REGIONAL SEMINAR SERIES

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Welcome to the Kansas City OSIsoft Regional User Seminar

Paul Hagan

Midwest Region

OSIsoft, Inc. St. Louis, MO

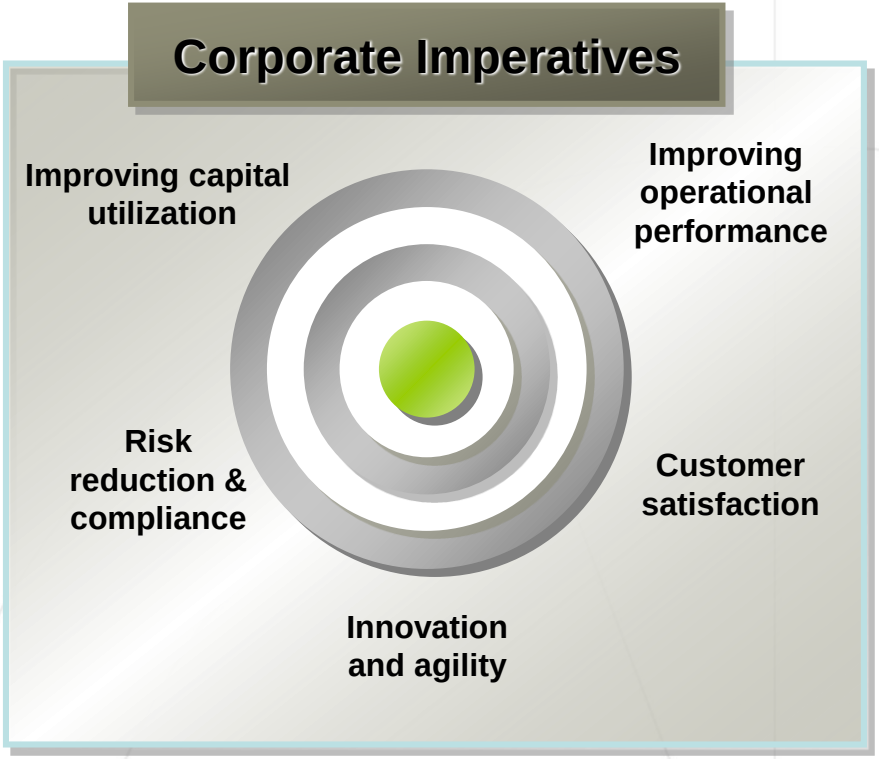
OSIsoft

In the beginning…

- House keeping
  - Cell phones
  - Questions
- PI Infrastructure - brief
- Agenda Review

Are these situations familiar to you?

- Limited operational ‘visibility’
- Many versions of the same data
- Minimal business communication and collaboration
- Repeating the same mistake

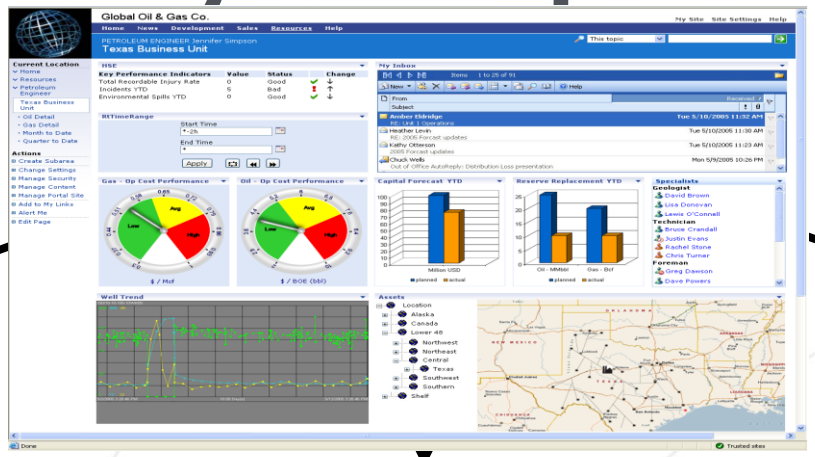


Resulting in compromised Quality, Security, and Profitability –

Ultimately impacting the corporate bottom line

Evolutionary Enterprise Visibility

Inventory,
Supply Chain,
Market/ Cost Data



Production, Market, &
Supply Chain Data

- Energy Management
- Condition Based Maint.
- Production Management
- Environmental Compliance
- APC Monitoring

Production Operations Center of Excellence

- Production Awareness
- Asset optimization
- HSSE Monitoring
- Benchmarking
- Knowledge Management

PI provides an agnostic enterprise IT platform that enables scalable, evolutionary Biofuels value chain visibility, benchmarking, and optimization

Plant #1 — Delta V

Plant #2 — SIEMENS

Plant #3 — Rockwell Automation, RSView

Plant #4 — FOXBORO

Future Plants — FANUC

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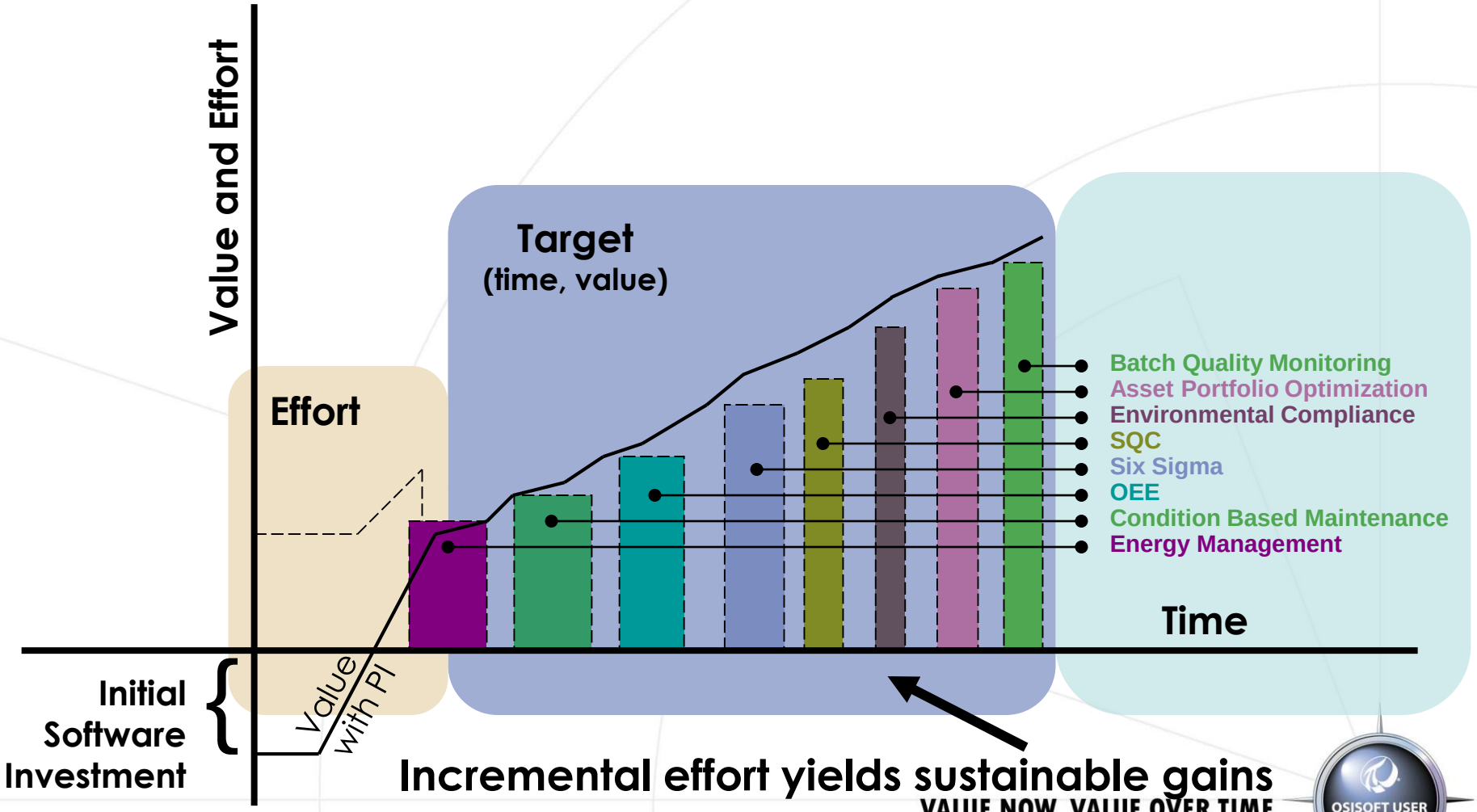

