



# vCampus **Live! 2011**

## PI System Roadmap

John Baier

Director, Product Management

WHERE PI GEEKS MEET



# GOT BIG DATA?



The  
Economist

FEBRUARY 27TH - MARCH 5TH 2010

Economist.com

Obama the warrior

Misgoverning Argentina

The economic shift from West to East

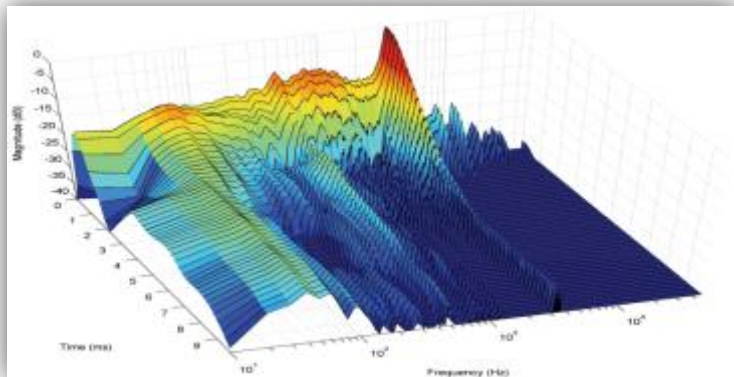
Genetically modified crops blossom

The right to eat cats and dogs

# The data deluge

AND HOW TO HANDLE IT: A 14-PAGE SPECIAL REPORT





## Syncro Phasors



4.8K data streams, 120Hz

3 years online

Unique Events: 55 Trillion

Estimated Data: 436TB



## Data Center



100K cells, 2M breakers

10 years online

Unique Events: 105 Trillion

Estimated Data: 841TB





## Automated Metering

**1,400**  
**TB**

20M meters, 5-min reads

7 years online

Unique Events: 177 Trillion

Estimated Data: 1,413TB



## Fleet Monitoring

**50,500**  
**TB**

1K assets, 1M points

10 years online

Unique Events: 6,307 Tr

Estimated Data: 50,458TB



# PI System Themes



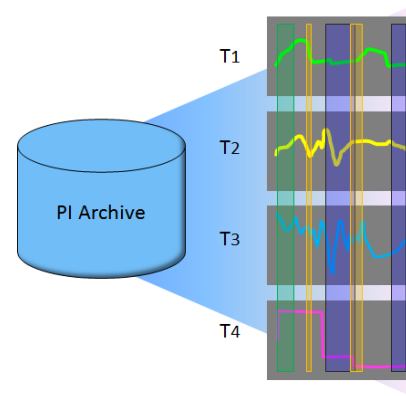
## Scaling

More data  
More updates  
More robust



## Asset-Centric PI System

Manage data via  
Asset context –  
Reuse many times



## Event Frames

Identify and use  
important events  
and related data



## Visualization

Many roles  
Different formats  
Any device





# PI Server 2010 Waves

## PI Server 2010 (Q3 2010)

- Complete infrastructure:
  - Common asset model
  - Includes analytics, notifications, and health monitoring
  - New PI Web Services and PI JDBC data access tools

## PI Server 2010 R2 (H1 2011)

- New and faster analytics:
  - Faster, more scalable analytics and notifications
  - New PI for StreamInsight analytics tool
  - Asset-based data access

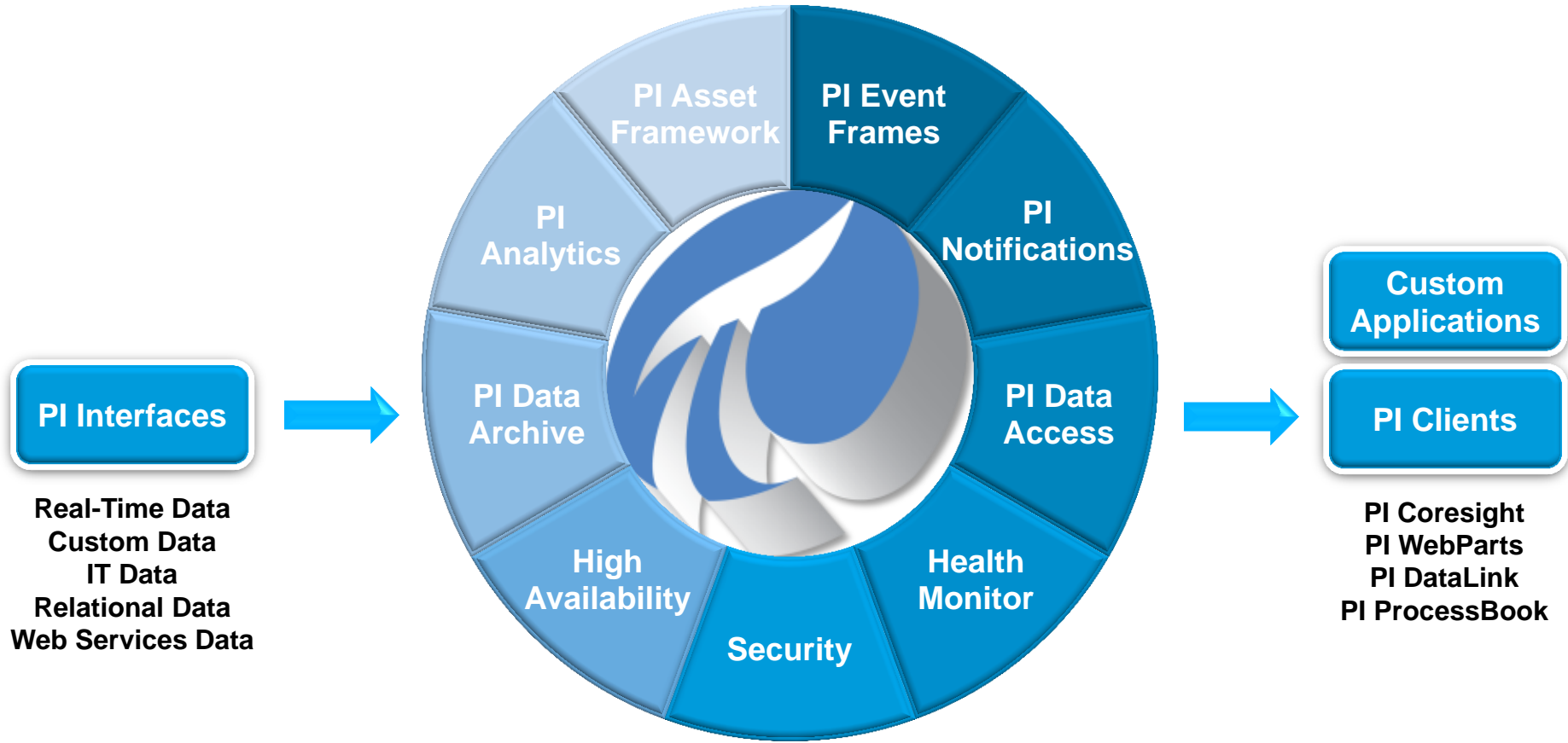
## PI Server 2010 R3 (Q4 2011)

