

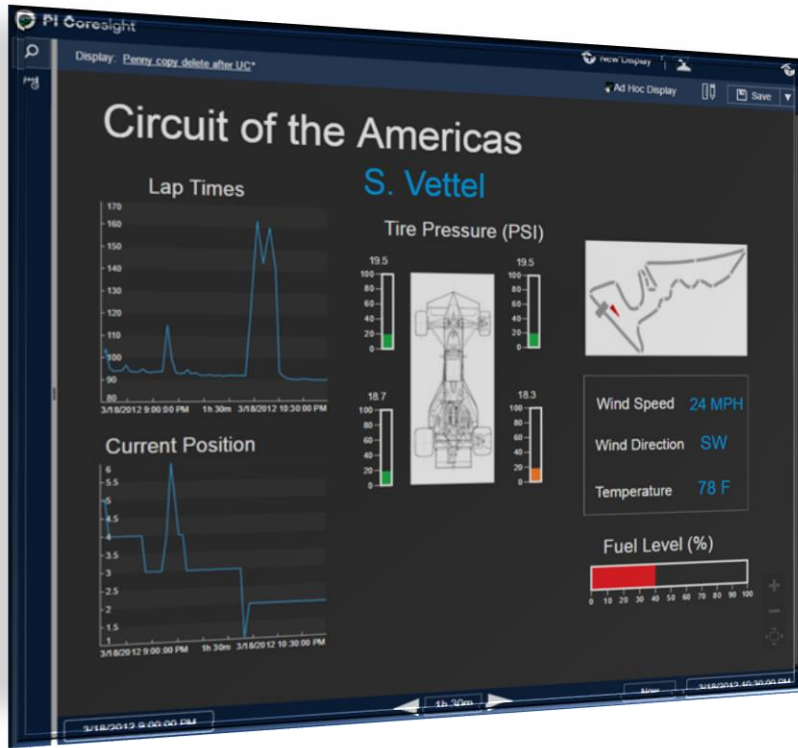
Getting Ready for Real-time and Advanced Analysis

