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A P A C

I N D I A

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WESTIN GARDEN CITY,
MUMBAI



PI System Roadmap

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Agenda

- Achievements since 2010
- Current Development Efforts



Achievements since 2010

- Servers
- Analytics
- Clients
- Data Access



Achievements since 2010

PI 64-Bit Products

- Servers:
 - PI Server 2010
 - PI SMT 2010 SP1
 - PI Notifications 2010 R2
 - PI ACE 2010 R2

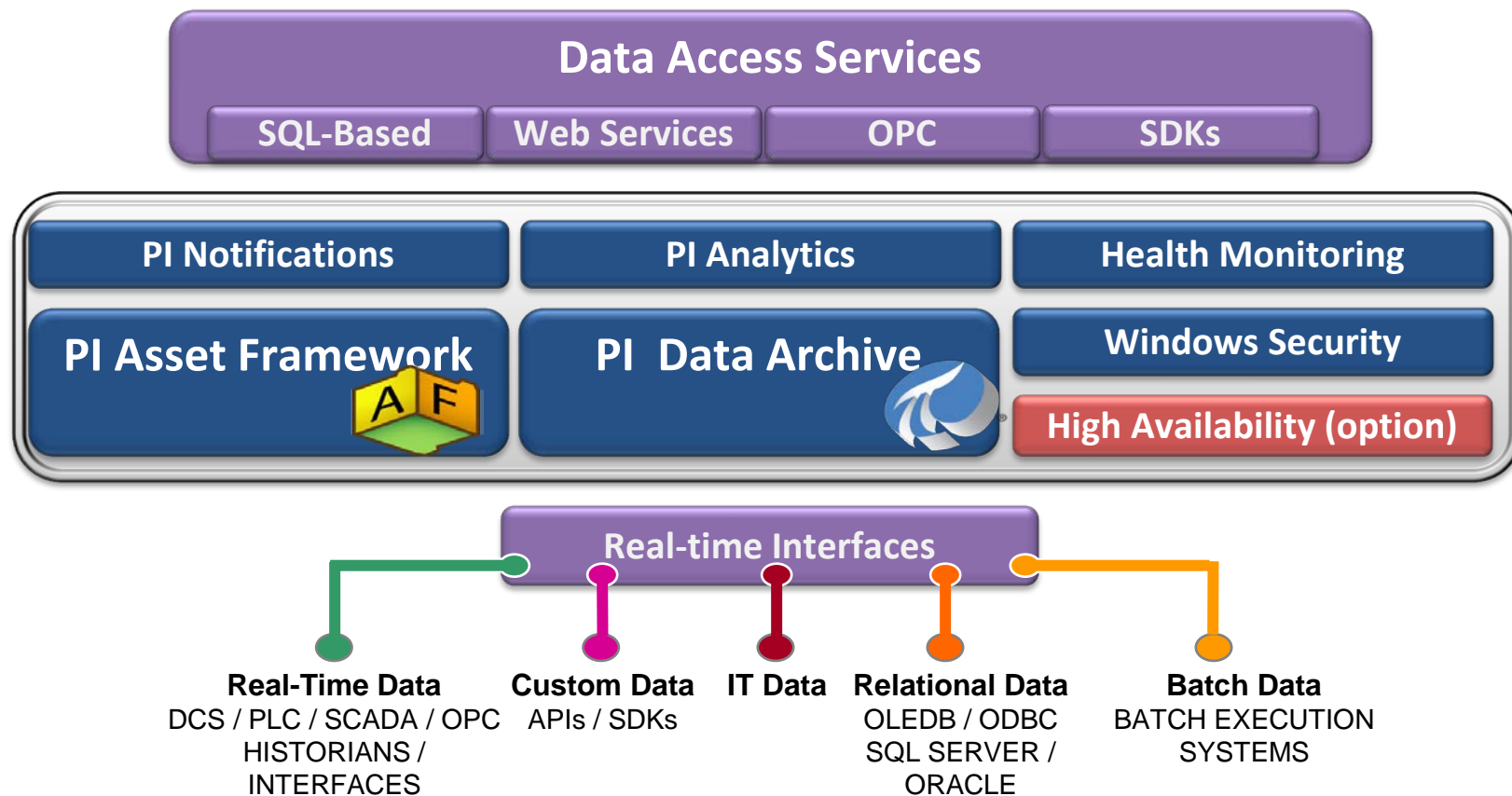


Achievements since 2010

- Data Access
 - PI SDK
 - PI OLE DB 3.3
 - PI OLE DB Enterprise 2010
 - PI Web Services 2010
- Clients
 - PI WebParts 2010 R2
 - PI Datalink 2010 SP1
 - PI DataLink for Excel Services 2010