- Better ways to find your data:
  - New PI Event Names
  - New PI Event Names
  - New PI Event Names

Releasing  
early next  
Week



# PI Server 2010 R3





# PI SERVER 2012



**BIGGER**

**BETTER**

**FASTER**



*Sneak Peek at... PI Server 2012*



# PI Server

## Sneak Peek at PI Server 2012

**Date:** Wednesday, November 30

**Time:** 9:30 – 11:15 a.m.

**Venue:** Napa [Track 4]

## Writing to High Availability PI Server

**Date:** Wednesday, November 30

**Time:** 11:30 a.m. – 12:30 p.m.

**Venue:** Telegraph Hill [Track 3]

## Applying Future Data in the PI System

**Date:** Thursday, December 1

**Time:** 9:30 – 11:15 a.m.

**Venue:** Pacific Heights [Track 1]



**Jay Lakumb**, *Product Manager*



**Denis Vacher**, *Development Lead*

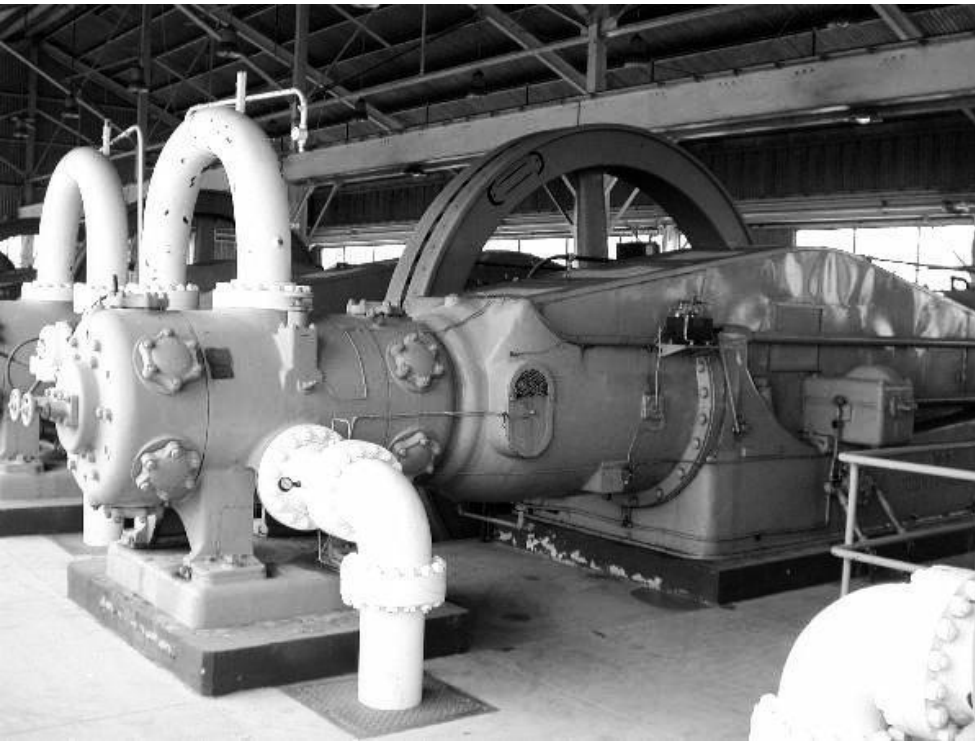




- Find all data by name, relationship, or usage
- Find important configurations such as analytics and displays
- Find work that you or colleagues have already completed
- Organize and Categorize data so it's easier to find next time
- Reference Data by **Assets** or **Events**

# PI AF Asset Centric PI Example

## Natural Gas Compressor



- RPM
- Fuel consumption rate
- Exhaust temperature
- Oxygen sensor

PI Tags

- Flow in
- Flow out
- Pressure differential

Calculations

- Last service date
- Service type
- Mfr documentation

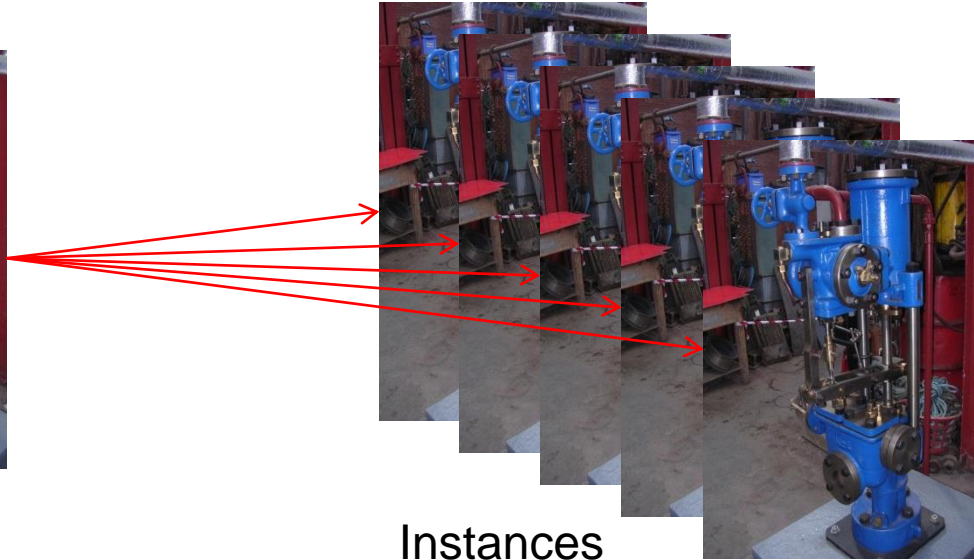
External Database

# PI AF Templates

- Element Templates can be created and reused for consistency – changes are propagated to each instance
- Elements can also be created without an Element Template for flexibility



