

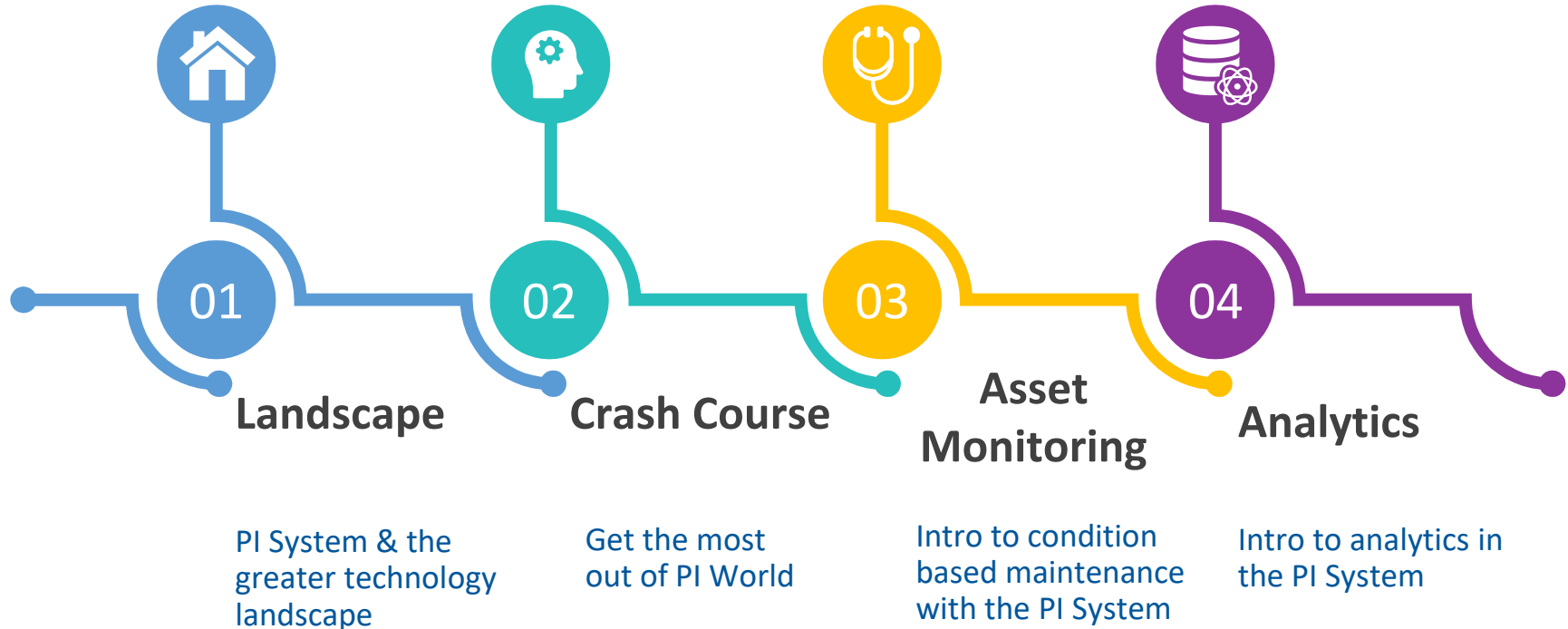
PI System & the Greater Technology Landscape

Anna Sofia Bidot
Systems Engineer



Intro to PI System Track:

New to PI System? We'll get you up to speed!



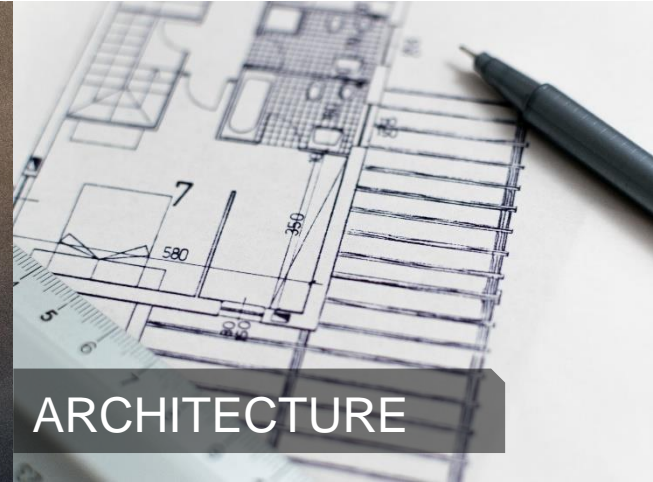
Questions we will address in this talk



PI SYSTEM



LANDSCAPE



ARCHITECTURE

What's the problem?

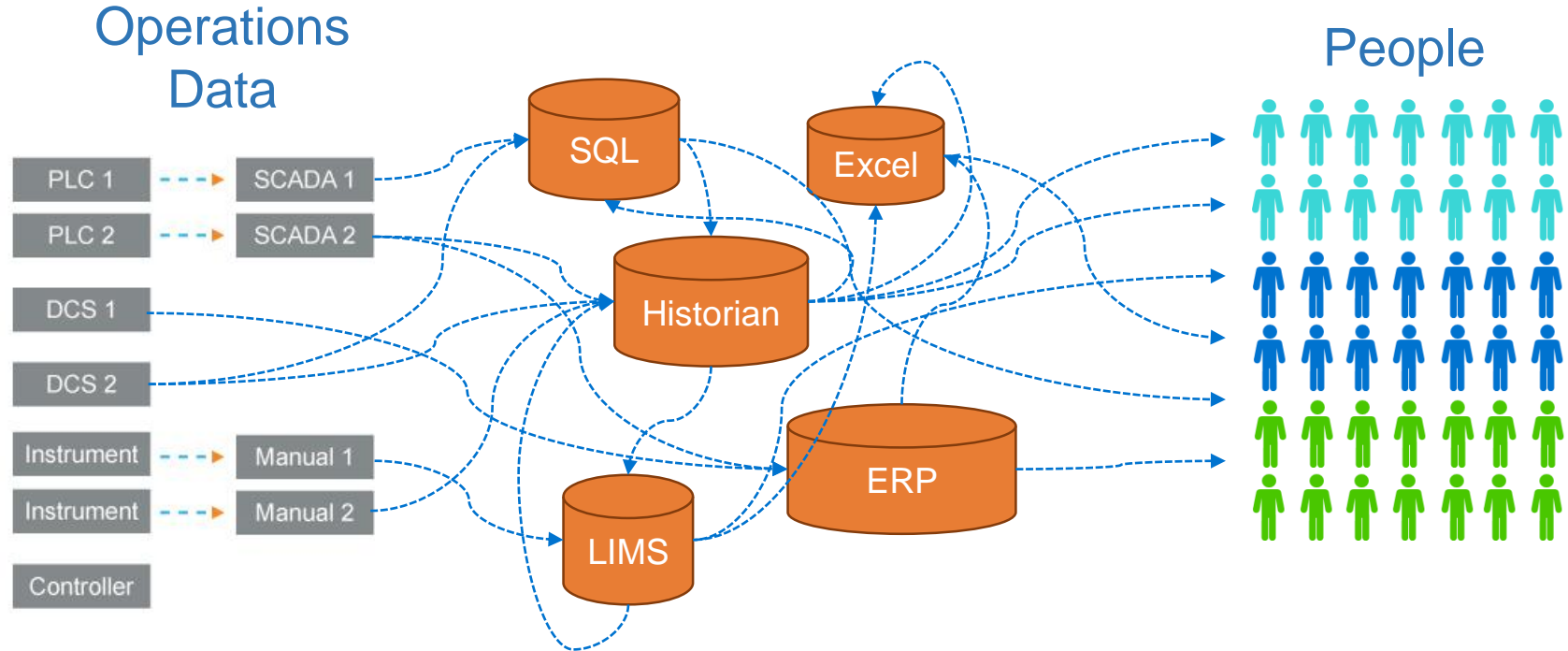
What's different about operational data?

