PI System
& the Greater Technology Landscape

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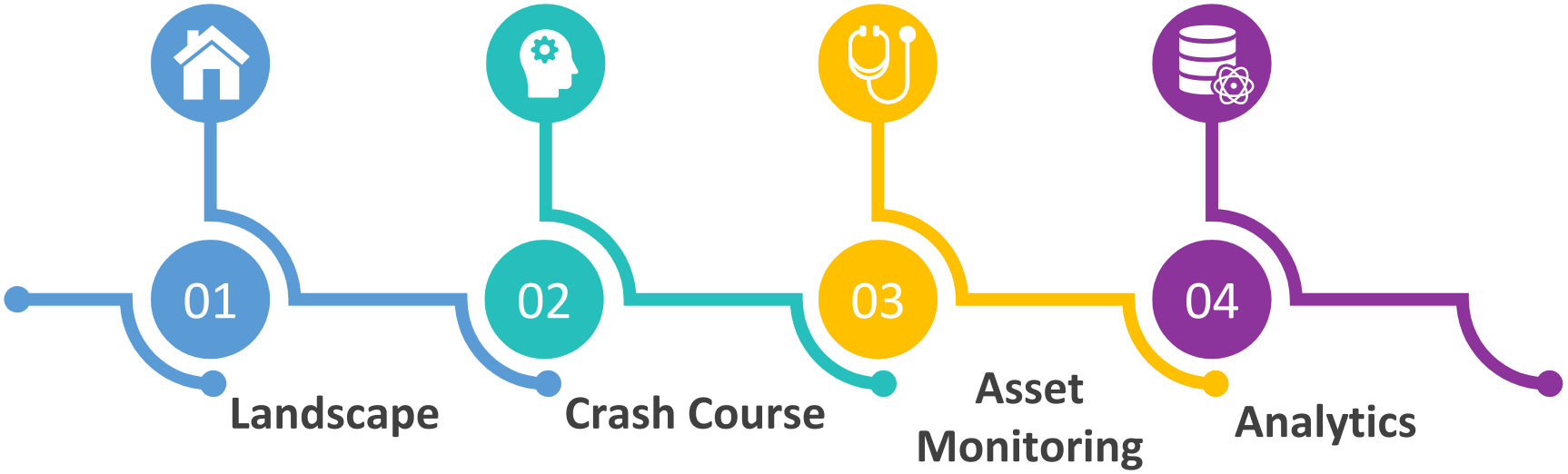
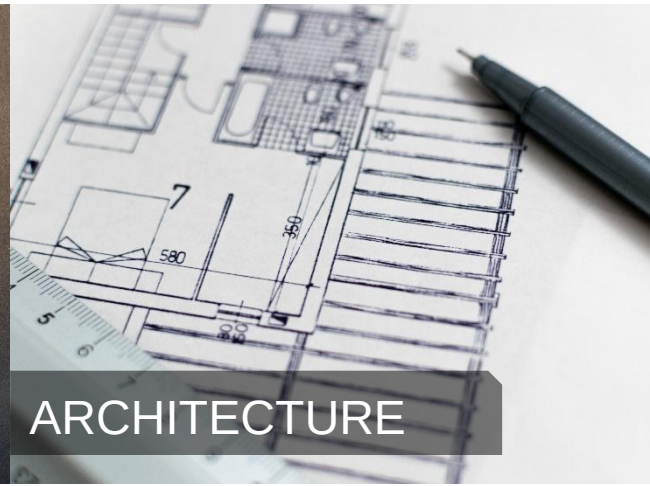
Product Marketing Manager

Intro to PI System Track:

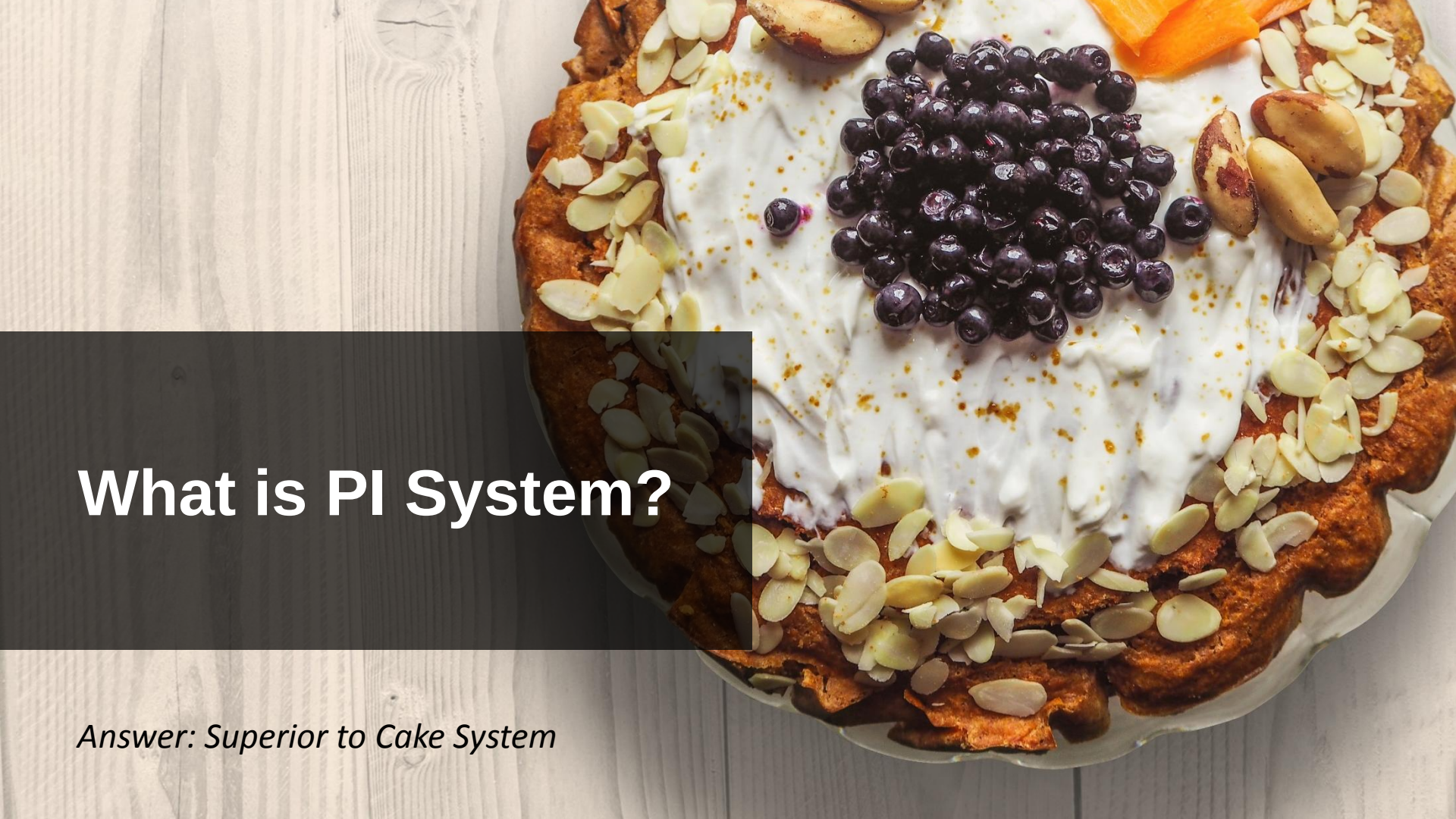
New to PI System? We'll get you up to speed!



Questions we will address in this talk



- What is PI System?
- What's different about operational data?
- What does a basic deployment look like?



What is PI System?

Answer: Superior to Cake System

Different business groups have different needs

Production Manager

"What is the forecast of productivity?"

Maintenance Engineer

"I need to know the moment it goes out of tune"

Process Engineer

"The equipment is not working– what's the problem?"

