

OSIsoft®

# USERS 2013 CONFERENCE

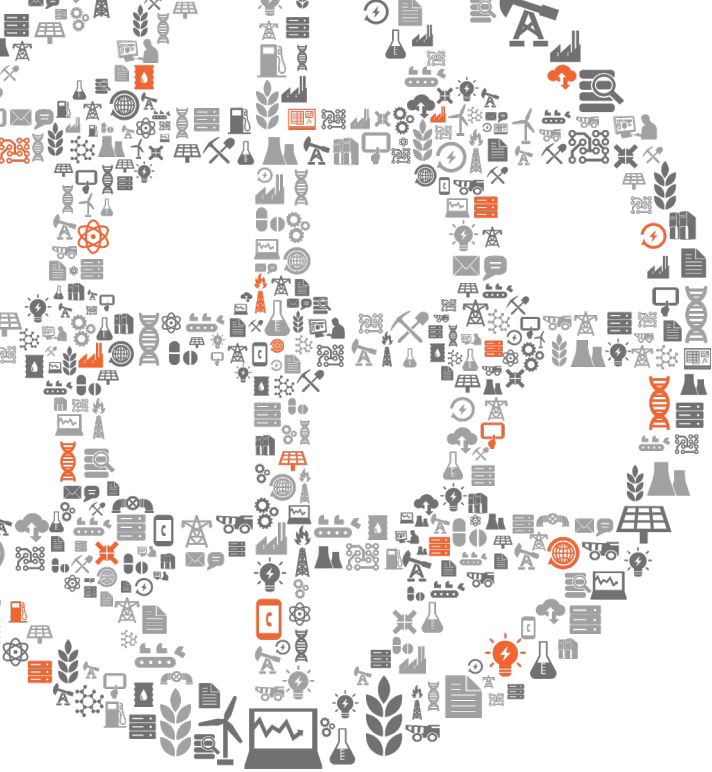
The Power of Data

THRIVING

IN A

WORLD OF

CHANGE



# Deliver PI Data to Your Apps and Enterprise Systems

Presented by **Michelle Kuiee**

# Business Challenges

## Disparate systems

- Acquired independently, over time
- Different departments/units

## Domain, industry, or user-specific needs

- PI System is an infrastructure

## Many different targets

- Diverse types of workers
- Different platforms, media

# A few use cases, some ideas

- **LoB Systems/Databases**
- **Orchestration/Workflows**
- **Web/Non-Windows Platforms**
- **Analysis/BI/Reporting**
- **Custom Applications**