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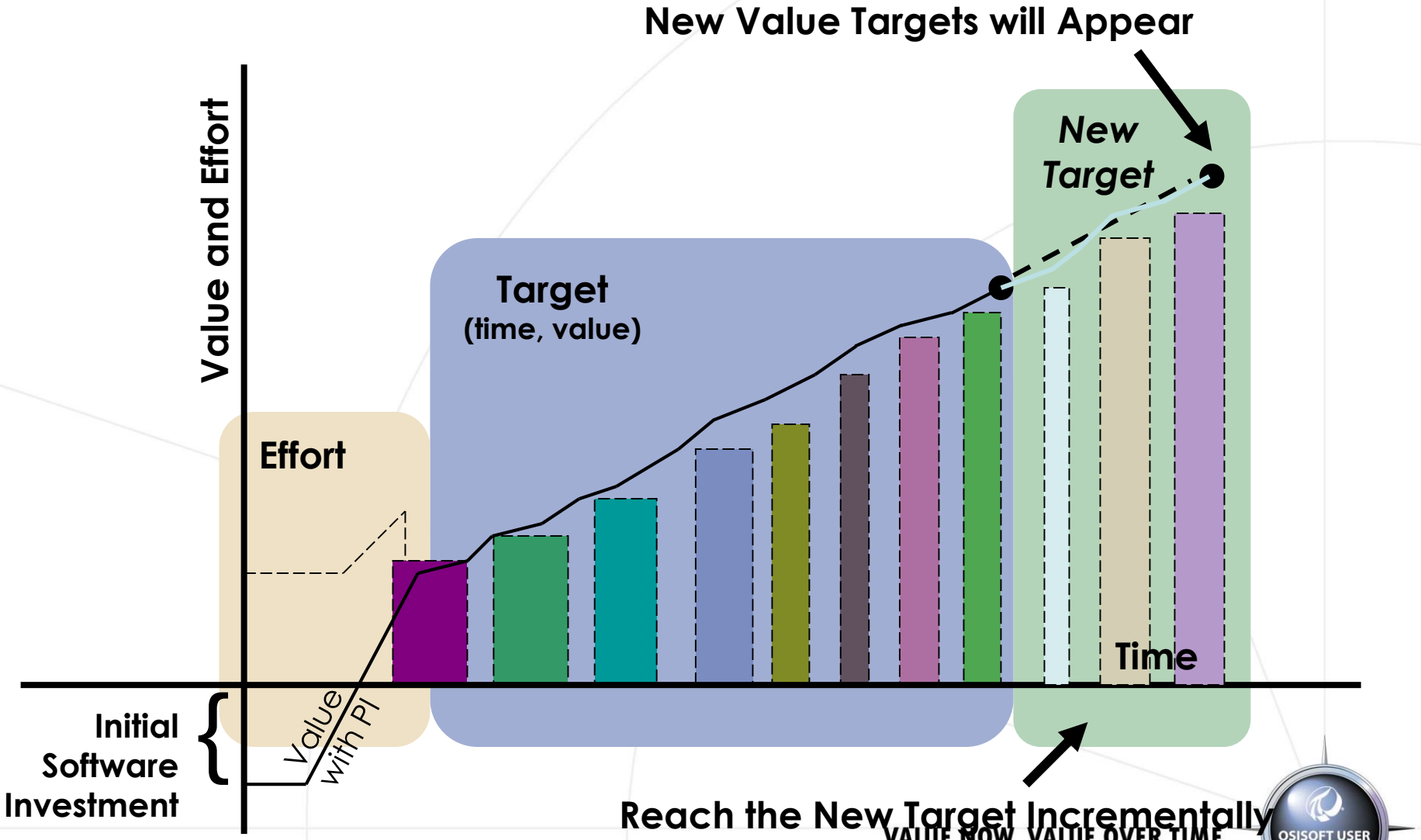

$how Me the Money…

- Electrical – M&D Center $8/$1 invested per year
- Pulp and Paper – Energy Trading Desk $18/$1 invested per year
- Steel – Proactive vs Reactive Maintenance – 20% increase in Plant Availability
- Generation – Turbine Monitor – saved $6MM on warranty issue
- Oil and Gas – Remote Model based Optimization – 10% Increase in Production from Platform

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8:40AM – 9:25AM
PI – Infrastructure for High Value Projects

Mike Jones

Lumberton, TX

OSIsoft

Cargill

9:25AM – 10:50AM RoadMap - The Server Direction (*gimme a break…10AM*)

Tom Hosea

OSIsoft Product Manager

“heeeeere’s Johnny…”

Digital Bond: SECURING THE CRITICAL INFRASTRUCTURE

LOGIN

GET OUR BLOG RSS FEED

10:50AM – 11:30AM
Department of Energy Projects – Securing PI and PI for Security

Dale Peterson

Digital Bond, Inc.

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Is it lunch time yet?
11:45AM – 1:00PM in Pavilion 3

DTE Energy – Fleet Optimization

Monroe – 3,135 mw

Belle River – 1,260 mw

Trenton Channel - 730 mw

Performance Center – 11,588 mw

River Rouge - 527 mw

Greenwood – 785 mw

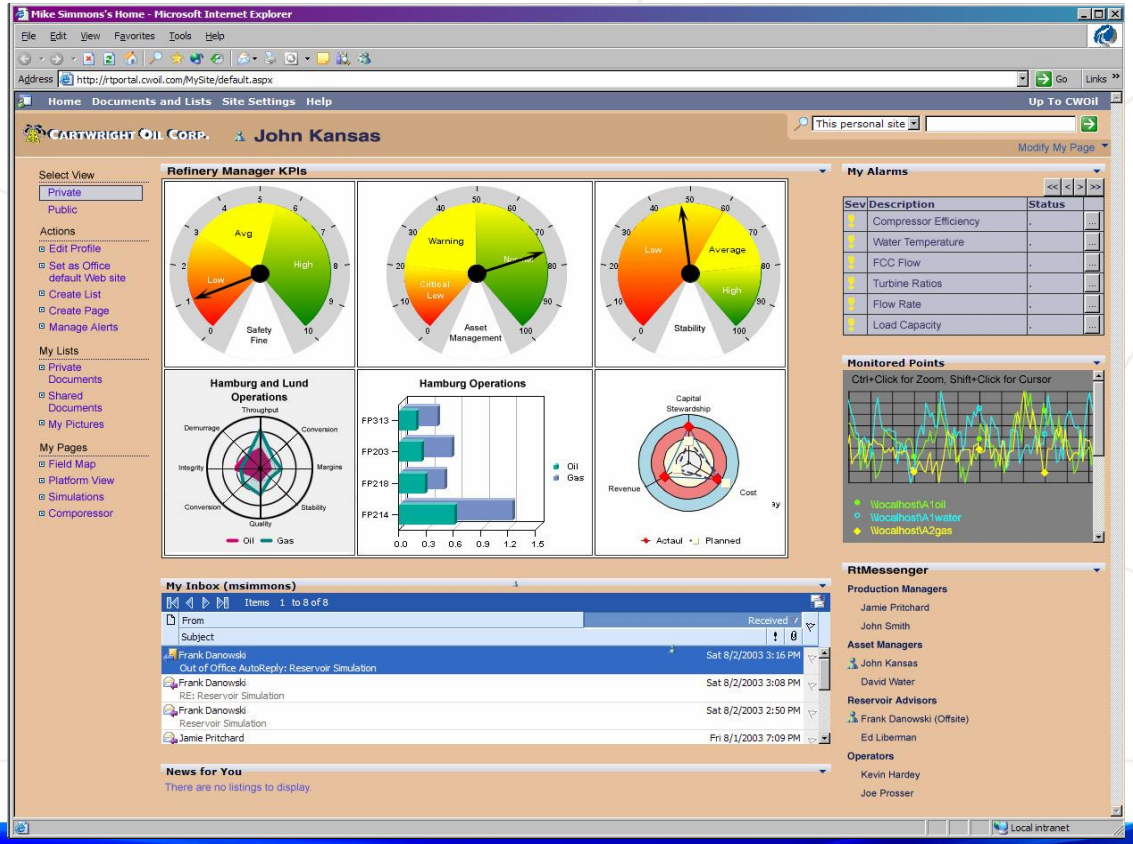
Generating Unit	Capacity Unit	Capacity Plant
Belle River 1	625	
Belle River 2	635	
Belle River		**1260**
Conners Creek 15	135	
Conners Creek 16	100	
Conners Creek		**235**
Fermi 2	**1110**	**1110**
Greenwood 1	**785**	**785**
Harbor Beach 1	**103**	**103**
Monroe 1	770	
Monroe 2	795	
Monroe 3	795	
Monroe 4	775	
Monroe		**3135**
River Rouge 2	247	
River Rouge 3	280	
River Rouge		**527**
St Clair 1	150	
St Clair 2	162	
St Clair 3	168	
St Clair 4	158	
St Clair 6	321	
St Clair 7	450	
St Clair		**1409**
Trenton Channel 7A	124	
Trenton Channel 8	122	
Trenton Channel 9	520	
Trenton Channel		**766**
Peakers	**1224**	**1224**
Totals:	**10554**	**10554**

