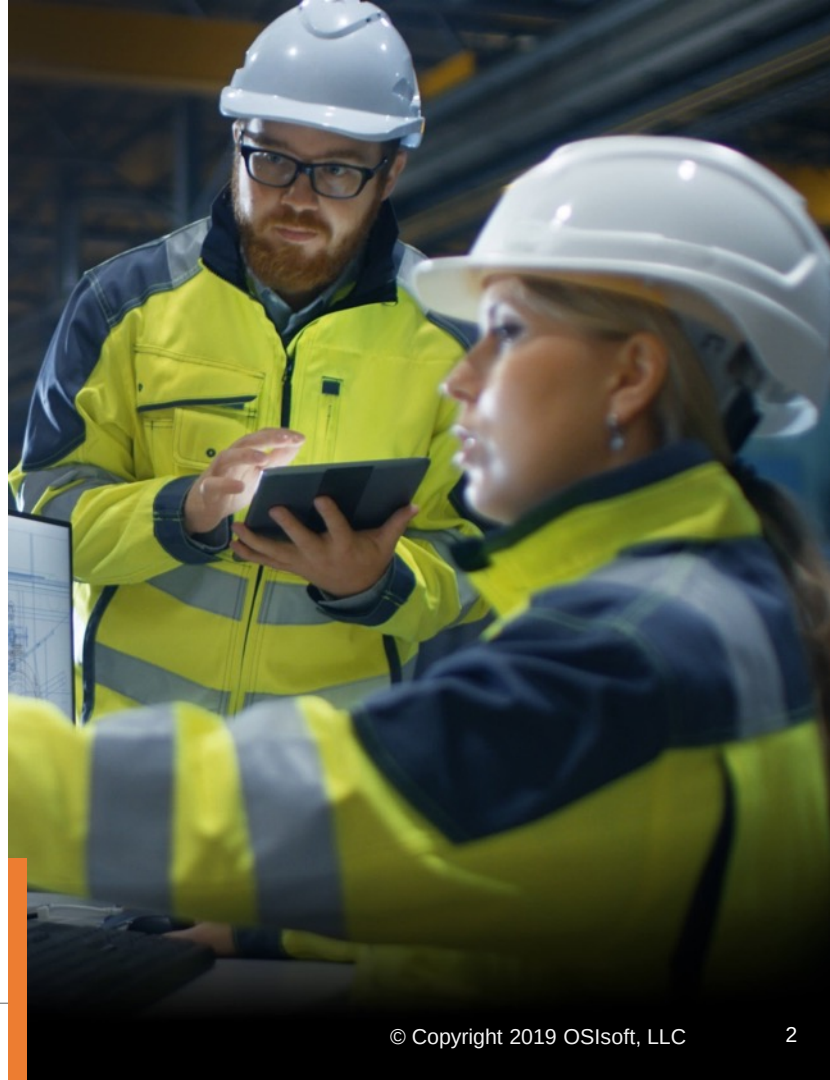
Secure Data Infrastructure for Critical Railway Operations

OSIsoft.

AGENDA

- Introductions
- Security challenges in rail
- Learning from other critical infrastructures
  - Use case – STM
  - Other architectures & resources
- Q&A - panel discussion



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Introductions

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Matthew Miller – OSIsoft
Transportation Industry Principle

Maxim McKay – OSIsoft
Business Advisory Services &
Transportation Industry Champion

Q&A Panel

Jesus Molina, PhD – Waterfall Security Solutions
Director of Business Development

Andrea Roy & Cedric Vallee- Alizent
Director of Business Development & OSIsoft PI Analyst

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Partnerships delivering secure railway solutions…

OSIsoft

- ✓ Leading real-time software data infrastructure
- ✓ Supporting 65% of Fortune 500 Operating Companies
- ✓ Gold Standard for Critical Infrastructure Monitoring

ALIZENT
ASSET INTERACTIVE

- ✓ Global System Integrator - 8 offices - millions of assets
- ✓ Over 20 years experience in monitoring critical assets
- ✓ Common customers-Transportation, Manufacturing & Utilities

- ✓ Global leader in cyber security appliances
- ✓ Strong Integration with OSIsoft products
- ✓ Used by leading utilities and critical infrastructures

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Security Challenges

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Digital Transformation is Changing Industry

Greater Operational Efficiency

Xcel Energy **saved $46 million** and improved renewable integration with real-time data visualizations and weather forecasting.