Control Room Technician

"The process is like a baby – you have to watch it"

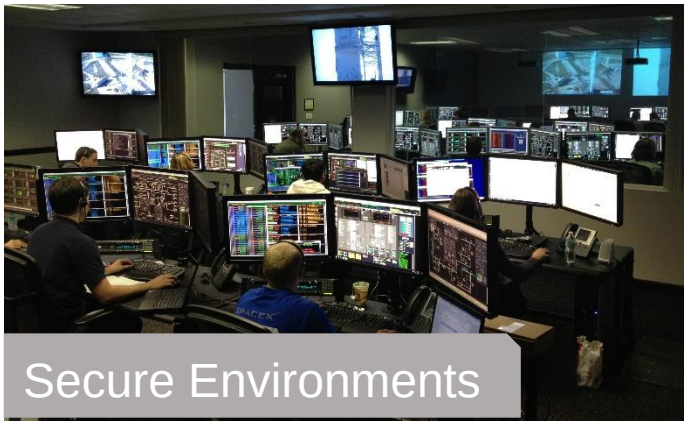
Reporting Analyst

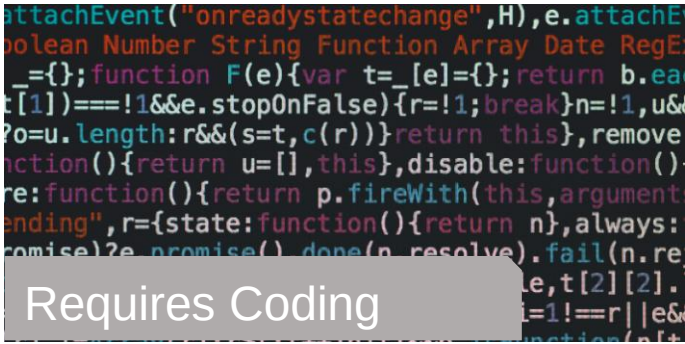
"I need to combine data from 3 sources in 1 report."

Data Scientist

"Can we find new savings with machine learning?"

Answers are in the data, but it's surprisingly hard to get to





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

What is this?

Temperature
Speed
Batch ID
Distance

From what?

Boiler
Pump
Truck
Transformer

37

What units?

°F or °C
mi/hr
psi

Where is it?

HQ
Off-shore
Springfield

Raw data needs context to make it consumable information

Goal of PI System is to connect people with data & information

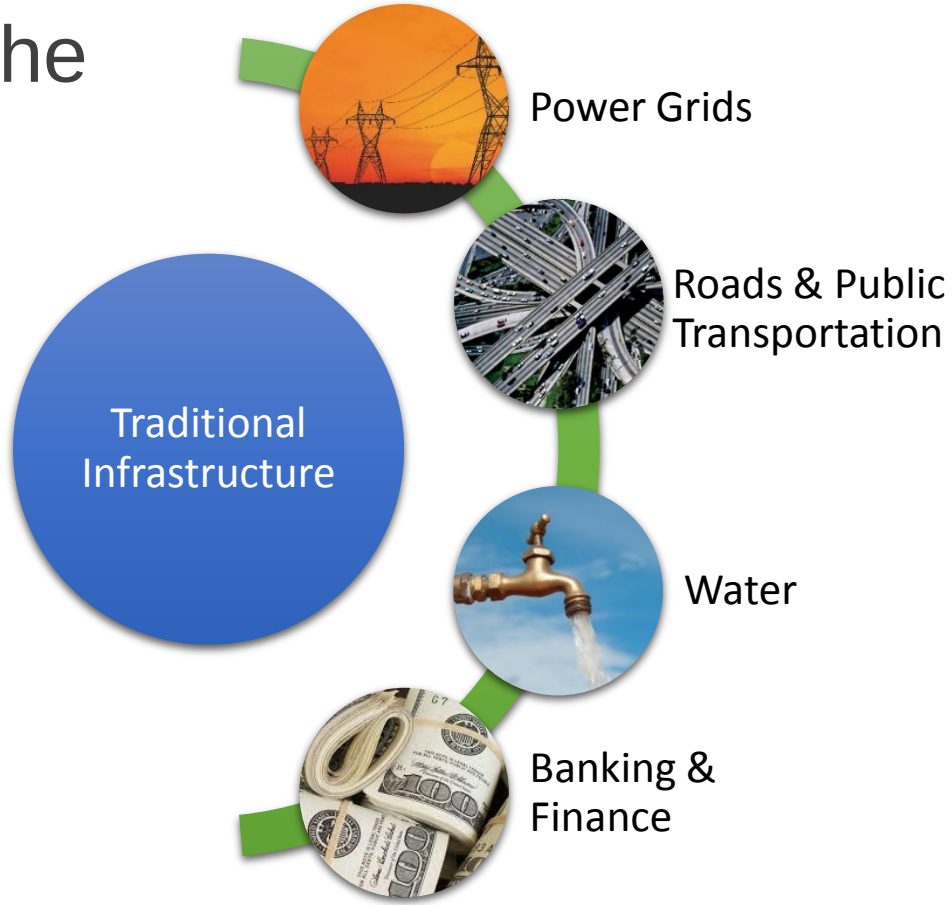
- One-stop-shop
- Viewing layer
- User configured

