PI System Product Roadmap

Presented by Mark Hughes

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Managing Complexity

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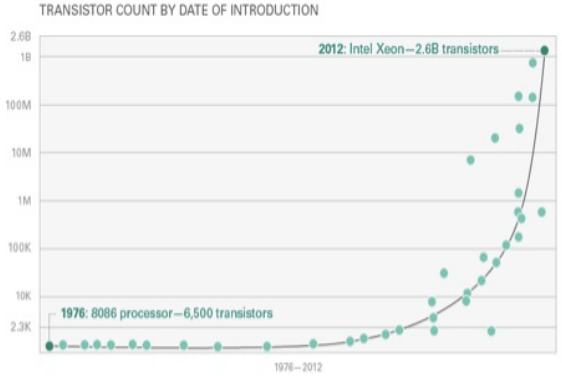
Why are systems getting more complicated?



Moore's Law

HART at the Speed of Ethernet

Distributed Network Protocol

WITSML™

ASHRAE BACnet™

More data transport protocols

Security requirements

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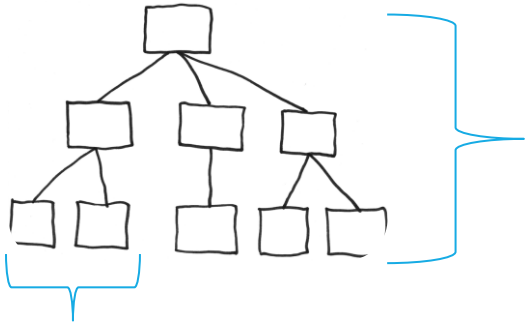
How to handle more of everything: Asset Framework & Event Frames

Context



Hierarchy

Grouping

Common Names
Units of Measure
Hidden and Excluded Attributes

New

Consistency

Reuse

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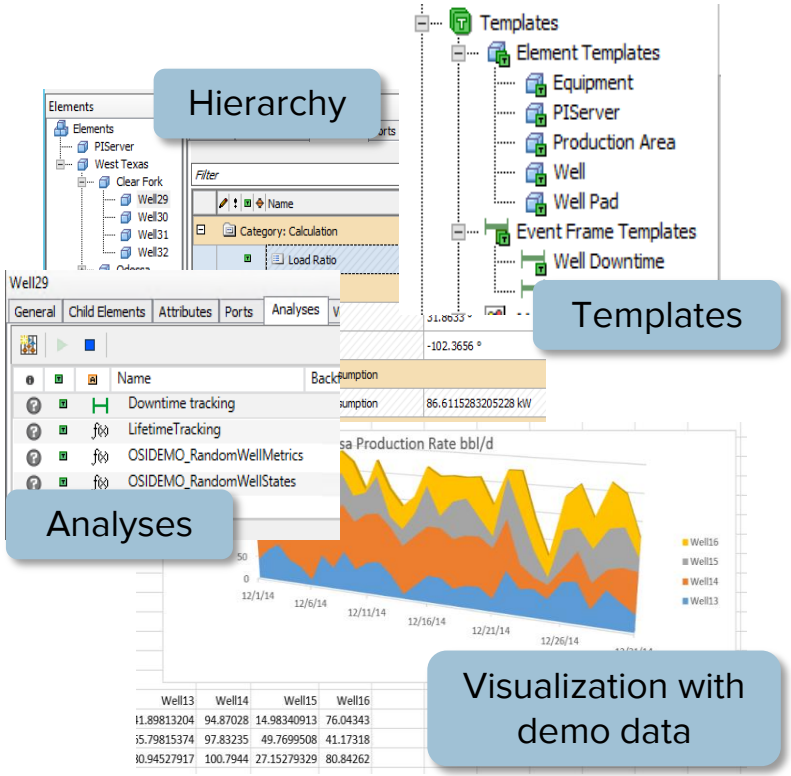
Asset Based PI Example Kits

- See business initiatives take shape
  - Example AF templates
  - Simple AF structure
  - Sample reports

- Download and discuss on PI Square
  - Search for the "Asset Based PI Example Kit" place



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New features

- PI Server 2015
  - Batch Database migration to Event Frames
  - Hidden and Excluded attributes
- PI Web API 2015 – edit Asset Framework and Event Frame databases

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Next year

- PI Notifications
- Asset Analytics enhancements
- System management improvements in the PI Data Archive

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Data Protocols

- BACnet
- DNP3
- EtherNet/IP
- HART-IP
- IEC 60870-5-104
- IPMI
- OPC Unified Architecture
- WITSML

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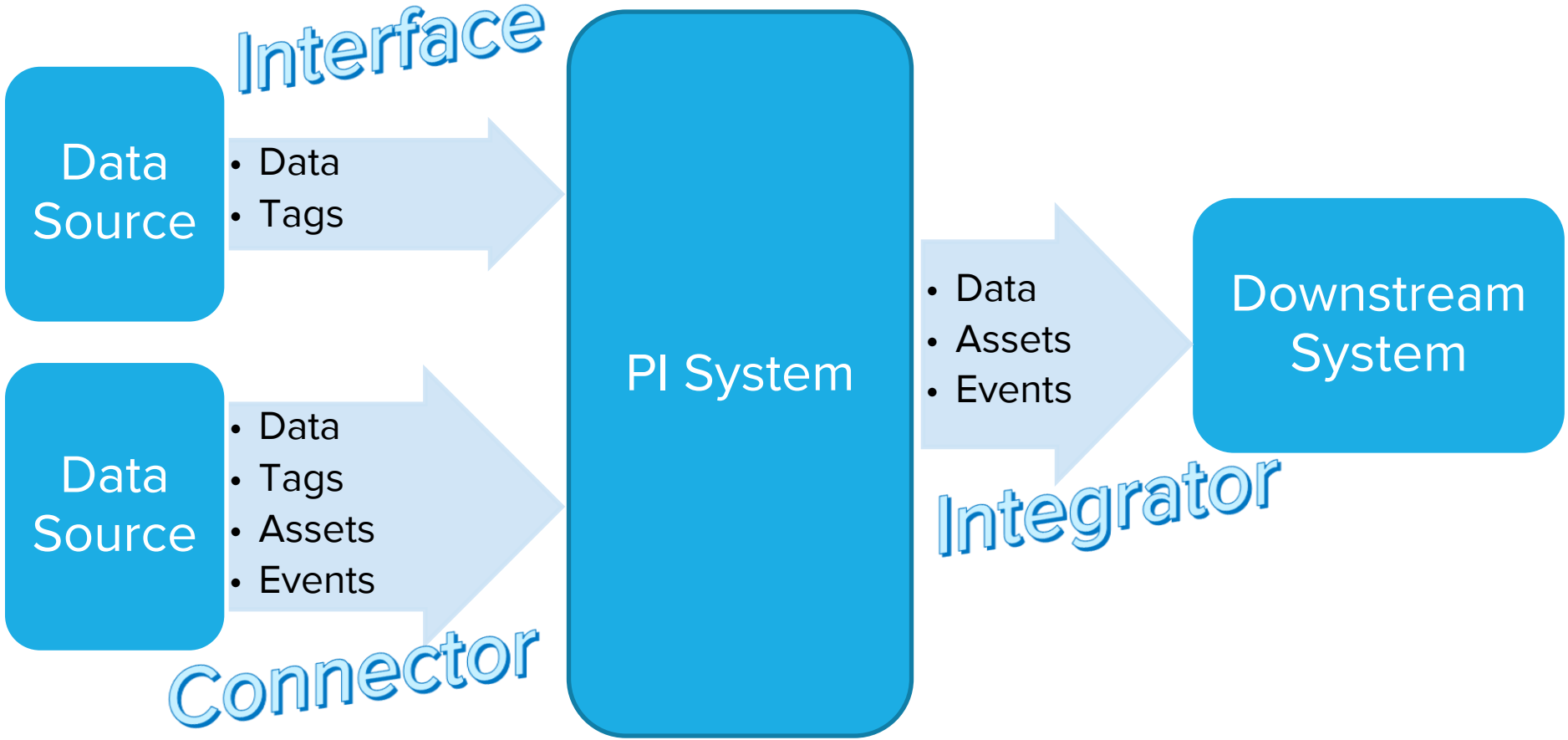