Pump Template



Instances

# PI Asset Framework

## Migrating to an Asset Centric PI System

**Date:** Wednesday, November 30

**Time:** 9:30 – 11:15 a.m.

**Venue:** Pacific Heights [Track 1]

## Take Full Control of Your Asset Structure

**Date:** Wednesday, November 30

**Time:** 11:30 a.m. – 12:30 p.m.

**Venue:** Marina [Track 2]



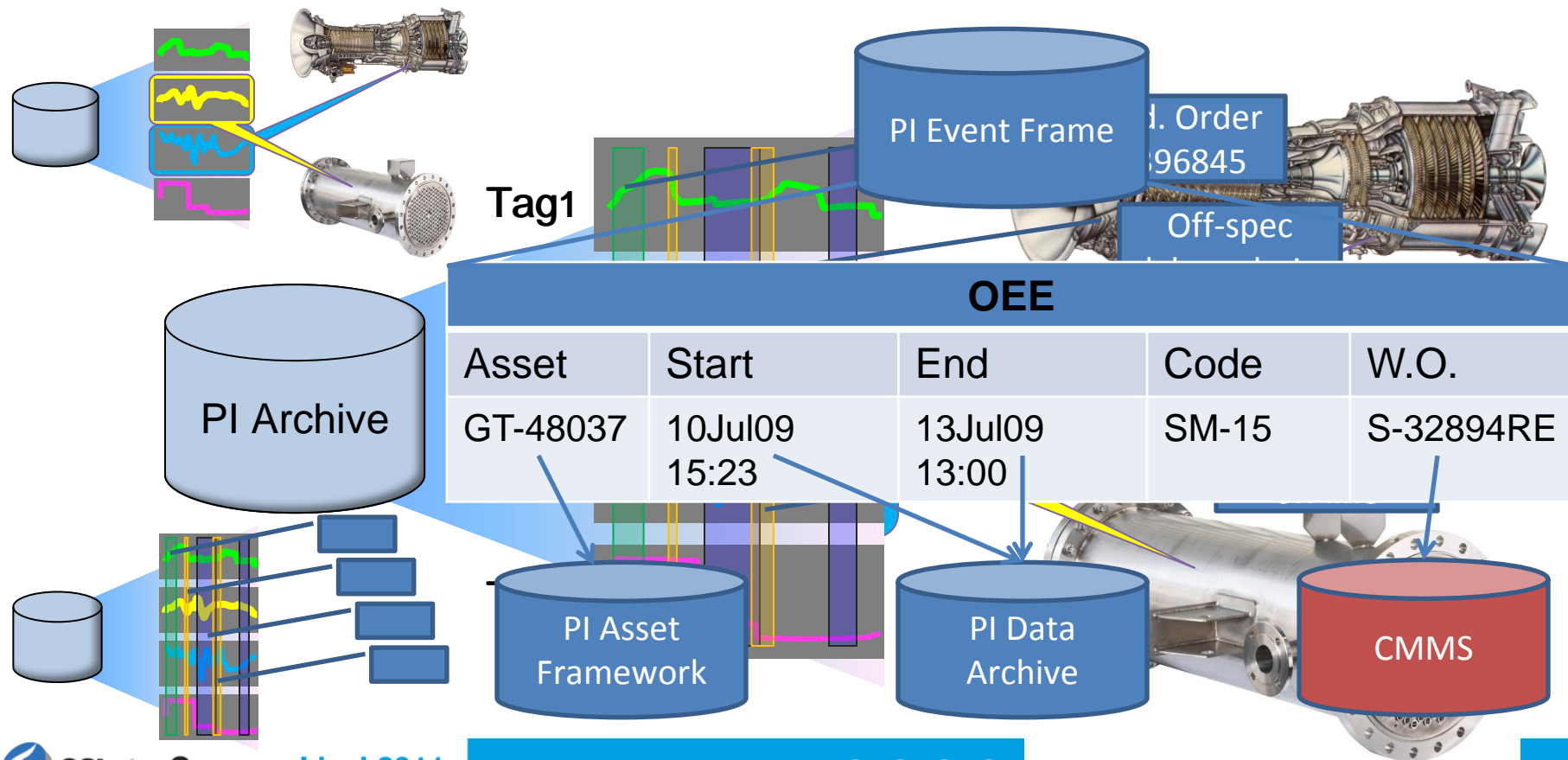
**Stephen Kwan**, *Product Manager*



**Chris Manhard**, *Development Lead*



# Asset Performance Monitoring and Diagnostics





# PI Event Frames

## PI Event Frames – Working with Your Data by Events *(Repeat Event)*

**Date:** Wednesday, November 30

**Time:** 2:15 – 4:00 p.m.

**Venue:** Pacific Heights [Track 1]

**Date:** Thursday, December 30

**Time:** 11:30 a.m. – 12:30 p.m.

**Venue:** Telegraph Hill [Track 3]



**Todd Brown**, *Product Manager*



**Chris Nelson**, *Development Lead*



# Interface Themes

- High Speed
- Meta Data, Auto Configuration
- High Availability
- Buffering
- Proactively built—let us know if you have a data source in need