“Smart” Products & Data-Driven Services

Caterpillar helps transportation giants **save up to $1.5 million** per ship per year through after-market services for fuel reduction and maintenance.

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And Make Operations Data an Asset Everyone Can Use in Real Time

Network Engineer
"Can we increase the overall capacity?"

Control Room Operator
"The process is like a baby – you have to watch it."

Operations Manager
"What is the forecast of productivity?"

Data Scientist
"Can we find new savings with machine learning?"

Reporting Analyst
"I need to combine data from 3 sources in 1 report."

Maintenance Engineer
"I need to know the moment it goes out of tune."

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Proven Business Results

ASSET HEALTH

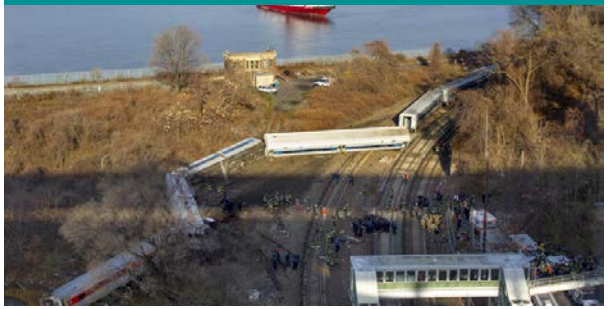
ENERGY EFFICIENCY

NETWORK OPTIMIZATION

ON TIME TRACKING

REGULATORY COMPLIANCE

SAFETY



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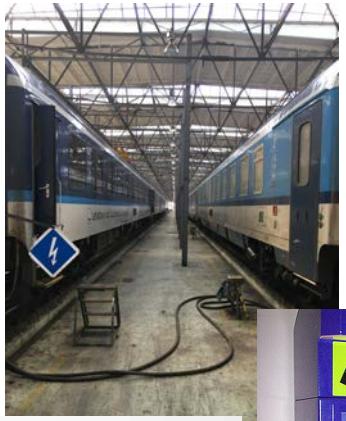
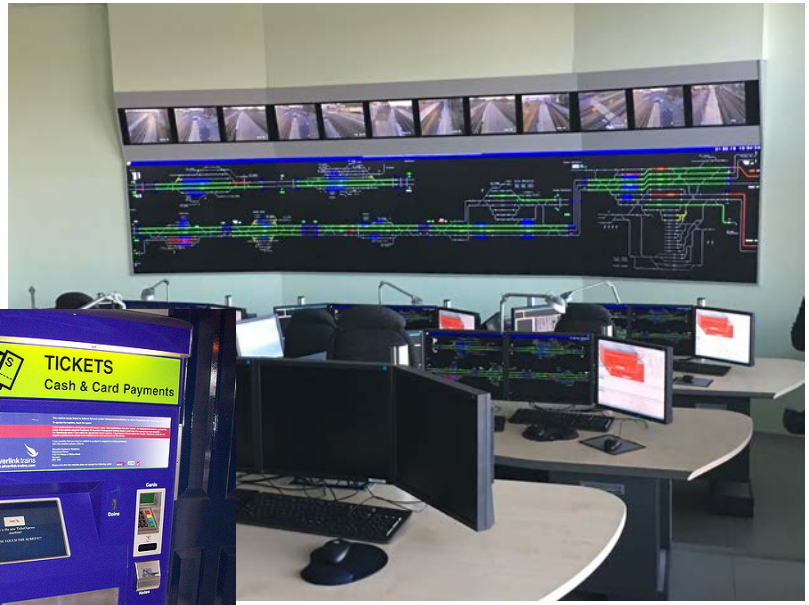
Security Challenges in Rail





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Operations Technology (OT) Systems

CRITICAL SYSTEMS

- Transmission & Distribution SCADA
- Plant DCS
- PLCs
- Environmental Systems
- Other critical operations systems

Limit direct access to critical systems while expanding the value use of information.

