



Leveraging Real-time Data for Intelligent, Utility Management

Esri 2015 Conference – Water Resources
San Diego, July 19, 2015

Presented by **Gary Wong, Principal, Global Water Industry
OSIsoft, LLC.**

OSIsoft – Makers of The PI System



OSIsoft®

One System. Singular focus.

1980

↳ Founded

20%

↳ Revenue invested in R&D

65%

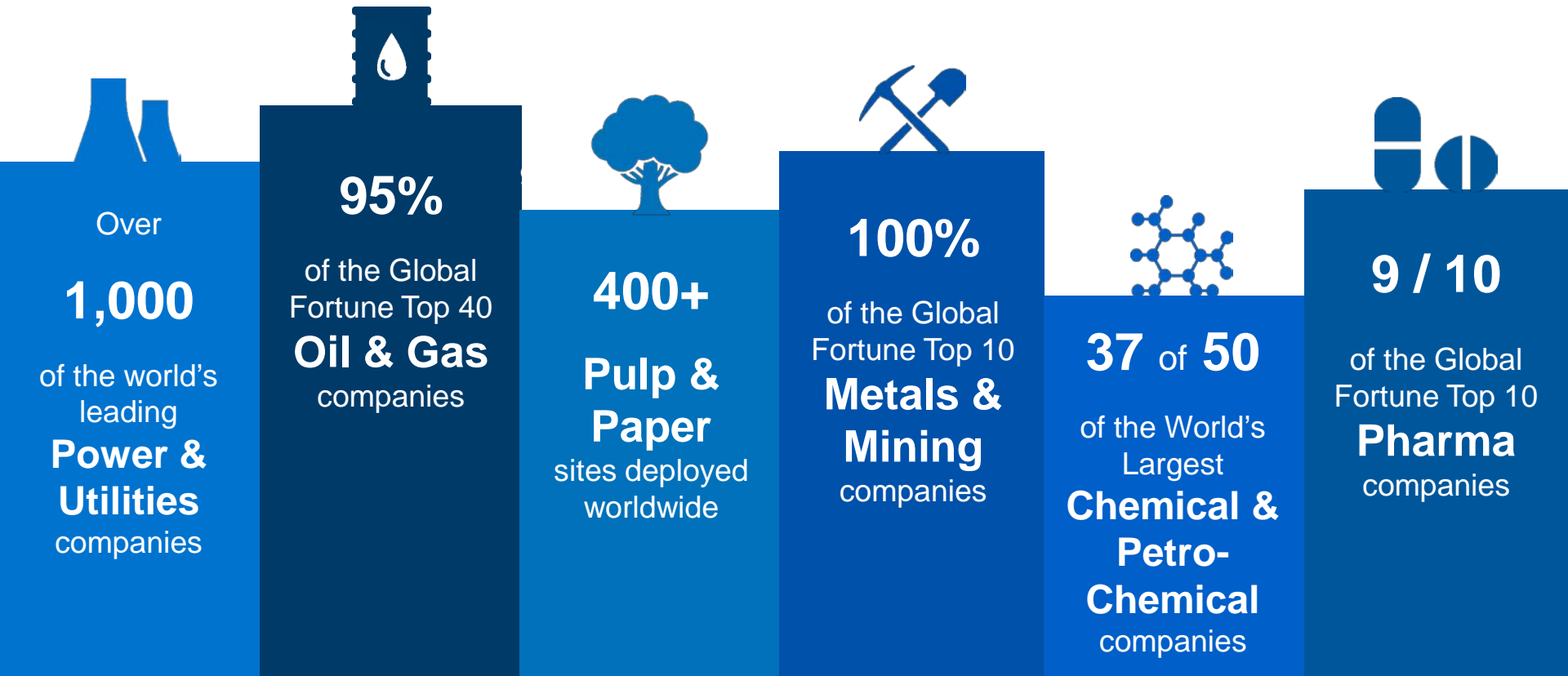
Of Global Fortune 500 ←

16,000

of Sites ←



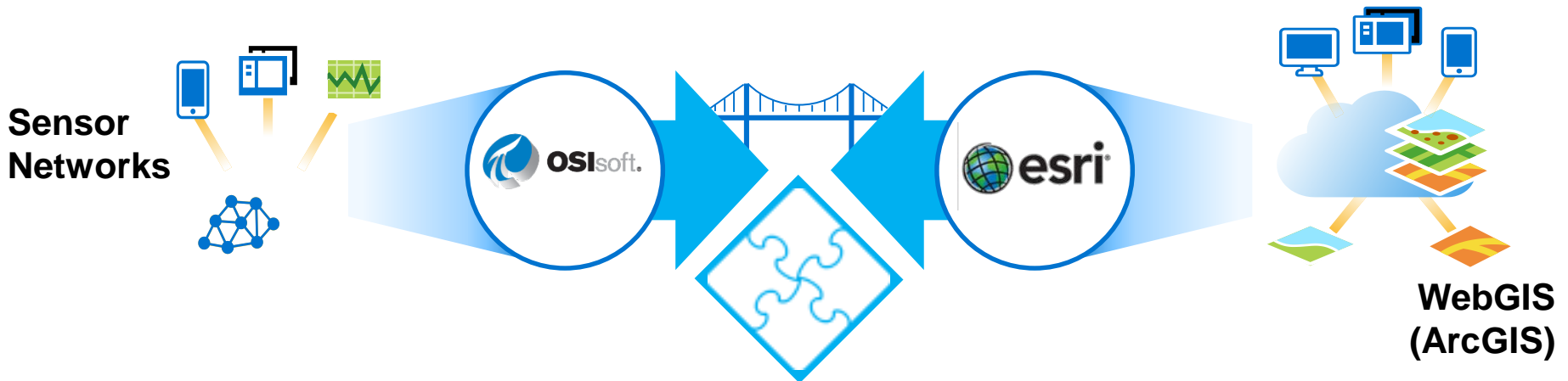
OSIsoft is trusted by the world's leading companies



150 Water Companies Globally

Two Companies One Vision:

We believe data in the hands of smart people can create amazing insights, business improvements, and value



Water Industry Challenges

Managing Costs

Environmental Protection & Compliance

Delivering Reliable Service / Product

Enabling Sustainable Infrastructure

Technology plays a critical role

Technology Megatrends

A new era of opportunity for Cities to innovate & prosper



Mobility

By **2016**
smartphones and tablets
will put power in the pockets
of
a billion global citizens.



Social

Millennials will make
up **75%** of the
American workforce by
2025



Cloud

70%
of organizations are either
using or investigating **cloud
computing solutions**



Big data

Digital content will grow to
2.7ZB in 2012,
up 48% from 2011,
rocketing toward
8ZB by 2015.

