Collect Your Data in Context using PI Connectors

Presented by Tadeáš Marciniak and Zdeněk Ryška

Customer challenges

Time

Spend a lot of time configuring tags

Configuration

Challenging to configure interface

Build

Time consuming to build an asset model

Speed

Collect high speed data

Embedded

Run on embedded devices / Linux

Secure

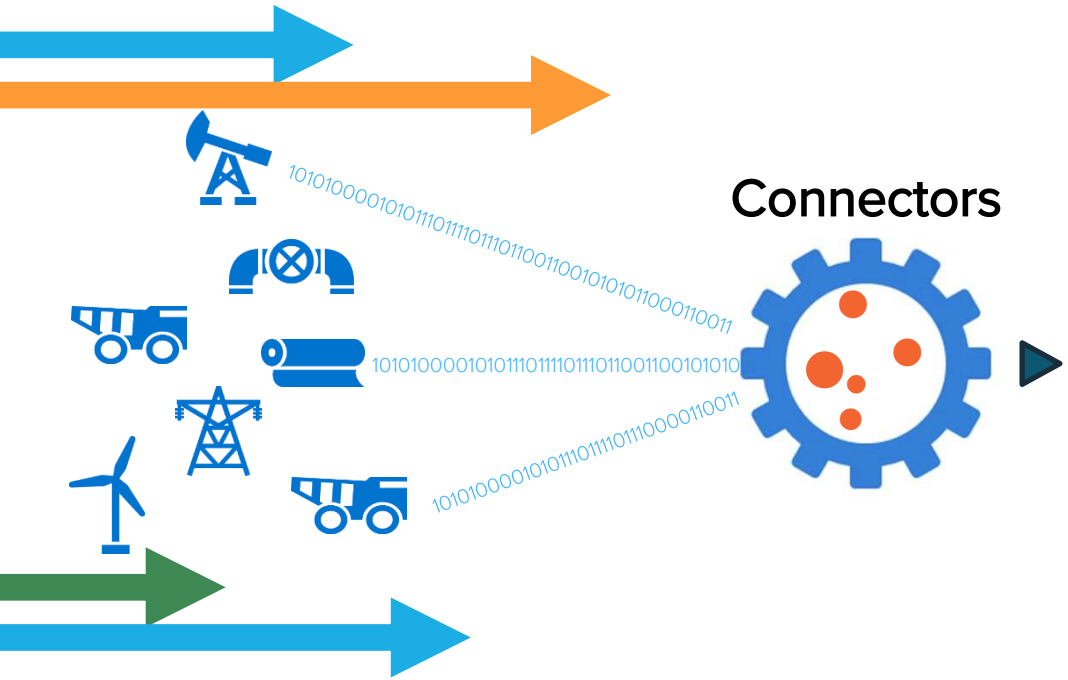
Security

PI Interfaces compared to PI Connectors

- Interfaces were designed to serve the tag-centric PI System of the past

- Connectors are designed to provide data acquisition for the asset-centric PI System of the present and future

PI Connectors



- Data source is the system of record
- Data collected in terms of assets as defined by the data source
- Assets auto-created in AF
- Tags auto-created in PI Data Server, linked to AF Elements
- Events collected and stored in Event Frames
- Easy to configure

Kongsberg benefits from PI Connector

- Fewer errors during commissioning
- Faster deployment
- Higher performance
- Better failover support
- Less maintenance. The system gets changed after the ship has left.

KONGSBERG

Stein-Roar Bjornstad

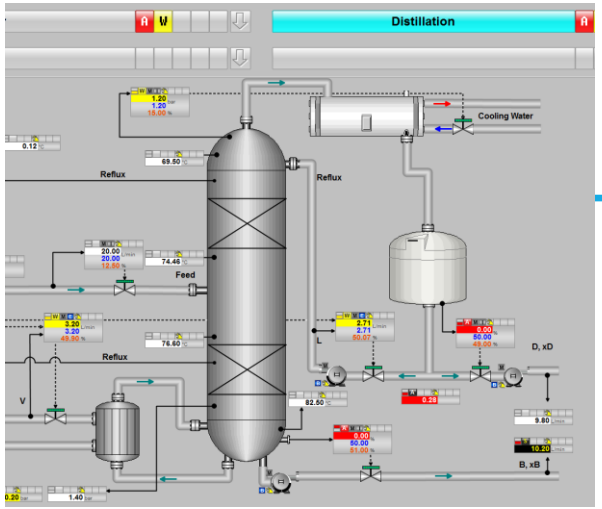
System Architect

PI Connector	Market	Status
IPMI	Datacenters	
CygNet	Upstream Oil and Gas	
EtherNet/IP	High-speed discrete	
Kongsberg	Transportation	
HART-IP	Many. Wireless sensors	
Wonderware Historian	Many	
IEC 60870-5-104	T&D Substations	
RTscada	T&D	Beta
BACnet	Facilities	Beta
WITSML	Upstream, drilling	Beta
Siemens SIMATIC PCS 7	Many	Beta
OPC UA	Many	Planned
DNP3 (Embedded)	T&D	Beta
IEC 61850	Substations, wind generation, etc.	Planned
PI Connector for UFL	Many	Beta