Matt Geerling, Systems Engineer

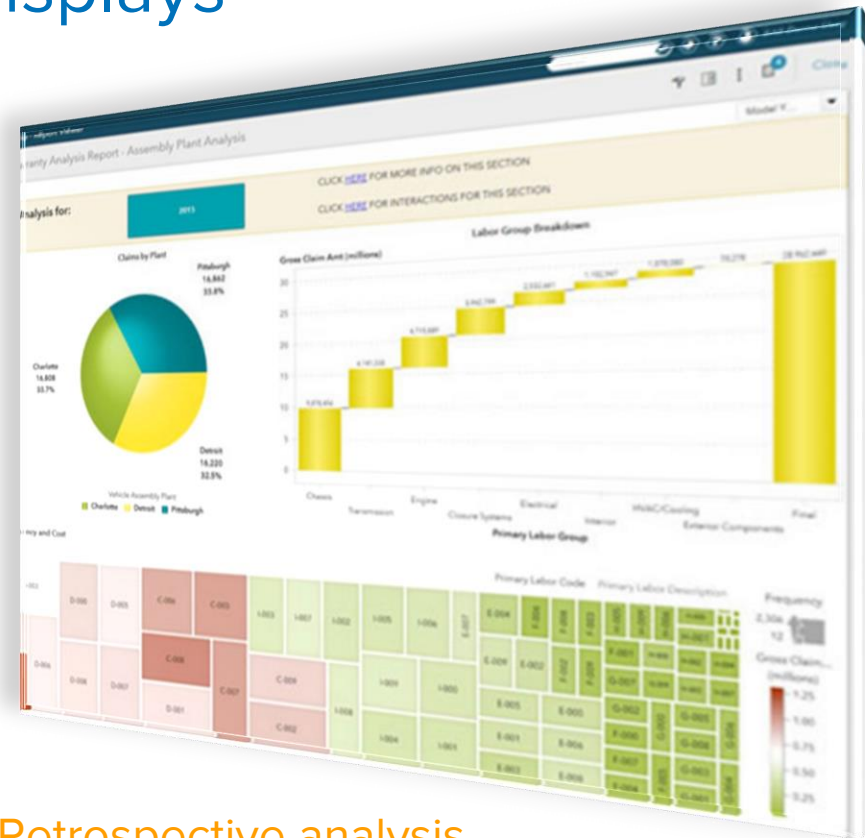
Wednesday, November 9th, 2016



A Journey of Enabling Rich Displays



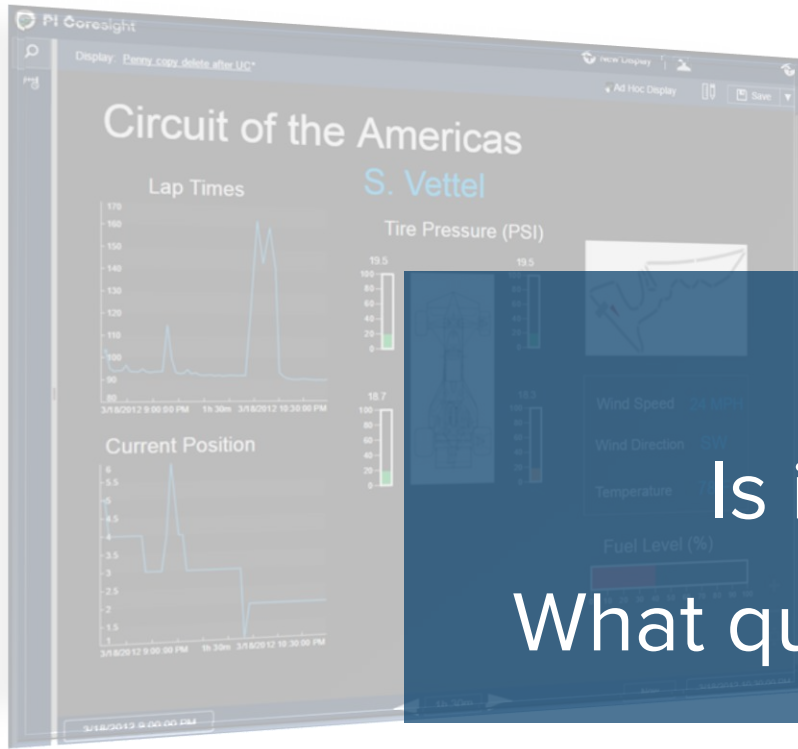
Real-time monitoring



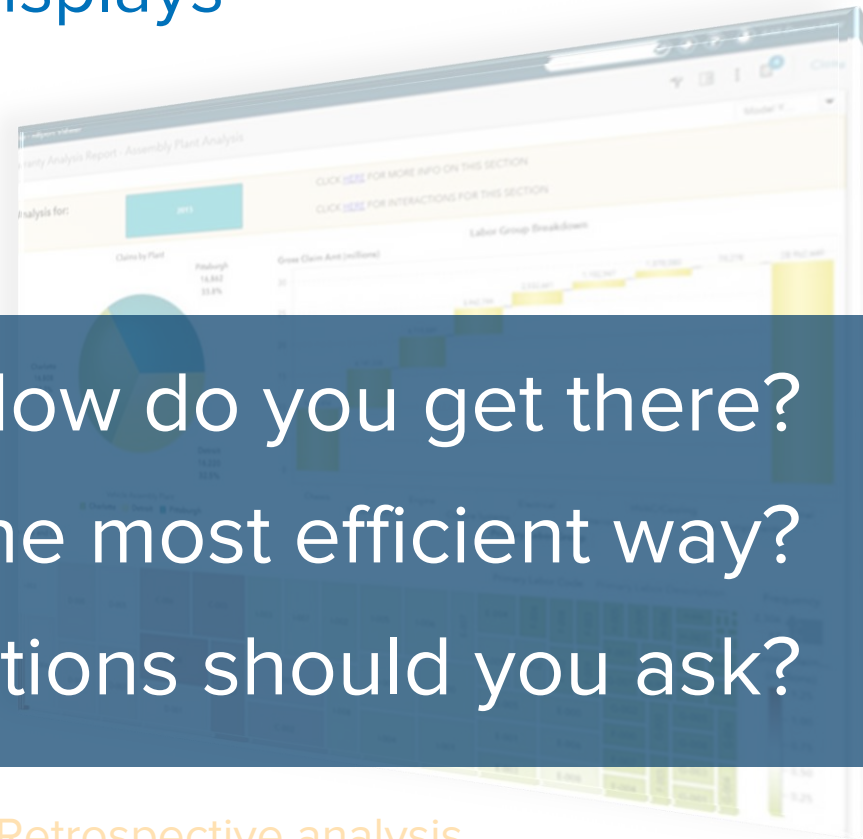
Retrospective analysis

Image: SAS Visual Analytics from www.sas.com

A Journey of Enabling Rich Displays



Real-time monitoring



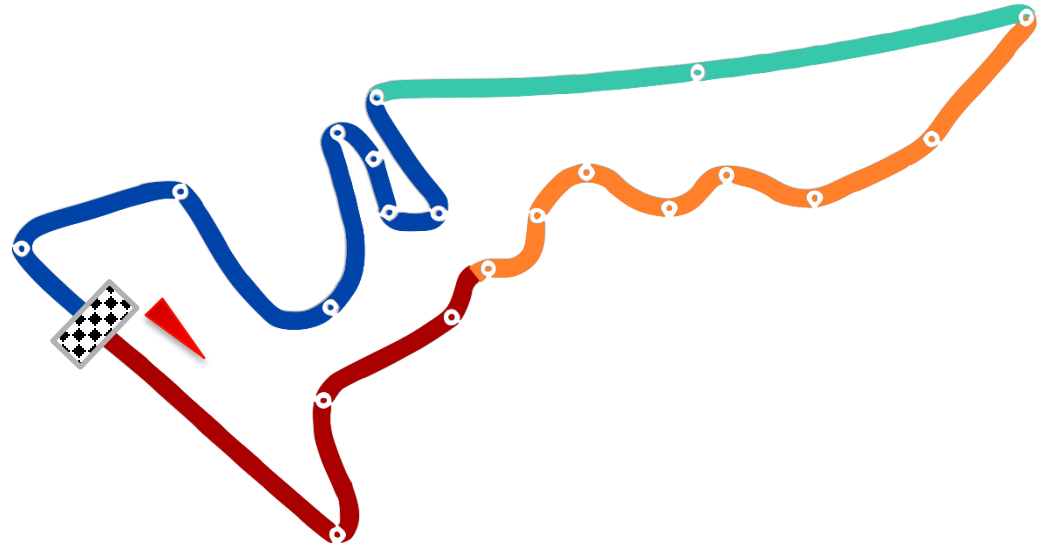
Retrospective analysis

How do you get there?
Is it the most efficient way?
What questions should you ask?



