Connectivity from A to Z – Roadmap for PI Connectors and PI Interfaces

Presented by **Tadeas Marciniak, Field Service Engineer**

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PI Interfaces – New options for securing

PI Interfaces – New options for securing

Data Source → **Read** → PI Interface → **Input** →

Write

Output

Operating System

White list

New Features:
1. Least privileges
2. Read-only and read-write
3. White list output points
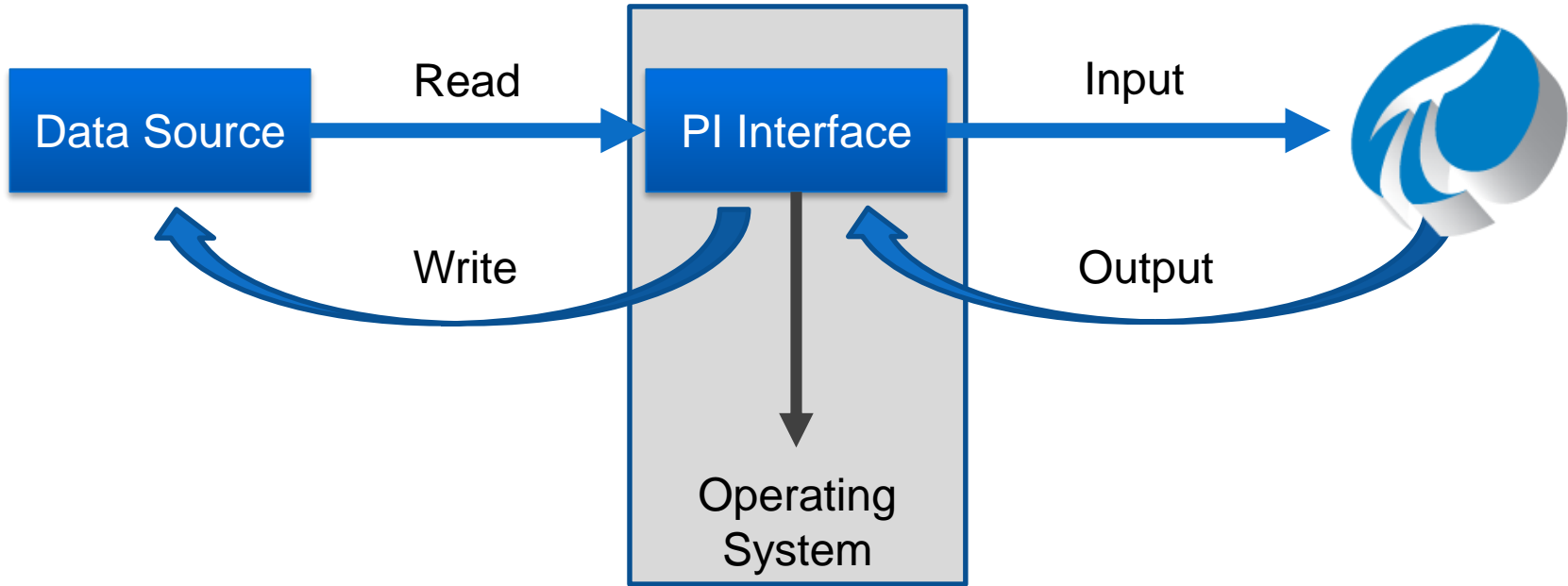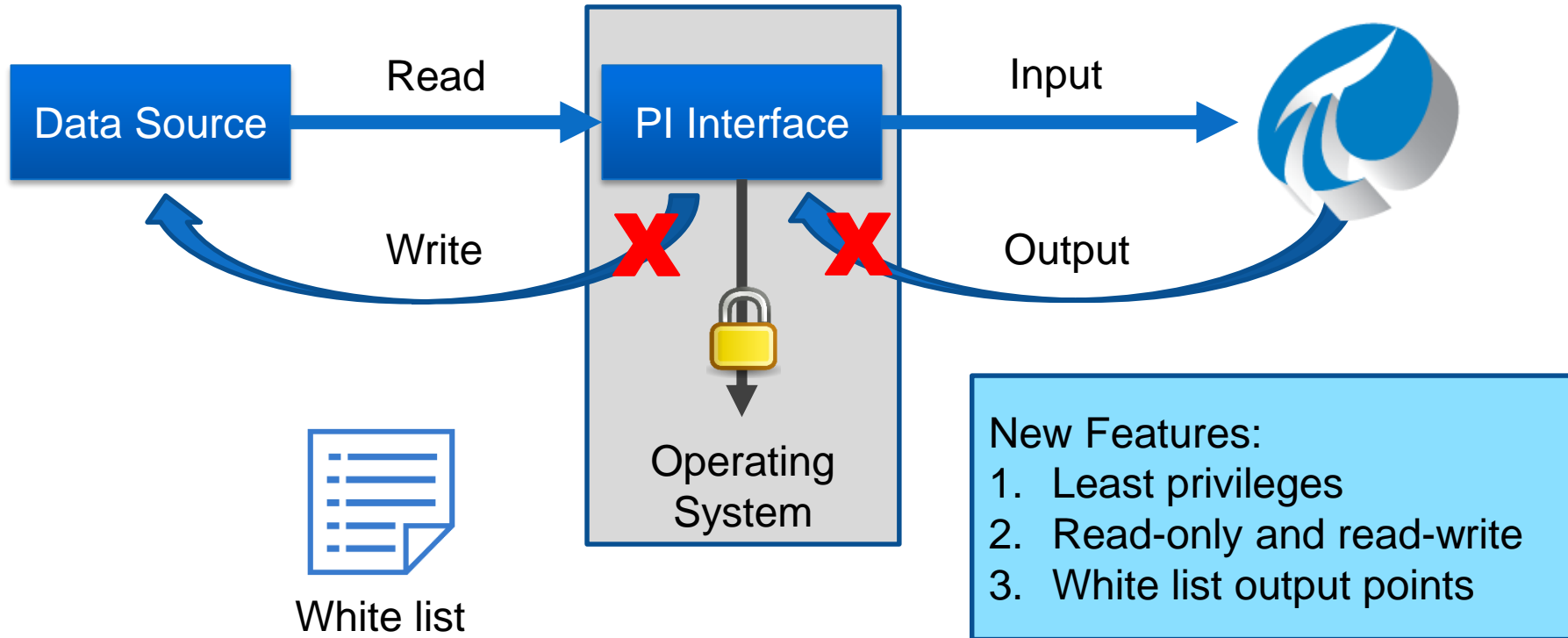
PI Connector Benefits