What does a basic deployment look like?

A perspective view of a long, empty hallway with glass walls and a reflective floor, leading to a bright light at the end. The hallway is flanked by tall, dark glass walls that reflect the light from the end of the corridor. The floor is highly reflective, mirroring the walls and the light. The sky visible through the glass is a gradient of blue and yellow, suggesting a sunrise or sunset. The overall atmosphere is clean, modern, and somewhat mysterious.

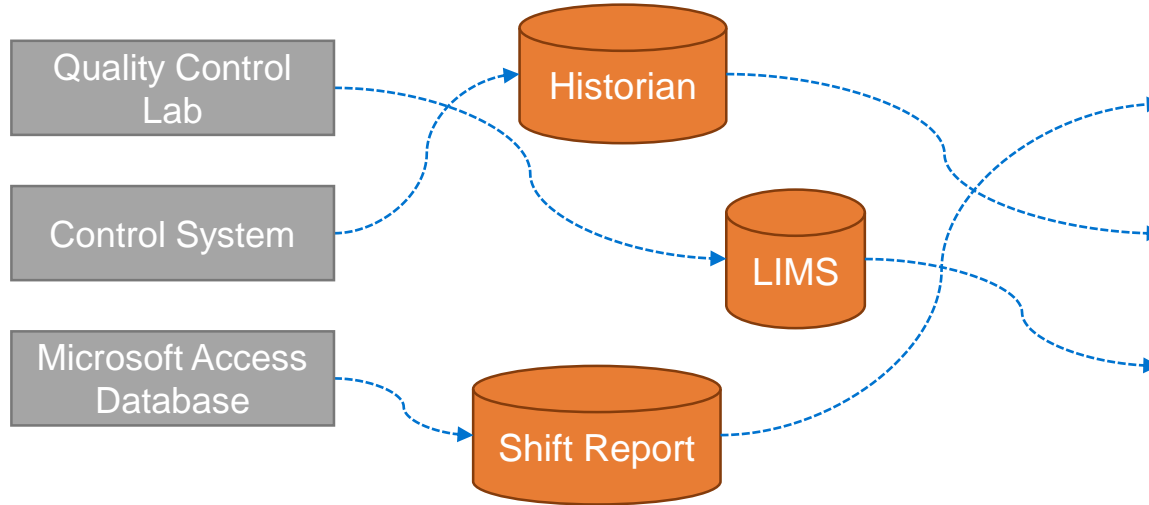
What's the Problem?

Connecting People and Operations Data is Hard



Let's Make This Real...

Operations Data



Process Engineer

(+12 other People)



The Morning Standup Meeting

	Goal	Sun	Mon	Tues	Wed	Thur	Fri	Sat
14th st Tons	20 tons			?	21	5	21	0
15th st Tons	> 22			?	?	17	22	15
14th Avg Feed	> 40 gpm	☺	☺	☺	40	?	25	7
15th Avg Feed	> 45 gpm	40	30	Good	70	40		
Nat Avg Feed	> 90 gpm							
Cogel Avg Feed	> 120 gpm							
WW Levels	< 60%	?	?	?	?	?	90	50

Manual



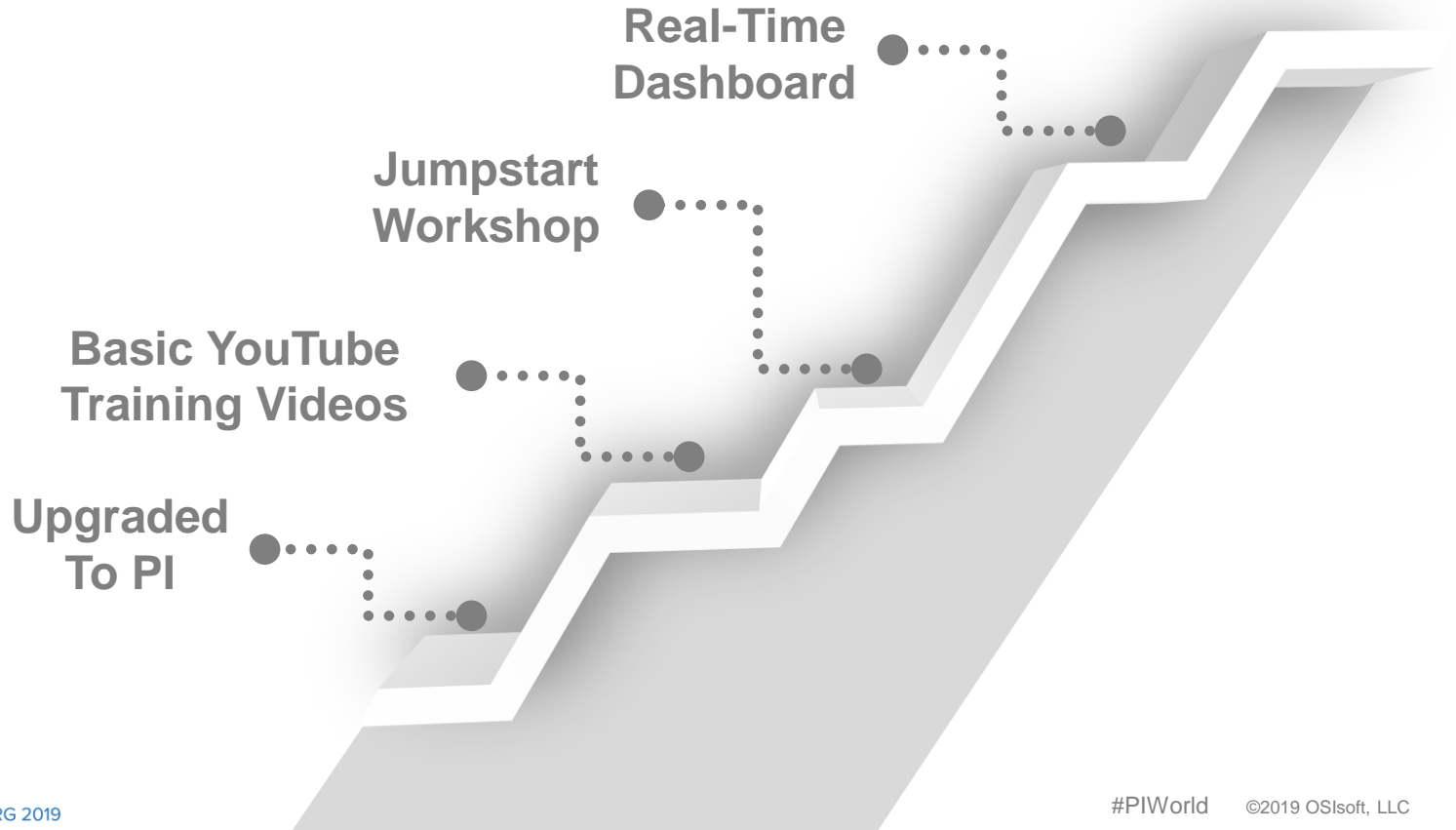
Error Prone



Time Consuming



Discovering the PI System



Improved Dashboard with the PI System



Automatic



Fast



Accurate

	Goal	Sun	Mon	Tue	Wed	Thur
14th Final	>20 tons	20	21	20	20	20
		21	20	21	21	21
15th Final	>22 tons	22	21.5	22	22	22
		23	24	22	23	24
14th Feed	>40 gpm	44	43	42	41	42
		45	47	43	42	40
15th Feed	>45 gpm	47	46	45.5	45	44
		43	43	44	45	47
Na Feed	>90 gpm	91	90.5	93	92	81
		92	92	95	94	93
Cogel Feed	>120 gpm	120	122	124	122	120
		119	127	127	123	120
Waste Water	<60%	40	45	50	30	20
		40	45	50	30	20