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Advantages of PI Connectors

- Auto-discover & auto-create assets and tags
- Collect event data type (Event Frames)
- Simple configuration
- Higher speed
- Ability to run on Linux
- Security

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New PI Connectors

BACnet (beta)

DNP3 (in development)

EtherNet/IP (released)

HART-IP (released)

IEC 60870-5-104 (released)

IPMI (released)

OPC UA (in beta test for Siemens SIMATIC PCS 7)

WITSML (in development)

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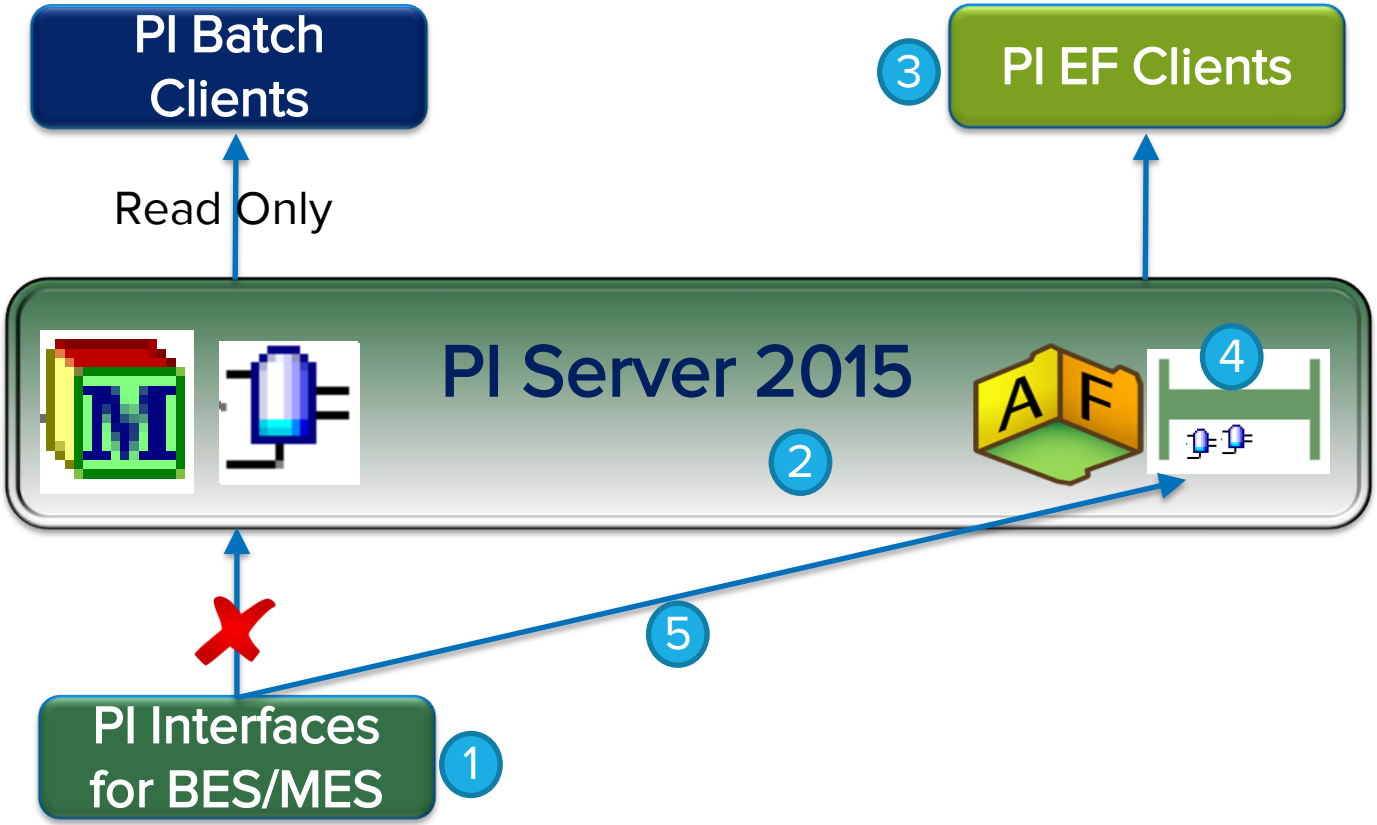
Batch to PI Event Frames Migration Process



1. Upgrade Interfaces
2. Upgrade Server
3. Install EF Clients
4. Migrate Batch Data
5. Switch Interfaces

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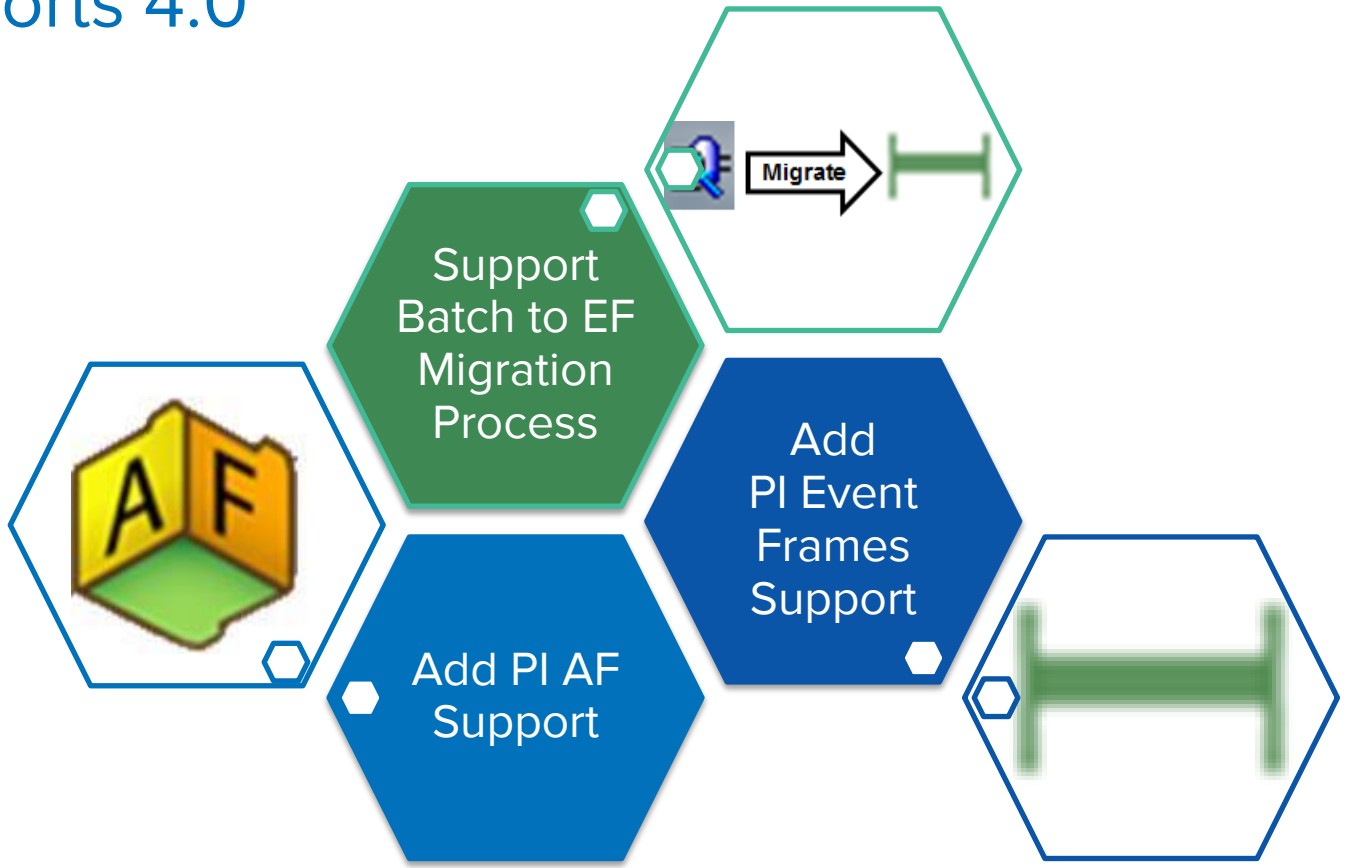
RtReports 4.0