Time

Reduce time to configure tags

Configuration

Simplify configuration / automatic update

Metadata

Create reference asset model automatically

Speed

Collect high speed data

Embedded

Operate on embedded devices / Linux

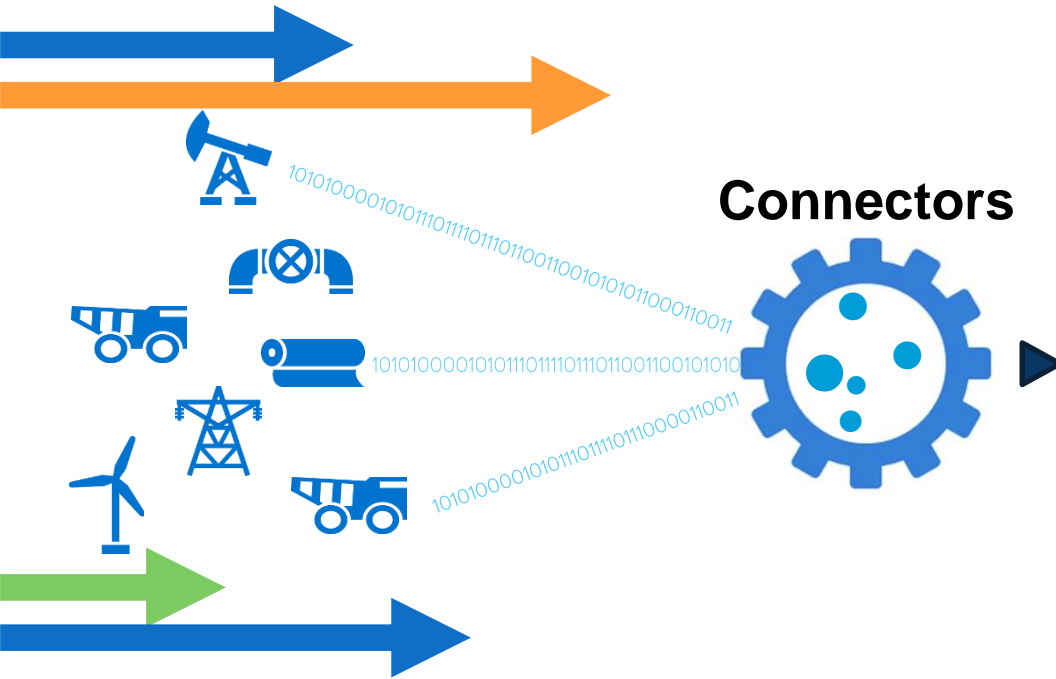**Secure**

Secure user access and data transfer

Flexible

Locate components to suit architecture

PI Connectors

Connectors

- Collects real-time data
- Easy to configure
- Creates reference model based on assets as defined by the data source
- Auto-creates:
  - Elements in PI AF
  - Points in PI Data Archive
  - Events in Event Frames
- Updates automatically with data source changes

Advancing the PI Connector technology

Enhancing and improving
- Performance, scalability and stability improvements
- Version 1.1 and 1.2 enhancements

Adding new PI Connectors
- 13 with general availability now
- Adding more

User experience
- Data selection
- Configuration and management

Available today

PI Connector	Market
BACnet	Facilities
CygNet	Upstream Oil and Gas