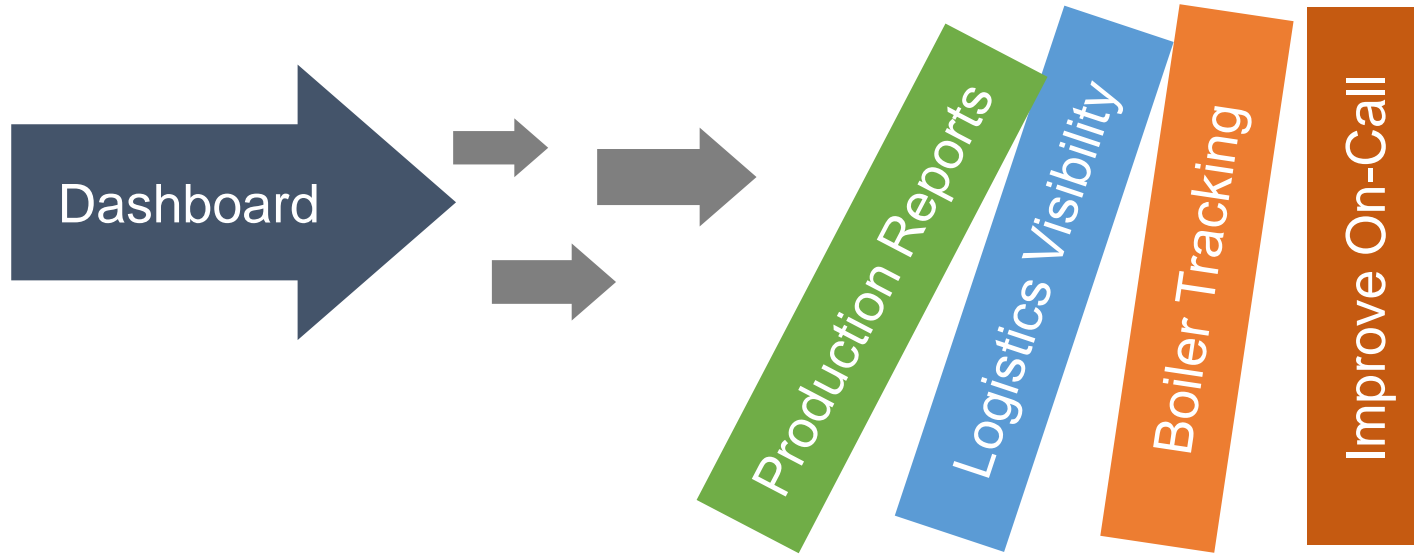
From 40 min



..... to 40 sec

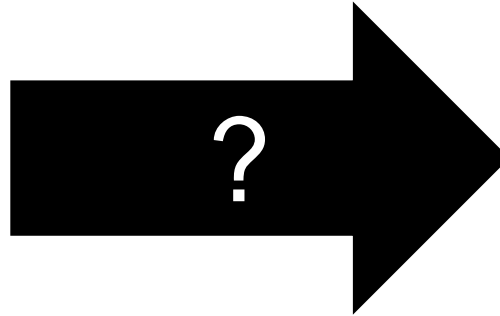


The First Domino Had Fallen

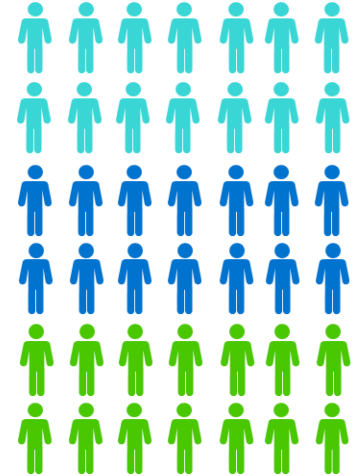


Connecting People with Operations Data is Hard

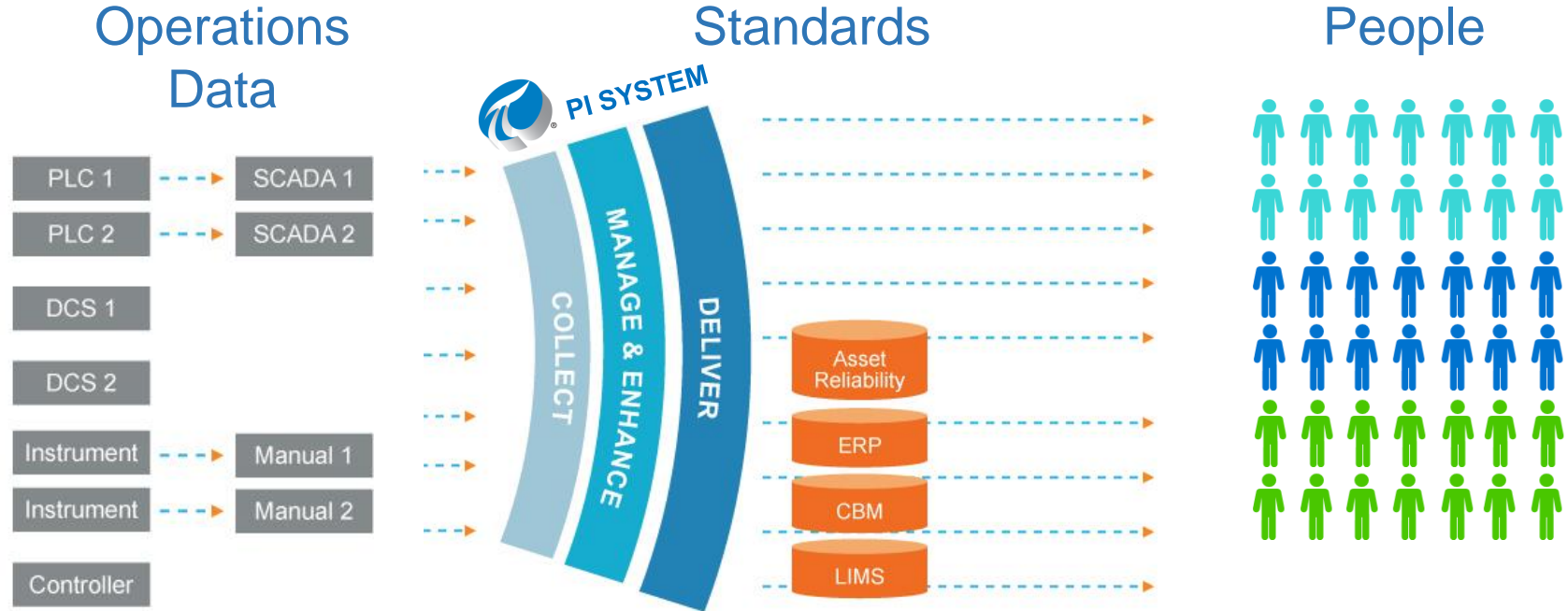
Operations Data



People



An Infrastructure for Critical Operations



An Infrastructure Approach

Delivers a critical resource in a **reliable** way to any **person** or application when **needed**



