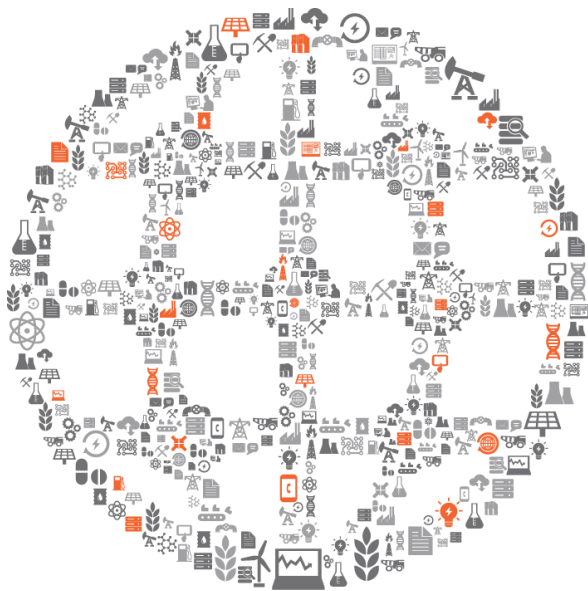




OSIsoft®

USERS 2013 CONFERENCE

The Power of Data

THRIVING

IN A

WORLD OF

CHANGE



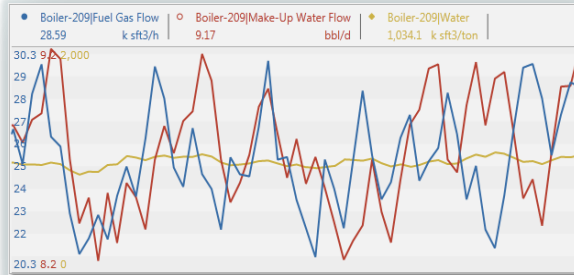
Tools & Best Practices For PI System Analytics & Reporting

Presented by **Christian Leroux, EPM**

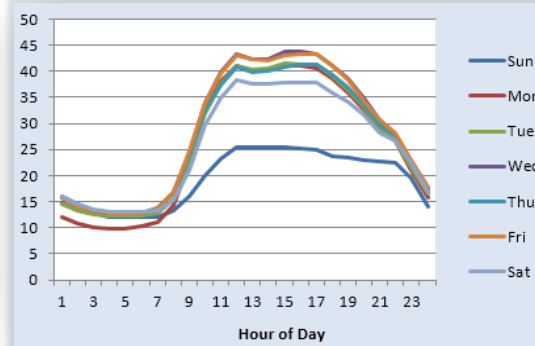
Matt Ziegler, Product Manager

Visual Contexts for PI System Data

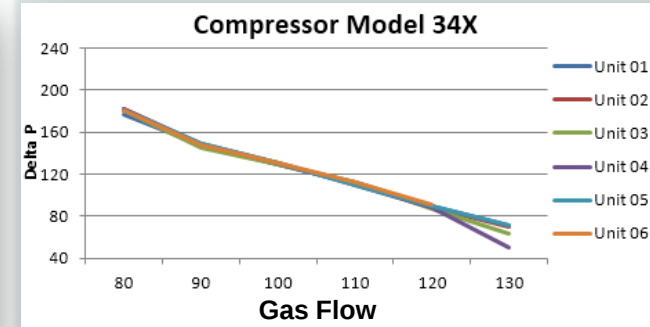
Time and Events



Profile



Behavioral



Performance Scorecard

	Bahrain			Kuwait		
	KPI Value	Plan Target	Dev %	KPI Value	Plan Target	Dev %
Crude Unit						
Light Naphtha 90 Pct. Pt.	179.9	180	-0.1 %	177.2	175	1.3 %
FCCU						
Conversion	63.4	64	-0.9 %	67.8	69	-1.7 %
FCC Gasoline (R+M)/2	86.2	86	0.2 %	85.2	86	-0.9 %
FCC Gasoline RVP	12.3	13	-1.6 %	11.8	12	0.0 %
FCCU 2						
Conversion				60.2	62	-3.0 %
FCC Gasoline (R+M)/2				87.0	86	1.8 %
FCC Gasoline RVP				13.1	12	9.2 %

Ad Hoc



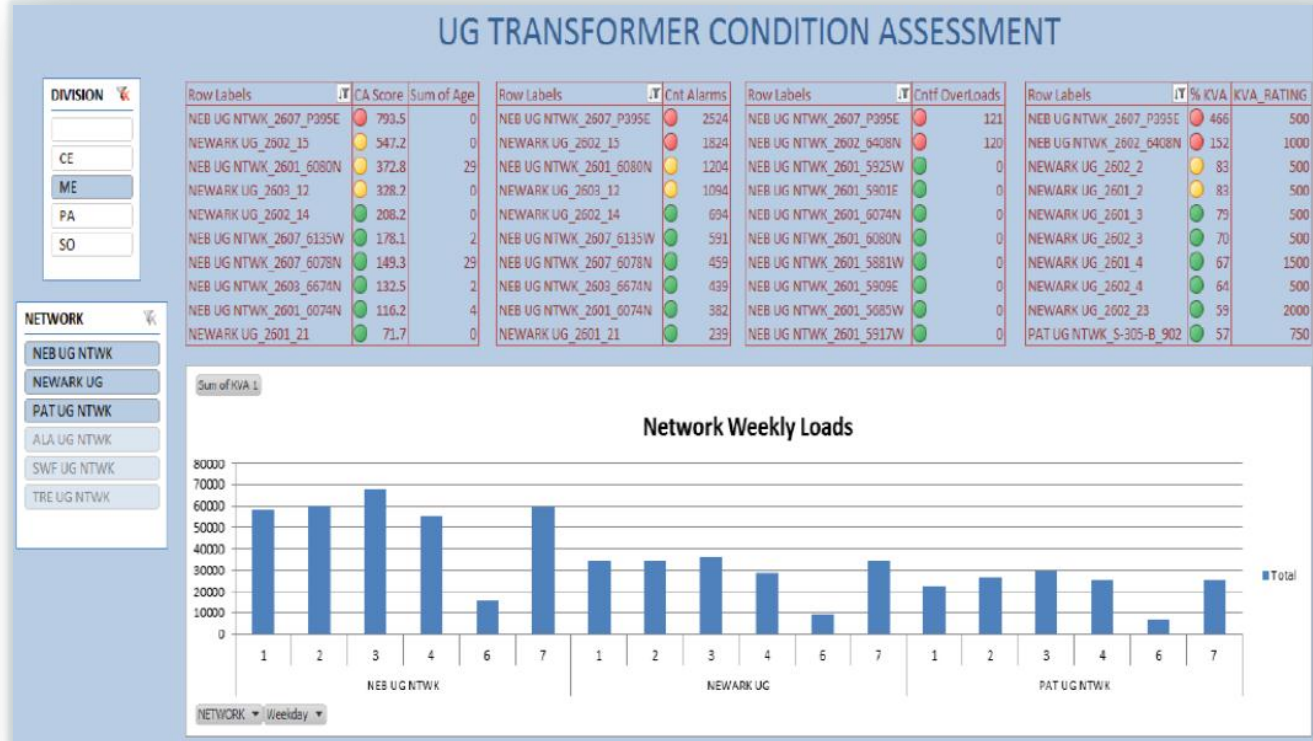
Geospatial



Asset Benchmarking and Scorecarding



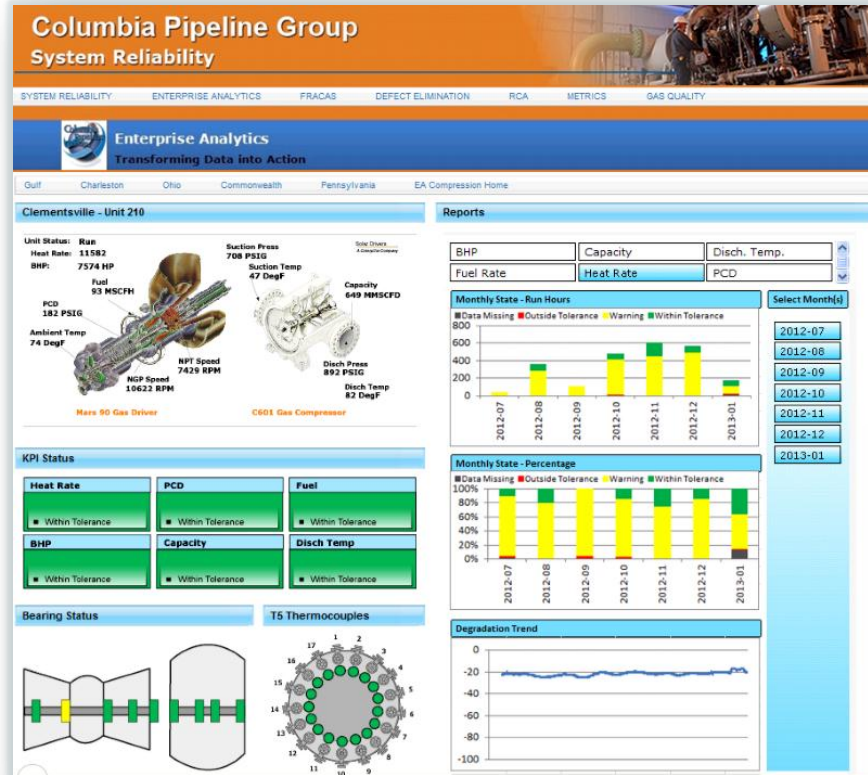
*PSE&G drives
Operational
Excellence,
DistribuTECH
2013*



