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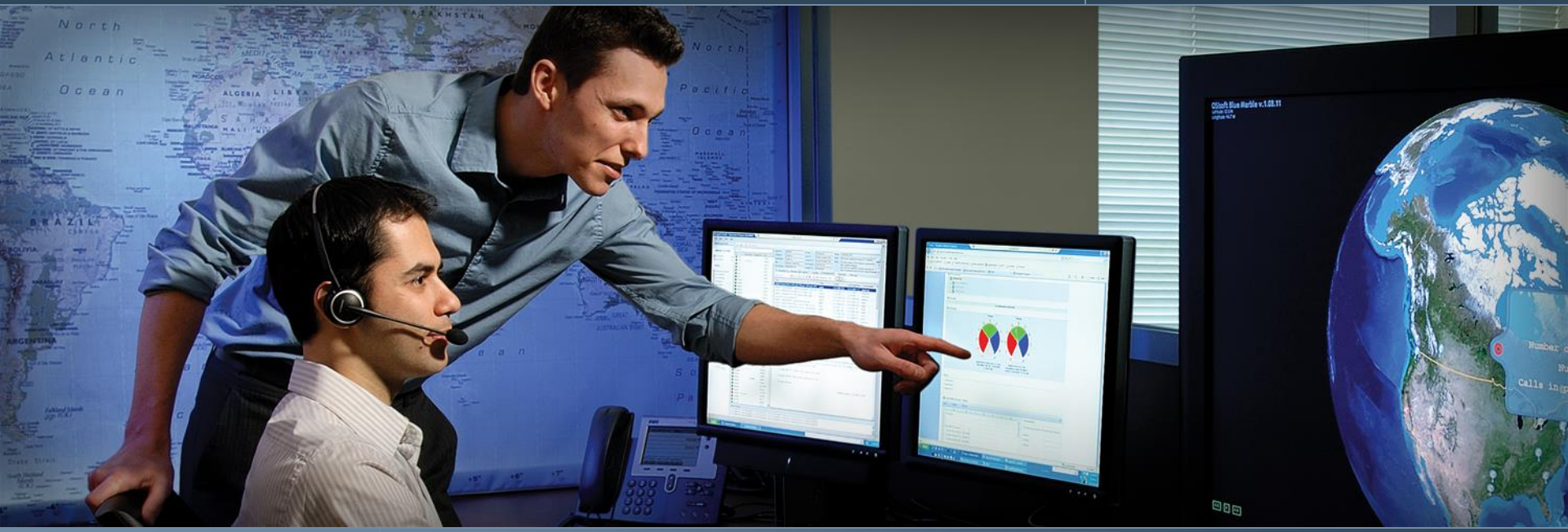
Regional Seminar Series



Value Based Case Studies

Martin Levionnois
Business Executive
OSIsoft, LLC.

28 January 2010

Empowering Business in Real Time.

Introduction

- Highlights from User Conference Papers, Presentations and Articles
- Users Conference Spring 2010 – San Francisco
  - Call for Papers by January 29, 2010
  - April 26-28, 2010

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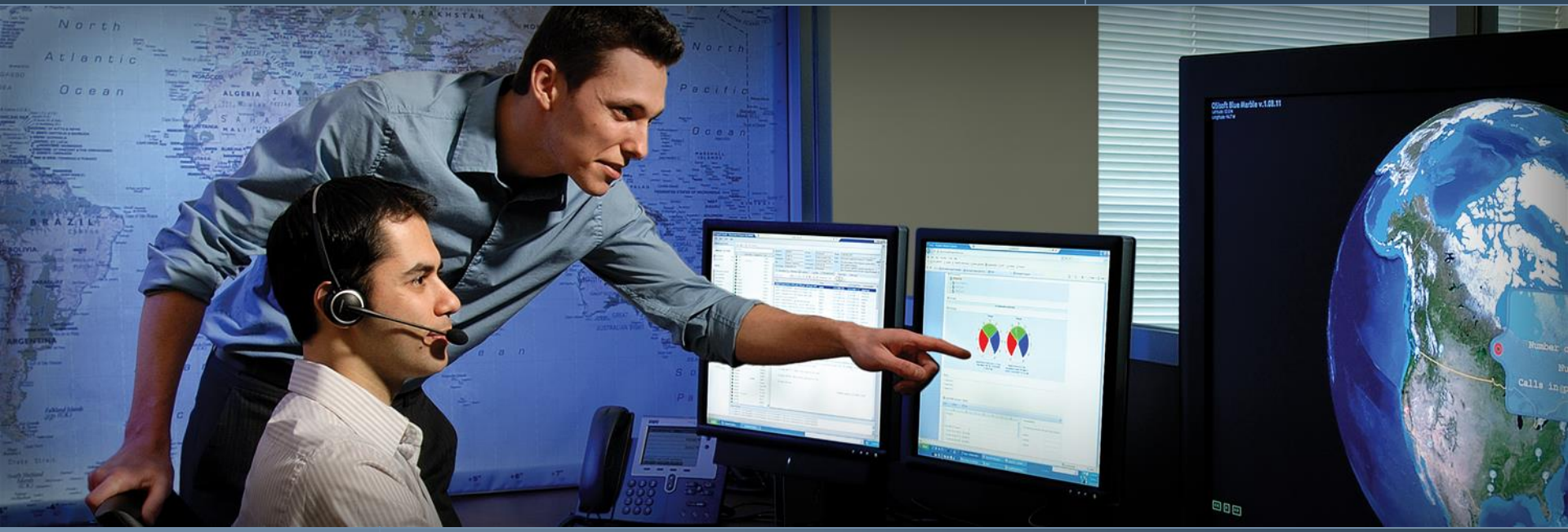
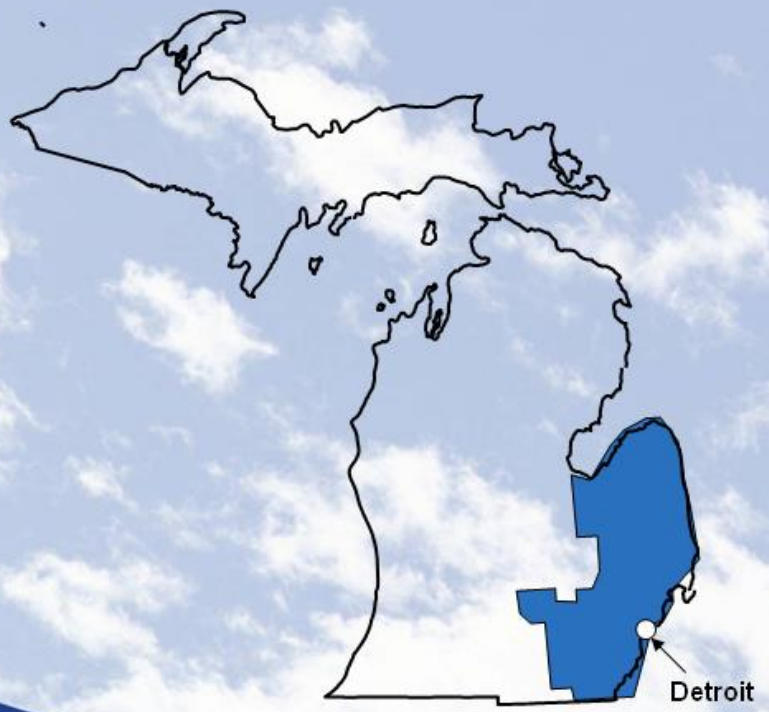


DTE, USA

Empowering Business in Real Time.

DTE Energy - Detroit Edison



Detroit Edison

- Michigan's largest electric utility with 2.2 million customers
- Over 11,080 MW of power generation, primarily coal fired
- 54,000 GWh in electric sales
- $4.7 billion in revenue

DTE Energy - Detroit Edison

3

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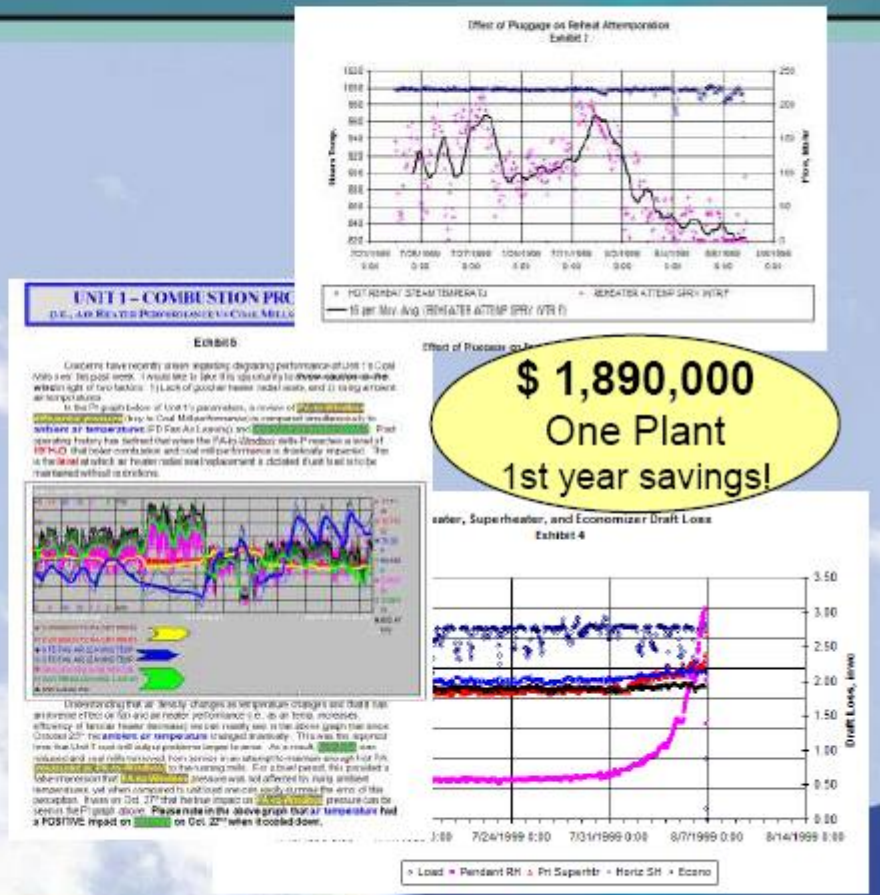
VALUE NOW, VALUE OVER TIME

Empowering Business in Real Time.

The values of accessing raw data !

Raw Data Analysis

- Post trip analysis
- Process monitoring
- Optimization
- Early warning
- Alarming



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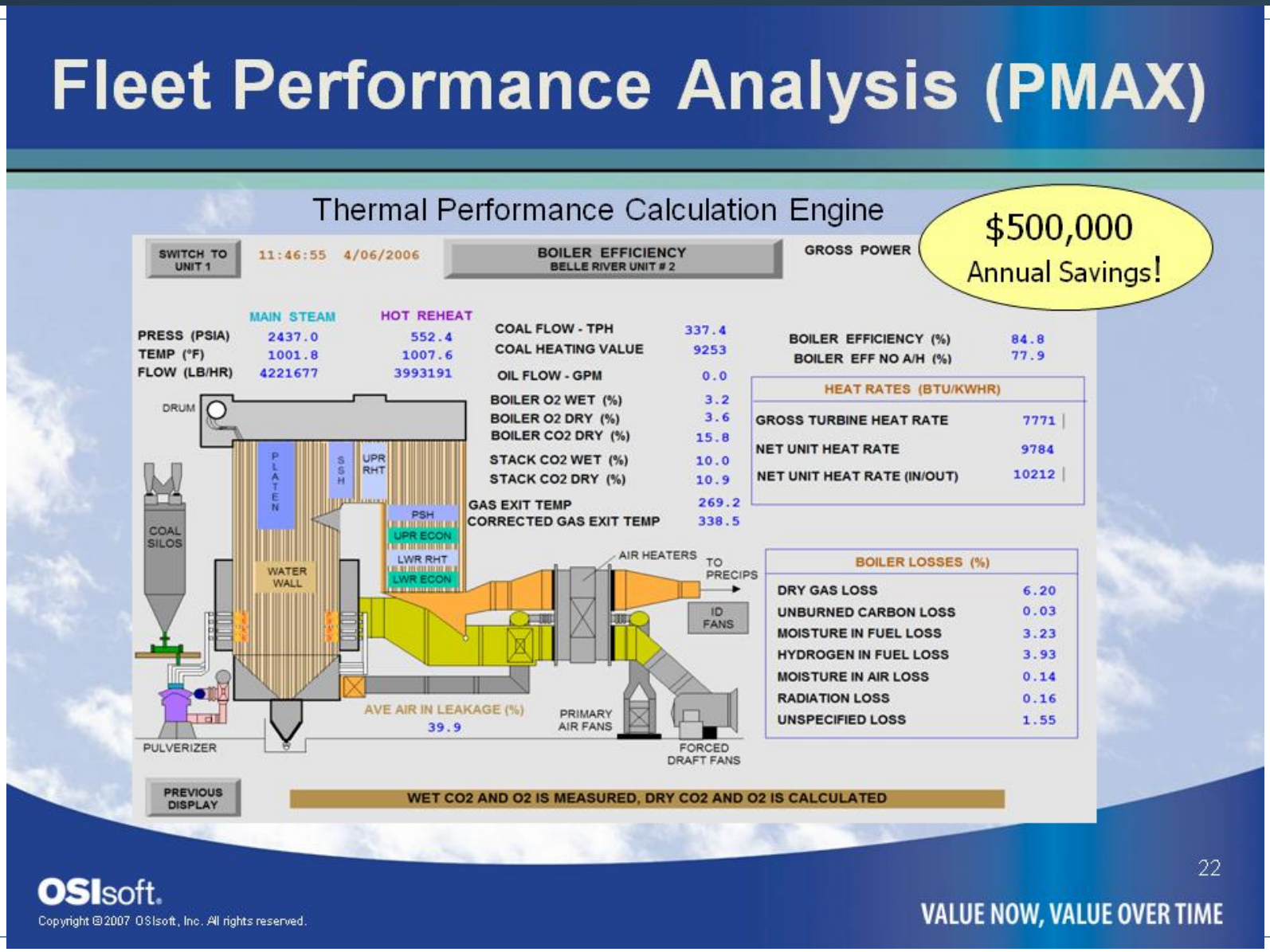
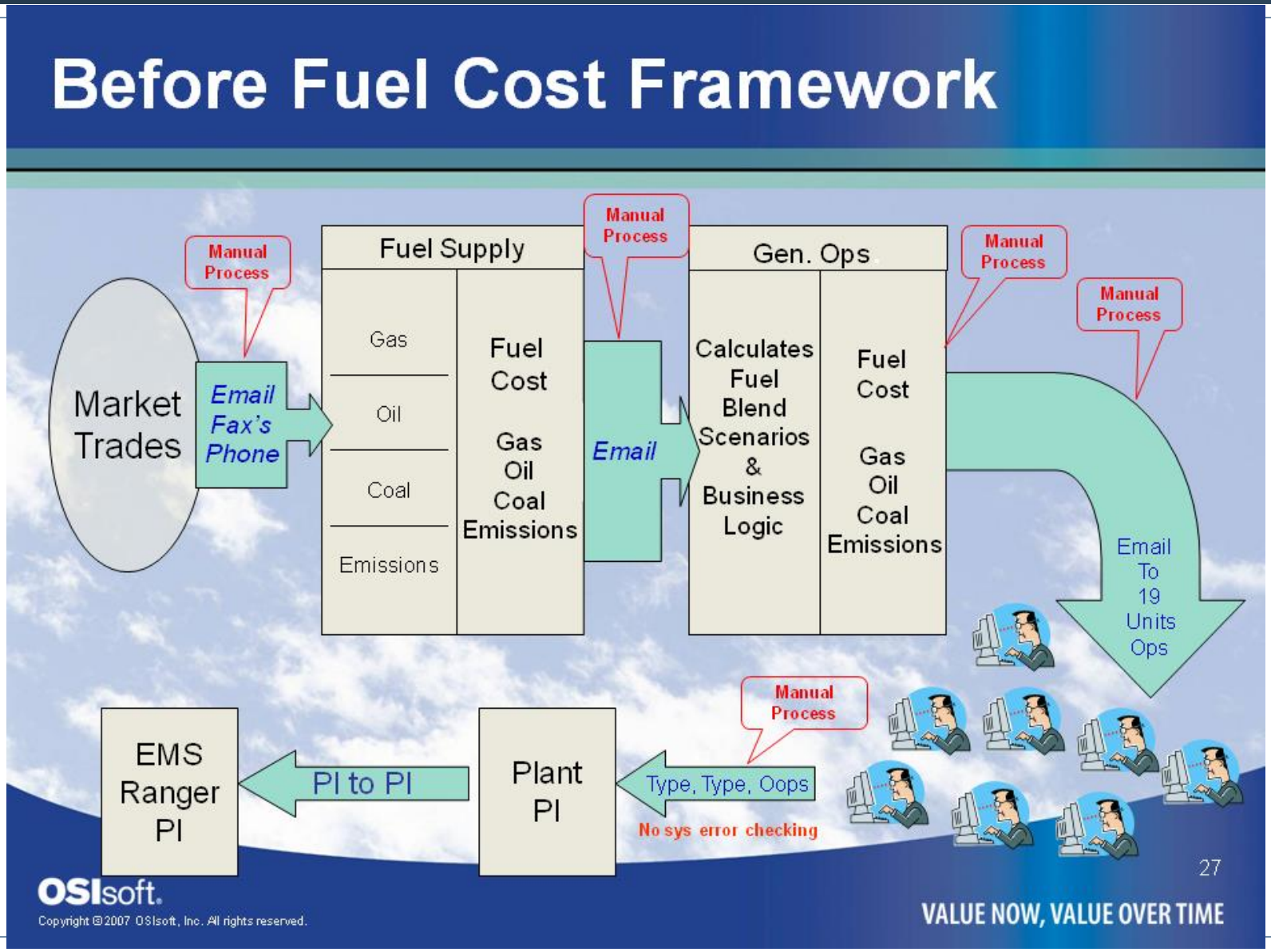
VALUE NOW, VALUE OVER TIME