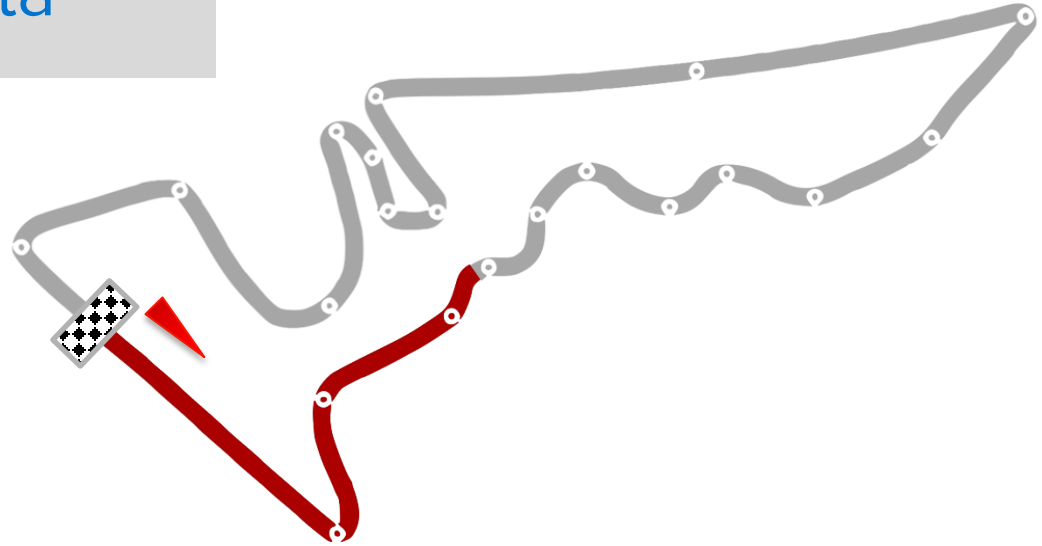
Agenda: 4 Stages to Get Value

1. Get started
 - **Collect raw data**: adding a new data source
2. Maneuver the turns
 - **Metadata**: applying context
3. Achieve fast insights
 - **Visualize** and **find** the info
4. The next level and the finish line
 - Enable **business analytics**



*Example: Find the Winning Formula
Lap around the Circuit of the Americas*

Get started with raw data



Example: Find the Winning Formula
Lap around the Circuit of the Americas

Adding a New Data Source

Challenges

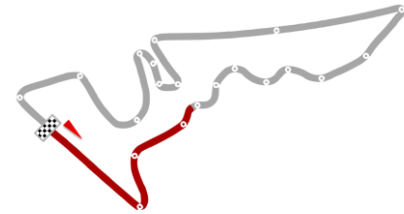
Can the data be brought
in the PI System?



How can the data be
imported?



Is this the most **effective
and efficient** way to do
this?

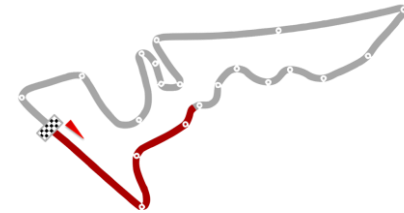


Collecting Data: Key Questions

1. What is the device?
2. What type of data is it?
 - Number of data streams, frequency of updates, necessary fidelity

Vendor specific?

3. What type of protocol does this device support?
 - Standard
 - OPC, Modbus, ODBC/OLEDB connectivity, RDBMS embedded
 - Non-Standard
 - OSIsoft Development & Technical Support



Ex: Answering Questions

1. What is the device?
 - Telemetry device collects data as the cars go around the racetrack
2. What type of data is it?
 - Many data streams, high frequency
Need high fidelity information
3. What type of protocol does this device support?
 - Non-Standard: Need to access data via the web server
4. Solution:
 - PowerShell script to query source data
 - Parse text files with PI Interface for Universal File Loader (UFL)

Lap Times		
Lap 1		
DriverId	Position	Time
alonso	1	1:34.494
vettel	2	1:35.274
webber	3	1:36.329
hamilton	4	1:36.991
petrov	5	1:38.084
michael_schumacher	6	1:38.633
rosberg	7	1:39.139
massa	8	1:39.979
buemi	9	1:40.611
button	10	1:40.998
perez	11	1:41.433
alguersuari	12	1:41.876
maldonado	13	1:42.255
resta	14	1:42.808
trulli	15	1:43.553
kovalainen	16	1:44.276
heidfeld	17	1:45.164
sutil	18	1:46.107
liuzzi	19	1:46.737
barrichello	20	1:47.077
glock	21	1:47.556
karthikeyan	22	1:48.183
ambrosio	23	1:48.573
kobayashi	24	1:57.590
Lap 2		
DriverId	Position	Time
alonso	1	1:30.812
vettel	2	1:30.633
webber	3	1:30.827
hamilton	4	1:31.189
petrov	5	1:32.394
michael_schumacher	6	1:32.839