Achievements since 2010

PI Server 2010



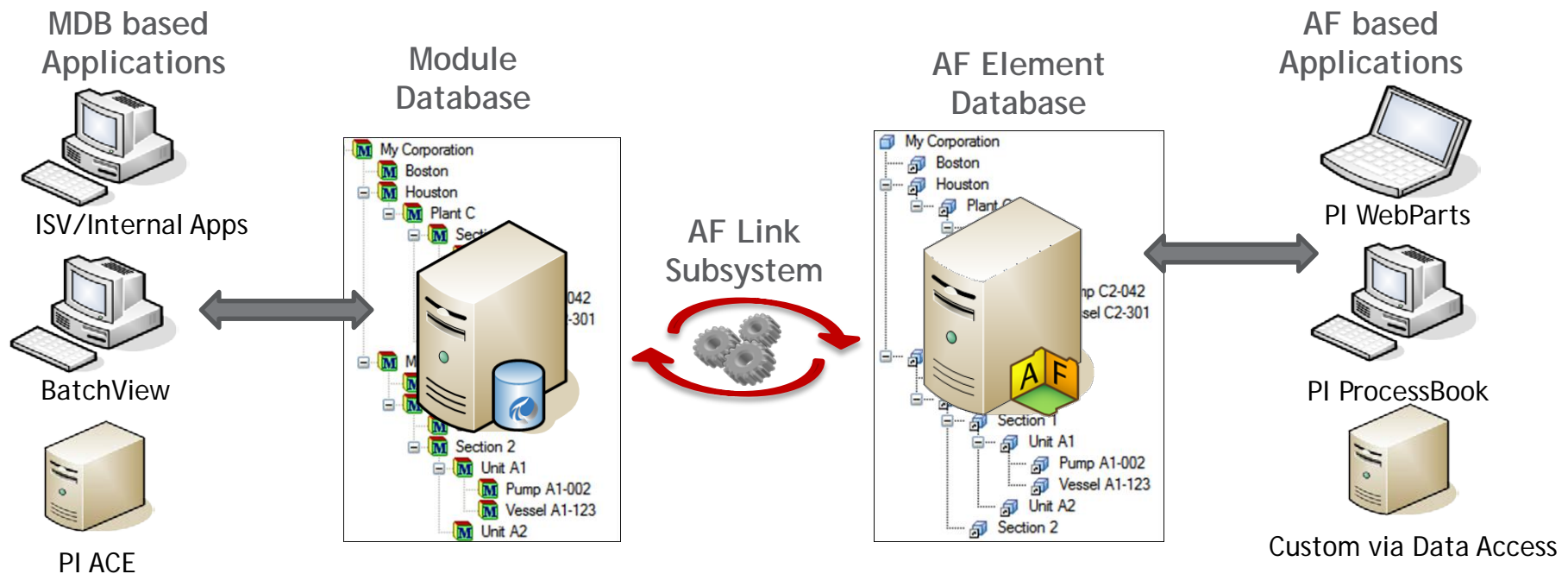


Achievements since 2010

- **PI Server 2010**
 - AF Link Subsystem
 - AF Scaling and Performance
 - AF Builder

Achievements since 2010

- **Migrating PI Module DB to PI Asset Framework (AF)**





Achievements since 2010

- **Benefits of Migrating PI Module DB to PI Asset Framework (AF)**
 - Increased number of objects supported
 - More than 3x faster in read speed
 - Increased insertion rate
 - Faster search time



Achievements since 2010

- **PI Analytics**
 - PI Notifications 2010 R2
 - PI ACE 2010 R2
 - PI for StreamInsight