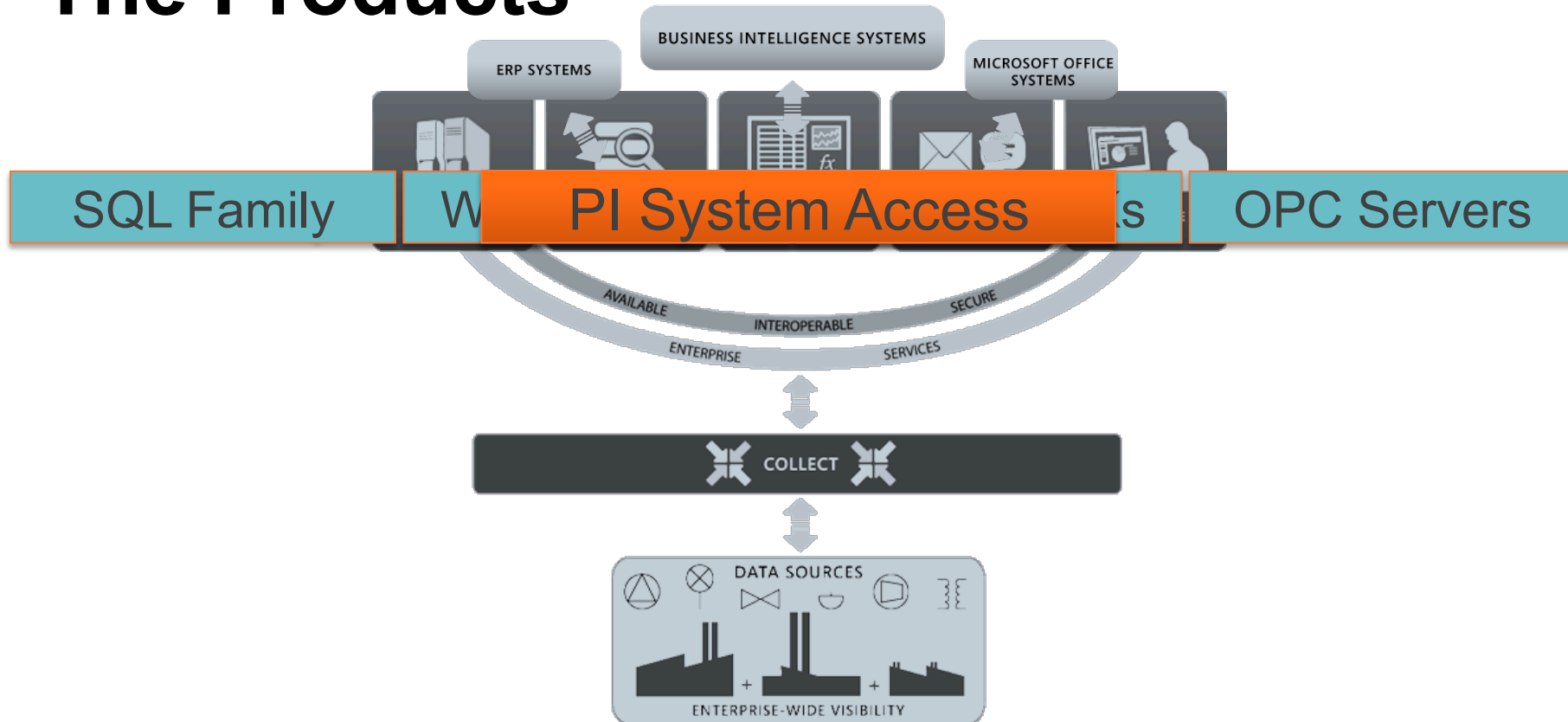


**Custom Downtime Analysis Engine**

**Automated Ordering to Suppliers**



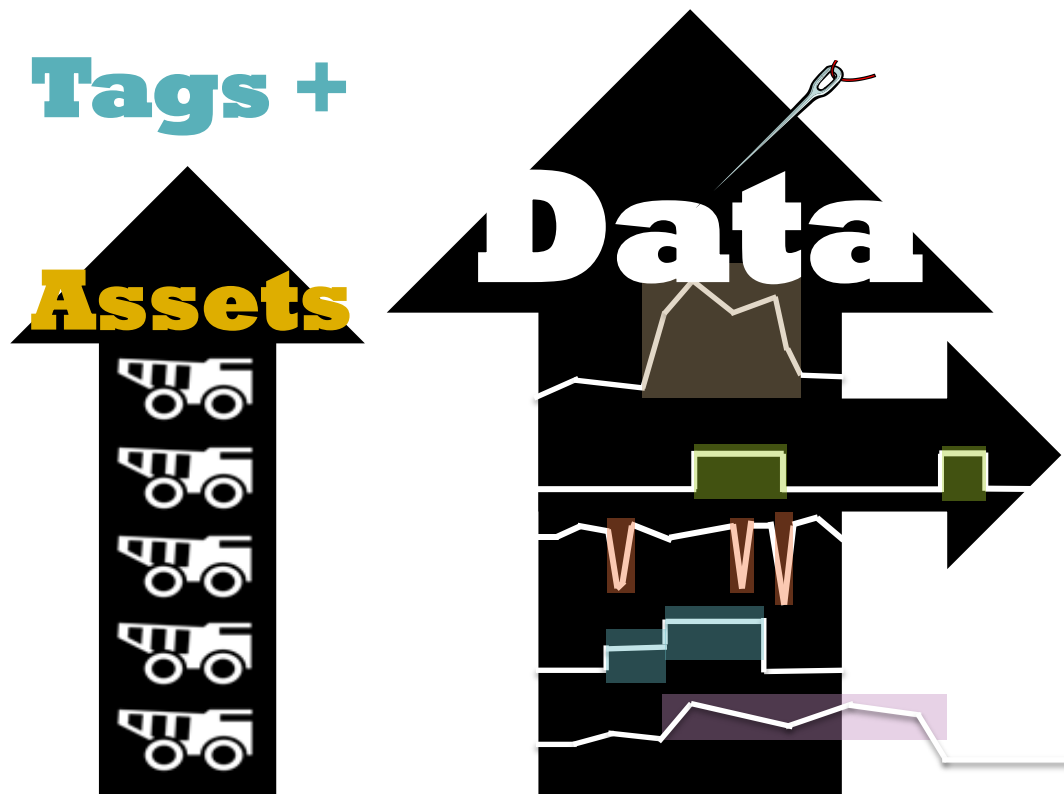
# The Products



# PI System Access Themes for 2012

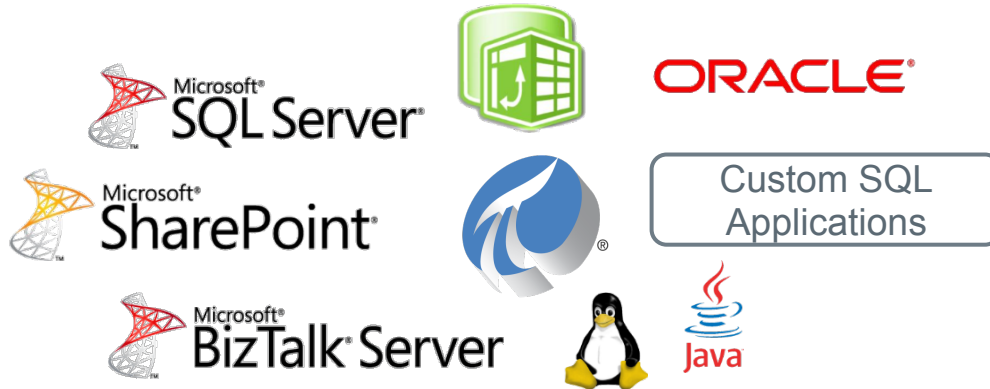
Asset based PI

Event Frames



# The SQL Family

- Set of drivers that expose PI System data in a relational **database view** (OLE DB, JDBC, ODBC)
- Database systems integration, analysis, BI, reporting, Linux

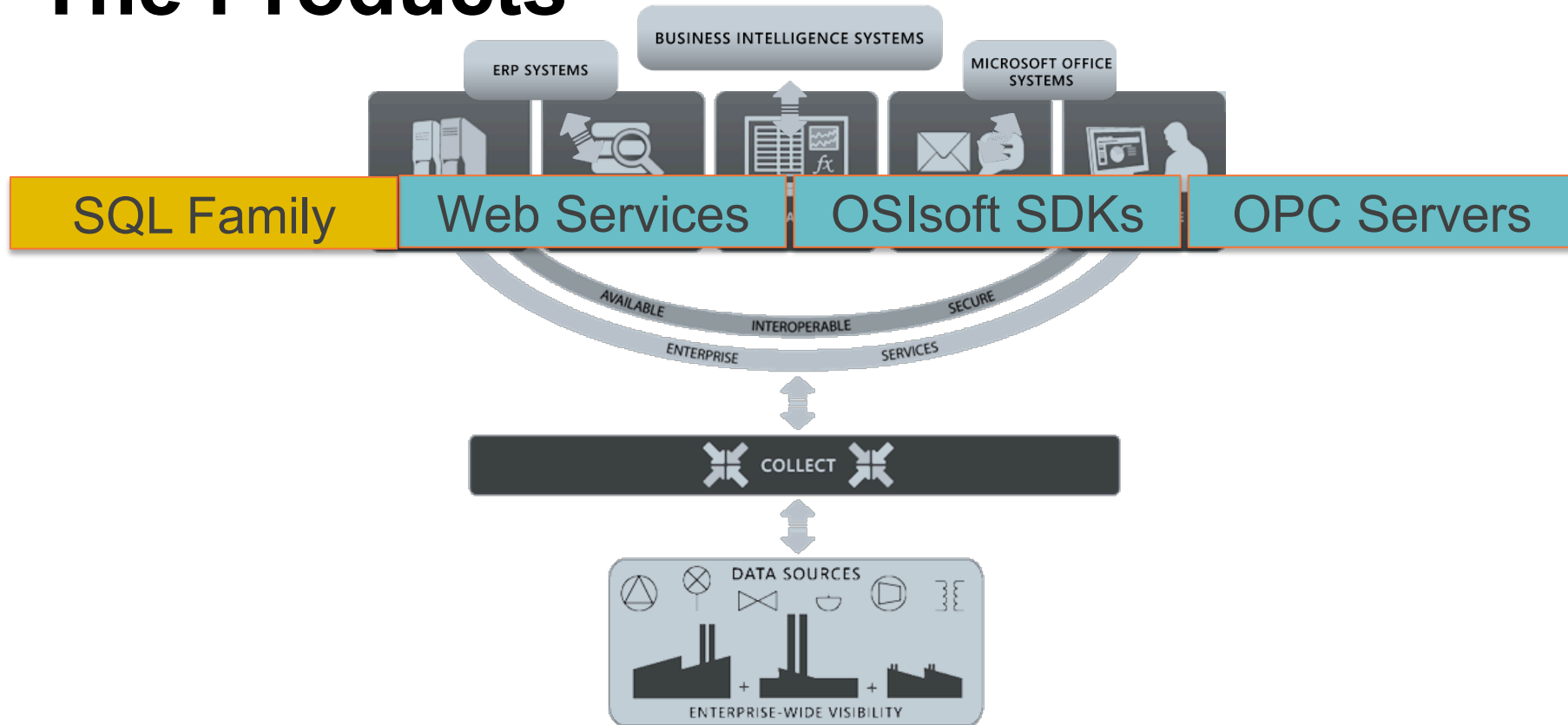




# Released



# The Products



# PI WebParts + PI OLEDB Enterprise 2012 - RoundTrips

## Truck RoundTrip Events

h Time Range

Start Time

End Time

Apply

Select a Truck

- Trucks
- Mine Truck 1
- Mine Truck 2
- Mine Truck 3
- Mine Truck 4
- Mine Truck 5



OSI Mining Links

## Truck Operational States

PI Coresight - HOME

## Operational State Attributes

### Truck Trip Events Summary

Count	Cum. Duration	Avg Duration (Sec)	Expected Avg Duration (Sec)
29	22:24:00	2880	360

### Truck Trip Events

Name	Start Time	End Time	Duration
RT: MT4 2013_04_07 12:44	4/7/2013 12:44:28 PM	4/7/2013 1:32:28 PM	00:48:00
RT: MT4 2013_04_07 13:32	4/7/2013 1:32:58 PM	4/7/2013 2:20:58 PM	00:48:00
RT: MT4 2013_04_07 14:21	4/7/2013 2:21:28 PM	4/7/2013 3:09:28 PM	00:48:00
RT: MT4 2013_04_07 15:09	4/7/2013 3:09:58 PM	4/7/2013 3:57:58 PM	00:48:00
RT: MT4 2013_04_07 15:58	4/7/2013 3:58:28 PM	4/7/2013 4:46:28 PM	00:48:00
RT: MT4 2013_04_07 16:46	4/7/2013 4:46:58 PM	4/7/2013 5:34:58 PM	00:48:00
RT: MT4 2013_04_07 17:35	4/7/2013 5:35:28 PM	4/7/2013 6:23:28 PM	00:48:00
RT: MT4 2013_04_07 18:23	4/7/2013 6:23:58 PM	4/7/2013 7:11:58 PM	00:48:00
RT: MT4 2013_04_07 19:12	4/7/2013 7:12:28 PM	4/7/2013 8:00:28 PM	00:48:00
RT: MT4 2013_04_07 20:00	4/7/2013 8:00:58 PM	4/7/2013 8:48:58 PM	00:48:00

Showing 1 to 10 of 29

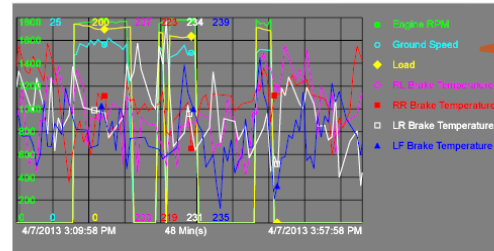
### Trip Operational State Events

Name	Start Time	End Time	Duration
Waiting to Load	4/7/2013 3:09:58 PM	4/7/2013 3:19:28 PM	00:09:30
Loading	4/7/2013 3:19:28 PM	4/7/2013 3:25:28 PM	00:06:00
Running Loaded	4/7/2013 3:25:28 PM	4/7/2013 3:36:28 PM	00:11:00
Dumping Load	4/7/2013 3:36:28 PM	4/7/2013 3:41:28 PM	00:05:00
Running Empty	4/7/2013 3:41:28 PM	4/7/2013 3:57:58 PM	00:16:30

