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Agenda







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Nutrien

Feeding the Future™

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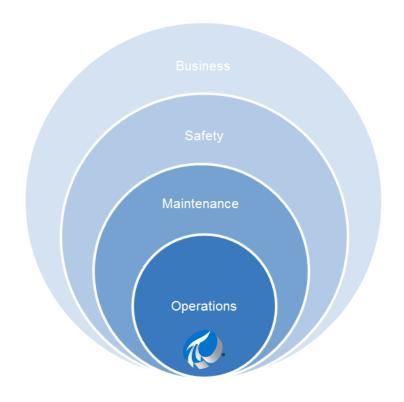


Why Implement an Enterprise PI System





- A single data point can have far reaching uses in an organization – pressure used for process, rotating equipment, throughput, safety considerations, sales, etc.
- Consolidated operational data enables companies to share best practices across the organization while maintaining local and regional needs
- Integrating operational data with other business data allows organizations to address much more complex challenges



PI System Enables Easy Access to Structured Operational Data



PI System Implementation Best Practices





Design Architecture to Securely Consolidate Operational Data

Develop Governance Program between OT, User Community and IT Create Standards to Enable OT Data to be Shared Effectively

Implement Master
Hierarchy and
Templates in AF to
Organize the Data

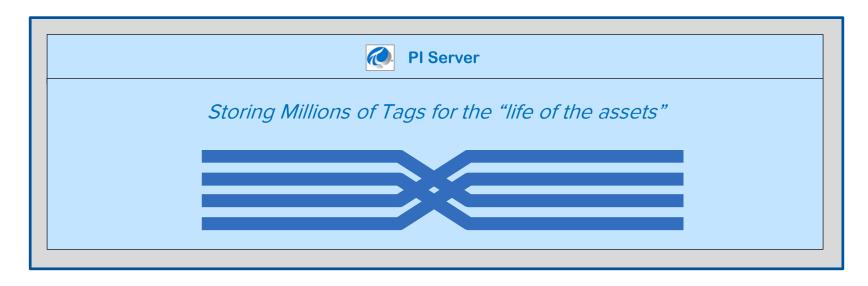
Validate ALL Data to
Ensure it will be
TRUSTED by the User
Community



OT Data Collection







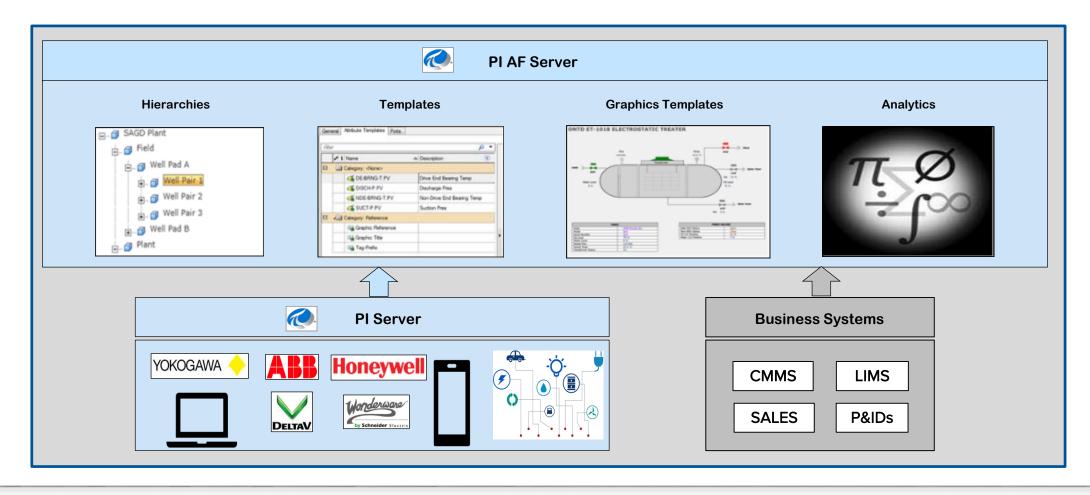




Pl System Asset Framework – OT Data "Game Changer"