Why do I keep hearing the word “infrastructure?”

Systems & organizations that move something of value from:

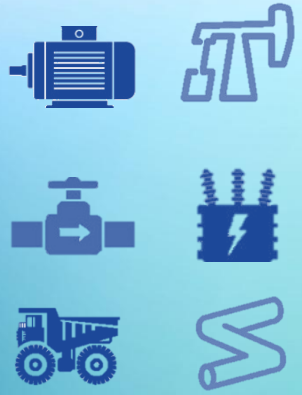
Point A – Where it is

Point B – Where it needs to go



PI System is a digital infrastructure for sensor-based data

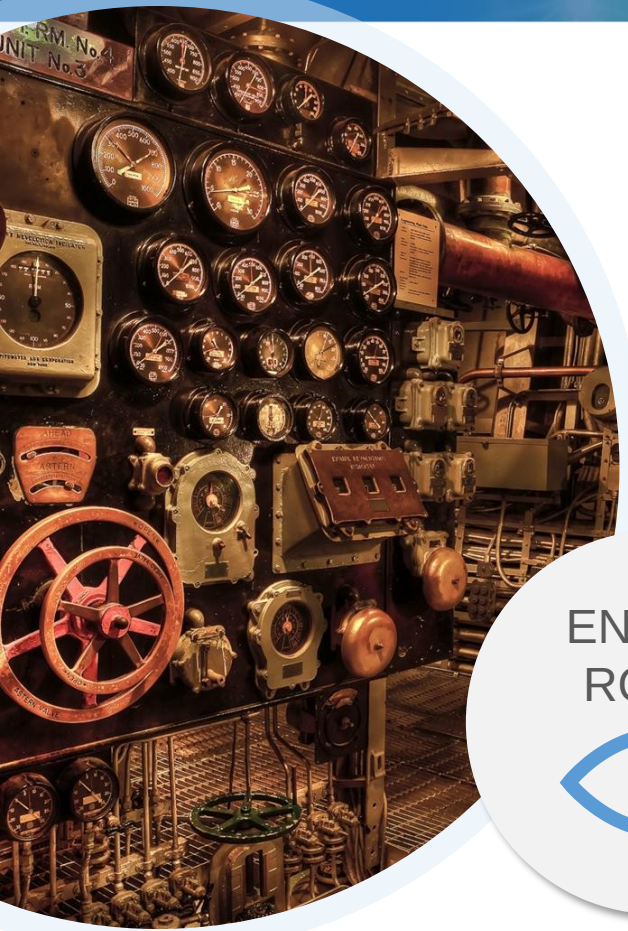
POINT A
Data Sources



POINT B

Infrastructure is ever-present, additive, & supports multiple uses

Data Landscape



ENGINE ROOM

PORT

CORPORATE

Everyone uses data

Not all data is the same

Real-time
Decision Support

Retrospective
Analysis

Time Series	Relational	Geospatial	Unstructured

Time Series

- Sensor data
- Historian

Comes from

SCADA, systems that typically run 24/7
(Near) continuous stream of data

Used for

Process monitoring
Critical systems needing real-time action

Used by

Control-network operators, engineers. **OT**

Relational

- SQL
- CRM

Comes from

Transactions, records

Used for

Enterprise resource planning (ERP)
Finance
Customer relationship management (CRM)