### Trip Operational State Event Attributes

Attribute	Value	UOM
Comment	Running Empty	
Description	Lebron James	
Driver	990	s
Duration		s
Duration.Expected	360	s
Engine RPM - Average	1730.04305844085	rpm
Engine RPM - Maximum	1784.16015625	rpm
LF Brake Temperature	236.584747314453	deg F
LF Brake Temperature - Maximum	238.224411010742	deg F
LF Brake Temperature - Minimum	235.461395263672	deg F
LF Brake Temperature - Std	0.541336338240054	deg F
LR Brake Temperature	236.323379516602	deg F
LR Brake Temperature - Maximum	237.286865234375	deg F
LR Brake Temperature - Minimum	235.466247558594	deg F
LR Brake Temperature - Std	0.316483902347557	deg F

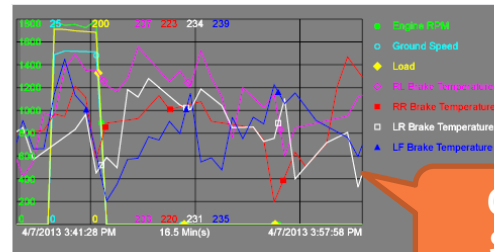
### Trip Event Trend



### Trip Attributes

Attribute	Value	UOM
Comment	RoundTrip	
Description	Revill Swivel	
Driver	2880	s
Duration	360	s
Duration.Expected	1723.4249567159	rpm
Engine RPM - Average	1784.61865234375	rpm
Engine RPM - Maximum	20.6147543030977	mi/h
Ground Speed - Average	22.7460880279541	mi/h
Ground Speed - Maximum	177.920925348455	ton
Load - Maximum	10.0697290593928	ton
Load - Range	Route C	
Route		

### Trip Operational State Event Trend

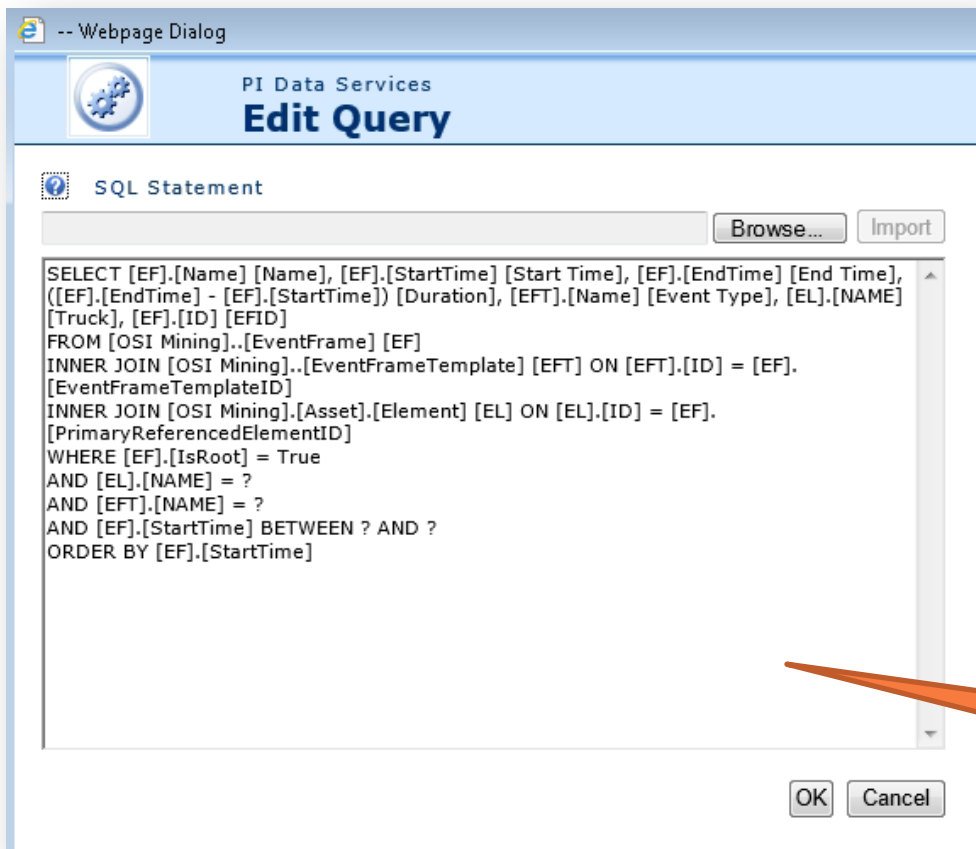


## Event Trend

## Event Attributes

## Operational State Trend

# PI WebParts + PI OLEDB Enterprise 2012 - RoundTrips



Preview -- Webpage Dialog

OSIsoft PI Data Services  
**Preview**

Name	Start Time	End Time	Duration	Event Type	Truck	EFID
RT: Truck 1: 2013_04_05 12:42	05-Apr- 2013 12:42:28	05-Apr- 2013 13:13:28	00:31:00	Truck RoundTrip Template	Mine Truck 1	12c80fff-1714-4a6a- 0000-000000040fcd
RT: MT1 2013_04_05 13:13	05-Apr- 2013 13:13:58	05-Apr- 2013 13:44:58	00:31:00	Truck RoundTrip Template	Mine Truck 1	12c80fff-1714-4a6a- 0000-0000000415a5
RT: MT1 2013_04_05 13:45	05-Apr- 2013 13:45:28	05-Apr- 2013 14:16:28	00:31:00	Truck RoundTrip Template	Mine Truck 1	12c80fff-1714-4a6a- 0000-0000000415bc
RT: MT1 2013_04_05 14:16	05-Apr- 2013 14:16:58	05-Apr- 2013 14:47:58	00:31:00	Truck RoundTrip Template	Mine Truck 1	12c80fff-1714-4a6a- 0000-0000000415e5
RT: MT1 2013_04_05 14:48	05-Apr- 2013 14:48:28	05-Apr- 2013 15:19:28	00:31:00	Truck RoundTrip Template	Mine Truck 1	12c80fff-1714-4a6a- 0000-000000041610
RT: MT1 2013_04_05 15:19	05-Apr- 2013 15:19:58	05-Apr- 2013 15:50:58	00:31:00	Truck RoundTrip Template	Mine Truck 1	12c80fff-1714-4a6a- 0000-000000041637
RT: MT1 2013_04_05 15:51	05-Apr- 2013 15:51:28	05-Apr- 2013 16:22:28	00:31:00	Truck RoundTrip Template	Mine Truck 1	12c80fff-1714-4a6a- 0000-00000004165a
RT: MT1 2013_04_05 16:22	05-Apr- 2013 16:22:58	05-Apr- 2013 16:53:58	00:31:00	Truck RoundTrip Template	Mine Truck 1	12c80fff-1714-4a6a- 0000-000000041681
RT: MT1 2013_04_05 16:54	05-Apr- 2013 16:54:28	05-Apr- 2013 17:25:28	00:31:00	Truck RoundTrip Template	Mine Truck 1	12c80fff-1714-4a6a- 0000-0000000416aa
RT: MT1 2013_04_05 17:25	05-Apr- 2013 17:25:58	05-Apr- 2013 17:56:58	00:31:00	Truck RoundTrip Template	Mine Truck 1	12c80fff-1714-4a6a- 0000-0000000416d2

1 2 3 4 5 6 7 8 9 10 ...