Security Perimeter

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Information Technology (IT) Systems

Limit direct access to critical systems while expanding the value use of information.

Business Systems

- ERP
- CMMS
- Planning/ Scheduling
- Accounting
- Engineering
- Communications
- Customer Service

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Learning from others

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Use Case - STM

Société de Transport de Montréal

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STM Overview
Société de Transport de Montréal

- Public company – Operator of the public transit system in Montreal: Metro and Bus services. Operates 4 underground train lines, totalizing 68 stations, 220 bus lines and 1771 busses

- 2nd largest urban transit network in Canada, after Toronto Transit Commission

- Montreal Metro is the largest in Canada in terms of passenger traffic, and 3rd in North America in terms of daily passengers, after New York and Mexico

- En 2016, 416,2 millions passenger-trips

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Command Center

Until 2012

Today

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OPALE Project Description
(Optimisation des Processus et Activités à L'Entretien)

- OPALE project objective was to increase the level of control over fixed asset maintenance

- Software application at the Command Center were not fit for the maintenance team needs

- Project deliverables:
  - New maintenance process and procedures
  - SAP-PM
  - Data infrastructure

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OPALE Project Description
Context

- No data collected by Maintenance on fixed equipment
- Restricted access to fixed assets status and alarm management
- Hard to generate reports and KPIs
- Difficult to diagnose field equipment issues
- No visibility on real-time process, other than through Command Center
- Command Center is not designed for flexibility needed by maintenance

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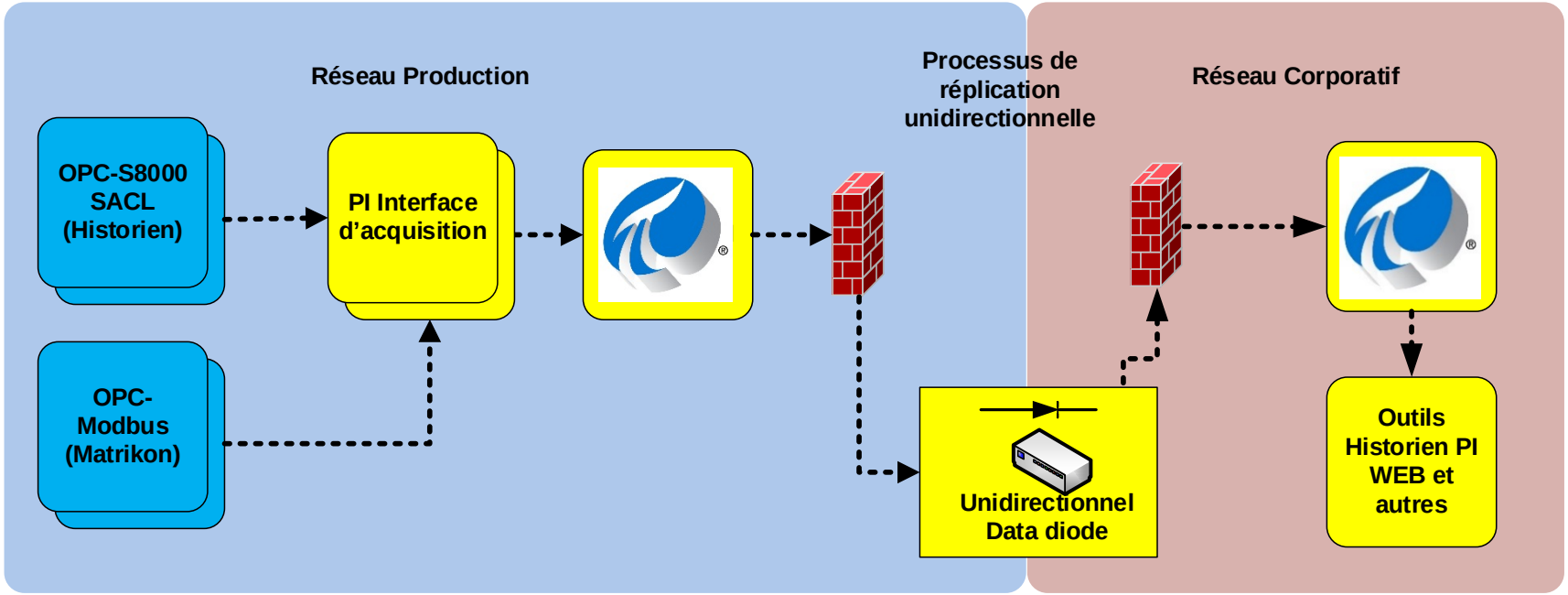
PI System Architecture