Source: Microsoft CityNext 2013

Data & Information Challenges

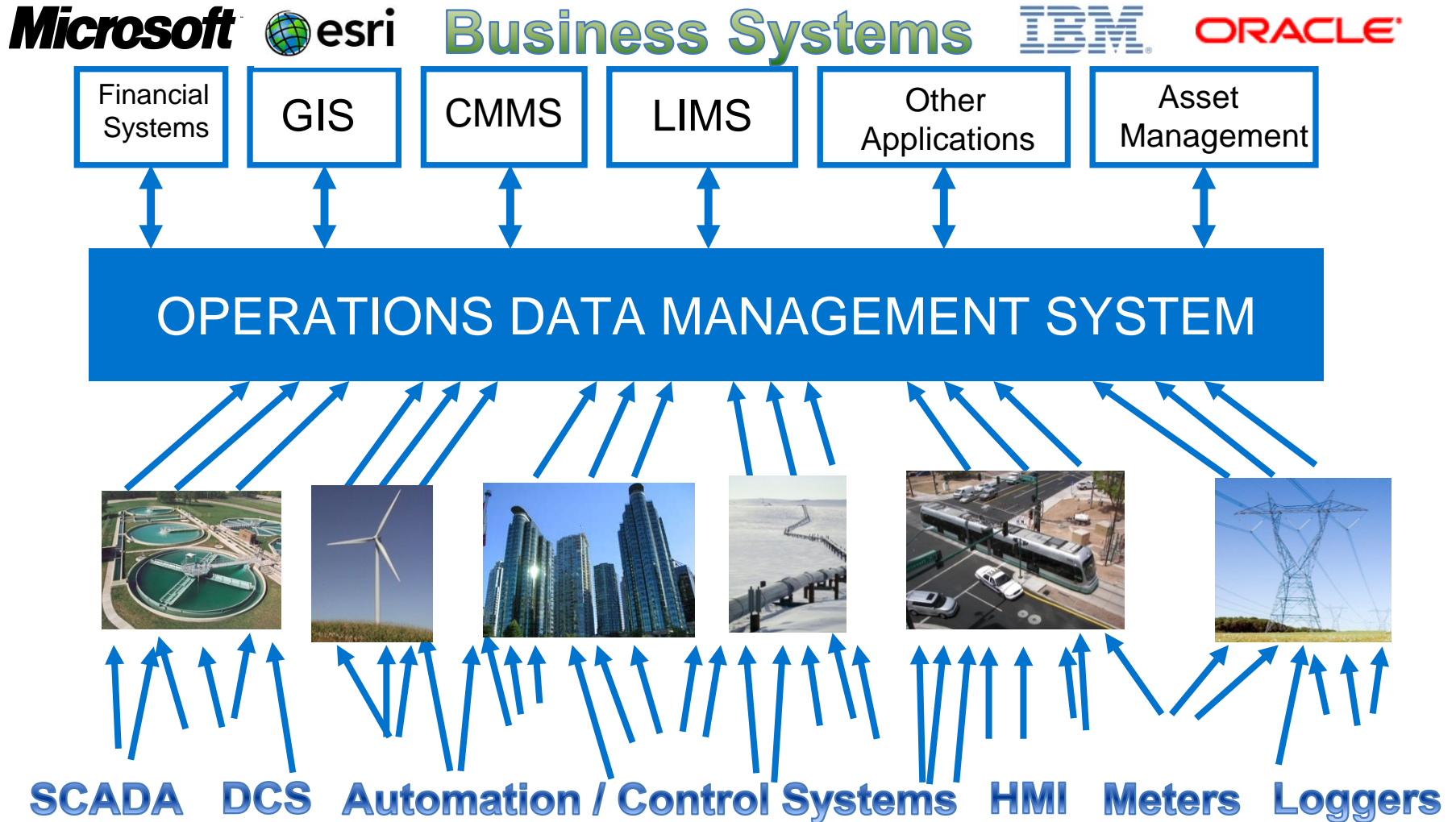
1. Need a Programmer to Extract / Calculate Data
2. Need to Call I.T. or Someone for Data and Reports.
3. Every New Report Leads to Stress of the Operative Staff
4. Reports Take a Long Time to Run
5. Different and Isolated Reporting Systems
6. Multiple Data Acquisitions
7. Different Security Models
8. Different Time Stamping Rules
9. No Real-time or Granular Data
10. Big Data Silos

Integration Nightmare

Microsoft  **esri** **Business Systems**  **IBM** **ORACLE**



Once Source of the Truth Common Infrastructure

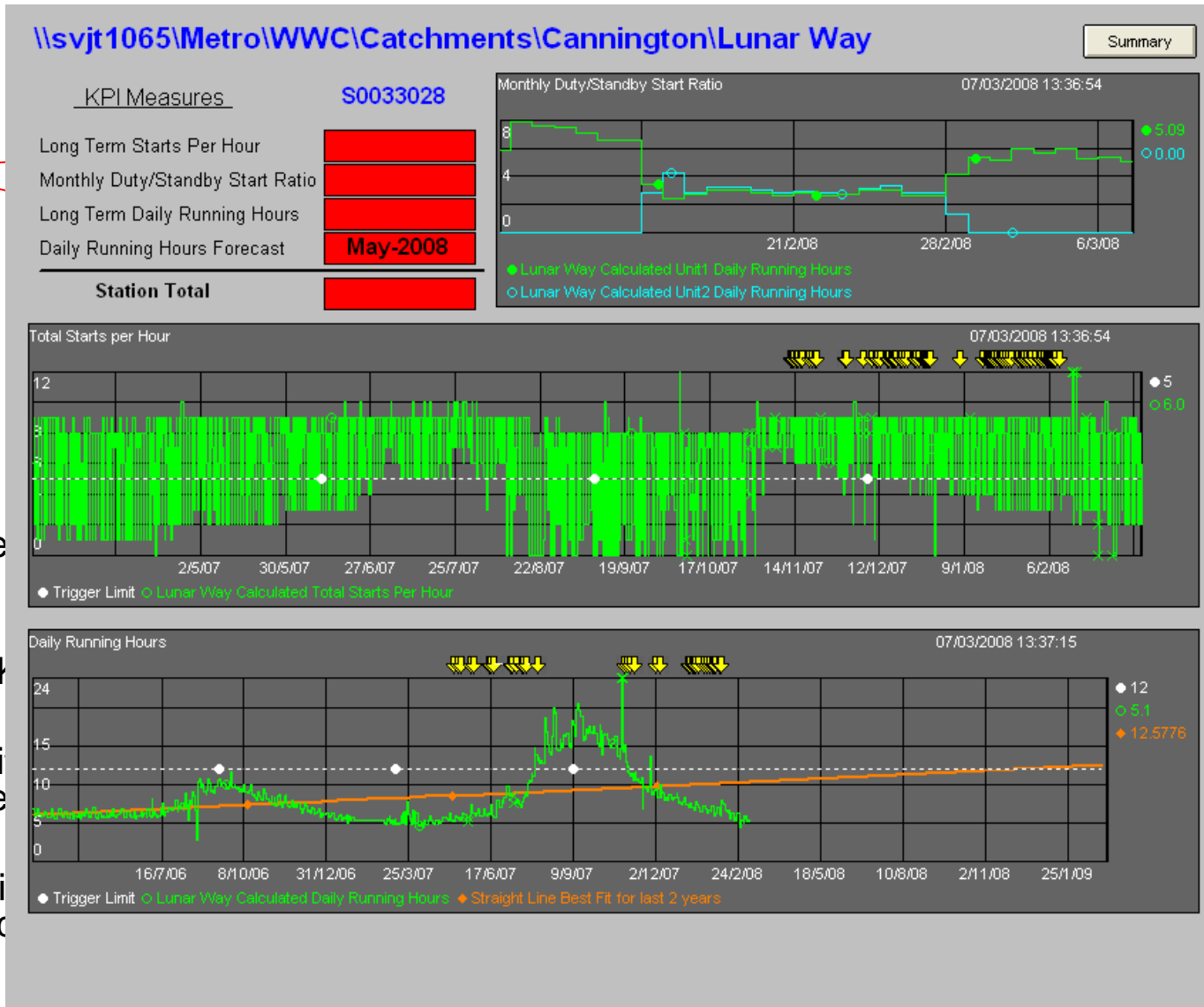


Operations Data Management Systems

- More than a Data Historian.
- Spans operations and corporate domains.
- Trans Enterprise – 3rd party data exchange.
- One Source of the Truth.
- Common Set of Tools & Technology.
- Out of the Box.
- No archaic coding or programming.
- Trustworthy and Secure Data.
- Independent of Operations and Business Systems.
- Real-time, Scalable and Fast.
- End users have easily, accessible data.
- Future Data.