Use AF to Provide Structure, Organization and Context to OT Data

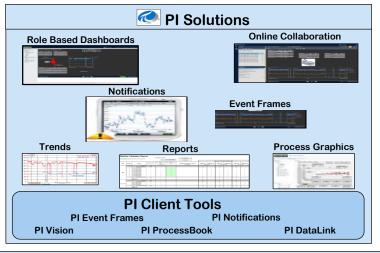


Enterprise PI System – OT Data Warehouse

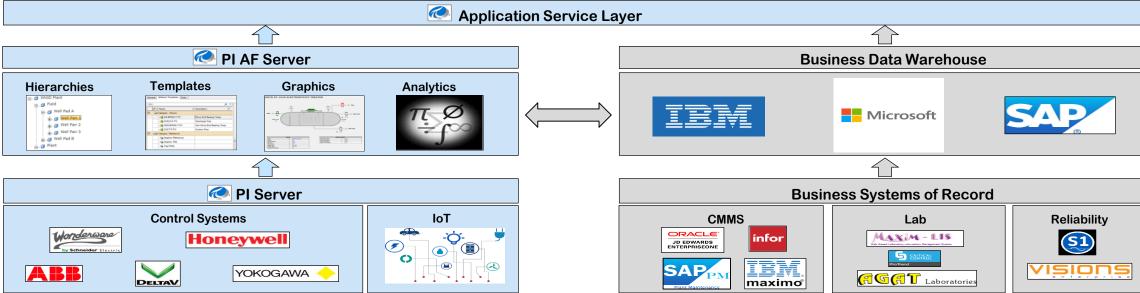










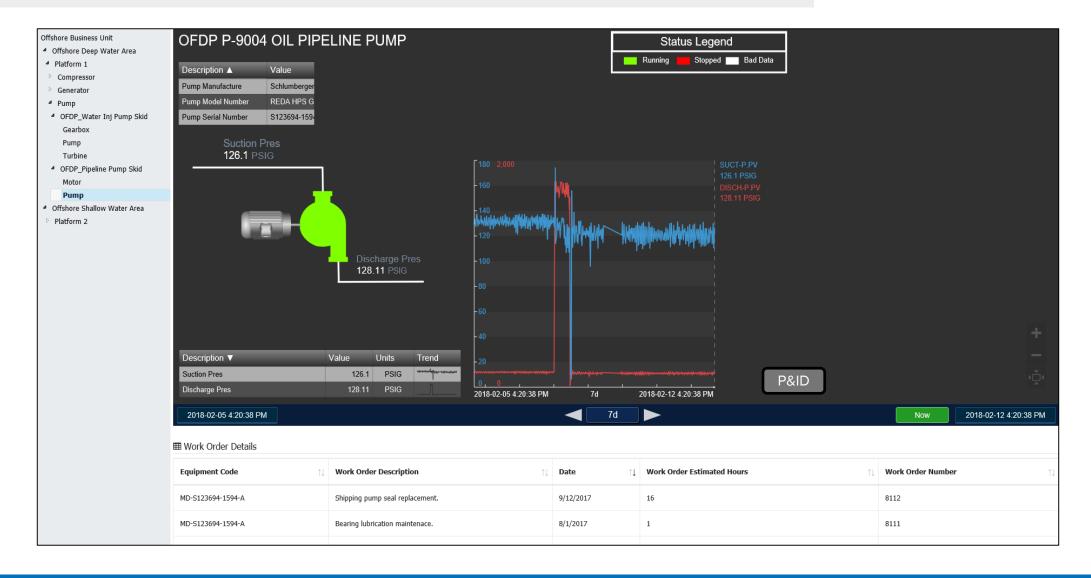




PI Vision Role Based Dashboard





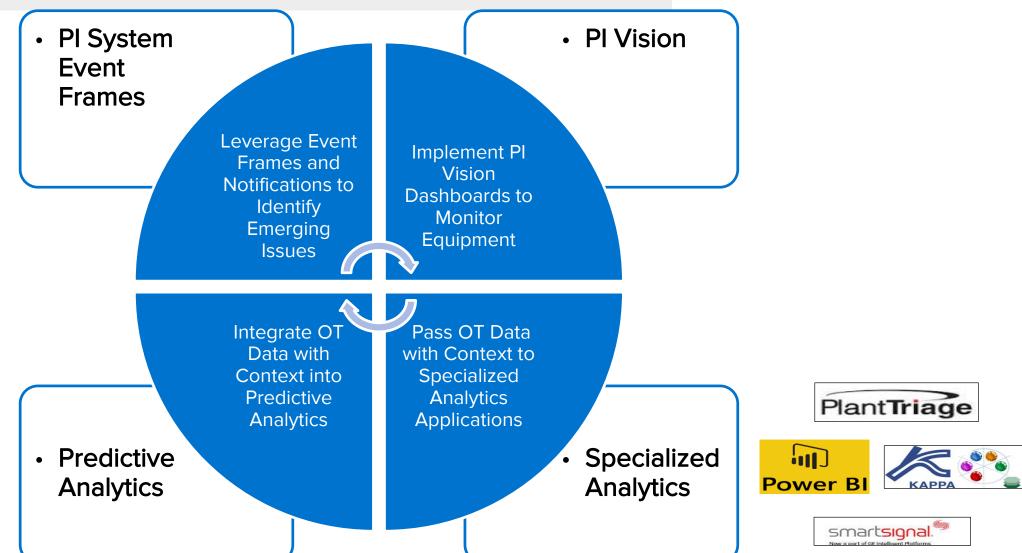




Solving Operational Challenges









esri

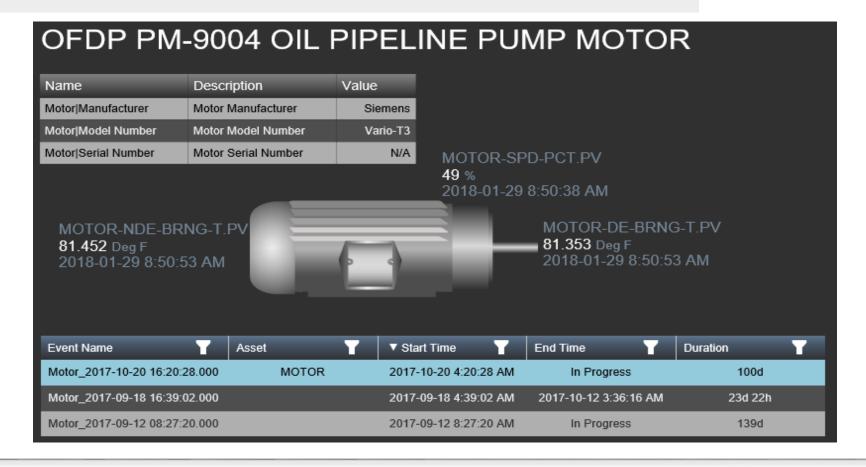
Microsoft

Azure

Leveraging Learnings in PI System Event Frames







History Match Predictions with Event Frames and Implement Notifications to Identify Emerging Issues based on Learnings



Best Practices IT and OT Teams





- PI AF organizes and structures Operation Data to enable integration with business systems
 - PI System becomes the warehouse for all required operational data
 - Multiple interface options to share data OLEDB, ODBC, WebAPI
 - Customized Integrators built to share data directly
- Governance Programs encourage sharing of data between the PI System and Business Systems and Applications
- Subject Matter Experts from IT and OT can work together to determine the best tool to address the business community's needs

Technology Exists – Now Building Teams to Leverage Best Tool for Any Business Requirement



Presenters









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Feeding the Future

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Phosphate

Nutrien is the world's largest provider of crop inputs and services.

Formed Jan 1, 2018 as a "merger of equals" between PotashCorp and Agrium.

- World's largest potash producer with 7 plants and 22 million tonnes capacity
- World's third largest nitrogen producer with 8 million tonnes gross ammonia capacity
- Most diverse portfolio of phosphate products in the world
- Largest global ag-retail network

Nutrien plays a critical role in Feeding the Future by helping growers to increase food production in a sustainable manner.

Why Do We Need an Enterprise PI System?





Our Vision:

- Current Practice: Decisions based primarily on historical metrics and reports.
- Goal: Enhance decision making with realtime operational data by implementing an Enterprise corporate data historian.
- Approach: Collaborate with Nutrien business systems to provide timely information to the user community.



Our Path to Enterprise PI System





- Architecture
 - The evolving role of the PI System
- Context
 - Standards
 - AF structure and templates
 - Event Frames
- Integration
 - Reconciliation and integration
- Governance
 - OT working with IT
 - PI Steering Committee
 - Data Governance Board





