



# The Big Data and Business Intelligence Talk

Presented by Matt Ziegler, Product Manager

# Overview

- Recap earlier sessions in case you missed out
- Extended Demo & Architecture Review
  - TechCon Version
- Early Adopter Customer Success Stories

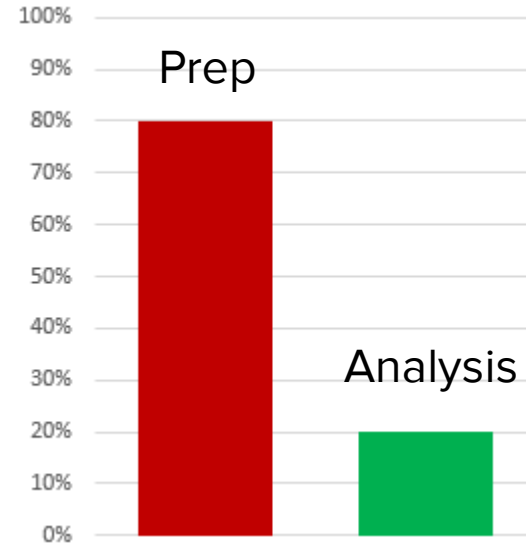
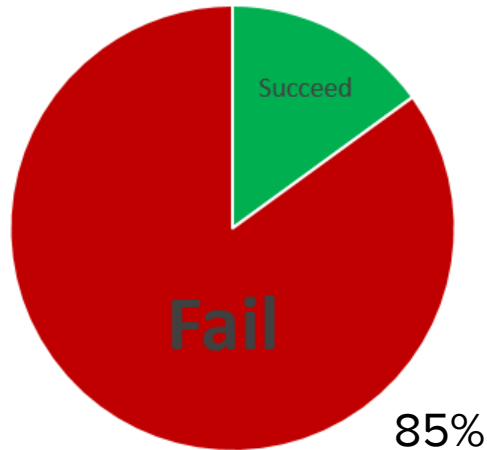
# PI Integrators

PI Integrators reduce the complexity of analyzing real world industrial data

*All PI System data delivered on **your terms**, in **your language**, to the **tools you use**, and to the people that can make a difference.*

# Big Expectations

64% of large enterprises plan to implement a big data project. 85% will be unsuccessful.

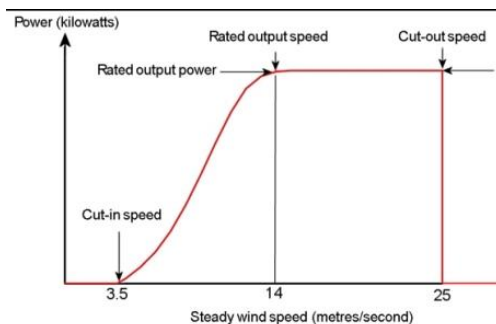


Data cleansing and preparation tasks can take 50-80% of the development time and cost.

<https://hbr.org/2014/04/the-sexiest-job-of-the-21st-century-is-tedious-and-that-needs-to-change/>



Downtime events



Startup Phases



Fleet Assets  
and Different  
Brands



Communications  
and incomplete data



Plant turn-around

# Business Intelligence for the Physical World

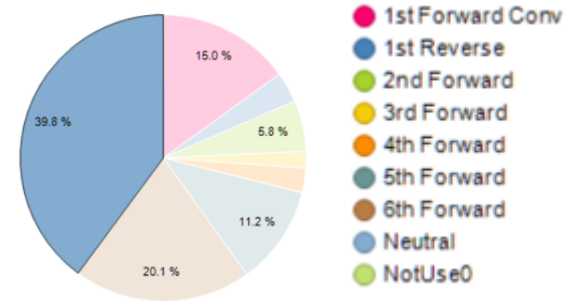


## 3 Contexts / 3 Perspectives

- Time-series – Time Focus
- Assets – Equipment Focus
- Events – Event Focus

PI  
Integrators

## Gear Select by Operator




2015-04-23 15:59:50	23.6547420812366	23.2147636153275	28.3663721651326
2015-04-23 16:00:00	23.6547420812366	23.2147636153275	28.3663721651326
2015-04-23 16:00:10	23.6547420812366	23.2147636153275	28.3663721651326
2015-04-23 16:00:20	23.6547420812366	23.2147636153275	28.3663721651326
2015-04-23 16:00:30	23.6547420812366	23.2147636153275	28.3663721651326
2015-04-23 16:00:40	23.6547420812366	23.2147636153275	28.3663721651326
2015-04-23 16:00:50	23.6547420812366	23.2147636153275	28.3663721651326
2015-04-23 16:01:00	23.6547420812366	23.2147636153275	28.3663721651326
2015-04-23 16:01:10	23.6547420812366	23.2147636153275	28.3663721651326



*Why has this vision  
been elusive?*

What we hear our customers saying



“We’re looking to get the data into tools like Spotfire.”