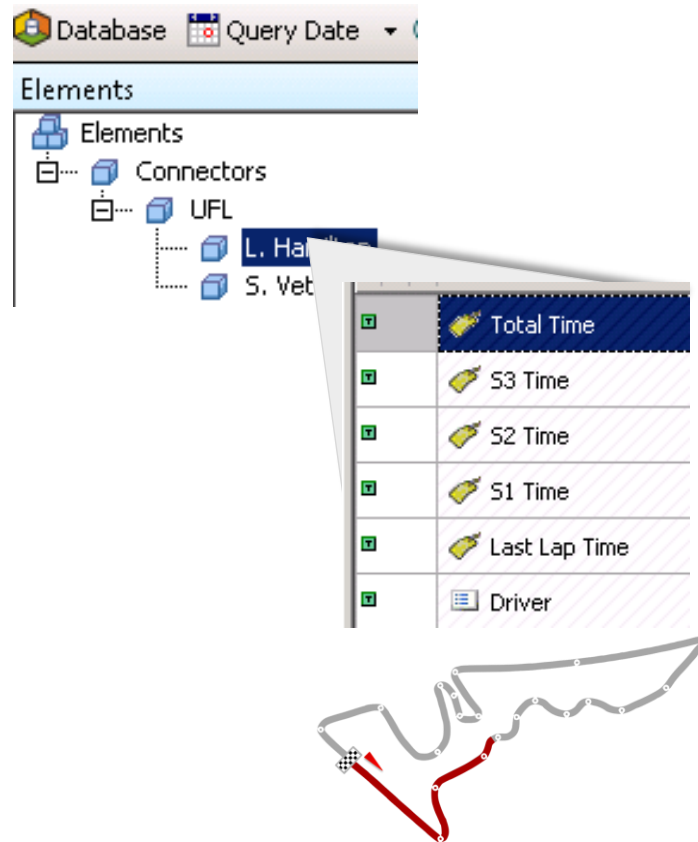
Ex: Choosing the Best Technology

New option: PI Connector for UFL

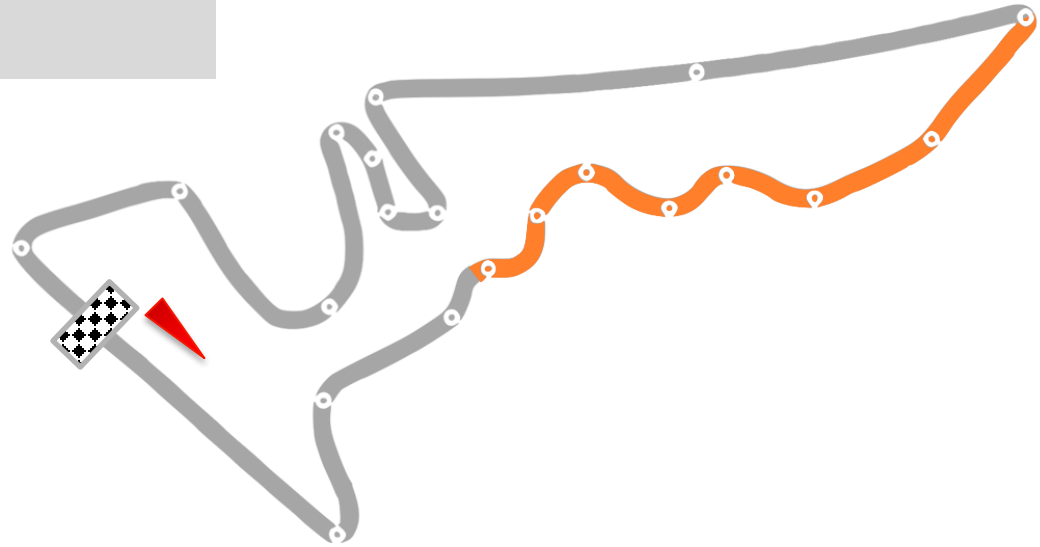
No more temporary text files needed: write directly to the UFL connector Rest endpoint.

- Benefits
 - Automatically creates tags, elements/attributes
 - Easier configuration
 - No scan class
 - Creates event frames

Now you implement your data collection solution!



Maneuver meta data



Example: Find the Winning Formula
Lap around the Circuit of the Americas

Context adds meaning to your data



Challenges:

- Meta data is needed to transform **raw data** into **information**.

Speed

107

Driver: Hamilton

mi/hr

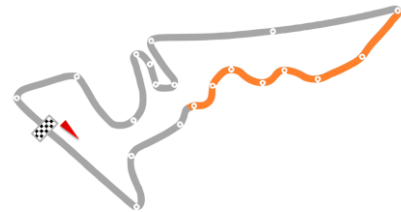
Austin, TX

- Important: Define the **use case**
→ Gives you **focus** on what meta-data is relevant to include



Meta Data: Key Questions

1. What meta data will put data into context?
2. What are the data characteristics?
How often does it update?
 - Often → Store the data in a PI Point
 - Not often/Never → Data reference via PI AF
3. Where is the meta data stored?
 - File, Web Site, Relational Database, etc



Ex: Meta Data: Add the Racing Team

1. What context will help the user?

- Want to compare by car constructor (team)



2. What are the data characteristics?

How often does it update?

- Many data streams. History is not required. Data type is string.
Static information



3. Where is the meta data stored?

- Web site

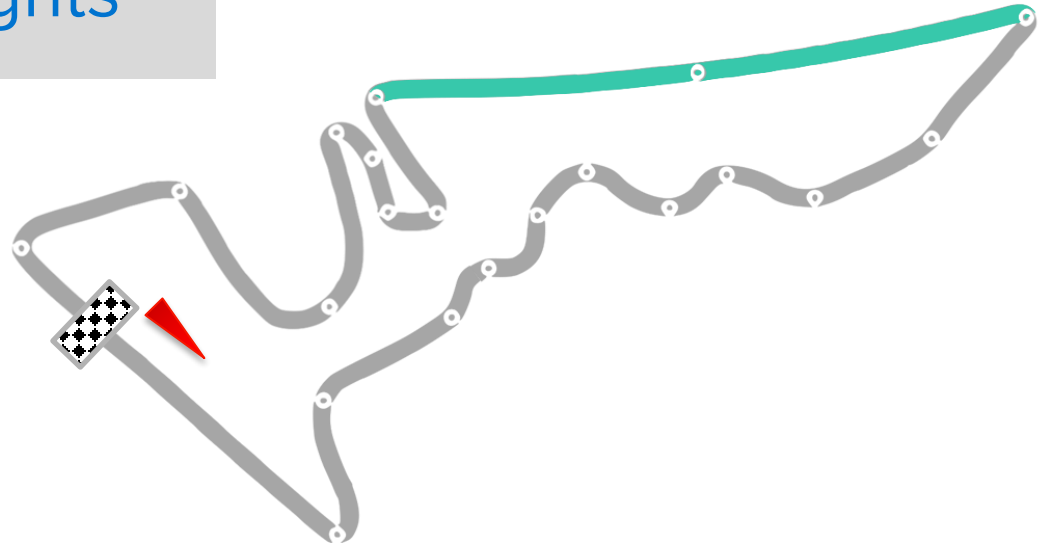


4. Options

- PI Interface for RDBMS
- PowerShell to pull in data from the web into my SQL Server and use a linked AF Table
- Import the table from the web into an internal AF Table



