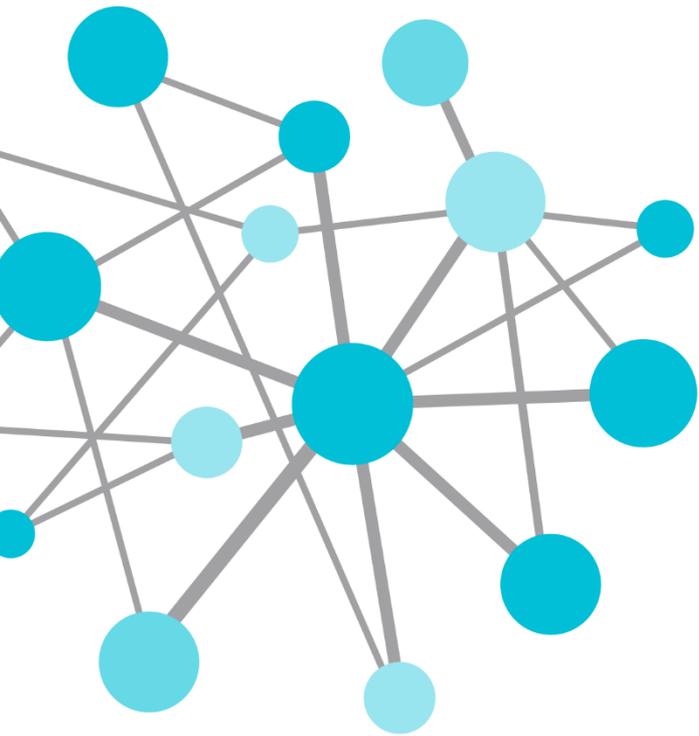


OSIsoft®

# REGIONAL SEMINAR 2014

The **Power** of **Data**

DECISION READY IN REAL-TIME



# Information on the Spot

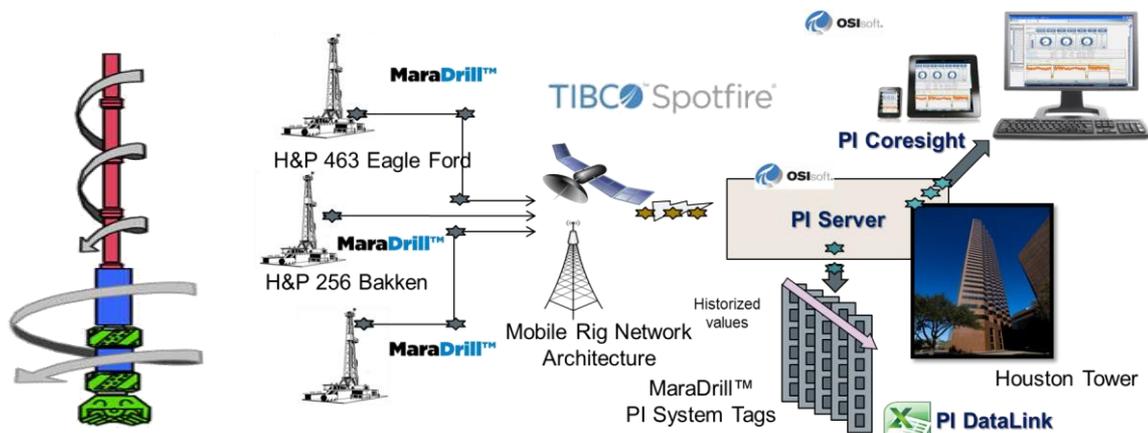
Presented by **Martin Bryant, Field Service Engineer**  
[MBryant@OSISoft.com](mailto:MBryant@OSISoft.com)



# Real-Time Drilling Optimization



From stick-slip identification to stick-slip mitigation.



## CHALLENGES

Lack of real-time drilling analytics and guidance capability at the drill site

Extended drill time and down hole tool damage

Increased use of resources

## SOLUTION

Installation of the PI System real-time integration and applications infrastructure

Creation of drilling process high fidelity real-time analytics and visualization capabilities at the drill site

## RESULTS

Drilling time and capital well cost savings due to reduction in resources

Reduced vibration and damage to downhole tools

Continuous optimization onsite and retrospective post-well analysis



## Update on Marathon Oil's MaraDrill(TM) PI-based Optimization Solution

Ken Startz  
Marathon Oil

## I need to:

Provide self service BI for my users



## I need to:

Enter data from my mobile device



## I need to:

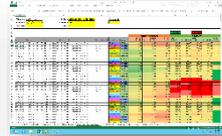
Respond to notifications and identify problems



I need to: Access process data anytime, anywhere

## I need to:

Report against process and event data



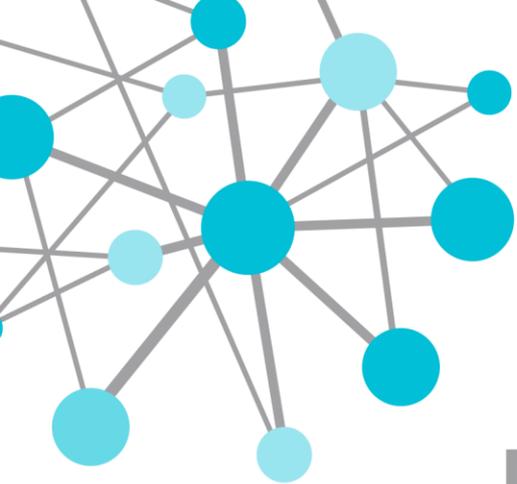
# I need to:

## Enter data from my mobile device



### PI Manual Logger using a smart phone





# DEMO

# PI Manual Logger 2014

**Tour-based** manual input data collection

- PI Manual Logger **PC**

- **Configure** tours
- Enter, review, edit, or **approve** the data



- PI Manual Logger **Web**

- **Collect** data from equipment with a **mobile device**
- **Barcode**/RFID to identify tags and/or enter data