Gas Transmission Pipeline Reliability



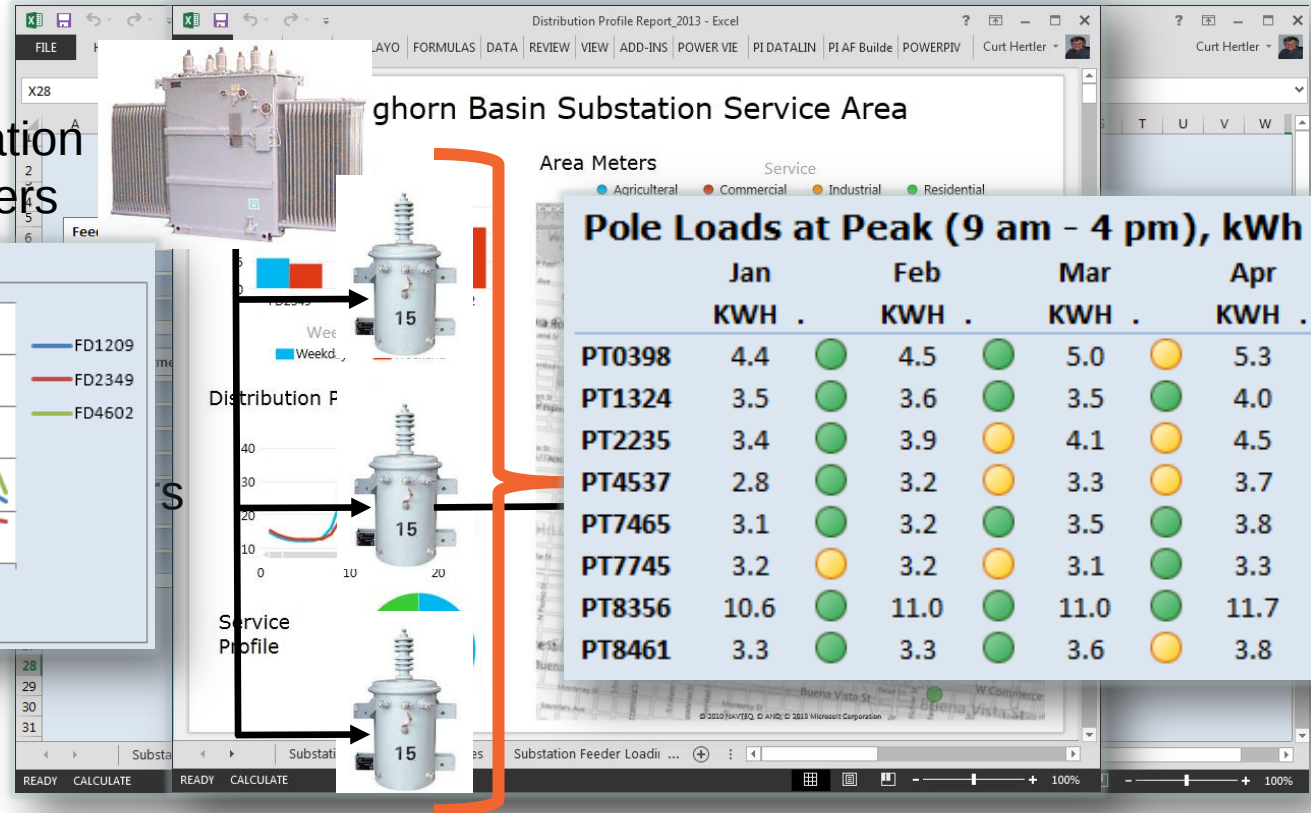
Columbia Gas,
OSIsoft O&G
Day Zero Event
2013

