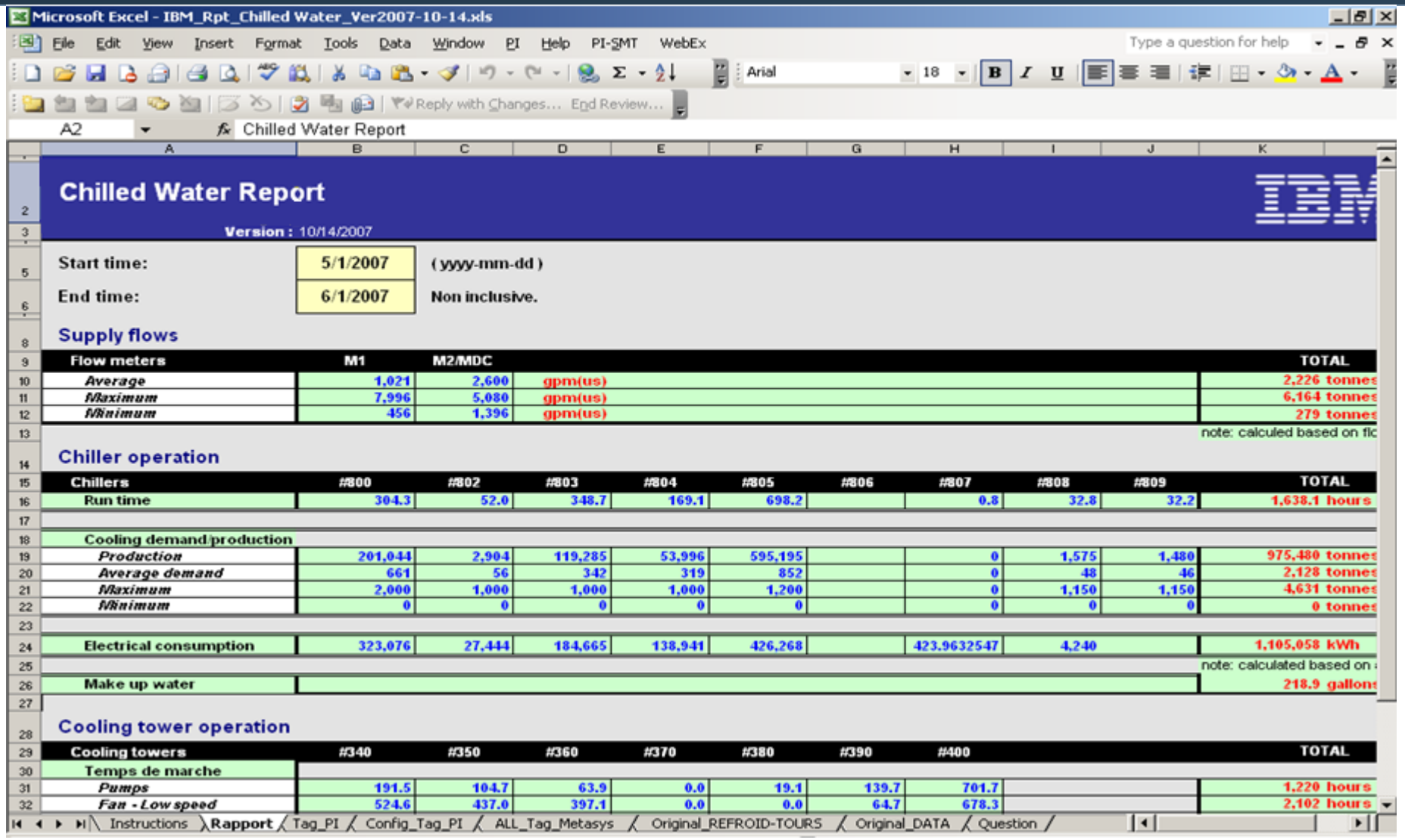
ProcessBook – UPS Detail



DataLink Reporting



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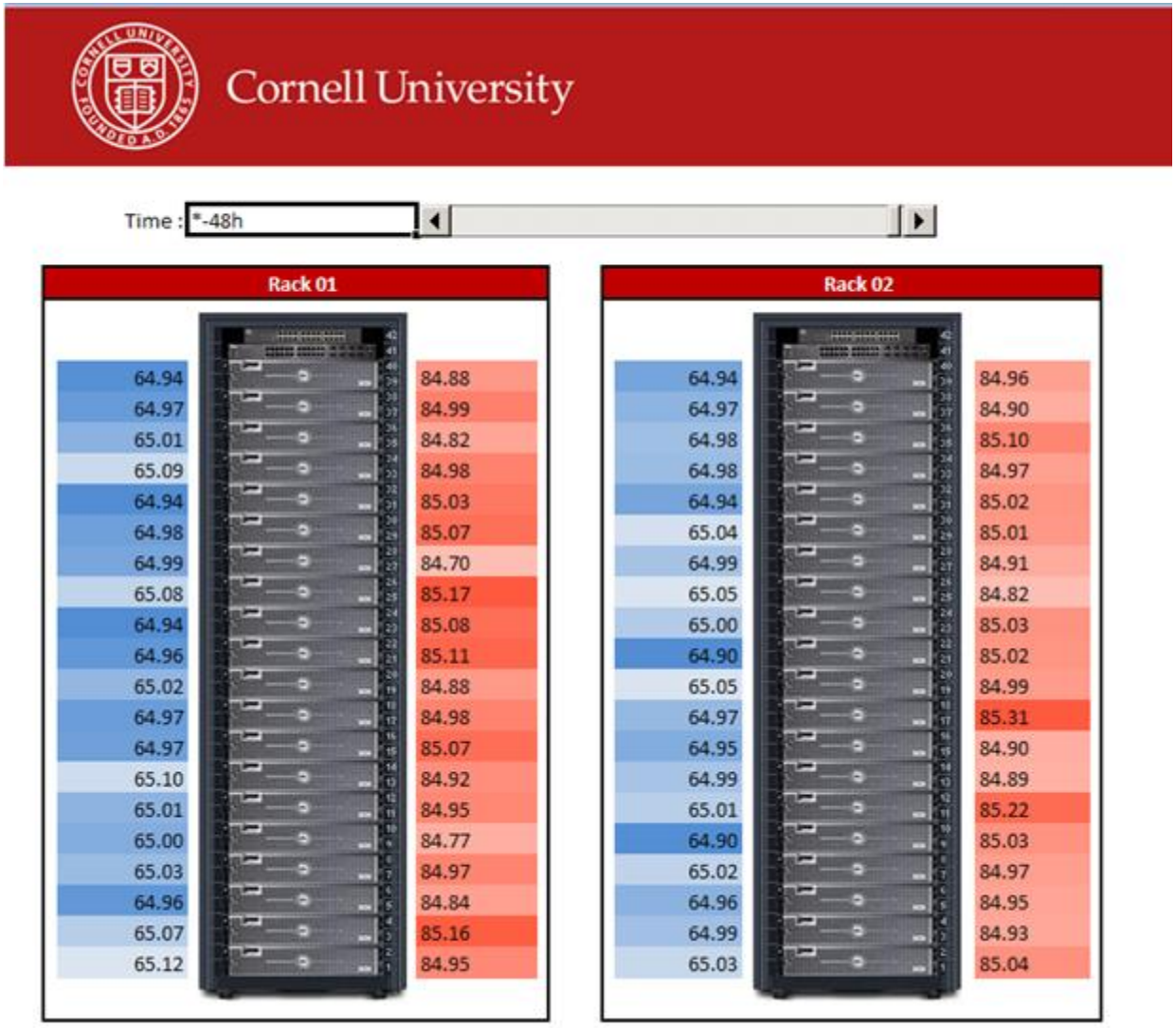
DataLink Reporting



- Monitor server temperatures
- IPMI data via XML interface
- Native IPMI interface coming soon

Call To Action

- Leverage PI for your IT / Facilities environment
- Baseline today
- Understand your infrastructure and power usage
- Make improvements and gain efficiencies
- **Apply the PI System (infrastructure) you use to run your business…**

  …to the infrastructure your business relies on to run.

Thank you

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