Visualization & fast insights

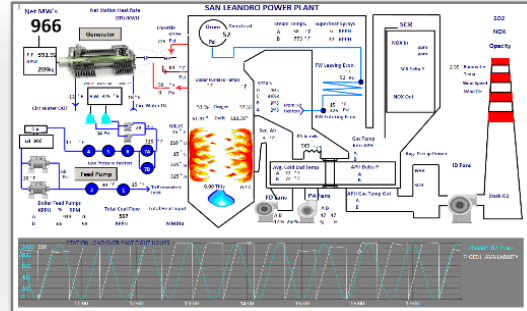


Example: Find the Winning Formula
Lap around the Circuit of the Americas

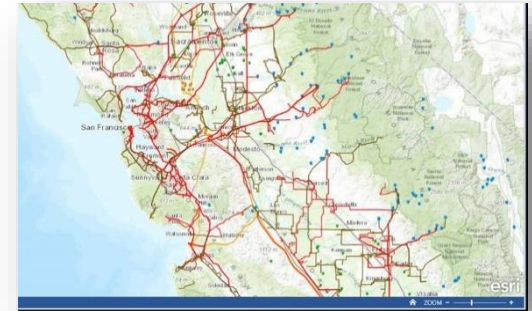
The Right Visualization: Consumable Data

Date	BA:CONC.1	BA:LEVEL.1	BA:PHASE.1	BA:TEMP.1
09-May-2012 09:00:27	43.93	3.60	Phase3	2.12
09-May-2012 09:00:57	0.00	2.93	Phase3	1.41
09-May-2012 09:17:27	6.37	11.64	Phase1	10.32
09-May-2012 09:29:27	19.39	21.89	Phase3	17.91
09-May-2012 09:52:57	24.68	37.74	Phase4	27.53
09-May-2012 10:01:27	40.86	34.79	Phase5	46.73
09-May-2012 10:21:27	44.28	0.16	Phase1	7.09
09-May-2012 10:21:57	0.00	0.24	Phase1	6.60
09-May-2012 10:37:27	6.16	10.97	Phase1	8.88
09-May-2012 10:55:27	23.30	27.33	Phase3	20.18
09-May-2012 11:17:27	29.37	39.17	Phase4	33.67
09-May-2012 11:23:27	42.29	35.50	Phase5	45.63
09-May-2012 11:42:27	46.19	0.47	Phase1	8.45
09-May-2012 11:42:57	0.00	0.52	Phase1	7.94
09-May-2012 11:56:57	4.39	6.63	Phase1	6.95
09-May-2012 12:14:27	21.23	25.19	Phase3	21.46
09-May-2012 12:34:57	28.39	41.40	Phase4	31.31

Table
view



Process
view

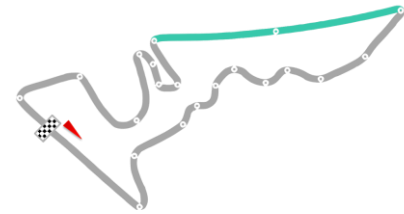
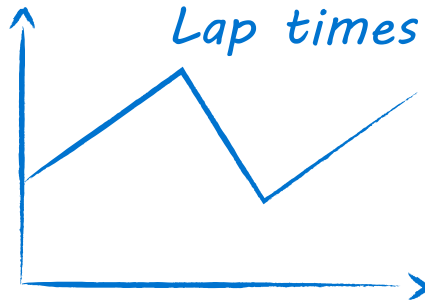
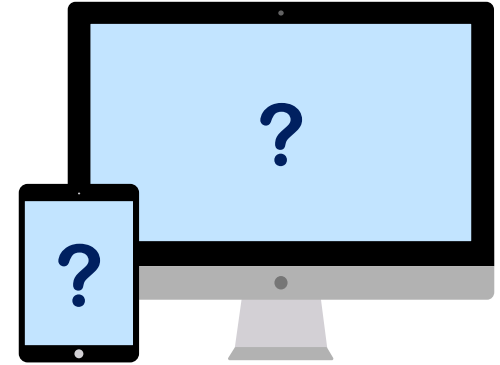


Geospatial
view

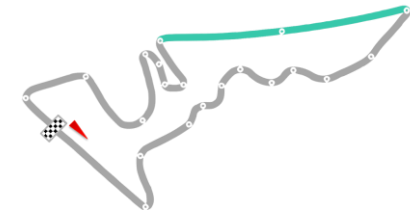
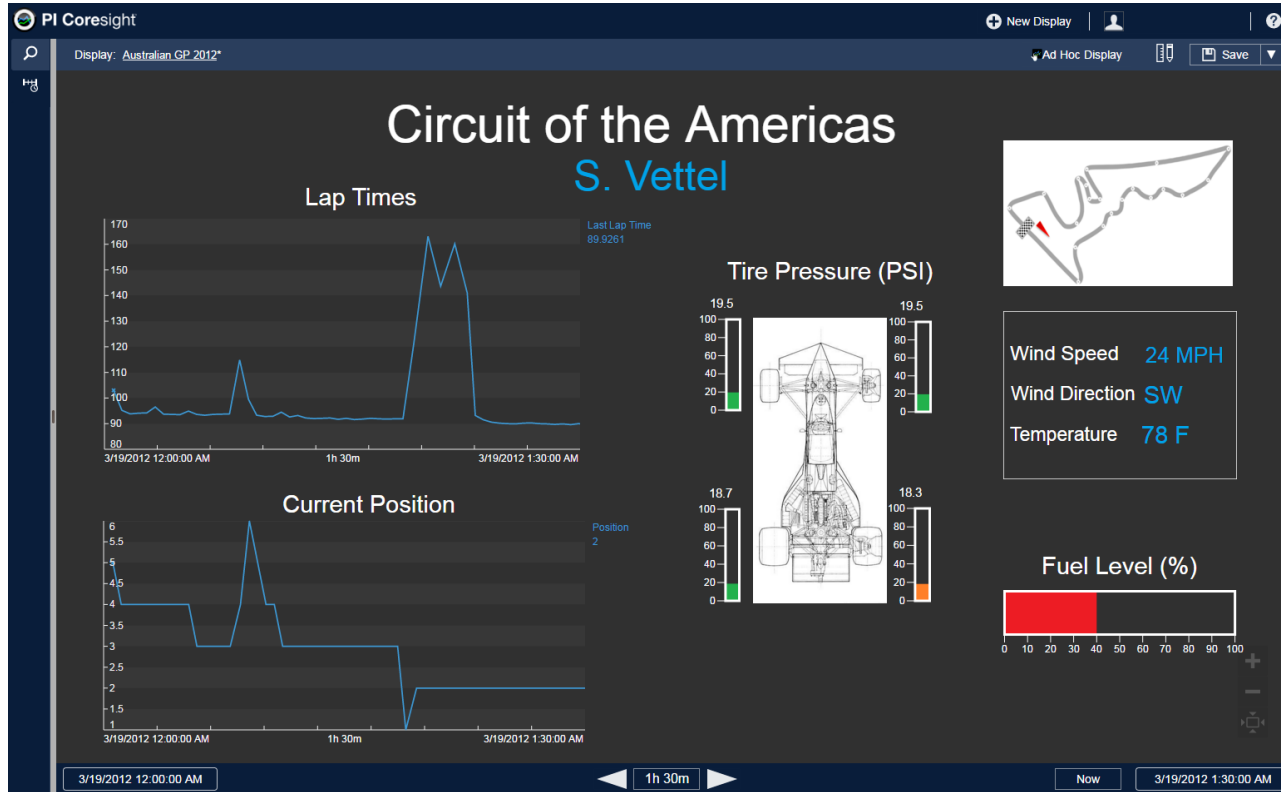