CASE STUDIES

Water Corporation: Pumpstation KPI Forecasting



- Provide view of
- These k
- Each si "one be
- Predicti reached timing.

Moulton Niguel Saves on Energy

15% or \$400,000 Annual Energy Savings
Save \$3/person served each year

Moulton Niguel Water District														May 2008		
Energy Management Report																
Report Date	6/15/2008		Days:	31		Average Daily Temp		This Month	63 (deg F)	Last Month	62 (deg F)	July	71 (deg F)			
						Total Precipitation		This Month	0.08 (in)	Last Month	0.00 (in)	July	0.06 (in)			
Facility	Efficiency	Calc Rate	Cost	Tot Flow	Tot Energy	Energy per AF	Run Time	Avg head	Schedule	Est Utility Bill	Act Utility Bill	Bill Date	Bill Days	Billed Pwr	Bill Rate	
	(%)	(\$/kwh)	(\$/acre-foot)	(acre-foot)	(kwh)	(kwh/acre-foot)	(hrs)	(psig)	---	(\$)	(\$)	---	---	(kwh)	(\$/kwh)	
	calc	calc	calc	sensor	sensor	calc	sensor	sensor	bill	calc	bill	bill	bill	bill	bill	
1 Aliso Viejo	18%		\$119.15	80	119,840	1502		111	TOU-P-S-I-AP	\$9,504	\$7,915	30-May	30	116,919	\$0.07	
2 Big Niguel	0%		--	0	766	--		77	TOU-P-S-I-AP	\$121	\$128	3-Jun	32	785	\$0.16	
3 Country Village	0%		--	0	1,325	--		99	PATICPP	\$190	\$308	5-Jun	30	2,043	\$0.15	
4 Crown Point	53%		\$58.56	128	63,308	496		110	PAT1	\$7,475	\$6,121	17-Jun	32	55,760	\$0.11	
5 Crown Valley	120%		\$40.82	20	4,239	212		106	PATICPP	\$814	\$3,683	16-Jun	32	34,003	\$0.11	
6 El Dorado	55%		\$34.76	94	39,811	424		98	TOU-P-S-I-AP	\$3,260	\$3,254	30-May	30	38,525	\$0.08	
7 Galivan	53%		\$67.92	183	62,037	339		75	PATICPP	\$12,420	\$8,073	9-Jun	32	75,684	\$0.11	
8 Highlands	45%		\$60.67	65	46,848	726		137	TOU-P-S-I-AP	\$3,913	\$3,736	29-May	30	45,538	\$0.08	
9 JRT AWT No 2	50%		\$54.16	568	283,443	499		104	TOU-CPP-GCCD	\$30,769	\$29,355	4-Jun	30	279,997	\$0.10	
10 La Paz	--		\$0.00	63	0	0		0	TOU-P-S-I-AP	\$2,709	\$2,709	22-May	30	37,547	\$0.07	
11 PID-1	0%		--	0	1,317	--		88	PAT1	\$244	\$187	17-Jun	30	1,246	\$0.15	
12 PID-2	60%		\$30.88	46	13,543	294		74	PATICPP	\$1,423	\$1,485	17-Jun	30	13,625	\$0.11	
13 Rancho	47%		\$38.35	161	51,022	317		63	PAT1	\$6,174	\$6,669	17-Jun	32	53,680	\$0.12	
14 Sheep Hills	62%		\$30.25	142	62,056	436		115	TOU-P-S-I-AP	\$4,305	\$4,655	3-Jun	32	67,054	\$0.07	
15 Southridge	22%		\$99.30	52	56,081	1078		99	TOU-P-S-I-AP	\$5,165	\$3,814	3-Jun	32	57,873	\$0.07	
16 Wood Canyon	53%		\$41.69	78	36,954	476		106	TOU-P-S-I-AP	\$3,238	\$2,769	4-Jun	30	33,862	\$0.09	
Totals (Average)	46%		\$54.63	1679	842,591	502		97		\$91,725	\$84,861			914,141	\$0.09	
Design Efficiency	72															
MNWD Key Energy Indicators																
	Efficiency	Calc Rate	Cost	Tot Flow	Tot Energy	Energy per AF	Water	Sgs Head		Est Utility Bill	Act Utility Bill	Bill	Billed Pwr	Bill Rate		
	(%)	(\$/kwh)	(\$/acre-foot)	(acre-foot)	(kwh)	(kwh/acre-foot)	Incl/Dcr	(psig)		(\$)	(\$)	Incl/Dcr	(kwh)	(\$/kwh)		
Dec	55		\$47.07	822	342,403	416		97		\$38,696	\$43,423		419,390	\$0.1035		
Jan	53		\$45.37	848	362,033	427	3%	98		\$38,465	\$43,228	0%	419,532	\$0.1030		
Feb	50		\$46.16	744	317,760	427	-12%	89		\$34,343	\$40,618	-6%	400,549	\$0.1014		
Mar	56		\$44.85	1574	681,860	433	112%	102		\$70,607	\$72,990	80%	767,675	\$0.0951		
Apr	53		\$44.10	1847	825,528	447	17%	99		\$81,451	\$78,292	7%	848,073	\$0.0923		
May	46		\$54.63	1679	842,591	502	-9%	97		\$91,725	\$84,861	8%	914,141	\$0.0928		

South Florida Water Management District

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Who we are

- A regional government agency that oversees water resources covering 16 counties from Orlando to the Florida Keys serving 7.9 million residents