Architecture is not fully HA , but is built for robustness and stability.

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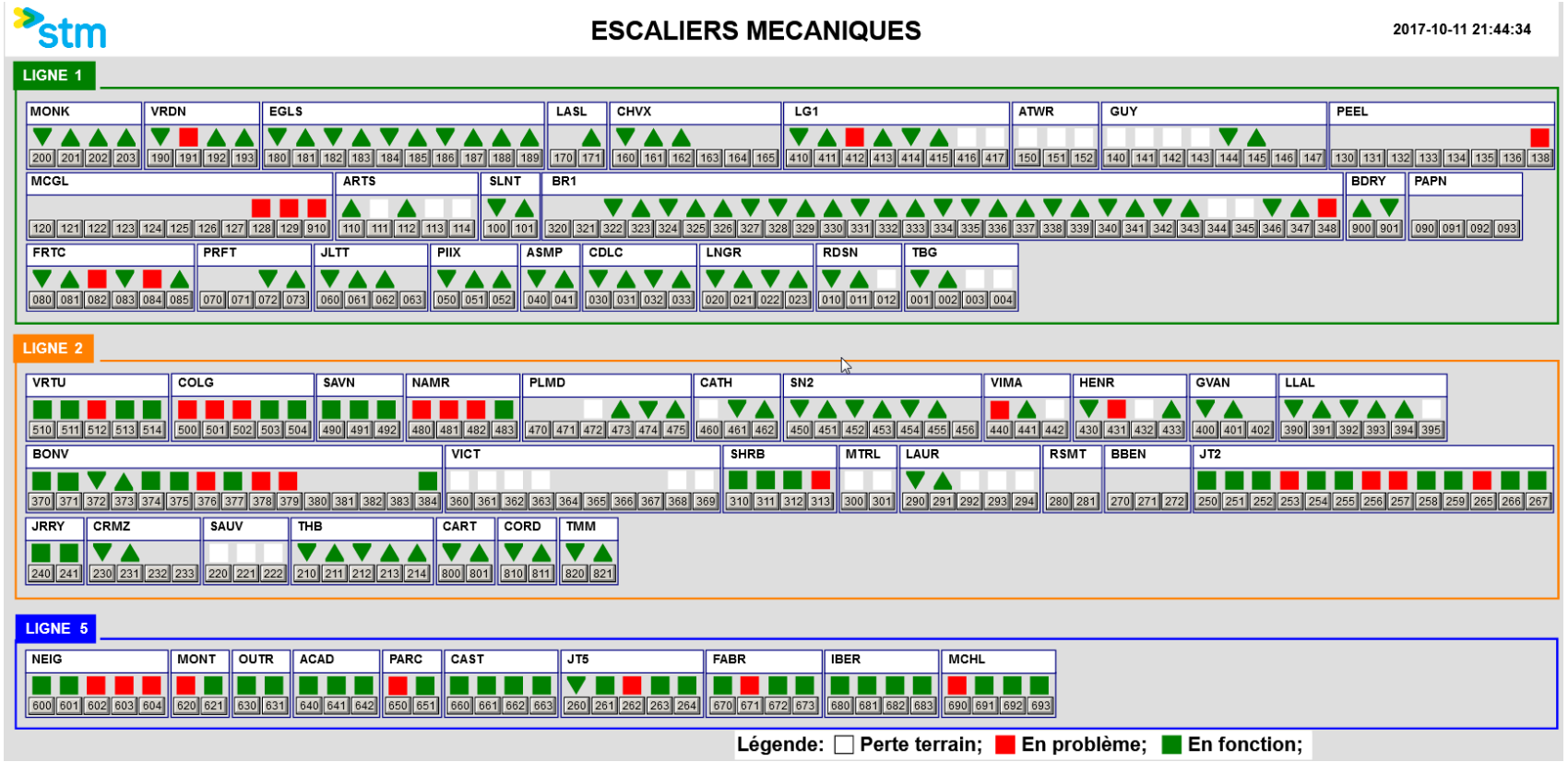
Escalators Fleet-Wide Monitoring



