The Role of the PI System in IIoT

Presented by
Martin Jetté – Regional Manager Canada

October 5th, 2017

We believe **People** with **Data** can **Transform** their world

Birth of the Internet of Things - IoT

The IoT Game Changer

What´s Driving the Interest in IoT?

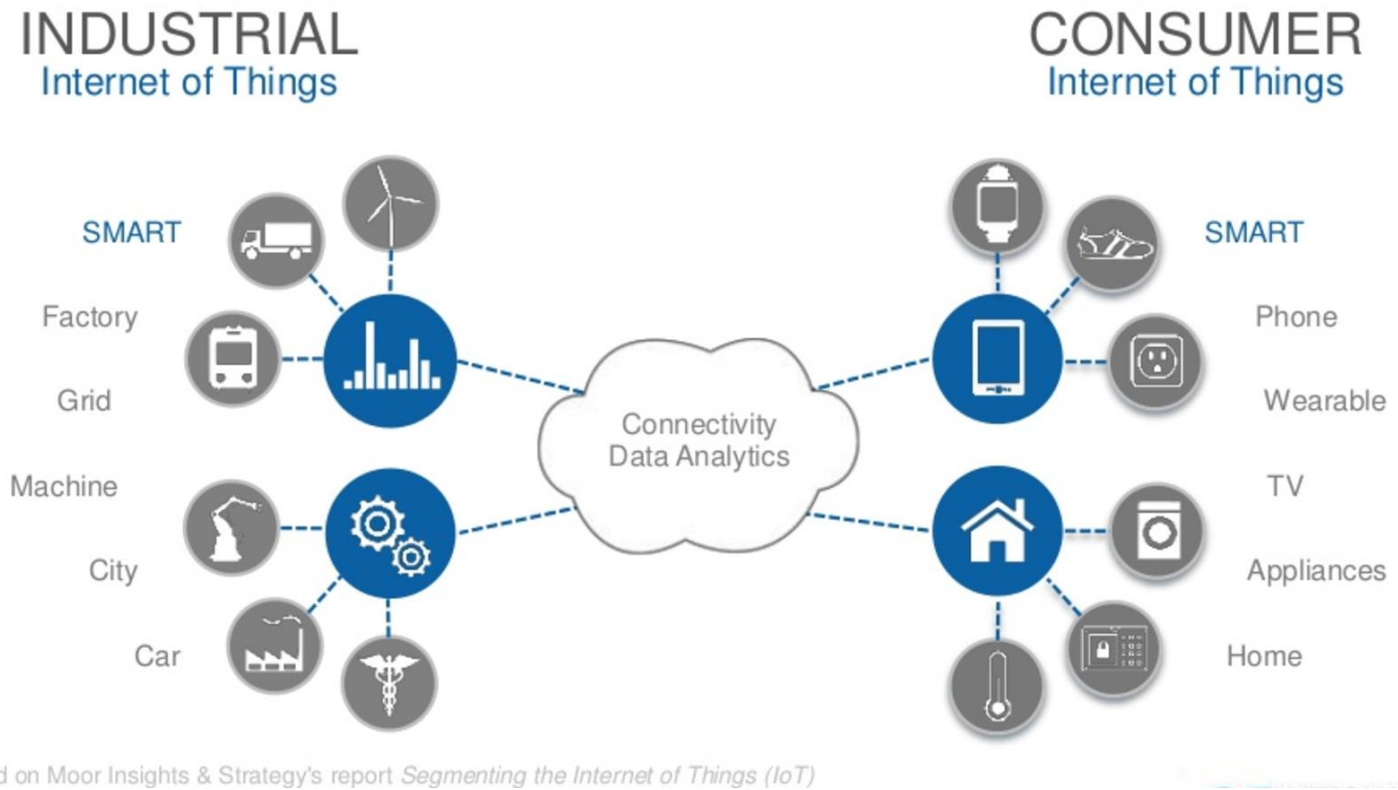
Cheap, and tiny sensors

Decreasing compute and storage costs

New abilities to process and analyze data

Ubiquitous connectivity

Enter the Industrial Internet of Things - IIoT



Based on Moor Insights & Strategy's report *Segmenting the Internet of Things (IoT)*

OSIsoft on Industrial IoT

"Connecting people with sensor based data in ways that were physically or economically unrealistic before"

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OSIsoft and the Industrial Internet of Things (IIoT)

Dr. J. Patrick Kennedy
Founder, CEO, OSIsoft, LLC

Accelerated by the 4th Industrial Revolution

Offering a new opportunity for Digital Transformation

1st	2nd	3rd	4th
1800	1890 – 1910	1960 – 1970	201x
Mechanization, water power, steam power	Mass production, assembly lines, electricity	Computers and automation	Cyber-physical systems

What does it mean to Industry?