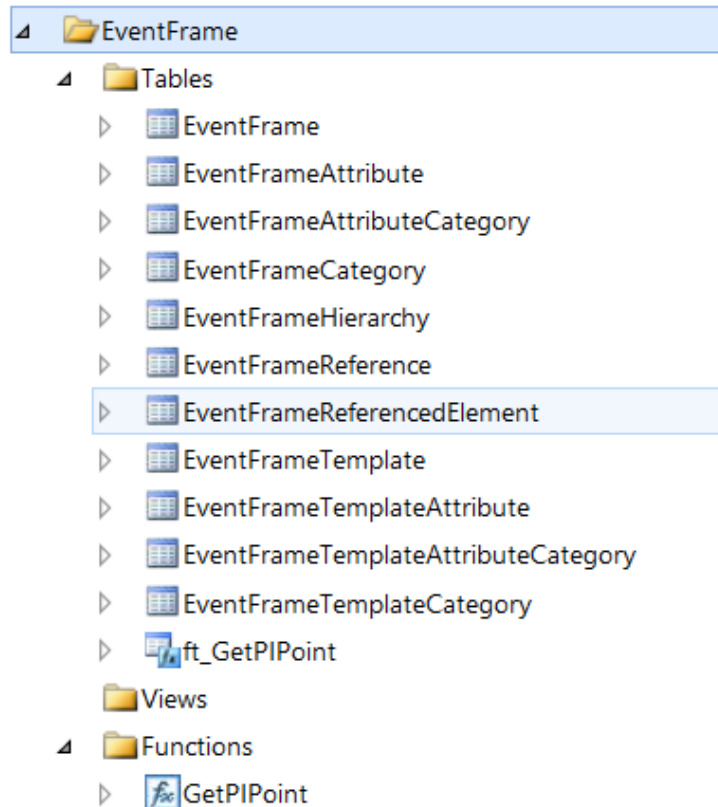
http://dfpiwebparts/PI%20Data%20Services/ Local intranet | Protected Mode: Off

No Black Magic ...  
simple PI OLEDB  
Enterprise Query



# PI OLEDB Enterprise 2012

- **Read Event Frames**
  - New catalog





File Edit View Query Project Tools Window Help

getpoint

New Query Execute Query Compendium

Object Explorer

- Data Sources
  - AF Servers
    - FRADEV-T2-AF24
    - FRADEV-T2-AF25
      - Catalogs
        - 1000Attributes
        - AdminOnly
        - Configuration
        - debug\_EF
        - ElementVersioning\_DB
        - MH\_DB
        - NuGreen
          - Asset
          - Data
          - DataT
          - EventFrame
            - Refresh
            - Export Custom Database Objects...
            - Import Custom Database Objects...
            - Generate Sample Event Frames...

1-EventFrames.sql - FRADEV-T2-AF25

```
-- Event frame template inheritance hierarchy
-- (event frame template table structure corresponds to the element template table structure;
-- for more usage patterns, refer to the ElementTemplates.sql file)
SELECT *
FROM NuGreen.EventFrame.EventFrameTemplate

-- Event frames which at least partially started yesterday
SELECT *
FROM NuGreen.EventFrame.EventFrame
WHERE StartTime <= 't' AND EndTime >= 'y'

-- Event frames which ended yesterday
SELECT *
```

**Bonus!**  
Create sample event frames in NuGreen Catalog

Results Messages

ID	Name	Description	StartTime	EndTime	EventFrameTemplateID	PrimaryParent
1	94H41c3-815e-4a66-0000-0000001aadb1	1015	2012-10-18 23:01:00.000		97976bc-f3c7-4cf9-b370-fa8a83b367b6	
2	94H41c3-815e-4a66-0000-0000001aadd5	1015_D	2012-10-19 00:07:18.000		a5b889c-94ce-4522-a53d-c441f718c08e	94H41c3-81
3	94H41c3-815e-4a66-0000-0000001aaddc	Draining	2012-10-19 00:23:11.700		fe444c6-8163-4953-b013-1ae5cbc4fca8	94H41c3-81
4	94H41c3-815e-4a66-0000-0000001ca1b1	1000	2013-04-02 00:00:00.000	2013-04-02 01:30:00.000	97976bc-f3c7-4cf9-b370-fa8a83b367b6	
5	94H41c3-815e-4a66-0000-0000001ca1b2	1000_A	2013-04-02 00:00:00.000	2013-04-02 00:22:30.000	a5b889c-94ce-4522-a53d-c441f718c08e	94H41c3-81
6	94H41c3-815e-4a66-0000-0000001ca1b3	Filling	2013-04-02 00:00:00.000	2013-04-02 00:02:15.000	fe444c6-8163-4953-b013-1ae5cbc4fca8	94H41c3-81
7	94H41c3-815e-4a66-0000-0000001ca1b4	Mixing	2013-04-02 00:02:15.000	2013-04-02 00:06:45.000	fe444c6-8163-4953-b013-1ae5cbc4fca8	94H41c3-81
8	94H41c3-815e-4a66-0000-0000001ca1b5	Heating	2013-04-02 00:06:45.000	2013-04-02 00:10:07.500	fe444c6-8163-4953-b013-1ae5cbc4fca8	94H41c3-81
9	94H41c3-815e-4a66-0000-0000001ca1b6	Ultra Heat	2013-04-02 00:10:07.500	2013-04-02 00:11:15.000	fe444c6-8163-4953-b013-1ae5cbc4fca8	94H41c3-81
10	94H41c3-815e-4a66-0000-0000001ca1b7	Sterilising	2013-04-02 00:11:15.000	2013-04-02 00:15:45.000	fe444c6-8163-4953-b013-1ae5cbc4fca8	94H41c3-81
11	94H41c3-815e-4a66-0000-0000001ca1b8	Cooling	2013-04-02 00:15:45.000	2013-04-02 00:19:07.500	fe444c6-8163-4953-b013-1ae5cbc4fca8	94H41c3-81
12	94H41c3-815e-4a66-0000-0000001ca1b9	Draining	2013-04-02 00:19:07.500	2013-04-02 00:22:30.000	fe444c6-8163-4953-b013-1ae5cbc4fca8	94H41c3-81
13	94H41c3-815e-4a66-0000-0000001ca1ba	1000_B	2013-04-02 00:18:00.000	2013-04-02 01:07:30.000	a5b889c-94ce-4522-a53d-c441f718c08e	94H41c3-81
14	94H41c3-815e-4a66-0000-0000001ca1bb	Filling	2013-04-02 00:18:00.000	2013-04-02 00:22:57.000	fe444c6-8163-4953-b013-1ae5cbc4fca8	94H41c3-81
15	94H41c3-815e-4a66-0000-0000001ca1bc	Mixing	2013-04-02 00:22:57.000	2013-04-02 00:32:51.000	fe444c6-8163-4953-b013-1ae5cbc4fca8	94H41c3-81
16	94H41c3-815e-4a66-0000-0000001ca1bd	Heating	2013-04-02 00:32:51.000	2013-04-02 00:40:16.500	fe444c6-8163-4953-b013-1ae5cbc4fca8	94H41c3-81
17	94H41c3-815e-4a66-0000-0000001ca1be	Soaking	2013-04-02 00:40:16.500	2013-04-02 00:42:45.000	fe444c6-8163-4953-b013-1ae5cbc4fca8	94H41c3-81

Query executed successfully

FRADEV-T2-AF25 (AF Server) 00:00:0.873 547 rows

Solution Explorer

- Solution 'PI SQL Query Compendium' (2 projects)
  - PI SQL Query Compendium (Asset)
    - Queries
      - Asset Database
        - 1-CurrentElementHierarchy.sql
        - 2-VersionedElementHierarchy.sql
        - 3-ElementTemplates.sql
        - 4-EnumerationSets.sql
      - Connection Info
      - Data
        - 1-Data.sql
        - 2-ErrorOptions.sql
        - 3-UOMConversions.sql
      - Event Frames
        - 1-EventFrames.sql
        - 2-EventFrameData.sql
      - Performance Hints
      - Transposed Data
      - Units of Measure
      - Element Attribute By Value Search.txt
      - NuGreen.xml
      - PIOLEdbTest.xml
      - ReadMe.txt
    - PI SQL Query Compendium (Classic)
      - Queries

PI SQL Query Compendium - PI SQL Commander

File Edit View Query Project Tools Window Help

getpoint

New Query Execute Query Compendium

Object Explorer

- Data Sources
  - AF Servers
    - FRADEV-T2-AF24
      - FRADEV-T2-AF25
        - Catalogs
          - 1000Attributes
          - AdminOnly
          - Configuration
          - debug\_EF
          - ElementVersioning\_DB
          - MH\_DB
          - NuGreen
            - Asset
            - Data
            - DataT
            - EventFrame
          - NuGreen (FRADEV-T1-PI2)
          - ONEMILLION
          - PIEFGEN
            - Refresh
            - Export Custom Database Objects...
            - Import Custom Database Objects...
          - PIEFGEN2
          - PIFD24L
          - PIFD24S
          - PIFD25XL
          - PIOLEDBENT\_Tests
          - PIOLEDBENT\_Tests\_EF