Visualization: Key Questions

1. How do you view data today?
2. What tools do you want to use?
 - Excel, web browser
3. **Pro tip:** Can you sketch what your ideal view looks like?



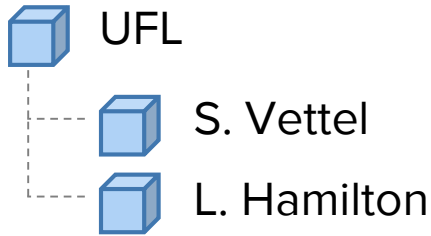
Ex: Real-Time Monitoring with PI Coresight



Help Users Find Data

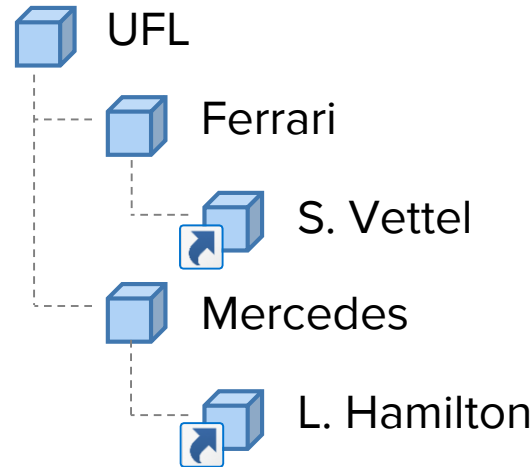
In addition to a flat list of drivers

Elements



Some users may want to search by team

Elements



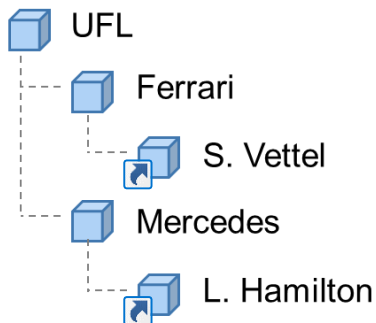
Organize Data in Multiple Views

Create views by **group**, **geography**, or **process**

Elements

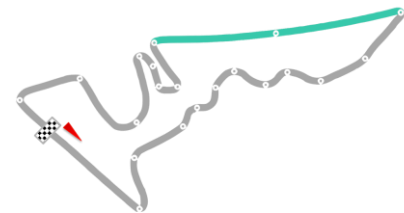


Elements

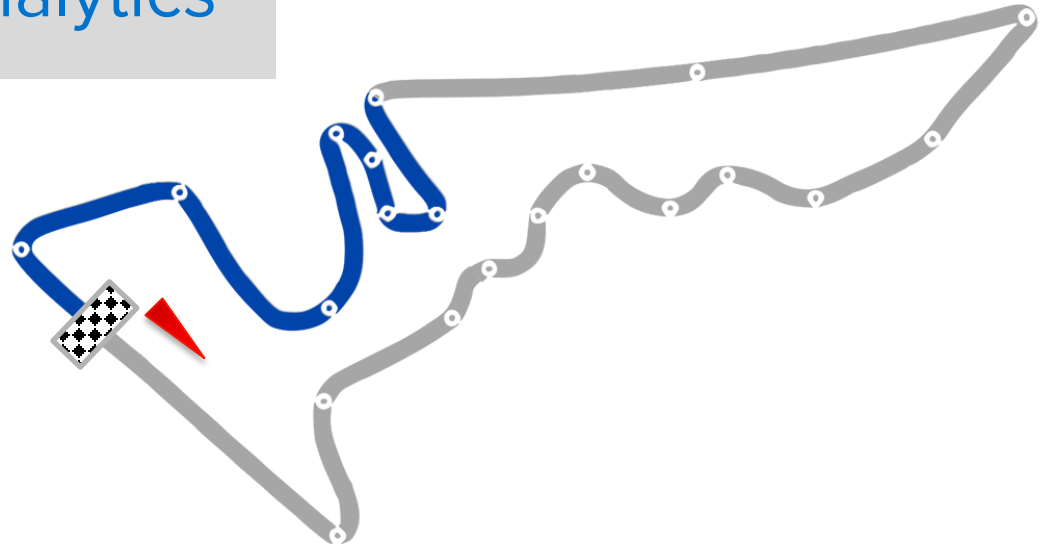


Options:

- PI System Explorer
- PI Builder
- AF SDK

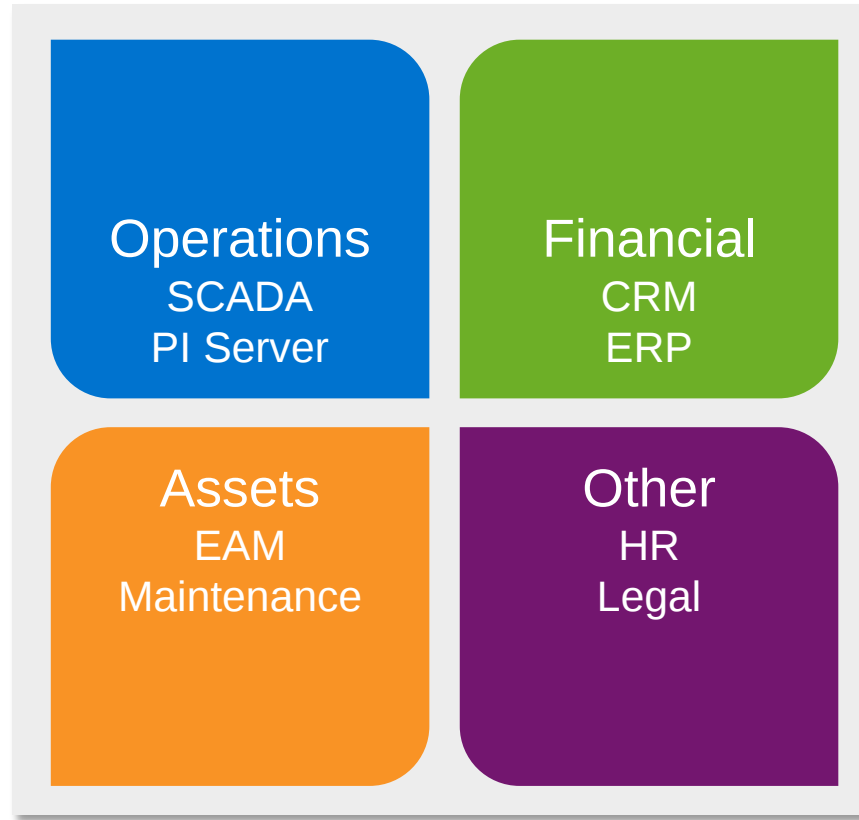


Strong finish: Business analytics

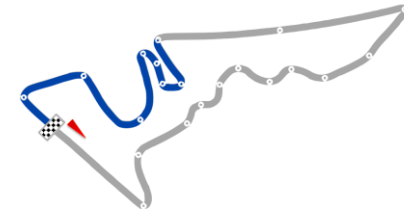


Example: Find the Winning Formula
Lap around the Circuit of the Americas

The Larger Business Landscape



Business analytics
blends multiple data
sets to support your
strategy.



Business Analytics: Key Questions

Analytics Packages

Visual Analytics



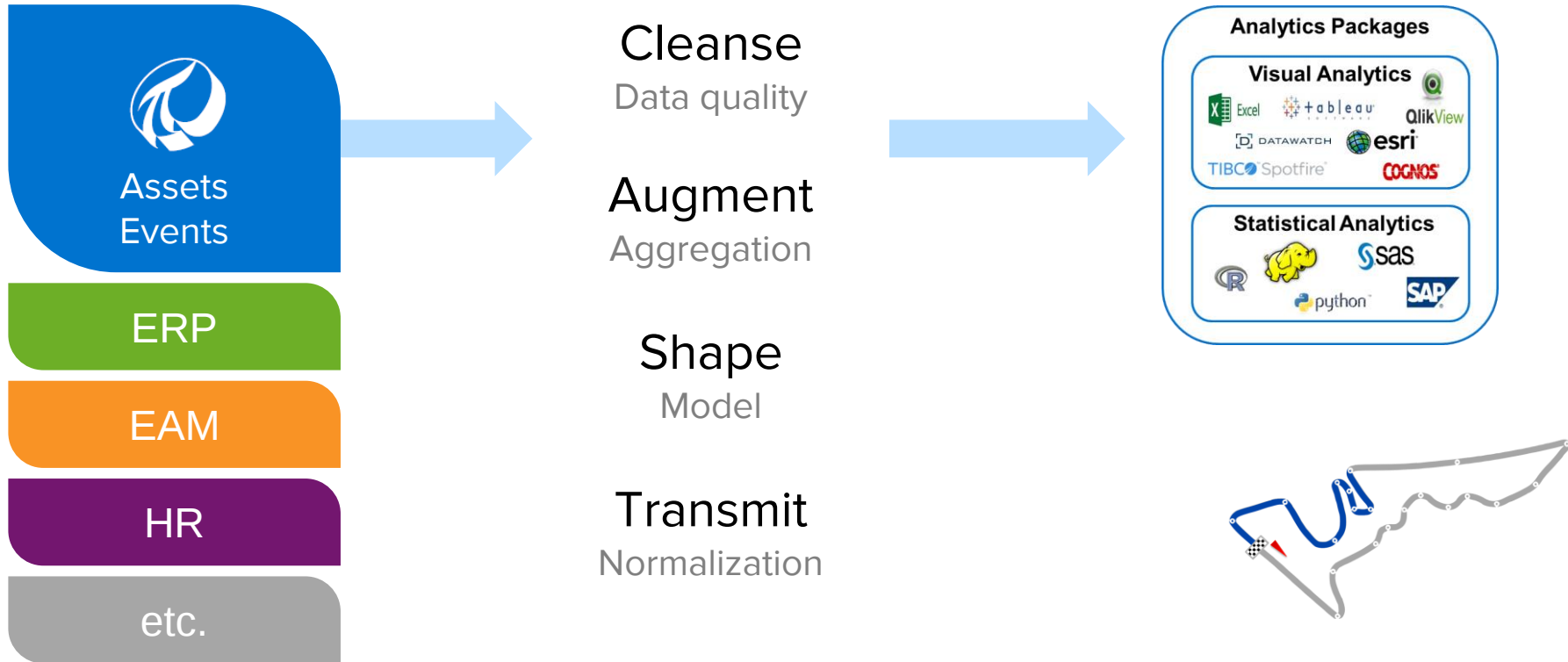
Statistical Analytics



- Which tools do you want to use?
- Do you have a data warehouse?
- What **decision** are you driving toward?
How does this add **business value**?
- What **data sets** would support that decision?
Operational, financial, market