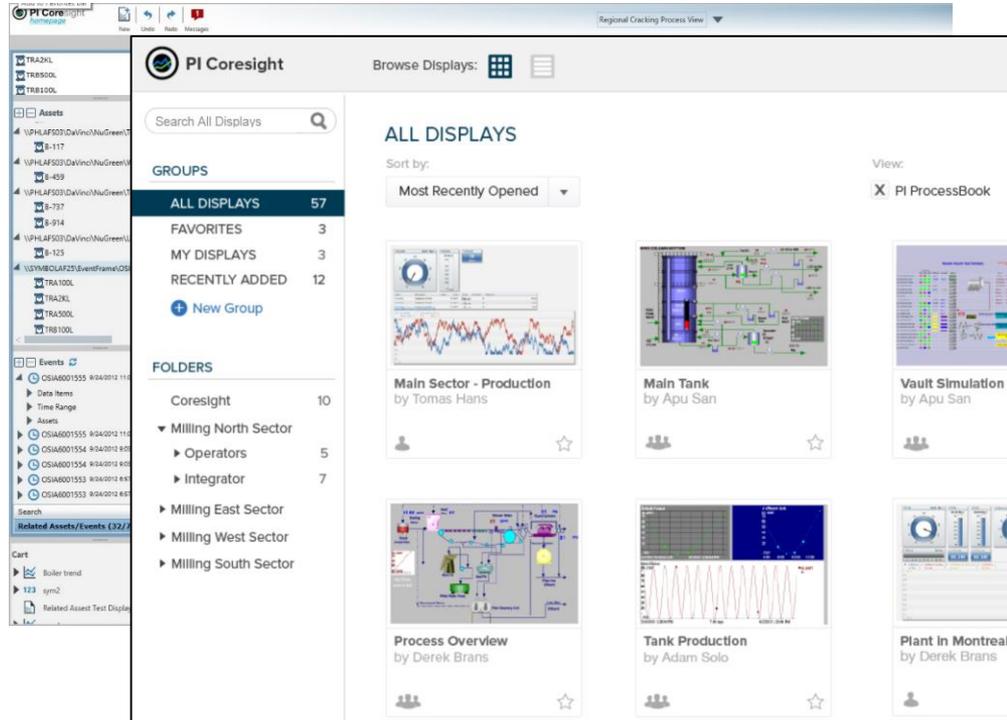


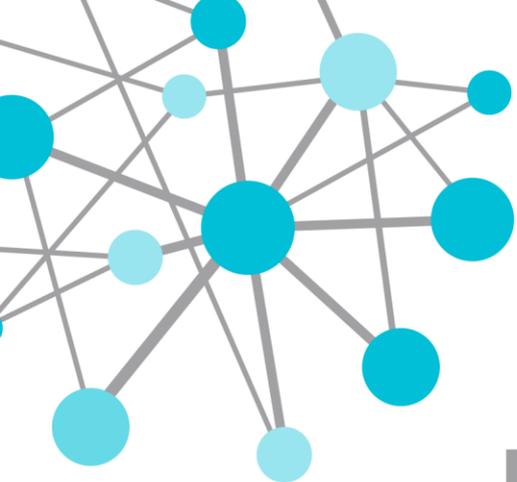
# I need to:

## Respond to notifications and identify problems



### Notification-driven investigation using PI ProcessBook and PI Coresight



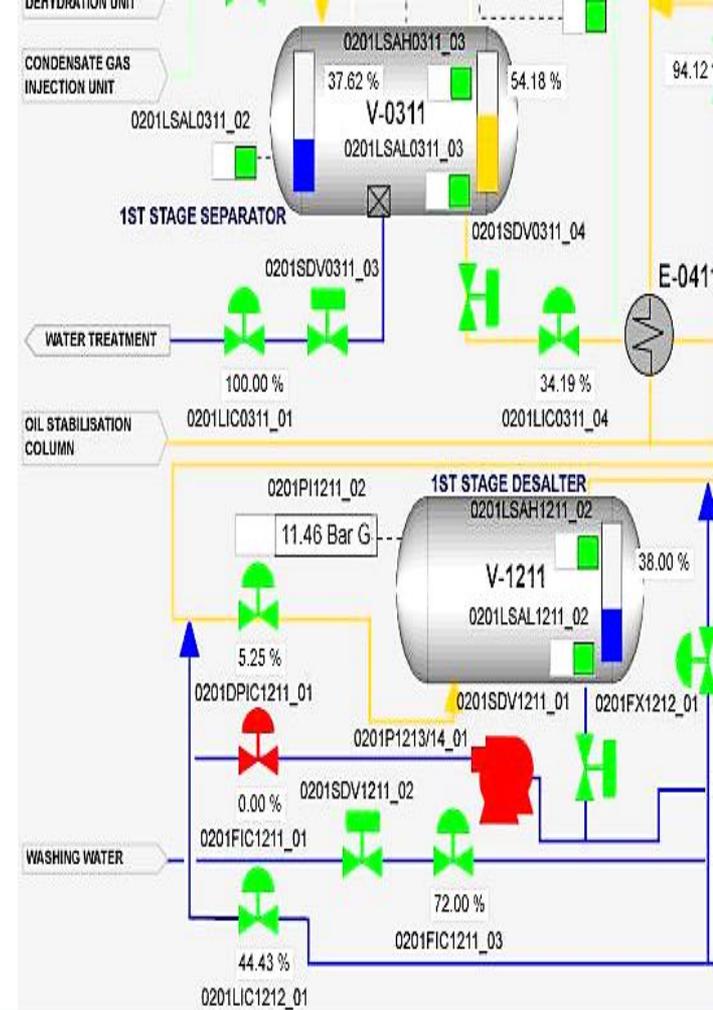


# DEMO



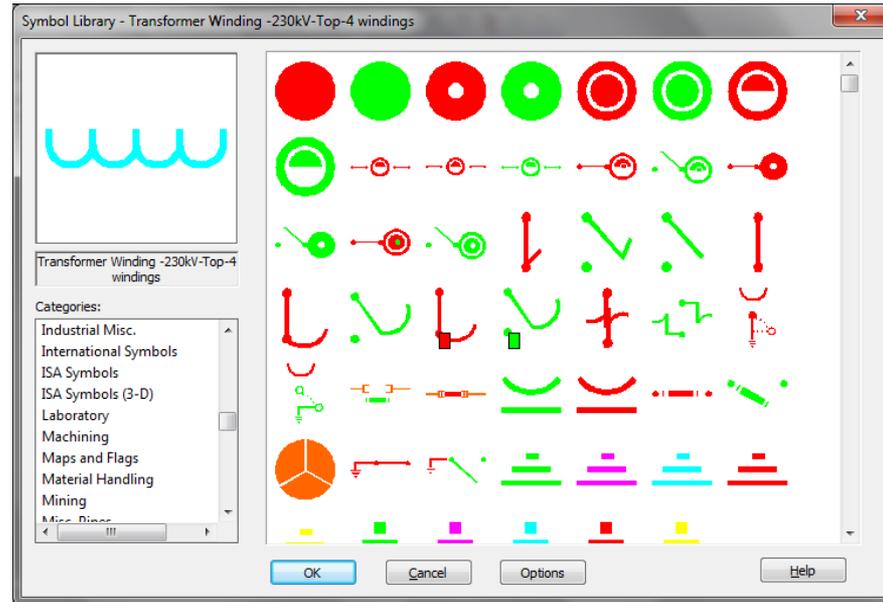
# PI ProcessBook

- Display **real-time** and **historical** data
  - Process representation
  - **Trend** with traces
  - Context management with **PI AF**
  - **Replay** problematic events
  - **Drill-down** capabilities