DC Systems RTscada	T&D
EtherNet/IP	High-speed PLC data
HART-IP	Many. Wireless sensors
IEC 60870-5-104	T&D Substations
IPMI	Datacenters
NOV WITSML	Upstream, drilling
OPC UA	Many
Ping	IT infrastructure
PI System Health	IT infrastructure
Siemens SIMATIC PCS 7	Many
UFL	Many
Wonderware Historian	Many

Demo

Demo

PI Connectors in development

Demo

PI Connector	Market	Status
PI System	All	Beta Q3
Redfish	Datacenter	Development
Modbus for embedded systems	All	Development
DNP3 for embedded systems	T&D	Development
IEC 61850	T&D	Development

◆ Industry 4.0: See also: "**Getting Started with Industry 4.0 and the PI System**" Christian Leroux and Chris Felts, Thursday 15:45, Potsdam I

Today's demonstrations:

✓ PI Connector for UFL

✓ PI Connector for OPC UA
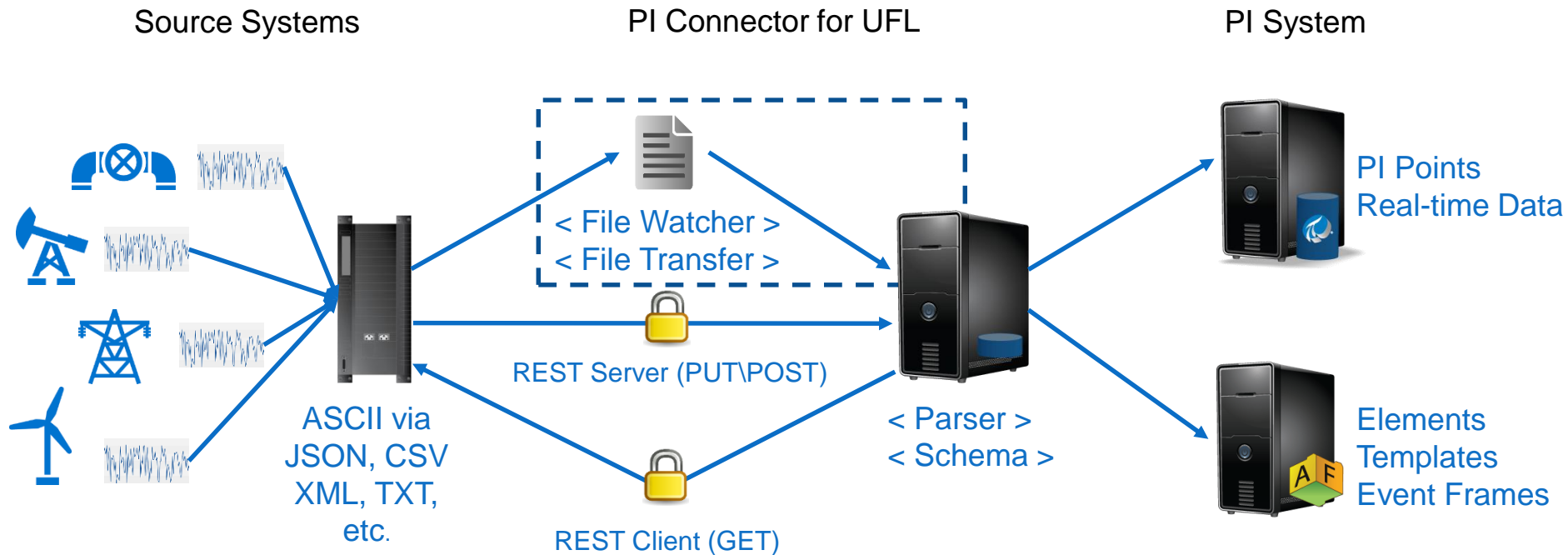
✓ PI System Connector

PI Connector for UFL

PI Connector for UFL Architecture

Source Systems

PI Connector for UFL

PI System

< File Watcher >
< File Transfer >

REST Server (PUT\POST)

ASCII via
JSON, CSV
XML, TXT,
etc.