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Security

- Identity
- Transport security

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Transport Security with PI Server 2015

From \ Connection	PI Trust	NTLM RC4/MD5	Active Directory (Kerberos) AES256/SHA1*
PI Buffer Subsystem	✗	✓	✓
PI Connectors	✗	✓	✓
PI DataLink	✗	✓	✓
PI ProcessBook	✗	Future	Future

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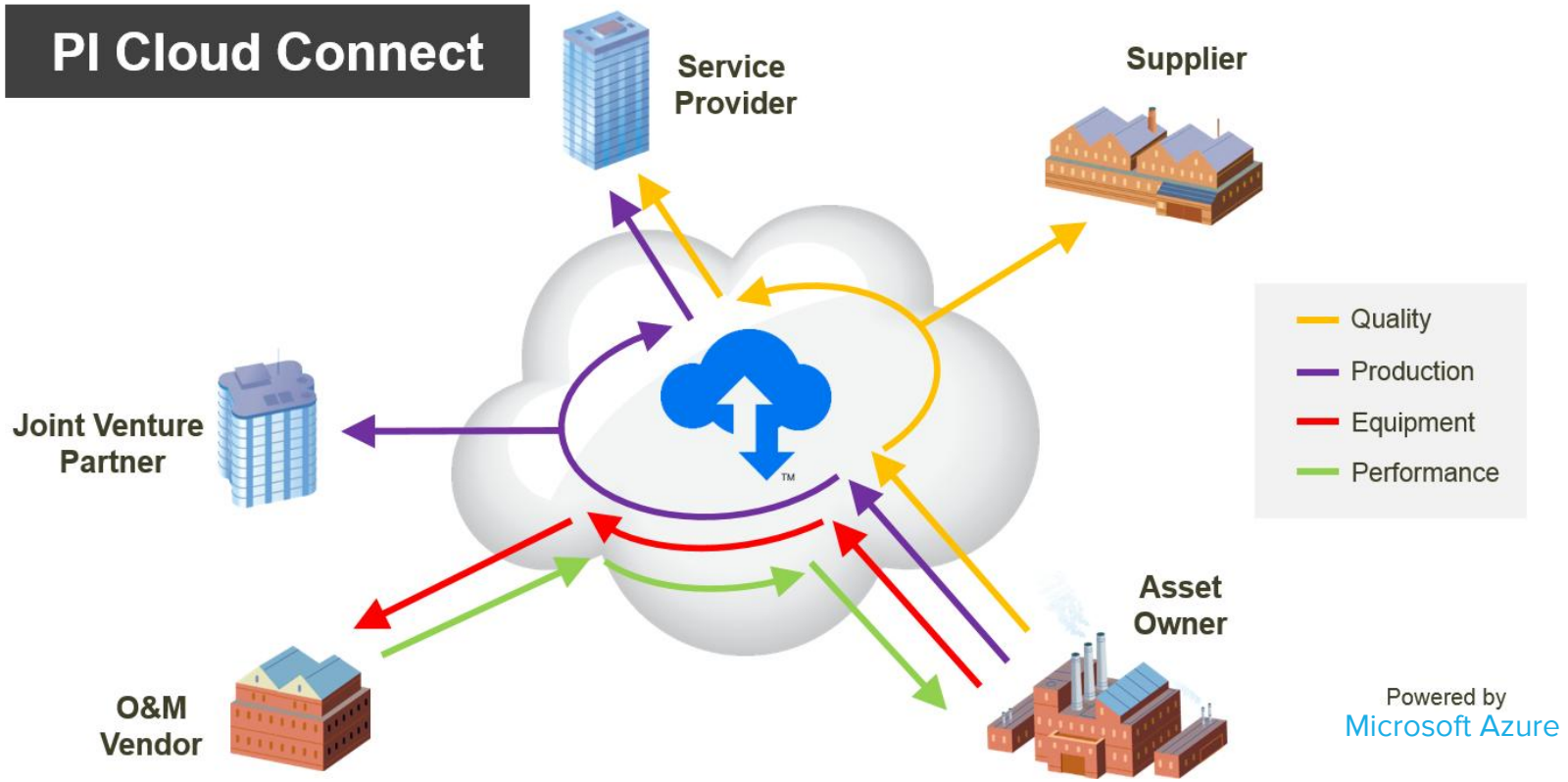
Software as a Service



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Managing Complexity

- PI Asset Framework & PI Event Frames
- PI Connectors
- Batch Migration
- Security (transport security, claims-based identity)
- PI Cloud Connect

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Data

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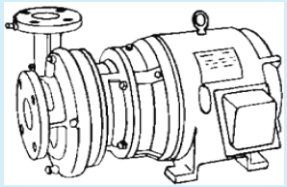
Asset Analytics

Element Template



Analysis Template

- Schedule or Attribute triggers
- Expressions or rollups or event frame generation