# PI ProcessBook 2014

- Launch ad hoc analysis in **PI Coresight**
- New Transmission and Distribution Symbols
- **Assign displays** to PI AF Elements and Templates



# Demo: Assign Displays to PI AF Elements

The screenshot shows the PI ProcessBook interface for a 'Tank Farm' project. The main workspace displays a 3D tank model labeled 'AwesomeTank1' with two data displays: '69.6918 psi' and '200 cm3'. The left-hand 'AF Browser' pane shows a tree view of the project structure, including folders for 'DataTypes', 'Formulas', 'Random', and 'Tank Farm', with 'AwesomeTank1' selected. The bottom pane shows the 'General' properties for 'AwesomeTank1', including its name, description, template ('AwesomeTankTemplate'), and categories. The top of the window features a menu bar (File, Edit, View, Insert, Tools, Draw, Arrange, Window, Help) and a toolbar with various drawing and editing tools. The status bar at the bottom right shows 'Server Time' and 'NUM'.

# What Can I Do with PI Coresight?

- Very easy to build **ad hoc displays**
- Easy to use integration to indexed values in **PI AF assets & events**
- Simple ways to **share insight with others**

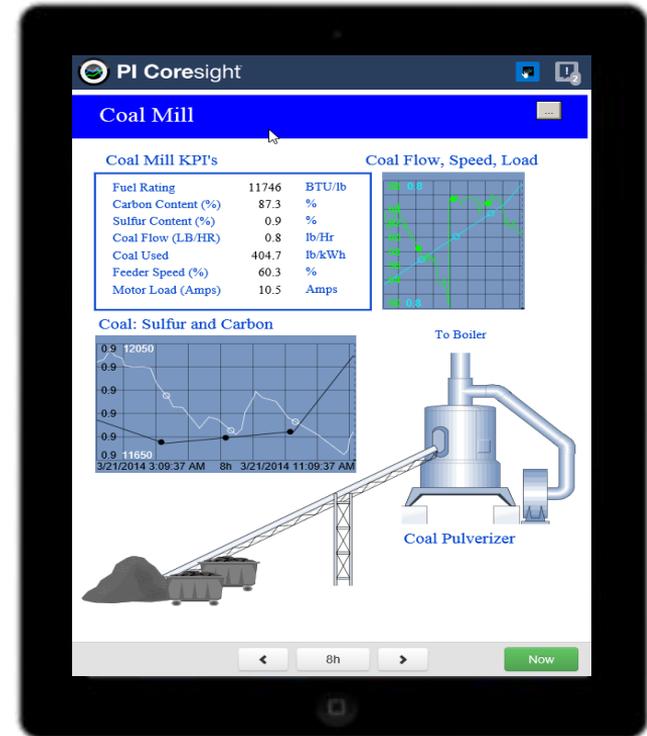


I need to:

Access operational data  
anytime, anywhere

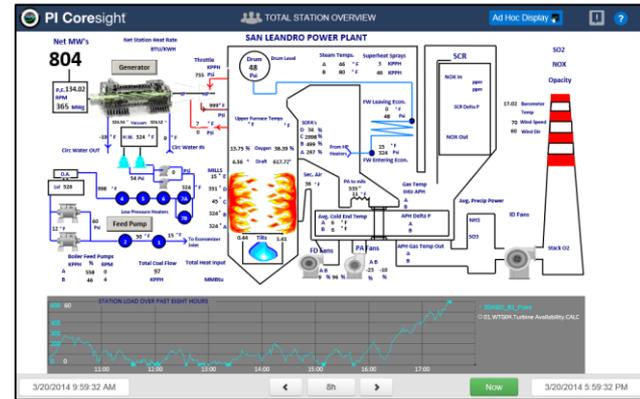


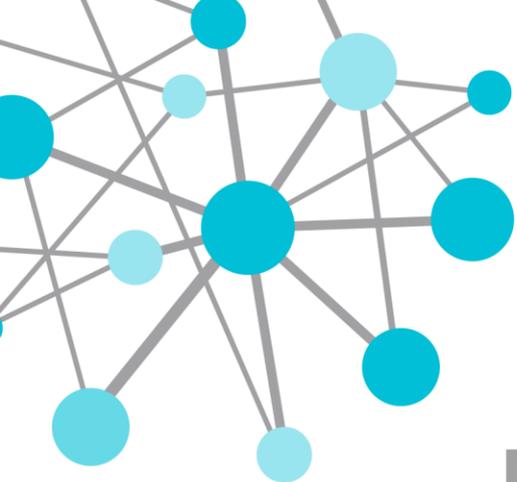
Real-time data on  
your tablet using  
PI Coresight



# Introducing PI Coresight 2014

- **Crafted displays** from PI Processbook not only displayed on **any device** accessible to PI Coresight – but integrated with PI Coresight’s **intuitive ad-hoc capabilities.**

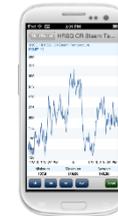




# DEMO

# PI Coresight on Mobile Devices

- Fast and easy access to PI System data
- View PI ProcessBook displays
- Designed for small screens
- Viewable on any device