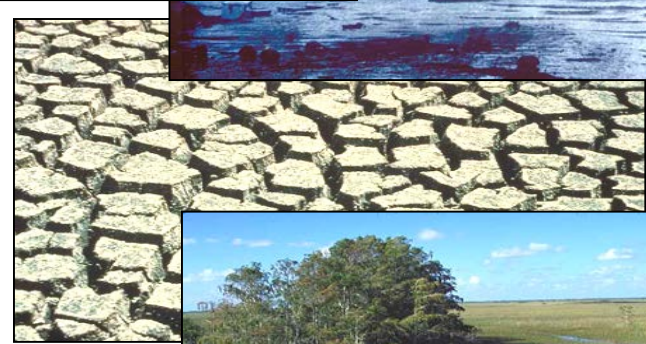


sfwmd.gov

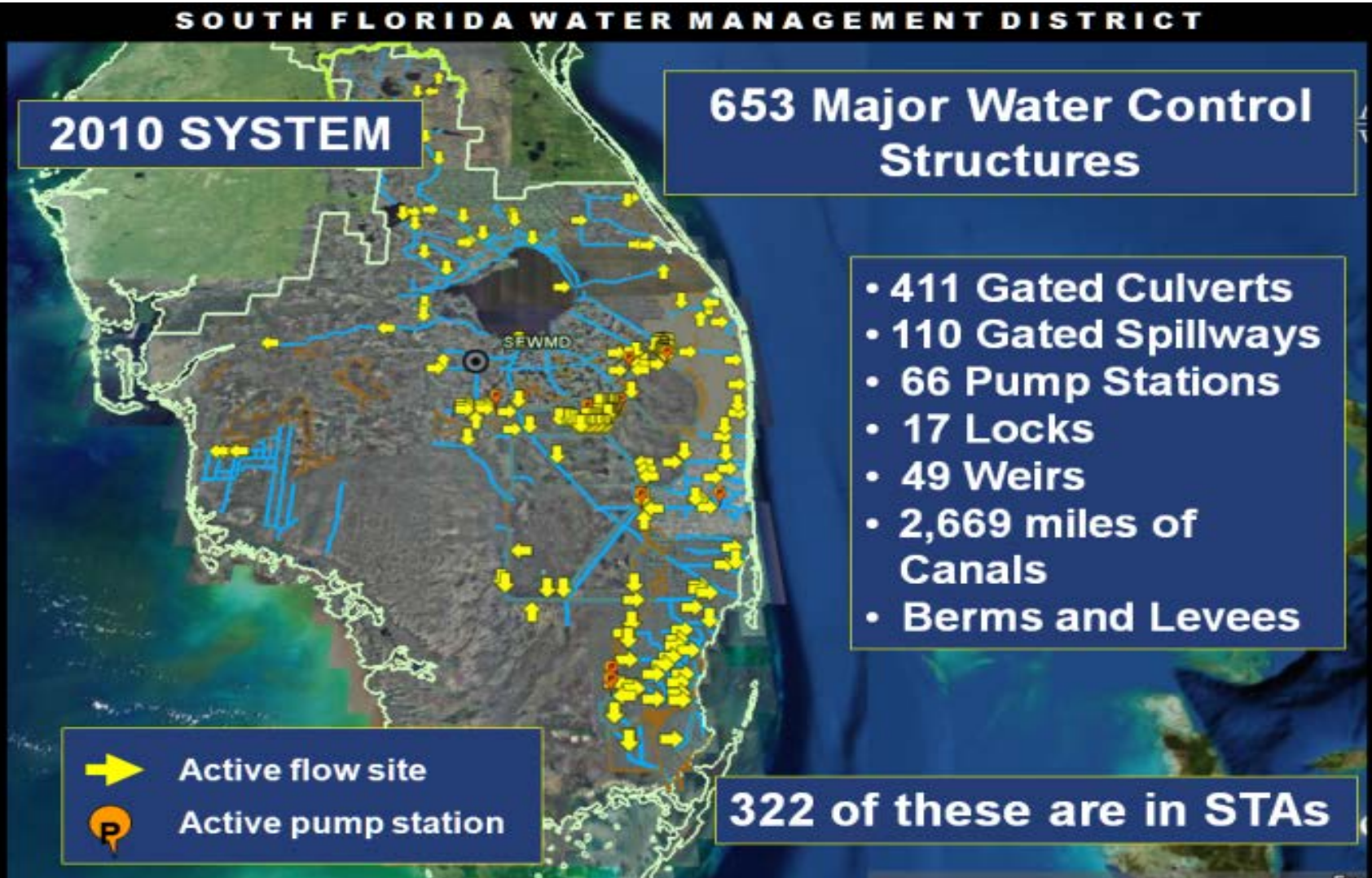
South Florida Water Management District

Our Mission

- Flood Control
- Water Supply
 - Agriculture
 - Urban
 - Everglades National Park
 - Saltwater Intrusion
- Water Quality
- Natural Systems Restoration

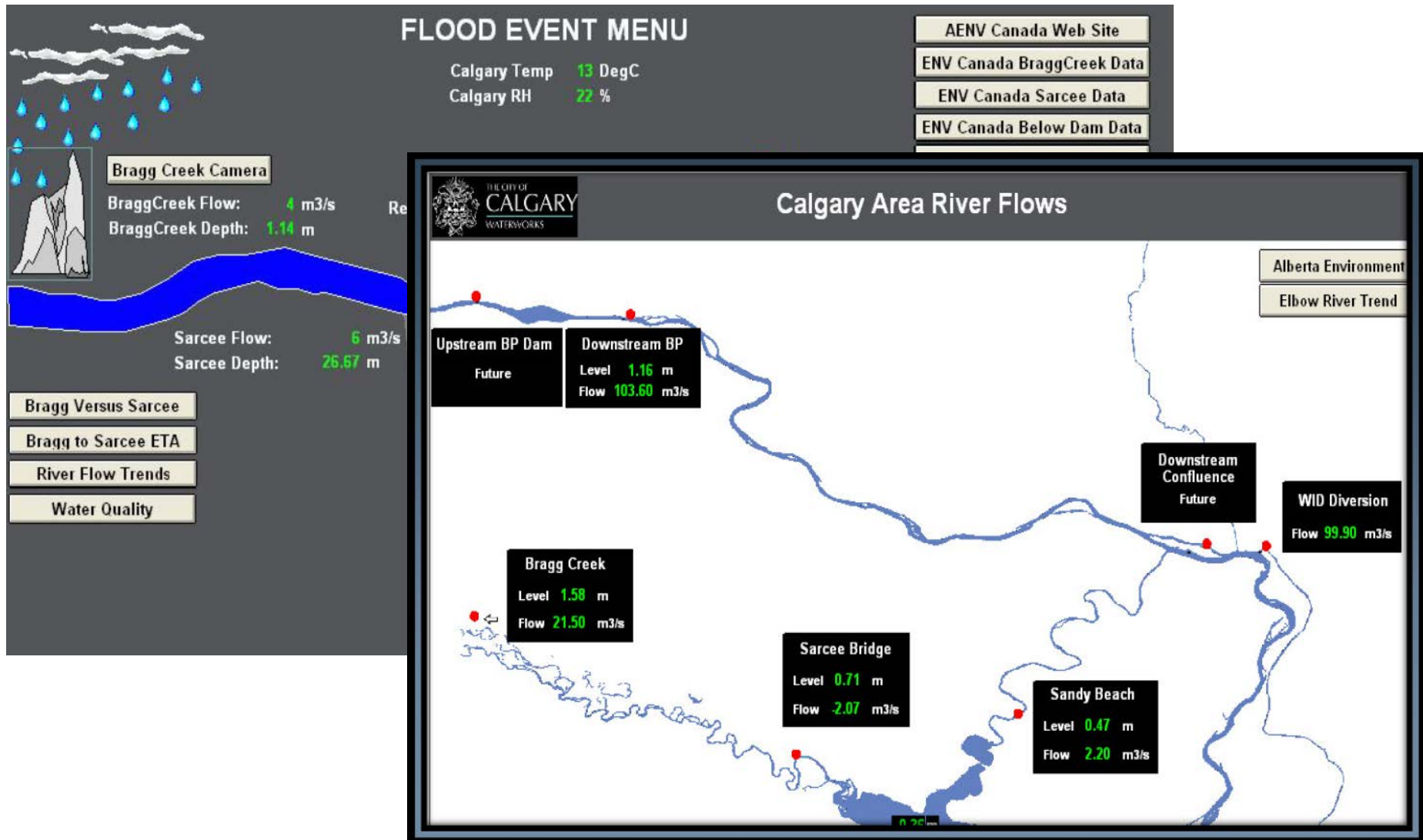


South Florida Water Management District



Real-world example: Tropical Storm Issac 2012

Calgary's Emergency Operations



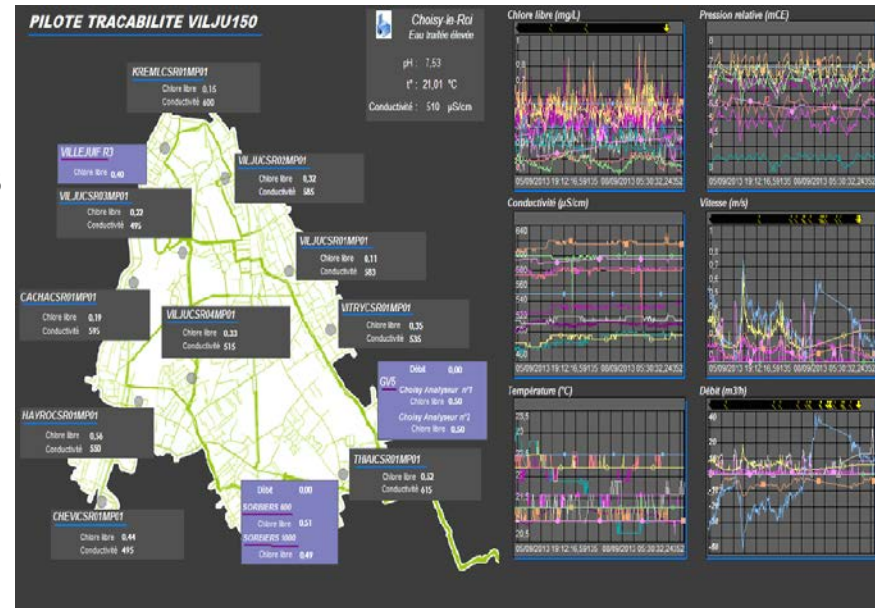
Veolia's Unified Control Center

- ODMS allows us to have a SCADA combining our three territories of production and distribution
- ODMS met the data sources from water supplies, network, customer service, data context for the implementation of the unified services
- Data is collected real-time data (2'30 / 5/10/15/60 minutes depending on equipment).