- More Automated machines
- Smart and connected products
- Augmented operators
- Cloud connected global facilities
- Efficient, intelligent operations
- Real time feedback loop for supply chain logistics
- Diversification of revenue streams

Predictive maintenance
Condition based Maintenance
Loss prevention
Better Asset utilization
Inventory tracking
Disaster planning and recovery
Downtime minimization
Energy usage optimization
Asset performance effectiveness
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IoT is Not Magical--
It's What You Can *Do* With the Data

Larry S. Shutzberg
SVP & CIO for Evergreen Packaging,
Graham Packaging,
Closure Systems International

Do you want to be Digital Prey or Predator?

- Forester Research

The Digital Opportunity - Top B2B Digital Companies

Revenue Growth	Profit	Shareholder Returns
5X	8X	2X
Their rivals	Their rivals	Their rivals

McKinsey and Company- McKinsey Digital Quotient, Capital IQ

Data Driven Transformations

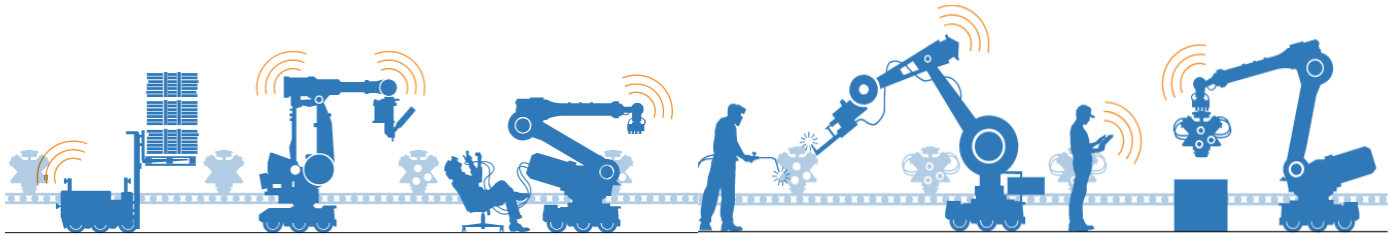
Safety & Security	Energy	Productivity	Asset Health	Quality	Regulatory Performance
					
Eliminated **5 unplanned** shutdowns in first year	$3.3 million in annual energy savings	**Industrial Demand Response** and Smart Manufacturing	**€20M** per year in preventative maintenance and improved worker safety	1000+ fewer paper documents via Lifecycle tracking	Recovering **640M liters** of treated water

How is OSIsoft supporting IIoT

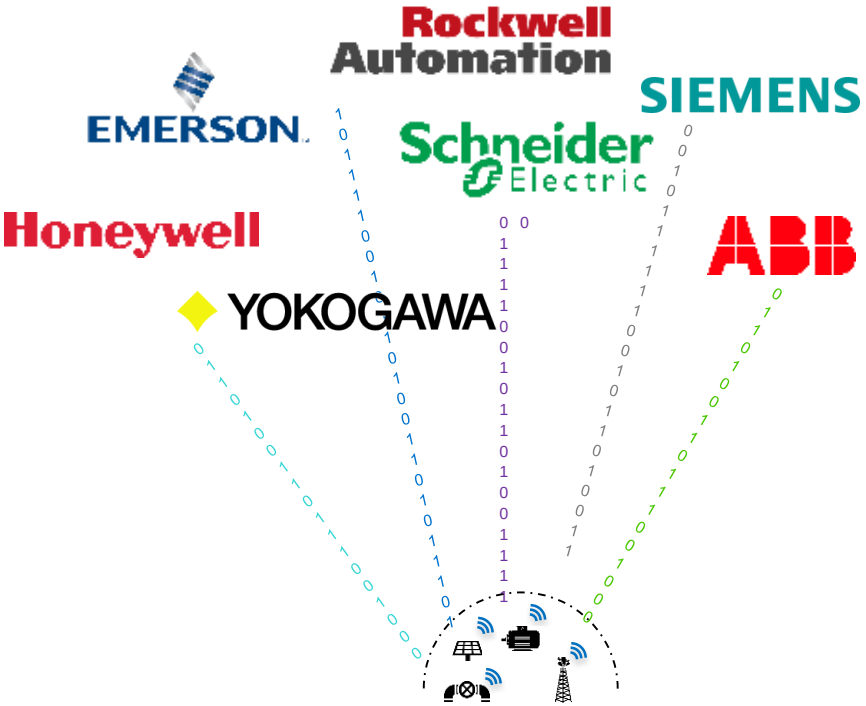
OSIsoft Pervasive Data Collection strategy