Achievements since 2010

- **PI Notifications 2010 R2**
 - Message formatting
 - Option to control tag usage
 - 64-bit



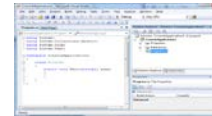
Achievements since 2010

- **PI ACE 2010 R2**
 - PI ACE Schedulers running on multiple machines
 - Higher scale. Faster startup.
 - Visual Studio 2005, 2008 & 2010
 - Both 32-bit and 64-bit

Achievements since 2010

- PI System and Microsoft StreamInsight

StreamInsight Application Development



.NET
C#
LINQ

StreamInsight Application at Runtime



Event sources



PI Server



Stock ticker, news feeds



PI Interface (future)

1

Input
Adapters

2

StreamInsight Engine

Standing Queries

Query
Logic

Query
Logic

Query
Logic

3

Output
Adapters

4

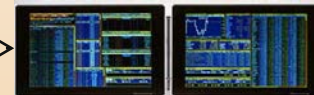
Event targets



PI Server



Pagers,
Mobile



Trading stations

PI for StreamInsight

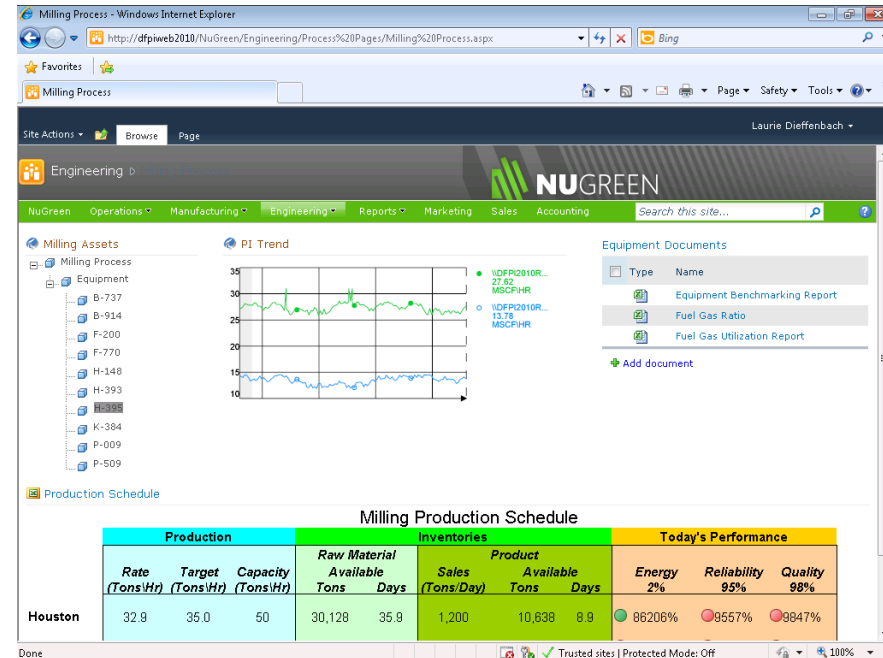


Achievements since 2010

- **PI Clients**
 - PI WebParts 2010
 - PI DataLink 2010 SP1

Achievements since 2010

- **PI WebParts 2010 (& R2)**
 - Support for AF Data Reference types
 - All time series data
 - Formula
 - Table Lookup
 - Custom





Achievements since 2010

- **PI DataLink 2010**
- Support for Microsoft Office 2010
- Fully internationalized
 - 8 languages
- PI DataLink Server 2010
 - Support for SharePoint 2010
 - 64-bit

Achievements since 2010



- **PI Data Access**
 - PI OLE DB Enterprise 2010
 - PI JDBC 2010
 - PI Web Services 2010



Achievements since 2010

- **PI OLE DB Enterprise 2010 (& R2)**
- Access to AF structures
- Data access to AF Attribute data
 - Snapshots, compressed, interpolated
 - With Unit of Measure conversions