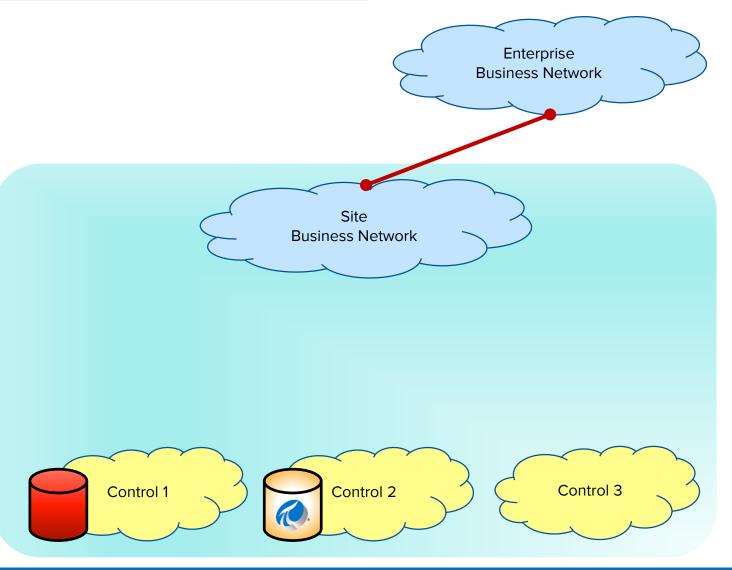
Architecture: Evolving Role of the PI System





Stage 1: In the Control System

- Only stores data for one system
- Short term, ultra-high frequency
- Not visible outside that control system
- Vendor specific





Architecture: Evolving Role of the PI System



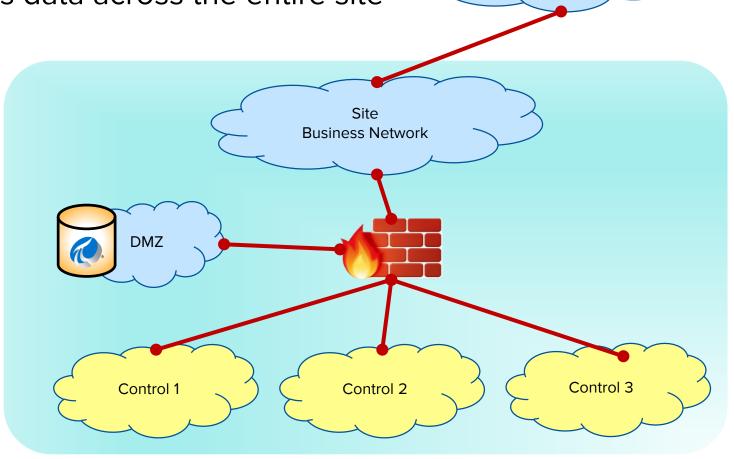
Enterprise Business Network



Stage 2: Site PI System

✓ One PI System for all operations data across the entire site

- DMZ or Business network
- Do not put in Control network
- ✓ Business users have access
- No Enterprise view
- Multiple interfaces to business systems
- Solutions not easily redeployed to other sites





Architecture: Evolving Role of the PI System

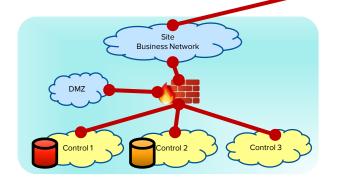


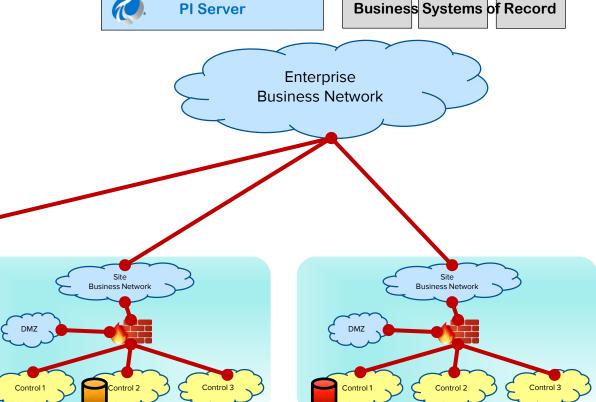


Business Data Warehouse

Stage 3: Enterprise PI System

- ✓ Enterprise wide roll-up of operations data
- ✓ Solutions easily deployed across all sites
- ✓ Standardization and reduced effort
- Observation: Site servers got turned off!
 - Enterprise PI System met everyone's needs