A single control center for three territories

A unique vision for an efficient control

For safety of the water supply



- Creating interactive screens for real-time monitoring

Real-time Data + GIS Integration

Mixing multiple data sources while providing better **consolidation** and **readability**

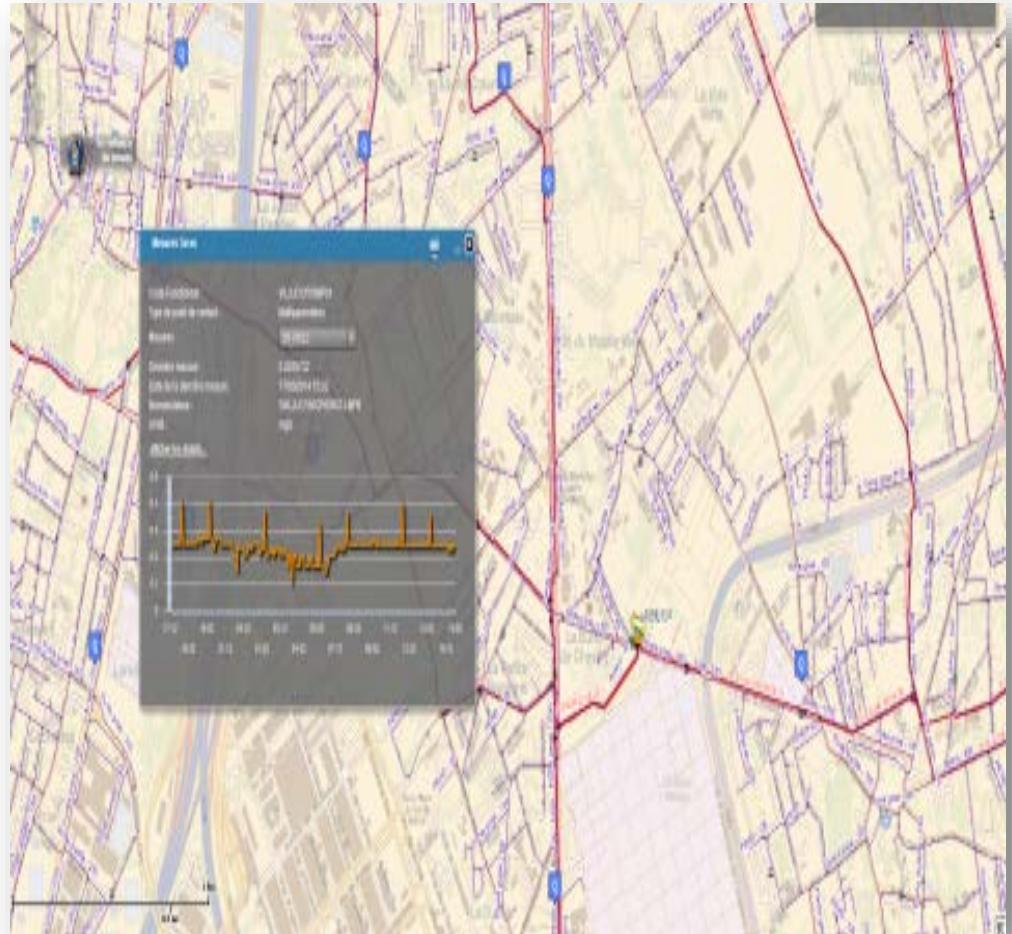
Better **understanding** of situations

Allows a **synoptic** overview across the whole territory

Intuitive!