"Ensuring no matter where your operational data resides, there are OSIsoft technologies available to collect and store this data"

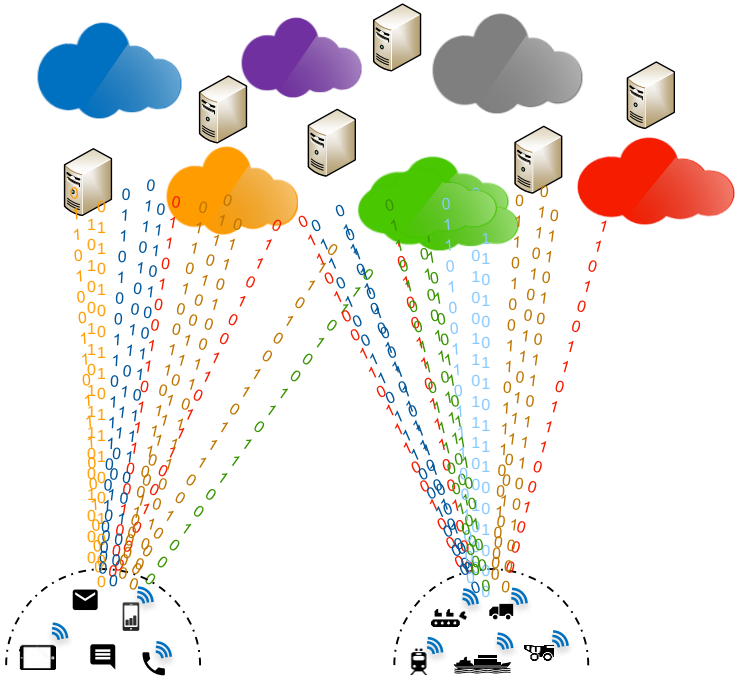
- Ray Hall – VP Engineering



The IIoT Challenge



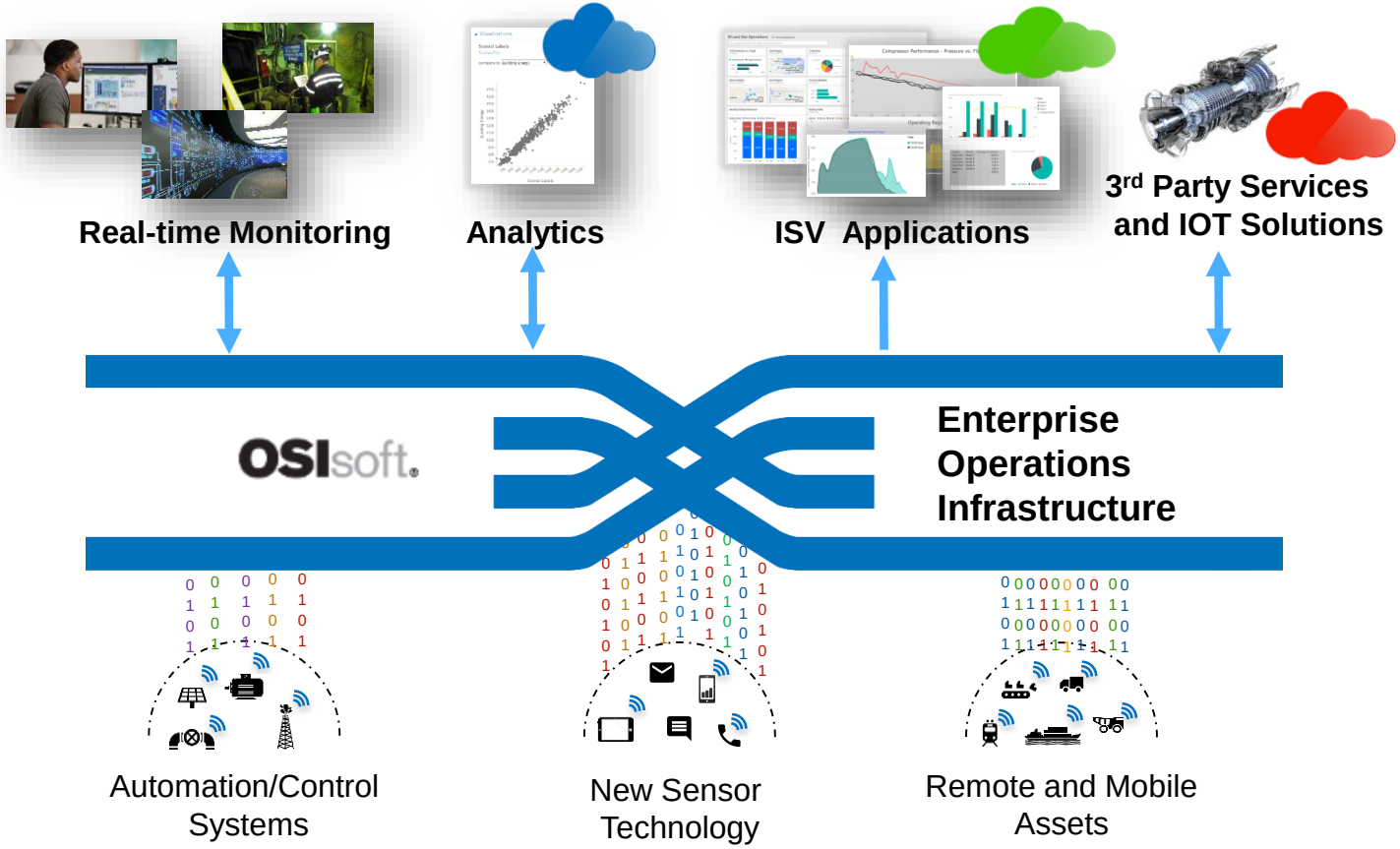
Automation/Control Systems



New Sensor Technology

Remote and Mobile Assets

Strategic Approach to an IIoT Enabled Enterprise



USE	CONNECTS TO	EDGE TECHNOLOGY	HARDWARE PLATFORM
Large facilities **10s of systems** **1,000,000s of data streams** **- 100,000s streams/system**	 DCS/SCADA	PI Interface PI Connector	 Server / PC
Distributed and/or remote assets **10,000s of devices** **1,000,000s of data stream** **- 100s of streams / device**	 Remote Assets	PI Connector	 Industrial Router