The Data Landscape

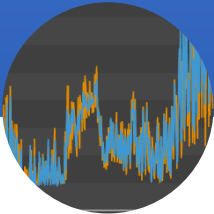


Common Types of Data

Time Series



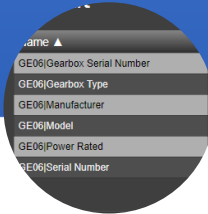
Temp Probe



Relational



Pump Specs



Geospatial



Maps



Unstructured



Log files





BOILER
ROOM



LOGISTICS

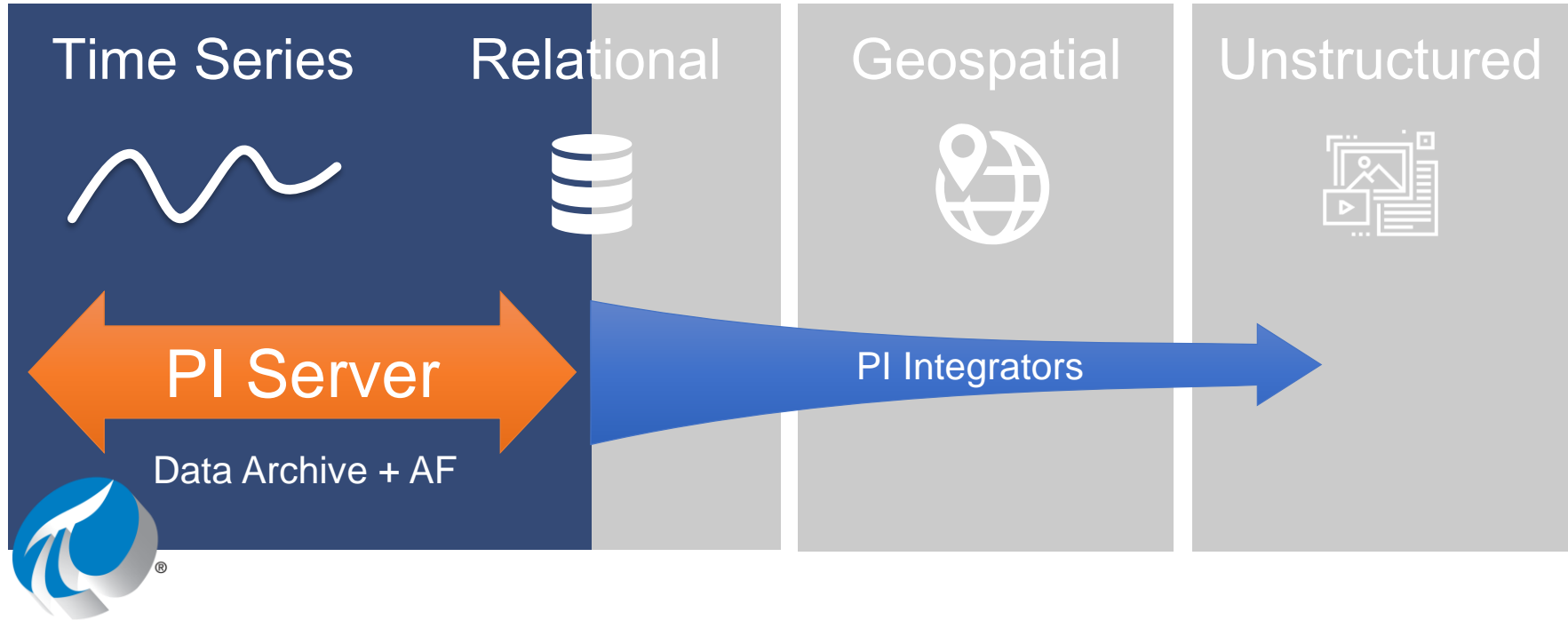


CORPORATE



Everyone uses data
Not all data is the same

We Specialize in Operational Data



Answers are in the data, but it's often hard to understand

What is this?

Temperature
Speed
Batch ID
Distance



What units?



°F or °C
mi/hr
psi

From what?

Boiler
Pump
Truck
Transformer



Where is it?



HQ
Offshore
Springfield

37

Raw data needs context to make it consumable information

Wind Turbine Detail

Asset: GE06

Ad Hoc Display



← GE06

Capacity
48,93 %Operating State
Load OperationEfficiency
14,401 %

Overheat Alarm

Turbine Availability
31,875 %

Links

[Thermal Details](#)[High Turbine Temp](#)

About

Name ▲	Value
GE06[Gearbox Serial Number]	4800000-0000-0
GE06[Gearbox Type]	WindEnergy
GE06[Manufacturer]	Truvalle
GE06[Model]	T95-2MW
GE06[Power Rated]	1 500
GE06[Serial Number]	M000000

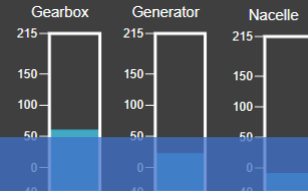
Nacelle

Blade Total Error
0,076527 °

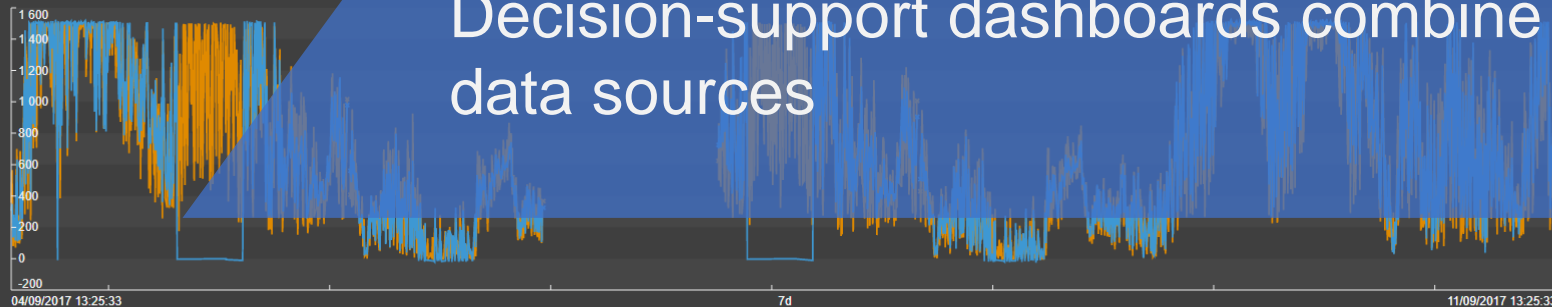
Hydraulic Pressure



Temperatures

Current L1
668,9 ACurrent L2
661,9 ACurrent L3
1 337 AL1-N Voltage
320,6 VL2-N Voltage
318 VL3-N Voltage
322,4 V