Element

Analysis

- Applied to specific attributes
- Automatically follows changes to template

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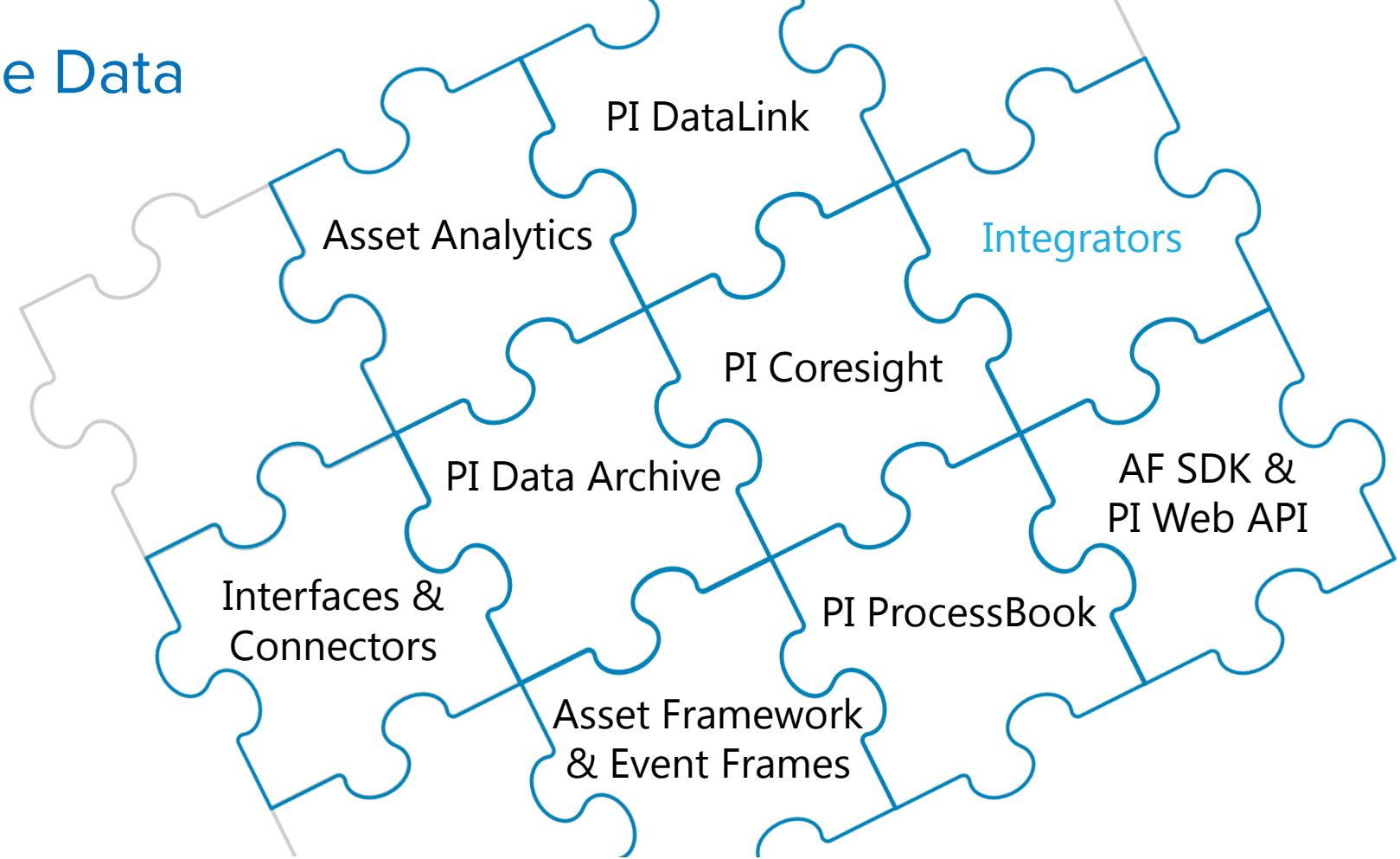
Future Data



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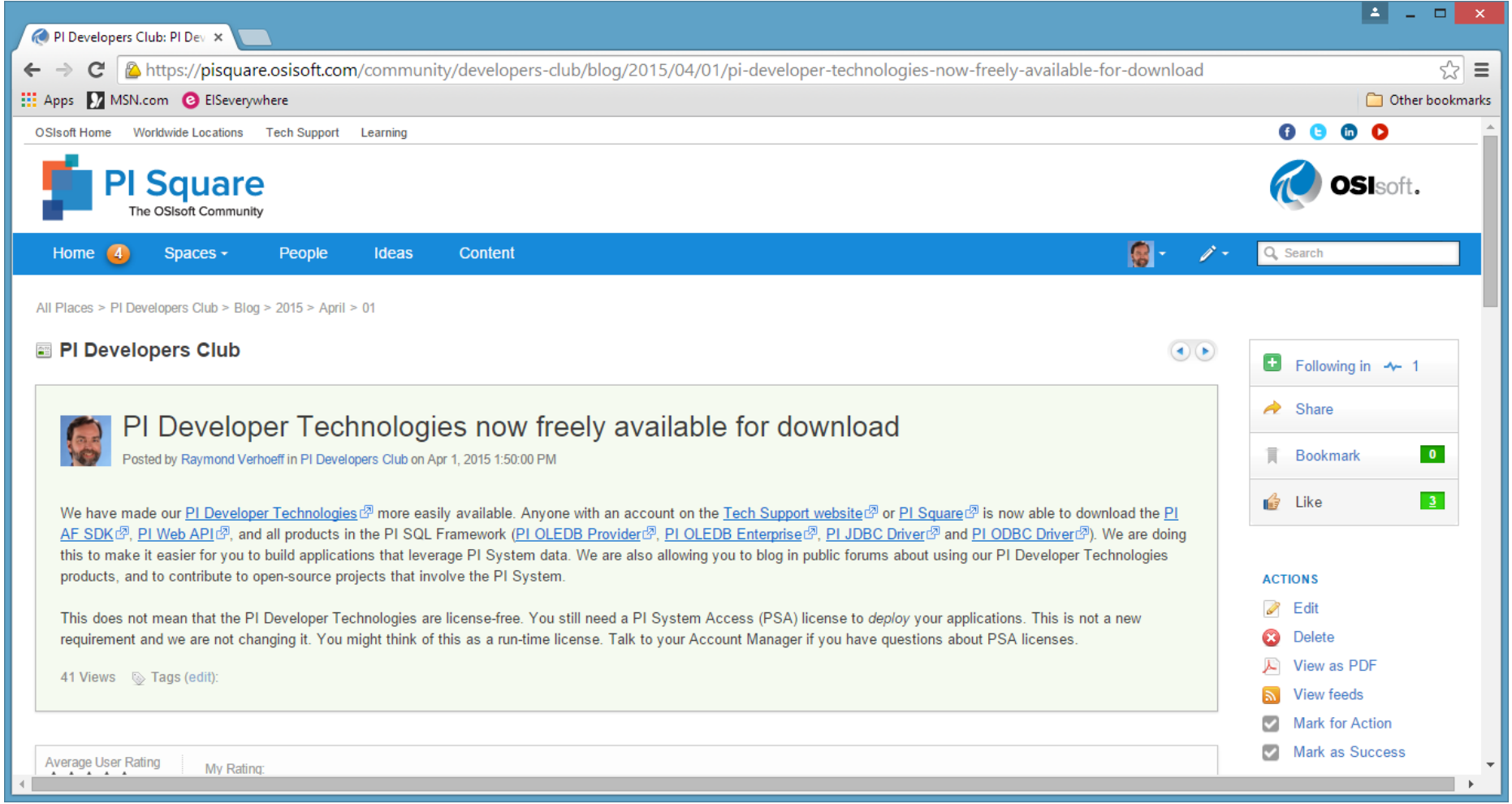

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Launching Open Licensing Rights

Developer Technology	
.NET Framework	AF SDK
PI Web API	Core Services Indexed Search
PI SQL Framework	PI OLEDB Enterprise PI OLEDB Classic PI ODBC PI JDBC