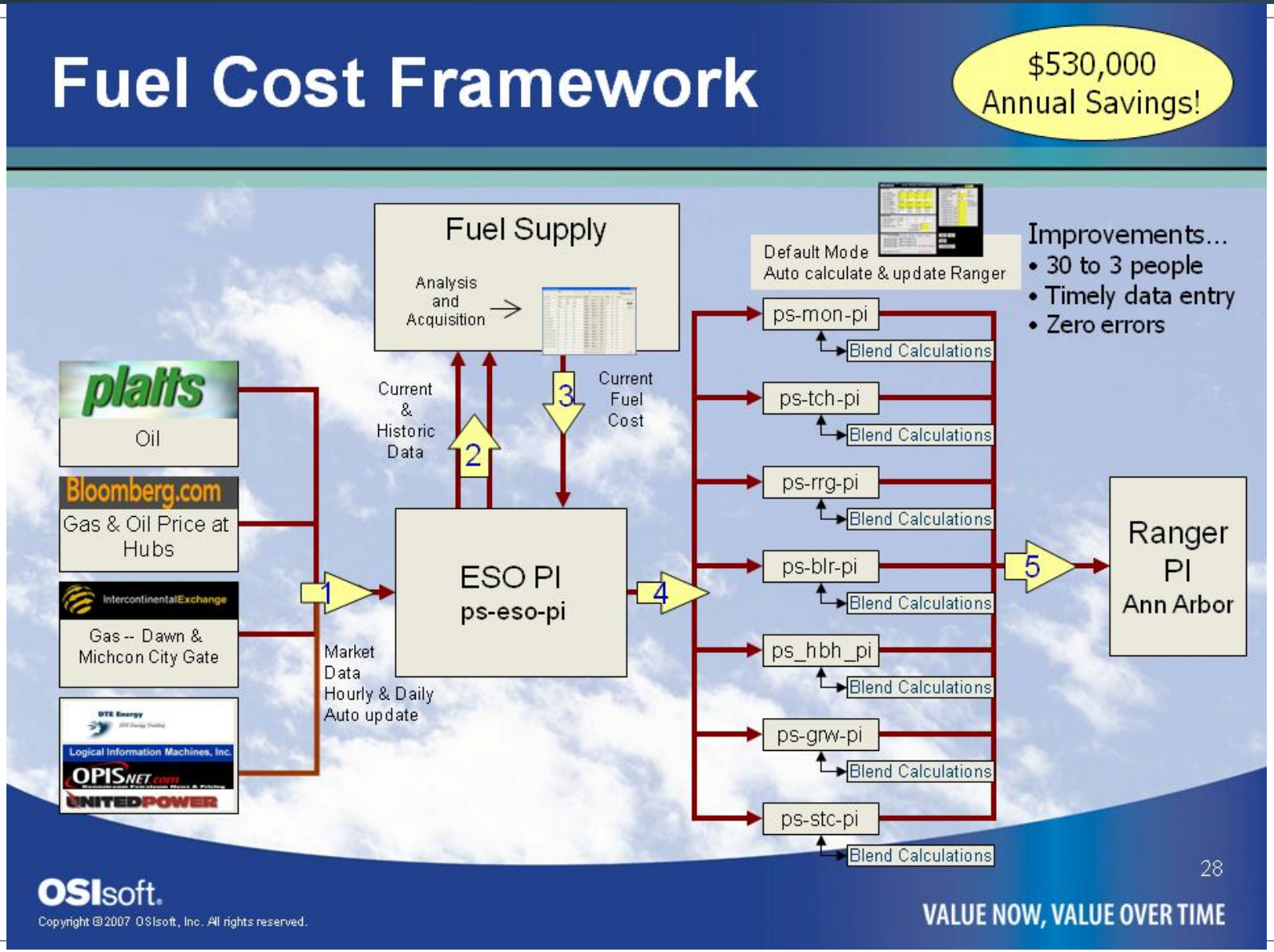
Fleet Performance Analysis



Before fuel cost framework



After fuel cost framework with PI



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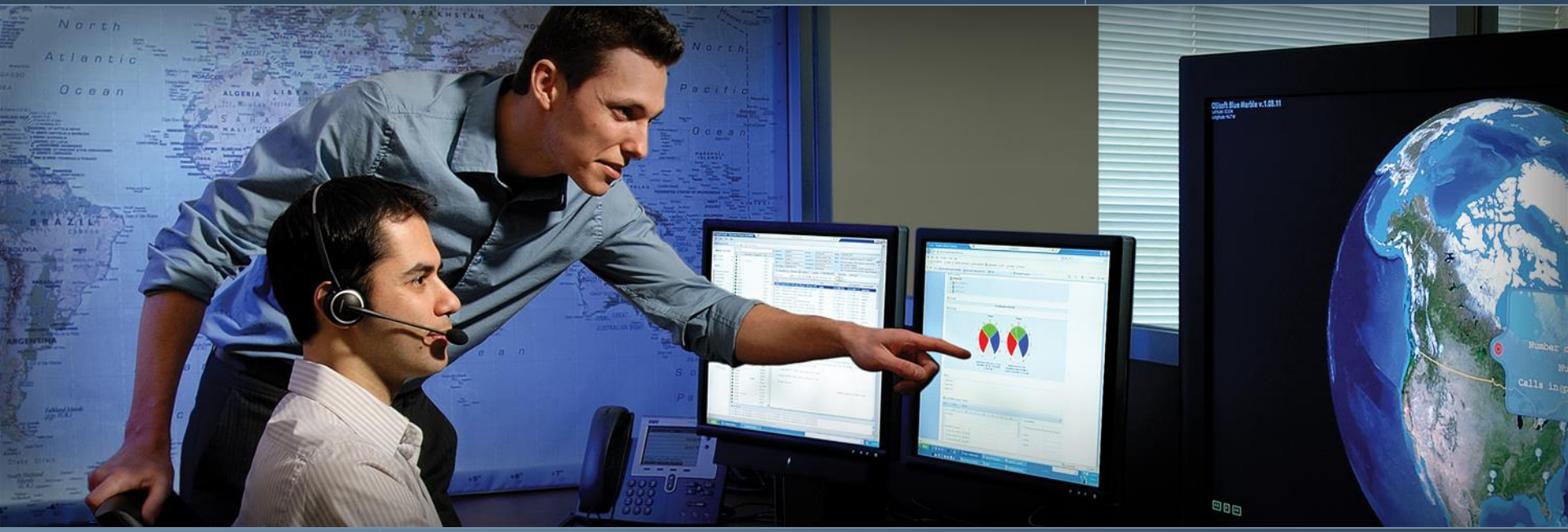


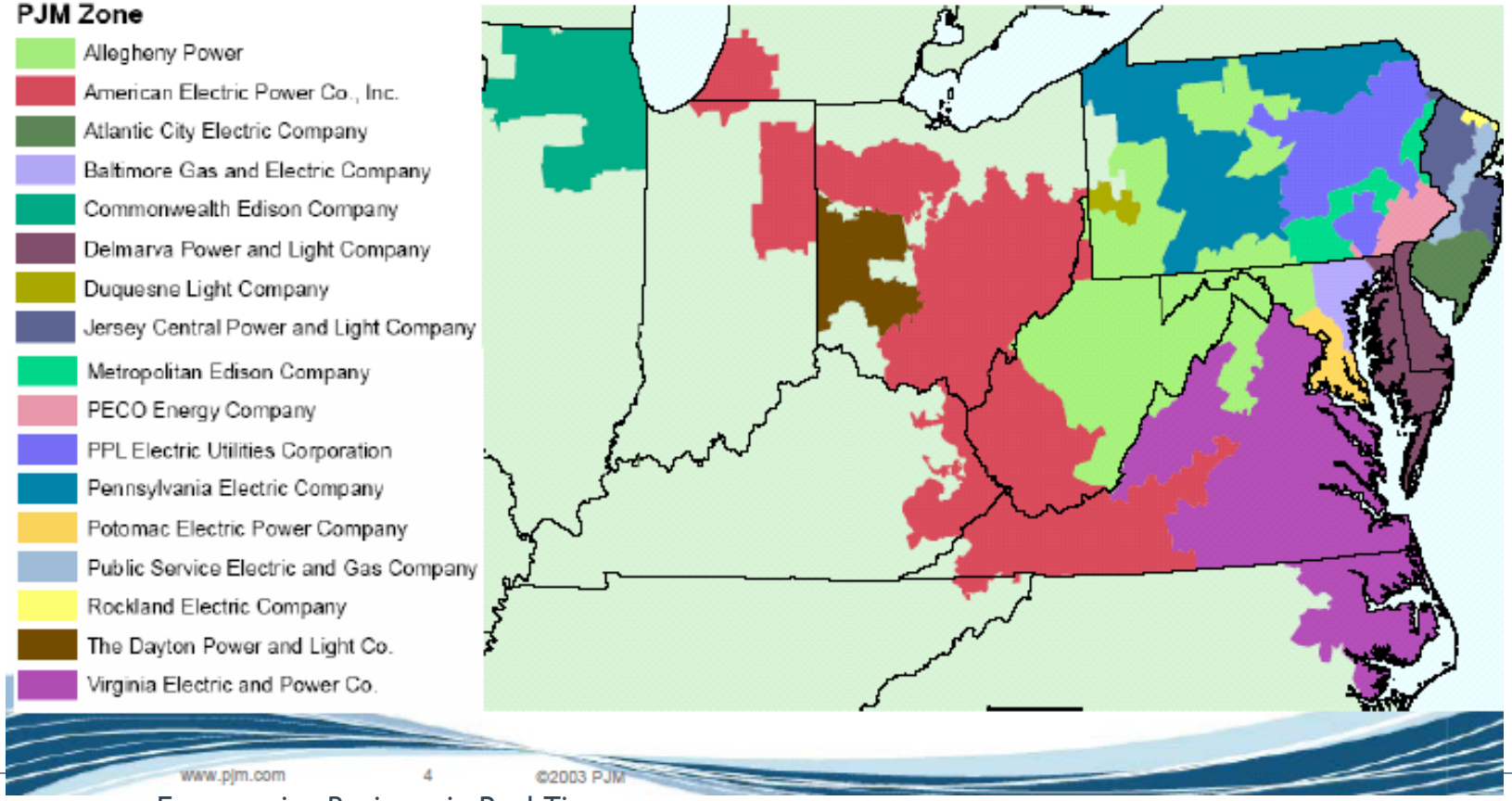
PJM, USA

Empowering Business in Real Time.