“We want to mix the data from BI and other systems in Hadoop.”

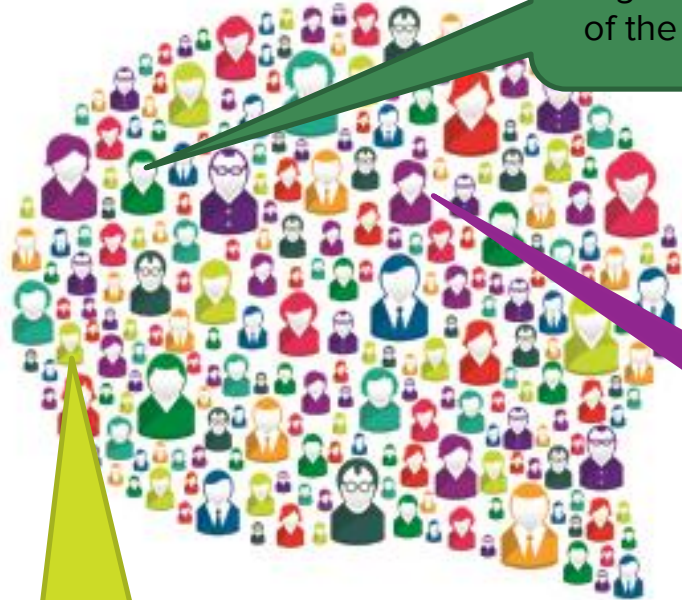
“Accessing the data in a relational database opens up the data to new users.”

“Our company has standardized on Teradata and Tableau for our business intelligence visualization.”

# 1. Access the data in tools familiar to the end users

## What we hear our customers saying





“It took us 40 days  
to get the data out  
of the PI System”

“Writing code and  
supporting it is just  
not an option.”

“We tried using  
OLEDB Enterprise  
but it timed out.”

## 2. It has to Scale (without code)

What we hear our customers saying

“My job is to provide one version of the truth to the whole organization so I have to be able to trust the data and have a repeatable process.”

“Seeing the data in terms of wells and pumps makes it much easier for my end users.”

“Zeroing in on just the necessary data by using events for my application keeps things simple.”

“It’s great that I can look at data across similar and different assets together.”

### 3. Flexibility and trust

What we hear our customers saying



# New Persona: Information Architect – The Hero



- Works in an IT or OPs IT role
- Responsible for integrating many data systems to achieve business goals
- Data Lifecycle Management
  - Access Policies & Distribution
  - Logical and Physical Architecture
  - Creation and Receipt (Trust)
  - Maintenance & Disposition
- PI Server is just 1 system
- Business Expert / Business Enabler / Not subject matter expert (engineer)



# Early Adopters





# Early Adopters

## Freeport McMoRan



250+ Trucks, Route optimization, Fuel usage, Oil, and Maintenance  
600+ Days, 1s and 5s data, 2BB rows, 200BB events



# Quiz: Which option should (did) Freeport McMoRan choose?

Option 1) Change oil every day.

Option 2) Run machine to failure

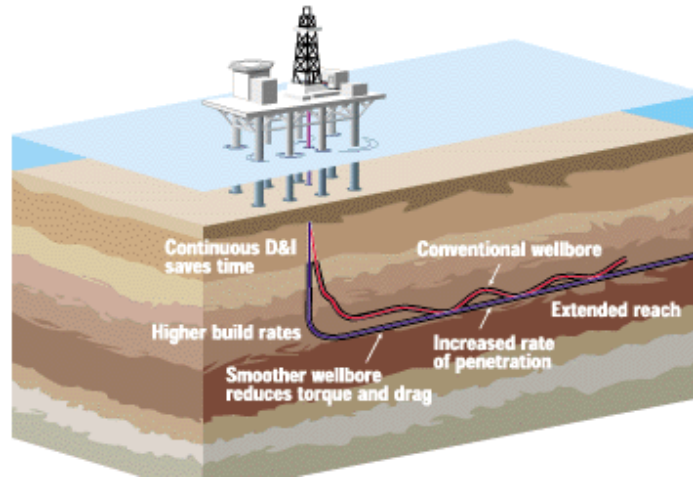
Option 3) Change oil on a schedule

Option 4) Change oil based on an algorithm



# Early Adopters

## Devon Energy



1000s of wells. Visibility across both drilling and production. Reporting and information distribution company wide. Determine best practices for drilling. Depth based reporting and analytics.