Found 7% more leaks

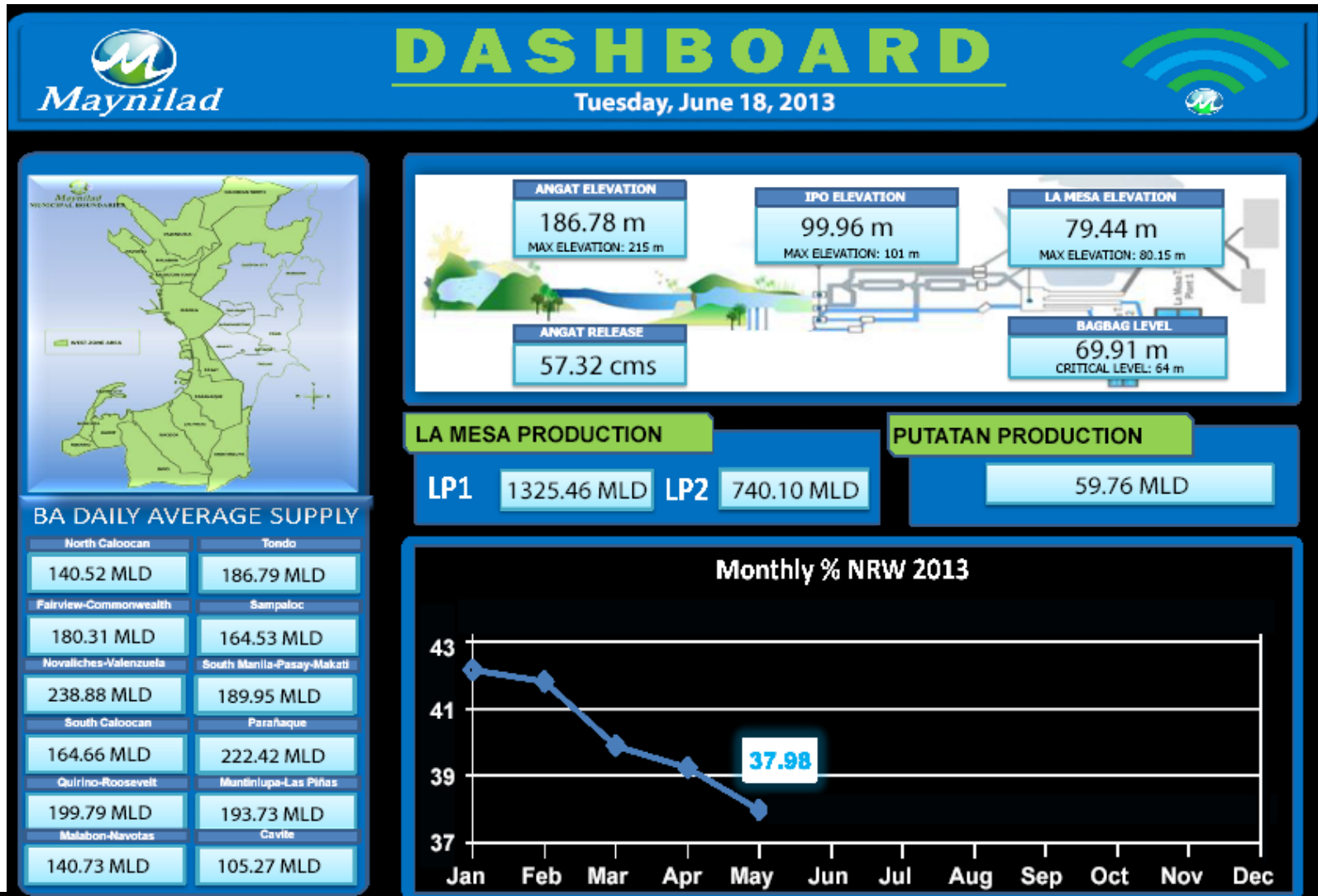
Reduced energy by 6%



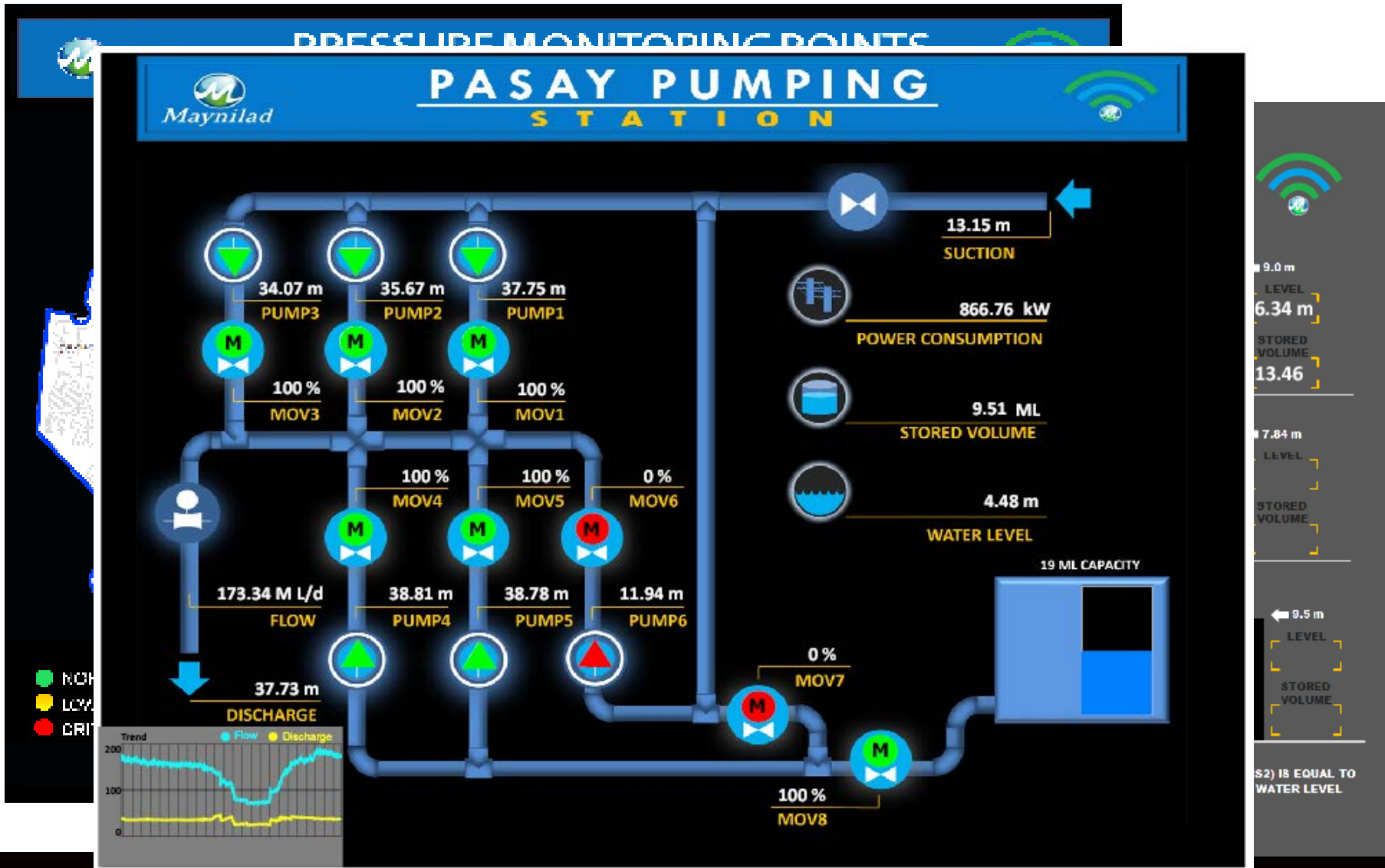
Maynilad Water Benefits Realized (~6 months)

- ✓ Quick response to unusual distribution network changes
- ✓ Better asset condition management
- ✓ Faster assessment on operations efficiency
- ✓ Cost on Operations
 - ✓ Less outsourcing
 - ✓ Reduced downtime
 - ✓ Less manpower
- ✓ Secure, scalable and redundant data management system
- ✓ User friendly

Dashboard Overview



Pressure Monitoring



Halifax Water Reduces Leaks in Real-Time

Water service to 325,000 people.
\$600,000 / yr savings reducing leakage (DMA Night Flows).