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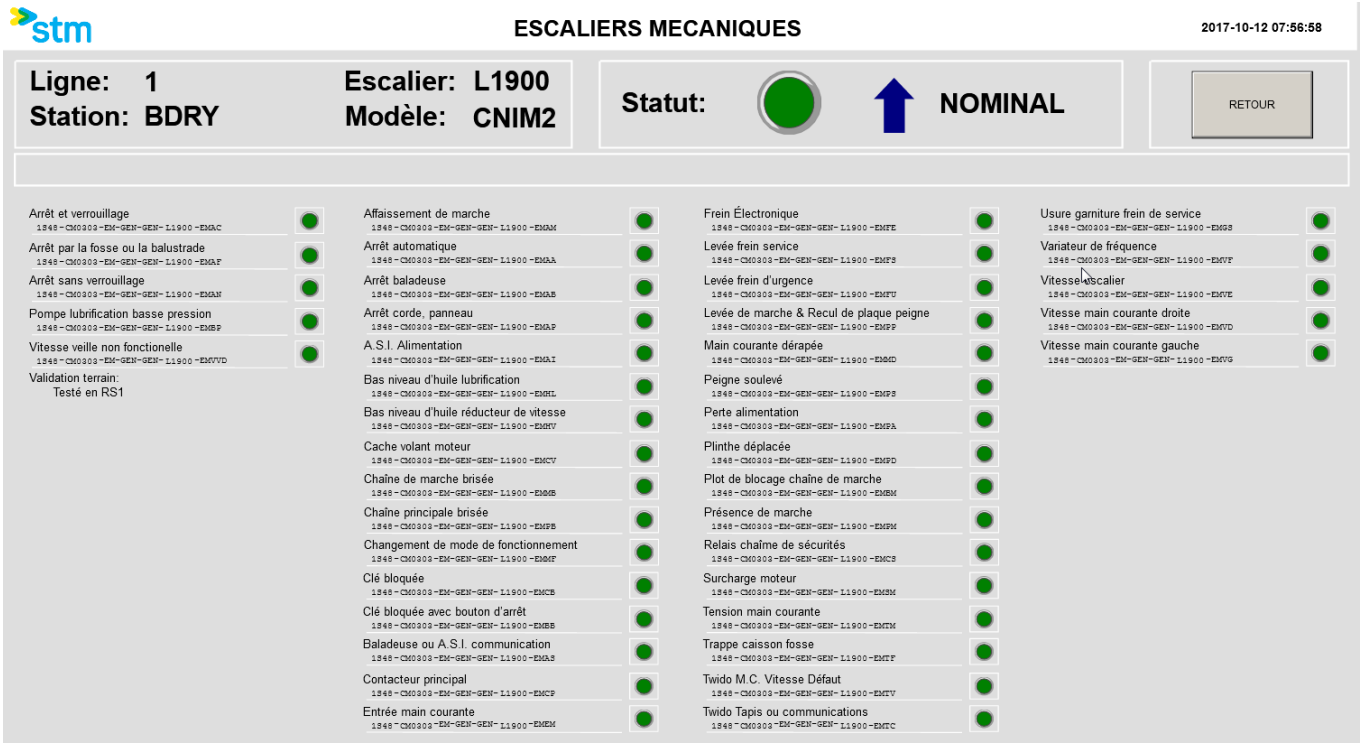
Escalators Fleet-Wide Monitoring