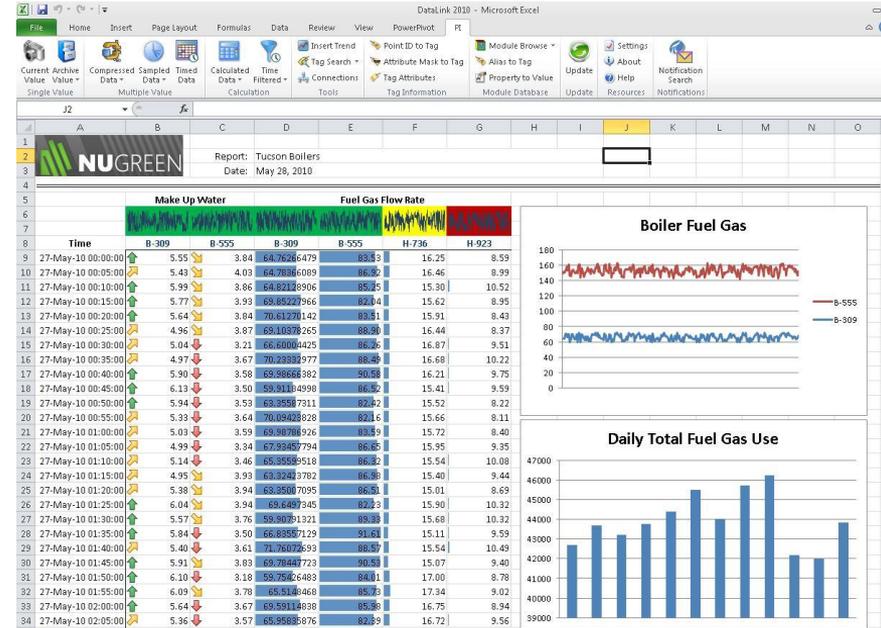


# I need to:

## Report against process and event data



### Events reporting in Excel using PI DataLink

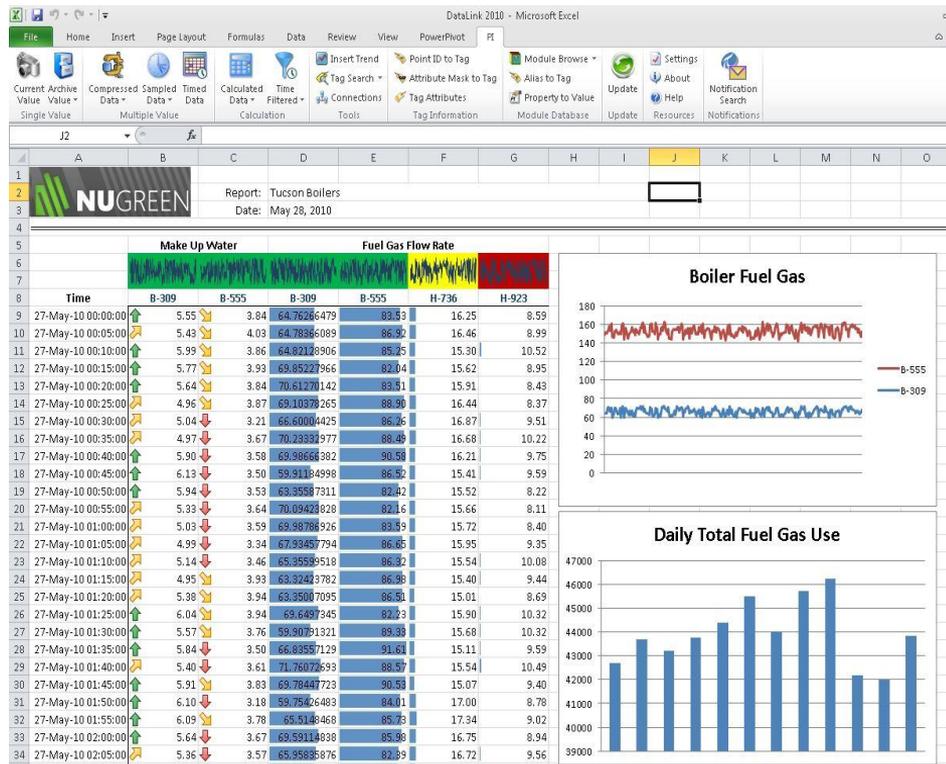


# PI DataLink

Add-in to **Microsoft Excel**

- Create reports
- Apply calculations
- Retrieve data

*OSIsoft's most popular product by installations*



# PI DataLink – Events Report Example

Copy of Copy of UC2014 Power Gen Reports - Excel

FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW ADD-INS PIDATALINK PI BUILDER Team

B21: [=PIEFdat[GLOBAL]!\$B\$2,'Production Summary Report'!\$C\$3,'Production Summary Report'!\$C\$4,0,'Production Summary Report'!\$F\$4,'Unit.TIME.Day'],'Production Summary Report'!\$F\$3,'','','','active in range'],'start time