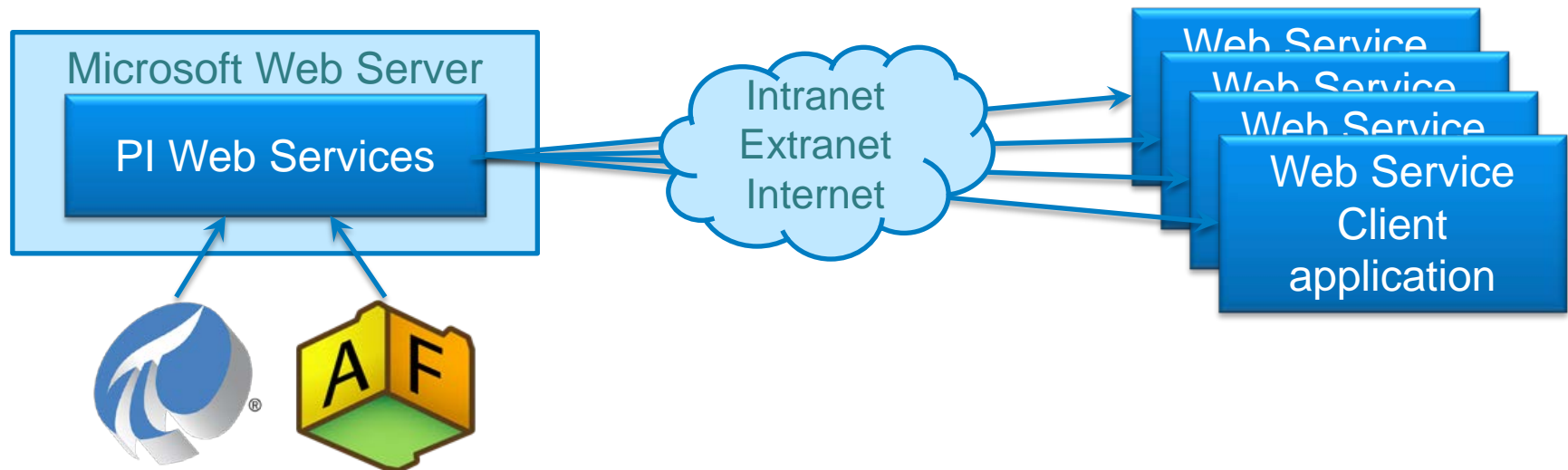
Achievements since 2010

- **PI JDBC 2010 (& R2)**
- Access to AF
- Compliant with JDBC 4.0 API
- Bulk insert
- JNDI Directory Service support
 - JDBC 2.0 Optional Package

Achievements since 2010

- **PI Web Services**

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





Achievements since 2010

- **PI Web Services 2010 (& R2)**
- Support for PI System time series data:
 - Both PI tag & AF Attribute paths
 - Snapshots, compressed, interpolated, plot, summaries
 - Performance Equations
- Basic PI tag search



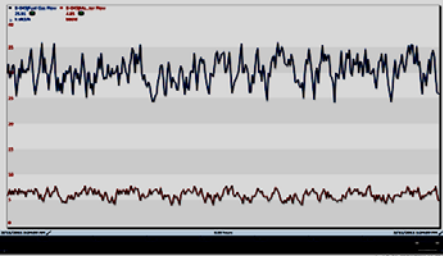
Achievements since 2010

- **PI Interfaces**
- 43 Interface Releases in 2010
- First AMI Interface Released
- Modbus Serial and Modbus Ethernet Interfaces Completely Rewritten
- *Improvement in message logging*



Current Development Efforts

2011 Development Efforts



Visualization

The fastest, easiest way to visualize PI data



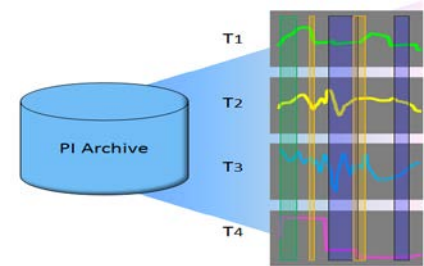
Scaling

More data
Faster queries
More robust



Analytics

Manage large numbers of calculations



Event Frames

Identify and use important events in your data

Also significant work in Asset-PI, Security, Interfaces, Data Access



Current Development Efforts - Interfaces

- **Interfaces**
- Interface Development
 - IEC 61850
 - OPC .NET
 - Web Services
 - IPMI
 - Modular Mining
 - SAFER Weather Station
 - Thermotron 8800 Controller