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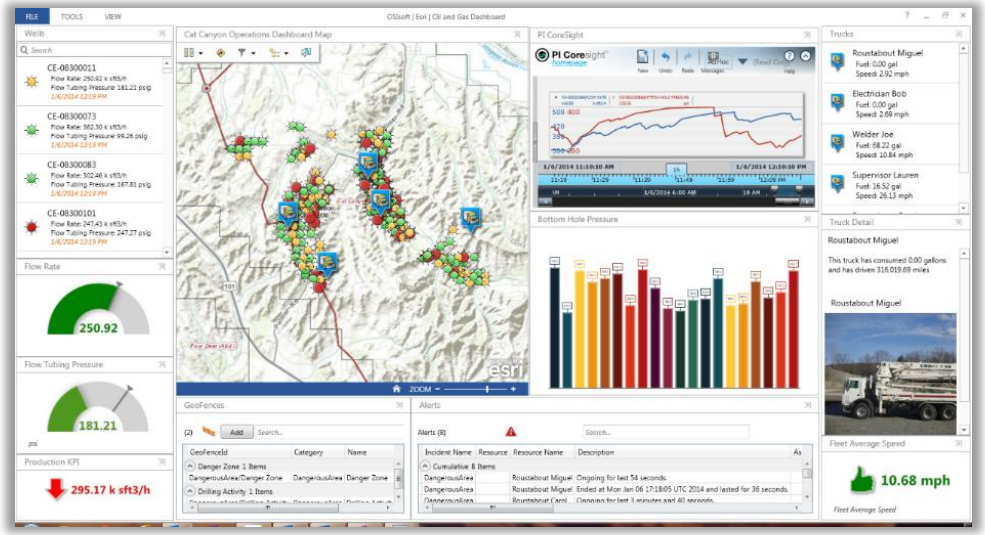
PI Integrator for Esri ArcGIS

Overlay Assets and Real-time Information onto Esri Maps



- Overview of your PI System assets using Esri maps
- Esri maps become live with PI System data
- Drill into asset data using PI Coresight
- Import Esri ArcGIS assets into PI AF

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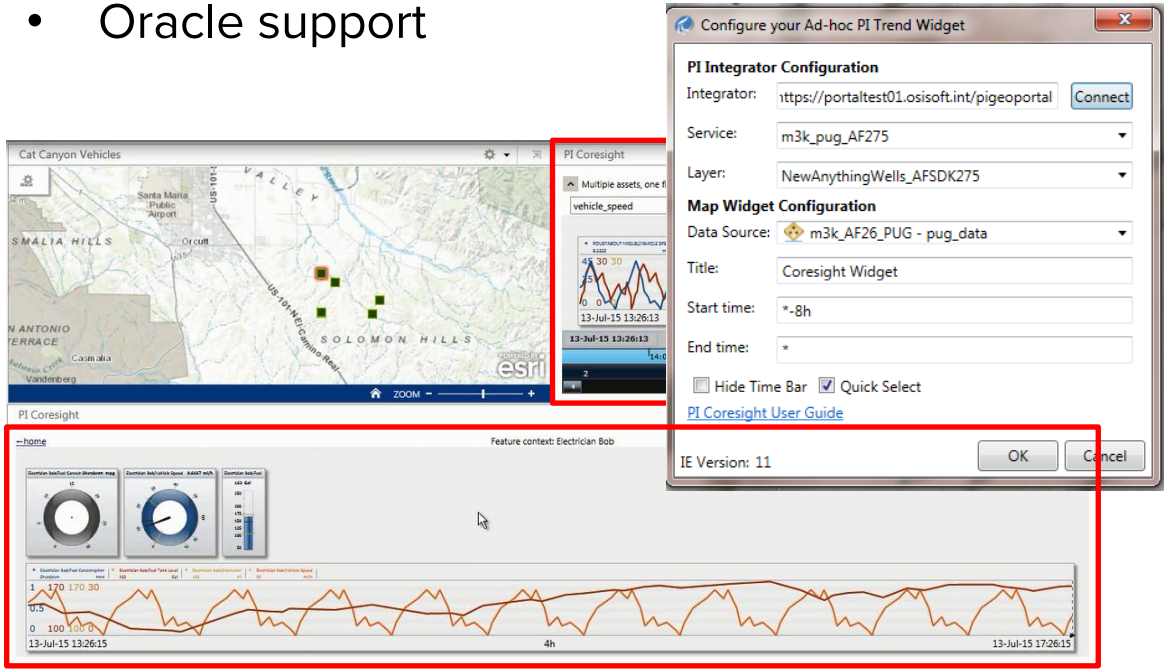
New Features in PI Integrator for Esri ArcGIS

Version 2014 SP1 (March 2015)

- ArcGIS v 10.3.0 support
- Oracle support



AdHoc Trend Widget

Saved Display Widget

Version 2015 (Oct. 2015)

- Support NOC Management
- Native ArcGIS Operations Dashboard widgets

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Business Intelligence, MapReduce, Machine Learning

Fleet Assets and Different Brands

Optimization

Startups and Plant turn-arounds

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Why do you need a PI Integrator?

Real-time Data isn't perfect

- Naturally incomplete (delays, shutdowns)
- Not evenly spaced
- Doesn't look and behave like SQL (RDBMS)
- Subject to errors in measurement
- Varies in fidelity
- Needs context (Assets, Events)
- Hard to collect effectively

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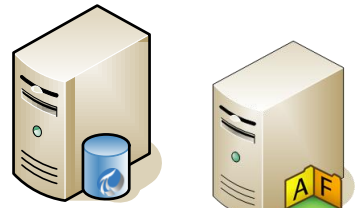
From Raw Data to Decision Ready Data



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System of Record

- Guaranteed Delivery & Storage
- Full Fidelity of Sensor
- Optimized for Real-Time
- Backup/Restore
- HA
- Security

Needs:

- Cleanse
- Augment
- Shape
- Transmit

Visual Analytics

Excel, tableau, Spotfire TIBCO Software, COGNOS, QlikView

Statistical Analytics

hadoop MapReduce, SAS, SAP

Analytics Packages

- Designed to Analyze Large Sets
- Expects that the Data Exists
- Problem Defines Data Shape
- Typically Evenly Spaced in Time