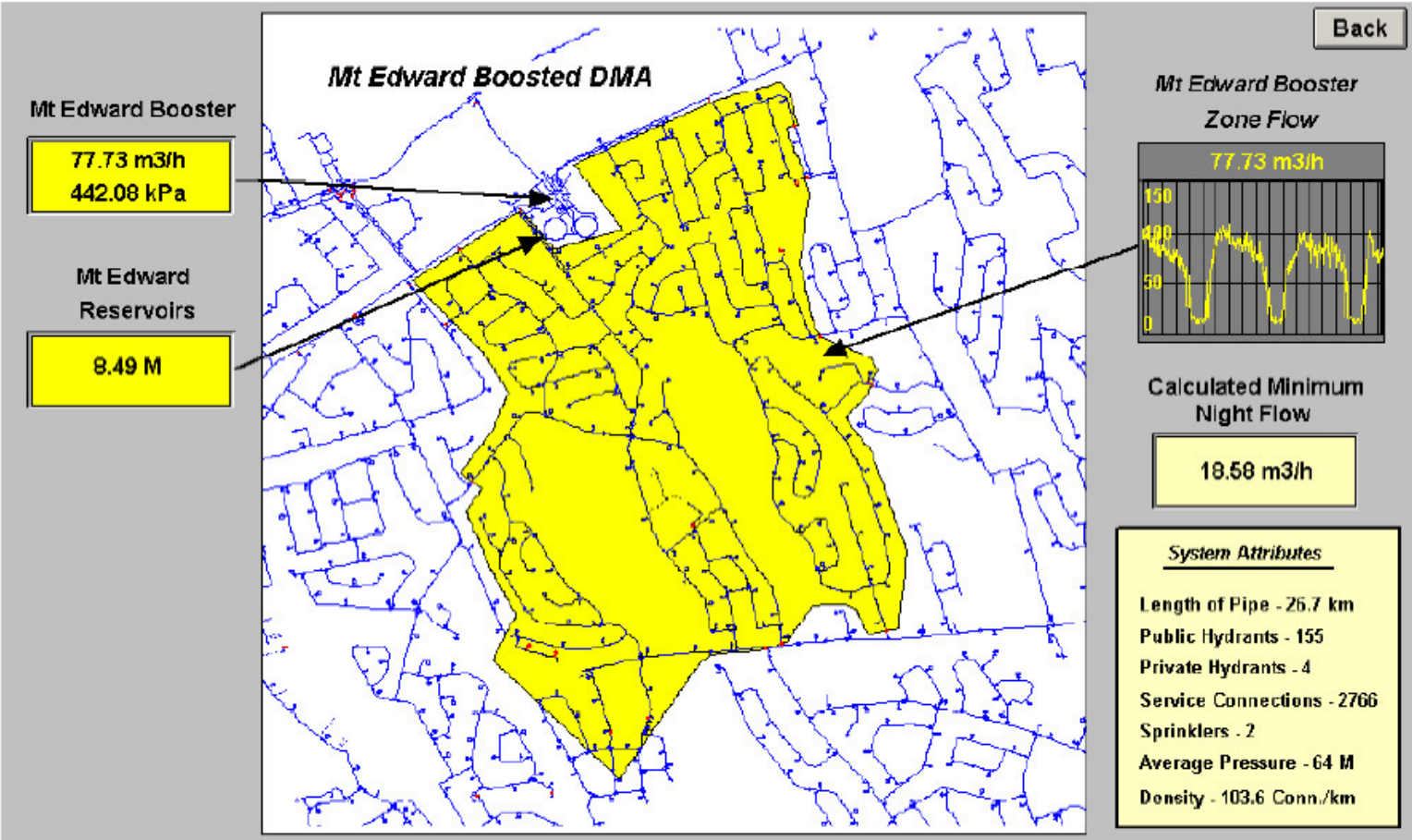


Figure 2.3 Mount Edward DMA, Dartmouth, Nova Scotia

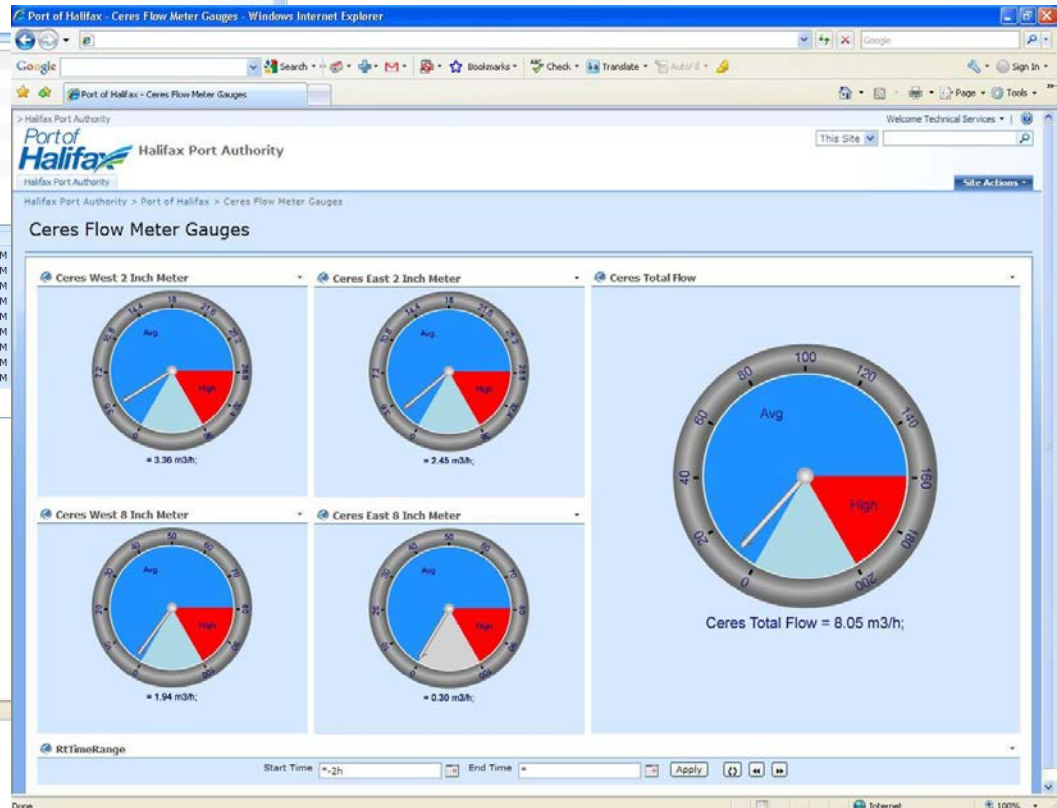
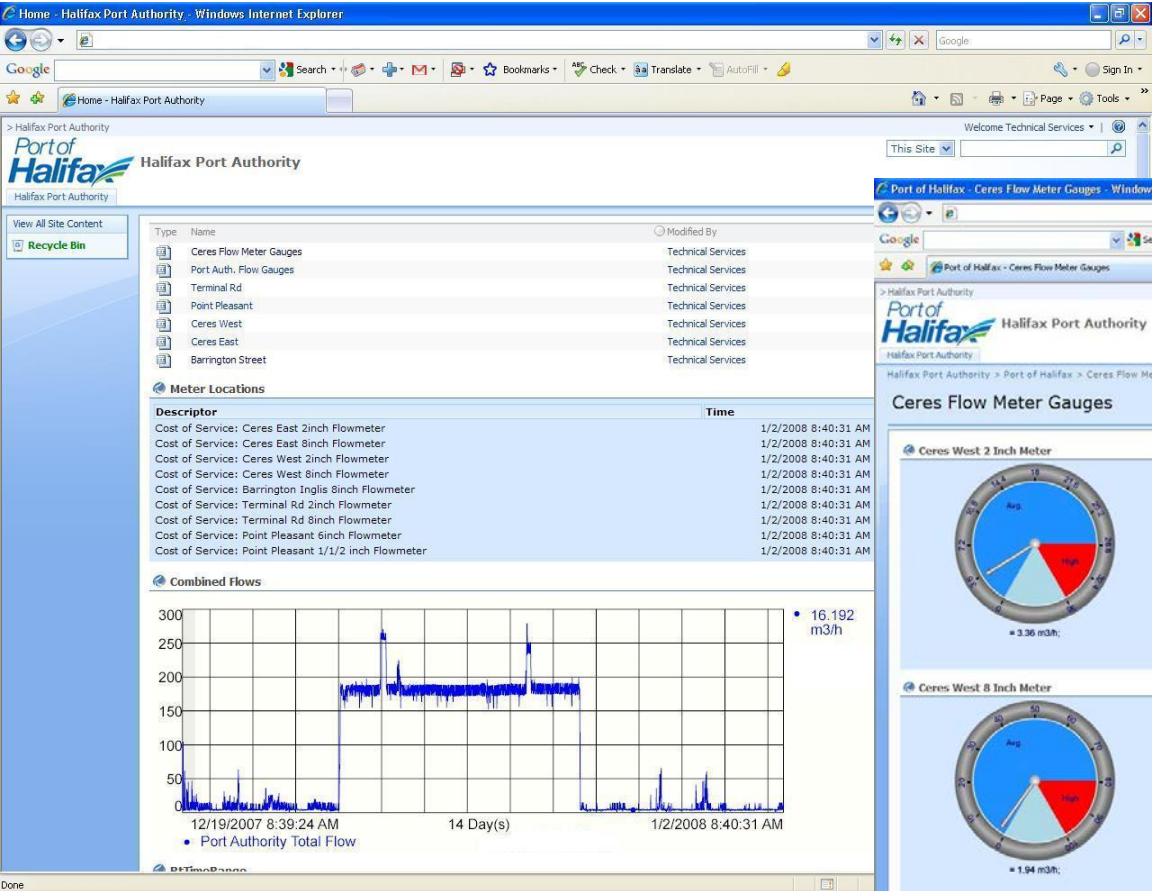
PI to Esri ArcGIS Demo