TransposedData.sql - FRADEV-T2-AF25

```
-- "Transpose" table-valued functions (TVFs) return values of multiple element attributes in a single row.
-- For the time being, "Transpose" TVFs can only be created to return attributes
-- inherited from element templates - each TVF exposes attributes of a single element template.

-- "Transpose" TVFs can be created exclusively using PI SQL Commander.

-- Steps to create TVFs:
-- 1. Connect PI SQL Commander to the database.
-- 2. Right-click NuGreen in the Object Explorer.
-- 3. Tick Boilerplate TVFs.
-- 4. By clicking the TVFs icon in the context menu.
-- 5. By clicking the TVFs icon in the context menu.
-- 6. Click Create TVFs.

-- There are two "Transpose" TVFs:
-- 1. TVFs to be used with current-time TVFs without "v" prefix.
-- 2. TVFs to be used with versioned TVFs with "v" prefix.

-- "Transpose" TVFs:
-- - TransposeSnapshot (ElementID, Time)
--   for a given element, returns snapshots of attributes
--   inherited from an element template TVF was created for

-- - TransposeInterpolateDiscrete (ElementID, Time)
--   for a given element, returns interpolations at given times of attributes
--   inherited from an element template TVF was created for

-- - TransposeInterpolateRange (ElementID, StartTime, EndTime, TimeStep)
--   for a given element, returns evenly spaced interpolations of attributes
--   inherited from an element template TVF was created for

-- - TransposeArchive (ElementID, StartTime, EndTime)
--   for a given element, returns archived data of attributes
--   inherited from an element template TVF was created for
```

Right click on an object to Export/Import to another database

# PI JDBC 2012

- **Now also runs on Java Runtime Environment 7**
- **Support new features of PI OLEDB Enterprise 2012 (e.g. Event Frames)**
- **Enhanced to support SAP EventInsight**
- **Removed dependency on .NET 4.0**

File Edit View Database SQL Commander Tools Window Help



Databases Scripts Favorites PI JDBC 2012 x 1: PI JDBC 2012 Untitled\* x



Connections

- PI JDBC 2012
  - 1000Attributes
  - AdminOnly
  - Configuration (Default)
  - debug\_EF
  - ElementVersioning\_DB
  - MH\_DB
  - NuGreen
  - NuGreen (FRADEV-T1-PI2)
  - ONEMILLION
  - PIEFGEN
  - PIEFGEN2
  - PIFD24L
  - PIFD24S
  - PIFD25XXL
  - PIOLEDBENT\_Tests
  - PIOLEDBENT\_Tests\_EF
  - PIOleDbTest
  - Production
  - System
  - x

Database Connection

☐ Sticky Database

Schema

Max Rows Max Chars

PI JDBC 2012

```

1 SELECT ef.Name, ef.StartTime, ef.EndTime
2 FROM NuGreen.EventFrame.EventFrameTemplate eft
3 INNER JOIN NuGreen.EventFrame.EventFrame ef ON ef.Event
4 WHERE eft.Name = N'OSUnitProcedure'
5 AND ef.StartTime BETWEEN 'y' AND 't'
6 OPTION (FORCE ORDER)

```

Same catalogs and tables available in  
JDBC as OLEDB Enterprise

Log [203] INS

Auto Commit: ON | Untitled\*

Log 1: EventFrameTemplate [64] x

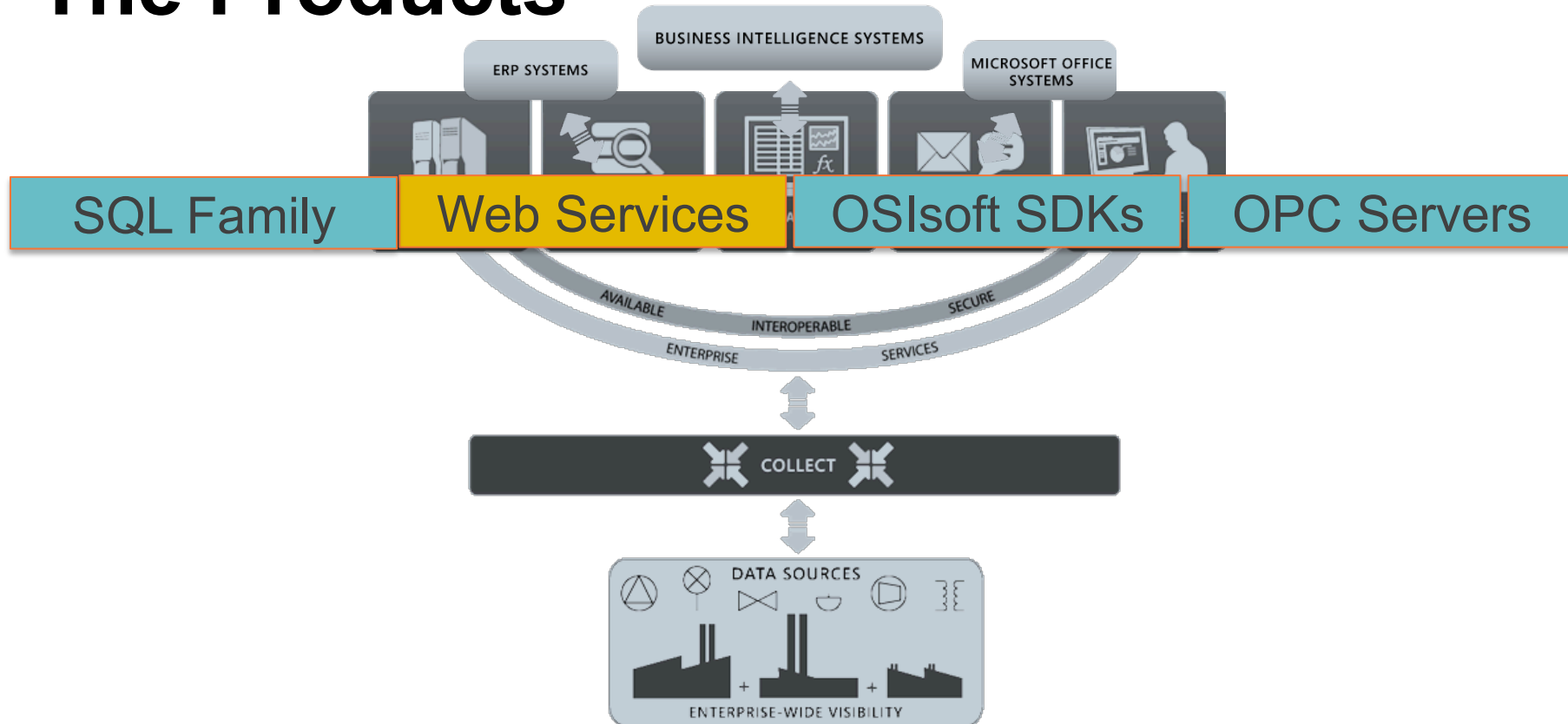


*	Name	StartTime	EndTime
1	1000_A	2013-04-02 00:00:00	2013-04-02 00:22:30
2	1000_B	2013-04-02 00:18:00	2013-04-02 01:07:30
3	1000_C	2013-04-02 00:18:00	2013-04-02 00:45:00
4	1000_D	2013-04-02 01:10:12	2013-04-02 01:30:00
5	1001_A	2013-04-02 01:17:00	2013-04-02 01:46:15
6	1001_C	2013-04-02 01:40:24	2013-04-02 02:15:30
7	1001_B	2013-04-02 01:40:24	2013-04-02 02:44:45
8	1001_D	2013-04-02 02:48:15	2013-04-02 03:14:00
9	1002_A	2013-04-02 02:57:00	2013-04-02 03:12:15
10	1002_B	2013-04-02 03:09:12	2013-04-02 03:42:45
11	1002_C	2013-04-02 03:09:12	2013-04-02 03:27:30
12	1002_D	2013-04-02 03:44:34	2013-04-02 03:58:00
13	1003_A	2013-04-02 04:16:00	2013-04-02 04:41:30
14	1003_B	2013-04-02 04:36:24	2013-04-02 05:32:30
15	1003_C	2013-04-02 04:36:24	2013-04-02 05:07:00
16	1003_D	2013-04-02 05:35:33	2013-04-02 05:58:00
17	1004_A	2013-04-02 05:37:00	2013-04-02 05:56:00
18	1004_B	2013-04-02 05:52:12	2013-04-02 06:34:00
19	1004_C	2013-04-02 05:52:12	2013-04-02 06:15:00
20	1004_D	2013-04-02 06:36:15	2013-04-02 06:53:00