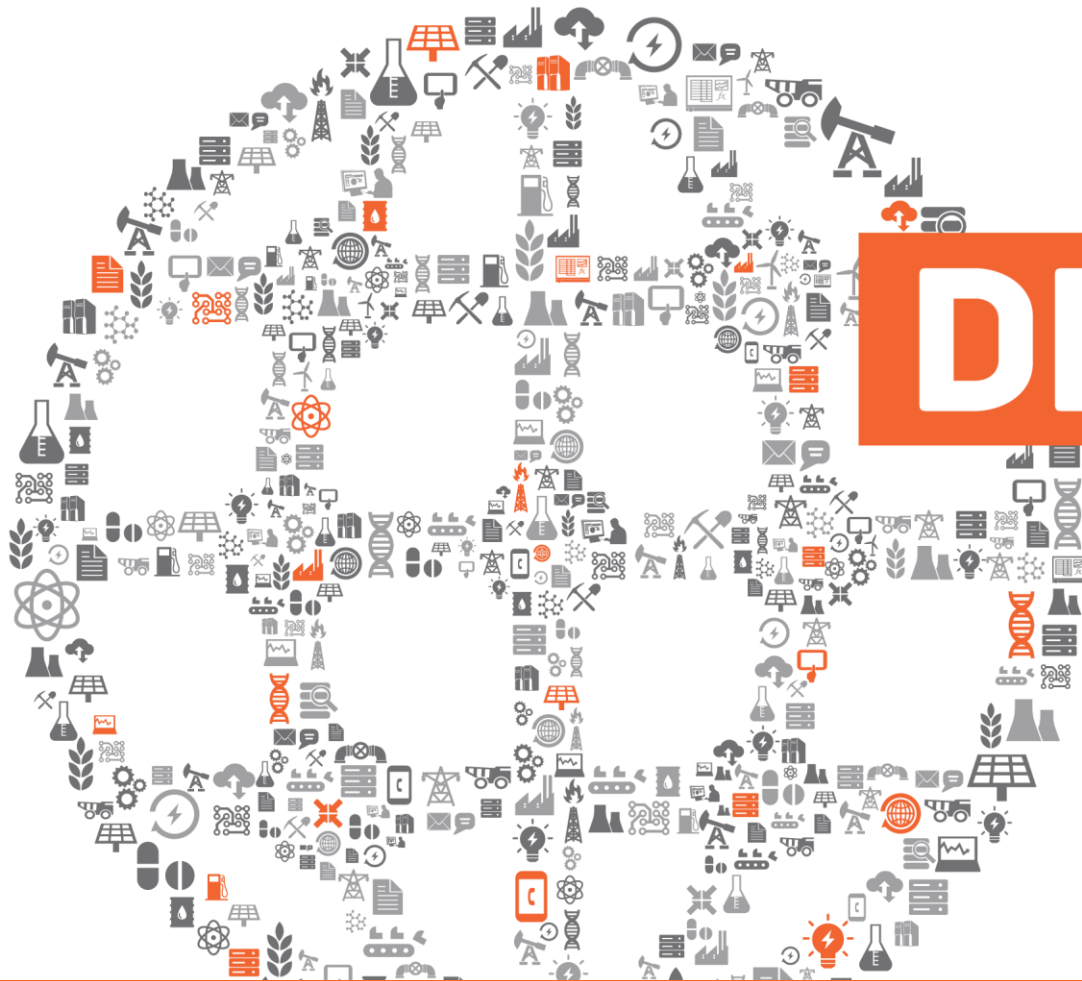


Demand Profile and Network Analysis

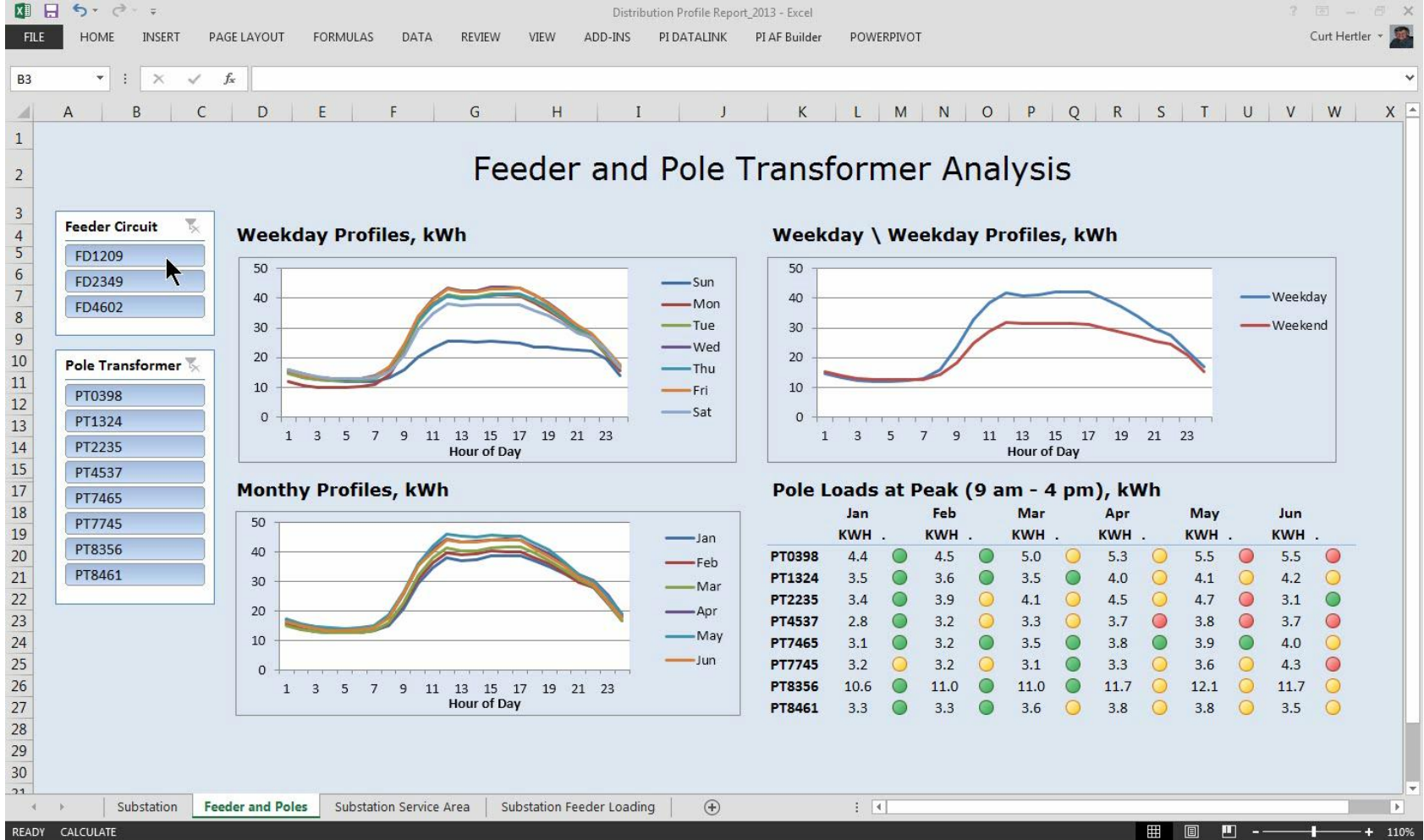


Substation
Feeders

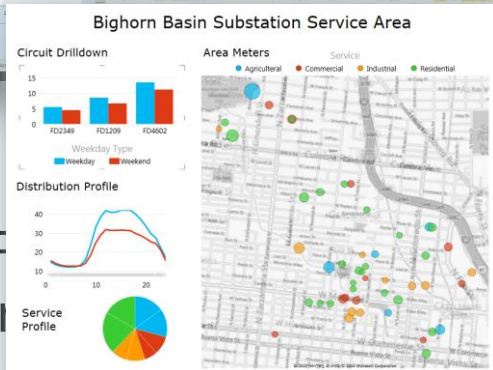
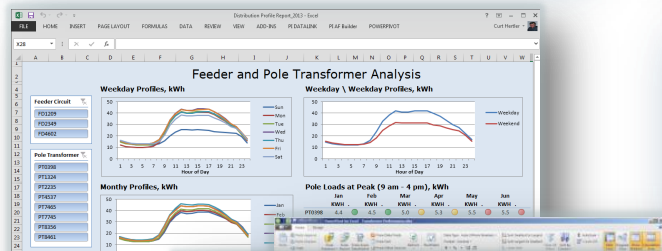




DEMO



Toolkit for Operational Insight – 2013 Update

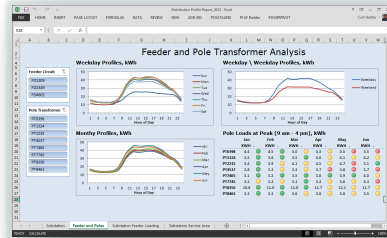


Power View

Excel 2013 Anatomy

Worksheets

Pivot
Tables &
Charts



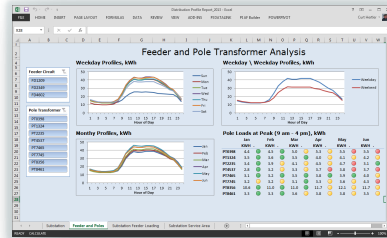
Power
Tables
Reports

Location	Opponent	Game Time	Start Time	Attendance
Home	Athletics	Night	4/13/12 7:00 PM	46,036
Home	Athletics	Night	4/14/12 6:00 PM	35,271
Home	Athletics	Day	4/15/12 1:00 PM	19,650
Home	Indians	Night	4/17/12 7:00 PM	12,461
Home	Indians	Night	4/18/12 7:00 PM	12,343
Home	Indians	Night	4/19/12 7:00 PM	12,342
Home	White Sox	Night	4/20/12 7:00 PM	19,947
Home	White Sox	Day	4/21/12 1:00 PM	22,472
Home	White Sox	Day	4/22/12 1:00 PM	19,775
Home	Dodgers	Day	4/5/12 4:00 PM	42,942
Home	Dodgers	Night	4/6/12 7:00 PM	32,490
Home	Dodgers	Night	4/7/12 5:30 PM	31,909
Home	Dodgers	Day	4/8/12 1:00 PM	19,021
Home	Diamondbacks	Night	4/10/12 7:00 PM	18,652
Home	Diamondbacks	Day	4/11/12 1:30 PM	18,091
Home	Diamondbacks	Night	4/12/12 7:00 PM	20,858

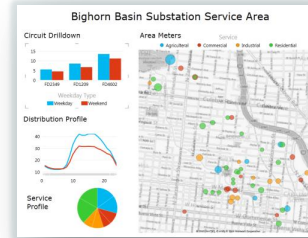
Excel 2013 Anatomy

Worksheets

Pivot
Tables &
Charts



Power
View
Reports



Excel
Tables

Location	Opponent	Game Time	Start Time	Attendance
Home	Athletics	Night	4/13/12 7:00 PM	46,036
Home	Athletics	Night	4/14/12 6:00 PM	21,071
Home	Athletics	Day	4/15/12 1:00 PM	19,650
Home	Indians	Night	4/17/12 7:00 PM	12,461
Home	Indians	Night	4/18/12 7:00 PM	11,343
Home	Indians	Night	4/19/12 7:00 PM	12,942
Home	White Sox	Night	4/20/12 7:00 PM	19,947
Home	White Sox	Day	4/21/12 1:00 PM	22,472
Home	White Sox	Day	4/22/12 1:00 PM	19,975
Home	Dodgers	Day	4/23/12 4:00 PM	62,942
Home	Dodgers	Night	4/24/12 7:00 PM	32,490
Home	Dodgers	Night	4/25/12 7:00 PM	31,909
Home	Dodgers	Day	4/26/12 1:00 PM	19,021
Home	Diamondbacks	Night	4/27/12 7:00 PM	18,652
Home	Diamondbacks	Day	4/11/12 3:30 PM	16,091
Home	Diamondbacks	Night	4/12/12 7:00 PM	20,858



Data Model

PowerPivot
Tables

This screenshot shows a PowerPivot data model with multiple tables and their relationships. The tables include 'Game', 'Opponent', 'Game Time', 'Start Time', and 'Attendance'. The relationships are shown as lines connecting the tables.

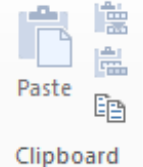
Data Sources



PI AF



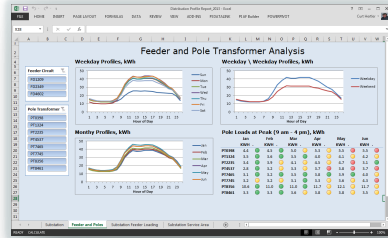
Relational Data



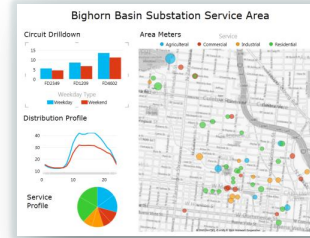
Excel 2013 Anatomy

Worksheets

Pivot Tables & Charts



Power
View
Reports

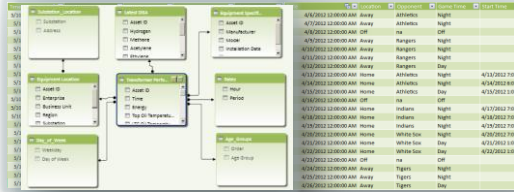


Excel Tables

Location	Opponent	Game Time	Start Time	Attendance
Home	Athletics	Night	4/13/12 7:00 PM	46,036
Home	Athletics	Night	4/14/12 6:00 PM	21,671
Home	Athletics	Day	4/15/12 1:00 PM	19,050
Home	Indians	Night	4/17/12 7:00 PM	24,461
Home	Indians	Night	4/17/12 7:00 PM	11,343
Home	Indians	Night	4/18/12 7:00 PM	12,942
Home	White Sox	Night	4/20/12 7:00 PM	19,947
Home	White Sox	Day	4/21/12 1:00 PM	22,472
Home	White Sox	Day	4/22/12 1:00 PM	19,975
Home	Dodgers	Day	4/17/12 4:00 PM	42,942
Home	Dodgers	Night	4/6/12 7:00 PM	32,490
Home	Dodgers	Night	4/7/12 3:30 PM	31,909
Home	Dodgers	Day	4/9/12 1:00 PM	19,021
Home	Diamondbacks	Night	4/10/12 7:00 PM	18,655
Home	Diamondbacks	Day	4/13/12 3:30 PM	16,091
Home	Diamondbacks	Night	4/12/12 7:00 PM	20,858

Data Model

PowerPivot Tables

[illegible]