REST Client (GET)

< Parser >
< Schema >

PI Points
Real-time Data

Elements
Templates
Event Frames

PI Connector for UFL

- Overview
- Data Source List
- Server List
- Diagnostics

Overview

Connector details

Version 1.1.0.62

Status of the connector

Connector running as OSI\zryska

✅ Connector is running - Stop connector

Data sources

The connector currently has no data sources associated with it.

Add or modify data sources

Servers configured to receive data from the connector

✅ PI Data server : PI Server

✅ PI Asset server : PI Asset Server

Add or modify servers

OSIsoft.

PI Connector for UFL Summary

- Supported channels:
  - File
  - REST Client
  - REST Server
- Secure communication using REST endpoint
- User defined Data Collection
- User definable PI AF Templates
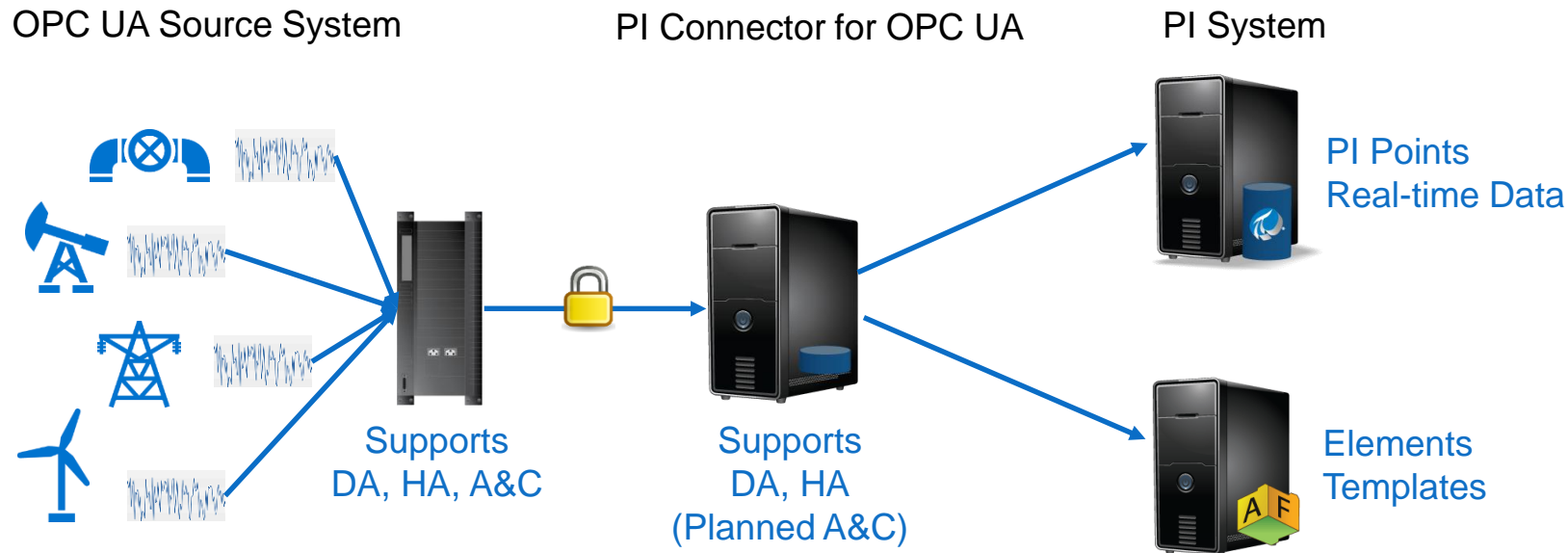- User definable Event Frames

PI Connector for OPC UA

PI Connector for OPC UA Architecture

OPC UA Source System

PI Connector for OPC UA

PI System

Supports
DA, HA, A&C

Supports
DA, HA
(Planned A&C)