Decision-support dashboards combine many data sources



04/09/2017 13:25:33

7d

Now

11/09/2017 13:25:33

← GE06



Capacity
48,93 %

Operating State
Load Operation

Efficiency
14,401 %

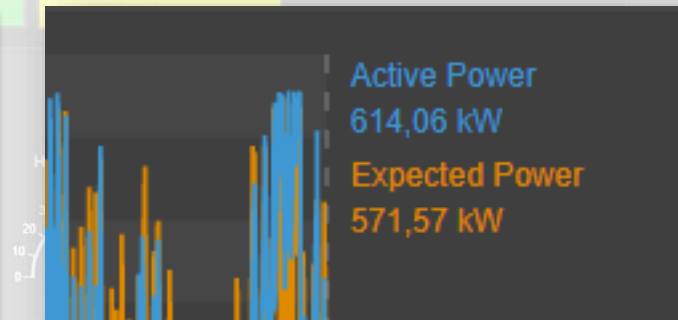
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Turbine Availability
91,875 %

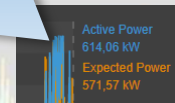
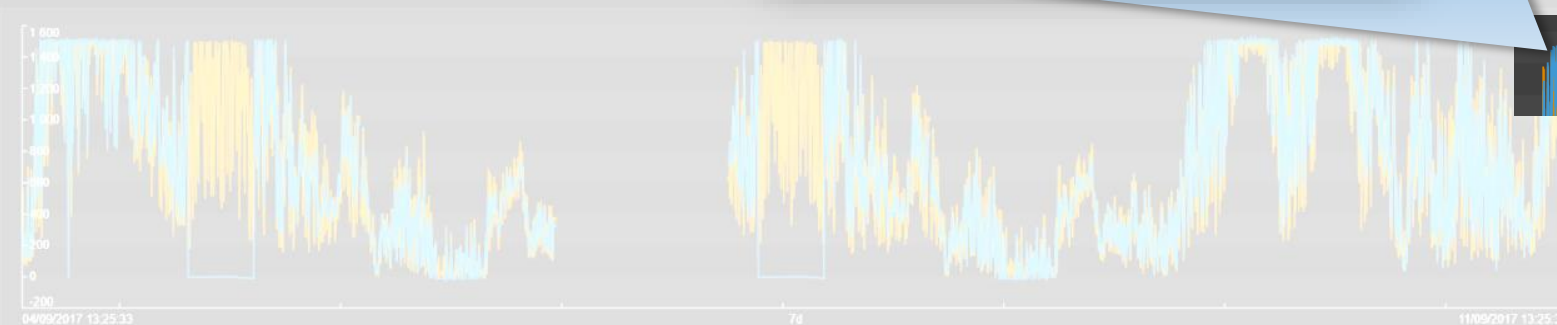
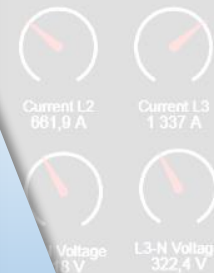
About

Name	Value
GE06/Gearbox Serial	
GE06/Gearbox Type	
GE06/Manufacturer	
GE06/Model	
GE06/Power Rated	
GE06/Serial Number	

- Real-time readings
- Predictive models



Links
[Thermal Details](#)
[High Turbine Temp](#)



Wind Turbine Detail Asset: GE06

Ad Hoc Display

← GE06



Capacity
48.93 %

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Load Operation

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Links
[Thermal Details](#)
[High Turbine Temp](#)

About

Name	Value
GE06 Gearbox Serial Number	4800000-0000-0
GE06 Gearbox Type	WindEnergy
GE06 Manufacturer	Truvalle
GE06 Model	T95-2MW
GE06 Power Rated	1 500
GE06 Serial Number	M000000

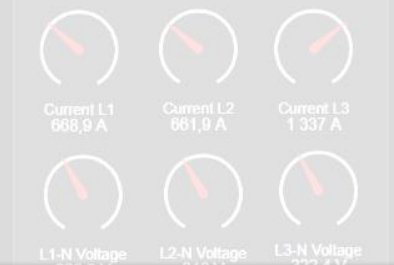
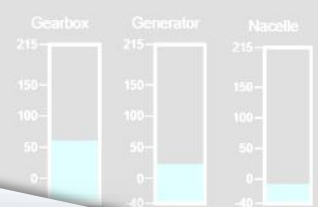
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Hydraulic Pressure



Temperatures

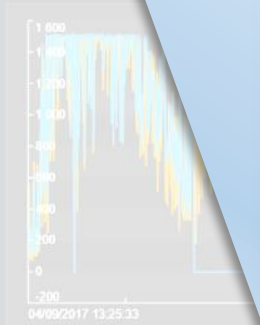


About

Name ▲	Value
GE06 Gearbox Serial Number	4800000-0000-0
GE06 Gearbox Type	WindEnergy
GE06 Manufacturer	Truvalle
GE06 Model	T95-2MW
GE06 Power Rated	1 500
GE06 Serial Number	M000000

Contextual information

- Manufacturer
- Rating
- Last maintenance date



04/09/2017 13:25:33

7d

Now

11/09/2017 13:25:33

← GE06



Capacity
48,93 %

Operating State
Load Operation

Efficiency
14,401 %

Overheat Alarm

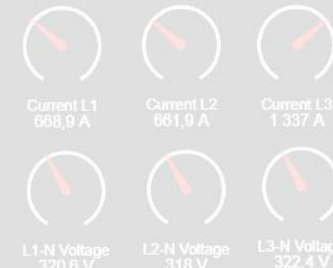
Turbine Availability
31,875 %

Links
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[High Turbine Temp](#)

About

Name ▲	Value
GE06/Gearbox Serial Number	4800000-0000-0
GE06/Gearbox Type	WindEnergy
GE06/Manufacturer	Truvalle
GE06/Model	T05-2MW
GE06/Power Rated	1.500
GE06/Serial Number	M000000

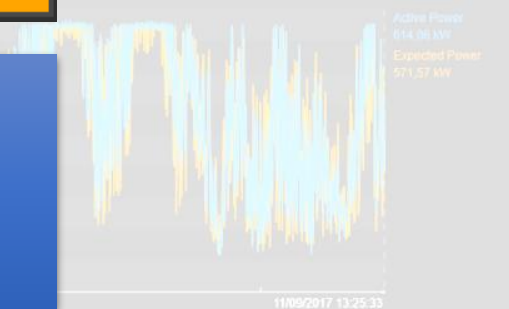
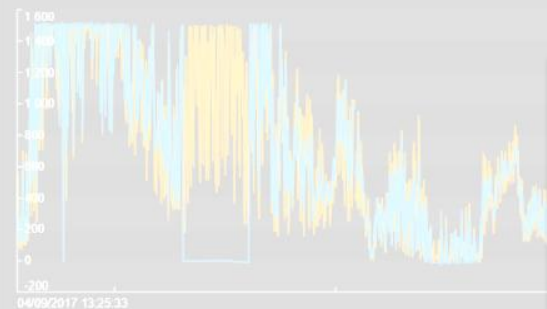
Temperatures