Time	Case	Min Value	Max Target	Min Discrete
5/30/2012 12:00:00 AM	5/30/2012	\$4,965.1	\$4,965.1	\$4,965.1
5/30/2012 1:00:00 AM	5/30/2012	\$4,968.8	\$4,968.8	\$4,968.8
5/30/2012 2:00:00 AM	5/30/2012	\$4,972.2	\$4,972.2	\$4,972.2
5/30/2012 3:00:00 AM	5/30/2012	\$4,976.1	\$4,976.1	\$4,976.1
5/30/2012 4:00:00 AM	5/30/2012	\$4,979.8	\$4,979.8	\$4,979.8
5/30/2012 5:00:00 AM	5/30/2012	\$4,983.1	\$4,983.1	\$4,983.1
5/30/2012 6:00:00 AM	5/30/2012	\$4,987.4	\$4,987.4	\$4,987.4
5/30/2012 7:00:00 AM	5/30/2012	\$4,991.2	\$4,991.2	\$4,991.2
5/30/2012 8:00:00 AM	5/30/2012	\$4,994.2	\$4,994.2	\$4,994.2
5/30/2012 9:00:00 AM	5/30/2012	\$4,998.1	\$4,998.1	\$4,998.1
5/30/2012 10:00:00 AM	5/30/2012	\$4,998.1	\$4,998.1	\$4,998.1
5/30/2012 11:00:00 AM	5/30/2012	\$4,998.1	\$4,998.1	\$4,998.1
5/30/2012 12:00:00 PM	5/30/2012	\$4,998.1	\$4,998.1	\$4,998.1
5/30/2012 1:00:00 PM	5/30/2012	\$4,998.1	\$4,998.1	\$4,998.1
5/30/2012 2:00:00 PM	5/30/2012	\$4,998.1	\$4,998.1	\$4,998.1
5/30/2012 3:00:00 PM	5/30/2012	\$4,998.1	\$4,998.1	\$4,998.1
5/30/2012 4:00:00 PM	5/30/2012	\$4,998.1	\$4,998.1	\$4,998.1
5/30/2012 5:00:00 PM	5/30/2012	\$4,998.1	\$4,998.1	\$4,998.1
5/30/2012 6:00:00 PM	5/30/2012	\$4,998.1	\$4,998.1	\$4,998.1
5/30/2012 7:00:00 PM	5/30/2012	\$4,998.1	\$4,998.1	\$4,998.1
5/30/2012 8:00:00 PM	5/30/2012	\$4,998.1	\$4,998.1	\$4,998.1
5/30/2012 9:00:00 PM	5/30/2012	\$4,998.1	\$4,998.1	\$4,998.1
5/30/2012 10:00:00 PM	5/30/2012	\$4,998.1	\$4,998.1	\$4,998.1
5/30/2012 11:00:00 PM	5/30/2012	\$4,998.1	\$4,998.1	\$4,998.1
5/30/2012 12:00:00 AM	5/30/2012	\$4,998.1	\$4,998.1	\$4,998.1



Performance Scorecard

Operation to Target Summary_2013 - Excel

FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW ADD-INS PI DATALINK PI AF Builder POWERPIVOT Curt Hertler

R32

Refining Division Operation to Plan - 7 Days

	Bahrain			Kuwait			Oman			Qatar		
	KPI Value	Plan Target	Dev %	KPI Value	Plan Target	Dev %	KPI Value	Plan Target	Dev %	KPI Value	Plan Target	Dev %
Crude Unit												
Light Naphtha 90 Pct. Pt.	179.9	180	-0.1 %	177.2	175	1.3 %	184.0	185	-0.5 %	189.3	180	5.2 %
FCCU												
Conversion	63.4	64	-0.9 %	67.8	69	-1.7 %	68.5	68	0.7 %	62.4	62	0.6 %
FCC Gasoline (R+M)/2	86.2	86	0.2 %	85.2	86	-0.9 %	84.2	87	-2.7 %	85.6	85	0.8 %
FCC Gasoline RVP	12.3	13	-1.6 %	11.8	12	0.0 %	12.5	12	0.8 %	11.9	12	-0.8 %
FCCU 2												
Conversion				60.2	62	-3.0 %						
FCC Gasoline (R+M)/2				87.0	86	1.8 %						
FCC Gasoline RVP				13.1	12	9.2 %						
Isomerization												
Isomerate RONC	87.8	89	-1.3 %				88.7	88	0.8 %	89.1	88	1.2 %
Reformer												
Feed N+2A	60.3	61	-1.1 %	57.9	58	-0.2 %	60.2	61	-0.5 %	55.9	62	-10.0 %
Reactor Temperature	984.0	985	-0.1 %	981.9	975	0.7 %	963.8	970	-0.6 %	975.5	974	0.2 %
Reformer 2												
Feed N+2A	58.8	59	-0.3 %									
Reactor Temperature	967.8	980	-1.2 %									
Vacuum Unit												
Vacuum Gas Oil 90 Pct. Pt.	1,023.0	1,030	-0.7 %	1,000.0	1,055	-5.2 %	1,050.0	1,020	2.9 %	1,078.0	1,000	7.8 %

Date: 5/10/2012 5/11/2012 5/12/2012 5/13/2012 5/14/2012 5/15/2012 5/16/2012

Crude: Al Shaheen Arab Heavy Kuwait Oman Qatar Marine

Operating Conditions Production Goals Executive Summary

READY 91%

Scoring of Operational Objectives

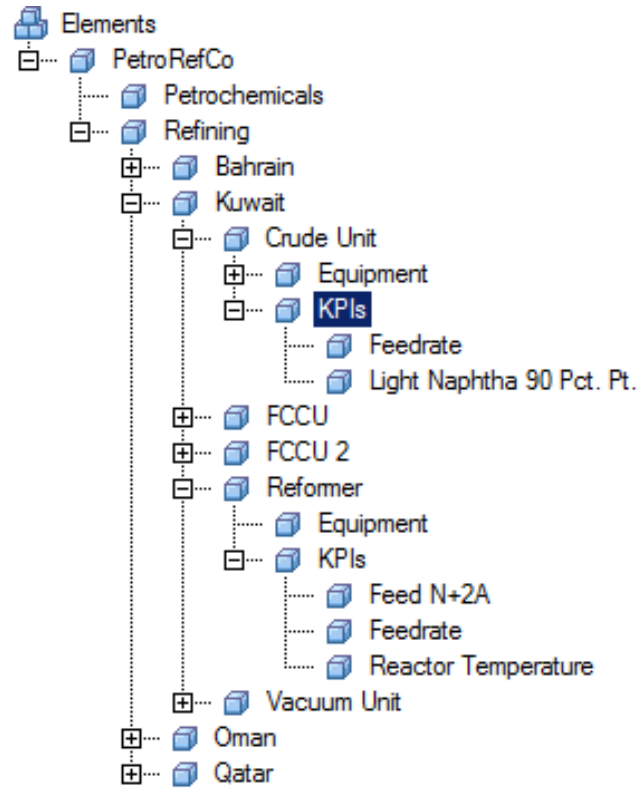
- Quality
- Production
- Energy

Can be driven by PI AF structure

Asset Context – *PI Asset Framework*

Asset Hierarchy

- Plant
- Process
- KPI



“KPI Total” Template

	Name	Value
Category:	Operating Plan Data	
	Operating Plan Target	16700 bbl
Category:	Process Data	
	Hourly Throughput	16761.332951708042
	Process Value	401676.21875 bbl/d

“KPI Laboratory” Template

	Name	Value
Category:	Operating Plan Data	
	Operating Plan Target	175 °F
Category:	Process Data	
	Laboratory Value	177.199996948242 °F

Operating Data with Context - PI OLEDB Enterprise

PowerPivot Table

- AF Attributes

PI Data

Table Lookup

- Calculations

- AF Hierarchy
Process
Context

[Plan Deviation] $\text{=[KPI Value]-[Plan Target]}$

Time	KPI Value	Plan Target	Plan Deviation	Refinery	Process	KPI
5/15/2012 2:00:00 PM	60.2	61	-0.3	Oman	Reformer	Feed N+2A
5/15/2012 3:00:00 PM	60.2	61	-0.3	Oman	Reformer	Feed N+2A
5/15/2012 4:00:00 PM	60.2	61	-0.3	Oman	Reformer	Feed N+2A
5/15/2012 5:00:00 PM	60.2	61	-0.3	Oman	Reformer	Feed N+2A
5/15/2012 6:00:00 PM	60.2	61	-0.3	Oman	Reformer	Feed N+2A
... Assets and KPI's ...						
5/11/2012 11:00:00 AM	1,118.3	1,200				
5/11/2012 12:00:00 PM	1,114.8	1,200				
5/11/2012 1:00:00 PM	1,115.7	1,200	-84.3	Bahrain	Isomerization	Feedrate
5/11/2012 2:00:00 PM	1,114.0	1,200	-86.0	Bahrain	Isomerization	Feedrate
... Assets and KPI's ...						
5/12/2012 4:00:00 PM	62.4	64	-1.6	Bahrain	FCCU	Conversion
5/12/2012 5:00:00 PM	62.4	64	-1.6	Bahrain	FCCU	Conversion
5/12/2012 6:00:00 PM	62.7	64	-1.3	Bahrain	FCCU	Conversion
5/12/2012 7:00:00 PM	62.7	64	-1.3	Bahrain	FCCU	Conversion
5/12/2012 8:00:00 PM	62.5	64	-1.5	Bahrain	FCCU	Conversion

PetroRefCo Refining KPIs Qatar Crude Runs Bahrain Crude Runs Kuwait Crude Runs Oman Crude Runs Bahrain Unit Capacities