Details display – Escalators



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Architecture Options

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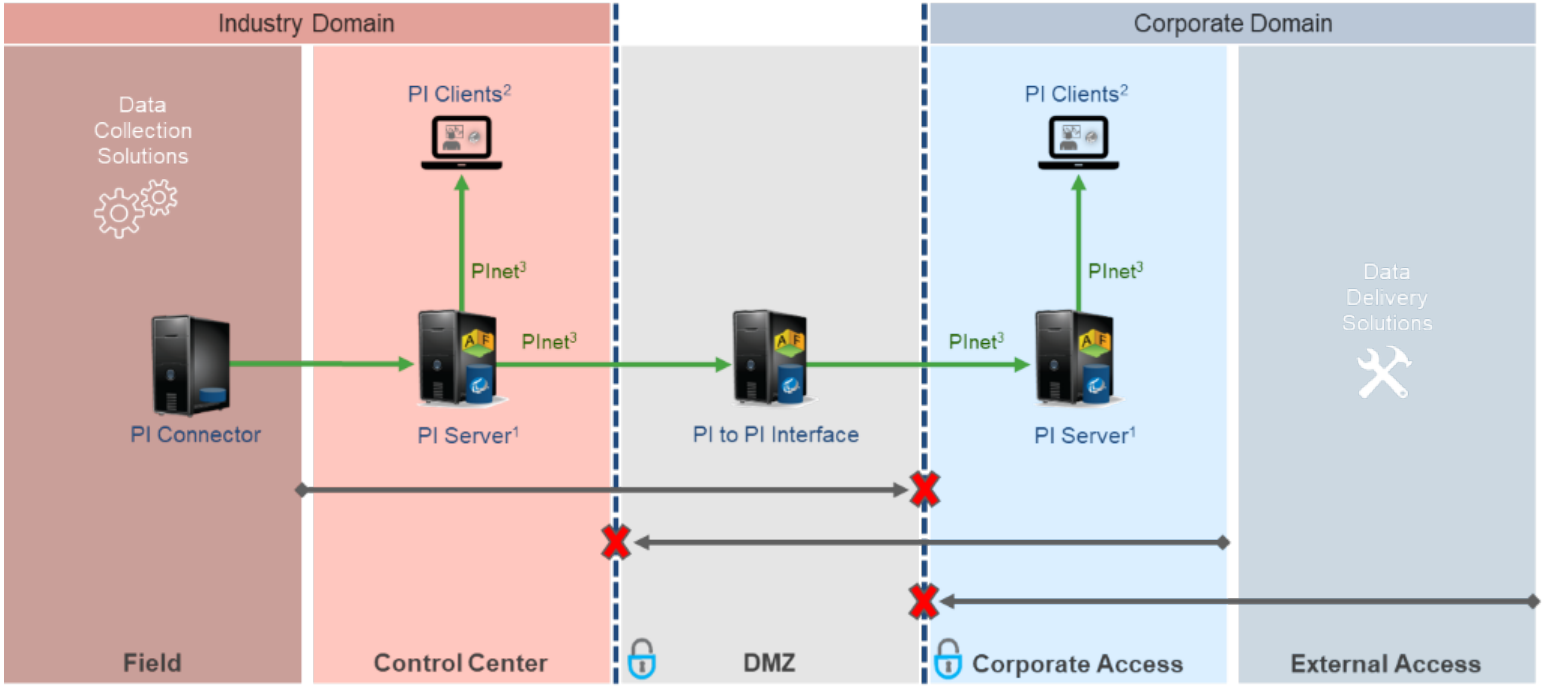
Data Replication Through DMZ