# PI Interfaces

## Is All That Data You Wanted to Gather Already at Your Fingertips?

**Date:** Thursday, December 1

**Time:** 9:30 – 11:15 a.m.

**Venue:** Marina [Track 2]



**Chris Coen, Product Manager**



**Julie Zeilenga, Development Lead**



***Dwaine Mougeotte, Technical Architect***



***Erwin Gove, Solution Architect***



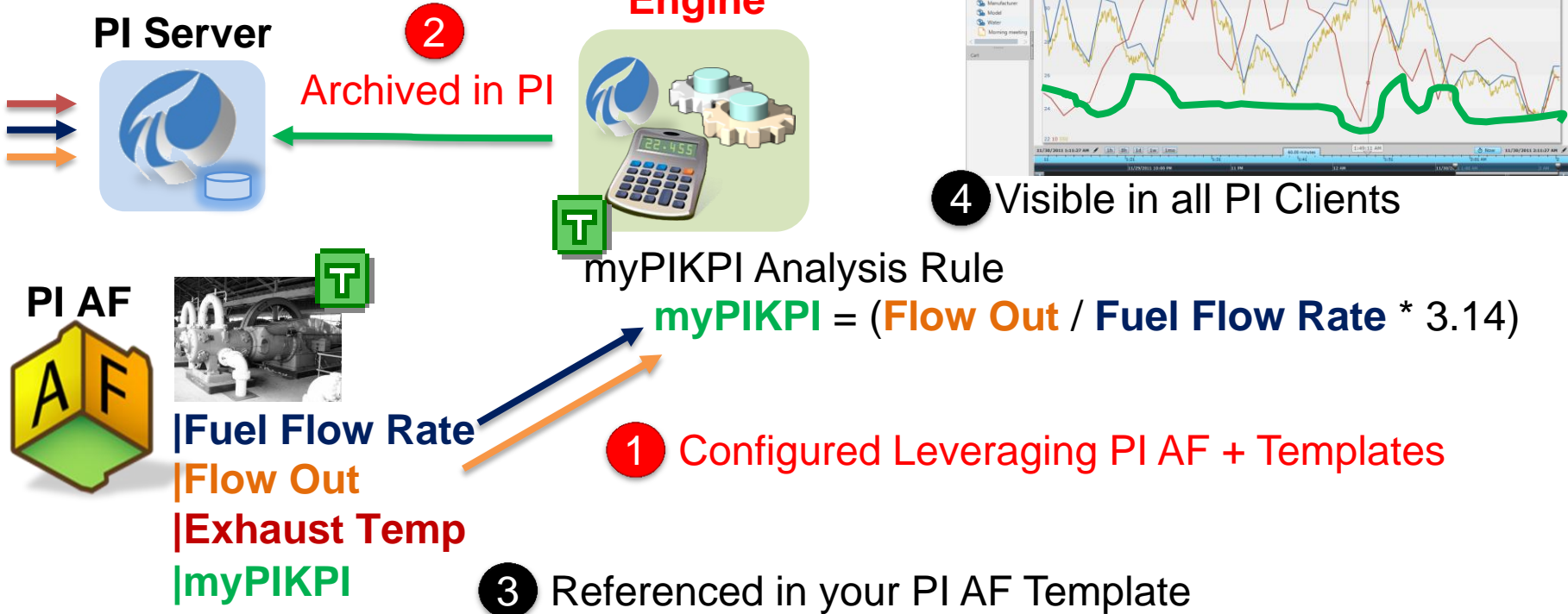
# PI AF Calculation Engine - Goals

- Majority of your analytics through configuration
- Rich Configuration in PI AF
  - Merge of PE and Formula DR syntax
  - Configuring rollup calculations
- OSIsoft takes care of
  - Scheduling
  - Dependencies
  - Writing results to the PI System
- Very Large Scale
  - Improvements in data access
  - OSIsoft managed scale-out
  - Driven from Templates in PI AF – easy replication



# PI AF Calculation Engine: Write to PI Tags

PI Interfaces



# PI AF Calculation Engine: Create Event Frames

PI Interfaces

PI Server



PI AF Calc  
Engine



myEF Analysis Rule

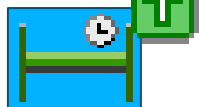
2 Archived in AF  $\text{myEF} = (\text{myPIKPI} > \text{LIMIT})$

1 Configured Leveraging PI AF + Templates

PI AF



Fuel Flow Rate  
Flow Out  
Exhaust Temp  
myPIKPI



3 Visible in all PI Clients



# PI Analytics and PI Notifications

## Selecting and Implementing the Right PI System Analytical Tool for the Job – Part I

**Date:** Thursday, December 1

**Time:** 11:30 a.m. – 12:30 p.m.

**Venue:** Marina [Track 2]

## PI Notifications – Create, Deploy and Receive Notifications!

**Date:** Thursday, December 1

**Time:** 2:15 – 4:00 p.m.

**Venue:** Marina [Track 2]

## Selecting and Implementing the Right PI System Analytical Tool for the Job – Part II

**Date:** Thursday, December 1

**Time:** 2:15 – 4:00 p.m.

**Venue:** Telegraph Hill [Track 3]



**Glenn Moffett**, *Product Manager*



**Beth McNeill**, *Development Lead*





# Find - PI System Search

- Optimized Search Engine for the whole PI System
  - And perhaps related systems
- Indexed for high performance
- Weighted / Ranked Results
  - Helps you find things more easily
- Can crawl many PI Servers and machines
- Includes client artifacts
  - PI ProcessBook Displays, PI Coresight Displays
- Shared by all PI System products and subsystems
- Shared User Experience





SQL Family

Web Services

OPC Servers

OSIsoft SDKs

AVAILABLE  
INTEROPERABLE  
SECURE  
ENTERPRISE  
SERVICES



ENTERPRISE-WIDE VISIBILITY



# PI Data Access Futures → *PI Integration Services*

- Event Frame support to PI OLEDB Enterprise, PI JDBC, and PI Web Services
- Single PI System SDK
- REST based Web Services (complement to existing SOAP)
- More focus on *integration* with many systems
  - Business Analytics (SQL Server and other data warehouses)
  - ERP (SAP HANA)
  - Maintenance (Maximo)
- Higher speed for all access methods and bulk queries – ability to query many data streams (millions) for values in a particular timeframe



# PI Data Access

## Creating Operational Intelligence Solutions Using PowerPivot, OLEDB Enterprise and SQL Server Denali

**Date:** Wednesday, November 30

**Time:** 9:30 – 11:15 a.m.

**Venue:** Telegraph Hill [Track 3]

## PI Data Access SQL Tools – Give Your Business Visibility into Your Operations

**Date:** Wednesday, November 30

**Time:** 11:30 a.m. – 12:30 p.m.

**Venue:** Pacific Heights [Track 1]

## SAP and Maximo Integration Using Web Services and PI Notifications

**Date:** Wednesday, November 30

**Time:** 4:15 – 6:00 p.m.

**Venue:** Pacific Heights [Track 1]

## PI Web Services – PI System Data Where You Want It to Be

**Date:** Thursday, December 1

**Time:** 11:30 a.m. – 12:30 p.m.

**Venue:** Pacific Heights [Track 1]



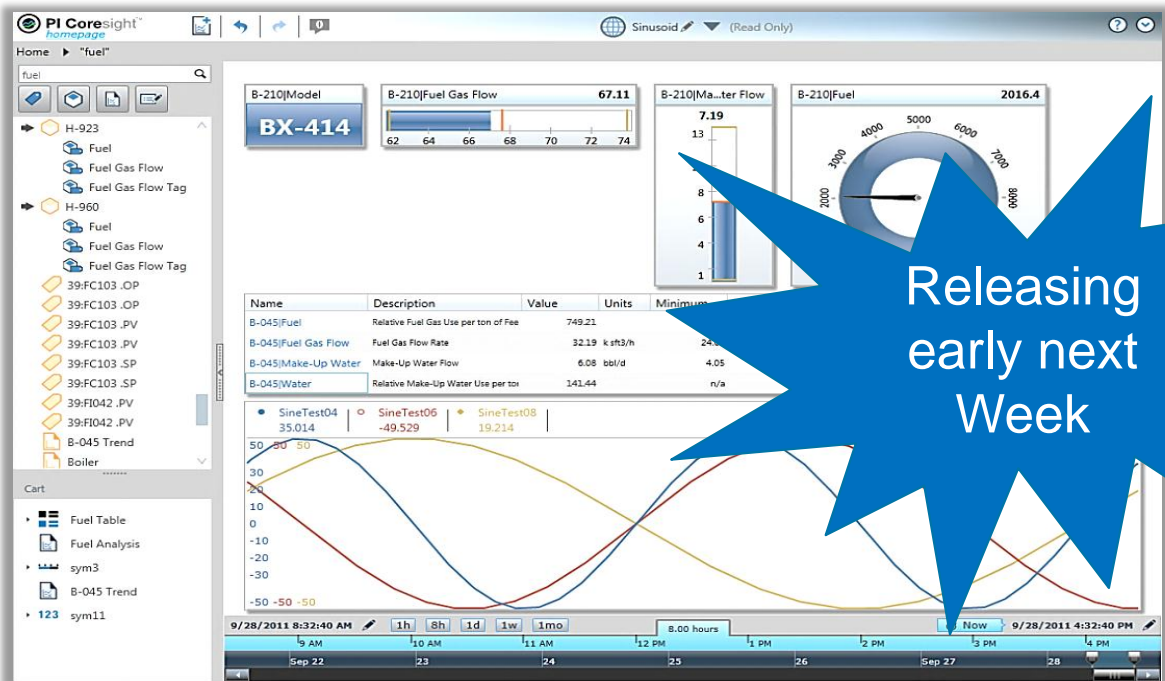
**Steve Pilon & Gopal Gopalkrishnan**  
*Product Managers*