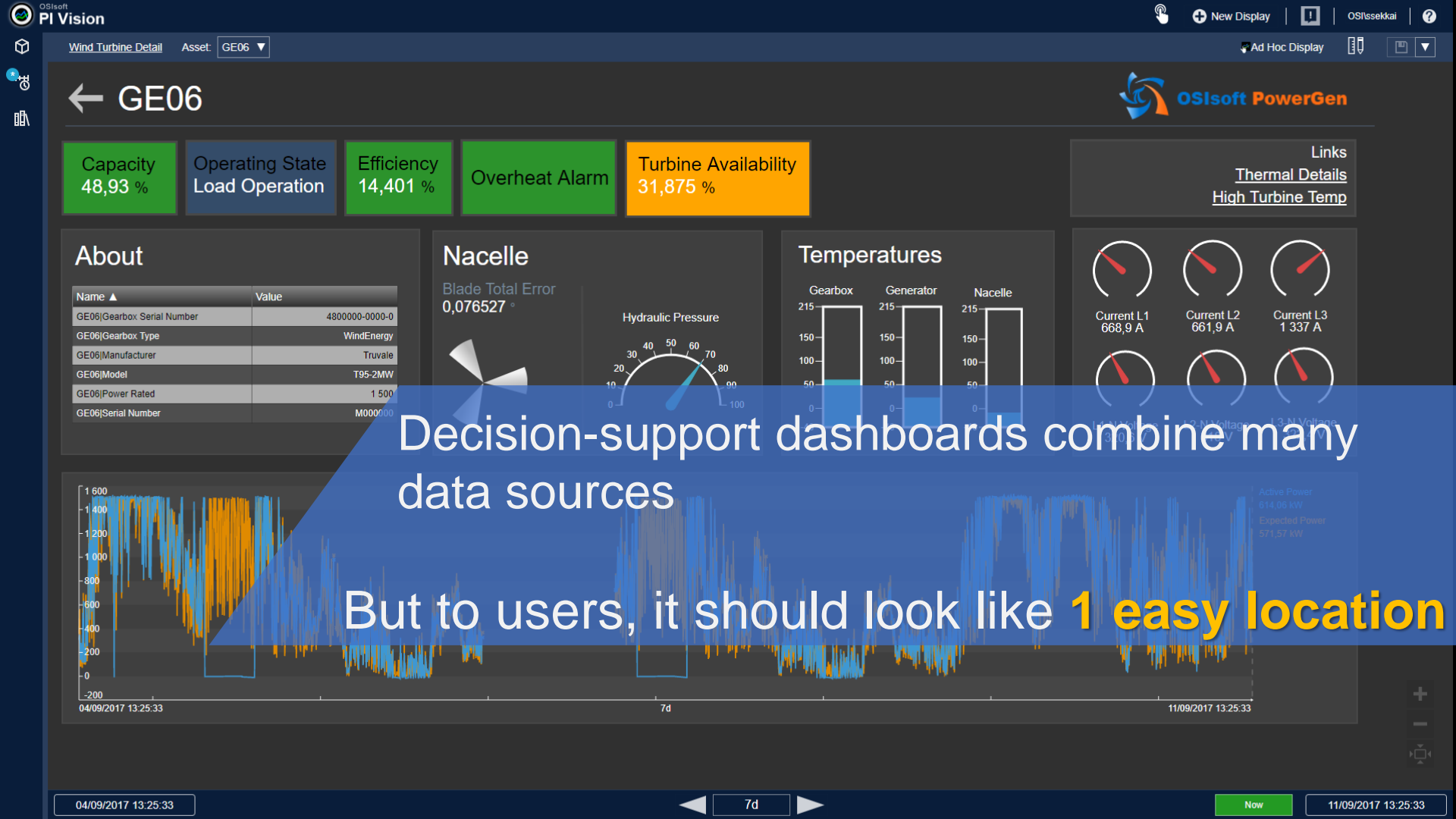


Efficiency
14,401 %

Turbine Availability
31,875 %

- Summary Calculations
- KPI's





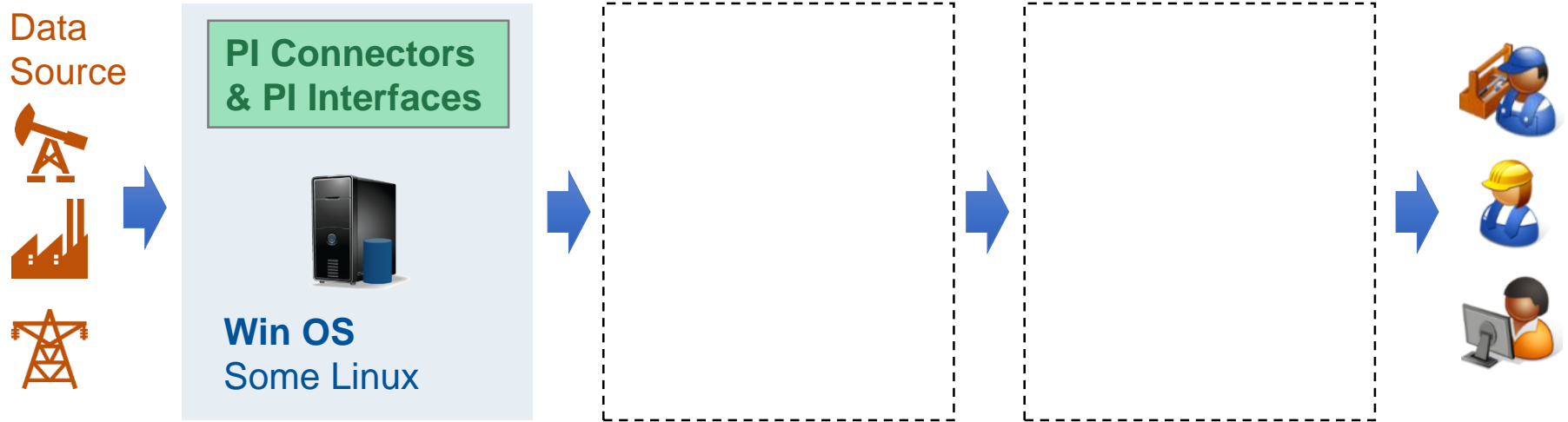
Decision-support dashboards combine many data sources