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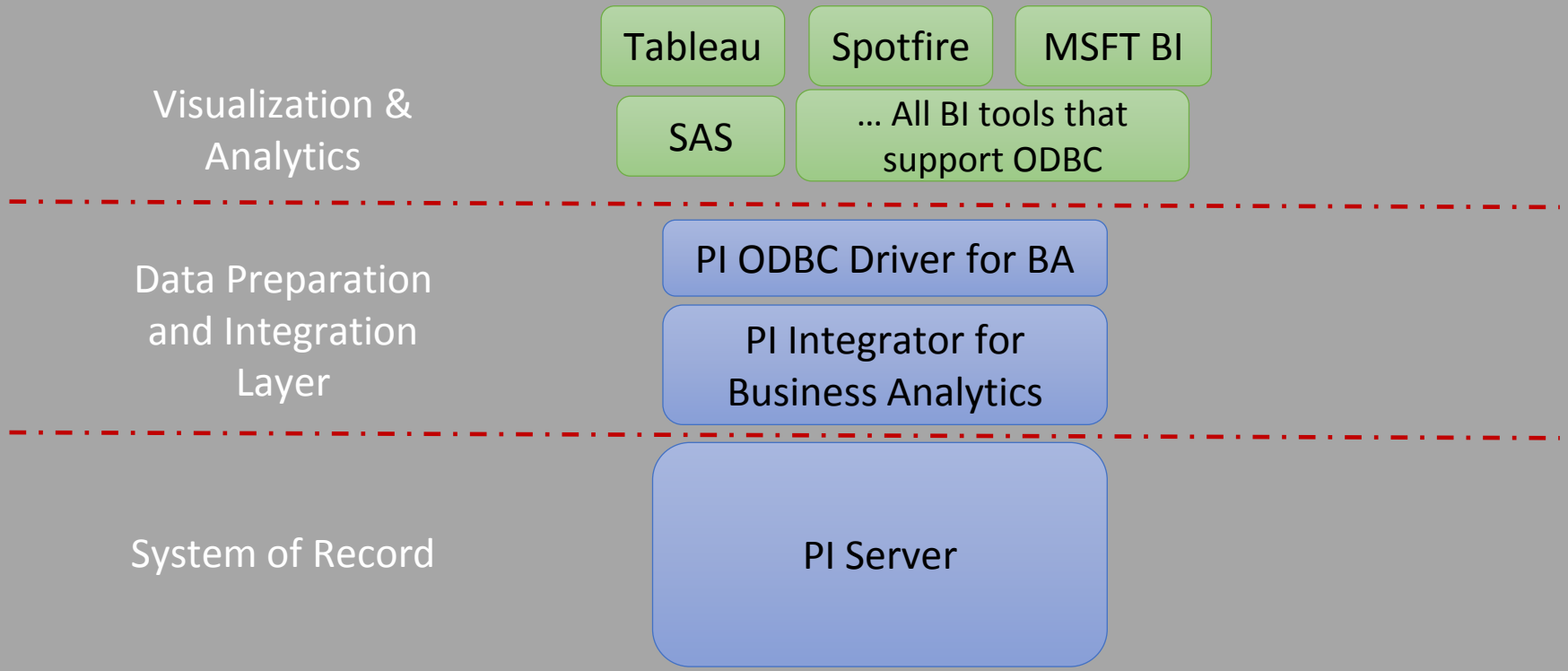
Operational Reporting & Analysis Architecture



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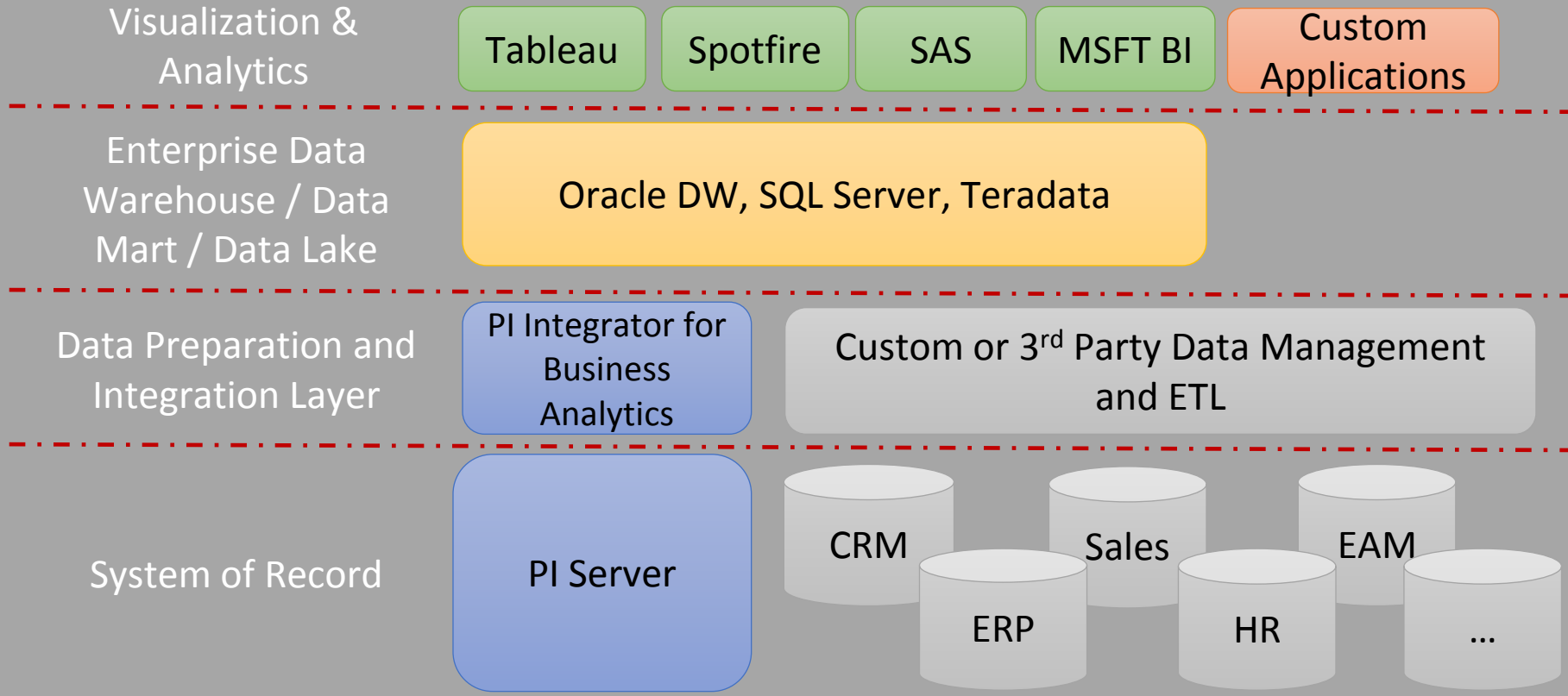
Enterprise Data Warehouse Architecture



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PI Integrators

- PI Integrator for ESRI ArcGIS
- PI Integrator for Business Analytics
  - Data Designer UI
  - Data Extraction, Shaping, Cleansing
  - MS SQL Server - Intermediate Store
  - Pull Data from PI System using ODBC
- PI Integrator for SAP HANA
  - Similar to above, adds into HANA Smart Data Access (SDA)
  - Create virtual tables corresponding to Views in PI System

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Data

- Asset Analytics
- Future data
- Open SDKs
- Integrators
  - PI Integrator for Esri ArcGIS
  - PI Integrator for Business Analytics
  - PI Integrator for SAP HANA