Embedded within equipment, control and IT hardware **1,000s of devices** **1,000,000s of data streams** **- 1,000s of streams / device**	 Automation Equipment	Edge Connector Data Access Data Storage Analytics Relationships PI / OCS Connectivity Edge Data Store	 Edge Gateway  PLC Controller
Complied In, open source technology from OSIsoft **100,000s of devices** **1,000,000s of data streams** **- 10s of streams / device**	 Sensors	Admin API Input API Buffer Output Open Edge Module	 Embedded Gateway  SBC
Roll your own embedded app **10,000s of devices** **1,000,000s of data streams** **- 100s of streams / device**	 Proprietary Hardware	OMF Application	 Local HMI  Industrial Switch **Any OS**

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How OSIsoft is Extending the PI System for IIoT

Jason Strayberry, Chris Felts, and Enrique Herrera
OSIsoft

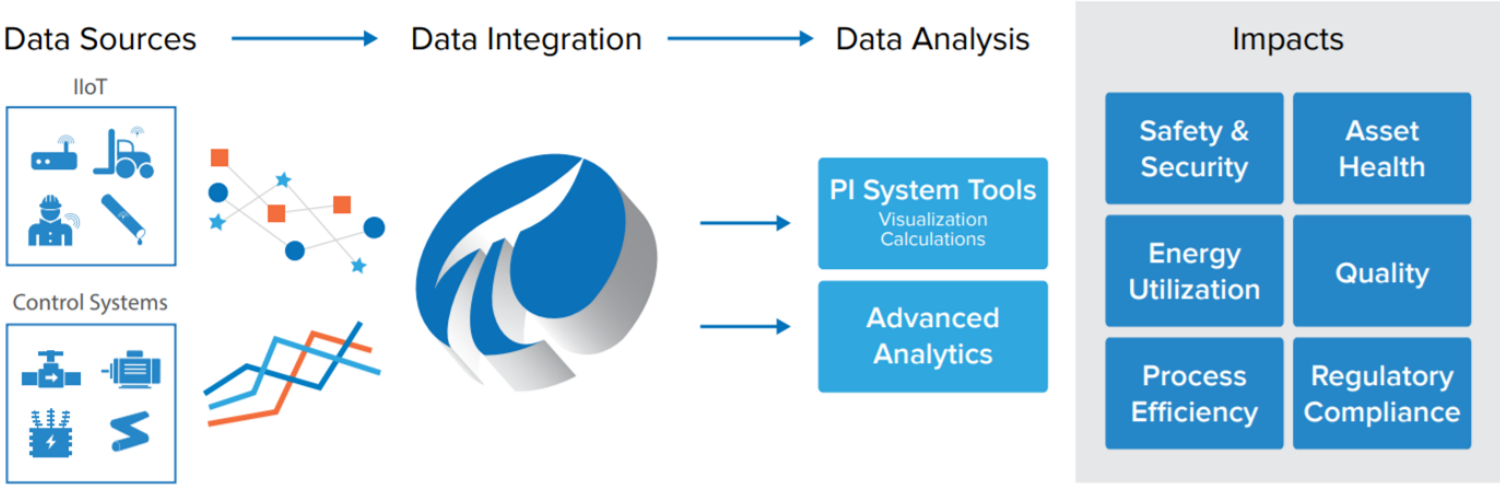
Digital tranformation and IIoT use cases