PI Points
Real-time Data

Elements
Templates

PI Connector for OPC UA Summary

- Collect data from various OPC UA servers

- Discovery of available endpoints

- Auto discovery of available type definitions using Data Access Filter file

- Ability to choose the data you want to collect
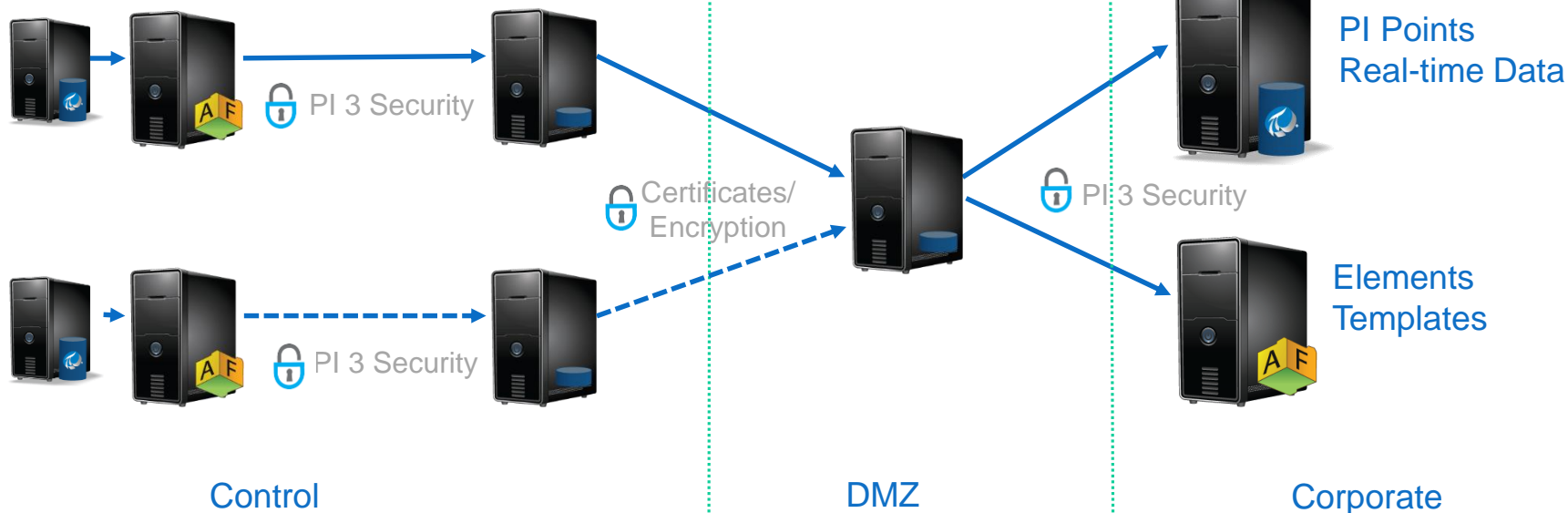
- Supports Data Access and Historical Access

PI System Connector

PI System Connector

Source PI System   PI System Connector   PI Connector Relay   Destination PI System (1 or More)

PI 3 Security

PI 3 Security

Certificates/ Encryption

PI 3 Security

PI Points Real-time Data

Elements Templates

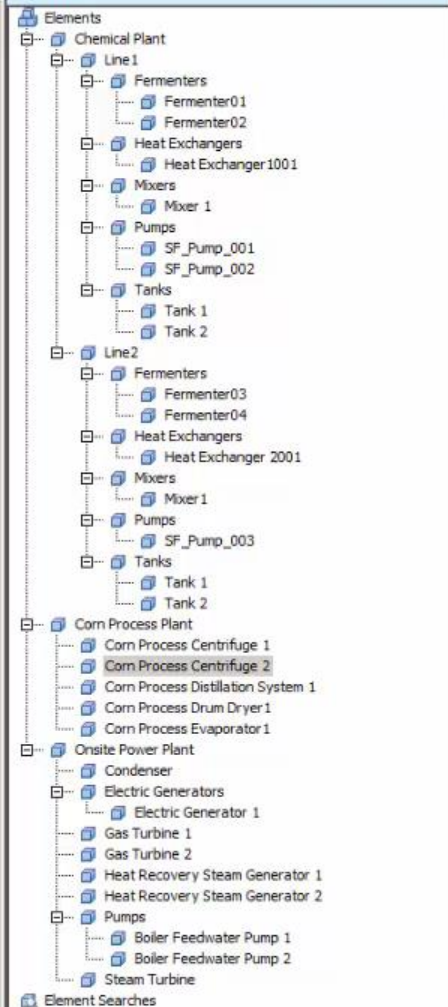Control   DMZ   Corporate

PI System Connector

PI AF Support

- Elements
- Element Templates
- Enumeration Sets
- Units of Measure
- Categories
- Tables (excludes linked)
- Custom Reference Types
- PI Point Arrays