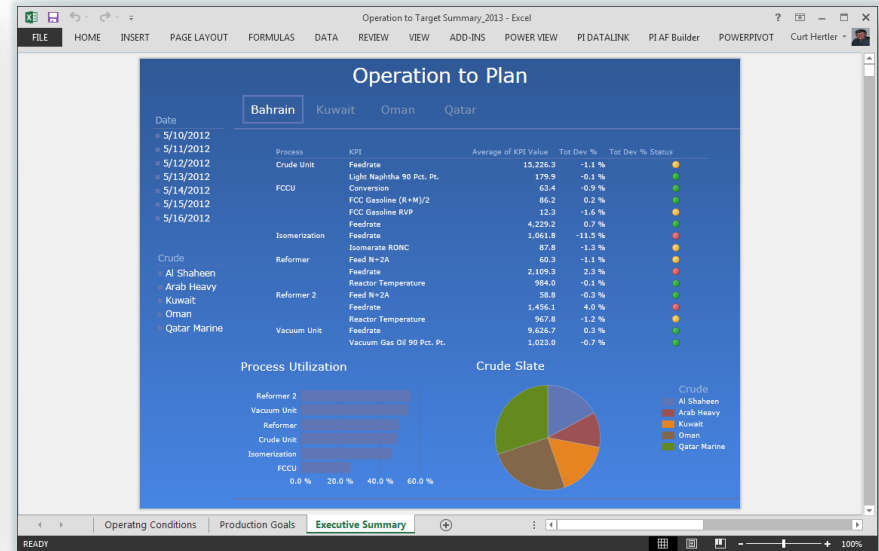
Plan Deviation
 $\text{=[KPI Value] - [Plan Target]}$

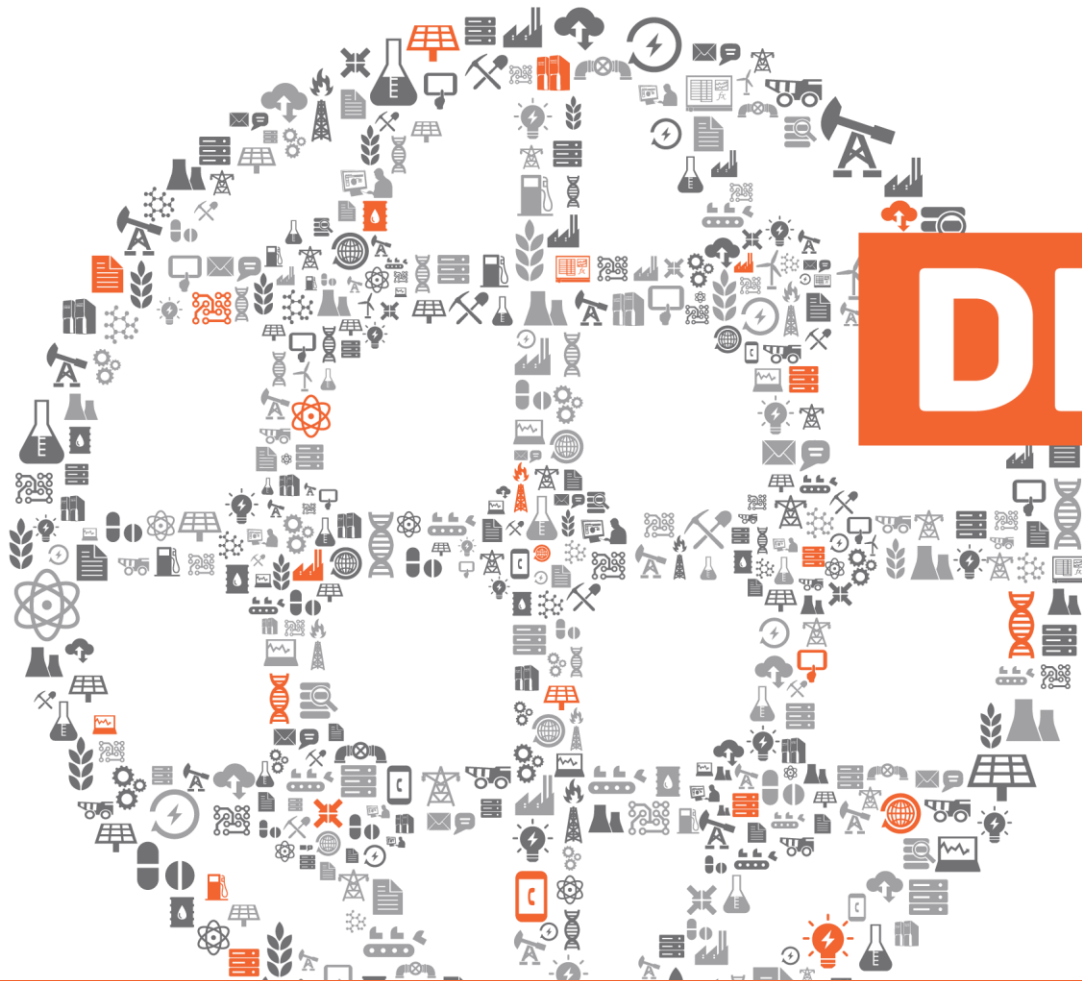
Operational Insight for the Organization

Excel 2013 Worksheet

Date	Process	KPI	KPI Value	Plan Target	Dev %	Dev % Status
5/10/2012	Crude Unit	Feedrate	179.9	180	-0.1 %	Good
5/11/2012	Crude Unit	Feedrate	177.2	175	1.3 %	Good
5/12/2012	Crude Unit	Feedrate	184.0	185	-0.5 %	Good
5/13/2012	Crude Unit	Feedrate	189.3	180	5.2 %	Bad
5/14/2012	Crude Unit	Feedrate	179.9	180	-0.1 %	Good
5/15/2012	Crude Unit	Feedrate	177.2	175	1.3 %	Good
5/16/2012	Crude Unit	Feedrate	184.0	185	-0.5 %	Good
5/10/2012	FCCU	Conversion	63.4	64	-0.9 %	Good
5/11/2012	FCCU	Conversion	66.2	86	0.2 %	Good
5/12/2012	FCCU	Conversion	85.2	86	-0.9 %	Good
5/13/2012	FCCU	Conversion	84.2	87	-2.7 %	Good
5/14/2012	FCCU	Conversion	85.6	85	0.8 %	Good
5/15/2012	FCCU	Conversion	12.3	13	-1.6 %	Good
5/16/2012	FCCU	Conversion	11.9	12	-0.8 %	Good
5/10/2012	FCCU 2	Conversion	60.2	62	-3.0 %	Good
5/11/2012	FCCU 2	Conversion	87.0	86	1.8 %	Good
5/12/2012	FCCU 2	Conversion	13.1	12	9.2 %	Bad
5/13/2012	FCCU 2	Conversion	88.7	88	0.8 %	Good
5/14/2012	FCCU 2	Conversion	89.1	88	1.2 %	Good
5/15/2012	FCCU 2	Conversion	88.7	88	0.8 %	Good
5/16/2012	FCCU 2	Conversion	89.1	88	1.2 %	Good
5/10/2012	Isomerization	Feedrate	87.8	89	-1.3 %	Good
5/11/2012	Isomerization	Feedrate	87.8	89	-1.3 %	Good
5/12/2012	Isomerization	Feedrate	87.8	89	-1.3 %	Good
5/13/2012	Isomerization	Feedrate	87.8	89	-1.3 %	Good
5/14/2012	Isomerization	Feedrate	87.8	89	-1.3 %	Good
5/15/2012	Isomerization	Feedrate	87.8	89	-1.3 %	Good
5/16/2012	Isomerization	Feedrate	87.8	89	-1.3 %	Good
5/10/2012	Reformer	Feed N+2A	60.3	61	-1.1 %	Good
5/11/2012	Reformer	Feed N+2A	57.9	58	-0.2 %	Good
5/12/2012	Reformer	Feed N+2A	60.2	61	-0.5 %	Good
5/13/2012	Reformer	Feed N+2A	55.9	62	-10.0 %	Bad
5/14/2012	Reformer	Feed N+2A	984.0	985	-0.1 %	Good
5/15/2012	Reformer	Feed N+2A	975	975	0.0 %	Good
5/16/2012	Reformer	Feed N+2A	963.8	970	-0.6 %	Good
5/10/2012	Reformer 2	Feed N+2A	58.8	59	-0.3 %	Good
5/11/2012	Reformer 2	Feed N+2A	967.8	980	-1.2 %	Good
5/12/2012	Reformer 2	Feed N+2A	967.8	980	-1.2 %	Good
5/13/2012	Reformer 2	Feed N+2A	967.8	980	-1.2 %	Good
5/14/2012	Reformer 2	Feed N+2A	967.8	980	-1.2 %	Good
5/15/2012	Reformer 2	Feed N+2A	967.8	980	-1.2 %	Good
5/16/2012	Reformer 2	Feed N+2A	967.8	980	-1.2 %	Good
5/10/2012	Vacuum Unit	Vacuum Gas Oil 90 Pct. Pt.	1,023.0	1,030	-0.7 %	Good
5/11/2012	Vacuum Unit	Vacuum Gas Oil 90 Pct. Pt.	1,000.0	1,055	-5.2 %	Bad
5/12/2012	Vacuum Unit	Vacuum Gas Oil 90 Pct. Pt.	1,050.0	1,020	2.9 %	Good
5/13/2012	Vacuum Unit	Vacuum Gas Oil 90 Pct. Pt.	1,078.0	1,000	7.8 %	Bad
5/14/2012	Vacuum Unit	Vacuum Gas Oil 90 Pct. Pt.	1,078.0	1,000	7.8 %	Bad
5/15/2012	Vacuum Unit	Vacuum Gas Oil 90 Pct. Pt.	1,078.0	1,000	7.8 %	Bad
5/16/2012	Vacuum Unit	Vacuum Gas Oil 90 Pct. Pt.	1,078.0	1,000	7.8 %	Bad