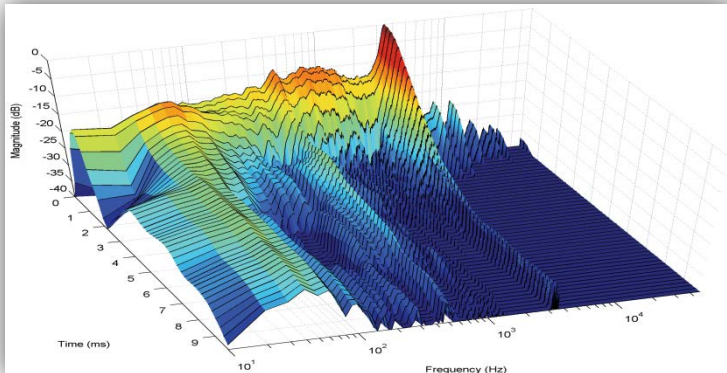
Current Development Efforts – PI Server

PI Server Security

- Goal
 - Your trusted source of real time data
- How
 - Continually improve the PI Infrastructure
 - Dedicated Cyber Security Manager
- Work Underway
 - Engagement with Idaho National Labs
 - Security Reviews with Microsoft
 - Designed-In on new efforts

Current Development Efforts – PI Server

- More use of the PI System



Synchro Phasors

4,800 data streams at 60Hz

3 years online

Unique events: 27 Trillion

Estimated data size: 270TB

270TB



Automated Metering

150M data streams, 15 min

7 years online

Unique events: 16 Trillion

Estimated data size: 200TB

200TB



Current Development Efforts - Analytics

Analytics Product Suite

PI Analytics	
Configuration	Programming
Performance Equations AF Configured Analytics	PI Advanced Computing Engine (PI ACE)
Totalizers	Microsoft StreamInsight & PI for StreamInsight
Statistical Quality Control	
PI AF formula data reference	PI AF custom data reference



Current Development Efforts - Analytics

- Rich Configuration in AF
 - Merge of PE and Formula DR syntax
 - Configuring rollup calculations
- OSIsoft takes care of
 - Scheduling
 - Dependencies
 - Writing results to PI
- Very Large Scale
 - Improvements in data access
 - OSIsoft managed scale-out

Current Development Efforts - Analytics

Analytics – Simple Configuration

- Equation defined on an attribute or a template

The screenshot shows a software window titled "Analysis" with a tabbed interface. The "Performance Equation" tab is active. The "Name" field is "LMTD Calculation" and the "Target" field is "HeatExchanger".

Analysis Rule

Performance Equation

Buttons: Add, Evaluate

Function menu: Ceiling, Char, Compare, Concat

Input Parameters

Parameter	Description
ColdIn	. Shell Side Inlet Temperature; UOM=°C
ColdOut	. Shell Side Outlet Temperature; UOM=°C
HotIn	. Tube Side Inlet Temperature; UOM=°C
HotOut	. Tube Side Outlet Temperature; UOM=°C

Output Parameters

Parameter	Value
LMTD	%Server% %Element%. %Attribute%

Schedule

Hourly

Frequency=3600



Current Development Efforts – Data Access

- PI Web Services
 - Data by exception
 - Event Frames
- PI OLEDB Enterprise & PI JDBC
 - Event Frames
- PI SDK
 - Buffering of new data and edits
 - Fanning to all members of an HA Collective
 - Windows Security



Current Development Efforts – Data Access

AF SDK

- Rich Data Access
 - Full featured
 - Bulk operations
 - Calculations
 - Updates
- .NET exposure



Current Development Efforts - Visualization

PI DataLink

- AF attribute paths
- PI tag paths
- Search
- Units of Measure
- 64-bit Excel Support



Current Development Efforts - Visualization

The fastest, easiest way to visualize PI System data

- See our technical presentation



Current Development Efforts – Event Framing

- Any event in your process
 - Such as a downtime or incident
- Automatically identify important events
 - Based upon patterns in your PI data
- Search these events
- Visualize and analyze them
 - To improve your process
- *Imagine:*
 - A simple downtime tracking tool
 - Configuration, no programming