**Alisher Maksumov, Bodo Bachmann, Steve Mohr & Charlie Henze**  
*Development Leads*



# What is PI Coresight?



A web-based product for:

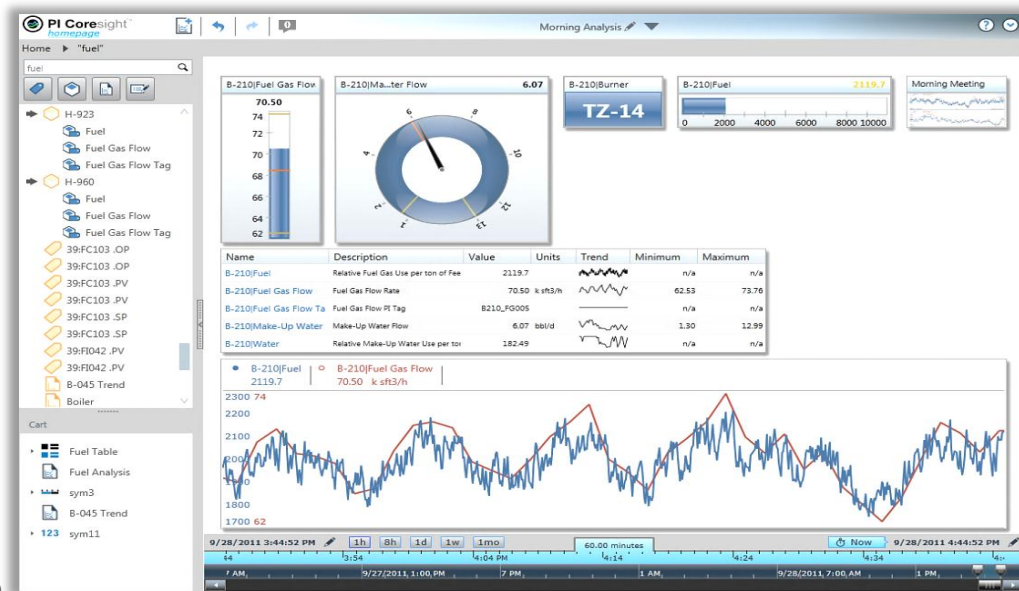
Releasing early next Week

- Ad hoc analysis
- Quick investigation
- Collaboration
- Rapid deployment



# Key Features of PI Coresight

- **Search the PI System (including PI AF) and displays together**
  - No need to understand tag names
- **Very fast display creation**
  - Save time
- **Intuitive user interface**
  - Can be used by a wide range of users
- **Easily share displays**
  - Leverage insights across the organization
- **Easy to deploy and maintain**
  - IT-friendly - always have the current version
- **Anywhere, Anytime**
  - All you need is a web browser

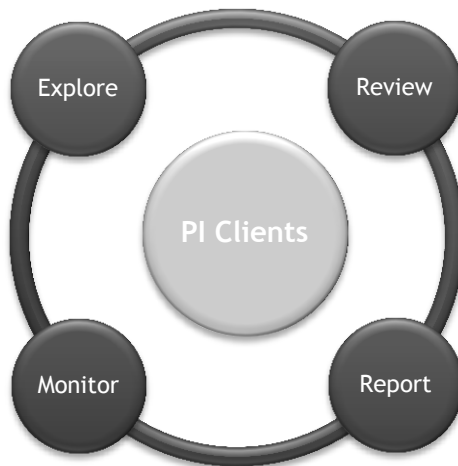


# Where Does PI Coresight Fit?

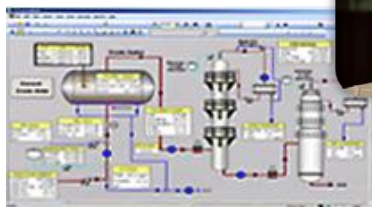
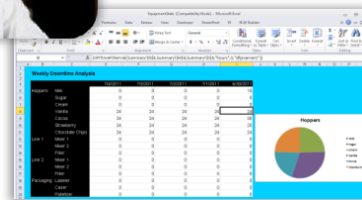
**PI Coresight:**  
*Ad Hoc Analysis & Collaboration*



**PI WebParts:** Composite Apps, Shared broadly



**PI DataLink:**  
Reporting and table based analytics in Microsoft Excel



**PI ProcessBook:**  
Display authoring and Process monitoring





# PI Coresight (Visualization)

## PI Coresight – A First Look Under the Hood (Installation, Configuration and Distinctive Features)

**Date:** Wednesday, November 30

**Time:** 2:15 – 4:00 p.m.

**Venue:** Marina [Track 2]



**Tom LeBay**, *Product Manager*



**Eugene Resnick**, *Development Lead*



# PI Clients – the 2012 Wave

- PI ProcessBook 2012
- PI DataLink 2012
  - PI AF Support – use any Element->Attribute in appropriate functions
  - PI AF and Tag Search
  - 64-Bit Office support
- PI Coresight 2012 – likely multiple releases
- PI WebParts 2012
  - Adobe SVG Viewer replaced with Microsoft Silverlight
    - Nicer Graphics, Faster, Multiple Skins
  - PI System Search and Browse
  - Allow separate SharePoint visualization server



# Visualization / User Interaction – Future

- PI Coresight – regular releases (~6 months)
  - Improved PI AF Integration – Template Displays
  - Event Frame integration in search, timebar
  - Built-In Trending Analytics
  - Additional graphics – XY Plot
- Continue to leverage Microsoft Office and SharePoint
- ***Mobility – for PI Coresight and beyond***
  - Notifications
  - Trend Visualization
  - Tables with Analytics