3 Use Cases for “New” IIoT

Monitor what you couldn’t

Integrate new sensor types

Add sensors around existing systems



DTE Energy Shortens Customer Outages

With Wireless Sensors & The PI System

Challenge

Determining where to send crews during outages to minimize patrol times and reduce duration of outages

Solution

Install wireless sensors to help pinpoint fault locations. Leverage OSIsoft technology to collect and share this data across the enterprise

Results

Prevented spending **$25** million in Capex. Reduce 6.6 million customer outage minutes annually

1000x Smart Fault indicators

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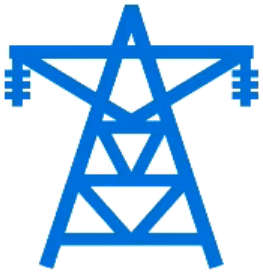

Improving Distribution Reliability with Smart Fault Indicators and the PI System

Cameron Sherding, DTE Energy

Heavy-Haul Equipment Logistic Strategies Using the PI System

COMPANY and GOAL

ArcelorMittal is Mines Canada on Quebec's North Shore - The world's number one steelmaker hauls and ships over 26 million metric tons of iron ore products every year for the international steel market WANTS to **Transform its mining business with supply chain resilience.**

ArcelorMittal
Mines Canada

CHALLENGE

Increase speed and quality of logistic decisions to support an increase of 10+ Mt of throughput following expansion

- Reduction in variable production costs
- Increase visibility of entire supply chain
- Resilience in adapting to disruptions and plan changes

SOLUTION

Use the PI System as an Information Hub to "Contextualize" data and manage all aspects of the supply chain

- Transform data into actionable information
- Support KPI-based planning to drive business goals
- Assist in scheduling maintenance at the right time based on market requirements

RESULTS

Throughput targets of 26Mt were met as shipping capacity increased with no infrastructure investments

- Visibility on all strategic, tactical and operational planning challenges
- Increased production and ore shipments from 23 to 26 Mt with additional revenue of 120M$ in 2015

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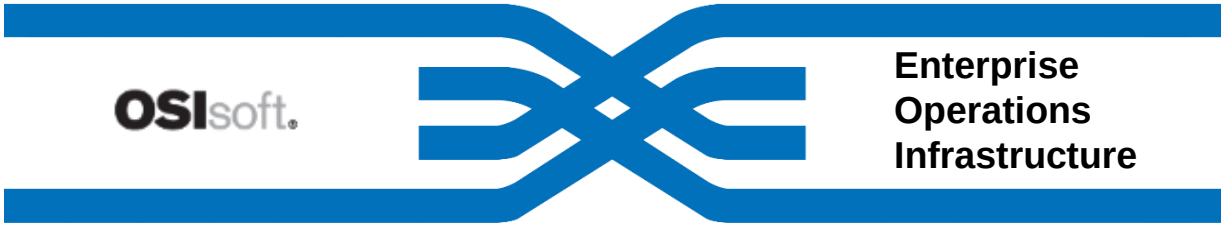
A Single Supply Chain-Oriented View of Operations

Michel Plourde, ArcelorMittal Mines Canada

Next, learn from **OSIsoft** and, most importantly, from **your peers** how **you** can achieve a **digital transformation with IIoT**

1. **IIoT Data Collection with the PI System**
2. **IIoT Data Readiness with the PI System**
3. **IIoT Data Access with the PI System**



Thank You