Kodak – Energy Information

1:45PM – 3:15PM (break at 2:30PM)
Map the Metrics to the Person

Michelle Kuiee

OSIsoft Certified Guru



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3:15PM – 4:00PM
How AEP is Approaching the Information Management Crisis by Leveraging OSIsoft's Suite of Tools

Kevin Stogran

Director Market

Operations Support

OSIsoft

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4:30PM – 6:30PM
OSIsoft Technology & CISCO ICI and ISR Appliances
– *“I’ll drink to that…”*

Matt Miller

OSIsoft Partner Manager

OSIsoft

CISCO

Let’s Get Started…

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Technology is Integral to Corporate Culture

May 8th, 2008

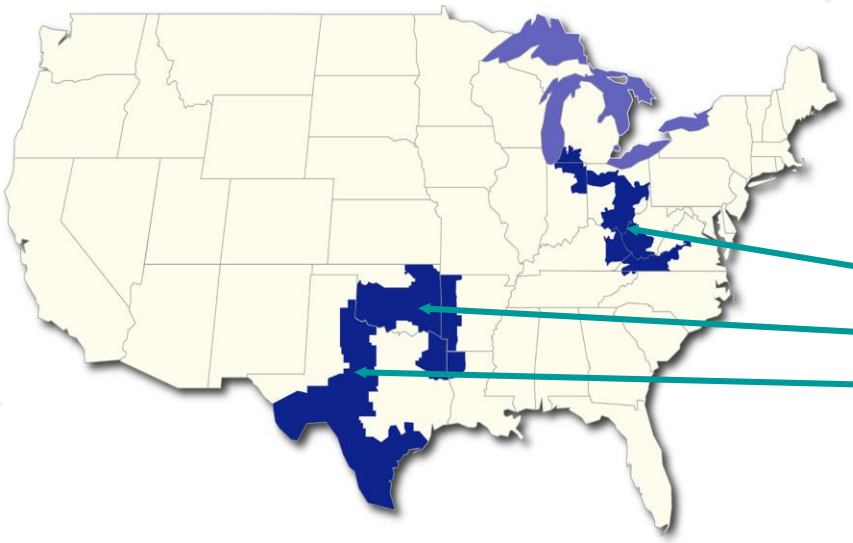
H. Kevin Stogran
Director - Market Operations Support
OSISoft Regional Conference, Kansas City

OSIsoft.

Agenda

- Who is AEP (American Electric Power)
- AEP's PI History and Footprint
- Information Management Challenges
- PI Display Examples
- AEP's Culture of Technology
- The Big Picture Challenge
- Technology Toolbox
- Portable Data
- Conclusion

AEP – Who We Are – By Assets



- One of the largest U.S. electricity generators (~ 38,000 MWs) with a significant cost advantage in many of our market areas
- Largest consumer of coal in the Western Hemisphere
- Operations within four RTO's
  - PJM
  - SPP
  - ERCOT
  - MISO
- A leading consumer of natural gas
- Major wind power developer (#3 in U.S. in 2005)
- 39,000 miles of transmission
- 186,000 miles of distribution
- Coal transportation
  - 7,000 railcars
  - 2,230 barges and 53 towboats
- 5 million customers

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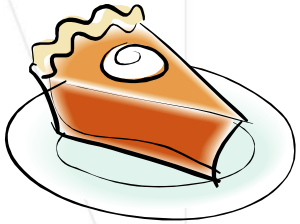
PI History – Where Have We Been

- AEP began installing PI servers in 1993
- Five servers installed between 1993 – 1998
  - Conesville 5, Conesville 6, Conesville 4, Sporn 5, Muskingum 5
- Bank License 40,000 Tags (1998)
- Corporate PI server installed in 1999
- Most plant PI servers installed after 1999
- Plant's Question - How Do You Justify PI?
- The Annual Bank
- AEP "All you can Eat" Contract 2004 (**aka EA**)
- Development partnership with Transpara, 2006
- Current Contract 2007-2009



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AEP's Current PI Footprint

- **Servers**
  - 4 Corporate PI Server
  - 49 Plant PI Servers
  - 2 Plant Simulator PI Servers
  - 3 Transmission PI Servers
  - 2 IT Monitor PI Servers
  - 60 Total PI Servers
- **PI Tags**
  - AEP total tag usage is about ~ 500,000 tags
  - Plant PI servers have over 325,000 Tags
    - Plants server tag counts range from 75 tags to over 20,000 tags
  - Corporate PI server has over 75,000 tags
  - IT Monitor server has over 70,000 tags
  - Transmission PI servers have over 50,000 tags
- **Processbooks**
  - No Idea Anymore!
  - Control Access As Needed, Not Desktop Applications.