PI Data Archive Support

- Archived Data Replication
- Data Backfilling
- PI Point Creation
- Digital State Sets
- Option to bring in all PI Points from a single PI Data Archive
- Option to Prefix PI Points and Digital State Sets

Elements

- Elements
  - Chemical Plant
    - Line1
      - Fermenters
        - Fermenter01
        - Fermenter02
      - Heat Exchangers
        - Heat Exchanger1001
      - Mixers
        - Mixer 1
      - Pumps
        - SF_Pump_001
        - SF_Pump_002
      - Tanks
        - Tank 1
        - Tank 2
    - Line2
      - Fermenters
        - Fermenter03
        - Fermenter04
      - Heat Exchangers
        - Heat Exchanger 2001
      - Mixers
        - Mixer 1
      - Pumps
        - SF_Pump_003
      - Tanks
        - Tank 1
        - Tank 2
  - Corn Process Plant
    - Corn Process Centrifuge 1
    - Corn Process Centrifuge 2
    - Corn Process Distillation System 1
    - Corn Process Drum Dryer1
    - Corn Process Evaporator 1
  - Onsite Power Plant
    - Condenser
    - Electric Generators
      - Electric Generator 1
    - Gas Turbine 1
    - Gas Turbine 2
    - Heat Recovery Steam Generator 1
    - Heat Recovery Steam Generator 2
    - Pumps
      - Boiler Feedwater Pump 1
      - Boiler Feedwater Pump 2
    - Steam Turbine
- Element Searches

Corn Process Centrifuge 2

General | Child Elements | Attributes | Ports | Analyses | Version

Group by: ☐ Category ☐ Template

Filter

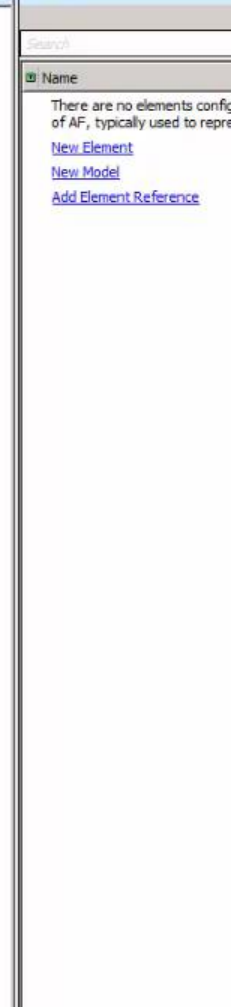| Name	Value
Flow In	144 kg/h
Flow Out 1	240 kg/h
Flow Out 2	185 kg/h
Installation Date	3/9/2013 9:00:00 PM
Last Service Date	11/25/2014 12:00:00 AM
Manufacturer	Sidewinder
Model	SW-360
Pressure In	36 bar
Pressure Out 1	174 bar
Pressure Out 2	116 bar
Temperature In	93 °C
Temperature Out 1	68 °C
Temperature Out 2	170 °C
Wet % In	218 %
Wet % Out 1	59 %
Wet % Out 2	215 %

Elements

- Elements
  - Element Searches

Elements

Name

There are no elements config
of AF, typically used to repre

New Element
New Model
Add Element Reference

PI System Connector Summary

- Architecture allows for secure data transfer across domain boundaries
- Replication of PI Data Archive data (archived data)
- Isolate the control network from the business
- Aggregate data for corporate rollups
- "AF to AF" (Reimagined PI to PI Interface)
- Improved scaling over the PI to PI Interface

Contact Information

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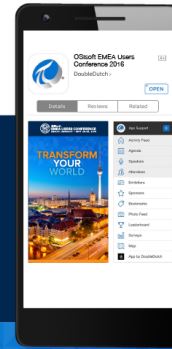zryska@osisoft.com

Software Developer

OSIsoft, LLC

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谢谢

Danke

Gracias

Merci

Thank You

ありがとう

Спасибо

Obrigado