# PI Integrator for Business Intelligence



The screenshot shows the Microsoft Access database interface. The left-hand pane displays the database structure, including tables, queries, and relationships. The 'Database' table is highlighted in blue. The main window shows the 'Database' table in the 'TCOS\_174372\_4PH' database. The table contains 18 rows of data, including columns for Name, CASTKey, LocalTime, and GMTTime. The 'Name' column contains values like 'TCOS\_174372\_4PH' and 'TCOS\_174372\_4PH'. The 'CASTKey' column contains values like 'VODCMSAPSC101P/ESP\_Steas/Entities/ESP/Gillette...'. The 'LocalTime' column contains values like '2014-12-07 08:30:00.000'. The 'GMTTime' column contains values like '2014-12-07 08:30:00.000'. The 'Database' table is highlighted in blue. A blue arrow points to the 'Database' table in the left-hand pane.



Spotfire®  
TIBCO Software



Microsoft®  
SQL Server®  
Reporting Services

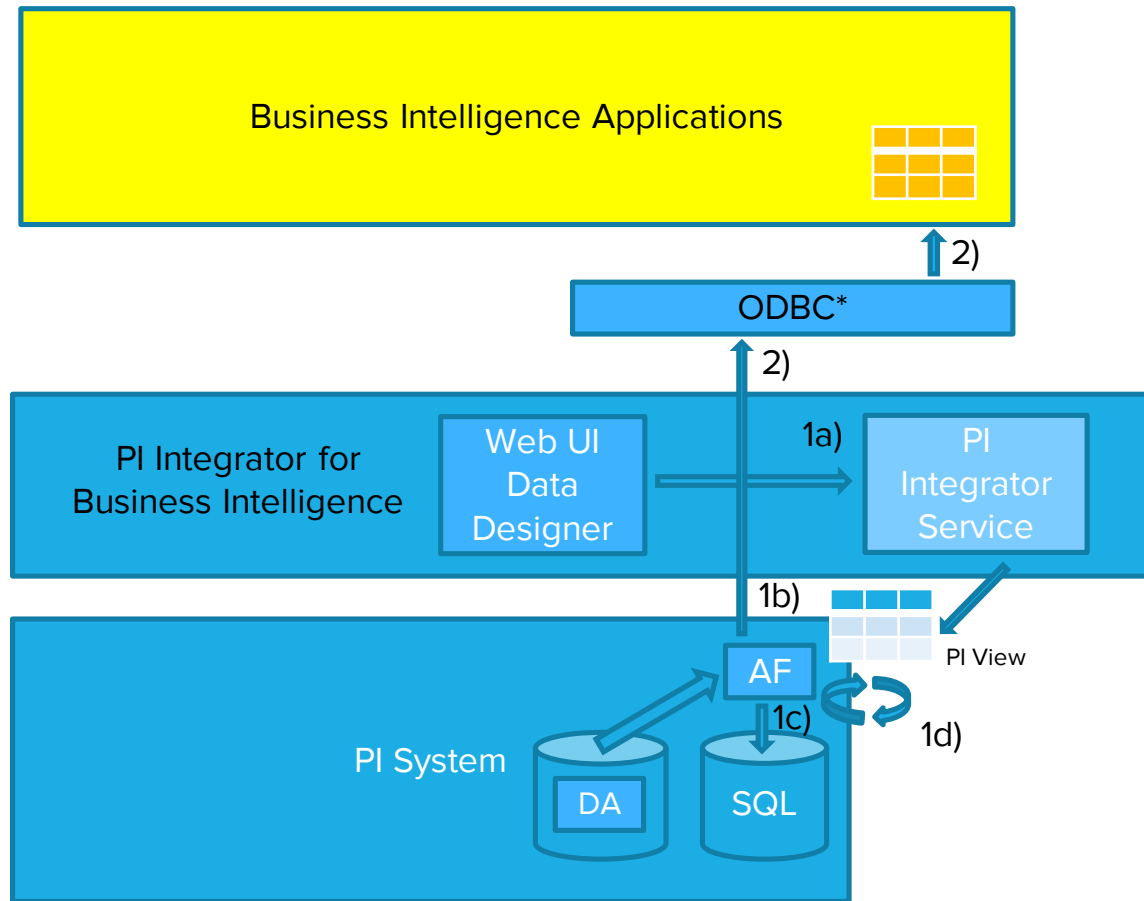




# Demo



## Application Flow



### 1) Web UI Data Designer

- User creates PI View in Web UI Data Designer via PI Integrator Service.
- View definition is stored in the PI System (Asset Framework).
- As needed View data is stored in an optimized format in the AF-managed SQL Server.
- Updates to the PI View are managed via PI Integrator Service