EF Template Unit Time.Day  
 Search Start 1/10/2014 0:00  
 Search End \*

Site Name San Leandro Power Plant  
 Unit Name Unit 1  
 EF Name \*

Day of Week \*

Top 10% Bottom 10%

| Event name | Start time         | End time           | Duration | Site Name               | Primary element | Day of Week | Day Type | AMBIENT TEMPERATURE     |                         |                         | GROSS MW       |              |              |              |              |
|------------|--------------------|--------------------|----------|-------------------------|-----------------|-------------|----------|-------------------------|-------------------------|-------------------------|----------------|--------------|--------------|--------------|--------------|
|            |                    |                    |          |                         |                 |             |          | Ambient Temperature.Min | Ambient Temperature.Avg | Ambient Temperature.Max | Gross MW.Start | Gross MW.End | Gross MW.Min | Gross MW.Avg | Gross MW.Max |
| 2014_01_10 | 10-Jan-14 00:00:00 | 11-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | FRIDAY      | WEEKDAY  | 39.38                   | 53.15                   | 62.12                   | 389.42         | 383.05       | 371.63       | 382.90       | 401          |
| 2014_01_11 | 11-Jan-14 00:00:00 | 12-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | SATURDAY    | WEEKEND  | 42.95                   | 51.00                   | 58.65                   | 383.05         | 548.17       | 377.83       | 513.15       | 581          |
| 2014_01_12 | 12-Jan-14 00:00:00 | 13-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | SUNDAY      | WEEKEND  | 36.49                   | 39.77                   | 42.97                   | 548.17         | 557.14       | 532.21       | 554.91       | 564          |
| 2014_01_13 | 13-Jan-14 00:00:00 | 14-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | MONDAY      | WEEKDAY  | 31.43                   | 34.38                   | 37.44                   | 557.14         | 557.33       | 445.87       | 549.09       | 562          |
| 2014_01_14 | 14-Jan-14 00:00:00 | 15-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | TUESDAY     | WEEKDAY  | 29.40                   | 36.46                   | 44.59                   | 557.33         | 561.43       | 513.01       | 557.11       | 565          |
| 2014_01_15 | 15-Jan-14 00:00:00 | 16-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | WEDNESDAY   | WEEKDAY  | 36.39                   | 39.39                   | 45.72                   | 561.43         | 483.70       | 443.01       | 494.80       | 562          |
| 2014_01_16 | 16-Jan-14 00:00:00 | 17-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | THURSDAY    | WEEKDAY  | 31.79                   | 33.96                   | 38.39                   | 483.70         | 559.58       | 472.09       | 538.88       | 562          |
| 2014_01_17 | 17-Jan-14 00:00:00 | 18-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | FRIDAY      | WEEKDAY  | 27.75                   | 31.90                   | 36.31                   | 559.58         | 584.55       | 556.32       | 581.89       | 581          |
| 2014_01_18 | 18-Jan-14 00:00:00 | 19-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | SATURDAY    | WEEKEND  | 32.18                   | 36.37                   | 41.00                   | 584.55         | 580.75       | 556.34       | 582.78       | 581          |
| 2014_01_19 | 19-Jan-14 00:00:00 | 20-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | SUNDAY      | WEEKEND  | 28.63                   | 33.16                   | 40.24                   | 580.75         | 581.87       | 574.66       | 583.12       | 581          |
| 2014_01_20 | 20-Jan-14 00:00:00 | 21-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | MONDAY      | WEEKDAY  | 25.36                   | 30.89                   | 33.64                   | 581.87         | 585.70       | 517.12       | 564.85       | 581          |
| 2014_01_21 | 21-Jan-14 00:00:00 | 22-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | TUESDAY     | WEEKDAY  | 21.31                   | 29.28                   | 36.49                   | 585.70         | 586.95       | 578.56       | 583.84       | 581          |
| 2014_01_22 | 22-Jan-14 00:00:00 | 23-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | WEDNESDAY   | WEEKDAY  | 31.02                   | 36.55                   | 43.74                   | 586.95         | 582.22       | 543.00       | 574.07       | 581          |
| 2014_01_23 | 23-Jan-14 00:00:00 | 24-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | THURSDAY    | WEEKDAY  | 30.67                   | 35.83                   | 39.71                   | 582.22         | 584.35       | 550.66       | 571.86       | 581          |
| 2014_01_24 | 24-Jan-14 00:00:00 | 25-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | FRIDAY      | WEEKDAY  | 34.48                   | 36.28                   | 38.73                   | 584.35         | 1.57         | 1.57         | 497.81       | 638          |
| 2014_01_25 | 25-Jan-14 00:00:00 | 26-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | SATURDAY    | WEEKEND  | 33.30                   | 36.73                   | 40.87                   | 1.57           | 1.41         | 1.39         | 1.52         | 638          |
| 2014_01_26 | 26-Jan-14 00:00:00 | 27-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | SUNDAY      | WEEKEND  | 37.34                   | 41.12                   | 46.49                   | 1.41           | 1.57         | 1.39         | 1.48         | 638          |
| 2014_01_27 | 27-Jan-14 00:00:00 | 28-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | MONDAY      | WEEKDAY  | 35.64                   | 42.73                   | 50.00                   | 1.57           | 1.51         | 1.51         | 1.57         | 638          |
| 2014_01_28 | 28-Jan-14 00:00:00 | 29-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | TUESDAY     | WEEKDAY  | 35.96                   | 42.99                   | 50.79                   | 1.51           | 1.51         | 1.39         | 1.50         | 638          |
| 2014_01_29 | 29-Jan-14 00:00:00 | 30-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | WEDNESDAY   | WEEKDAY  | 37.32                   | 45.35                   | 51.52                   | 1.51           | 1.57         | 1.39         | 1.49         | 638          |
| 2014_01_30 | 30-Jan-14 00:00:00 | 31-Jan-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | THURSDAY    | WEEKDAY  | 38.37                   | 45.66                   | 53.09                   | 1.57           | 1.57         | 1.39         | 1.50         | 638          |
| 2014_01_31 | 31-Jan-14 00:00:00 | 01-Feb-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | FRIDAY      | WEEKDAY  | 45.71                   | 52.39                   | 61.25                   | 1.57           | 564.46       | 1.57         | 329.83       | 581          |
| 2014_02_01 | 01-Feb-14 00:00:00 | 02-Feb-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | SATURDAY    | WEEKEND  | 34.55                   | 41.15                   | 52.62                   | 564.46         | 584.37       | 499.94       | 575.82       | 539          |
| 2014_02_02 | 02-Feb-14 00:00:00 | 03-Feb-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | SUNDAY      | WEEKEND  | 29.58                   | 37.42                   | 45.33                   | 584.37         | 502.19       | 502.19       | 581.74       | 581          |
| 2014_02_03 | 03-Feb-14 00:00:00 | 04-Feb-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | MONDAY      | WEEKDAY  | 31.52                   | 38.18                   | 47.16                   | 502.19         | 581.26       | 502.19       | 580.03       | 581          |
| 2014_02_04 | 04-Feb-14 00:00:00 | 05-Feb-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | TUESDAY     | WEEKDAY  | 41.13                   | 41.29                   | 41.45                   | 581.26         | 582.85       | 581.26       | 582.05       | 581          |
| 2014_02_05 | 05-Feb-14 00:00:00 | 06-Feb-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | WEDNESDAY   | WEEKDAY  | 40.82                   | 40.97                   | 41.13                   | 582.85         | 584.43       | 582.85       | 583.64       | 581          |
| 2014_02_06 | 06-Feb-14 00:00:00 | 07-Feb-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | THURSDAY    | WEEKDAY  | 40.68                   | 43.56                   | 53.49                   | 584.43         | 584.13       | 496.15       | 575.45       | 539          |
| 2014_02_07 | 07-Feb-14 00:00:00 | 08-Feb-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | FRIDAY      | WEEKDAY  | 48.62                   | 57.47                   | 60.77                   | 584.13         | 585.30       | 405.41       | 473.67       | 539          |
| 2014_02_08 | 08-Feb-14 00:00:00 | 09-Feb-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | SATURDAY    | WEEKEND  | 43.24                   | 51.08                   | 67.00                   | 585.30         | 581.77       | 557.08       | 583.15       | 539          |
| 2014_02_09 | 09-Feb-14 00:00:00 | 10-Feb-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | SUNDAY      | WEEKEND  | 43.60                   | 47.53                   | 54.25                   | 581.77         | 581.77       | 572.93       | 583.79       | 581          |
| 2014_02_10 | 10-Feb-14 00:00:00 | 11-Feb-14 00:00:00 | 1:00:00  | San Leandro Power Plant | Unit 1          | MONDAY      | WEEKDAY  | 42.88                   | 46.16                   | 50.80                   | 583.44         | 583.44       | 472.99       | 578.89       | 581          |

READY LIVE LIVE Root Cause Compare Boiler Feed Pump Relative Production Summary Report Hourly Report Daily Anomaly Investigation GLOBAL DAY Data

7:25 AM 4/1/2014

Daily Events

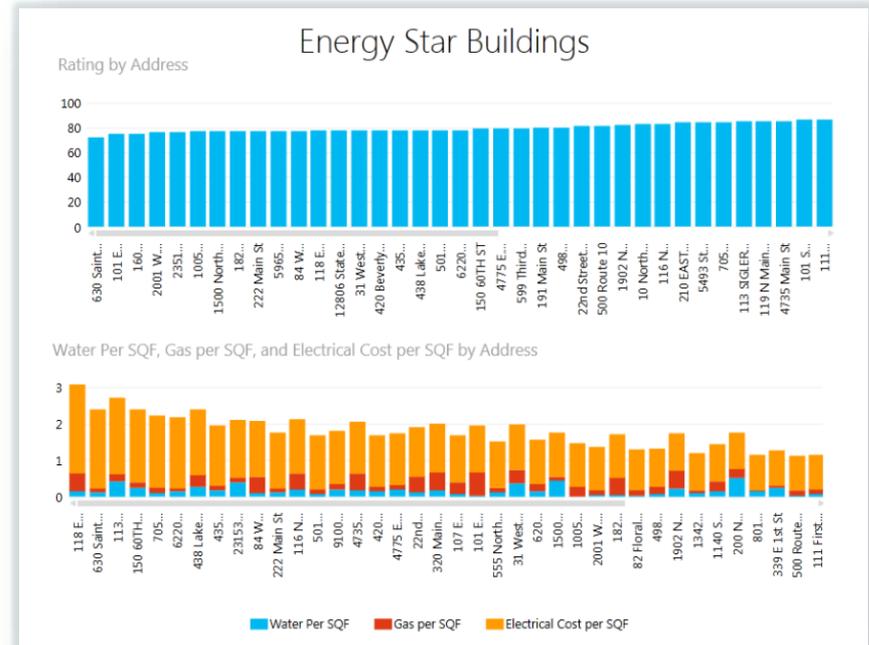
Unit Trip!