# PI ProessBook (Visualization)

## PI Client Scripting – What Have You Done for Me Lately?

**Date:** Wednesday, November 30

**Time:** 9:30 – 11:15 a.m.

**Venue:** Marina [Track 2]



**Laurie Dieffenbach**, *Product Manager*



**Andre Downey**, *Development Lead*



# PI DataLink (Visualization)

## Asset Centric PI DataLink

**Date:** Wednesday, November 30

**Time:** 4:15 – 6:00 p.m.

**Venue:** Marina [Track 2]



**Matt Ziegler**, *Product Manager*



**Jason King**, *Development Lead*



# PI WebParts (Visualization)

## PI WebParts 2012 – More Value, Less Time and Less Code

**Date:** Wednesday, November 30

**Time:** 9:30 – 11:15 a.m.

**Venue:** Telegraph Hill [Track 3]



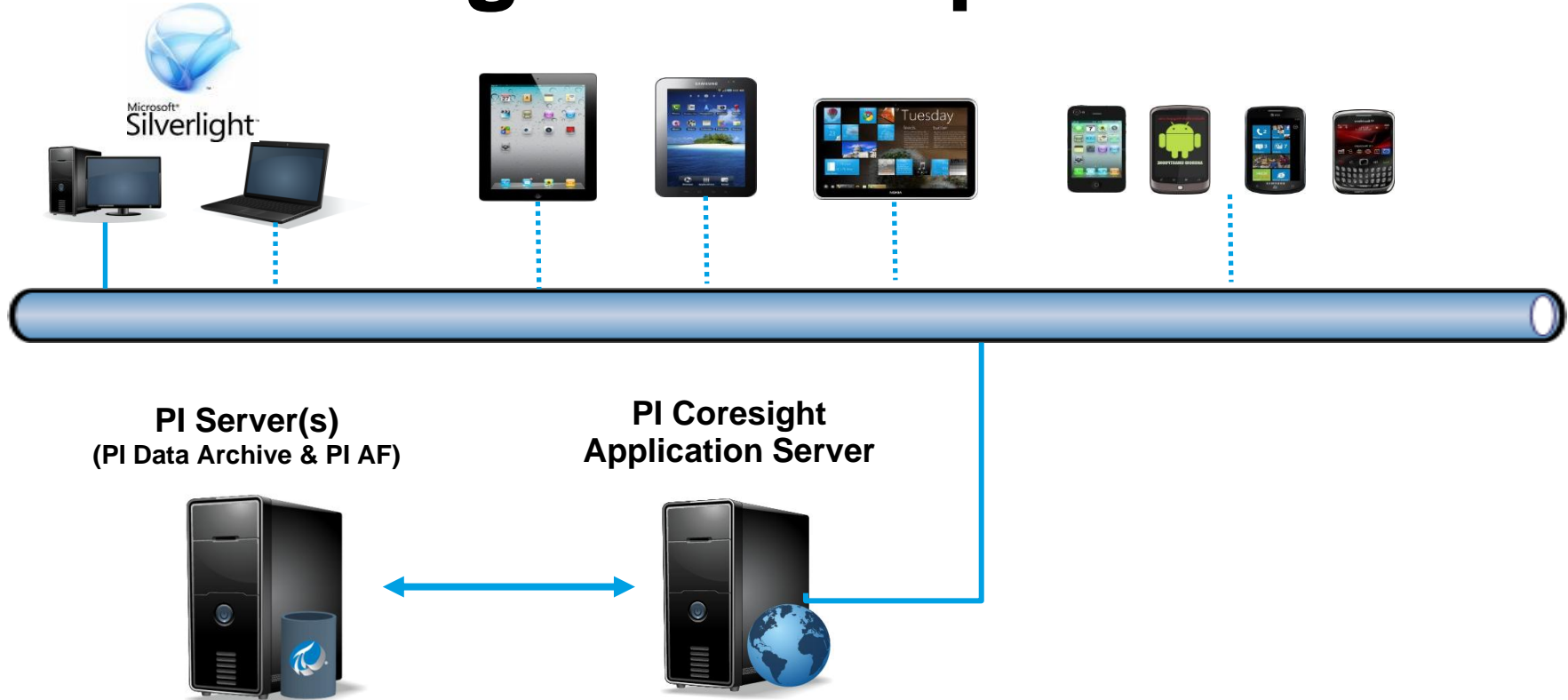
**Mike Wood**, *Product Manager*



**Paul Kaiser**, *Development Lead*

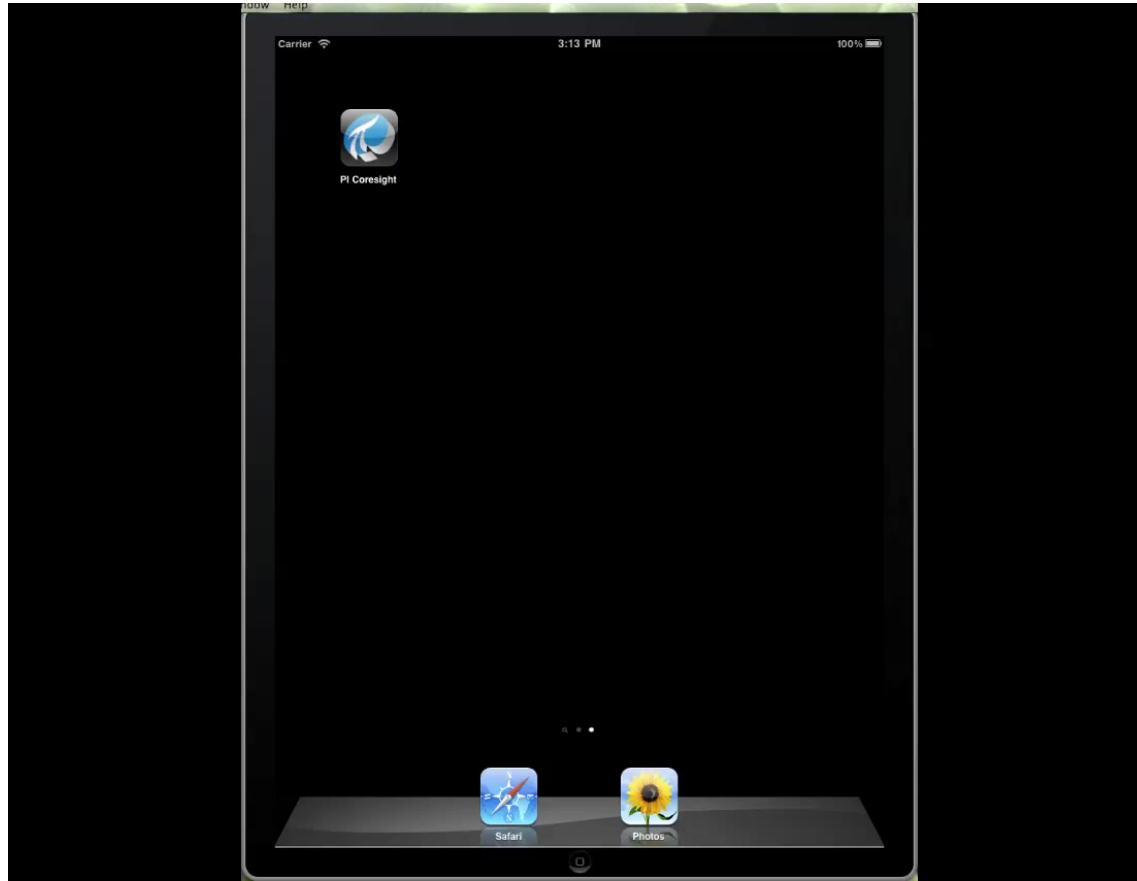


# PI Coresight – Multiple Clients

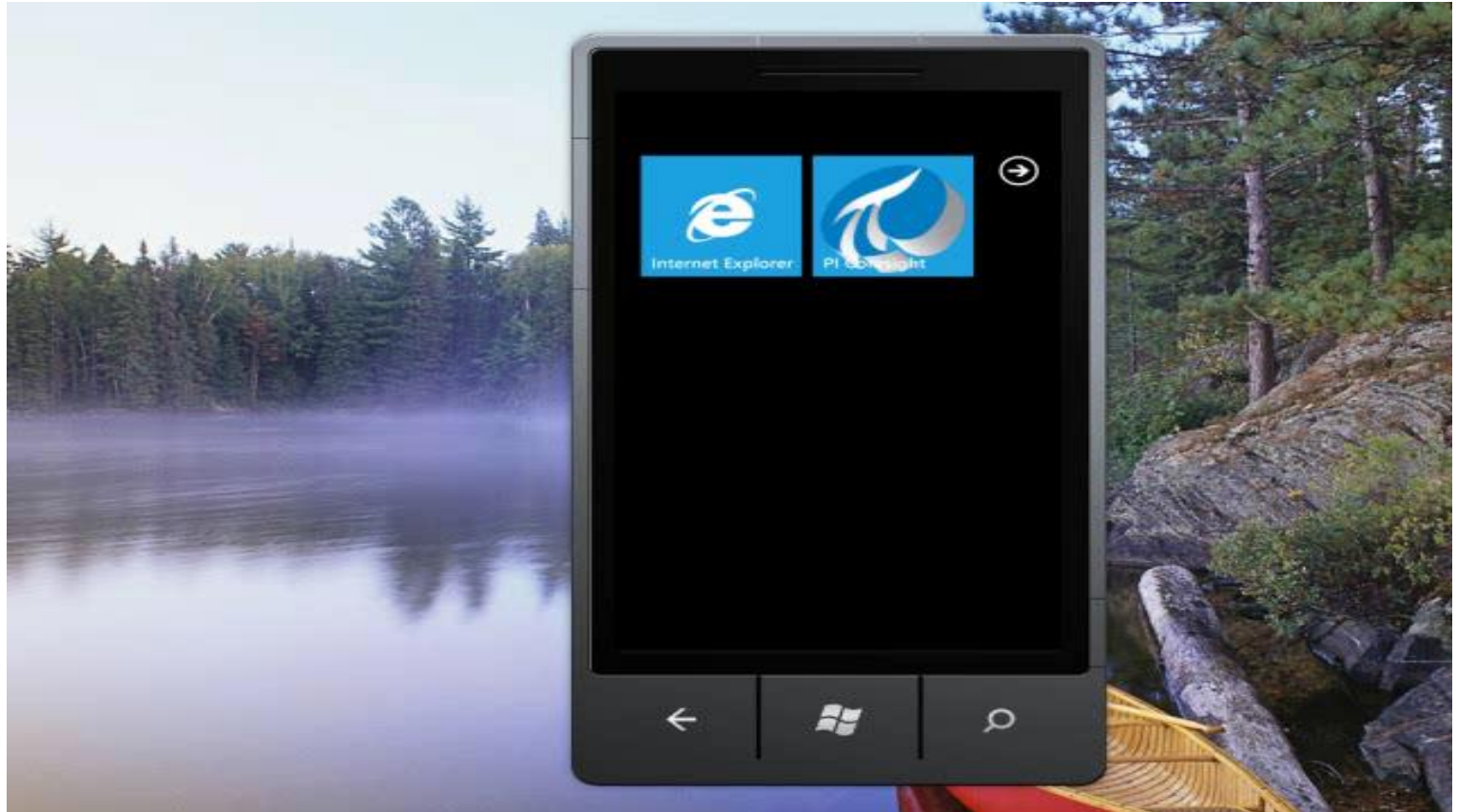




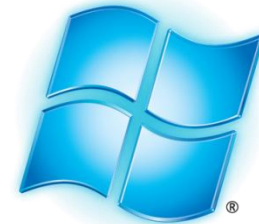