2) 3<sup>rd</sup> party requests data which routes through ODBC layer into the PI View

# Quiz: Which option should (did) Freeport McMoRan choose?

Option 1) Change oil every day.

Option 2) Run machine to failure

Option 3) Change oil on a schedule

Option 4) Change oil based on an algorithm

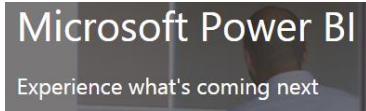


# Answer: Needs Business Context

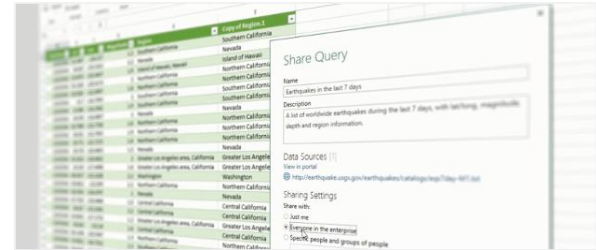


*60% of OSIsoft customers use SAP*

*ERP data, market data, maintenance and strategic planning data are required*

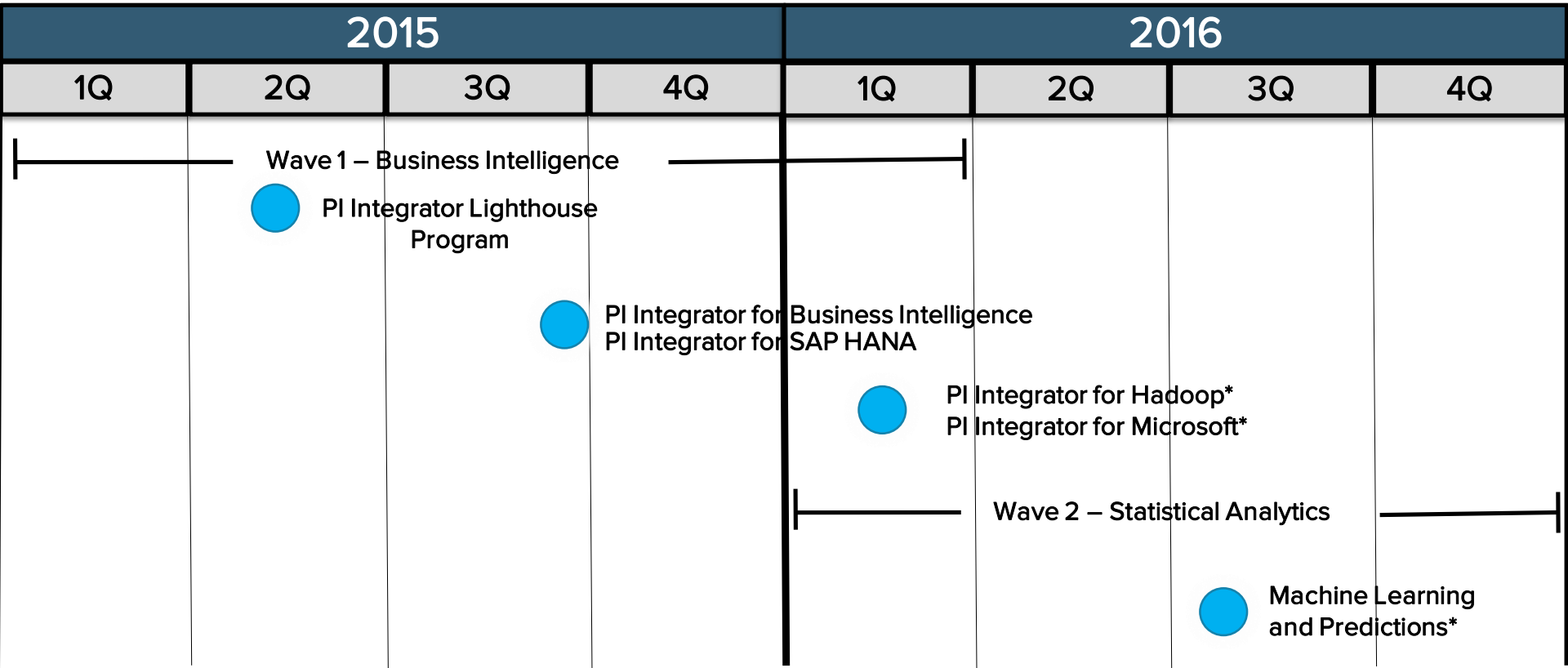


*100% of OSIsoft customers are using a Business Intelligence Application*



# PI Integrators Roadmap

*Subject to change*



# PI Integrator for Business Intelligence

## Data perfectly suited for BI

- Row Column Data (Dimensional model)
- Data alignments: Evenly spaced in Time, Reference attribute Time, By Events
- Comprehensive coverage of Asset Framework (AF)
- Event Frames – As Filters, As Data
- No programming or queries
- Data cleansing, filters, and business rules built in

## View updates on a schedule

- Caveats: Q3/2015 does not detect history changes

# Q3 2015

- **PI Integrator for Business Intelligence**

- Create PI Views
- Access decision ready data via ODBC with first class support for Tableau, Tibco Spotfire, and Microsoft BI (Excel, PowerPivot, PowerView, Power BI)
- Works with any software with an ODBC data source connection

- **PI Integrator for SAP HANA**

- Automatically creates Virtual Tables via Smart Data Access (SDA)
- Native integration with SAP HANA
  - Linux and SAP HANA Cloud Platform



# Early Adopters





# Early Adopters Merck & Co



## CERVICAL CANCER

ANOTHER **33** WOMEN/DAY IN THE UNITED STATES  