DEMO

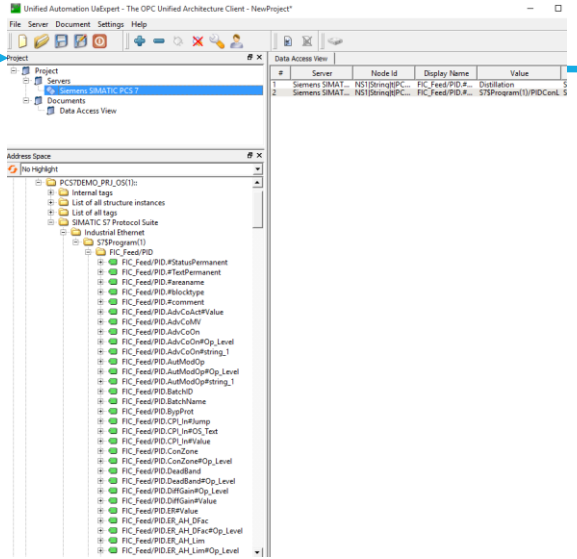
PI Connector for Siemens SIMATIC PCS 7

- Many industries
- Distributed control system
- Rich meta data available
- Beta released
- Version 1.0 soon

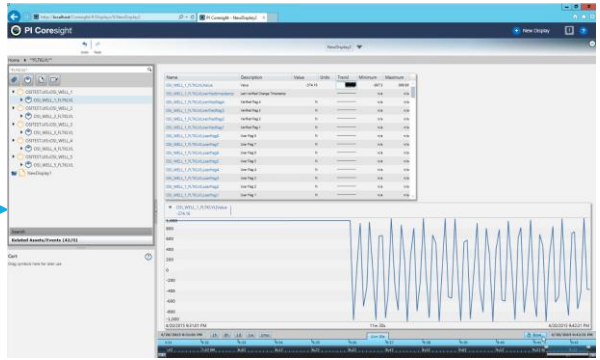


Datasource

OPC UA model



PI System



PI Connector for Siemens SIMATIC PCS 7 filtering

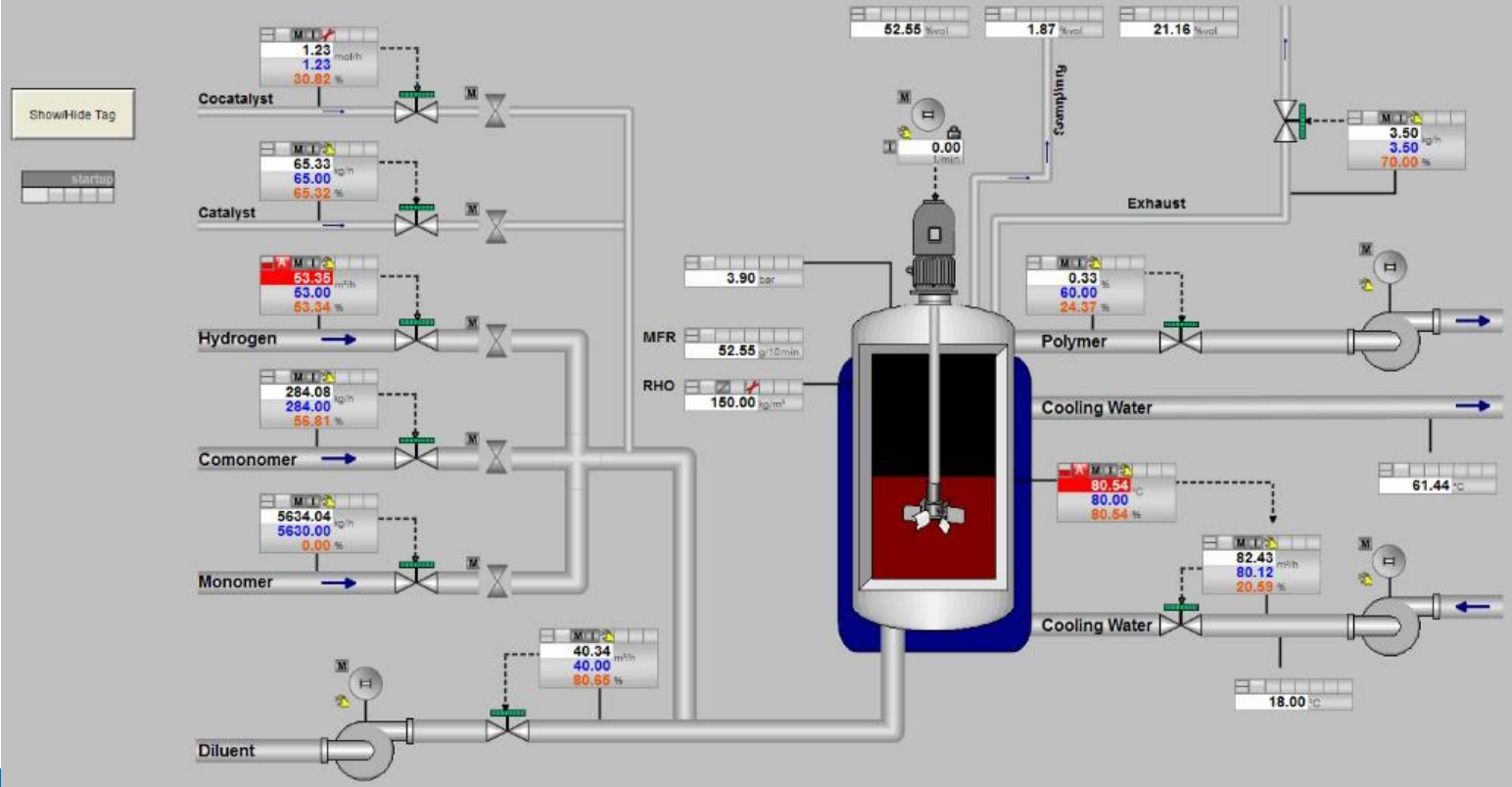
- Filtering is based on BlockType definition
- BlockType defines type of a device (a template)
- Easy to create (in Microsoft Excel)
- We'll pre-generate it for you

02/09/15 | 13:14:03.999 | 0 | S7$Program(1)/@(1)/SIMATIC_400(1)_ Net time consumption of all OBs exceeds max. limit | CG | 9/2/2015 11:1

Reactor | A | W

Distillation | A | W | S

SIEM PC



PI Connector for IEC 60870-5-104

- T&D Substations
- Talking directly to RTUs
- Version 1.0 released