Excel 2013 Power View Report





DEMO

Operation to Target Summary_2013 Demo - Excel

Curt Hertler

FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW ADD-INS PI DATALINK PI AF Builder POWERPivot

PivotTable Recommended PivotTables Table

Pictures Online Pictures SmartArt Screenshot Illustrations

Apps for Office Apps Recommended Charts

PivotChart Power View Reports

Line Column Win/Loss Sparklines

Slicer Timeline Filters

Hyperlink Links

Text Box Header & Footer Text

WordArt Signature Line Object

Equation Symbol Symbols

A1

Refining Division Operation to Plan - 7 Days

	Bahrain			Kuwait			Oman			Qatar		
	KPI Value	Plan Target	Dev %	KPI Value	Plan Target	Dev %	KPI Value	Plan Target	Dev %	KPI Value	Plan Target	Dev %
Crude Unit												
Light Naphtha 90 Pct. Pt.	179.9	180	-0.1 %	177.2	175	1.3 %	184.0	185	-0.5 %	189.3	180	5.2 %
FCCU												
Conversion	63.4	64	-0.9 %	67.8	69	-1.7 %	68.5	68	0.7 %	62.4	62	0.6 %
FCC Gasoline (R+M)/2	86.2	86	0.2 %	85.2	86	-0.9 %	84.2	87	-2.7 %	85.6	85	0.8 %
FCC Gasoline RVP	12.3	13	-1.6 %	11.8	12	0.0 %	12.5	12	0.8 %	11.9	12	-0.8 %
FCCU 2												
Conversion				60.2	62	-3.0 %						
FCC Gasoline (R+M)/2				87.0	86	1.8 %						
FCC Gasoline RVP				13.1	12	9.2 %						
Isomerization												
Isomate RONC	87.8	89	-1.3 %				88.7	88	0.8 %	89.1	88	1.2 %
Reformer												
Feed N+2A	60.3	61	-1.1 %	57.9	58	-0.2 %	60.2	61	-0.5 %	55.9	62	-10.0 %
Reactor Temperature	984.0	985	-0.1 %	981.9	975	0.7 %	963.8	970	-0.6 %	975.5	974	0.2 %
Reformer 2												
Feed N+2A	58.8	59	-0.3 %									
Reactor Temperature	967.8	980	-1.2 %									
Vacuum Unit												
Vacuum Gas Oil 90 Pct. Pt	1,023.0	1,030	-0.7 %	1,000.0	1,055	-5.2 %	1,050.0	1,020	2.9 %	1,078.0	1,000	7.8 %

Date

5/10/2012 5/11/2012 5/12/2012 5/13/2012 5/14/2012 5/15/2012 5/16/2012

Crude

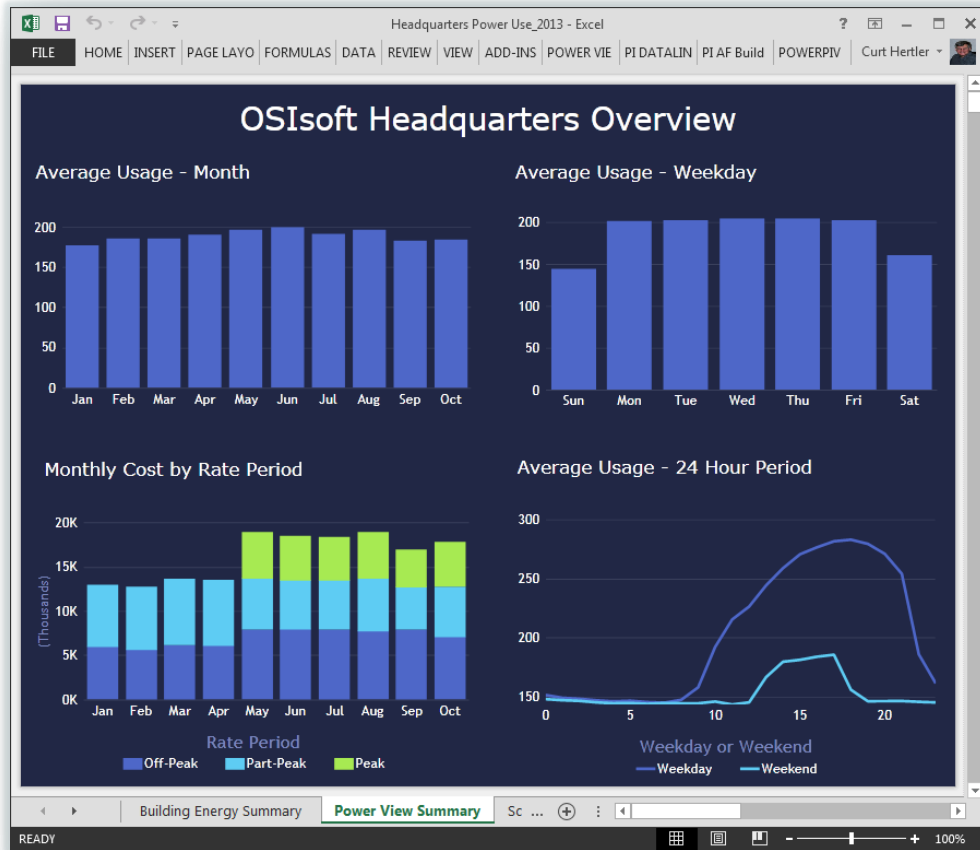
Al Shaheen Arab Heavy Kuwait Oman Qatar Marine

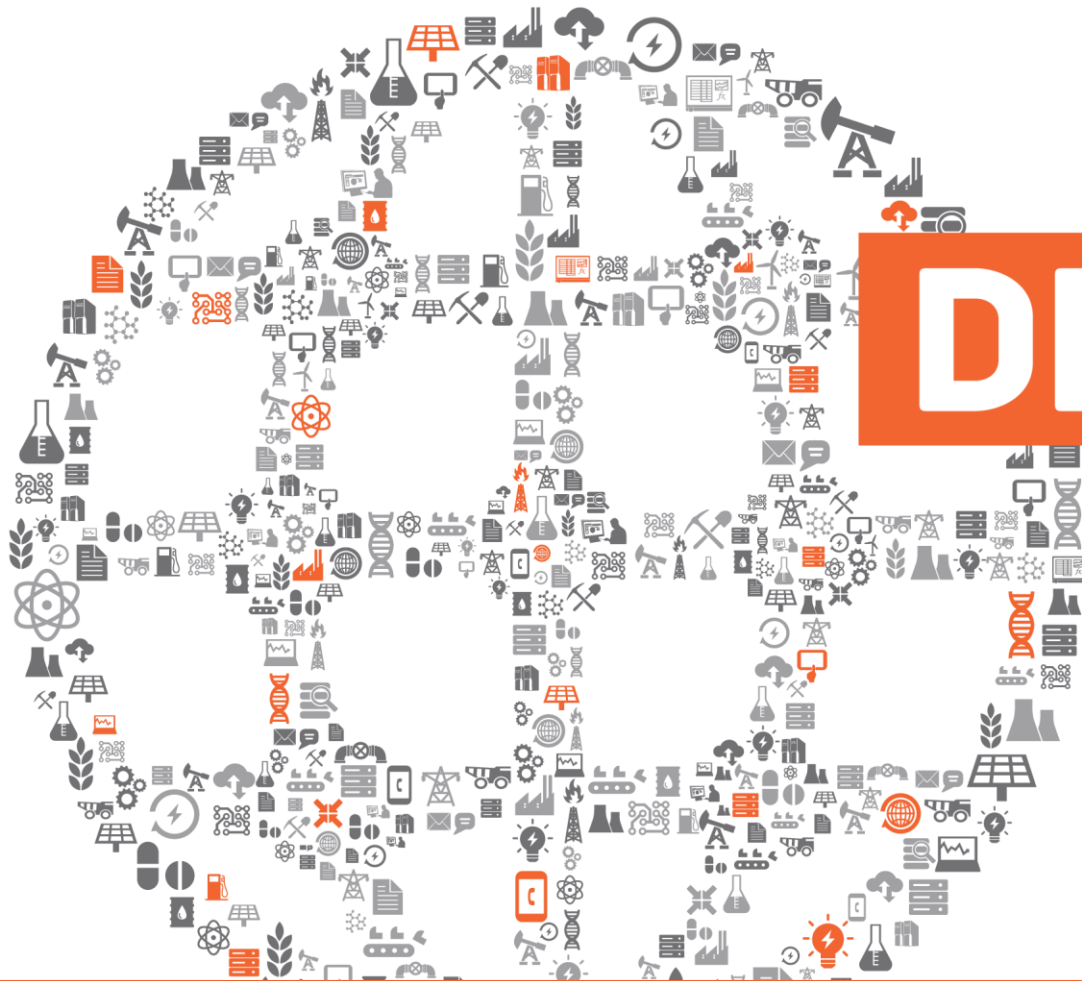
Production Goals **Operating Conditions**