ARE DIAGNOSED WITH CERVICAL CANCER—THAT'S ABOUT  
**12,000/YEAR**

HPV Types 16 and 18 cause about 75% of cervical cancer cases

Through **15 billion calculations** and more than **5.5 million batch-to-batch comparisons**, Merck discovered that certain characteristics in the fermentation phase of vaccine production were closely tied to yield in a final purification step. "That was pretty powerful, and **we came up with a model** that demonstrated, quantifiably, that specific fermentation performance traits are very important to yield," says Megaro.

<http://www.informationweek.com/strategic-cio/executive-insights-and-innovation/merck-optimizes-manufacturing-with-big-data-analytics/d/d-id/1127901>



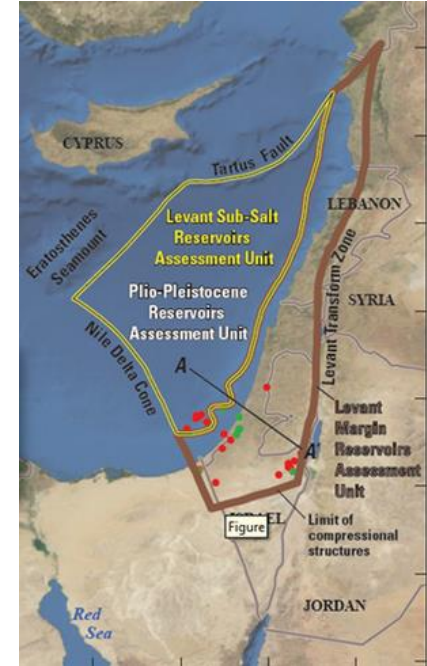
# Early Adopters

## Noble Energy



*EcoNode  
Centralized  
Facilities may  
reduce our  
land footprint*

**70%**



1000s of wells/tanks/pipe (econodes). Determine optimal routes for product pickup. Impact of system-wide pressure on production. Reporting True-Up.



# Many More

Carnegie Mellon (See EMEA UC 2014 presentation)

Energy optimization in buildings

UCSD

Solar PV, Synchrophasor, Machine Learning

UC Davis

Beyond the meter usage signatures

SDG&E

Weather Stations for load forecasting

Microsoft, Pepco, Southern China Grid, Servature, GRTgaz



# PI Integrator Lighthouse Program

Jump start your big data or analytics project with help from OSIsoft. [PIIntegrators@osisoft.com](mailto:PIIntegrators@osisoft.com)

<https://www.surveymonkey.com/s/PXW5L6X>

6 week engagements through September 2015.



# Matt Ziegler

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# Questions

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

State your  
**name & company**





THANK  
YOU