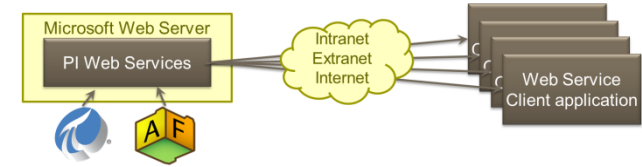
0.000/0.000 sec 64/3 1-20

78M of 455M

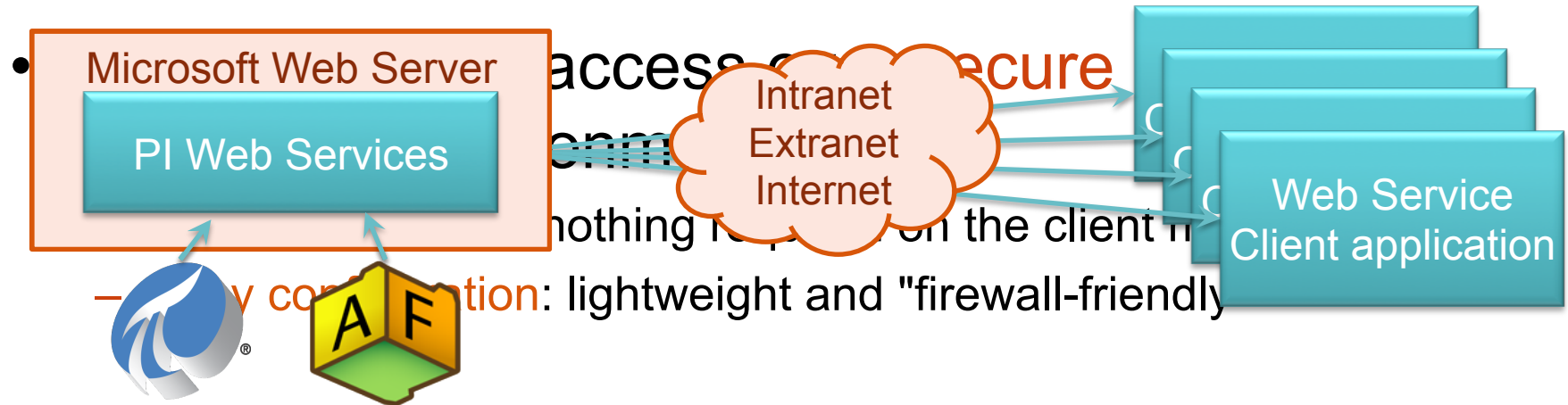
# The Products



# PI Web Services



- Access to PI System data using standard **web service** technologies

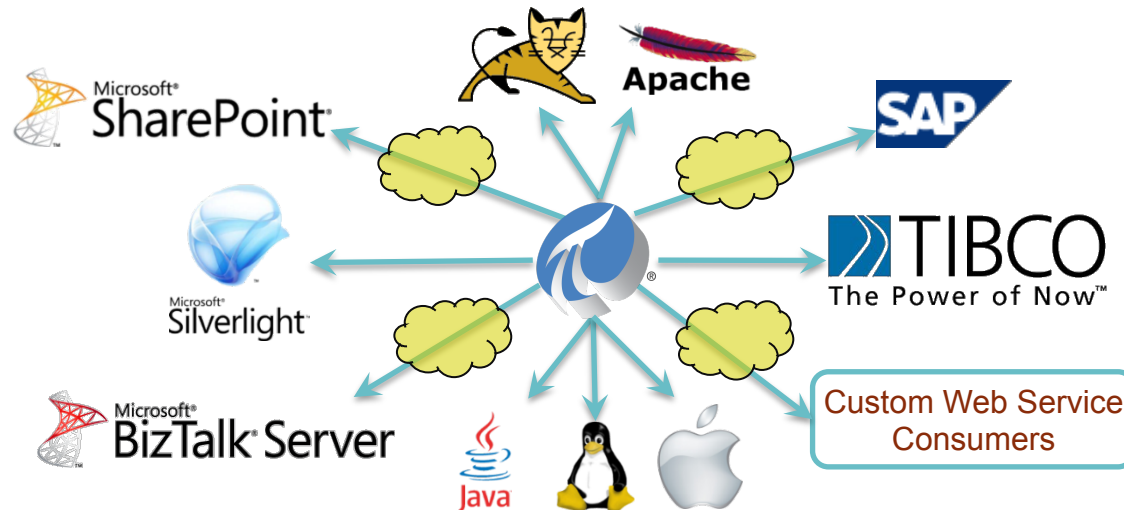


# Use Cases

Web-based  
visualization

Integration with  
business systems

Non-Windows  
environments







# Released





# PI V

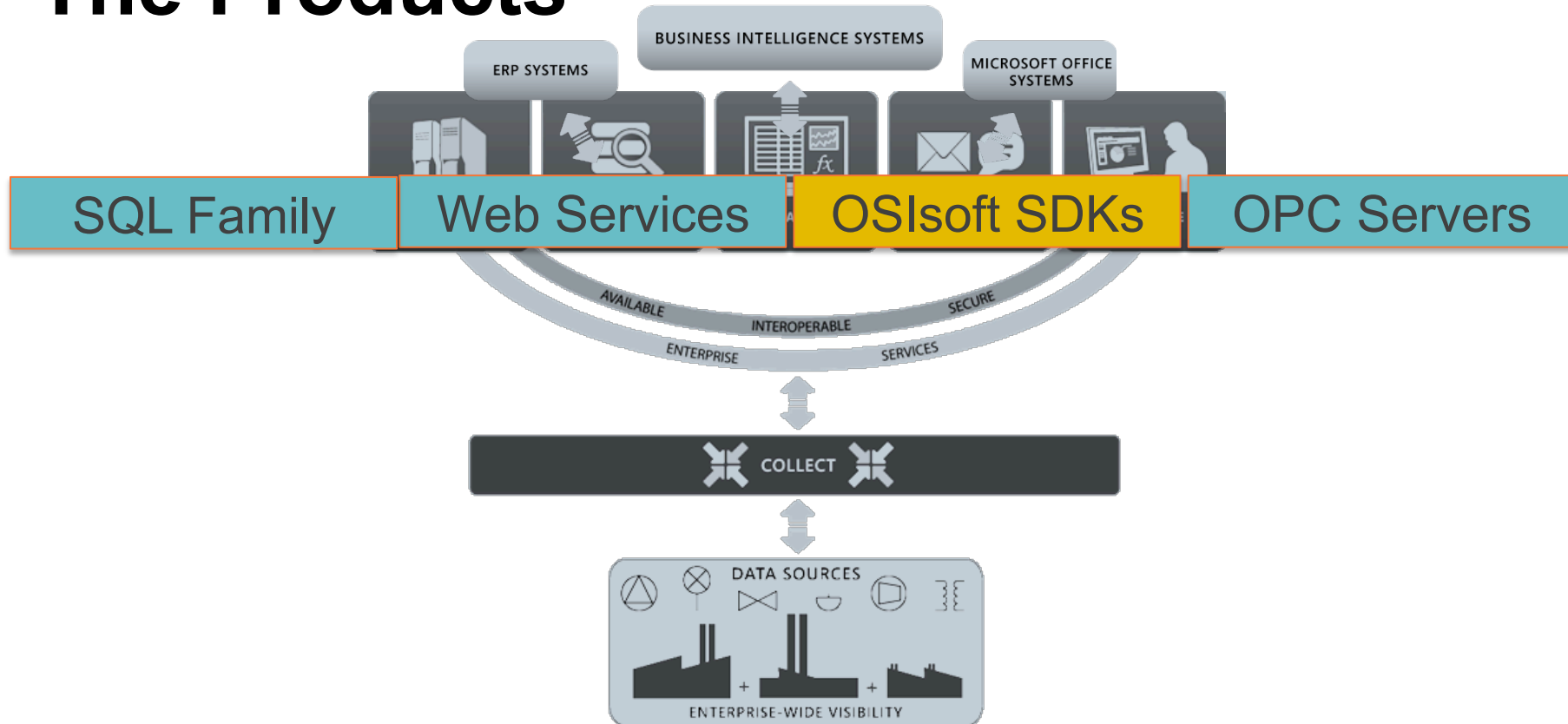
- AF Re
- EF Re

Table to be searched	/CS4UGAS/SGW_SM	DB: Meter Master Data
Number of hits	367	
Runtime	0	Maximum no. of hits 500