Information Management Challenges

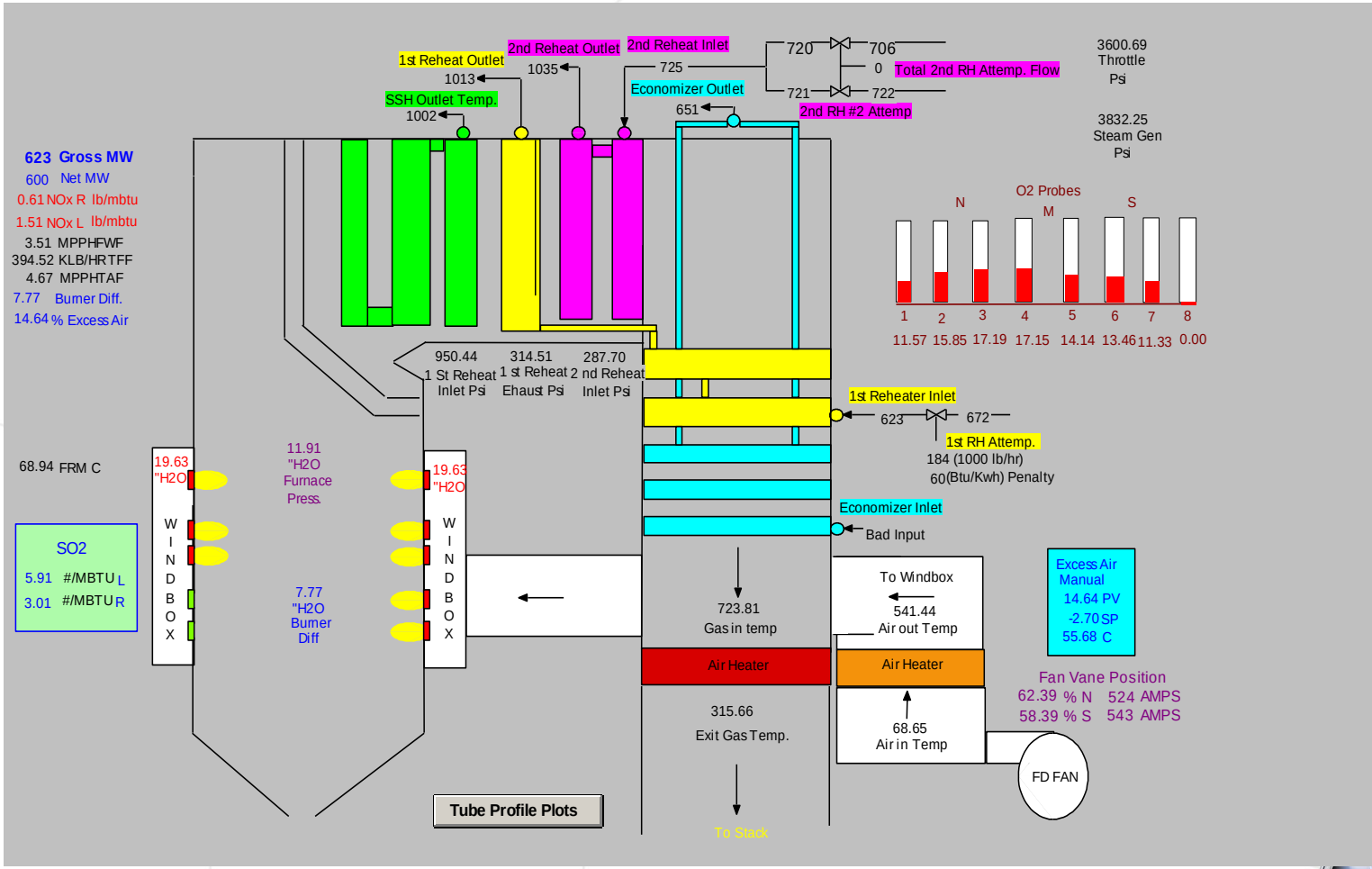
- Aging Workforce
  - Provide Smart Displays
- Improve Information Management
  - Millions and Millions Points of Data!
- How Do We Use Information to Be:
  - More Productive ?
  - Retain / Expand Knowledge and Experience ?
  - More Cost Effective ?
  - More Responsive to RTO Market Needs
    - **Process More Data with Same Staff.**
    - **Be Aware of Market Conditions and Current Situational Awareness**

Conventional PI Development

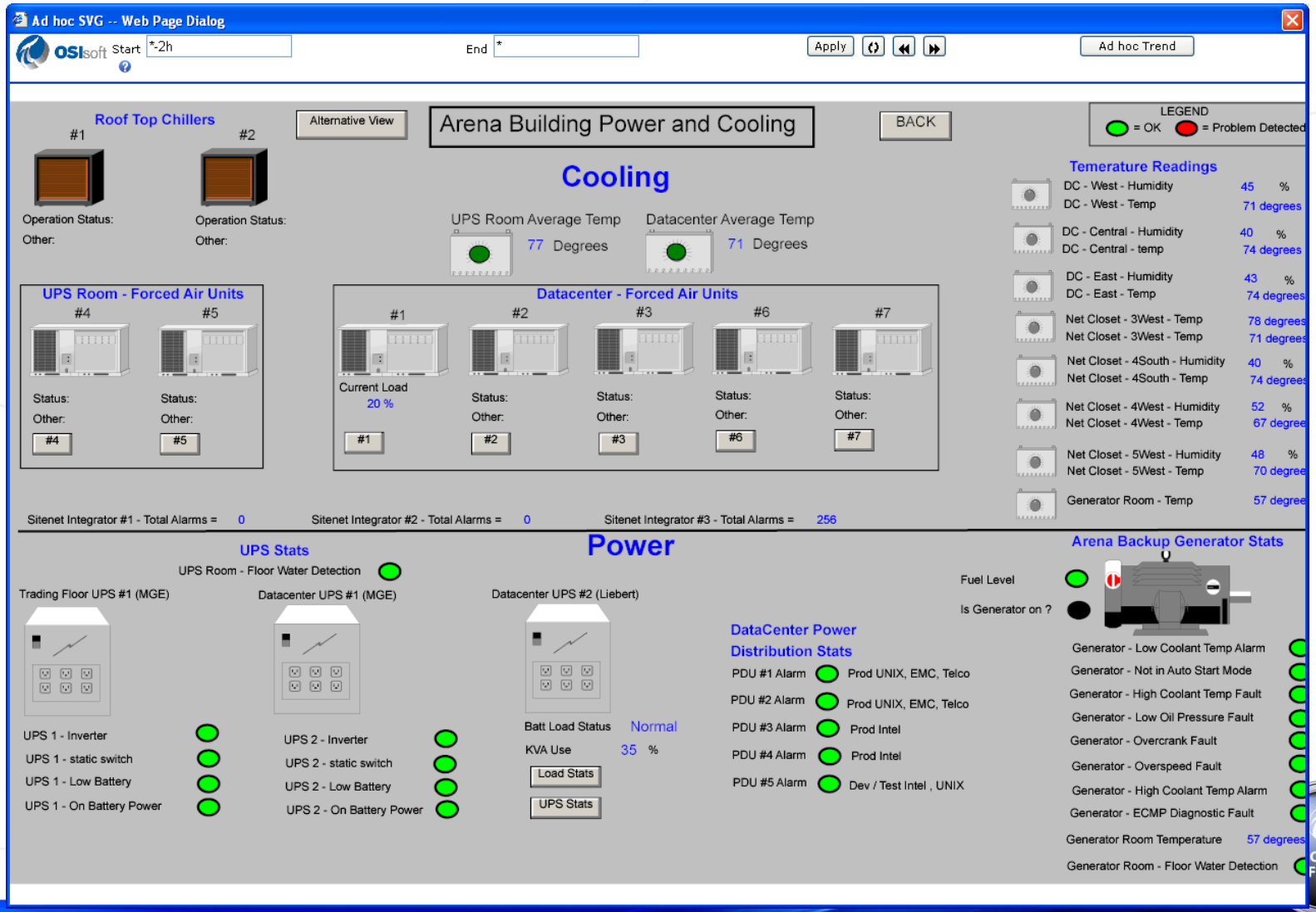
PI Helps Control Production Costs

Controllable Cost	Units	Actual	Target	Design	Deviation from Target (Btu/Kwh)	Cost ($/Shift)	Total ($/Shift
Main Steam Pressu	PSIG	1,985	2,000	2,000	-50 150	$6.48	$-0
Main Steam Temperatu	F	976	962	1,050	-50 150	$-32.04	$-2
1st RH Steam Temperatu	F	976	948	1,050	-50 150	$-59.76	$-3
1st Reheat Attemperat	lb/hr	1,079	0	0	-50 150	$1.86	$0
Excess Ai	%	21.4	19.8	14.0	-50 150	$20.86	$-1
Exit Gas Temperatu	F	359.4	329.7	305	-50 150	$150.12	$17
Steam Coil Air Heaters	klb/hr						
Condense	in. of HG	1.13	0.92	0.77	-50 150	$64.98	$8
HP Feedwater Heate	Btu/Kwh	5.2	0	0	-50 150	$8.61	$1
LP Feedwater Heaters	Btu/Kwh						
Auxiliary Pow	Mw	14.33	16.08	15.41	-50 150	$-186.90	$-13
Total Operator Contollable C					-50 150	$-25.79	$6