Ad Hoc Analysis

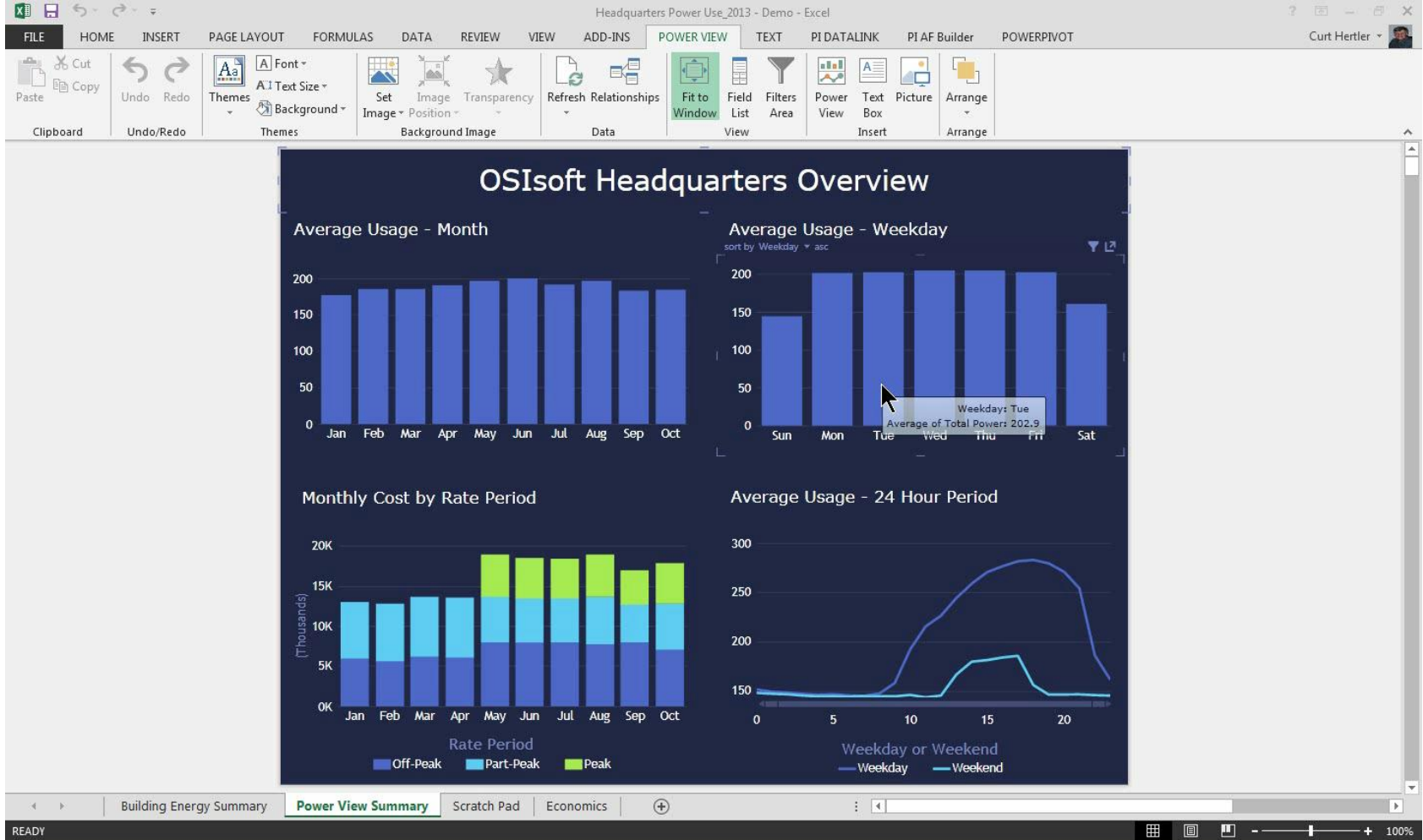


Power Use at OSISOFT Headquarters

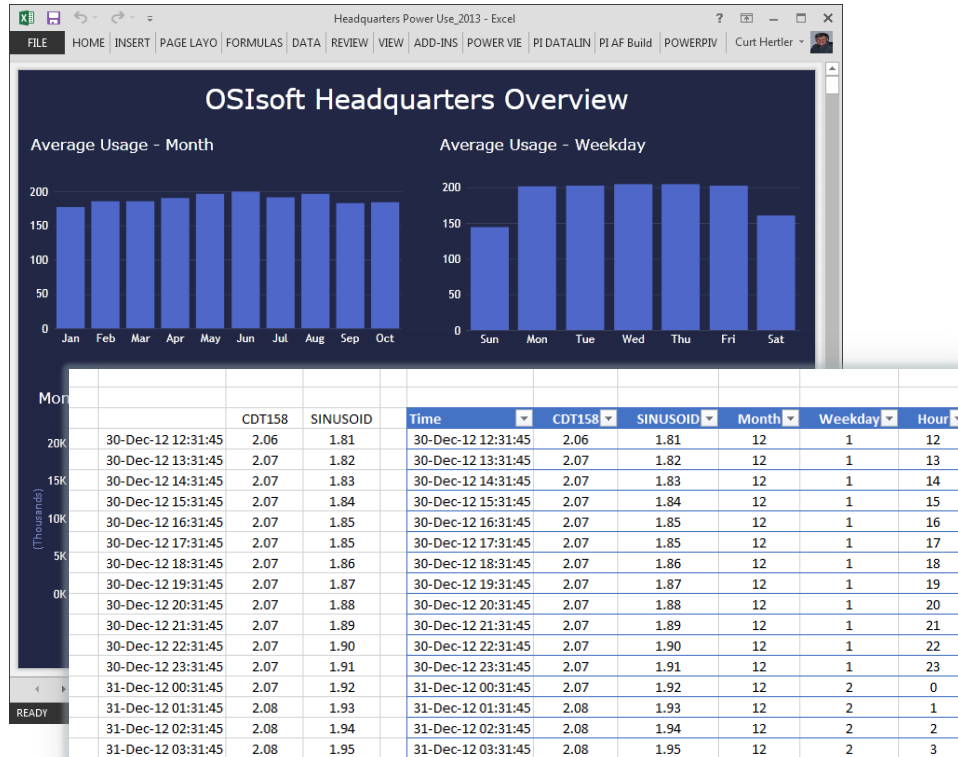




DEMO



Data Integration using DataLink



Requires reference to DataLink array for table range formatting

Limited to ~1 million rows

Best for single assets

No support for automatic refresh in SharePoint 2013

No support for upsizing to SQL Analysis Services 2012



PI for Office 365

Evolving Excel

Motivation



Increase Productivity

- Shorten the time to develop reports
- More visuals - Integrate natively with charts and tables
- Make it easy to share insights



Collections of things

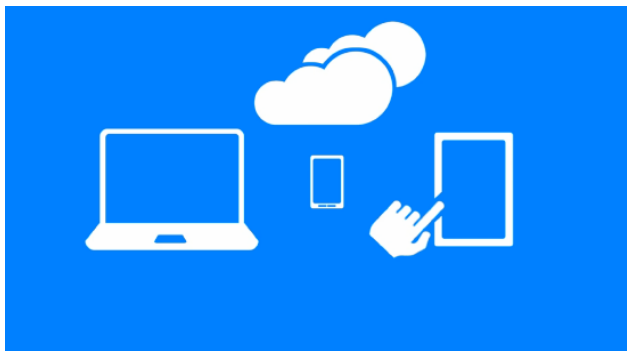
- Report by exception
- Compare across equipment
- Do BI on aggregate and summary information
- Work with bigger collections of data



Redefining how we work

- Work with Mobile devices
- Make it web based
- Embrace non-experts
- Ensure the data is decision ready