PJM

PJM Footprint

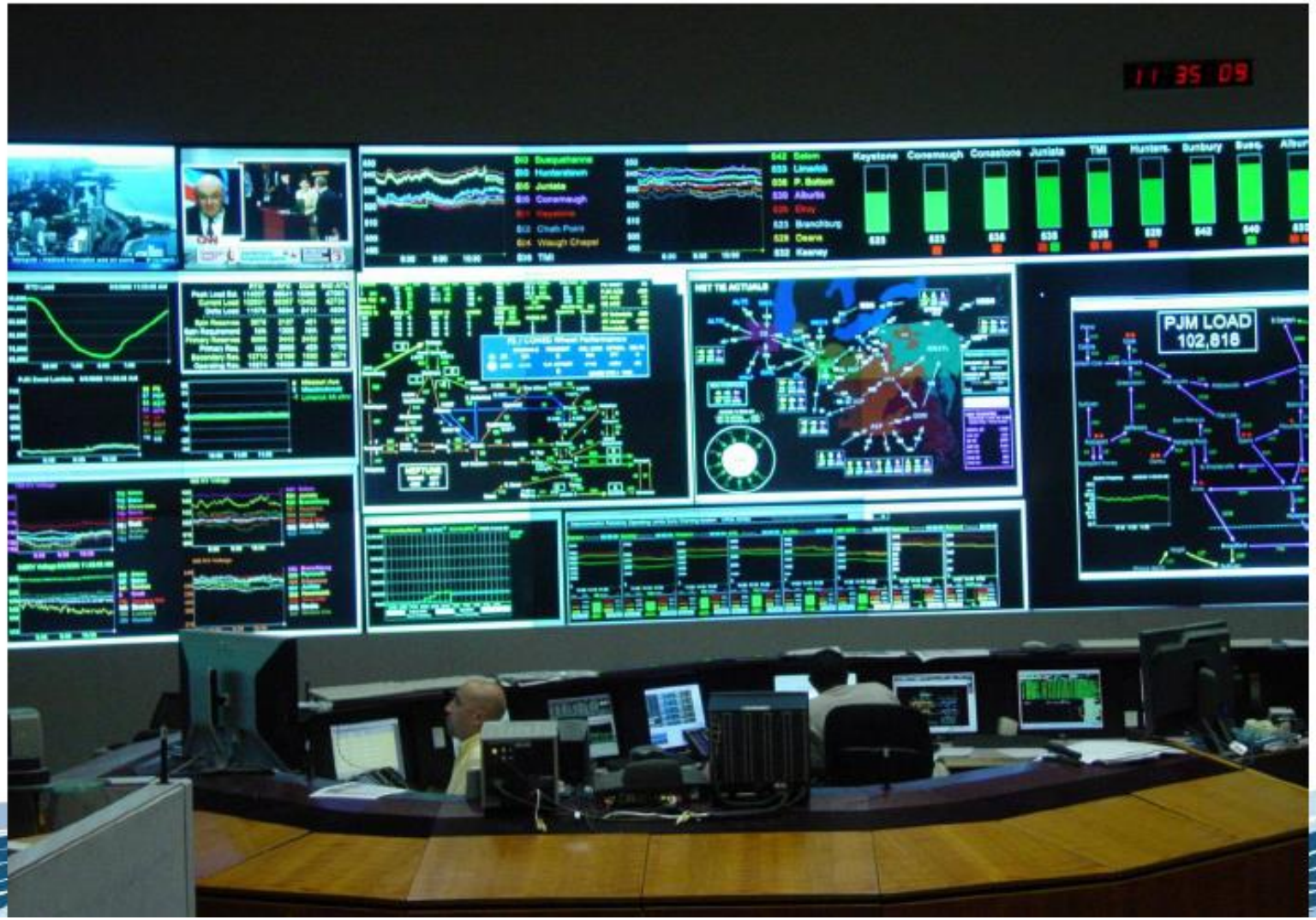
- PJM manages the power grid in 13 states and D.C
- PJM service area has a population over 50 million people



Operations Visibility with PI

pjm

Transmission Video Wall



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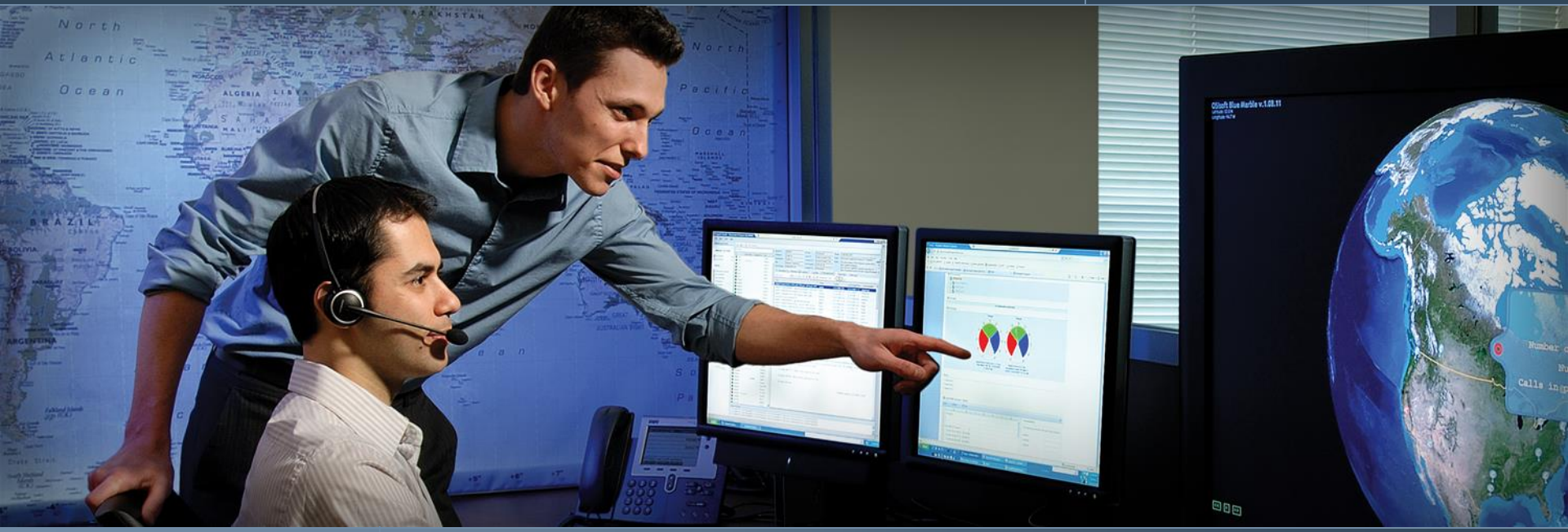
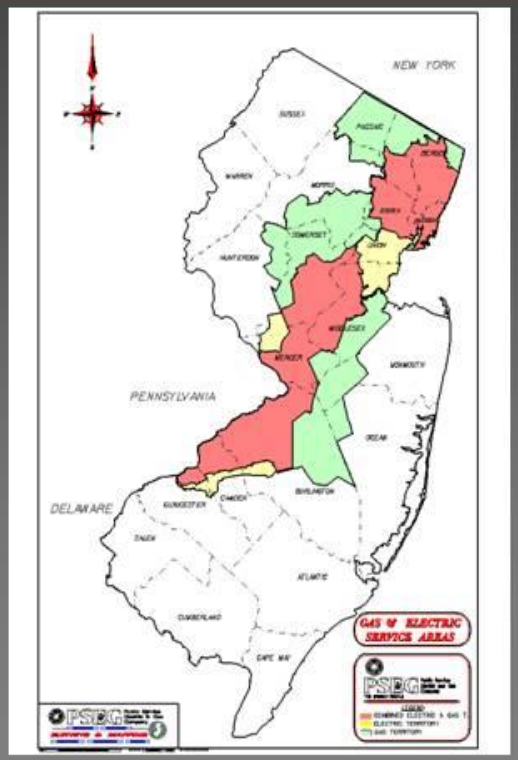


PSE&G, USA

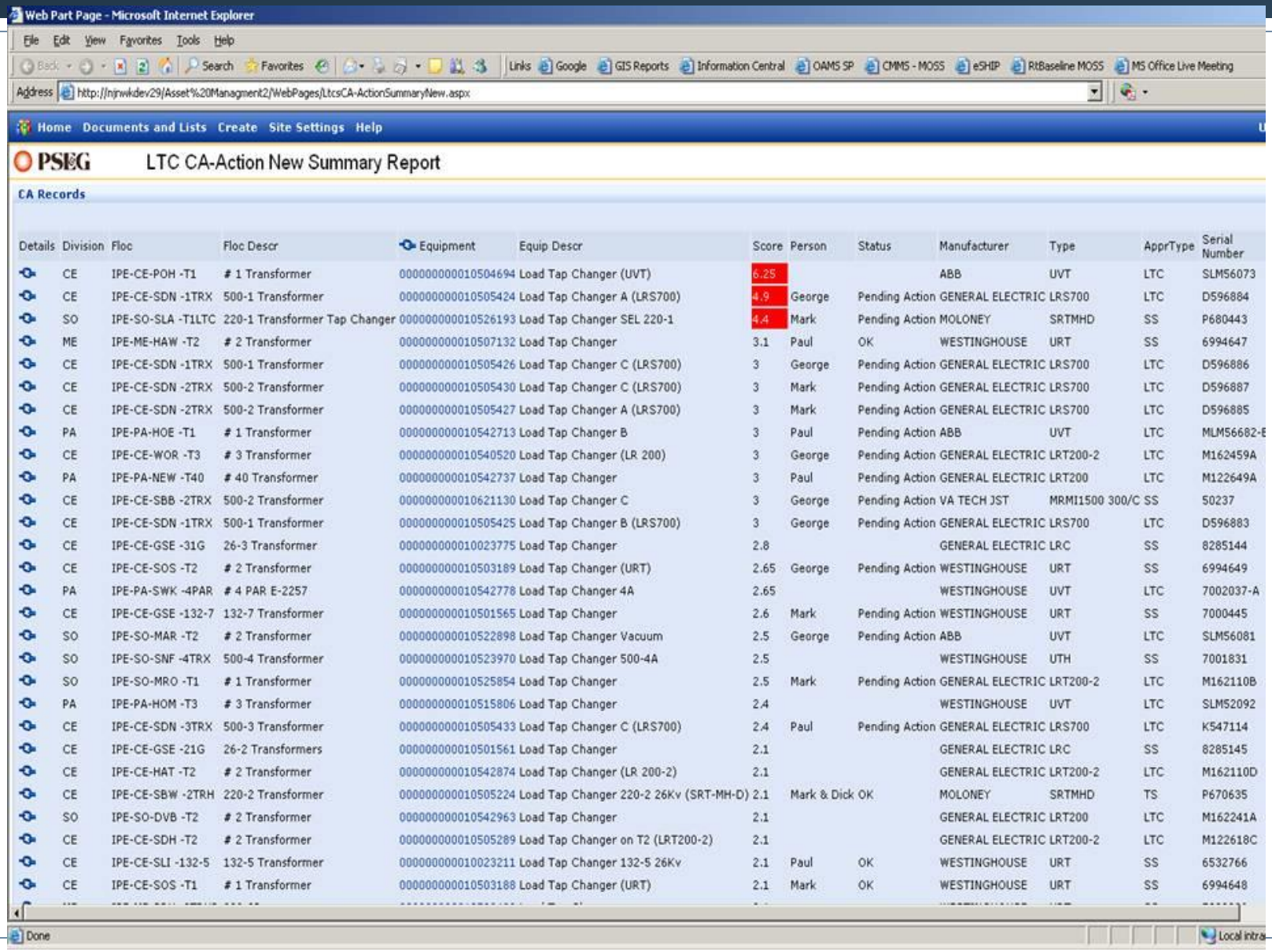
Empowering Business in Real Time.

Background

- Utility Overview
  - New Jersey Based
  - Total Assets ~ $14 Billion
  - Total Revenue ~ $7 Billion
- Service Territory
  - 70% of New Jersey's population
  - 2.0 million Electric customers
  - 1.6 million Gas customers
  - 2,600 Square Miles
- Delivery Implementation
  - 1999 – SAP
  - 2000 - OMS, GIS & CAD
  - 2002 - CMMS



Top 10 with PI



Details	Division	Floc	Floc Descr	Equipment	Equip Descr	Score	Person	Status	Manufacturer	Type	ApprType	Serial Number
	CE	IPE-CE-POH -T1	# 1 Transformer	000000000010504694	Load Tap Changer (UVT)	6.25			ABB	UVT	LTC	SLM56073
	CE	IPE-CE-SDN -1TRX	500-1 Transformer	000000000010505424	Load Tap Changer A (LRS700)	4.9	George	Pending Action	GENERAL ELECTRIC	LRS700	LTC	D596884
	SO	IPE-SO-SLA -T1LTC	220-1 Transformer Tap Changer	000000000010526193	Load Tap Changer SEL 220-1	4.4	Mark	Pending Action	MOLONEY	SRTMHD	SS	P680443
	ME	IPE-ME-HAW -T2	# 2 Transformer	000000000010507132	Load Tap Changer	3.1	Paul	OK	WESTINGHOUSE	URT	SS	6994647
	CE	IPE-CE-SDN -1TRX	500-1 Transformer	000000000010505426	Load Tap Changer C (LRS700)	3	George	Pending Action	GENERAL ELECTRIC	LRS700	LTC	D596886
	CE	IPE-CE-SDN -2TRX	500-2 Transformer	000000000010505430	Load Tap Changer C (LRS700)	3	Mark	Pending Action	GENERAL ELECTRIC	LRS700	LTC	D596887
	CE	IPE-CE-SDN -2TRX	500-2 Transformer	000000000010505427	Load Tap Changer A (LRS700)	3	Mark	Pending Action	GENERAL ELECTRIC	LRS700	LTC	D596885
	PA	IPE-PA-HOE -T1	# 1 Transformer	000000000010542713	Load Tap Changer B	3	Paul	Pending Action	ABB	UVT	LTC	MLM56682-E
	CE	IPE-CE-WOR -T3	# 3 Transformer	000000000010540520	Load Tap Changer (LR 200)	3	George	Pending Action	GENERAL ELECTRIC	LRT200-2	LTC	M162459A
	PA	IPE-PA-NEW -T40	# 40 Transformer	000000000010542737	Load Tap Changer	3	Paul	Pending Action	GENERAL ELECTRIC	LRT200	LTC	M122649A
	CE	IPE-CE-SBB -2TRX	500-2 Transformer	000000000010621130	Load Tap Changer C	3	George	Pending Action	VA TECH JST	MRMI1500 300/C	SS	50237
	CE	IPE-CE-SDN -1TRX	500-1 Transformer	000000000010505425	Load Tap Changer B (LRS700)	3	George	Pending Action	GENERAL ELECTRIC	LRS700	LTC	D596883
	CE	IPE-CE-GSE -31G	26-3 Transformer	000000000010023775	Load Tap Changer	2.8			GENERAL ELECTRIC	LRC	SS	8285144
	CE	IPE-CE-SOS -T2	# 2 Transformer	000000000010503189	Load Tap Changer (URT)	2.65	George	Pending Action	WESTINGHOUSE	URT	SS	6994649
	PA	IPE-PA-SWK -4PAR	# 4 PAR E-2257	000000000010542778	Load Tap Changer 4A	2.65			WESTINGHOUSE	UVT	LTC	7002037-A
	CE	IPE-CE-GSE -132-7	132-7 Transformer	000000000010501565	Load Tap Changer	2.6	Mark	Pending Action	WESTINGHOUSE	URT	SS	7000445
	SO	IPE-SO-MAR -T2	# 2 Transformer	000000000010522898	Load Tap Changer Vacuum	2.5	George	Pending Action	ABB	UVT	LTC	SLM56081
	SO	IPE-SO-SNF -4TRX	500-4 Transformer	000000000010523970	Load Tap Changer 500-4A	2.5			WESTINGHOUSE	UTH	SS	7001831
	SO	IPE-SO-MRO -T1	# 1 Transformer	000000000010525854	Load Tap Changer	2.5	Mark	Pending Action	GENERAL ELECTRIC	LRT200-2	LTC	M162110B
	PA	IPE-PA-HOM -T3	# 3 Transformer	000000000010515806	Load Tap Changer	2.4			WESTINGHOUSE	UVT	LTC	SLM52092
	CE	IPE-CE-SDN -3TRX	500-3 Transformer	000000000010505433	Load Tap Changer C (LRS700)	2.4	Paul	Pending Action	GENERAL ELECTRIC	LRS700	LTC	K547114
	CE	IPE-CE-GSE -21G	26-2 Transformers	000000000010501561	Load Tap Changer	2.1			GENERAL ELECTRIC	LRC	SS	8285145
	CE	IPE-CE-HAT -T2	# 2 Transformer	000000000010542874	Load Tap Changer (LR 200-2)	2.1			GENERAL ELECTRIC	LRT200-2	LTC	M162110D
	CE	IPE-CE-SBW -2TRH	220-2 Transformer	000000000010505224	Load Tap Changer 220-2 26Kv (SRT-MH-D)	2.1	Mark & Dick	OK	MOLONEY	SRTMHD	TS	P670635
	SO	IPE-SO-DVB -T2	# 2 Transformer	000000000010542963	Load Tap Changer	2.1			GENERAL ELECTRIC	LRT200	LTC	M162241A
	CE	IPE-CE-SDH -T2	# 2 Transformer	000000000010505289	Load Tap Changer on T2 (LRT200-2)	2.1			GENERAL ELECTRIC	LRT200-2	LTC	M122618C
	CE	IPE-CE-SLI -132-5	132-5 Transformer	000000000010023211	Load Tap Changer 132-5 26Kv	2.1	Paul	OK	WESTINGHOUSE	URT	SS	6532766
	CE	IPE-CE-SOS -T1	# 1 Transformer	000000000010503188	Load Tap Changer (URT)	2.1	Mark	OK	WESTINGHOUSE	URT	SS	6994648