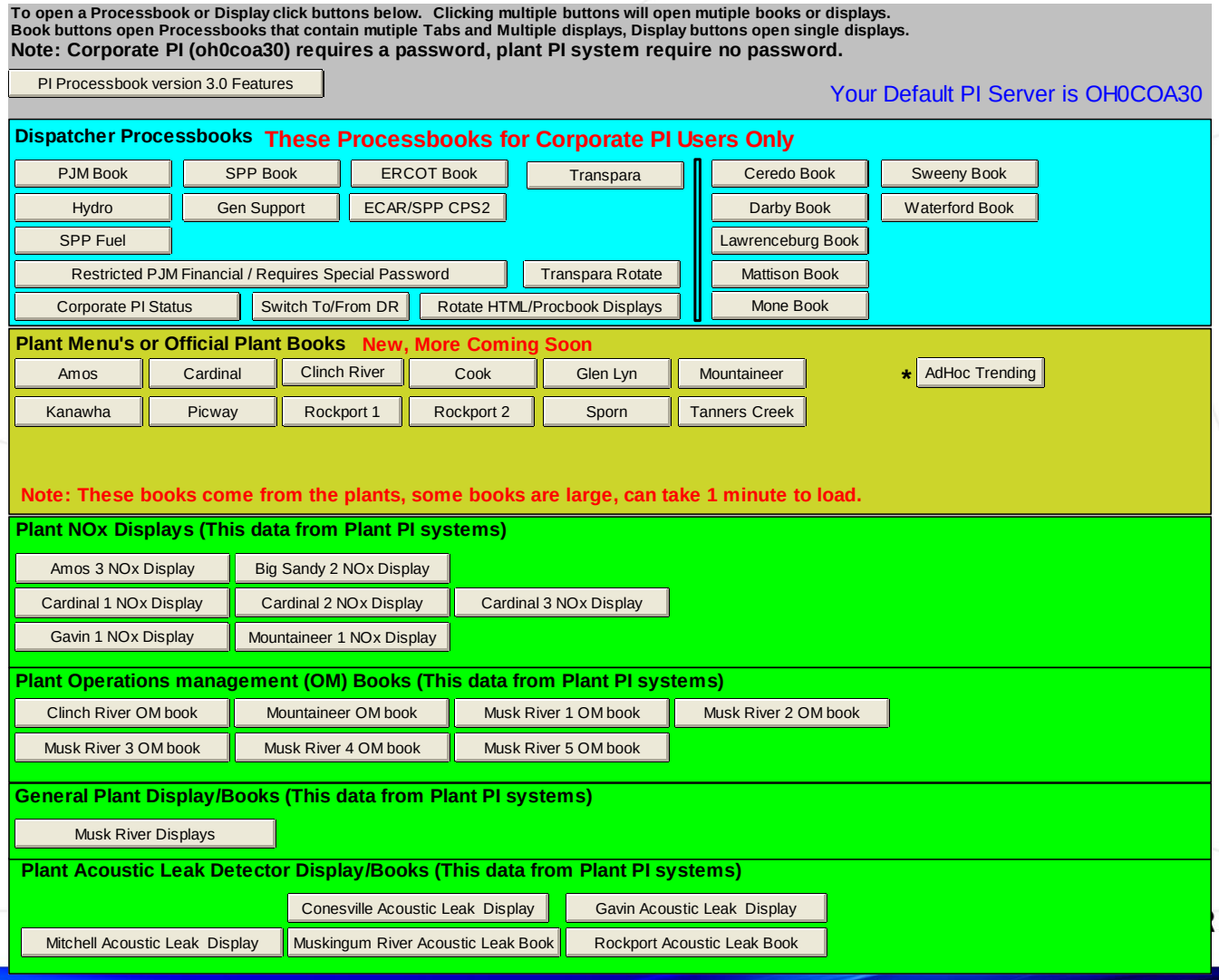
PI Brings Diverse Data to One Graphical View



Building Diverse Monitor Capability (RTWebParts)

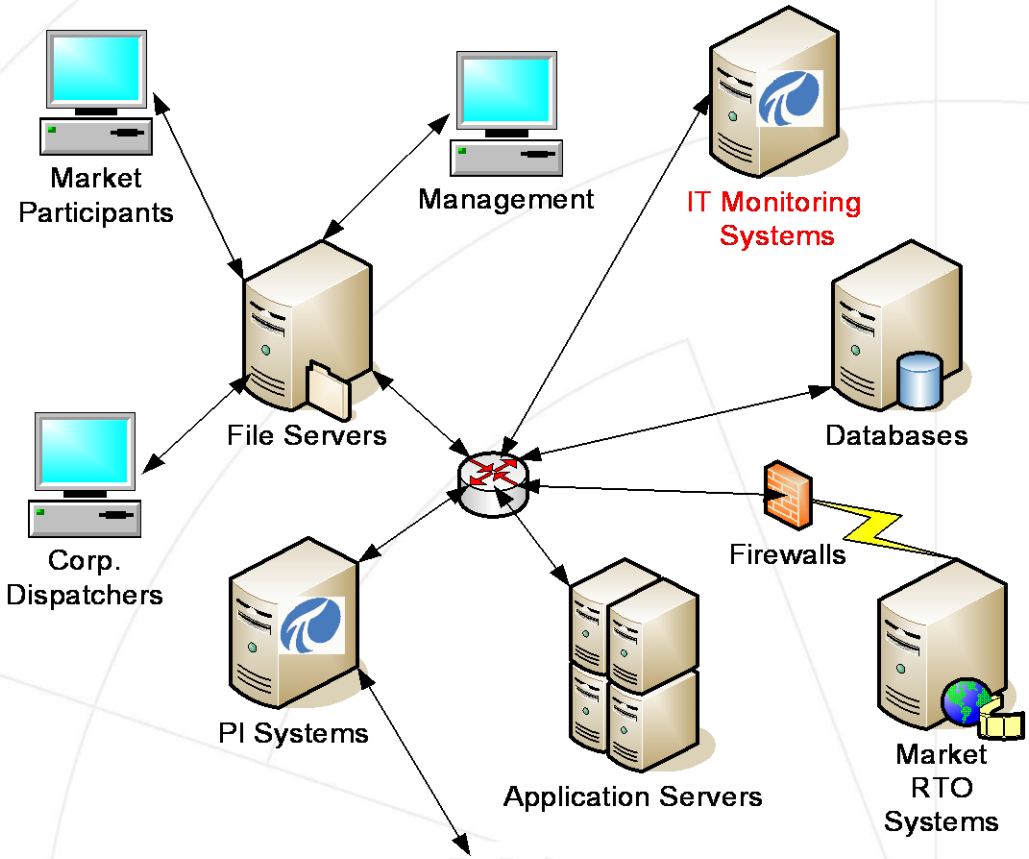


AEP Processbook Menu



IT Monitor of Critical Systems

- **IT Monitoring**
- Corporate and Plant PI Server Monitoring
  - Hardware statistics (CPU Use, Memory Use, Network, etc)
  - PI statistics (Snapshot, Archive, Cache, Interfaces, etc.)
- Backup Generator and Inverter Monitoring
- Computer Center Temperature and Humidity Monitoring
- 70,000 Tags in One Year.
- Used to Measure Business Disruptions for IT's ICP