Used by

Business users, planners, maintenance. **IT**

Unstructured

- Hadoop

Comes from

Documents
Images
Social media

Used for

Correlation analysis, pattern recognition

Used by

Statisticians, data scientists

Sensor data is raw & not naturally aligned

Turbine 1

Speed

Bearing Temp

Oil Temp

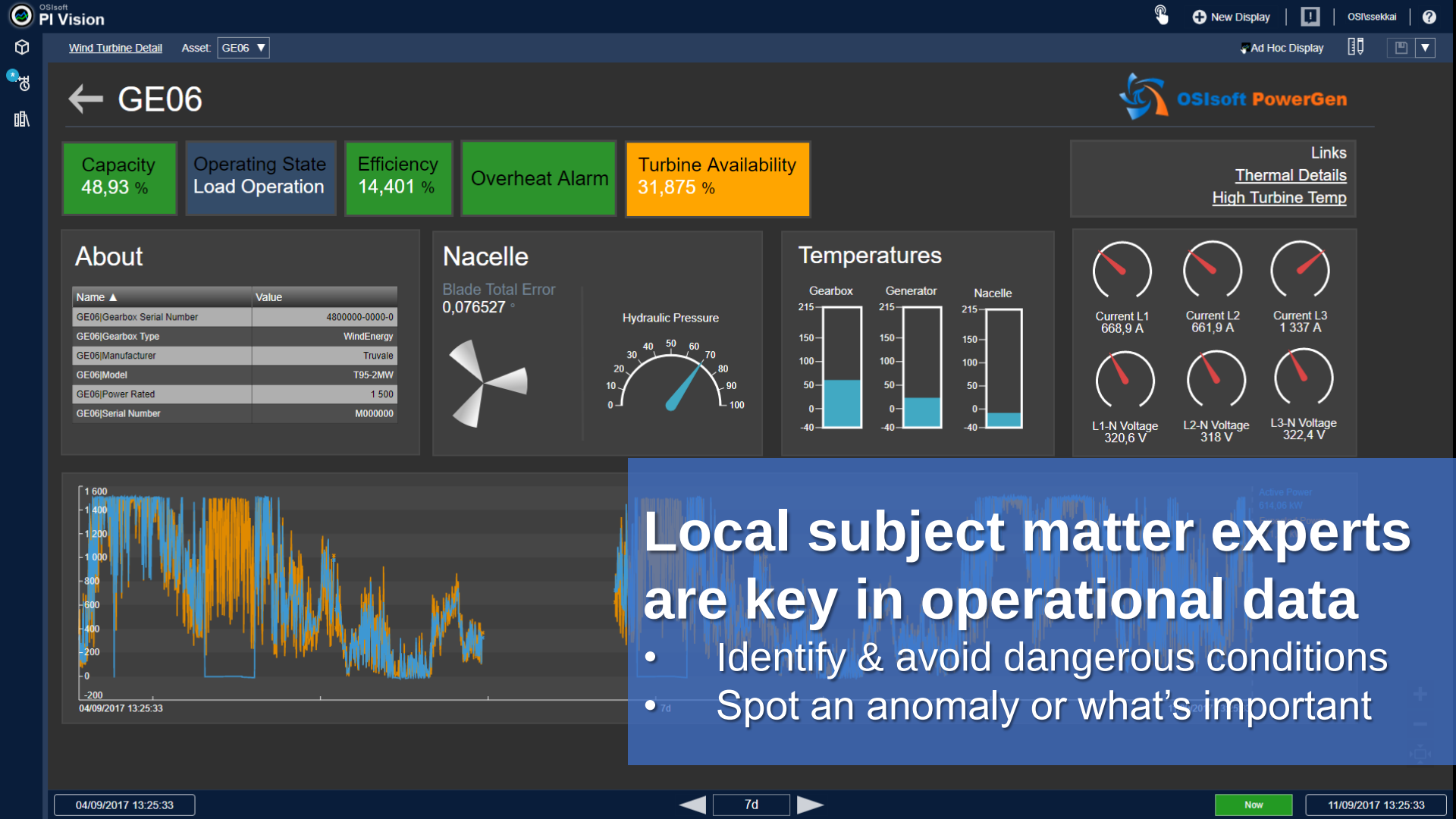
Turbine 2

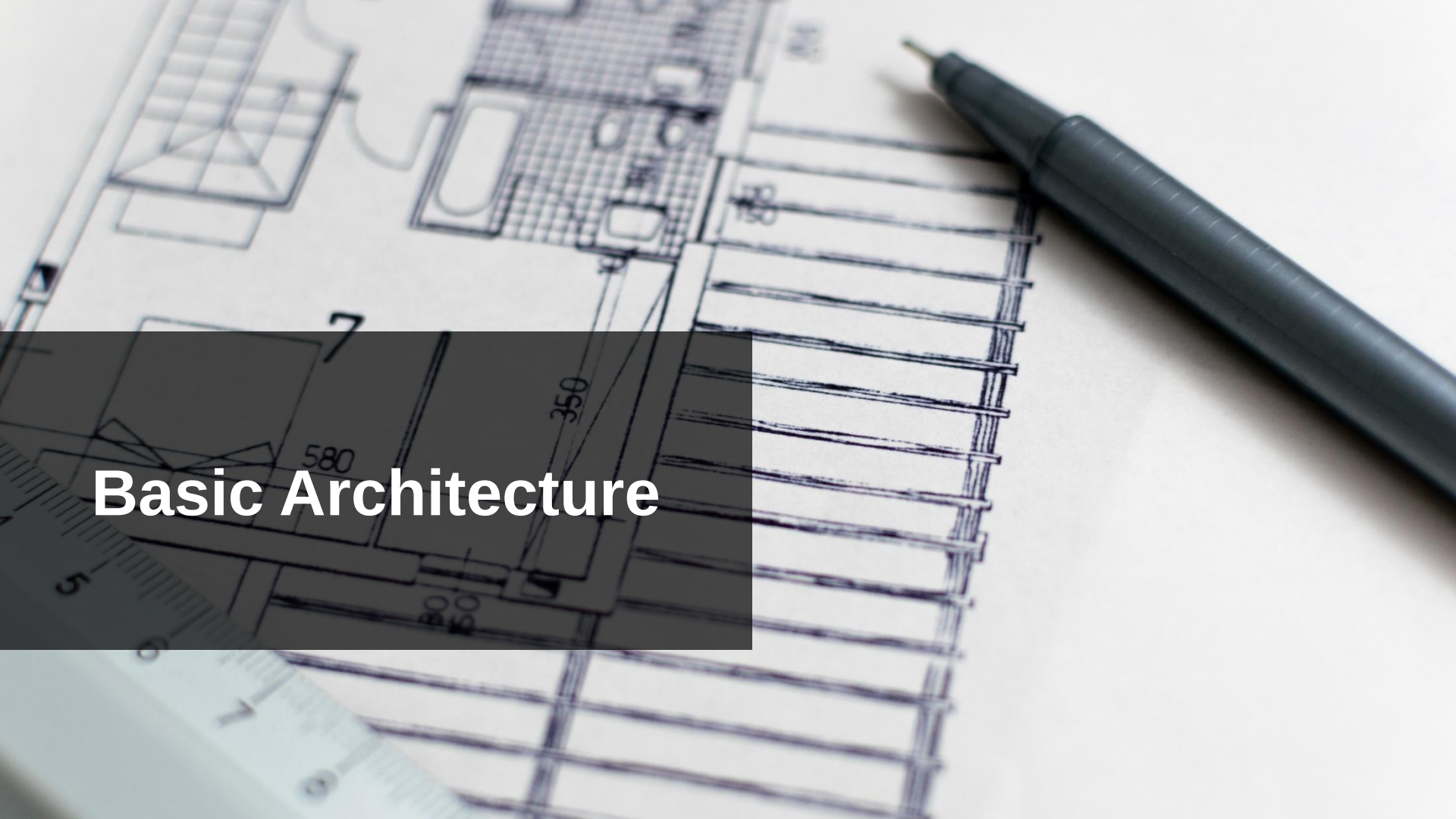
Speed