<https://www.youtube.com/watch?v=5bTWihcjcao>

Real-time Consumption Management

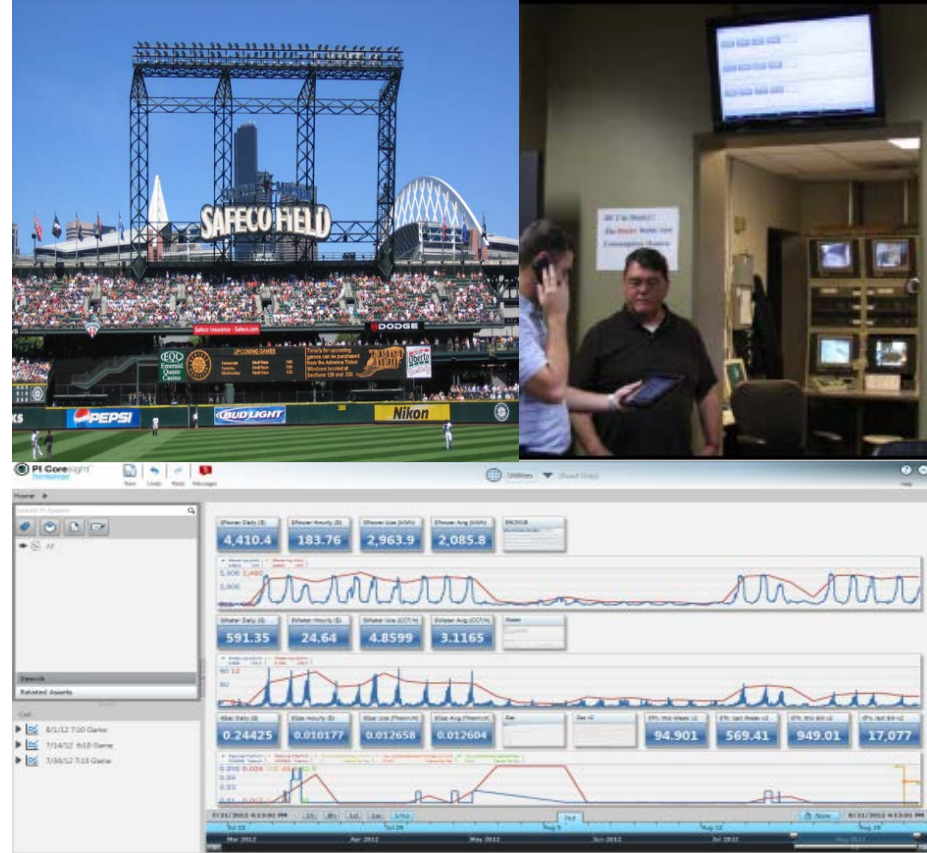
“Sustainability, both sides of the meter.” Carl Yates, GM of Halifax Water

Real time water consumption dashboards for largest consumers



Safeco Field

- Real-time Operational Awareness
 - Security Office
- Unplanned Event Notification
 - Water Leak
- Operational Systems Costs
 - Stadium Roof Open/Close
- Key Equipment Reliability
 - Stadium Roof Equipment
- Solar Panel Integration
 - Green Operations and Cost Reduction
- Hard Savings
 - Electric – 10% to 30% reduction
 - Water – 10% to 30% reduction
 - Gas – 10% to 30% reduction
 - Maintenance on Equipment – 5% to 20% reduction
 - Return on Investment – Typically less than one year
- Soft Savings
 - Greens the Brand
 - Assists in attaining LEED Points
 - Automates providing data to the EPA's Portfolio Manager
 - Continuous Monitoring allows for Continuous Improvement

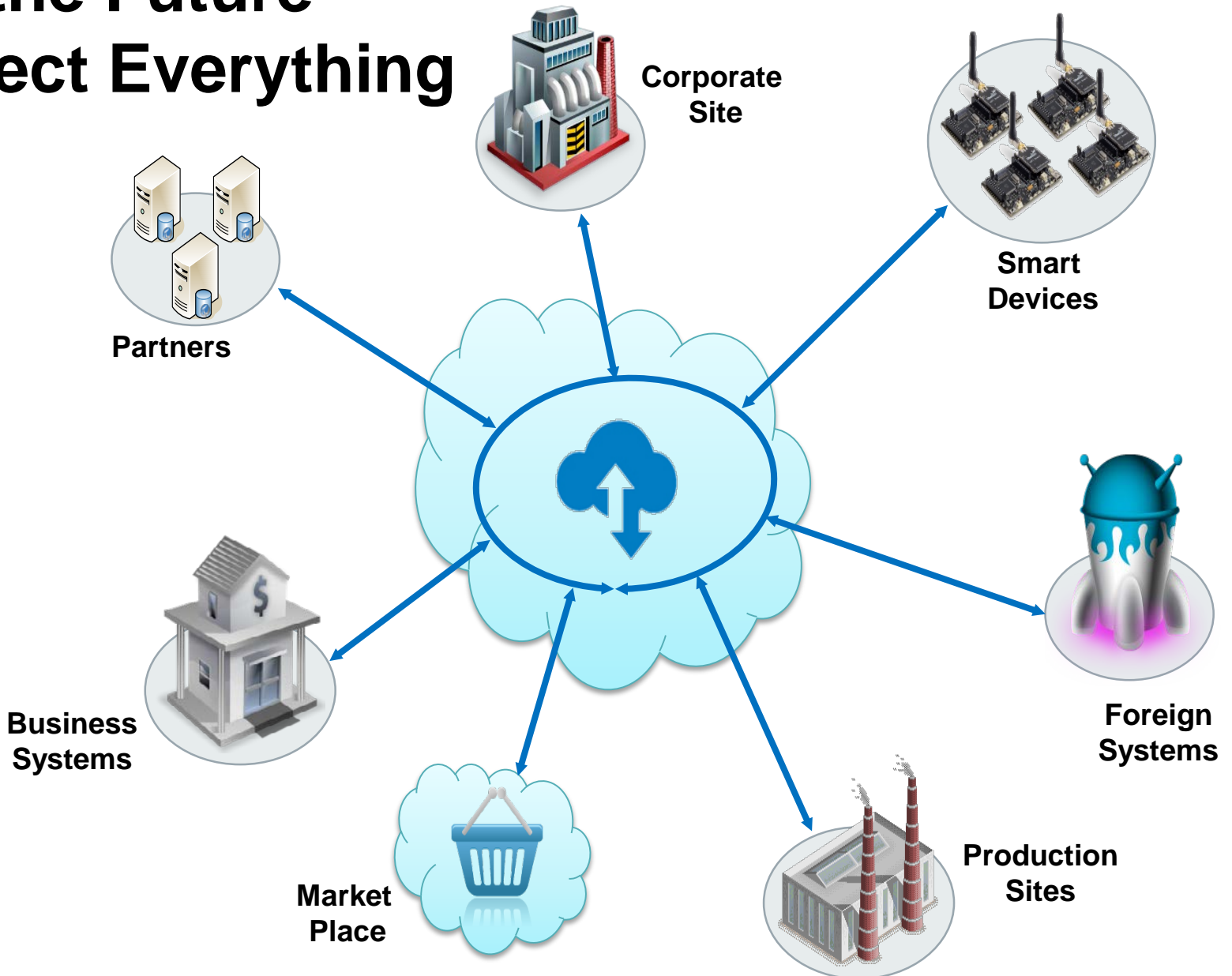


“My PI System data feeds right into the Major League Baseball centralized data collection system that’s tracking my water, gas, and electric and it’s automated. That’s going to enable 29 other teams to adopt the kind of behavior that’s helped us return more than \$1.5 million to our bottom line in just 4 years.”

- Scott Jenkins, VP Operations Seattle Mariners

THE NEAR FUTURE

In the Future – Connect Everything



Thank You!

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Principal, Global Water Industry
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OSIsoft Water:
<http://www.osisoft.com/corporate/waterutilities/index.html>