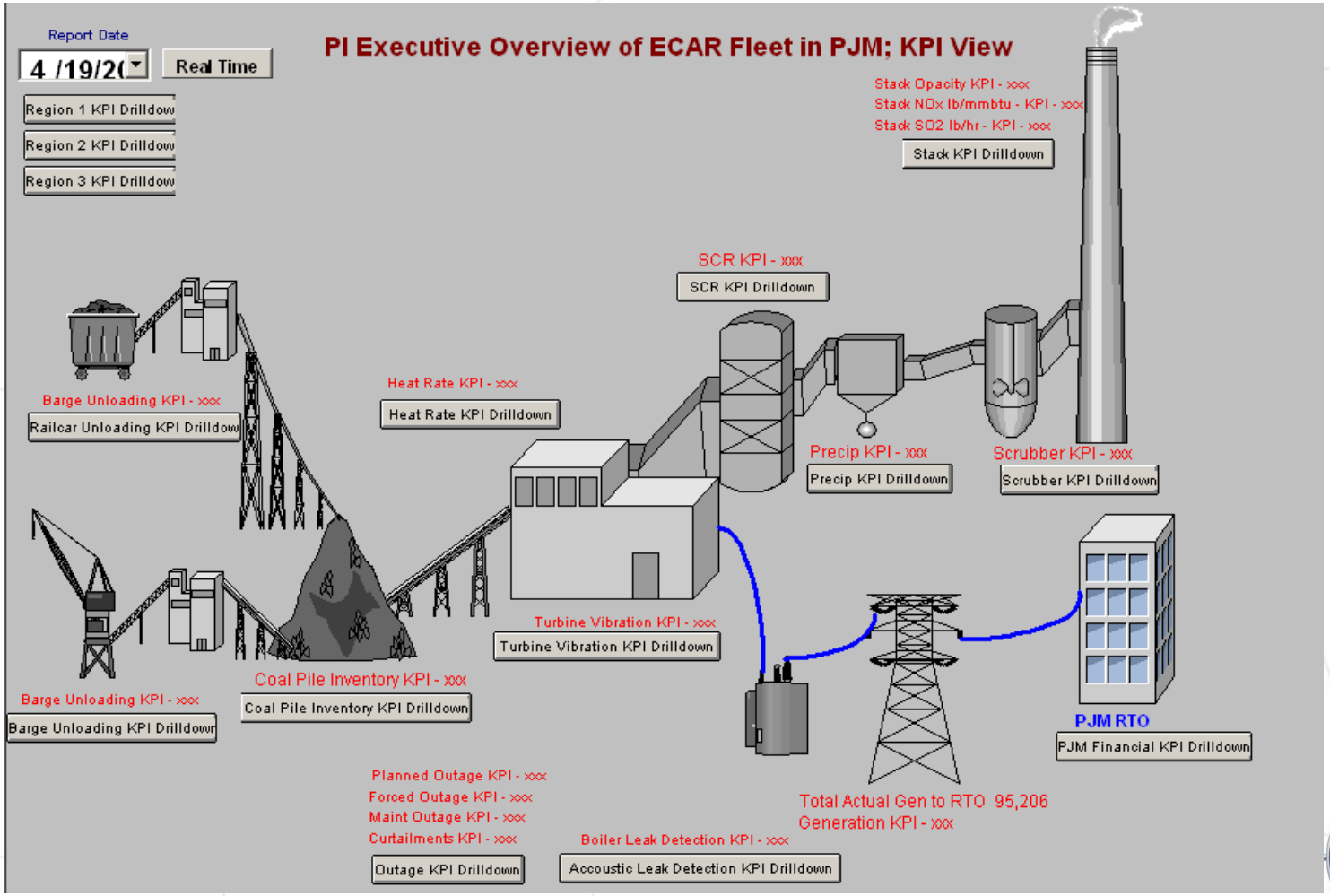


AEP's Culture of Technology

- Use technology to enhance and expand our staff's capability and maintain headcount (FTE's)
- Single point of data entry, and share that data and it's context.
- It's better to have too much data than not have what you need after the fact. When in doubt, store it.
- Simplify the user's interface and experience.
- Get the data to the right person, at the right time.
- Understand the "True Costs" of technology and the data experience.
- Empower the staff to use technology, don't top down constrain them.
  - AEP's Contract – encourage the use of technology; don't discourage it.
  - Transpara grass roots expansion.

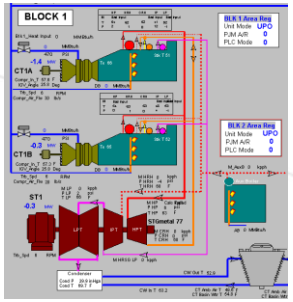
The Road Ahead in PI Development

The Challenge
Provide Those That Need The Data The Big Picture



The Technology Toolbox

- Provide the Technology
  - Eliminate the Roadblocks
- Provide the Drive
- Enable the Team to Get It Done