But to users, it should look like **1 easy location**

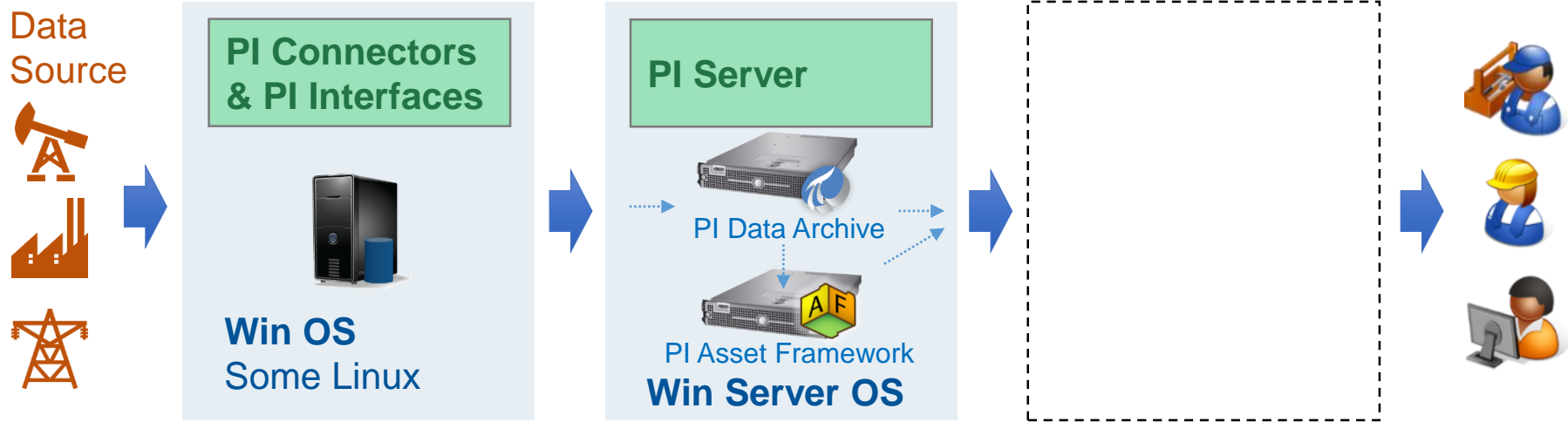
A close-up photograph of an architectural drawing on a white sheet of paper. The drawing features various geometric shapes, lines, and numerical annotations such as '7', '580', '350', '150', and '200'. A black pen with a gold-colored tip lies diagonally across the upper right portion of the drawing. In the bottom left corner, a portion of a white ruler with black markings is visible. A semi-transparent dark grey rectangular box is overlaid on the left side of the image, containing the text 'Basic Architecture' in white.