Device ID	Date to	Date from	Serial ID	Mat ID	UII	HES ID SAP	HES ID PI	AF Element Path	ConStatus
10001377	31.12.9999	01.01.2013	SER10000000095	302	UII10000000095	2000	SILVERSPRING	CX4U_METER_10000095	
10001379	31.12.9999	01.01.2013	CK023	302	UII10000000005	2000	SILVERSPRING	CX4U_METER_10000005	
10001380	31.12.9999	01.01.2013	CX4UMETER06	302	UII10000000587	2000	SILVERSPRING	CX4U_METER_10000587	
10001381	31.12.9999	01.01.2013	SER10000000096	302	UII10000000096	2000	SILVERSPRING	CX4U_METER_10000096	
10001382	31.12.9999	01.01.2013	DG_DBG_20130204_01	AMI_DG	UII10000000678	2000	SILVERSPRING	CX4U_METER_10000678	
10001383	31.12.9999	01.01.2013	DG_DBG_20130204_02	AMI_DG	UII10000000667	2000	SILVERSPRING	CX4U_METER_10000667	
10001384	31.12.9999	01.01.2013	DG_DBG_20130204_03	AMI_DG	UII10000000667	2000	SILVERSPRING	CX4U_METER_10000667	
10001396	31.12.9999	01.01.2013	DG_DBG_20130205_02	AMI_DG	UII10000000666	2000	SILVERSPRING	CX4U_METER_10000666	
10001397	31.12.9999	01.01.2013	SER10000000097	CK_M1	UII10000000097	4000	SILVERSPRING	CX4U_METER_10000097	DISCONNECT
10001401	31.12.9999	01.01.2013	SER10000000099	CK_M1	UII10000000099	4000	SILVERSPRING	CX4U_METER_10000099	DISCONNECT
10001403	31.12.9999	01.01.2013	SER10000000111	CK_M1	UII10000000111	4000	SILVERSPRING	CX4U_METER_10000111	DISCONNECT
10001406	31.12.9999	01.01.2013	SER10000000301	CK_M1	UII10000000301	4000	SILVERSPRING	CX4U_METER_10000301	
10001410	31.12.9999	01.01.2013	SER10000000302	AB_METER	UII10000000302	4000	SILVERSPRING	CX4U_METER_10000302	
10001411	31.12.9999	01.01.2013	DG_BADI_TEST_001	AMI_DG	UII10000000666	2000	SILVERSPRING	CX4U_METER_10000666	
10001412	31.12.9999	01.01.2013	SER10000000303	AB_METER	UII10000000303	4000	SILVERSPRING	CX4U_METER_10000303	
10001414	31.12.9999	01.01.2013	CK024	302	UII10000000006	2000	SILVERSPRING	CX4U_METER_10000006	
10001415	31.12.9999	01.01.2013	SER10000000304	AMI-CIX	UII10000000304	4000	SILVERSPRING	CX4U_METER_10000304	
10001417	31.12.9999	01.01.2013	SER10000000305	CK_M1	UII10000000305	4000	SILVERSPRING	CX4U_METER_10000305	DISCONNECT
10001426	31.12.9999	01.01.2013	SER10000000306	AMI-CIX	UII10000000306	4000	SILVERSPRING	CX4U_METER_10000306	
10001431	31.12.9999	01.01.2013	SER10000000310	CK_M1	UII10000000310	4000	SILVERSPRING	CX4U_METER_10000310	
10001432	31.12.9999	01.01.2013	SER10000000311	CK_M1	UII10000000311	4000	SILVERSPRING	CX4U_METER_10000311	
10001434	31.12.9999	01.01.2013	CK_REL_01	AB_METER	UII10000000038	4000	SILVERSPRING	CX4U_METER_10000038	
10001436	31.12.9999	01.01.2013	SER10000000319	CK_M1	UII10000000319	4000	SILVERSPRING	CX4U_METER_10000319	
10001505	31.12.9999	01.01.2013	DG_MOMI_001	AMI_DG	UII10000000666	2000	SILVERSPRING	CX4U_METER_10000666	
10001515	31.12.9999	01.01.2013	DG_REPLACE_001	AMI_DG	UII10000000666	2000	SILVERSPRING	CX4U_METER_10000666	
10001516	31.12.9999	01.01.2013	DG_REPLACE_002	AMI_DG	UII10000000667	2000	SILVERSPRING	CX4U_METER_10000667	
10001517	31.12.9999	01.01.2013	REPL_001	AMI_DG	UII10000000666	2000	SILVERSPRING	CX4U_METER_10000666	
10001518	31.12.9999	01.01.2013	REPL_002	AMI_DG	UII10000000667	2000	SILVERSPRING	CX4U_METER_10000667	
10001521	31.12.9999	01.01.2013	NOW_001	AMI_DG	UII10000000666	2000	SILVERSPRING	CX4U_METER_10000666	

# The Products



# AF SDK 2012 - Enhancements

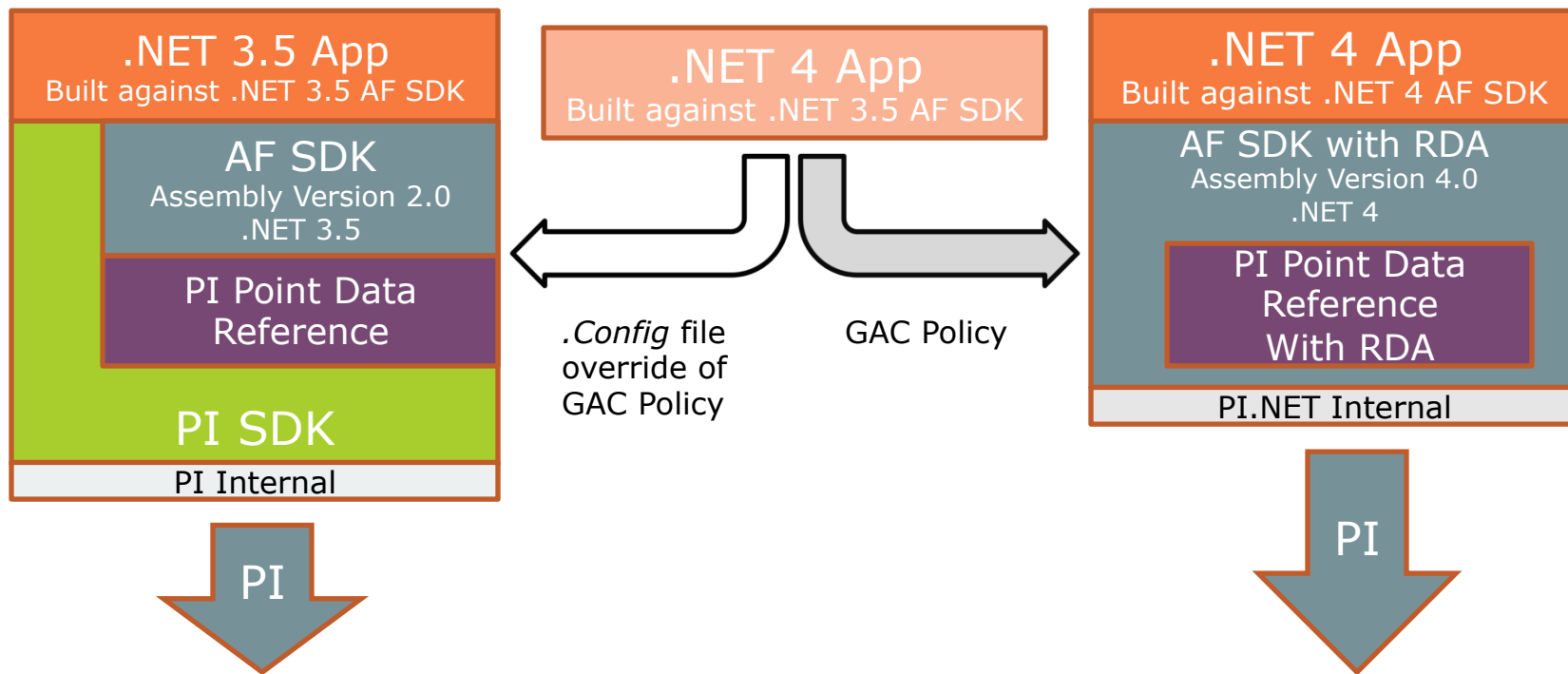
- Retrieve time series data from the PI Server
  - Rich Data Access (RDA)



# AF SDK 2.4

# &

# AF SDK 2012



# AF SDK 2012 - Benefits

- Access all PI data with one SDK
  - Simplify application development
- Smaller Memory Footprint and Larger Scale
- Higher Performance
- No more legacy COM

# What Does This Mean to You?

- Your existing apps continue to be supported
  - PI SDK will continue to be supported
  - AF SDK will be provided in two versions
    - .NET 3.5 for backwards compatibility
    - .NET 4 for Rich Data Access
      - Focus for future releases
  - Do nothing and your apps will continue to work
- Consider the benefits of AF SDK 2012



# *IN DEVELOPMENT*

# PI ODBC 2.0

- **ODBC 3.5 SDK**
- **UNICODE**
- **Architecture change**
- **SQL capabilities similar to PI JDBC 2012**