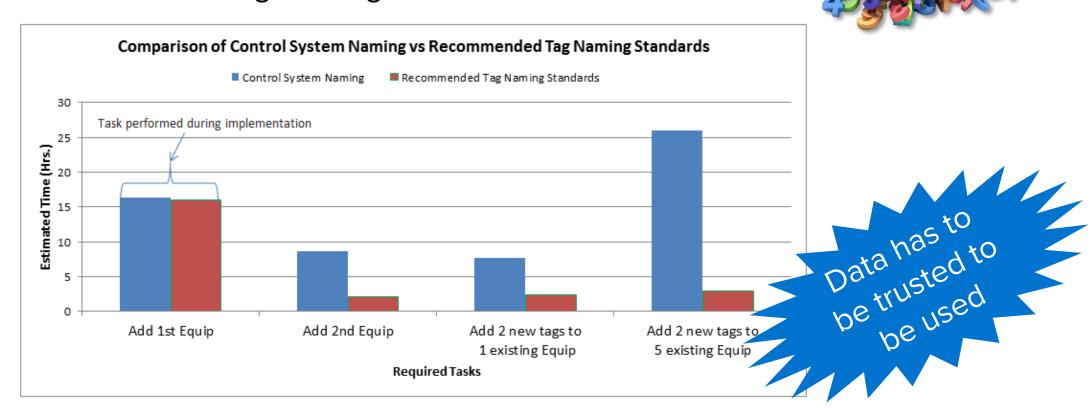
Context: Standards and Validation





Without AF, a PI Server is basically a "pile of tags"

- Only context comes from tag naming standard and displays
- Implemented common tag naming standard for all sites





Context: The Evolving Role of the PI System

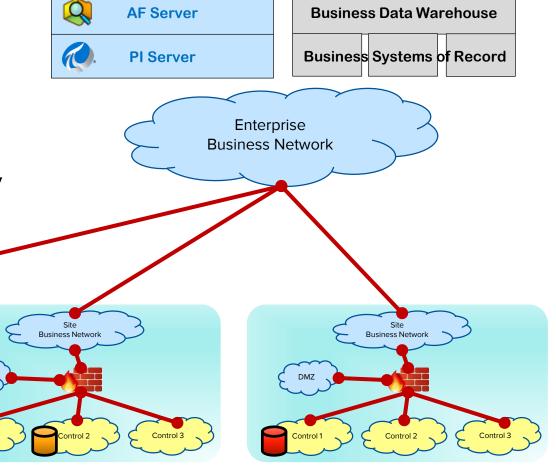




Stage 4: Enterprise PI-AF

- Adds context and analytics at the source
- Context available to both Operations and Business
- Develop AF structure to compliment CMMS

 Hierarchy and templates ensure consistency across all sites





Context: Event Frames





Bookmarks in time – add additional context

Process Downtime Tracking:



Equipment Condition Monitoring:





Integration: From Ops to Business and back





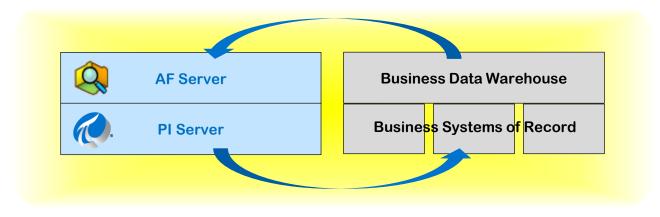
Operations data must be reconciled before use in Business Systems

Values transferred to Business Systems (system of record)

What is AF Integration?

- Select data from other systems is shown in AF for added context
- Data not stored in the PI System, just referenced
- Integrated data looks and feels like a PI System tag

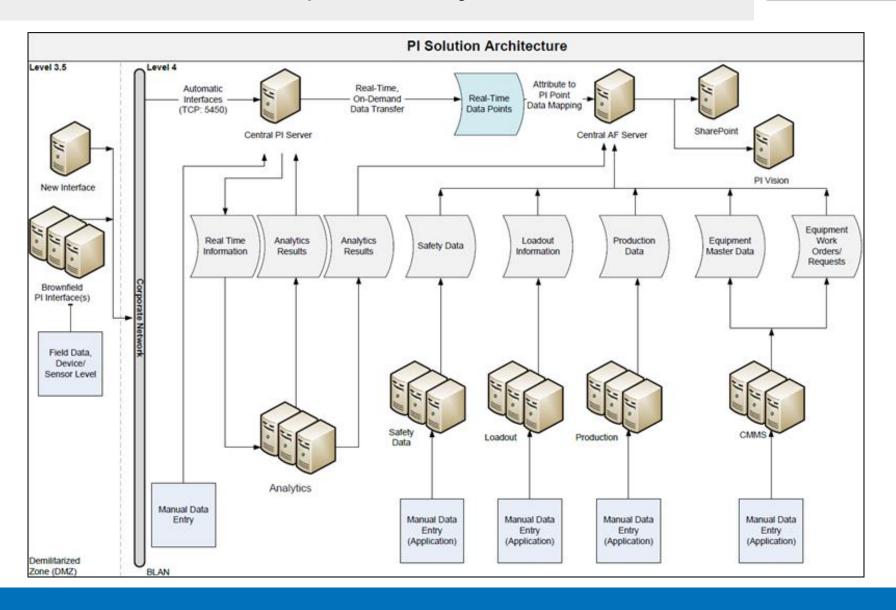
"Single source of the truth"