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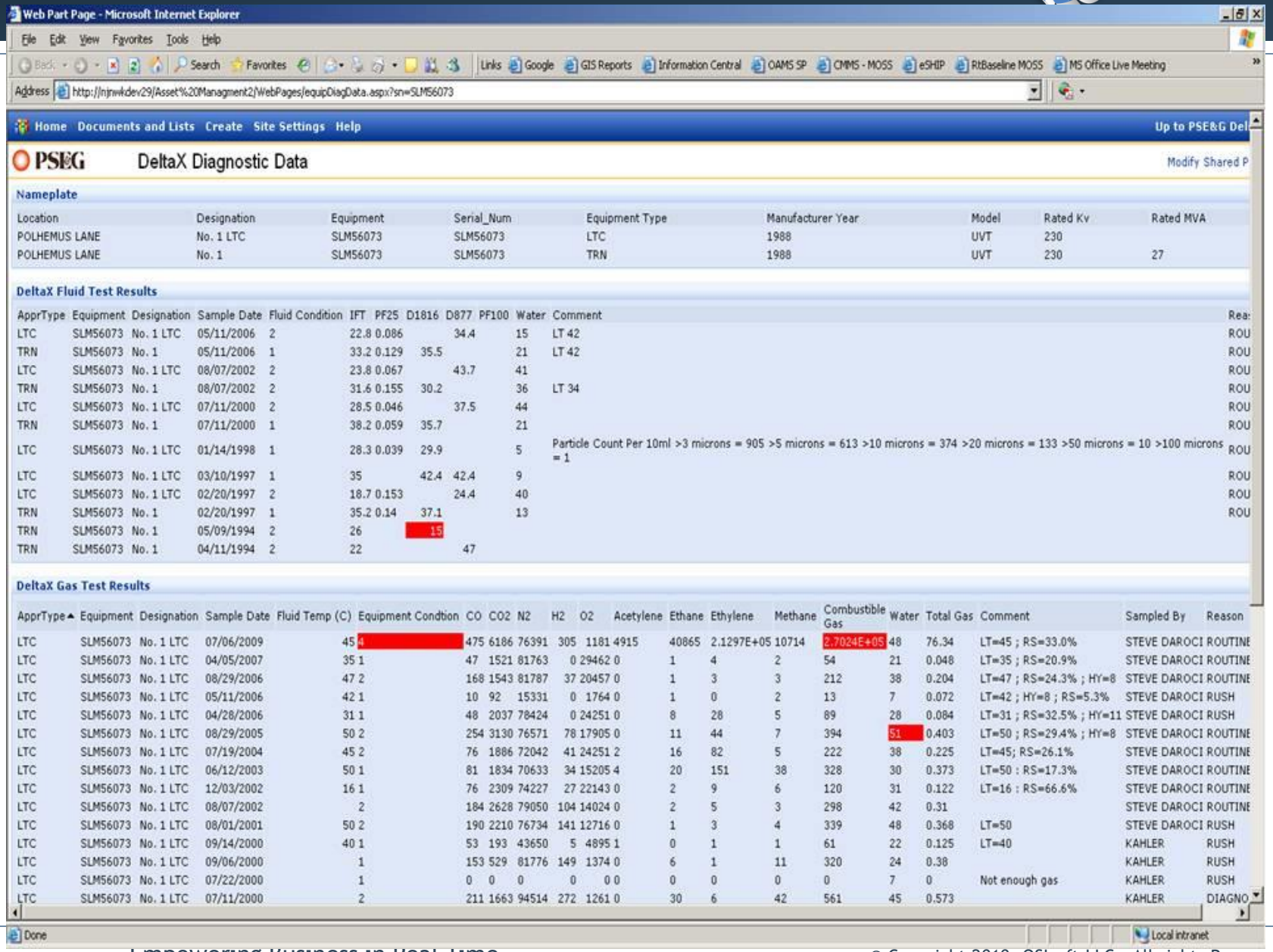
Drilling down to the root cause



Web Part Page - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://njnwkdev29/Asset%20Managment2/WebPages/equipDiagData.aspx?sn=SLM56073

Home Documents and Lists Create Site Settings Help

PSEG DeltaX Diagnostic Data

Modify Shared P

Nameplate

Location	Designation	Equipment	Serial_Num	Equipment Type	Manufacturer Year	Model	Rated Kv	Rated MVA
POLHEMUS LANE	No. 1 LTC	SLM56073	SLM56073	LTC	1988	UVT	230	
POLHEMUS LANE	No. 1	SLM56073	SLM56073	TRN	1988	UVT	230	27

DeltaX Fluid Test Results

ApprType	Equipment	Designation	Sample Date	Fluid Condition	IFT	PF25	D1816	D877	PF100	Water	Comment	Rea
LTC	SLM56073	No. 1 LTC	05/11/2006	2	22.8	0.086		34.4		15	LT 42	ROU
TRN	SLM56073	No. 1	05/11/2006	1	33.2	0.129	35.5			21	LT 42	ROU
LTC	SLM56073	No. 1 LTC	08/07/2002	2	23.8	0.067		43.7		41		ROU
TRN	SLM56073	No. 1	08/07/2002	2	31.6	0.155	30.2			36	LT 34	ROU
LTC	SLM56073	No. 1 LTC	07/11/2000	2	28.5	0.046		37.5		44		ROU
TRN	SLM56073	No. 1	07/11/2000	1	38.2	0.059	35.7			21		ROU
LTC	SLM56073	No. 1 LTC	01/14/1998	1	28.3	0.039	29.9			5	Particle Count Per 10ml >3 microns = 905 >5 microns = 613 >10 microns = 374 >20 microns = 133 >50 microns = 10 >100 microns = 1	ROU
LTC	SLM56073	No. 1 LTC	03/10/1997	1	35		42.4	42.4		9		ROU
LTC	SLM56073	No. 1 LTC	02/20/1997	2	18.7	0.153		24.4		40		ROU
TRN	SLM56073	No. 1	02/20/1997	1	35.2	0.14	37.1			13		ROU
TRN	SLM56073	No. 1	05/09/1994	2	26		15					
TRN	SLM56073	No. 1	04/11/1994	2	22			47				

DeltaX Gas Test Results

ApprType	Equipment	Designation	Sample Date	Fluid Temp (C)	Equipment Condtion	CO	CO2	N2	H2	O2	Acetylene	Ethane	Ethylene	Methane	Combustible Gas	Water	Total Gas	Comment	Sampled By	Reason
LTC	SLM56073	No. 1 LTC	07/06/2009	45	4	475	6186	76391	305	1181	4915	40865	2.1297E+05	10714	2.7024E+05	48	76.34	LT=45 ; RS=33.0%	STEVE DAROCI	ROUTINE
LTC	SLM56073	No. 1 LTC	04/05/2007	35	1	47	1521	81763	0	29462	0	1	4	2	54	21	0.048	LT=35 ; RS=20.9%	STEVE DAROCI	ROUTINE
LTC	SLM56073	No. 1 LTC	08/29/2006	47	2	168	1543	81787	37	20457	0	1	3	3	212	38	0.204	LT=47 ; RS=24.3% ; HY=8	STEVE DAROCI	ROUTINE
LTC	SLM56073	No. 1 LTC	05/11/2006	42	1	10	92	15331	0	1764	0	1	0	2	13	7	0.072	LT=42 ; HY=8 ; RS=5.3%	STEVE DAROCI	RUSH
LTC	SLM56073	No. 1 LTC	04/28/2006	31	1	48	2037	78424	0	24251	0	8	28	5	89	28	0.084	LT=31 ; RS=32.5% ; HY=11	STEVE DAROCI	RUSH
LTC	SLM56073	No. 1 LTC	08/29/2005	50	2	254	3130	76571	78	17905	0	11	44	7	394	51	0.403	LT=50 ; RS=29.4% ; HY=8	STEVE DAROCI	ROUTINE
LTC	SLM56073	No. 1 LTC	07/19/2004	45	2	76	1886	72042	41	24251	2	16	82	5	222	38	0.225	LT=45; RS=26.1%	STEVE DAROCI	ROUTINE
LTC	SLM56073	No. 1 LTC	06/12/2003	50	1	81	1834	70633	34	15205	4	20	151	38	328	30	0.373	LT=50 ; RS=17.3%	STEVE DAROCI	ROUTINE
LTC	SLM56073	No. 1 LTC	12/03/2002	16	1	76	2309	74227	27	22143	0	2	9	6	120	31	0.122	LT=16 : RS=66.6%	STEVE DAROCI	ROUTINE
LTC	SLM56073	No. 1 LTC	08/07/2002	2		184	2628	79050	104	14024	0	2	5	3	298	42	0.31		STEVE DAROCI	ROUTINE
LTC	SLM56073	No. 1 LTC	08/01/2001	50	2	190	2210	76734	141	12716	0	1	3	4	339	48	0.368	LT=50	STEVE DAROCI	RUSH
LTC	SLM56073	No. 1 LTC	09/14/2000	40	1	53	193	43650	5	4895	1	0	1	1	61	22	0.125	LT=40	KAHLER	RUSH
LTC	SLM56073	No. 1 LTC	09/06/2000	1		153	529	81776	149	1374	0	6	1	11	320	24	0.38		KAHLER	RUSH
LTC	SLM56073	No. 1 LTC	07/22/2000	1		0	0	0	0	0	0	0	0	0	0	7	0	Not enough gas	KAHLER	RUSH
LTC	SLM56073	No. 1 LTC	07/11/2000	2		211	1663	94514	272	1261	0	30	6	42	561	45	0.573		KAHLER	DIAGNO

Done

Local intranet

Some savings...

Results

- LTC Stationary & Moving Contacts Burned
- Next PM Due 2015
- LTC & Transformer would have failed before next PM
- Conservatively Saved $2M Transformer

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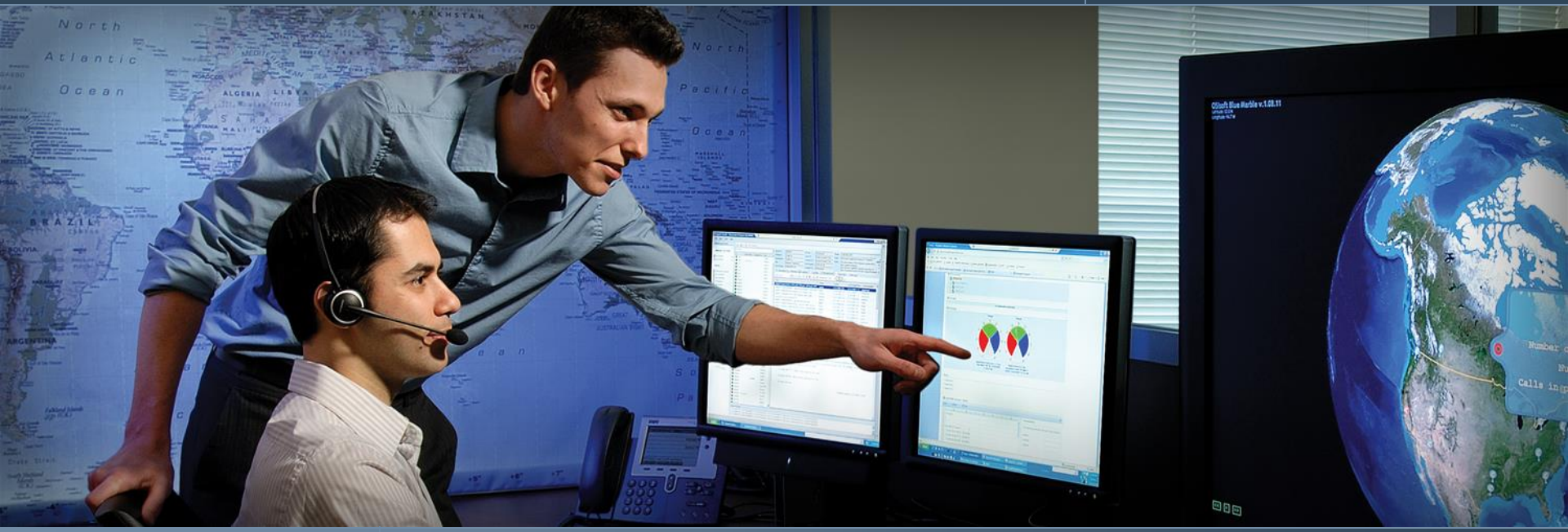

ENTERGY, USA

Empowering Business in Real Time.