# I need to:

## Provide self-service BI for my users



### Rich reports in Microsoft Power BI

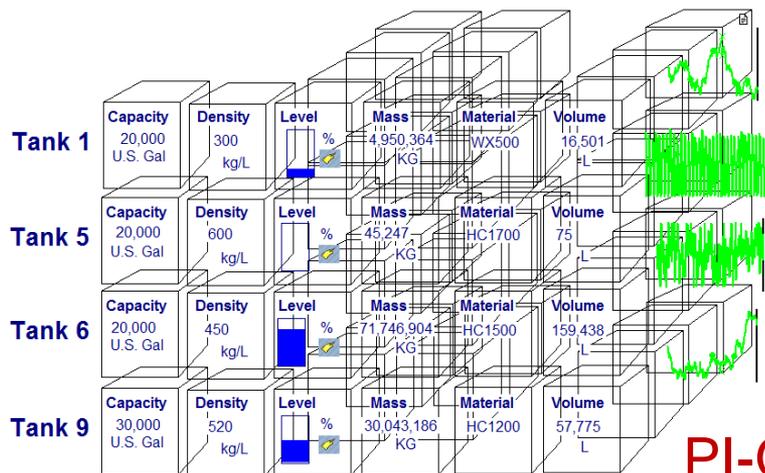


# PI & BI

PI AF templates are the schema that combined with simple asset hierarchies and the process history in your PI Data archive server

– give you structured PI Data....

| Filter   |                     |
|----------|---------------------|
| Name     | Value               |
| capacity | 20000 U.S. gal      |
| density  | 300 kg/L            |
| Level    | 20.32068 %          |
| mass     | 4615328.63228164 kg |
| material | water               |
| Volume   | 15384.4287742721 L  |



PI Data

*Deep, fast process history*

PI AF  
& Templates

*Context & Calculations*

PI-OLEDB  
Enterprise

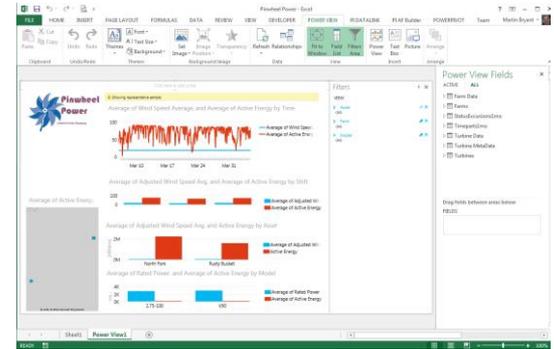
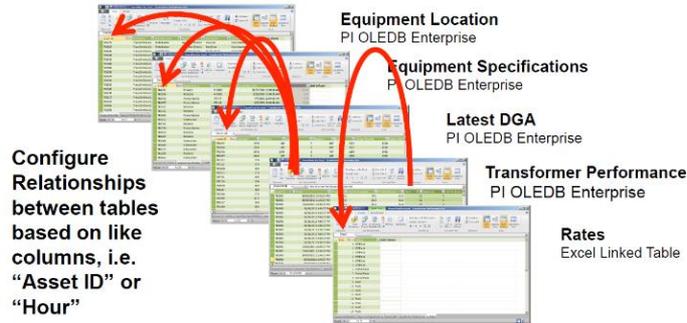
*SQL Wizards & Connectivity*

# PI & BI

PI OLEDB-Enterprise or our emerging PI Web API stack of connectivity tools connect this structured data to Microsoft's personal and shareable "BI" tools in Excel....

| Tank   | Capacity        | Density  | Level | Mass          | Material | Volume    |
|--------|-----------------|----------|-------|---------------|----------|-----------|
| Tank 1 | 20,000 U.S. Gal | 300 kg/L | %     | 4,950,364 KG  | WX500    | 16,501 L  |
| Tank 5 | 20,000 U.S. Gal | 600 kg/L | %     | 45,247 KG     | HC1700   | 75 L      |
| Tank 6 | 20,000 U.S. Gal | 450 kg/L | %     | 71,746,904 KG | HC1500   | 159,438 L |
| Tank 9 | 30,000 U.S. Gal | 520 kg/L | %     | 30,043,186 KG | HC1200   | 57,775 L  |

## PowerPivot Creates the "Cube"



## PI-OLEDB Enterprise

SQL Wizards & Connectivity

## Power Pivot & Power View

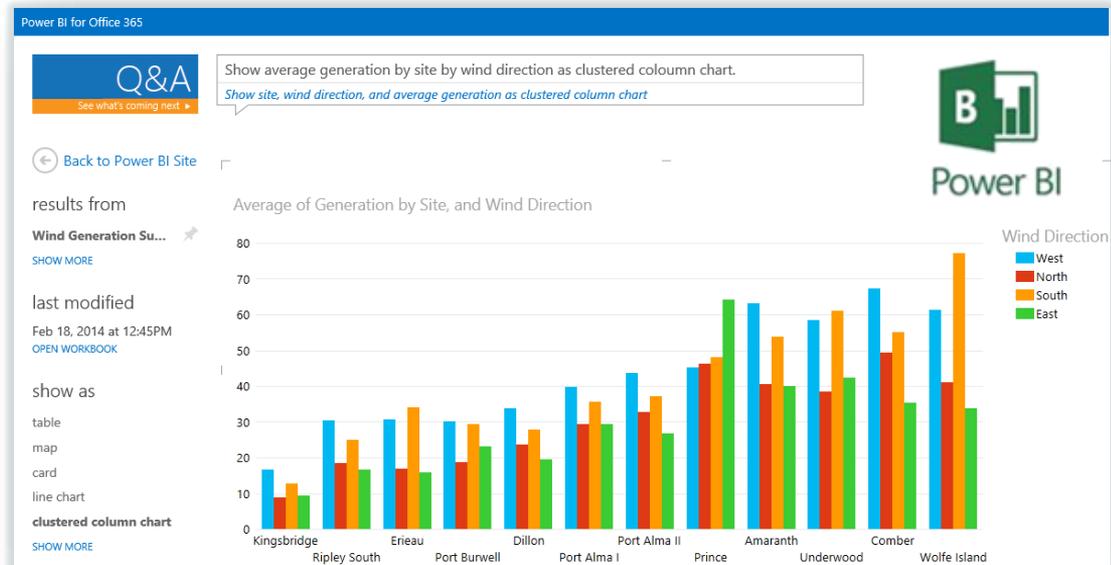
For Microsoft Excel 2013

Powerful BI where you need it

# Microsoft Power BI for Office 365

- Ask and answer with **Power Q&A**
- Analysis anywhere with **Power BI Sites** and the **Power BI App**
- Scheduled data **refresh**
- Benefit from the **latest updates**