- Version 1.1 soon

Data Window - "Default" View

File Options View

Test Harness
- s104
  - s104
    - ASDU 3
    - ASDU 2
    - ASDU 1

Modify

MitMaxEvents	100
MitTimeFormat	TIME_56
MitTransmissio	SINGLE
MmenaEventMo	MOST_RECENT
MmenaMaxEver	100
MmenaScanEna	False
MmenaTimeFor	TIME_NONE
MmenaTransmi	SINGLE
MmenbEventMo	MOST_RECENT
MmenbMaxEver	100
MmenbScanEna	False
MmenbTimeFor	TIME_NONE
MmenbTransmi	SINGLE
MmencEventMo	MOST_RECENT
MmencMaxEver	100
MmencScanEna	False
MmencTimeFor	TIME_NONE
MmencTransmi	SINGLE
MmendEventMo	SOE
MmendMaxEver	100
MmendScanEna	False
MpsnaEventMo	SOE
MpsnaMaxEven	100
MpsnaScanEna	False
MspEventMode	SOE
MspMaxEvents	100
MspScanEnable	False
MspTimeForma	TIME_56
MspTransmissi	SINGLE
MstEventMode	SOE
MstMaxEvents	100
MstScanEnable	False
MstTimeFormat	TIME_56
MstTransmissic	SINGLE