Entergy

- Entergy Owns and Operates approximately 30,000 MW of capacity
- Entergy delivers electricity to approximately 2.6 million utility customers across 4 states
- Entergy is the second-largest nuclear operator in the nation, operating 12 units
- Entergy is a Fortune 500 company with revenues of more than $10 billion in 2006
- Entergy is the second cleanest utility generator among the top 10 generators and was the first U.S. utility to voluntarily stabilize greenhouse gas emissions

Entergy‘s "Big Catch" with PI

http://www.powermag.com/o_and_m/Entergys-big-catch_1445.html

According to Gary Barr … pleted its sixth year of providing 24-7 coverage … OIS and PI systems still are the primary means … -solving is greatly enhanced by a suite of … version of SmartSignal’s EPI*Center, for early de…

PI servers are now loca… pecial purpose utilities have been developed to… es noted that the PM&DC has a strong can-do att… tools, and an in-house maintenance managem…

Repairs were later estimated at approximately $5 million. Costs for picking up the pieces and putting out lube oil and hydrogen fires—which would have resulted if the shaft actually had failed—were estimated at between $20 and $40 million, not including personnel injuries.

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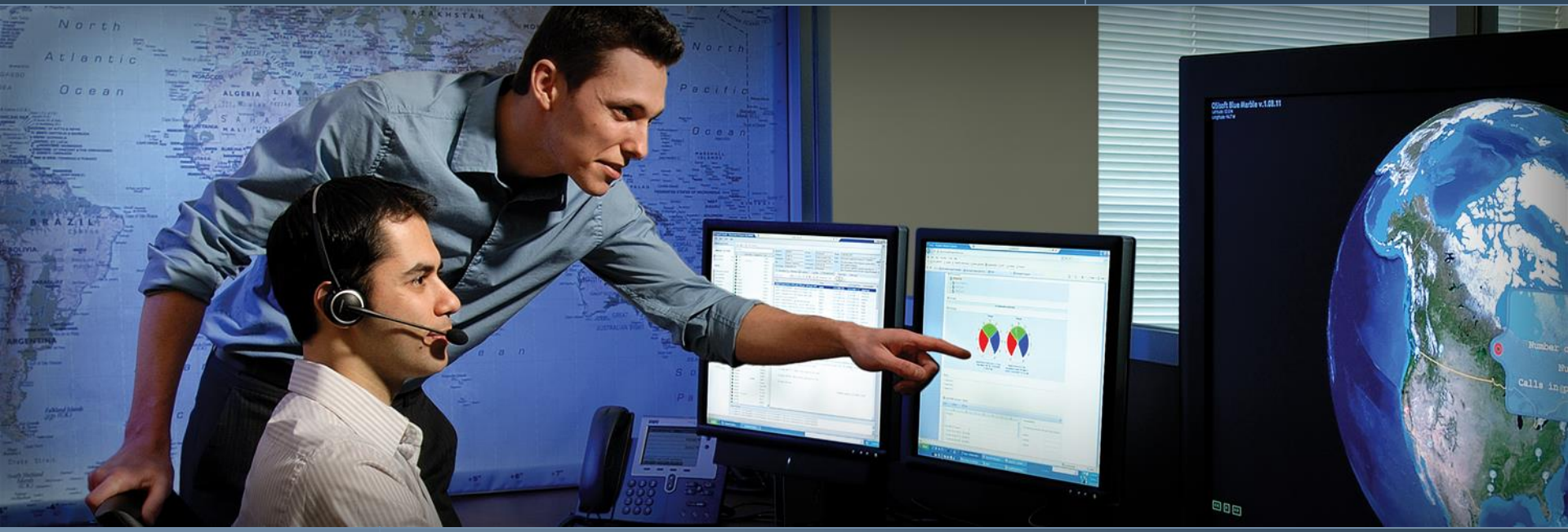


NiSOURCE, USA

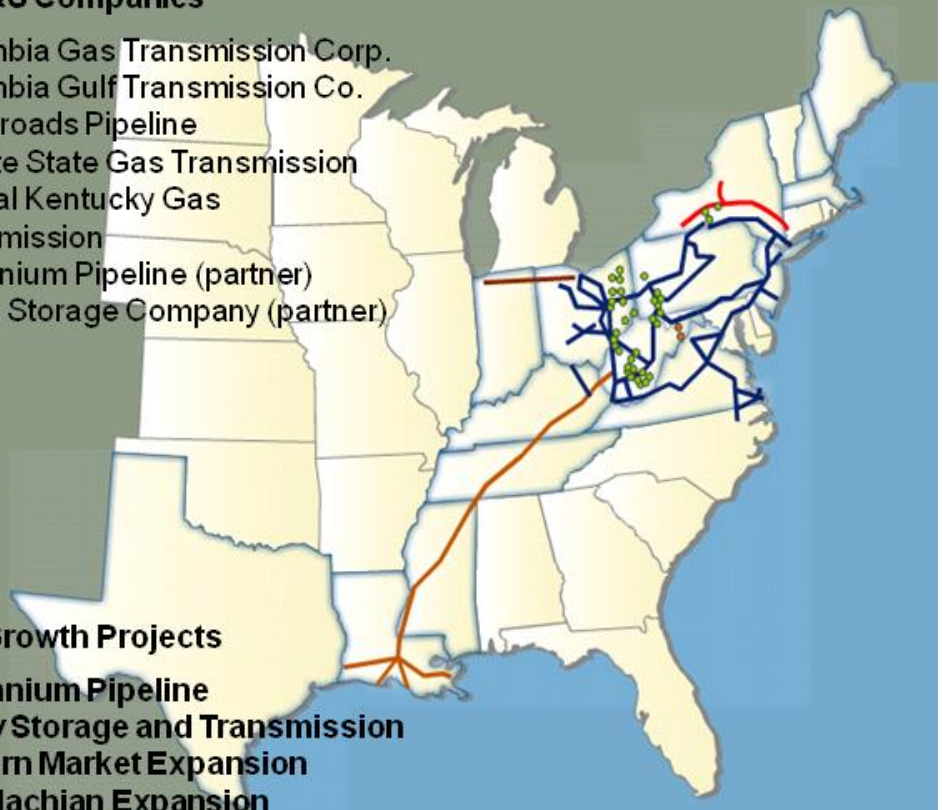
Empowering Business in Real Time.

NiSource Gas Transmission & Storage

Employees: 1,571
Total Payroll: $98 million
Operating States: 17
Miles of Pipe: approximately 14,000
Compressor Stations: 100
Total Horsepower: About 1.1 million
Annual Deliveries: About 1 trillion cubic feet
Number of customers: 72 LDCs and a variety of commercial users
Storage Fields: 37 in four states
Total Storage Capacity: 590 billion cubic feet
Total Working Gas: 253 billion cubic feet
Peak Day Deliveries: 7.4 billion cubic feet (4.5 bcf from storage)
State taxes paid annually: $58.6 million

NGT&S Companies

Columbia Gas Transmission Corp.
Columbia Gulf Transmission Co.
Crossroads Pipeline
Granite State Gas Transmission
Central Kentucky Gas Transmission
Millennium Pipeline (partner)
Hardy Storage Company (partner)

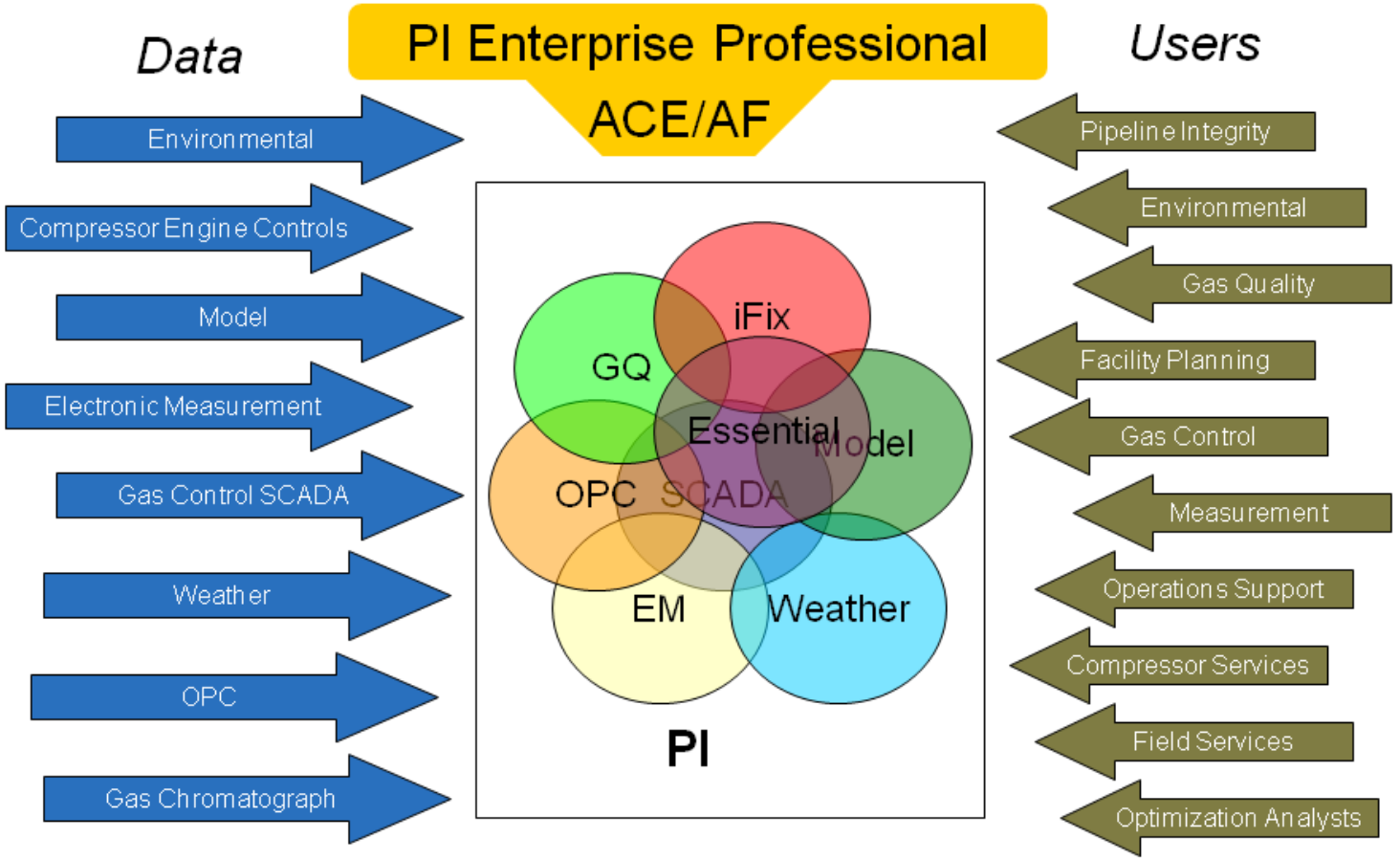


Key Growth Projects

Millennium Pipeline
Hardy Storage and Transmission
Eastern Market Expansion
Appalachian Expansion
Ohio Storage Expansion Project

Extensive use of PI

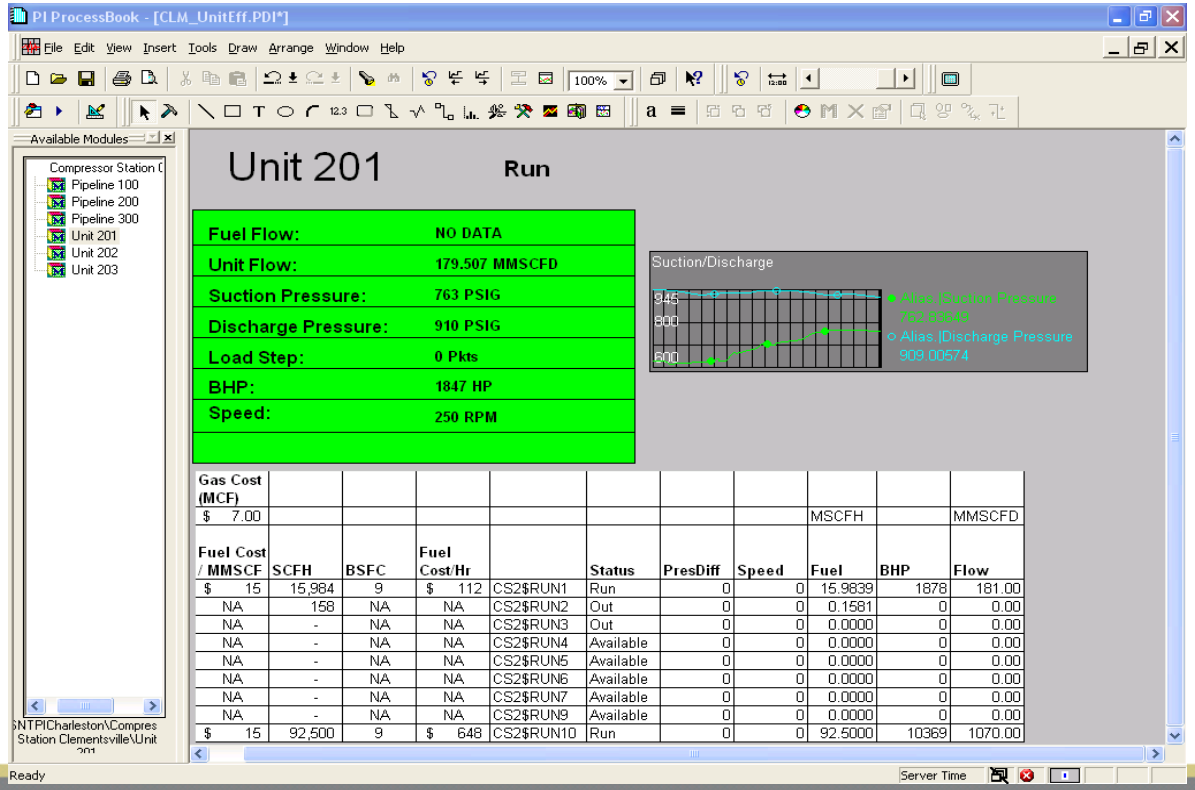
How PI Stretches



A view on financial performance

Energy Cost (Concept)

- (CF$/mcf)*(7350BTU lhv/BHP hr)*(1cf/1000BTU hhv)*(1BTU hhv/0.915BTU lhv)*(BHP)*(1mcf/1000cf)