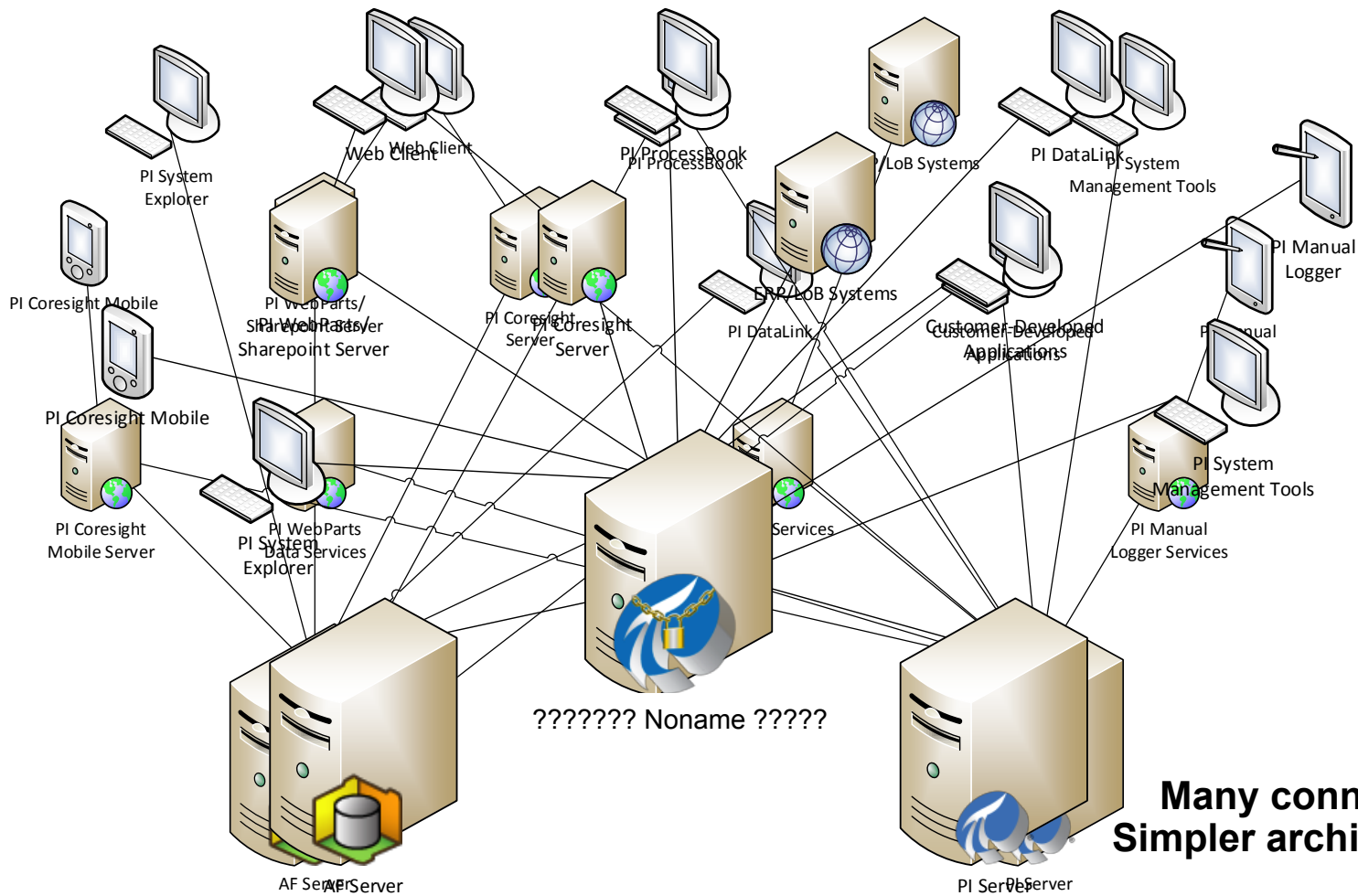


# Next Generation Services

- The next generation **platform** for multi-user access to the PI System
- Supports plain REST and OData
- Claims-based security
- Extensible with plugins
- Performant and scalable

# Next Generation Services

- Replaces multiple single-purpose servers
- Replaces countless connections to PI and AF servers
- The new primary way to access PI System data



**Many connections  
Simpler architecture**

# ODATA support

## CLIENTS

### MOBILE DEV



### APP DEV

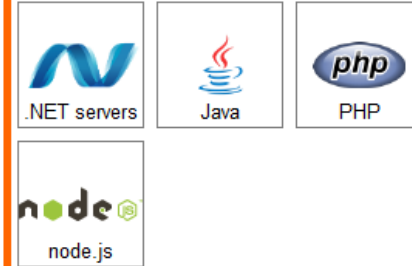


### WEB CMS



## SERVERS

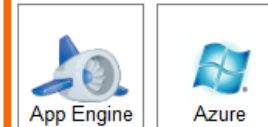
### CUSTOM SERVERS



### DATABASES



### CLOUD APPLICATIONS





I want it!

How do I get it?

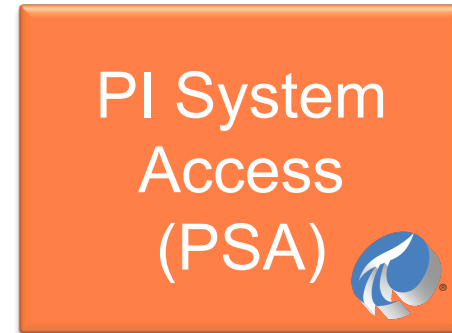
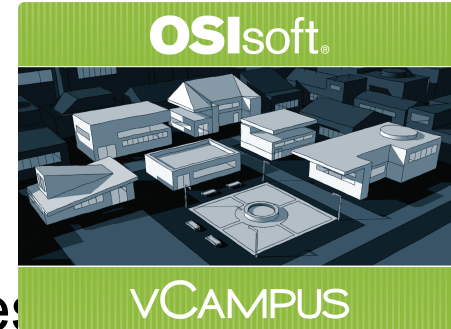
# How to get PI System Access Licenses

- `AFTimeRange tr = new AFTimeRange(new AFTime(tex`  
`AFValues vals = _afDB.Elements["Pump123"].Attri` products

```
1stValues.Items.Clear();  
foreach(AFValue val in vals)  
{
```

```
1stValues.Items.Add(val.Value.ToString() +
```

```
}  
-----time licenses
```



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



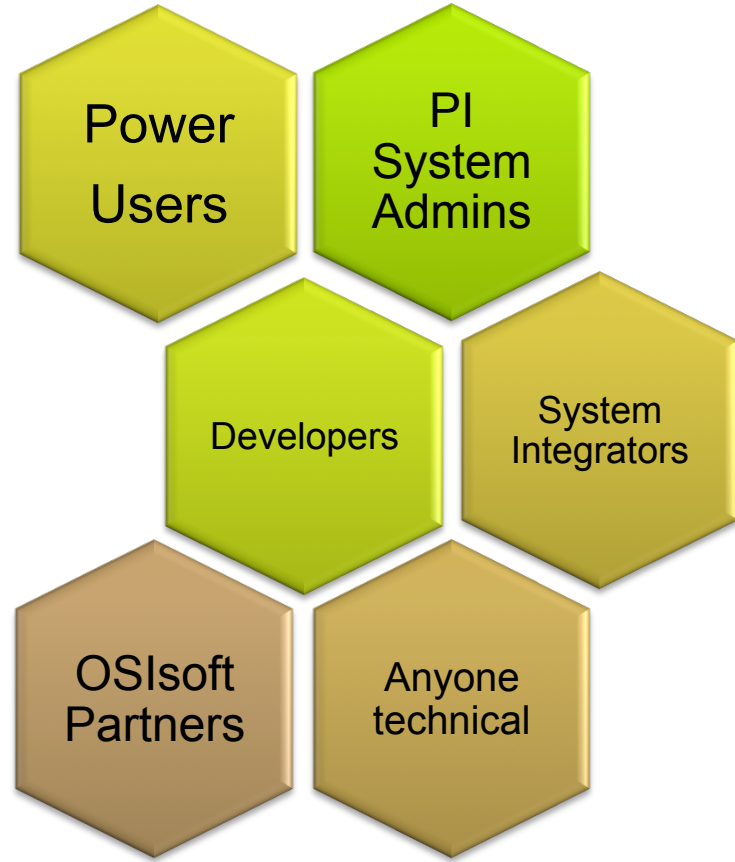
DECEMBER 3 - 6, GRAND HYATT SAN FRANCISCO

## vCampus Live! 2013

WHERE PI GEEKS MEET



# SAVE THE DATE



# Michelle Kuiee

[michelle@osisoft.com](mailto:michelle@osisoft.com)

Product Manager

OSIsoft, LLC





# THANK

# YOU

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