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Viewing data

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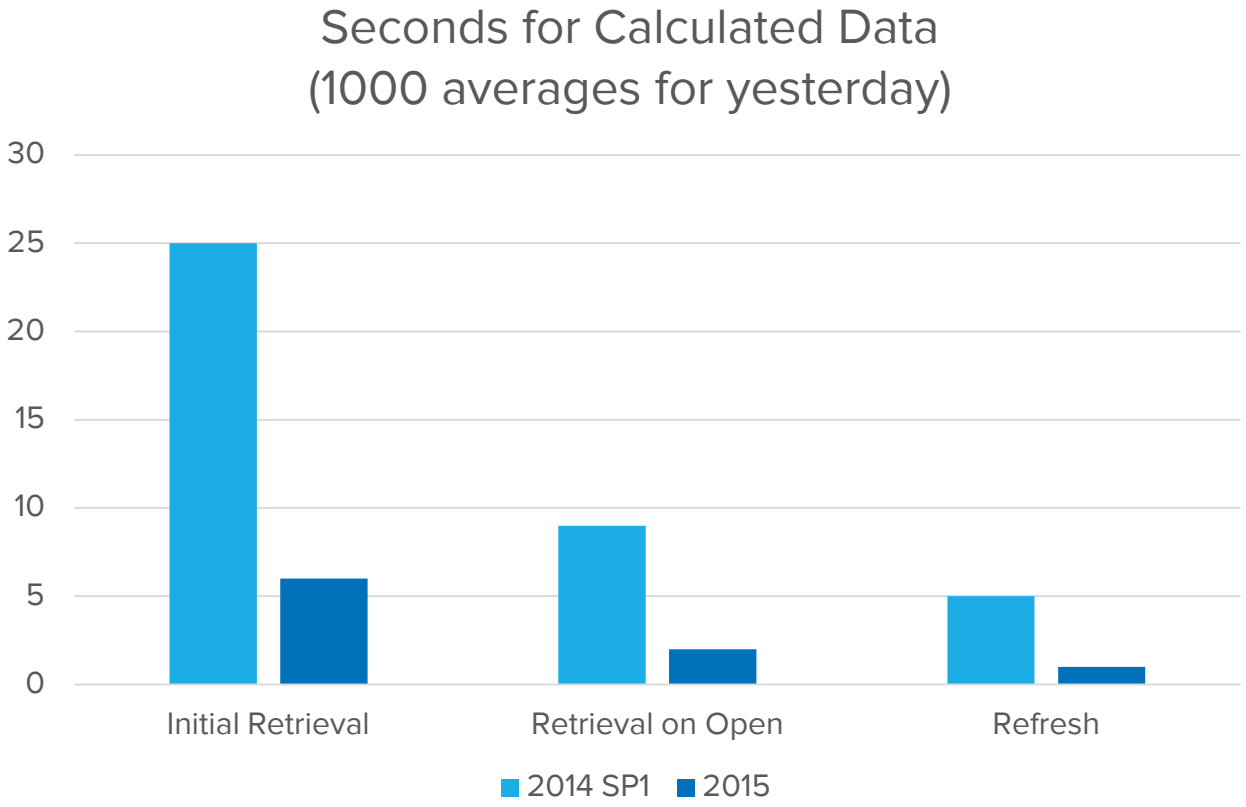
PI DataLink 2015



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PI Coresight 2014

- Fast and easy access to PI System data
- PI ProcessBook display viewing in any browser
- New mobile web site designed for small screens and accessible on any device

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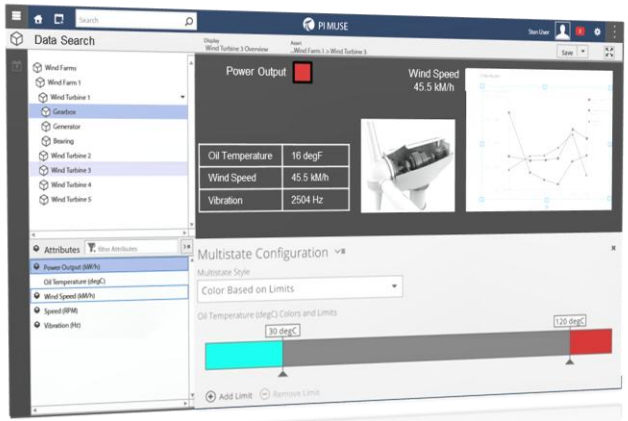
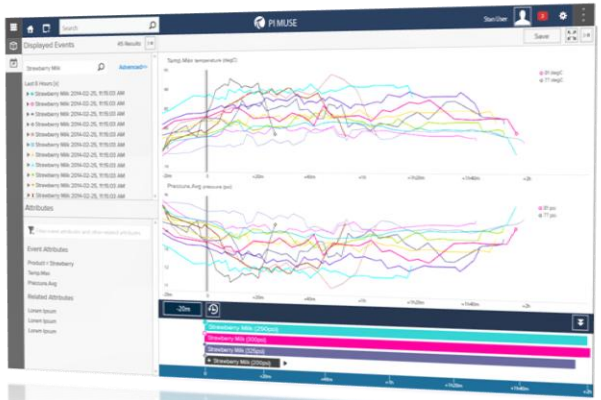
Visualization for today's PI System

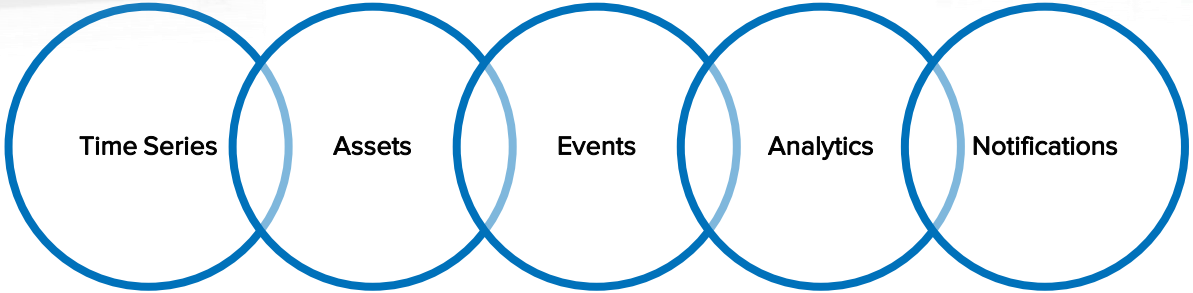


Authoring

Monitoring



Ad Hoc Analysis



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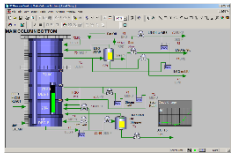


PI ProcessBook

Display Editor
Process Monitoring

+

PI Coresight 2.x

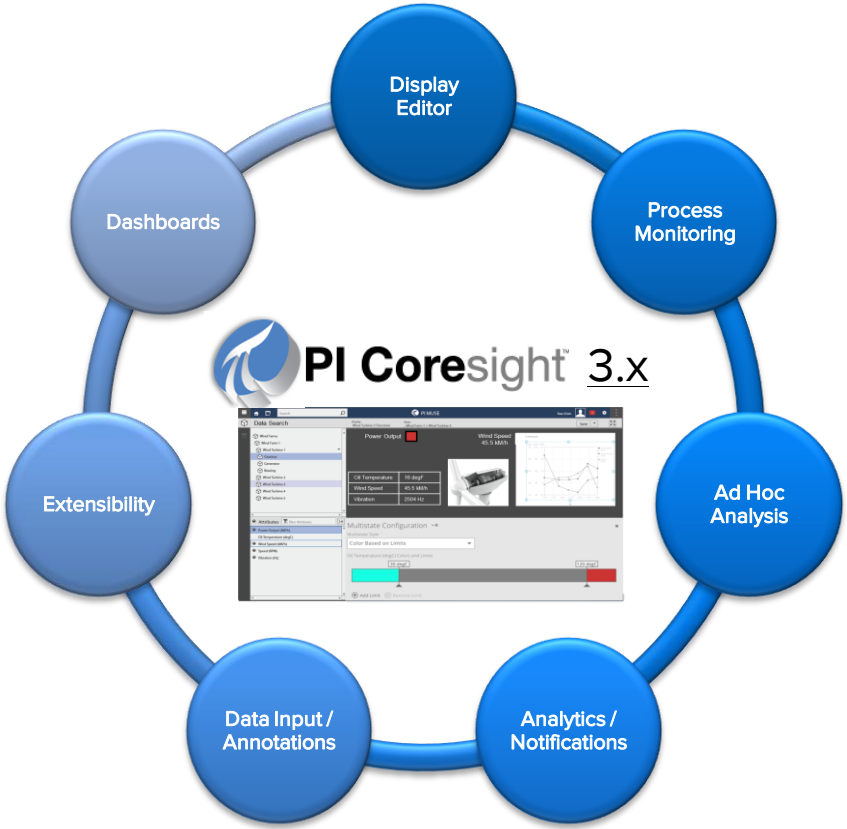
Ad Hoc Analysis
PB Display Viewer

+

PI WebParts

Dashboards

TODAY (2015)