*“Show generation by site by wind direction as column chart”*



# From Data to Decision-Ready Information

Access to analytical tools

Power Query

Power Pivot

Power View

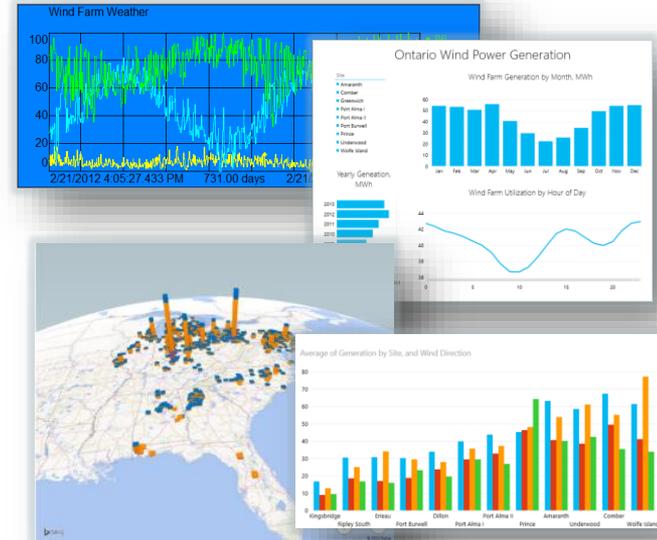


Excel



Access to data

PI Web API



“Decision Ready” Information

| Date      | Temp (F) | Dew Point (F) | Humidity (%) | Sea Level Press (in) |
|-----------|----------|---------------|--------------|----------------------|
| 1/28/2012 | 22       | 16            | 70           | 30.02                |
| 1/29/2012 | 23       | 16            | 69           | 30.02                |
| 1/30/2012 | 23       | 16            | 69           | 30.02                |
| 1/31/2012 | 23       | 16            | 69           | 30.02                |
| 2/1/2012  | 23       | 16            | 69           | 30.02                |
| 2/2/2012  | 23       | 16            | 69           | 30.02                |
| 2/3/2012  | 23       | 16            | 69           | 30.02                |
| 2/4/2012  | 23       | 16            | 69           | 30.02                |
| 2/5/2012  | 23       | 16            | 69           | 30.02                |
| 2/6/2012  | 23       | 16            | 69           | 30.02                |
| 2/7/2012  | 23       | 16            | 69           | 30.02                |
| 2/8/2012  | 23       | 16            | 69           | 30.02                |
| 2/9/2012  | 23       | 16            | 69           | 30.02                |
| 2/10/2012 | 23       | 16            | 69           | 30.02                |
| 2/11/2012 | 23       | 16            | 69           | 30.02                |
| 2/12/2012 | 23       | 16            | 69           | 30.02                |
| 2/13/2012 | 23       | 16            | 69           | 30.02                |
| 2/14/2012 | 23       | 16            | 69           | 30.02                |
| 2/15/2012 | 23       | 16            | 69           | 30.02                |
| 2/16/2012 | 23       | 16            | 69           | 30.02                |
| 2/17/2012 | 23       | 16            | 69           | 30.02                |
| 2/18/2012 | 23       | 16            | 69           | 30.02                |
| 2/19/2012 | 23       | 16            | 69           | 30.02                |
| 2/20/2012 | 23       | 16            | 69           | 30.02                |
| 2/21/2012 | 23       | 16            | 69           | 30.02                |
| 2/22/2012 | 23       | 16            | 69           | 30.02                |
| 2/23/2012 | 23       | 16            | 69           | 30.02                |
| 2/24/2012 | 23       | 16            | 69           | 30.02                |
| 2/25/2012 | 23       | 16            | 69           | 30.02                |
| 2/26/2012 | 23       | 16            | 69           | 30.02                |
| 2/27/2012 | 23       | 16            | 69           | 30.02                |
| 2/28/2012 | 23       | 16            | 69           | 30.02                |
| 2/29/2012 | 23       | 16            | 69           | 30.02                |
| 2/30/2012 | 23       | 16            | 69           | 30.02                |

| Name                           | Category           | Value |
|--------------------------------|--------------------|-------|
| Category: Cooling Fan          |                    |       |
| Fan Status                     | RUN                |       |
| Motor Current                  | 15.6769619888037 A |       |
| Category: Current DGA Analysis |                    |       |
| Acetylene                      | <1                 |       |
| Carbon Dioxide                 | 6524 ppm           |       |
| Carbon Monoxide                | 530 ppm            |       |
| Ethane                         | 900 ppm            |       |