MiSource

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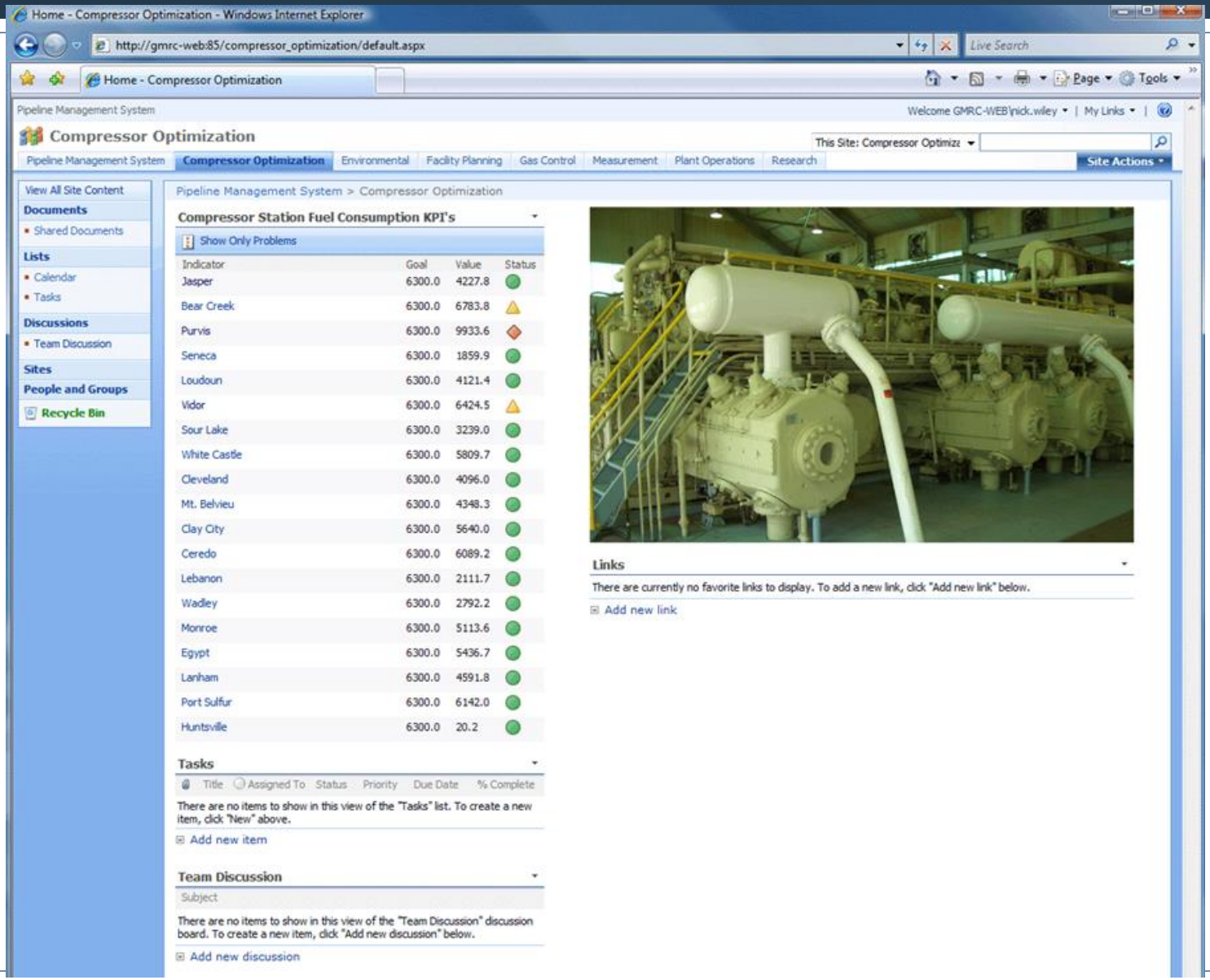
33

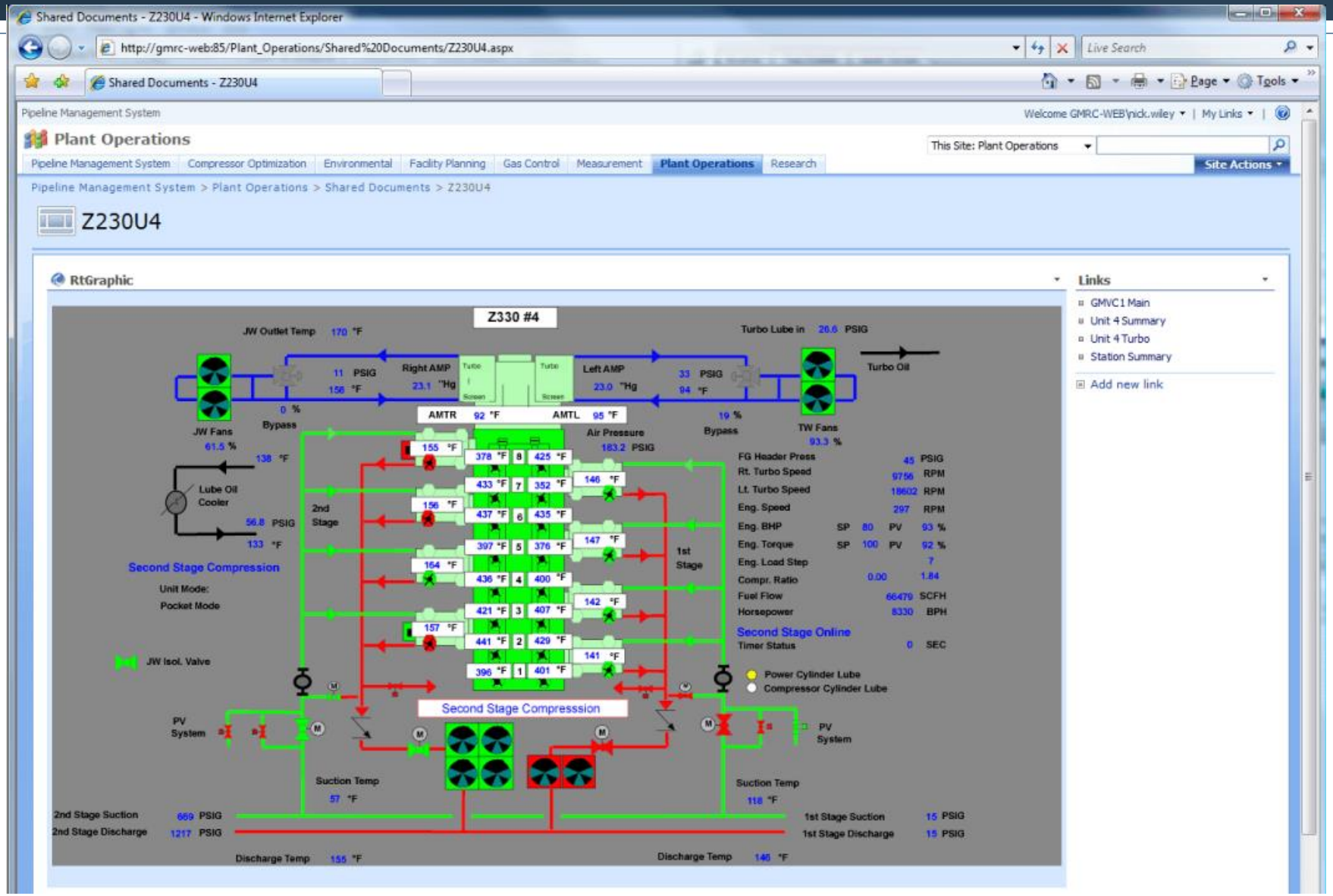
Empowering Business in Real Time.

Operations visibility: global view



Empowering Business in Real Time.

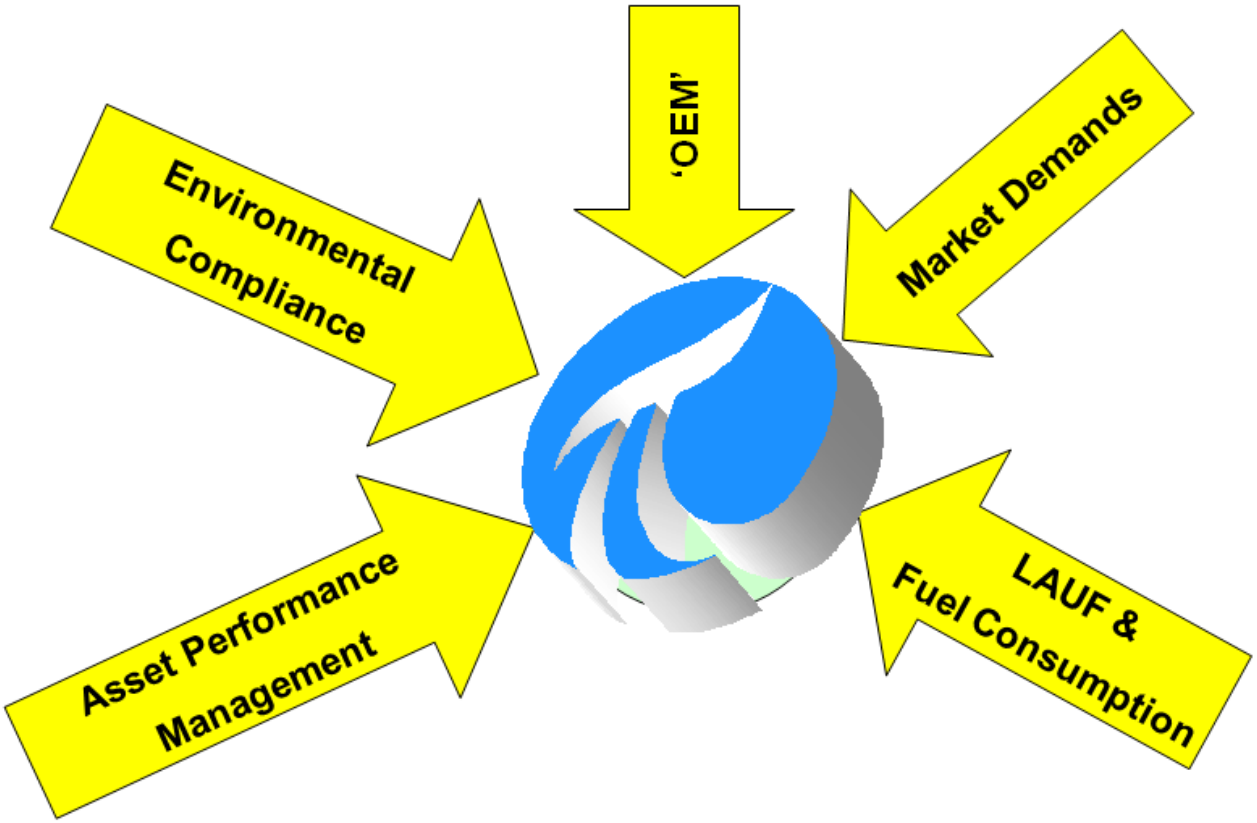
Operations visibility: assets view



Empowering Business in Real Time.

Combining different data with PI

Natural Gas Pipeline Industry Challenges



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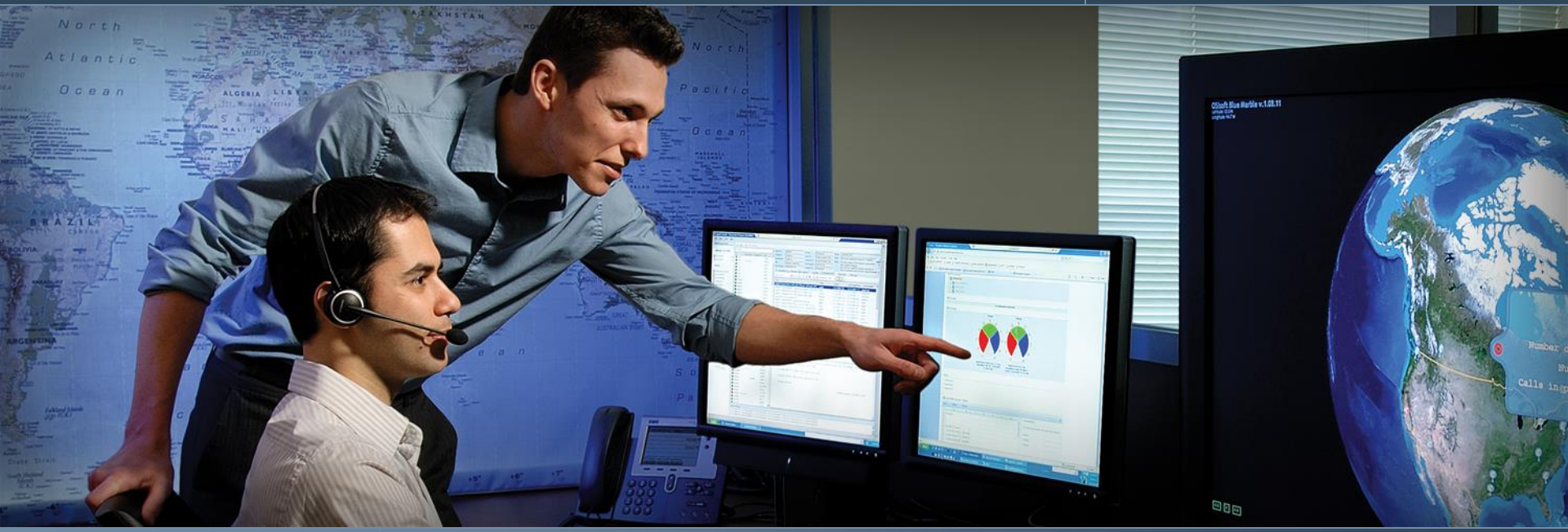
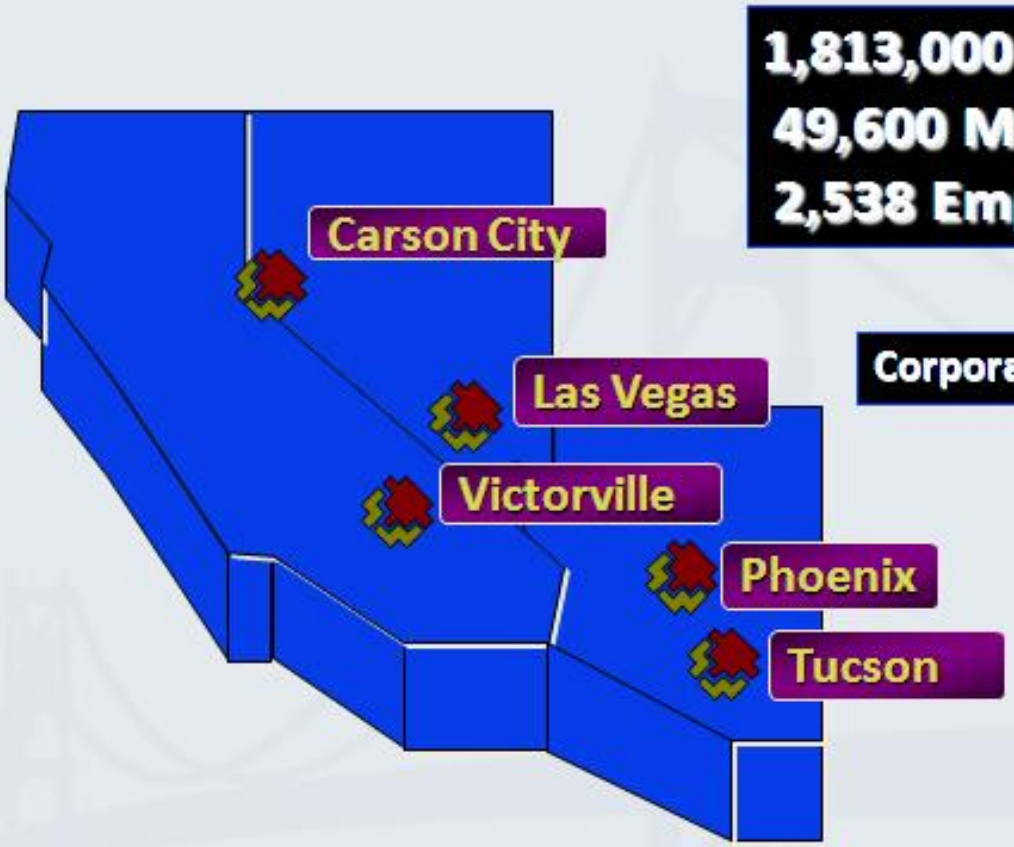


SOUTHWESTGAS, USA

Empowering Business in Real Time.