Basic Architecture

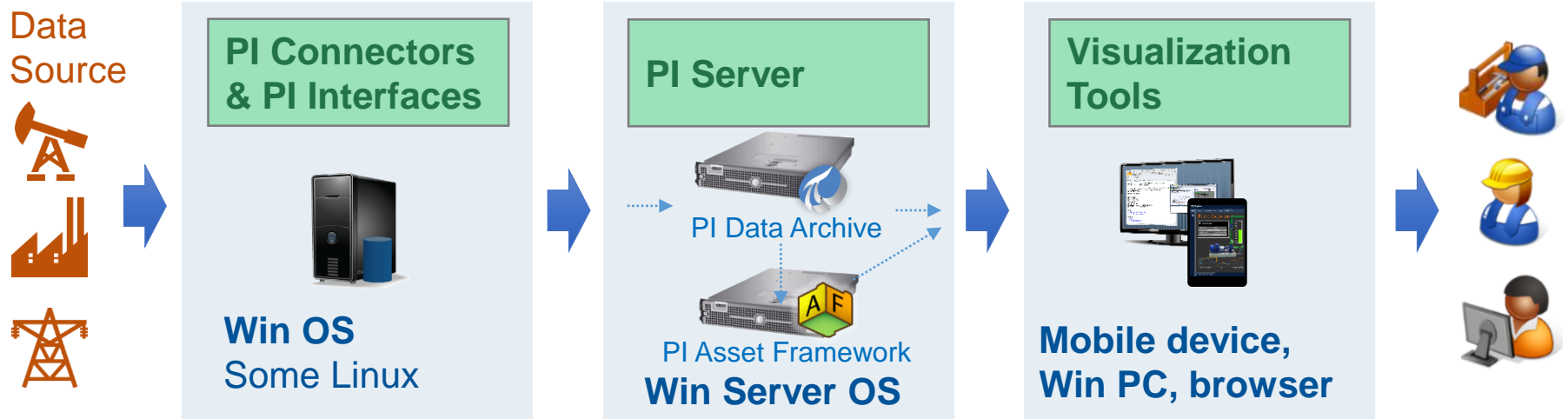
Layer 1: Data collection



Layer 2: Store & Enhance

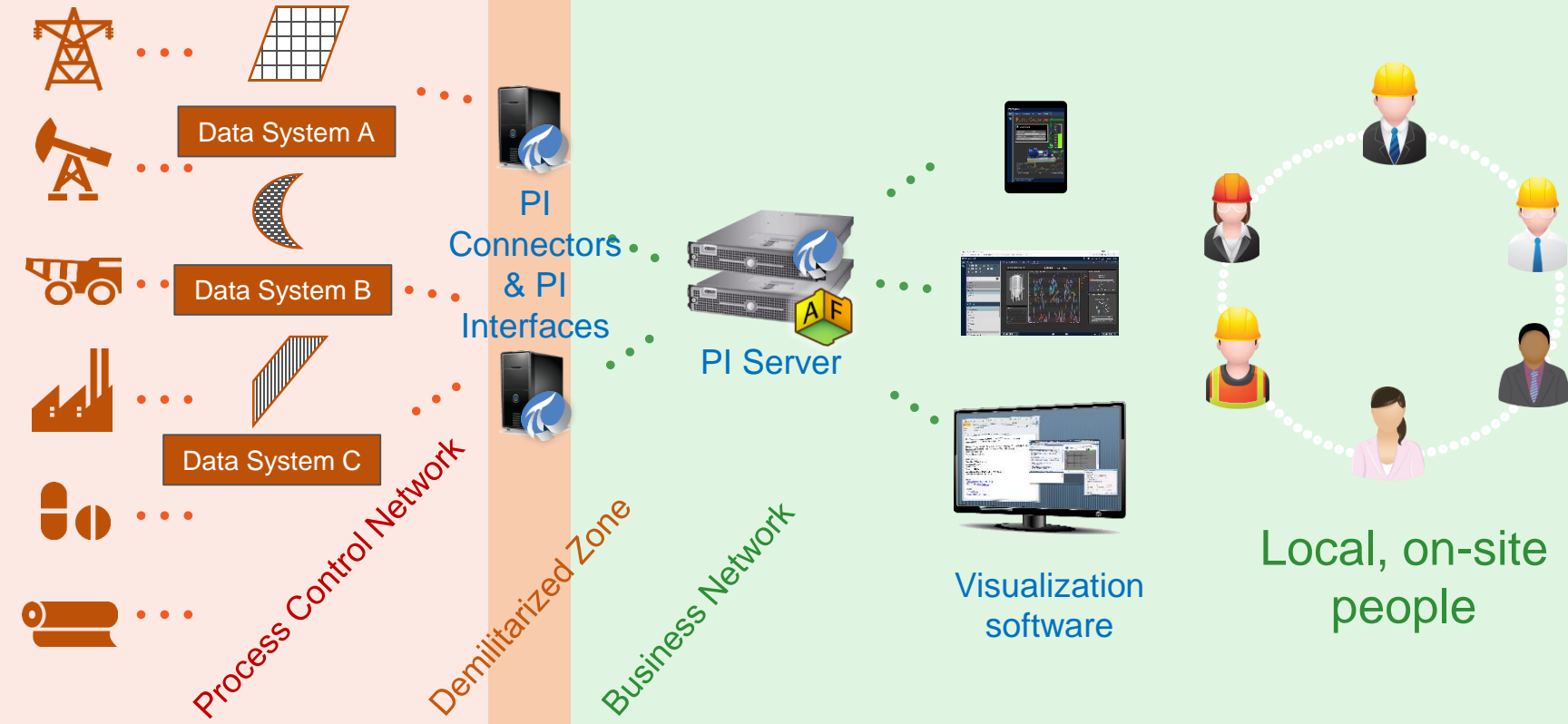


Layer 3: Deliver

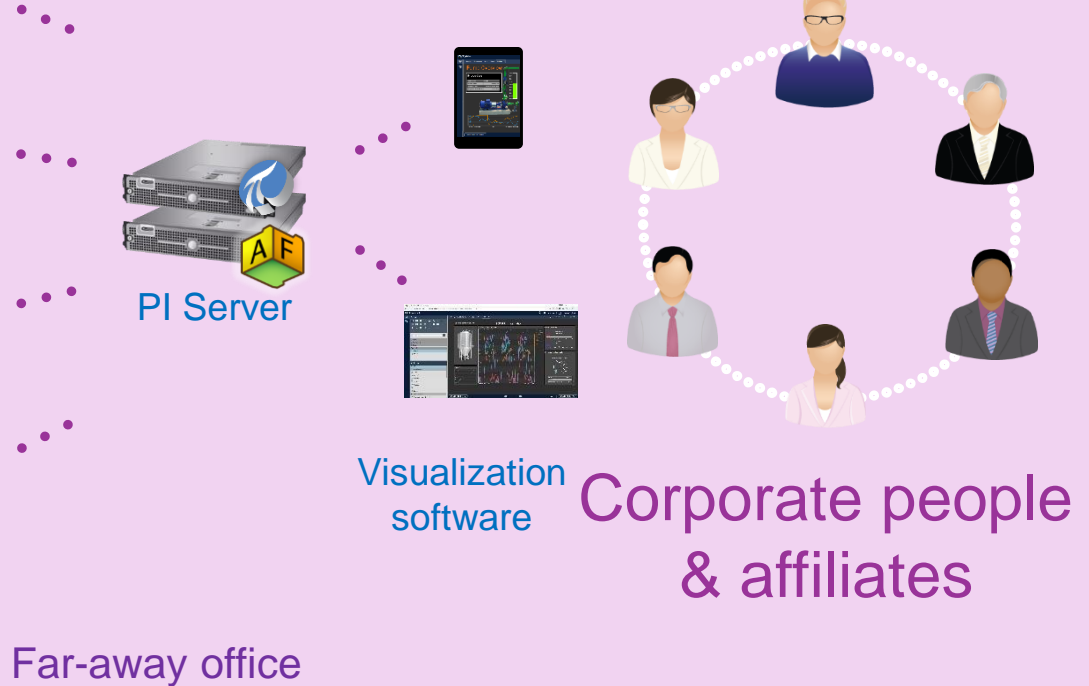


← Typical installation from nothing to seeing data is 3~5 days →

Basic Architecture



Enterprise Architecture



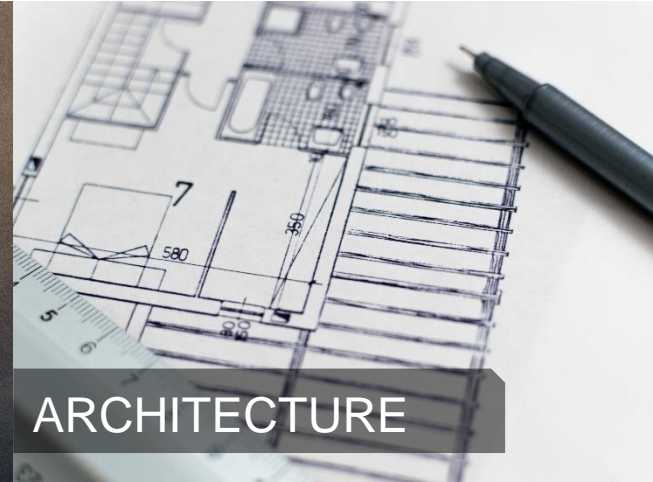
What We Covered



PI SYSTEM



LANDSCAPE



ARCHITECTURE

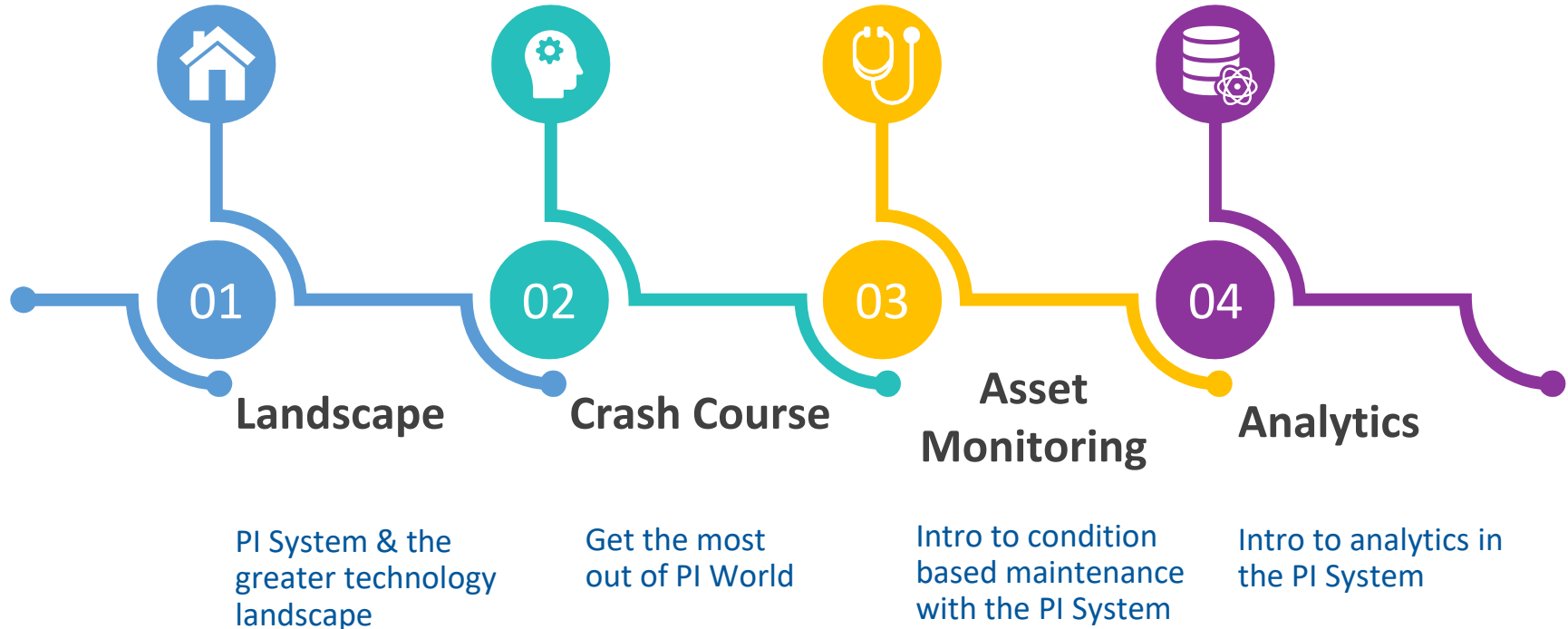
Digital data **infrastructure** for sensor-based data.

Today's operations blends **multiple types of data**. But to a user, it should be **seamless**.

Fast deployment times to connect single sites or the entire enterprise

Intro to PI System Track:

New to PI System? We'll get you up to speed!



Contact Information



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abidot@osisoft.com

Questions?

Please wait for
the **microphone**

State your
name & company



Please remember to...

Complete Survey!

Navigate to this session in
mobile agenda for survey