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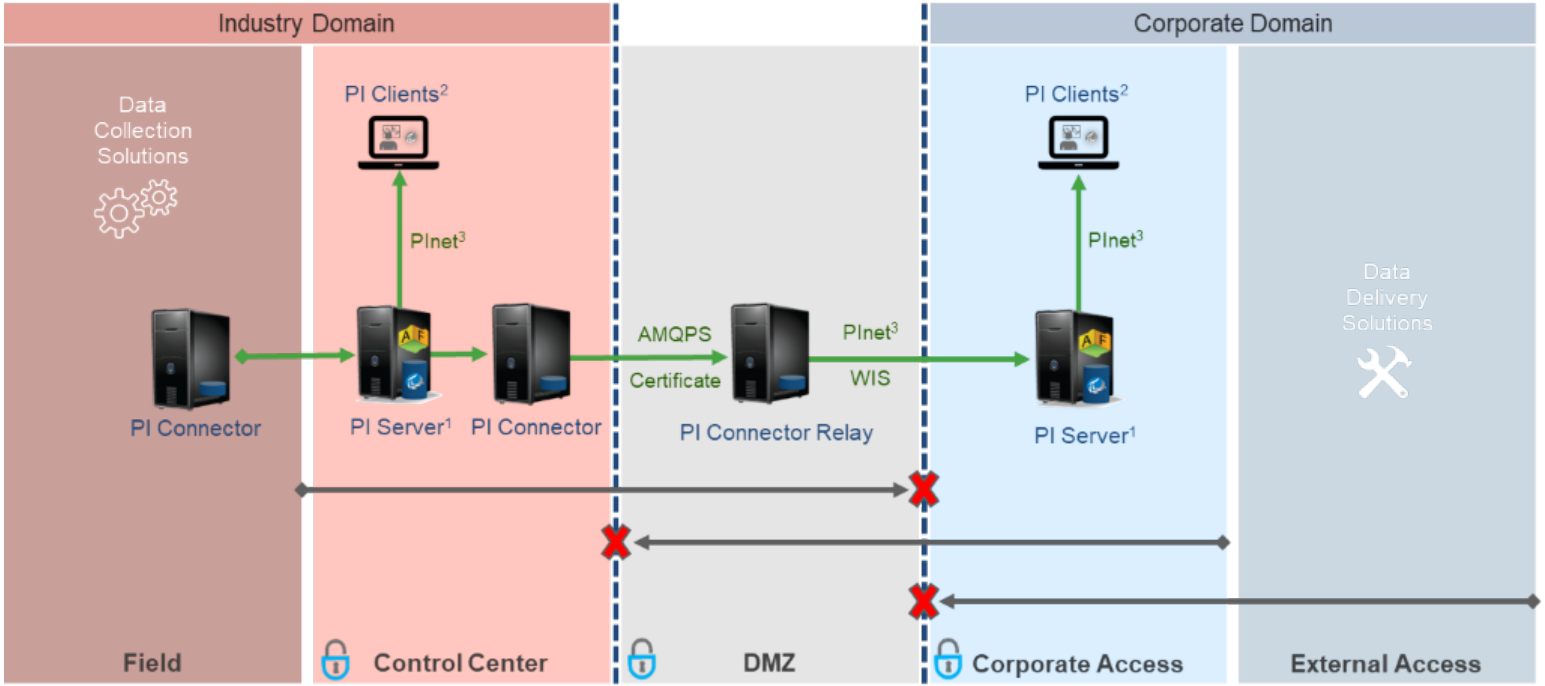
Data Relay through DMZ



