Less Wires, More Data: Harnessing new technology at the network edge

Presented by

Martin Davis, Vice President of IT, J.D. Irving Ltd
Keith Flynn, President & Founder, RtTech Software Inc.
Quality Service
Quality Products
Customer Satisfaction
Since 1882 - 135 Years

Over 15,000 engaged employees
A diversified group of companies, vertically integrated to support each other, committed to the future and continued business growth.
forest products

J.D. Irving, Limited
Largest private reforestation program in Canada.

A full range of forest products:
- lumber
- pulp
- paper
- corrugated medium

consumer products

Irving Tissue
Leading manufacturer of premium quality tissue products - branded and private label.

Irving Personal Care
Private label diaper and training pants for North American retailers.

transportation

Midland Transport
Sunbury Transport
Kent Lines
Atlantic Towing
RST Industries
NB Southern Railway
Harbour Development
food products

Cavendish Farms
Processor of frozen potato and appetizer products in North America.

Cavendish Produce
Fresh potato specialists serving retail and food service.

shipbuilding, industrial & construction

Irving Shipbuilding
Kent Homes
- Modular buildings - commercial & residential
Irving Wallboard
Gulf Operators
Irving Equipment/ Industrial Rentals

retail & distribution

Kent Building Supplies
Chandler
Universal Truck & Trailer
Cavendish Agri Services
Plasticraft
...and more
Operational Excellence

Built on

Operational Intelligence

Powered by The PI System
IoT & OSIsoft – J.D. Irving & RtTech

What do we use the PI System for?

• Used across our Manufacturing plants
• Includes:
  – Paper Mills
  – Tissue converting
  – Diaper
  – Frozen Food
Internet of Things in Manufacturing

MANUFACTURING PLANT

- Monitor production flow in near-real time to eliminate waste and unnecessary work in process inventory.
- Implement condition-based maintenance alerts to eliminate machine downtime and increase throughput.

GLOBAL FACILITY INSIGHT

- Manage equipment remotely, using temperature limits and other settings to conserve energy and reduce costs.
- Aggregate product data, customer sentiment, and other third-party syndicated data to identify and correct quality issues.

CUSTOMER SITE

- Transmits operational information to the partner (e.g., OEM) and to field service engineers for remote process automation and optimization.
- Provide cross-channel visibility into inventories to optimize supply and reduce shared costs in the value chain.

GLOBAL OPERATIONS

- Management can see my production line status and recommend adjustments to better manage operational costs.
- I gain insight into usage patterns from multiple customers and track equipment deterioration, enabling me to reengineer products for better performance.

THIRD-PARTY LOGISTICS

- I know when to deploy the right resources for predictive maintenance to minimize equipment failures and reduce service cost.
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Opportunities

• Capturing information, from anywhere, in real-time
• Optimizing production flow
• Condition-based maintenance automatically creating work orders
• Adjusting production speeds automatically to maximize production while minimizing energy
• Automated vehicles making data-driven decisions
• Transportation and Marine operations
Common Challenges

- Assets not connected to the PI System have no real-time visibility

- What about limitations?
  - Isolated areas of a plant or in the field (outside the plant)?
  - Poor network quality?
  - Mobile assets?
  - Remote Meters?

- Or aging or outdated controls with low connectivity?
  - Upgrades are costly. Rip and Replace
  - Networking and installation significant
RtTech Relationship

- RtTech and JDI are long term partners
- JDI helped design & develop RtDUET
- RtDUET and RtEMIS key components of our architecture
- Piloting Cipher
  - Scalable IIoT solution
  - Connect more to PI
Cipher is a drop-in Industrial IoT solution
  – Cost effective “No Rip and Replace”
  – Data from remote assets, integrated in real-time into the PI System
  – Seamless integration to your existing PI system
IoT & OSIsoft – J.D. Irving & RtTech
Solution: Less Wires, More Data

“Simplifying the Industrial Internet”
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Solution: Less Wires, More Data

Asset (Log Saw) → Wireless Sensors → Edge Gateway MQTT Broker → PI Web API → PI Server

Scalable for future expansion
Cipher Connect Embedded Web

Dashboard for status

OSI/PI Publisher is running

B&B MQTT Client is running

CPU Usage

Mem Usage

Disk Usage
Cipher Connect Embedded Web

Enter the configuration of the MQTT Broker and PI Web API Server you want to use to collect and report data.

OSI/PI Publisher: OK
B&B MQTT Client: OK

MQTT Broker URL: 127.0.0.1
MQTT Broker Port: 1883
Pi Server URL (CWF or Web API): 192.168.2.148
Use OMF:
Pi Web API Data Server Name: brad-vm
Pi Web API Username: Administrator
Pi Web API Password: **********
Cipher Connect Embedded Web

Item configuration

- Deactivate 00134-20F220B.analog_input_1
- Deactivate 00134-20F220B.analog_input_2
- Deactivate 00134-30F220B.temperature_internal
- Deactivate 00134-31DECE8.analog_input_1
- Deactivate 00134-31DECE8.analog_input_2
- Deactivate 00134-31DECE8.temperature_internal
- Deactivate 00134-31DECE9.analog_input_1
- Deactivate 00134-31DECE9.analog_input_2
- Deactivate 00134-31DECE9.temperature_internal
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Cipher Connect Embedded Web

Live Data Monitor
Monitor 10 Assets:
$1000 per PLC CAPEX
$300 per device installation
$15/ft cabling/conduit & installation
$1000 System commissioning/test
Total Project = $31,500

“The main cost of an asset monitoring system isn’t the system itself, but the cabling deployment costs.”
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Wired vs Wireless: Savings

Monitor 10 Assets:
$600 Wzzard Gateway
$300 Gateway Installation
$6250 – 13 Edge Nodes
$1650 Edge Node/Sensor Install
$500 commissioning/ test per site
Total Project = $9,300

$22,200 in savings, nearly 70%!
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Cipher Mesh

![Diagram of IoT and OSIsoft integration using MQTT]

- OPC
- Modbus
- BACnet
- OSIsoft
- MQTT

PI Server

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#OSIsoftUC
# Cipher Connect Roadmap

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Cipher Live

Cellular Satellite
Wi-Fi
LAN

Publish AMQP

Cipher Live
Broker

Private Network
VPN

Direct
PI Web API

Subscribe AMQP

Assets

Plant/Office/Corporate

PI Server

Multiple Subscriptions to single Broker

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Contact Information

Martin Davis
Davis.Martin@JDIrving.com
Vice President of IT
J.D. Irving Ltd

Keith Flynn
Keith@RtTechSoftware.com
President and Founder
RtTech Software Inc.