SouthWestGas

Southwest Gas Corporation



1,813,000 Customers
49,600 Miles of Pipe
2,538 Employees

Corporate Headquarters

OSIsoft. 2009 USERS CONFERENCE SAN FRANCISCO

SOUTHWEST GAS

Operations visibility: SCADA and beyond...

Let Everyone Look at SCADA Data

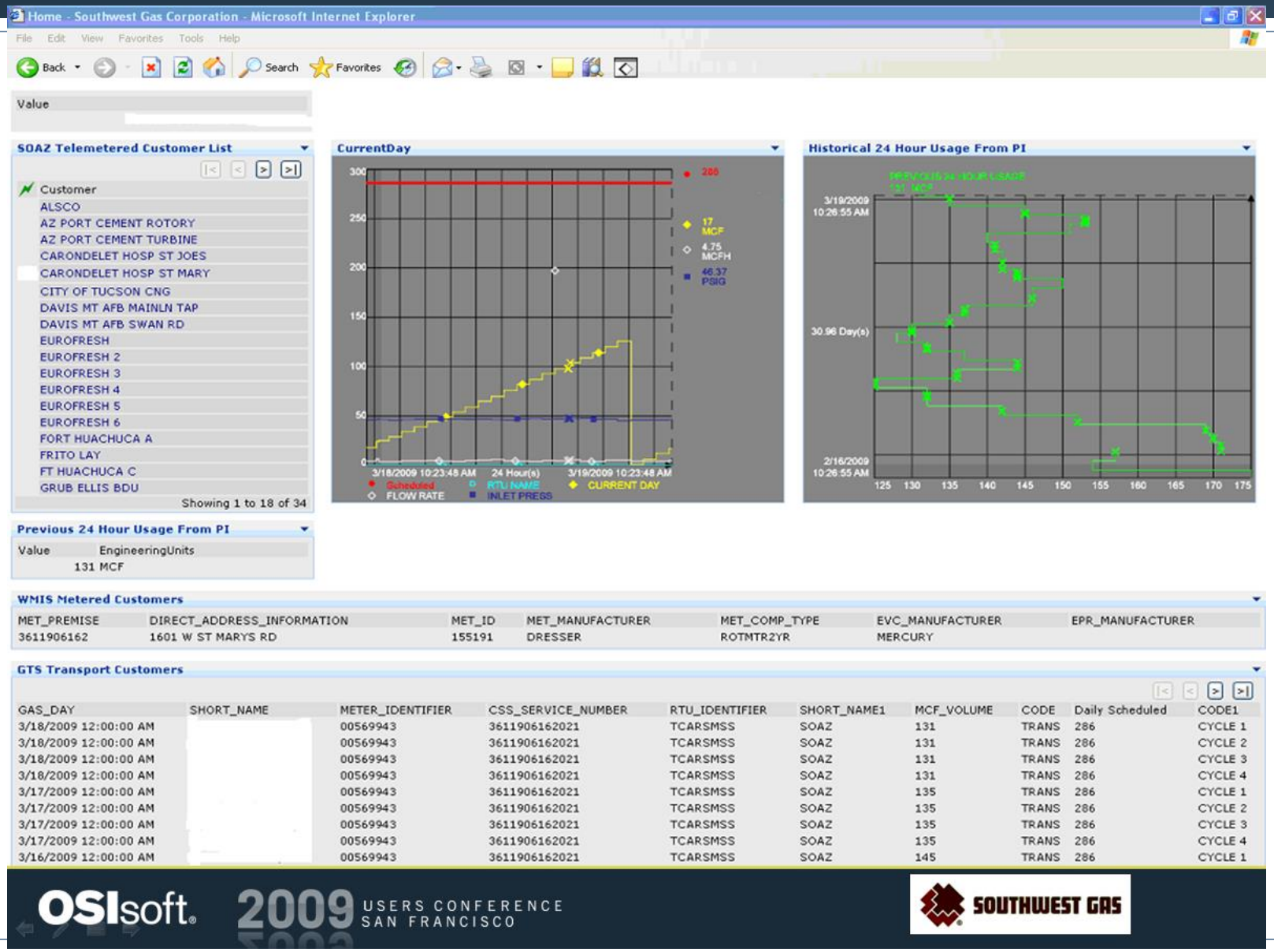
- **Challenge:** Put SCADA data to work for the rest of the company (not just Gas Control)
- **Before PI**: Information had to be extracted from the SCADA historical sub-system in a very cumbersome and time consuming method to provide data to end users
- **After PI**: End users are now able to extract data themselves using the PI client tools
- **Benefits Derived**:
  - Easy access to SCADA data for planning purposes and engineering studies
  - Access to SCADA data during an emergency situation
  - Ability to provide PI data to internal and external customers via the WEB

PI supporting regulation & deregulation

Turn Regulations into Value for Our Customers

- **Challenge:** To comply with tariffs requiring SWG to provide key natural gas parameters like pressure, temperature, flow and quality to both agents and customers.
- **Before PI**: SWG provided agents and customers with phone numbers and passwords for direct access to system RTUs.
- **After PI**: Direct RTU access was revoked. PI-RtWebParts was used to configure Agent and Customer specific web views of tariff data in a secure environment.
- **Benefits Derived**:
  - Securing RTUs
  - The ability for agents and customers to access gas parameters in near real-time
  - PI-RtWebParts provides trending and data downloading via the web

A holistic view on operations



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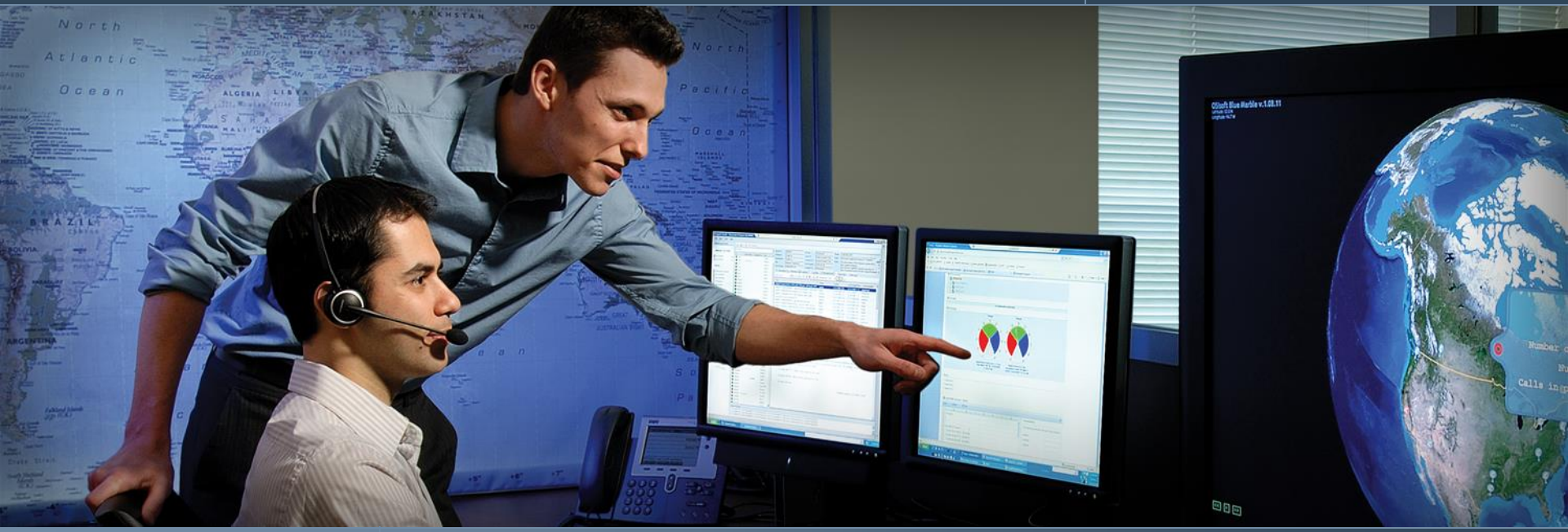

ROCHE, SWITZERLAND

Empowering Business in Real Time.

Roche

Roche 2006

A leading global healthcare company

- Pharma: no. 8 worldwide; market leader in key therapeutic areas such as oncology, transplantation, anaemia and virology
- Diagnostics: world leader
- 9 products/lines with sales in excess of CHF 1 billion
- No. 2 in biotechnology
- One of the best pipelines in the industry – in pharmaceuticals and diagnostics
- Around 68,000 employees in around 150 countries
- 2005 sales: 35.5 billion Swiss Francs

PI unifies data

Expanding to more and more people

... to everybodys everyday data source

Roche

Maintenance Operator Process Engineer Process Manager Quality Assurance Management

PI System

Buildings/Rooms Utilities Chemical Biotech Granulation Tabletting Packaging

Infrastructure **API Production** **Galenical Manufacturing**

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OSIsoft User Conferences 2006 San Francisco Frankfurt

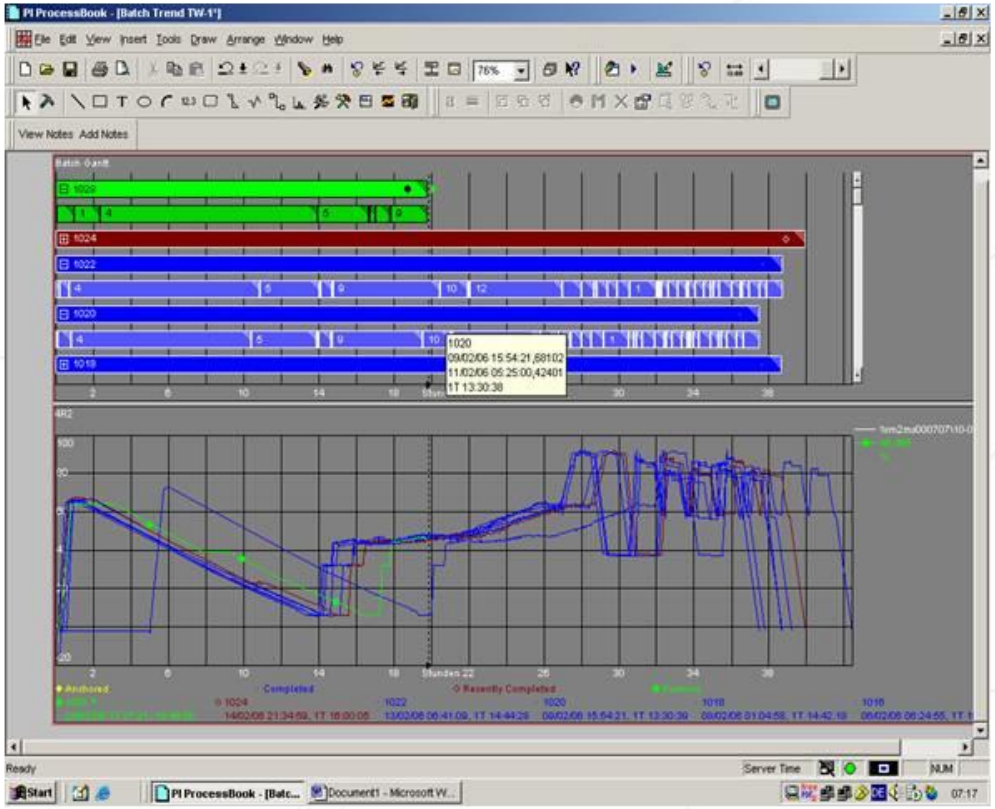
10

Empowering Business in Real Time.

Improvements with PI-Batch technology

Process Improvements

BatchView display in PI ProcessBook



Purpose

Compare batches across time and units

User

Process Engineer
Process Manager

Benefits

Quick data access allows quick & continuous evaluation

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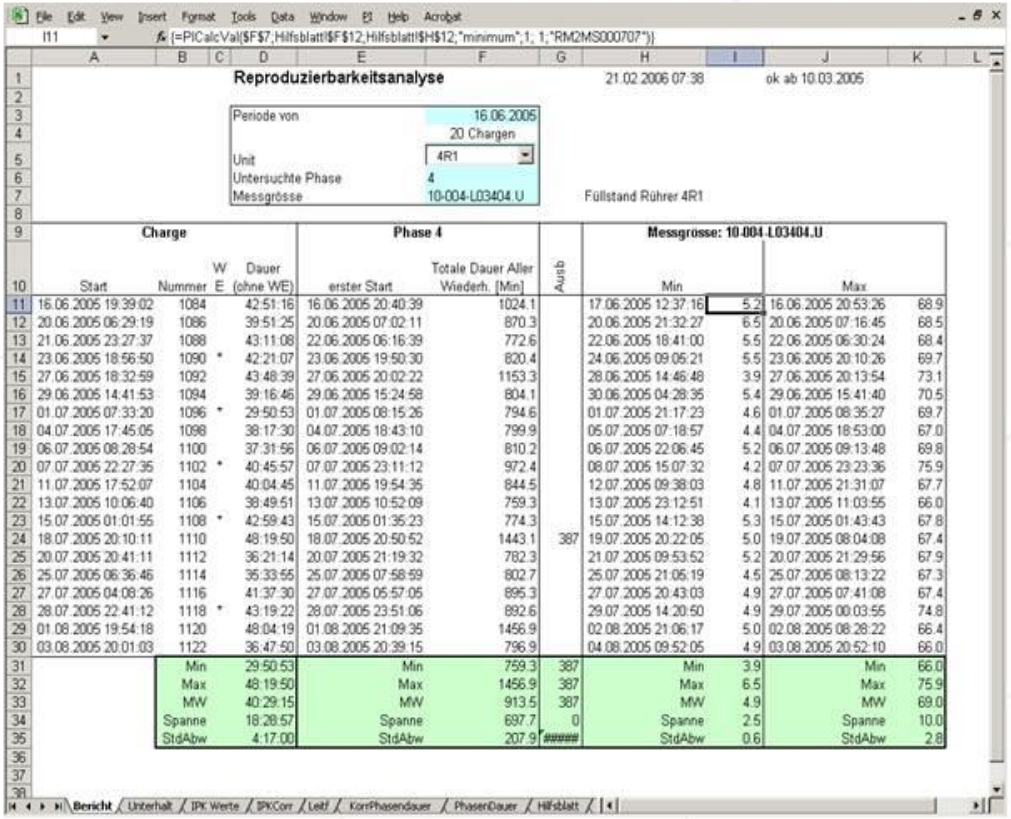
15

Empowering Business in Real Time.