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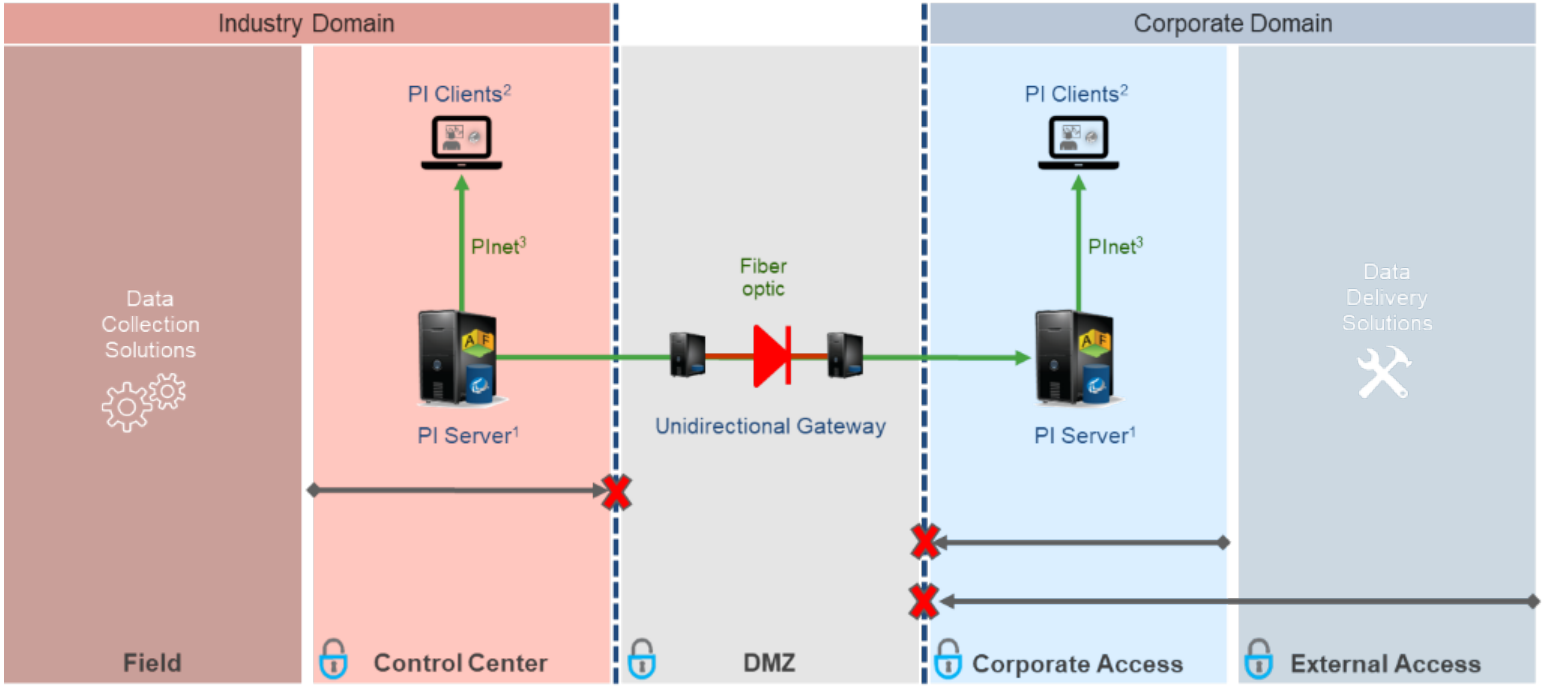
Uni-directional Gateway Physical Isolation



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Applicable Security Standards

- **NIST (National Institute of Standards and Technology, USA)**
- **NIST has also published a Guide to Industrial Control Systems (ICS) Security**
- **European Union Agency for Network and Information Security (ENISA)**
- **NERC CIP (North American Electric Reliability Corporation)**
- **UIC (International Union of Railways)**
- **Rail Delivery Group (RDG)**
- **Agence nationale de la sécurité des systèmes d'information (ANSSI)**
- **American Public Transportation Association (APTA)**

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Q&A Panel

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Q&A Panel

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Managing Editor
Railway Gazette Group

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Want more information?

- Copy of today's Presentation
- Secure Data Infrastructure for Critical Railway Operations Whitepaper
- OSIsoft/Waterfall Presentation and Roundtable at Rise of IoT and Big Data in Rail

  May 25-28th in Munich Germany – Special 20% discount voucher offered to todays attendees!
- Go to our websites
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  - www.waterfall-security.com
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