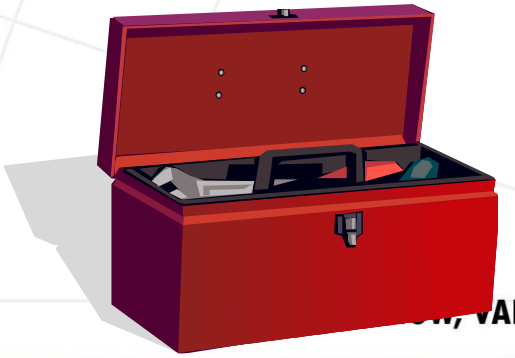


ProcessBook

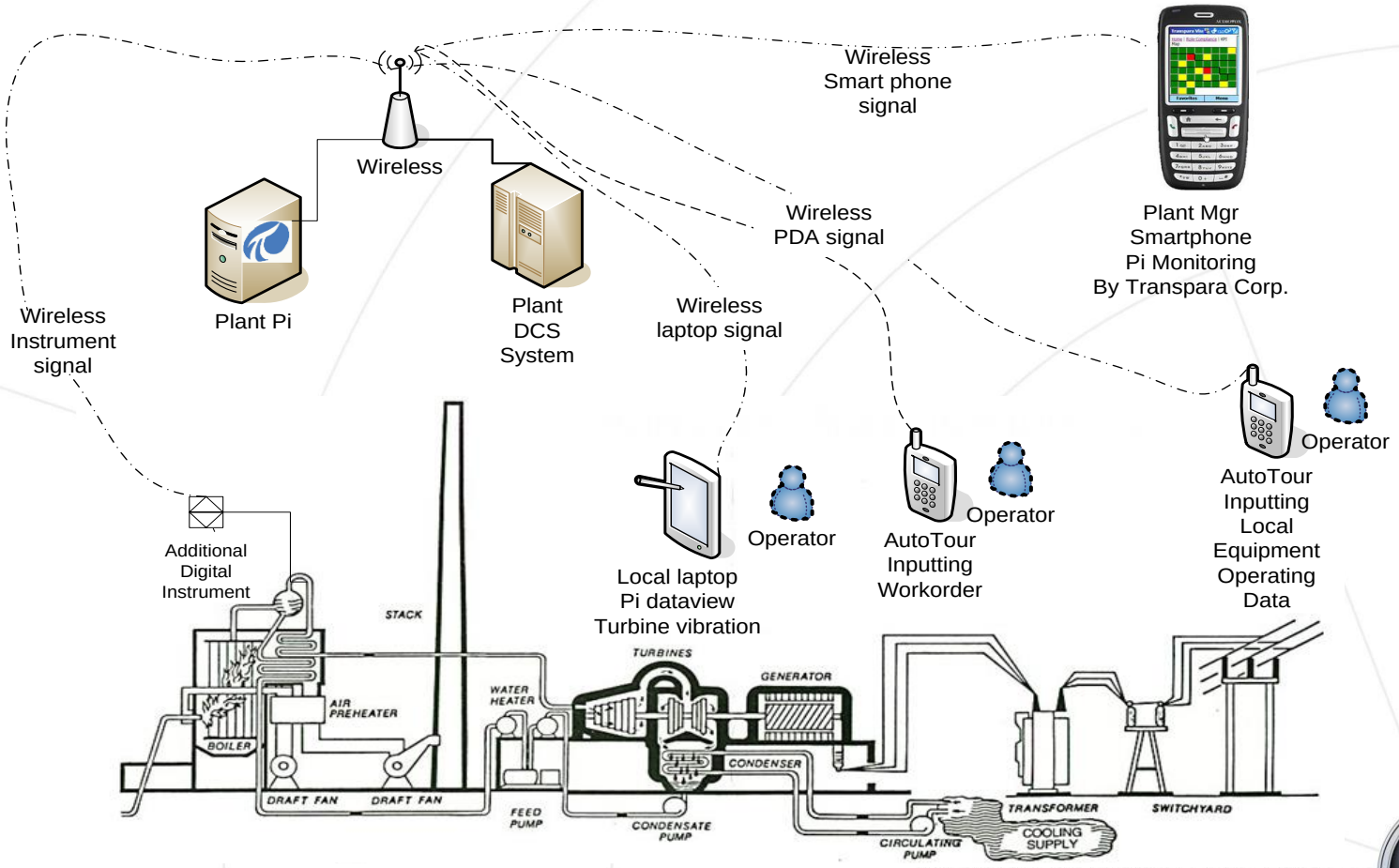
Transpara

PI Server

SharePoint



Wireless Potential in a Power Plant



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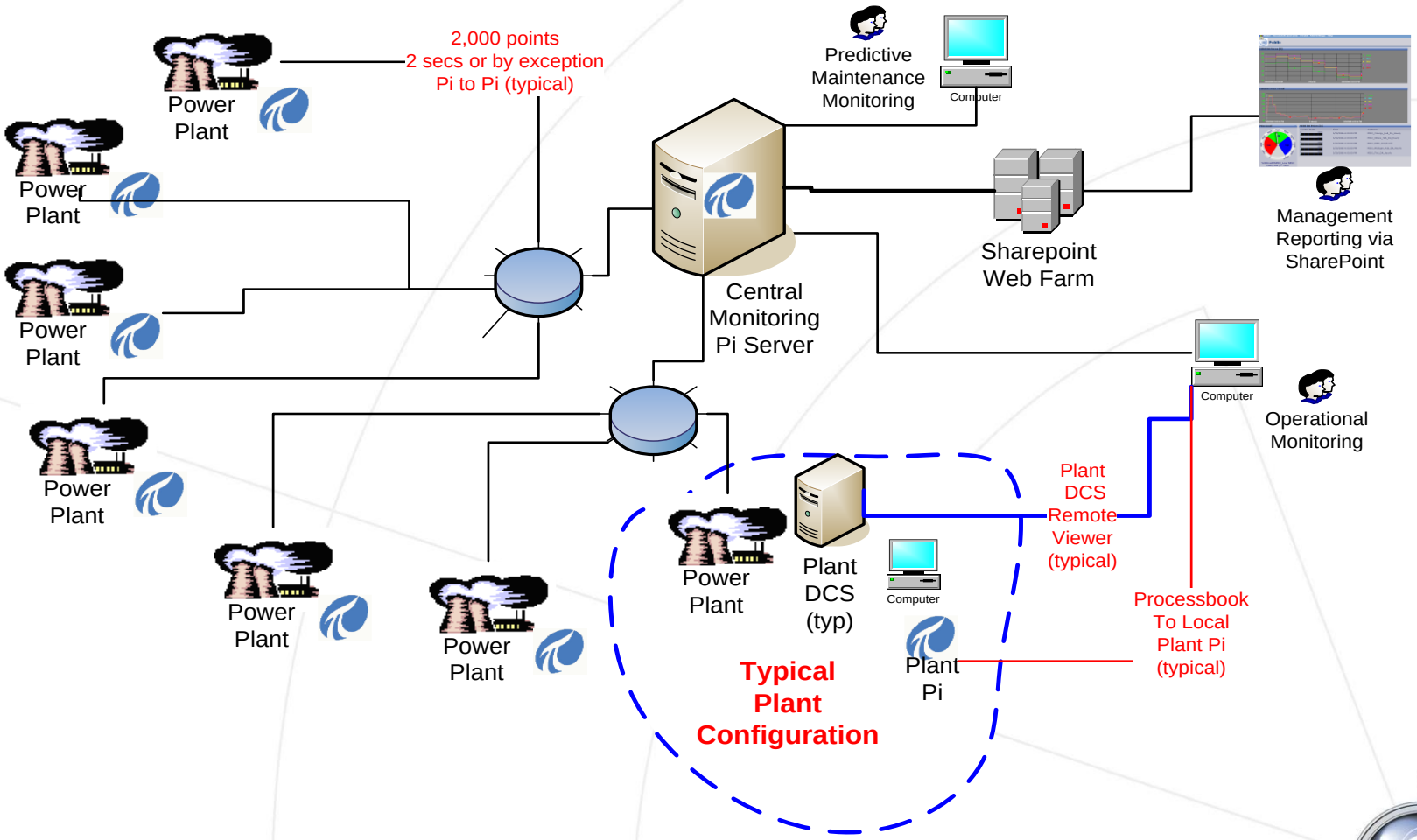
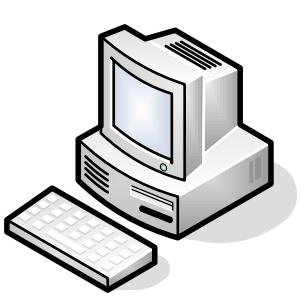
Centralized Data Monitoring

Central Monitoring Network Backbone (typical)