# iPad Demo



# PI Coresight on WP7 Demo



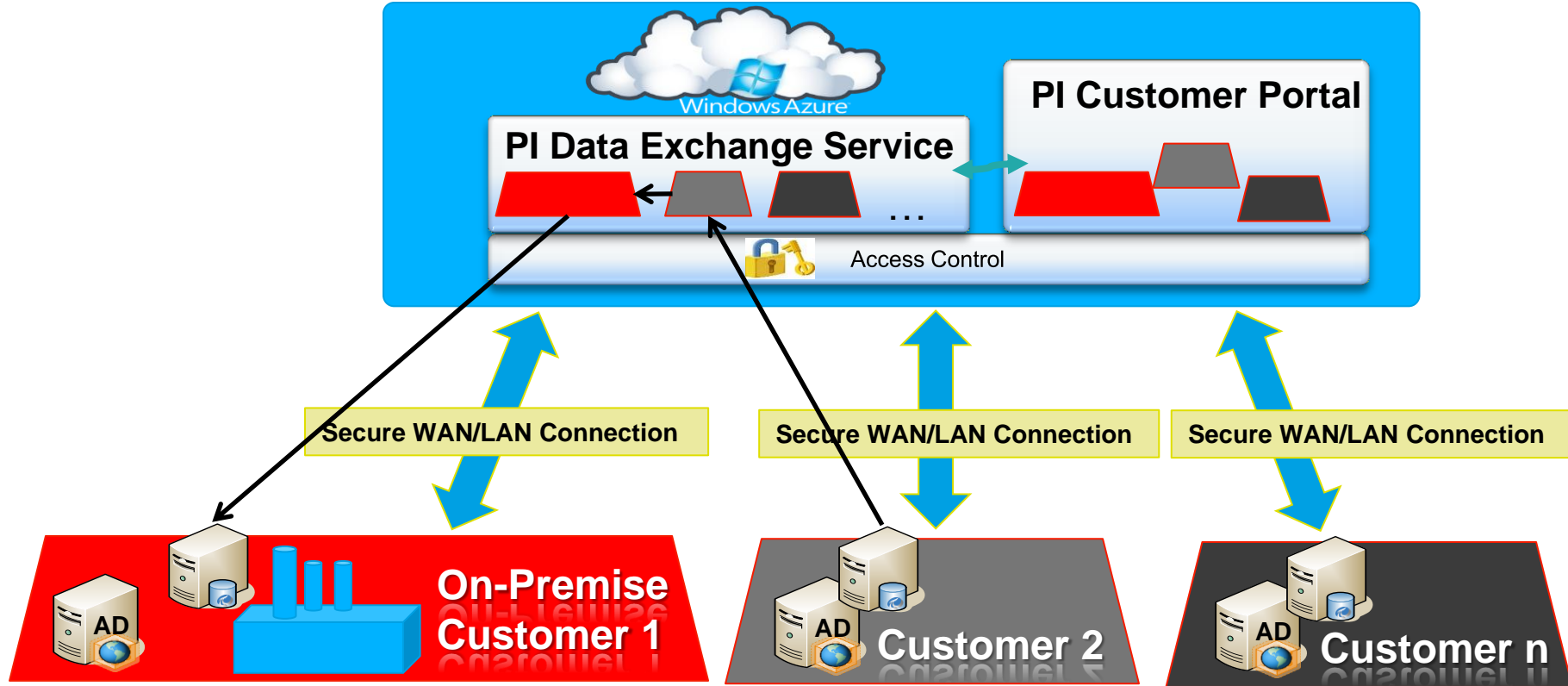
# Evolution of Operating Systems



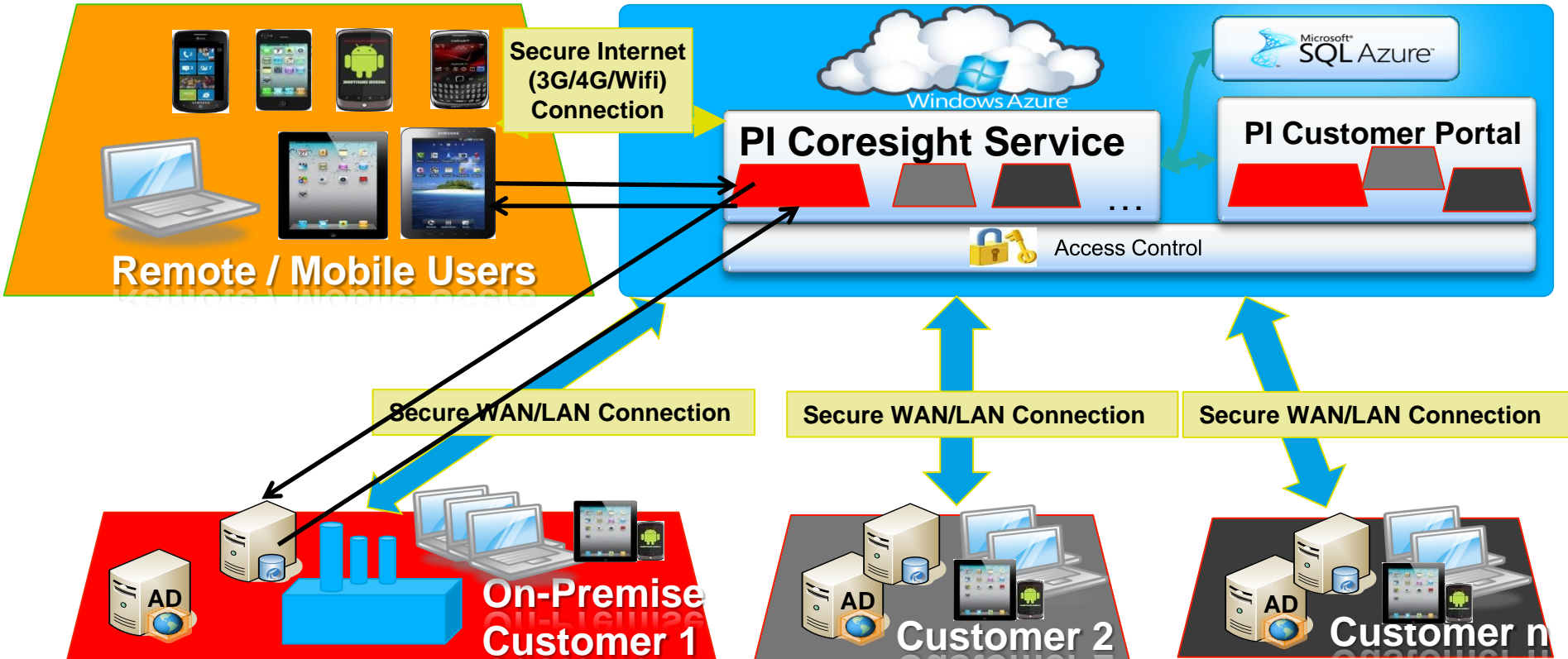
## Windows Azure™



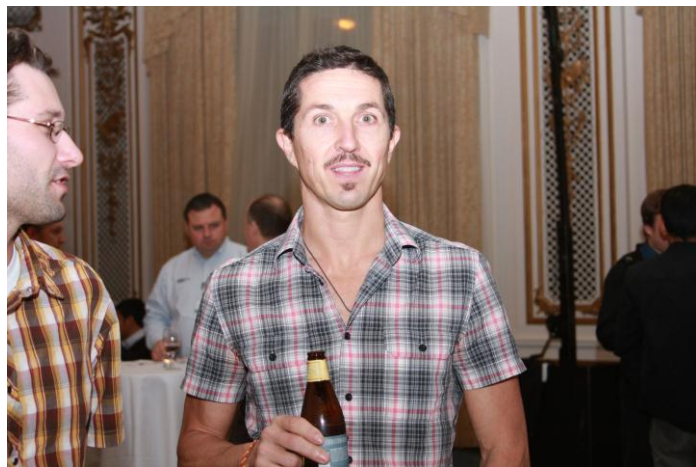
# PI Data Exchange Service



# PI Coresight Service with Mobility



# Cloud



**Laurent Garrigues**, *Product Manager*



**Richard Beeson**, *Engineering Director*



# Engineering Leadership Team



Ray Hall



Ray Verhoeff



Brian Bostwick



Richard Beeson





# Thank you