Channel	Session	Sector	Type	Number	Protocol Specific	Value	Flags	Time Updated	Description
s104	s104	ASDU 1	[1] Single-point information	100	GI global, GI group 1	Off	Valid	07Sep15 09:33:31.466 (invalid)	
s104	s104	ASDU 1	[1] Single-point information	101	GI global, GI group 2	Off	Valid	07Sep15 09:33:31.466 (invalid)	
s104	s104	ASDU 1	[1] Single-point information	102	GI global, GI group 3	Off	Valid	07Sep15 09:33:31.466 (invalid)	
s104	s104	ASDU 1	[1] Single-point information	103	GI global, GI group 4	Off	Valid	07Sep15 09:33:31.466 (invalid)	
s104	s104	ASDU 1	[1] Single-point information	104	GI global, GI group 5	Off	Valid	07Sep15 09:33:31.466 (invalid)	
s104	s104	ASDU 1	[1] Single-point information	105	GI global, GI group 6	Off	Valid	07Sep15 09:33:31.466 (invalid)	
s104	s104	ASDU 1	[1] Single-point information	106	GI global, GI group 7	Off	Valid	07Sep15 09:33:31.466 (invalid)	
s104	s104	ASDU 1	[1] Single-point information	107	GI global, GI group 8	Off	Valid	07Sep15 09:33:31.466 (invalid)	
s104	s104	ASDU 1	[1] Single-point information	108	GI global, GI group 9	Off	Valid	07Sep15 09:33:31.466 (invalid)	
s104	s104	ASDU 1	[1] Single-point information	109	GI global, GI group 10	Off	Valid	07Sep15 09:33:31.466 (invalid)	
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s104	s104	ASDU 1	[17] Event of protection equipment with time tag	1302	GI global	sep = 0, el...	Valid	07Sep15 09:33:31.466 (invalid)	
s104	s104	ASDU 1	[17] Event of protection equipment with time tag	1303	GI global	sep = 0, el...	Valid	07Sep15 09:33:31.466 (invalid)	
s104	s104	ASDU 1	[17] Event of protection equipment with time tag	1304	GI global	sep = 0, el...	Valid	07Sep15 09:33:31.466 (invalid)	
s104	s104	ASDU 1	[18] Packed start events of protection equipme...	1400	GI global	spe = 0, rel...	Valid	07Sep15 09:33:31.466 (invalid)	
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s104	s104	ASDU 1	[18] Packed start events of protection equipme...	1403	GI global	spe = 0, rel...	Valid	07Sep15 09:33:31.466 (invalid)	
s104	s104	ASDU 1	[18] Packed start events of protection equipme...	1404	GI global	ape = 0, rel...	Valid	07Sep15 09:33:31.466 (invalid)	

Embedded Connectors

Why Embed Connectors on Devices?

- Emergence of small sophisticated devices is pushing data collection capabilities into devices
- Multi-purpose device data collection node
- Higher quality data having collection logic as close as possible to the data source

What Specifically Is OSIsoft Doing?

- Building platform agnostic Connectors that can be deployed on both Windows and Linux
- Initial target for Embedded Linux is the DNP3 Connector
- Working with Cisco, Intel, and Qualcomm

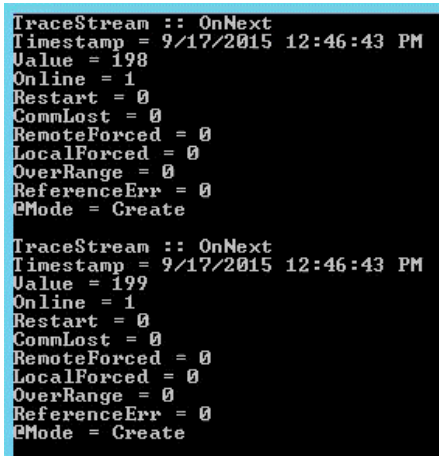
PI Connector for DNP3 (embedded)

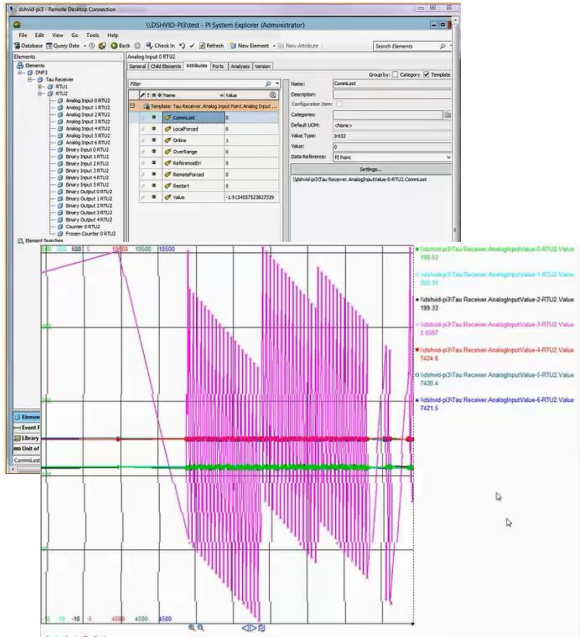
- T&D
- Talking directly to RTUs
- Running on Cisco's Industrial Integrated Services Router 829

DNP3 Network

DNP3 Connector Running on Cisco's ISR 829 Device

PI System





PI Connector for DNP3

- Overview
- Data Source List
- Server List
- Diagnostics

Overview

Connector details

Version 1.0.0.0

Status of the connector

Connector running as OSI\dnoonen

Updating...