Beyond spreadsheets



Microsoft Power Query for Excel



Microsoft PowerPivot for Excel

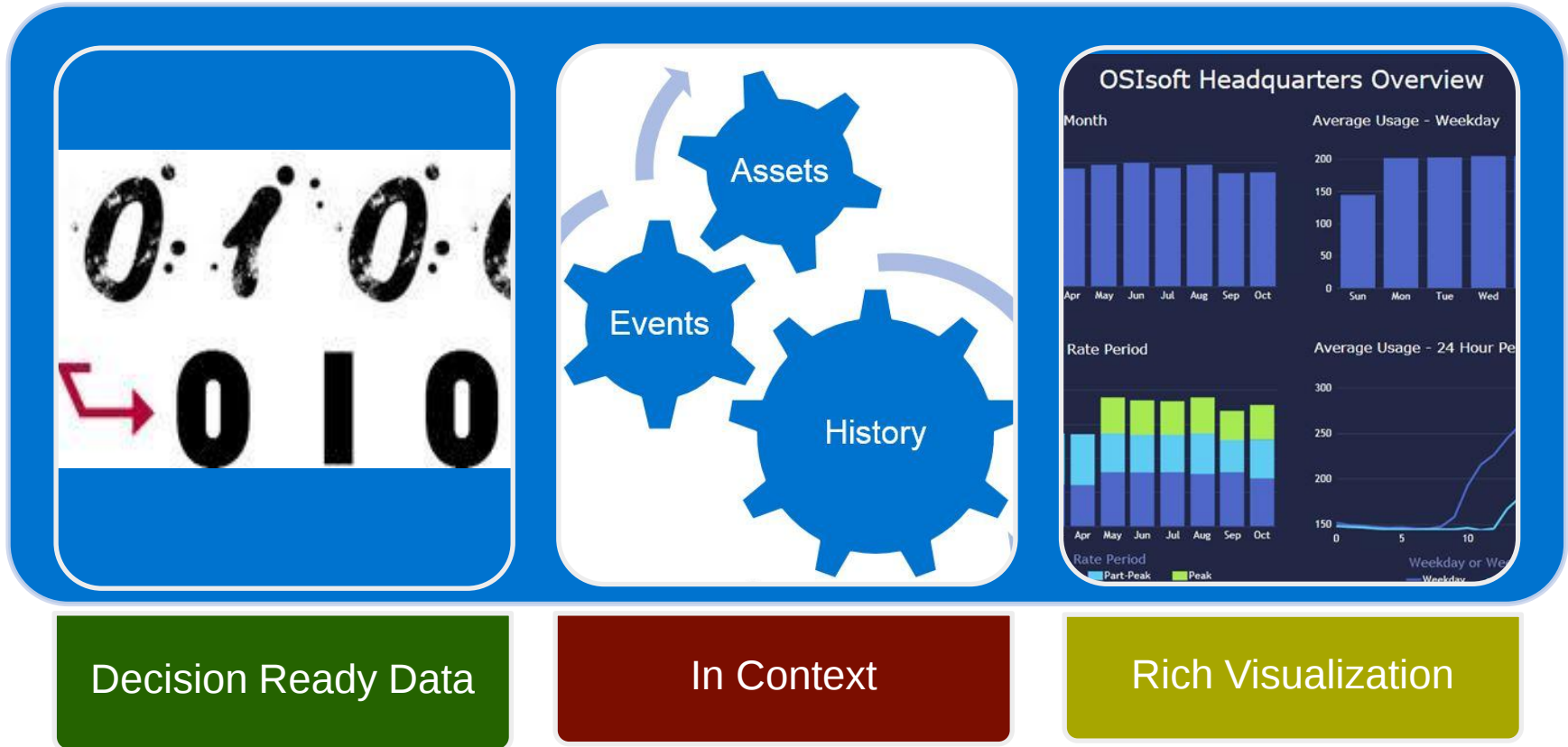


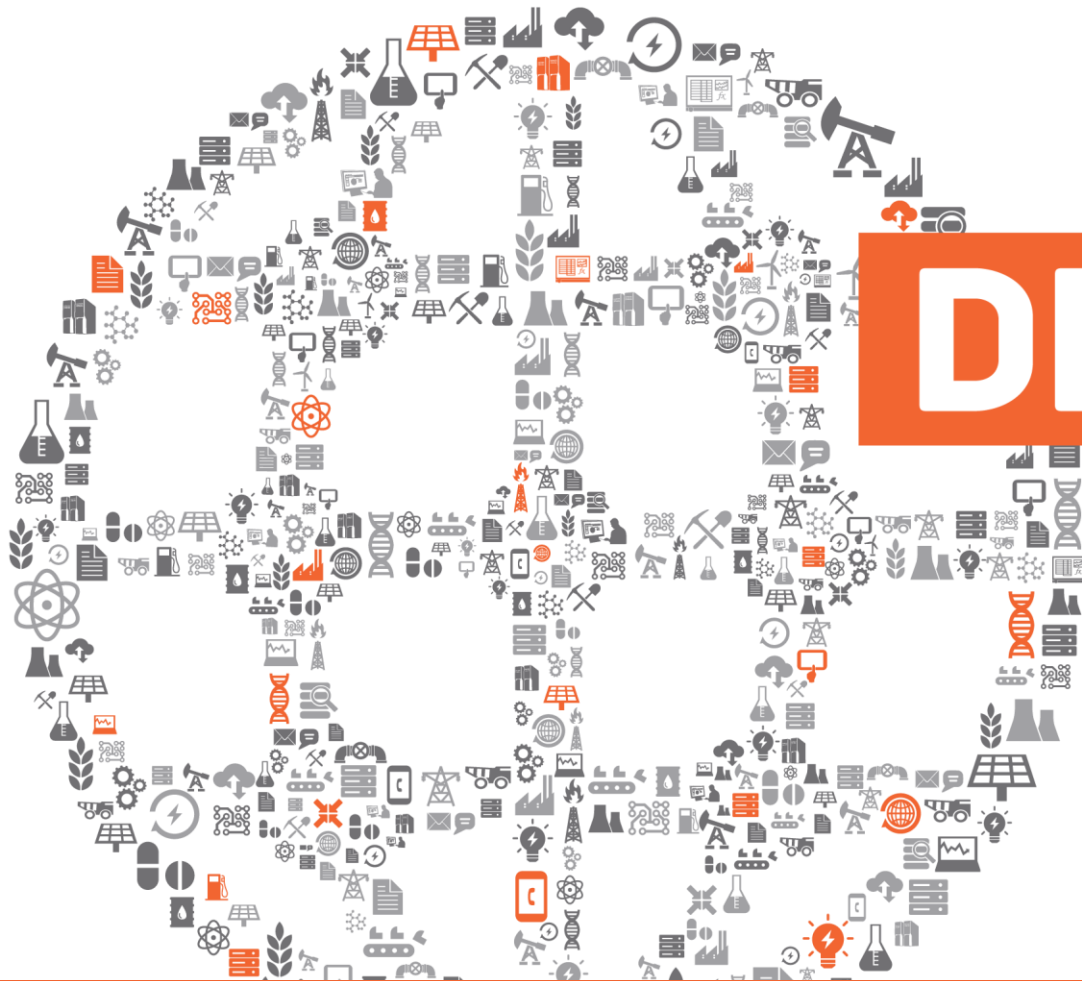
Microsoft PowerView for Excel



Microsoft Power Map for Excel

Streamlining reporting and analysis





DEMO

Additional Information

OSIsoft Resources

- “Using Microsoft PowerPivot and Power View with the PI System”
OSIsoft Tech Support
 \ Download Center \ Training Materials
 techsupport.osisoft.com
- OSIsoft vCampus vcampus.osisoft.com
- For SRP Customers learning.osisoft.com
- For EA Customers, contact your EPM.

Helpful Books

- “PowerPivot for the Data Analyst”, Bill Jelen
- “Practical PowerPivot & DAX Formulas for Excel 2010”, Art Tennick



Cubing your PI Asset Framework

Version 1.02

Scope

This document contains a series of exercises designed to illustrate the process of bringing PI data and metadata into business intelligence cubes. This is a self-paced series of exercises designed to take approximately 4 hours, though this will increase if you are not familiar with PI OLEDB Enterprise.

Prerequisites

Familiarity with PI Asset Framework, and with the PI System Explorer utility, is assumed.
Familiarity with SQL language is very helpful.

Materials

Provided for you:

- PI Archive with tags and data
- PI AF database (*Pinwheel*) with assets and event frames

Scenario

The *Pinwheel Power Corporation* is a wind generation concern. It has two wind farms in Texas, and has developed an asset model exposing some data for its wind operations.

Pinwheel uses PI Event Frames to track turbine downtime – their causes, and their impact.

Your job is to construct a generic business intelligence cube to power some basic exploration and reporting. This process will revolve around preparing their Asset Framework model for business intelligence, and writing PI OLEDB Enterprise queries to feed the cube.

Instructions

Do each action marked by a red diamond symbol

Get hands on knowledge of how to use and get value from the PI System



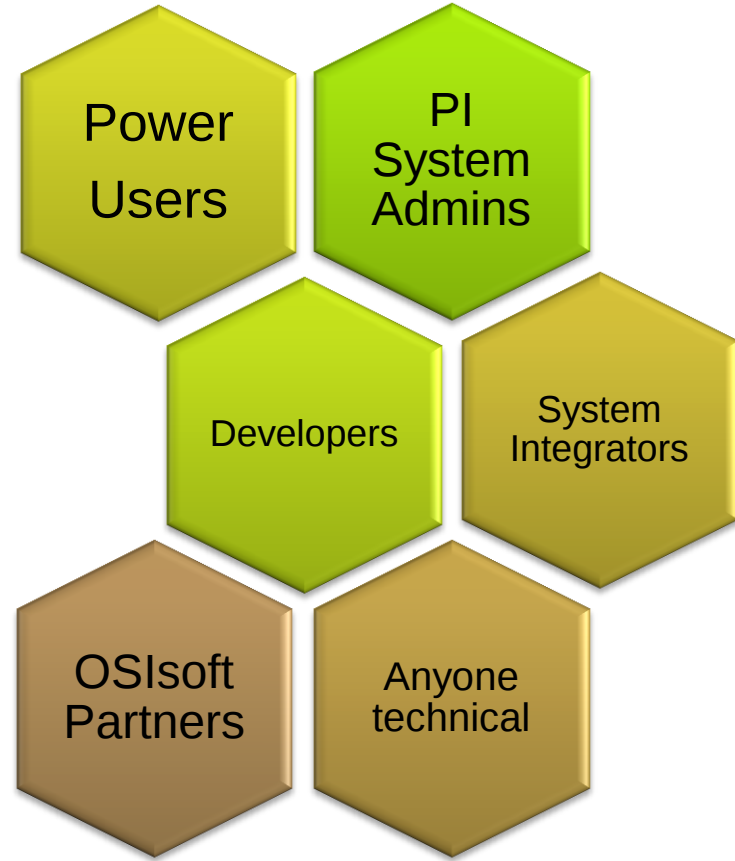
DECEMBER 3 - 6, GRAND HYATT SAN FRANCISCO

vCampus Live! 2013

WHERE PI GEEKS MEET



SAVE THE DATE



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