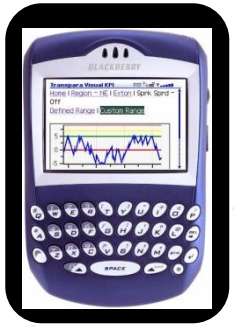
Portable Data – Transpara / PI



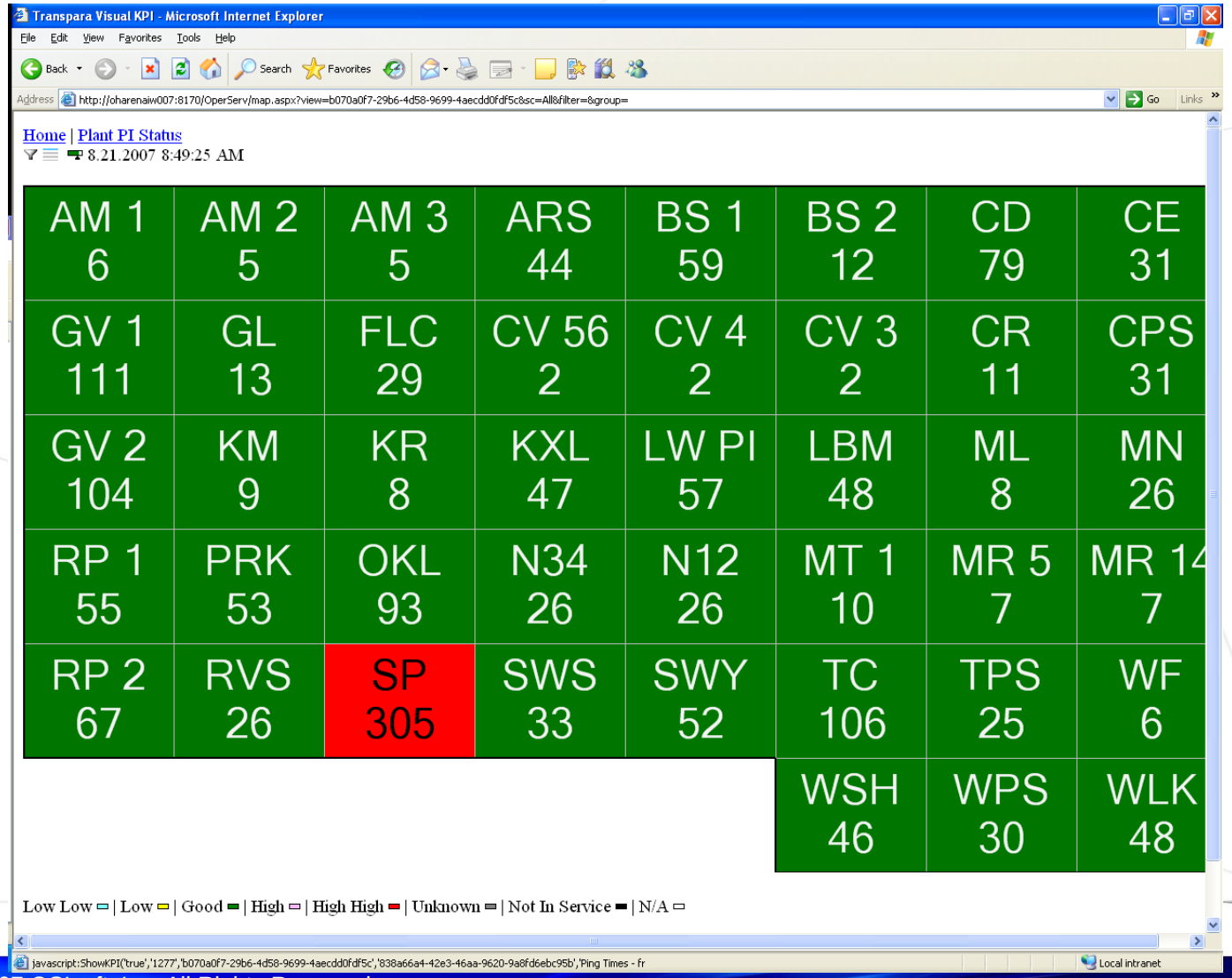
Web Se

XML over HTTP

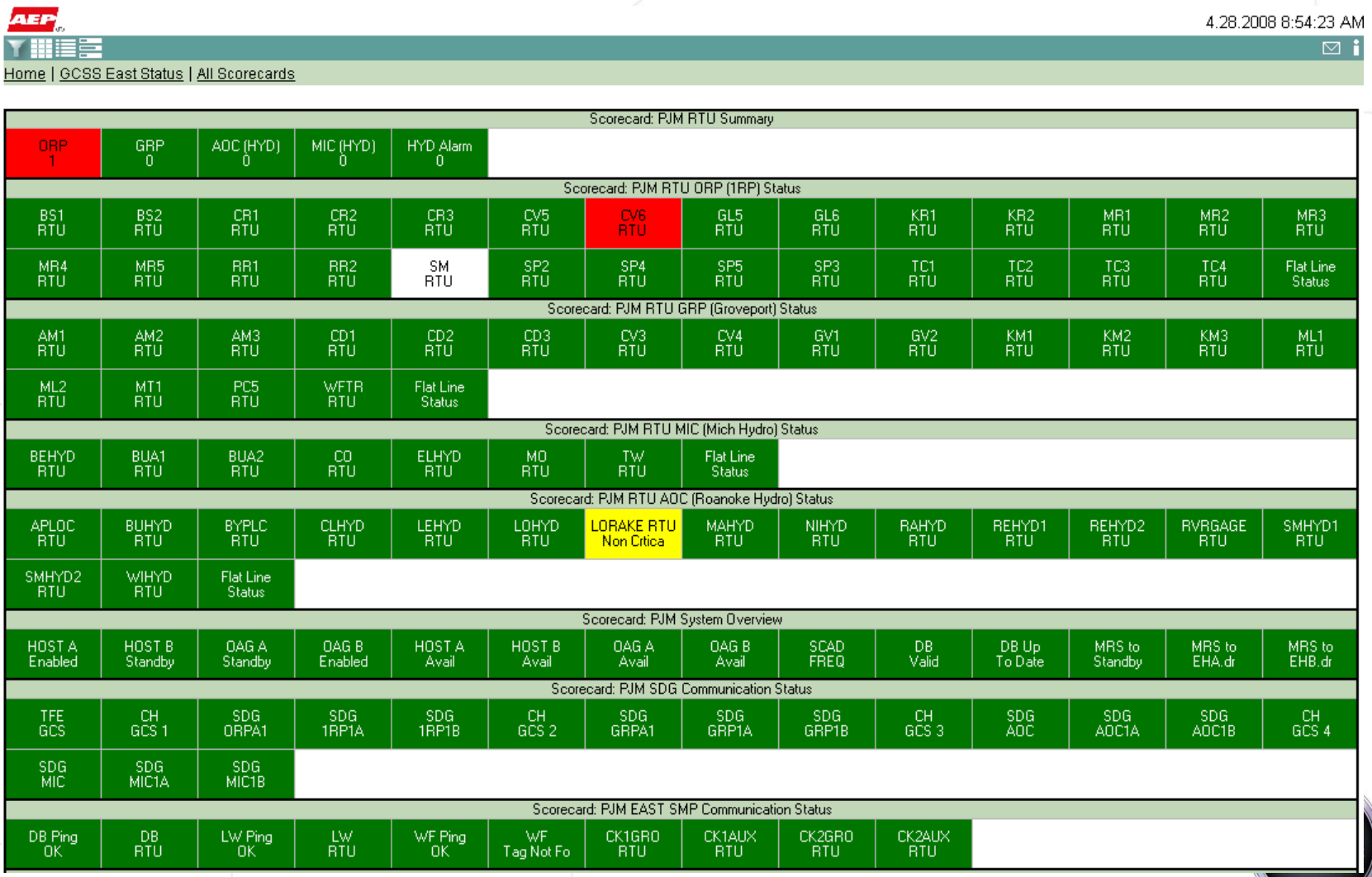
Web Services



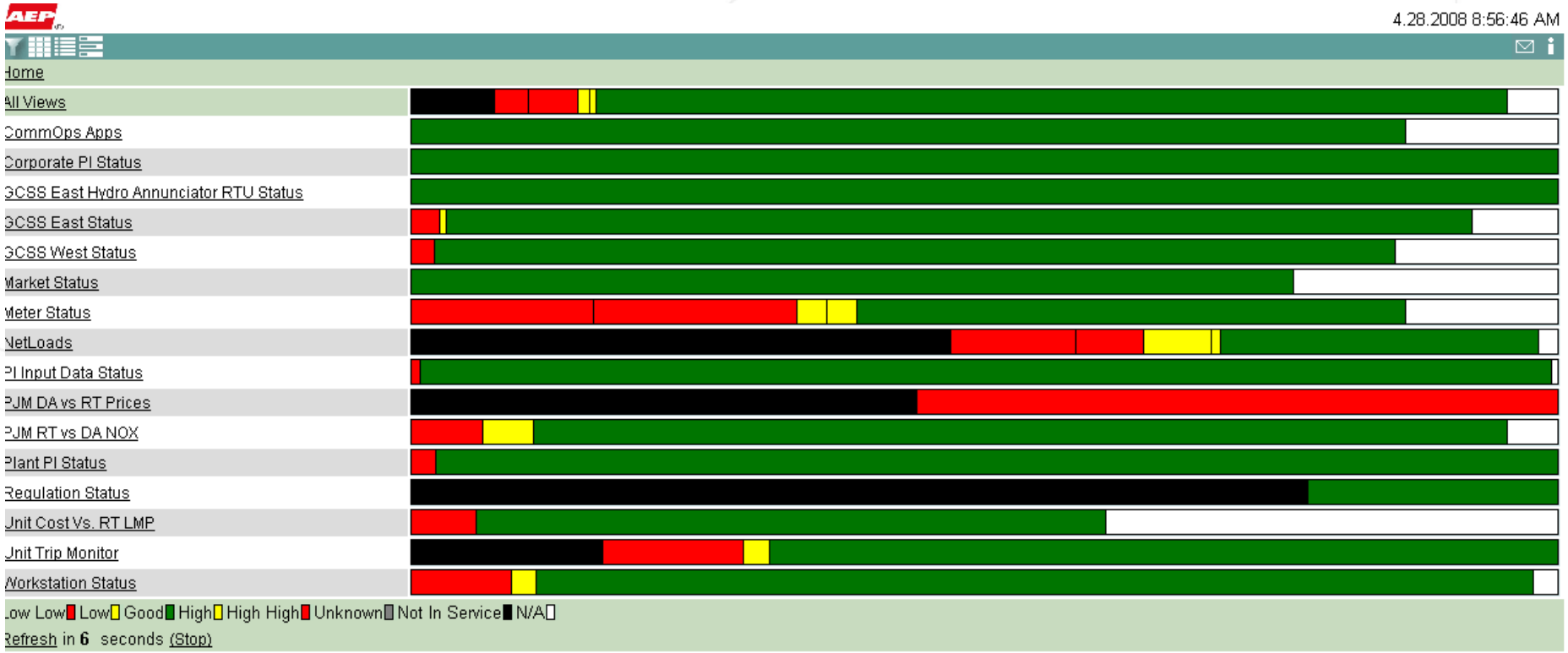
Transpara – Plant PI Ping Status



Monitoring of Critical Systems



KPI Map – Full Overview



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Conclusion

- The Future is Upon Us !
  - We Intend to Use Information Technology to Make Us:
    - More Effective !
    - More Responsive !
    - More Flexible !
    - More Profitable !