Data sources

Port20500

Add or modify data sources

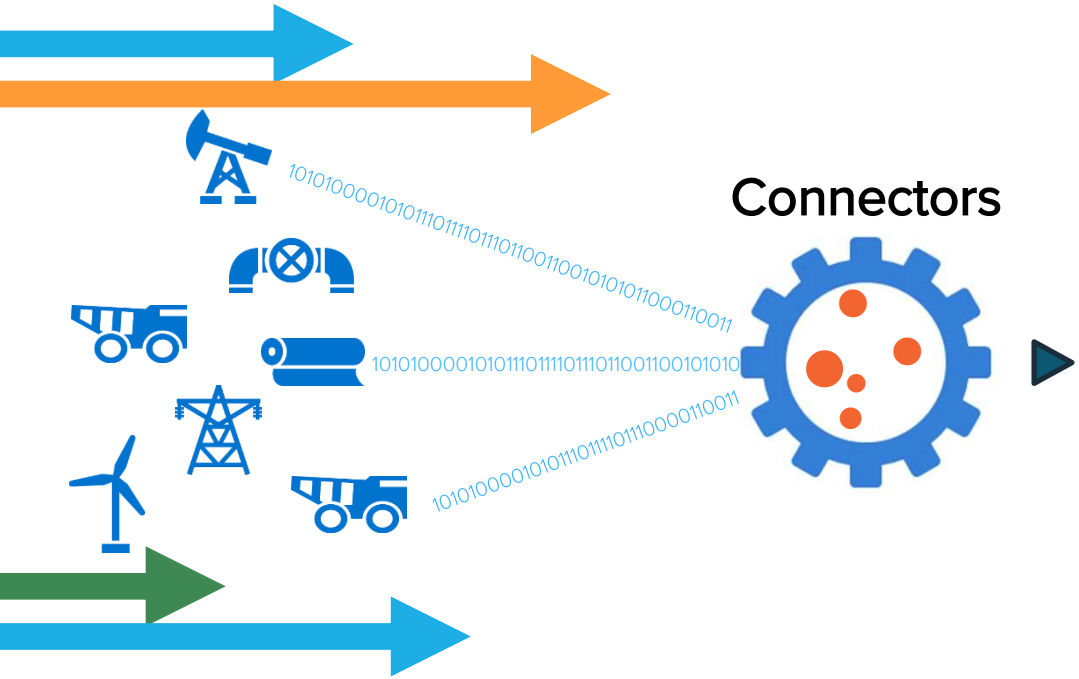
Servers configured to receive data from the connector

PI Relay server : dnoonen7600

Add or modify servers

OSIsoft.

Demo Summary



Time

Elimates time and errors configuring tags

Configuration

Simple to configure

Build

Reduces effort to build an asset model

Embedded

Run on embedded devices / Linux

Come See Us at the PI Connector Pod

- Tell us what connectors you want
- Give us feedback on functionality
- Sign up to beta test
- Test drive the following connectors

BACnet
CygNet
EtherNet/IP
Embedded DNP3
HART-IP
IPMI
IEC 60870-5-104
SIMATIC PCS 7
Wonderware Historian
UFL

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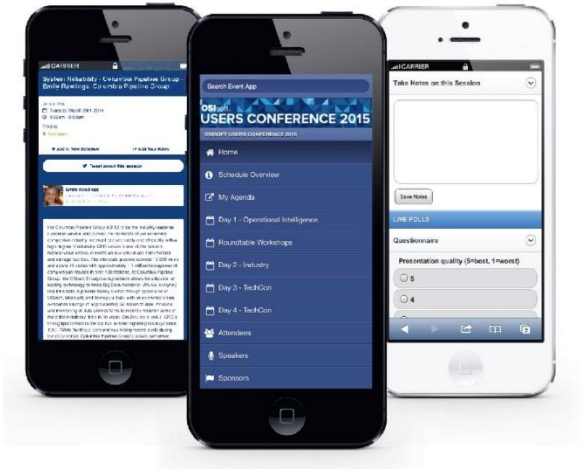
Questions

Please wait for the **microphone** before asking your questions

State your
name & company

Please don't forget to…

Complete the Online Survey for this session



http://eventmobi.com/emeauc15

감사합니다

谢谢

Danke

Gracias

Merci

Thank You

ありがとう

Děkujeme

Obrigado