FUTURE (2016+)

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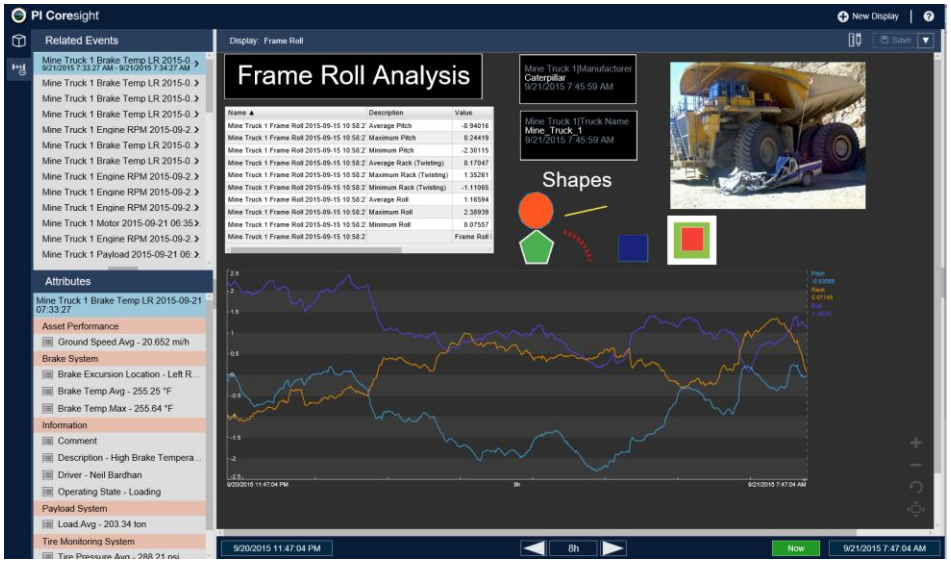
PI Coresight 2016 – Expected Features

- Fully HTML5 based; usable on any device
- Absolute size and position display editor
- Support for shapes and graphic images
- Multistate behavior
- Event Comparison (Overlay trend)
- Related Assets and Events
- Event details page



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Viewing data

- PI DataLink
- PI Coresight
  - ProcessBook Viewer
  - Mobile experience
  - Event comparison
  - Notifications
  - Extensibility

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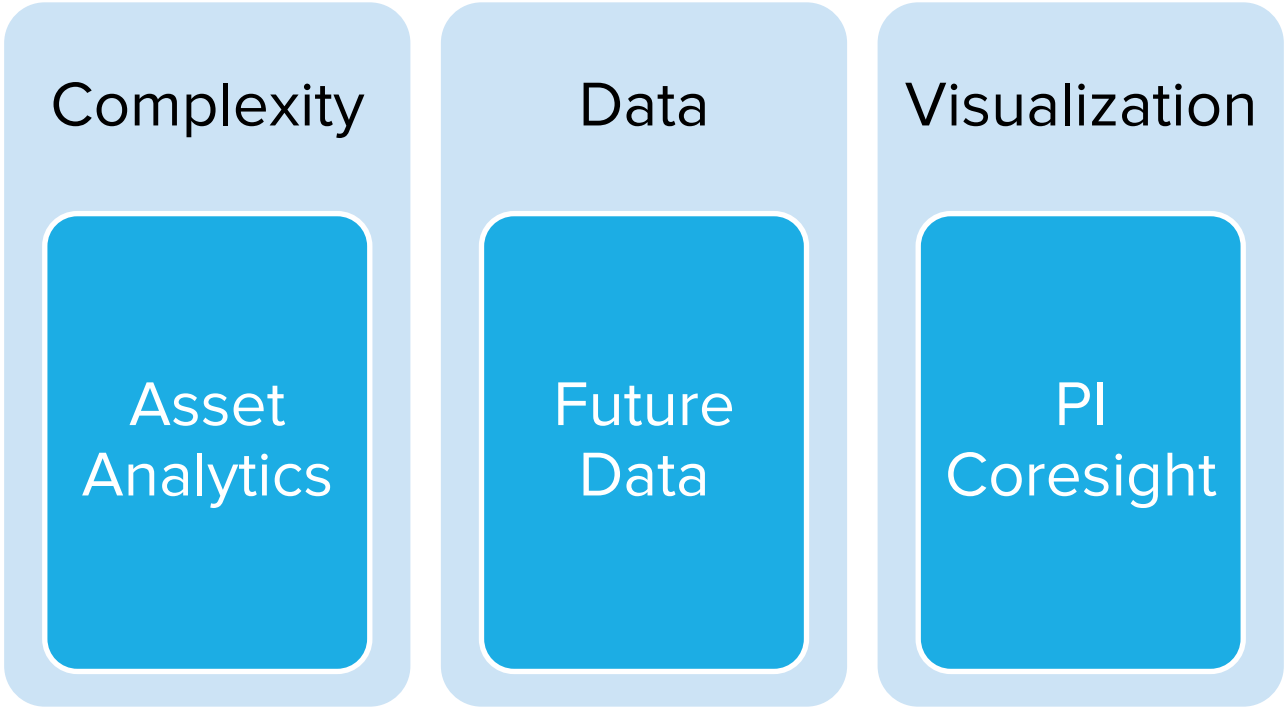
What should you do next?



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Contact Information

Mark Hughes
mark@osisoft.com
Director of Product Management
OSIsoft, LLC

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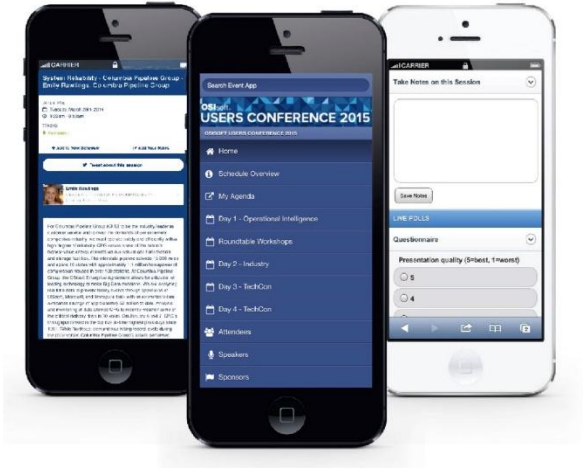
Questions

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



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감사합니다

谢谢

Danke

Gracias

Merci

Thank You

ありがとう

Спасибо

Obrigado

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