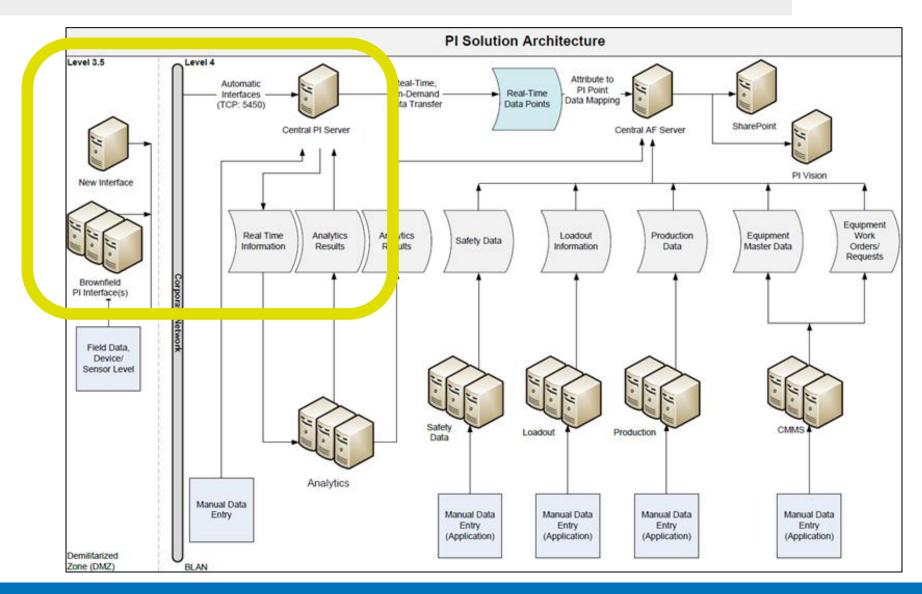








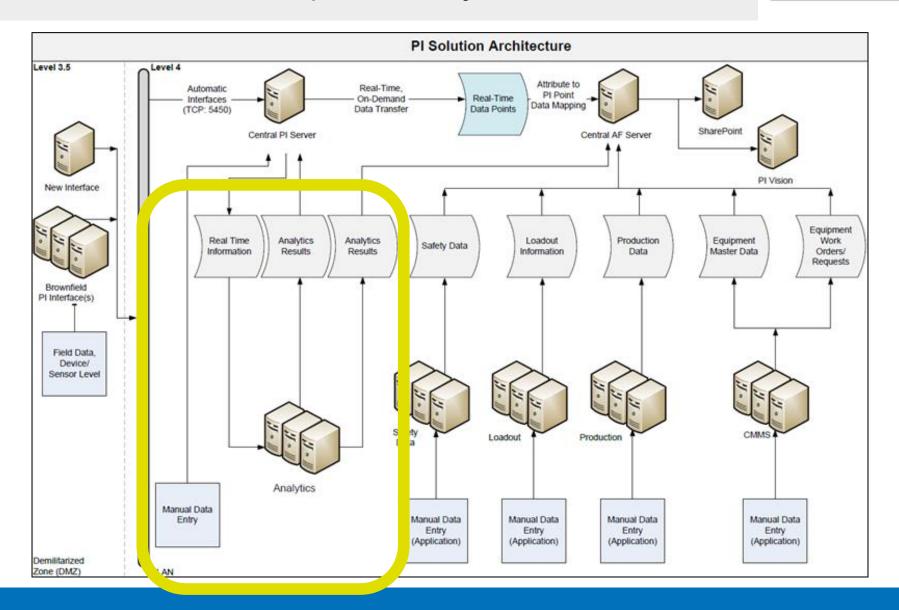








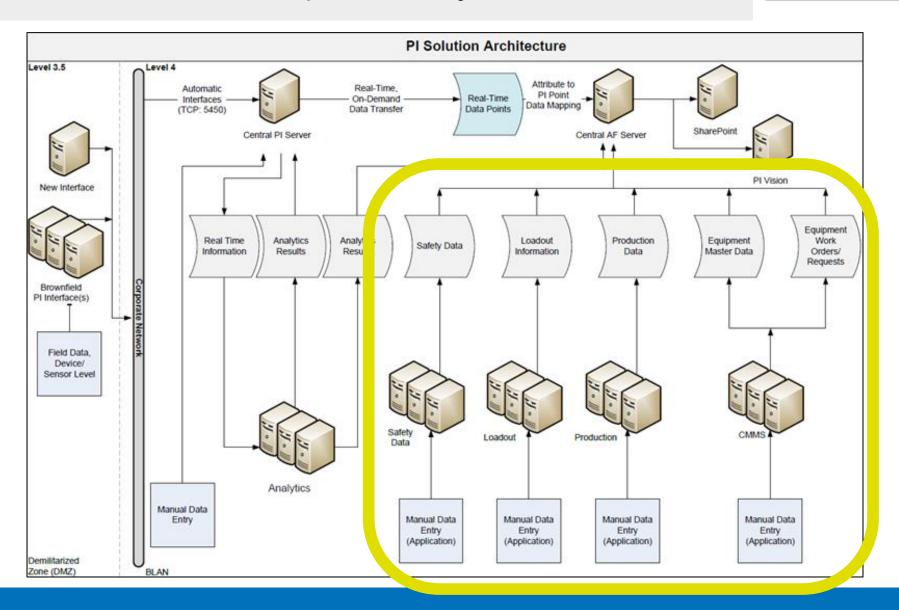








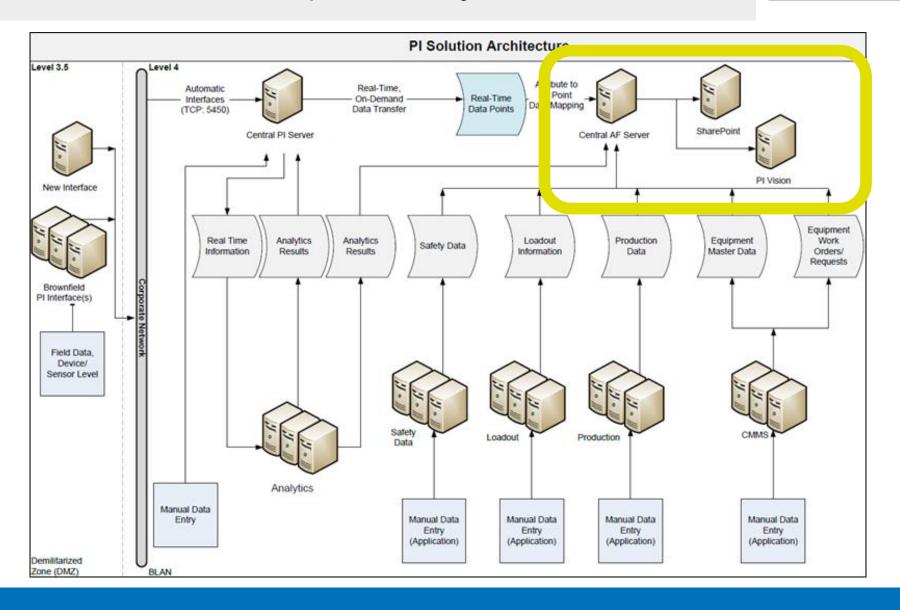














Governance:





- PI System Governance is required to ensure accurate, timely data for the user community
- PI System Governance is dependent on the following:
 - Establishing a cross disciplinary governance board and steering committee to govern the
 PI System
 - Identifying and assigning the roles and responsibilities of each member
 - Creating a set of standards, processes and procedures appropriate to manage the PI
 System
 - Developing an evergreen process to ensure data governance will be refreshed as changes occur in the data, systems, personnel or corporation