Cycle time analysis with PI

Process Improvements

Cycle time variance analysis in PI DataLink



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Reproduzierbarkeitsanalyse 21.02.2006 07:38 ok ab 10.03.2005

Periode von	16.06.2005
	20 Chargen
Unit	4R1
Untersuchte Phase	4
Messgrösse	10-004-L03404.U

Füllstand Rührer 4R1

Charge				Phase 4			Messgrösse: 10-004-L03404.U			
Start	Nummer	W E	Dauer (ohne WE)	erster Start	Totale Dauer Aller Wiederh. [Min]	Ausb	Min		Max	
16.06.2005 19:39:02	1084		42:51:16	16.06.2005 20:40:39	1024.1		17.06.2005 12:37:16	5.2	16.06.2005 20:53:26	68.9
20.06.2005 06:29:19	1086		39:51:25	20.06.2005 07:02:11	870.3		20.06.2005 21:32:27	6.5	20.06.2005 07:16:45	68.5
21.06.2005 23:27:37	1088		43:11:08	22.06.2005 06:16:39	772.6		22.06.2005 18:41:00	5.5	22.06.2005 06:30:24	68.4
23.06.2005 18:56:50	1090	*	42:21:07	23.06.2005 19:50:30	820.4		24.06.2005 09:05:21	5.5	23.06.2005 20:10:26	69.7
27.06.2005 18:32:59	1092		43:48:39	27.06.2005 20:02:22	1153.3		28.06.2005 14:46:48	3.9	27.06.2005 20:13:54	73.1
29.06.2005 14:41:53	1094		39:16:46	29.06.2005 15:24:58	804.1		30.06.2005 04:28:35	5.4	29.06.2005 15:41:40	70.5
01.07.2005 07:33:20	1096	*	29:50:53	01.07.2005 08:15:26	794.6		01.07.2005 21:17:23	4.6	01.07.2005 08:35:27	69.7
04.07.2005 17:45:05	1098		38:17:30	04.07.2005 18:43:10	799.9		05.07.2005 07:18:57	4.4	04.07.2005 18:53:00	67.0
06.07.2005 08:28:54	1100		37:31:56	06.07.2005 09:02:14	810.2		06.07.2005 22:06:45	5.2	06.07.2005 09:13:48	69.8
07.07.2005 22:27:35	1102	*	40:45:57	07.07.2005 23:11:12	972.4		08.07.2005 15:07:32	4.2	07.07.2005 23:23:36	75.9
11.07.2005 17:52:07	1104		40:04:45	11.07.2005 19:54:36	844.5		12.07.2005 09:38:03	4.8	11.07.2005 21:31:07	67.7
13.07.2005 10:06:40	1106		38:49:51	13.07.2005 10:52:09	759.3		13.07.2005 23:12:51	4.1	13.07.2005 11:03:55	66.0
15.07.2005 01:01:55	1108	*	42:59:43	15.07.2005 01:35:23	774.3		15.07.2005 14:12:38	5.3	15.07.2005 01:43:43	67.8
18.07.2005 20:10:11	1110		48:19:50	18.07.2005 20:50:52	1443.1	387	19.07.2005 20:22:05	5.0	19.07.2005 08:04:08	67.4
20.07.2005 20:41:11	1112		36:21:14	20.07.2005 21:19:32	782.3		21.07.2005 09:53:52	5.2	20.07.2005 21:29:56	67.9
25.07.2005 06:36:46	1114		35:33:55	25.07.2005 07:58:59	802.7		25.07.2005 21:05:19	4.5	25.07.2005 08:13:22	67.3
27.07.2005 04:08:26	1116		41:37:30	27.07.2005 05:57:05	895.3		27.07.2005 20:43:03	4.9	27.07.2005 07:41:08	67.4
28.07.2005 22:41:12	1118	*	43:19:22	28.07.2005 23:51:06	892.6		29.07.2005 14:20:50	4.9	29.07.2005 00:03:55	74.8
01.08.2005 19:54:18	1120		48:04:19	01.08.2005 21:09:35	1456.9		02.08.2005 21:06:17	5.0	02.08.2005 08:28:22	66.4
03.08.2005 20:01:03	1122		36:47:50	03.08.2005 20:39:15	796.9		04.08.2005 09:52:05	4.9	03.08.2005 20:52:10	66.0
	Min		29:50:53	Min	759.3	387	Min	3.9	Min	66.0
	Max		48:19:50	Max	1456.9	387	Max	6.5	Max	75.9
	MW		40:29:15	MW	913.5	387	MW	4.9	MW	69.0
	Spanne		18:28:57	Spanne	697.7	0	Spanne	2.5	Spanne	10.0
	StdAbw		4:17:00	StdAbw	207.9	#####	StdAbw	0.6	StdAbw	2.8

Bericht / Unterhalt / IPK Werte / IPKCorr / Leitf / KorrPhasendauer / PhasenDauer / Hilfsblatt

Purpose

Compare phase time across batches

User

Process Engineer
Process Manager

Benefits

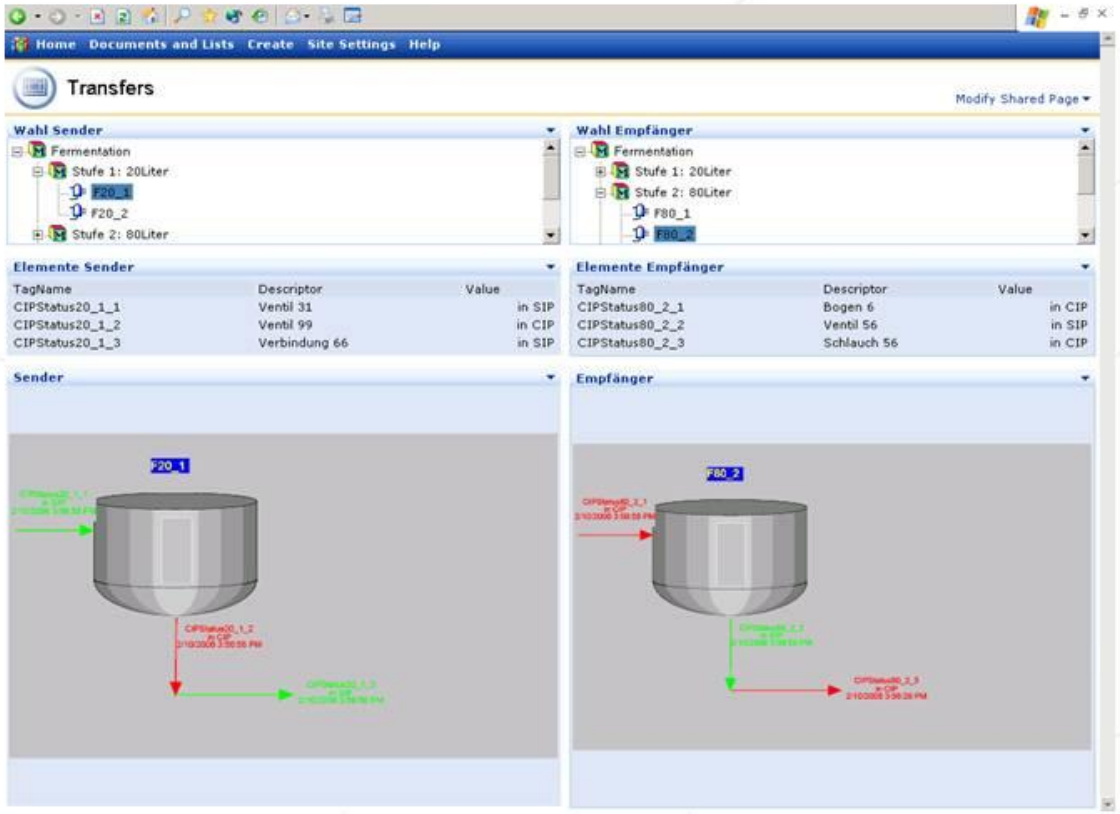
Quick data access allows quick & continuous evaluation

VALUE NOW, VALUE OVER TIME

Publishing from the desktop to the web

Bringing Plant Data to the Organization

Transfer display in RtWebParts bridges DCS gaps



Purpose

Cleaning status review for distant transfers

User

Operator

Benefits

Combines data which DCS cannot show on one screen

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21

Benefits

"Last year, we were five percent below our yield standard, but we've already improved a half percentage point over that standard, thanks to employing more real-time performance management," says Pat Scully, a senior engineer and application developer at the Clarecastle site. "Operators, engineers, chemists, and managers can plan better, improve production, and increase efficiency everywhere. Throughput is up: cycle time fell from eleven hours to eight. We're now able to produce 10 percent more batches per week."

Shorter cycle times and enterprise standards has enhanced The Roche Group's agility in manufacturing, allowing products to be delivered more quickly in response to higher commercial demand. In addition, since cycle times and equipment effectiveness are linked so closely, Roche Ireland is now able to run operations longer and more efficiently, with almost no downtime. As one illustration, three hours were shaved from cycle times and energy costs reduced by about $30,000 simply by knowing to lower the temperatures of production coolants. Previously, only 50 batches could run before exchanger equipment became too hot and needed flushing. This added four hours to cycle times. Now, 300 batches can run with only a 20 percent decrease in cycle time.

operations infrastructure and a complete, off-the-shelf product line. OSIsoft products require little, if any, engineering to provide true enterprise-level power and capacity.

- Enhanced efficiency and performance
- Improved yield, cost efficiencies, cycle time, and equipment effectiveness
- Real-time costing
- Simplified production of GMP-compliant batch reports

operational improvement solution and as a solid infrastructure. The power of having real-time data so pervasive across the organization is a great advantage. Making operations data available to every employee and providing the environment to make use of the data correlates with our belief that our success depends on our employees' capabilities. OSIsoft's Platform helps create those capabilities."

The role of PI

Growing With Us
… a PI System for (almost) every site

Roche

- Roche will continue to expand existing PI Systems
- Roche will continue to extend functionality
- Roche will continue to install PI Systems in new sites
- Roche will continue to make PI information accessible to more and more people

We believe that our PI Systems play a very important role as a production data hub with making data easily available to anybody who may need them. This enables everybody to contribute better to our companys success by making well informed decisions

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29

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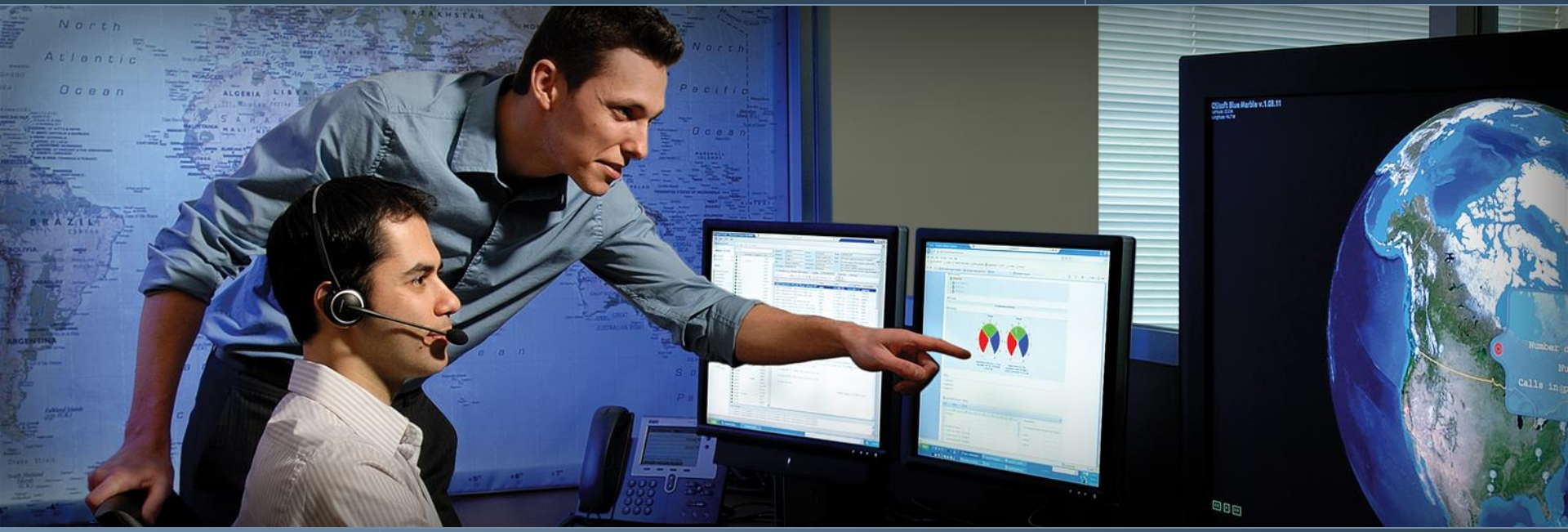
Regional Seminar Series



ROCKTENN, USA

Empowering Business in Real Time.

RockTenn

Who is RockTenn?

- One of North America's leading manufacturers of paperboard, containerboard, consumer and corrugated packaging and merchandising displays
- Annual net sales of approximately $3 billion
- Founded in 1936 and operates manufacturing facilities throughout the United States, Canada, Mexico, Argentina and Chile
- 11 Recycle Paperboard Mills, 1 Recycle Container-board Mill, 1 Bleached Board Mill
- 90+ Converting Plants
- Headquartered in Norcross, Georgia

Challenges and Obstacles

Challenges and Obstacles

Our Challenges

- Controlling Costs (Energy, Fiber, Labor, and Maintenance)
- Producing Consistent, High Quality Paperboard
- Operating at Maximum Reliability and Efficiency
- Using Data to Drive Process Improvement - Six Sigma

The Obstacles

- Mis- & Missing Information
- No History, No Visibility, No Real-Time Feedback
- You don't know you need the data, until you need the data

"The discouraging part of process improvement is trying to get a complete set of data together in one place. When it is too hard to get, you have to leave it out of the analysis. We are missing opportunities to act on information and save money"

General Manager, Cincinnati Mill

The PI foundation

RockTenn PI Installations

Empowering Business in Real Time.

Energy reduction and ROI with PI

The PI Effect: Energy Reduction

- Initial PI installation, Oct. 2005
- Began using PI trends to monitor pulper steam usage
- Made procedure changes to limit pulper steam usage
- Reduced steam usage 41%
- Reduced boiler gas consumption 23%
- Half of gas reduction attributable to pulper steam

> $1,000,000

Thank you

777 Davis St. San Leandro, CA 94577 - USA