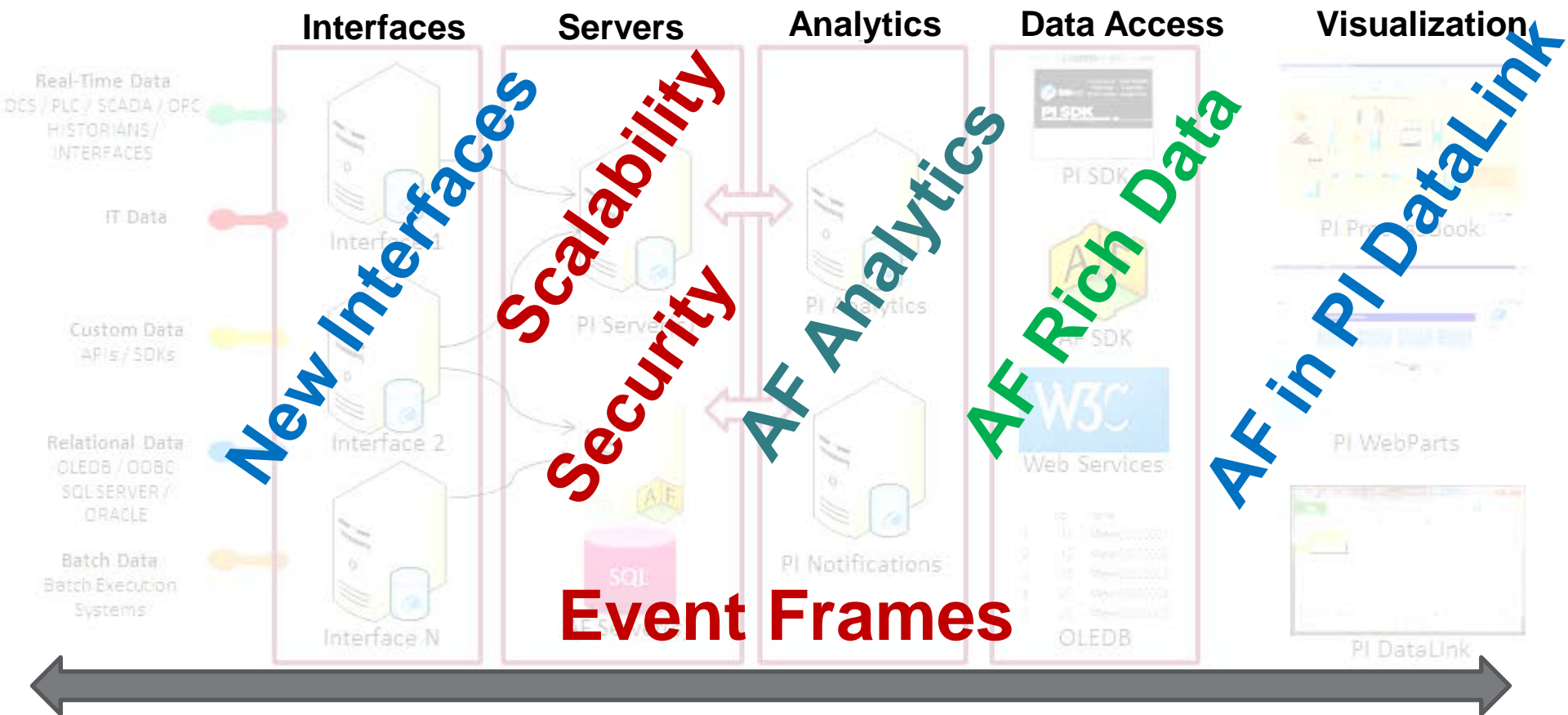


Current Development Efforts – Event Framing

Infrastructure changes

- Interfaces
 - Batch Interfaces
- Servers
 - **Events Frames stored in AF Server**
 - Batch to EF transition
- Analytics
 - Generating Event Frame on patterns
- Data Access
 - **AF SDK**
 - **PI Web Services**
 - **PI OLEDB Enterprise & PI JDBC**
- Clients
 - PI DataLink
 - PI WebParts
 - PI ProcessBook
 - New Visualization

Current Development Efforts - Summary





Summary



Questions



Thank you