Example: Potash Portal





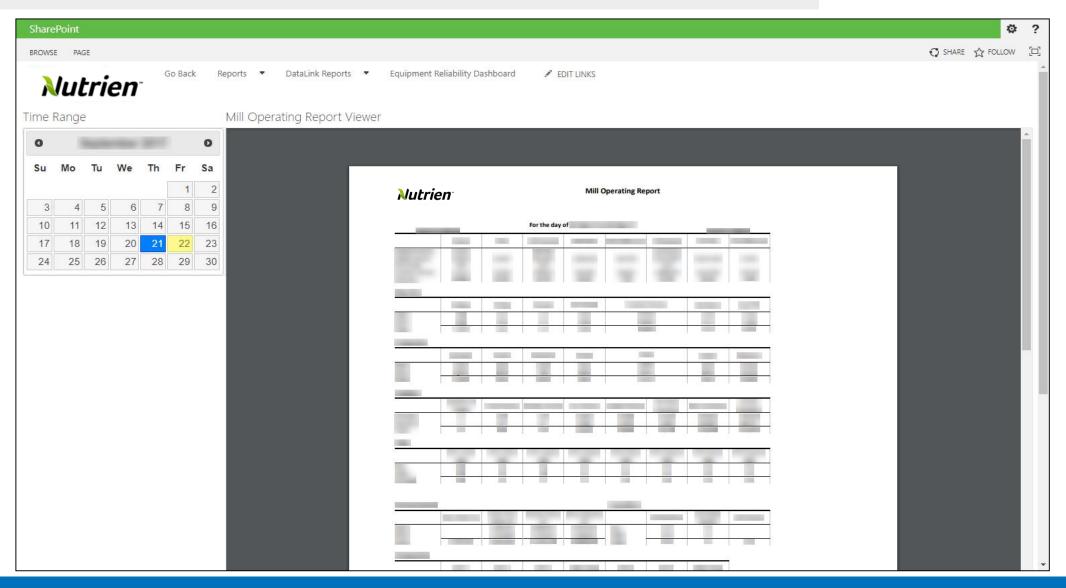




Example: Operations Report Viewer





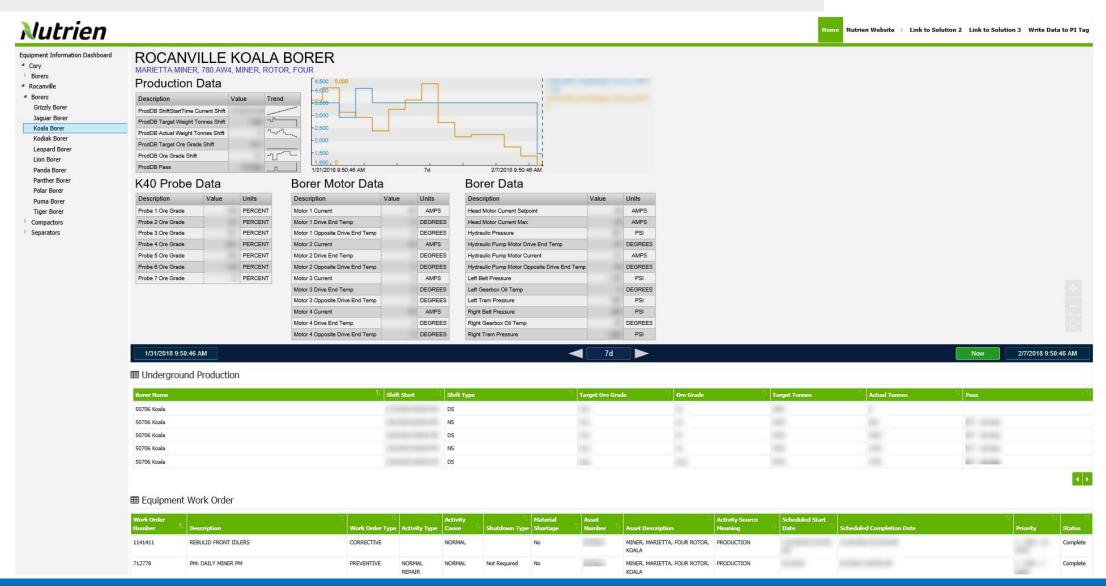




Example: Equipment Dashboard









Summary - Best Practices for Success





- Enterprise Architecture
- Context
- Integration
- 4 Governance



Trusted Source of Operations Data

Questions and Answers



Next





- Stayed tuned for follow-up email
 - Link to OSIsoft On-Demand webinars
 - Visit Pl Square
- Social media. Keyword OSIsoft
- Conversation
- Exit survey





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APRIL 23 - 27, 2018

TOP REASONS TO ATTEND



GUEST KEYNOTE SPEAKER



9 INDUSTRY SPECIFIC TRACKS



15 PRODUCT
PRESENTATIONS



70 BOOTHS IN PARTNER AND PRODUCT

EXPO



70+ HANDS-ON TRAINING LABS



NIGHTLY NETWORKING EVENTS



감사합니다

谢谢

Merci

Danke

Gracias

Thank You

ありがとう

Спасибо

Obrigado