PI Integrator for Business Analytics



Winning Strategies with Business Analytics Tools



Benchmarking

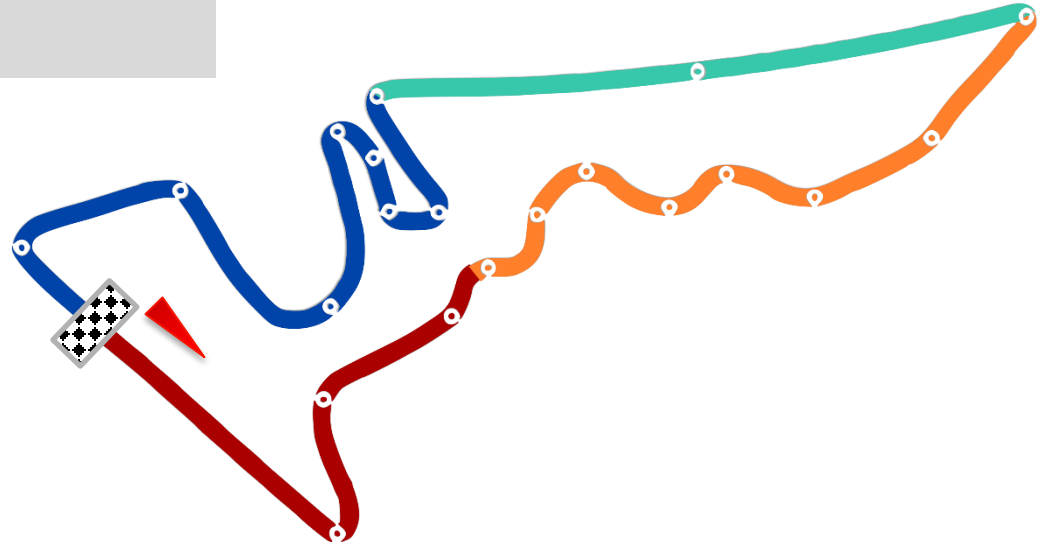
Fleet-wide performance comparisons

Large multivariate analysis



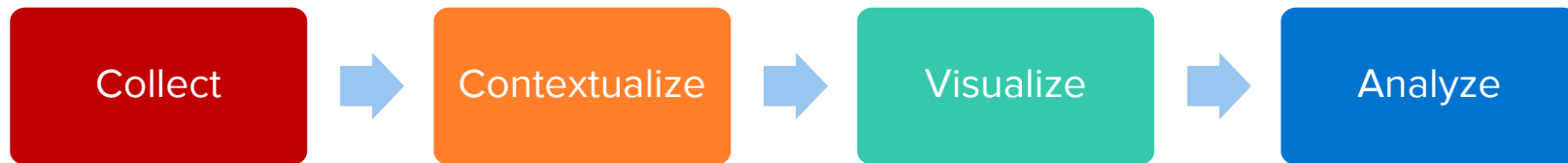
Image: SAS Visual Analytics from www.sas.com

Summary



Example: Find the Winning Formula
Lap around the Circuit of the Americas

Set Your Team Up for Success



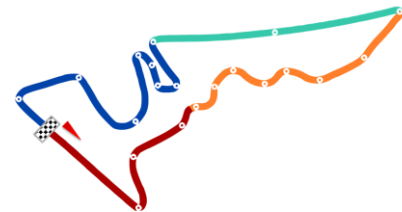
Understand the use case

Understand the users

Choose the technology that best fits their needs



Goal: Get the most value from your data



Resources



- PI Connector for UFL
- PI Coresight
- PI Integrator for Business Analytics

- Master PI
- PI Developers Club

Questions

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



State your
name & company

Please remember to...

Complete the Survey
for this session

OSIsoft. REGIONAL SEMINAR
Safeco Field – Seattle, WA – September 20, 2016

Evaluation Form

Name: _____ Company: _____
Email: _____

Quality of presentations

	Poor	Good	Excellent	N/A
1. Digital Transformation with Today's PI System – OSIsoft	☐	☐	☐	☐
2. PI Coresight 2016: New Vision, New Display Editor, New Look and Feel – OSIsoft	☐	☐	☐	☐
3. Monitoring Health and Performance of Grid-Scale Energy Storage Systems – UniEnergy Technologies	☐	☐	☐	☐
4. Using PI Integrators to Improve the Value of your PI Data – OSIsoft	☐	☐	☐	☐
5. PI Asset Framework Ties Together Enterprise OEE for Clearwater Paper – Clearwater Paper	☐	☐	☐	☐
6. Solving Business Initiatives with the PI System – OSIsoft	☐	☐	☐	☐
7. PI Analytics and Coresight for Business Process Improvement – Arista	☐	☐	☐	☐
8. Seq helps customers get even more value from their OSIsoft PI System – Seq Inc.	☐	☐	☐	☐
9. What's Really Going on with your Beer's Fermentation? – Deschutes Brewery	☐	☐	☐	☐

Quality of seminar

	Poor	Good	Excellent	N/A
1. Presentation topics meeting your needs or interests	☐	☐	☐	☐
2. Time allowed for lunch/breaks/discussions	☐	☐	☐	☐
3. Pace and time allocated to the presentations	☐	☐	☐	☐



Contact Information

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Thank You



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