Data

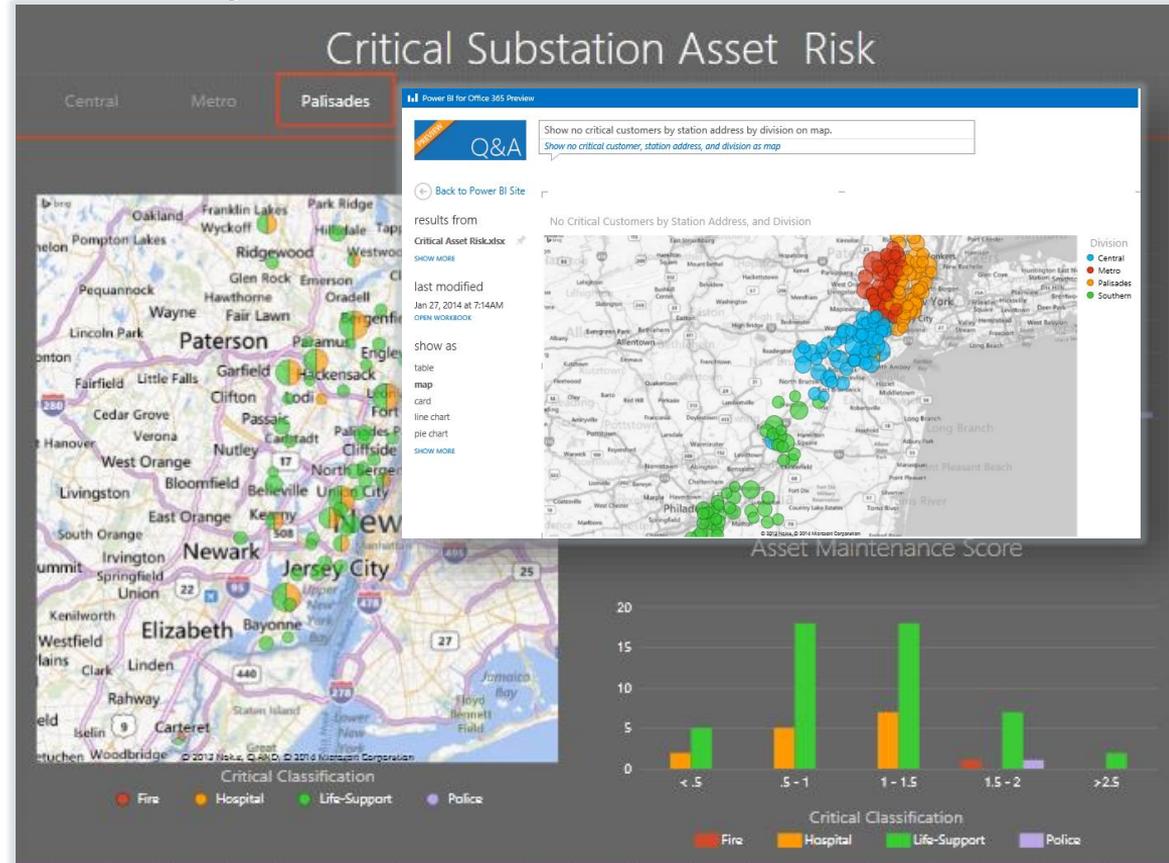
# Making Decision-Ready Accessible

## Objective

- Share a vision of making substation asset health analysis available to domain experts

## Outcome

- Provision Office 365 users with Power BI and Excel



# Different People Need Different Tools at Different Times

**I need to:**

Provide self service BI for my users



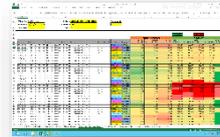
**I need to:**

Enter data from my mobile device



**I need to:**

Report against process and event data



**I need to:**

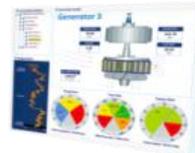
Respond to notifications and identify problems



**I need to:** Access process data anytime, anywhere



PI ActiveView



PI BatchView



PI Coresight



PI WebParts



PI ProcessBook



PI Manual Logger



PI DataLink



# Unlimited Access to Your Data

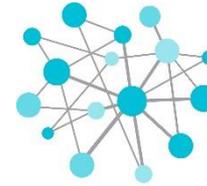


- The PI Visualization Suite puts **every PI System visualization tool** at your fingertips
- Allows **everyone** to **collaborate** with data to **drive innovation** and for **data-driven decision making**
- The **PI Visualization Suite** unlocks PI System **data sharing** across your business to **empower your enterprise**





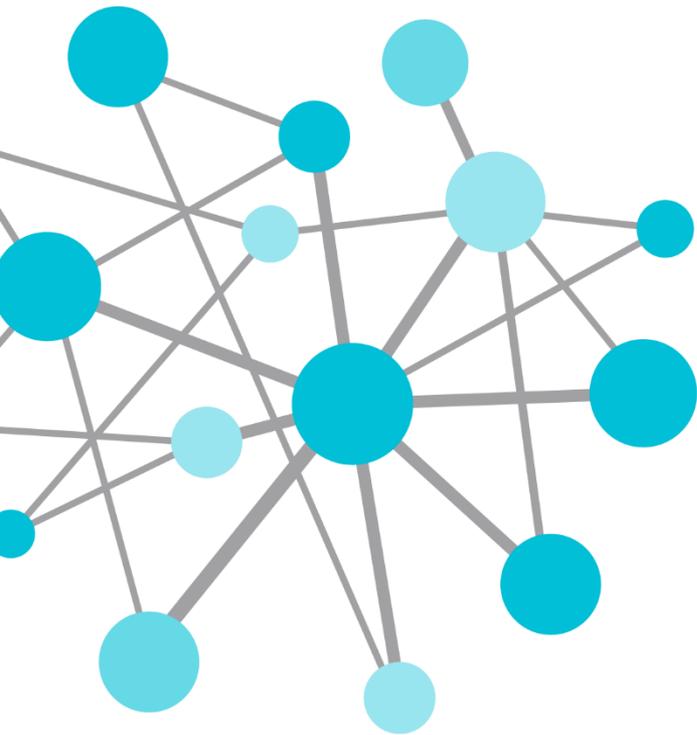
Information  
on the Spot



OSIsoft.  
**REGIONAL  
SEMINAR** 2014  
The Power of Data  
DECISION READY IN REAL-TIME

# Key Points to Take Home

- Assure access to your PI System(s)
- The right tool at the right time for every user.
- Process information anywhere from any device
- Simplifies compliance and license management

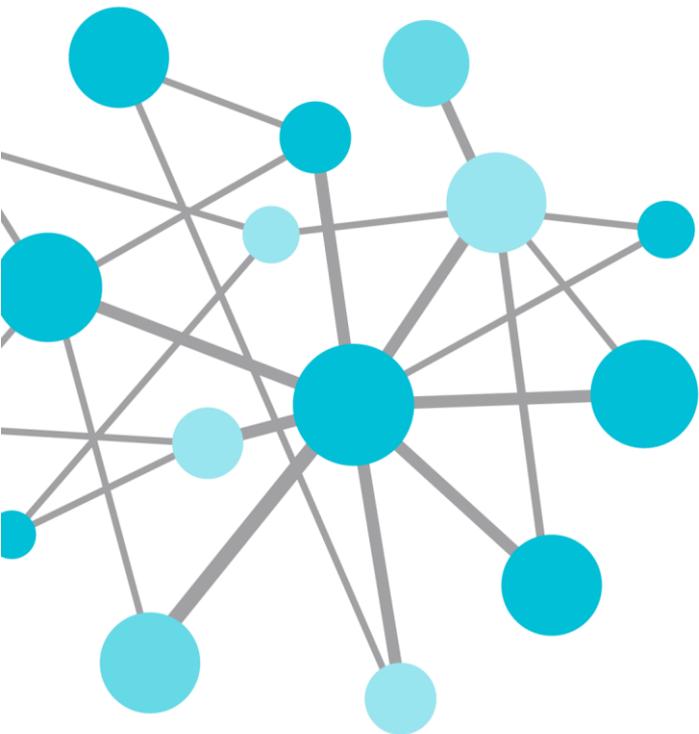


# Questions

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



**Please state your name**  
and your company



THANK  
YOU

## Martin Bryant

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