Bearing Temp

Oil Temp

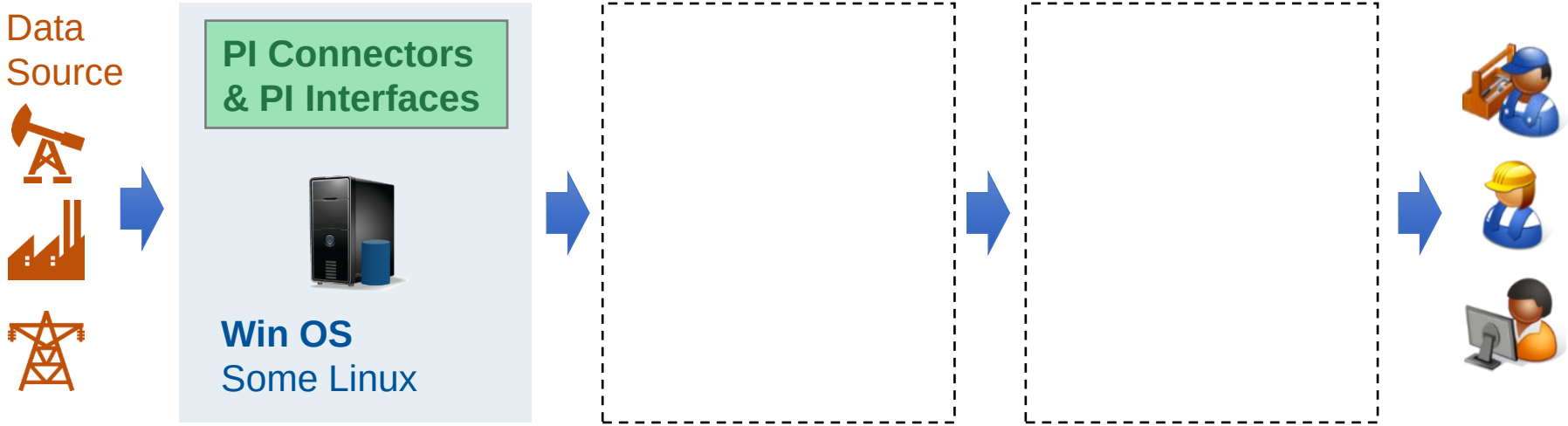
Wear Factor


OSIsoft
PI Vision
New Display
OSI\ssekkai
Wind Turbine Detail
Asset: GE06
Ad Hoc Display
GE06
OSIsoft PowerGen
Capacity
48,93 %
Operating State
Load Operation
Efficiency
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
Truvale
GE06|Model
T95-2MW
GE06|Power Rated
1 500
GE06|Serial Number
M000000
Nacelle
Blade Total Error
0,076527 °
Hydraulic Pressure
Temperatures
Gearbox
Generator
Nacelle
Current L1
668,9 A
Current L2
661,9 A
Current L3
1 337 A
L1-N Voltage
320,6 V
L2-N Voltage
318 V
L3-N Voltage
322,4 V
04/09/2017 13:25:33
Local subject matter experts are key in operational data
• Identify & avoid dangerous conditions
• Spot an anomaly or what's important
04/09/2017 13:25:33
7d
Now
11/09/2017 13:25:33



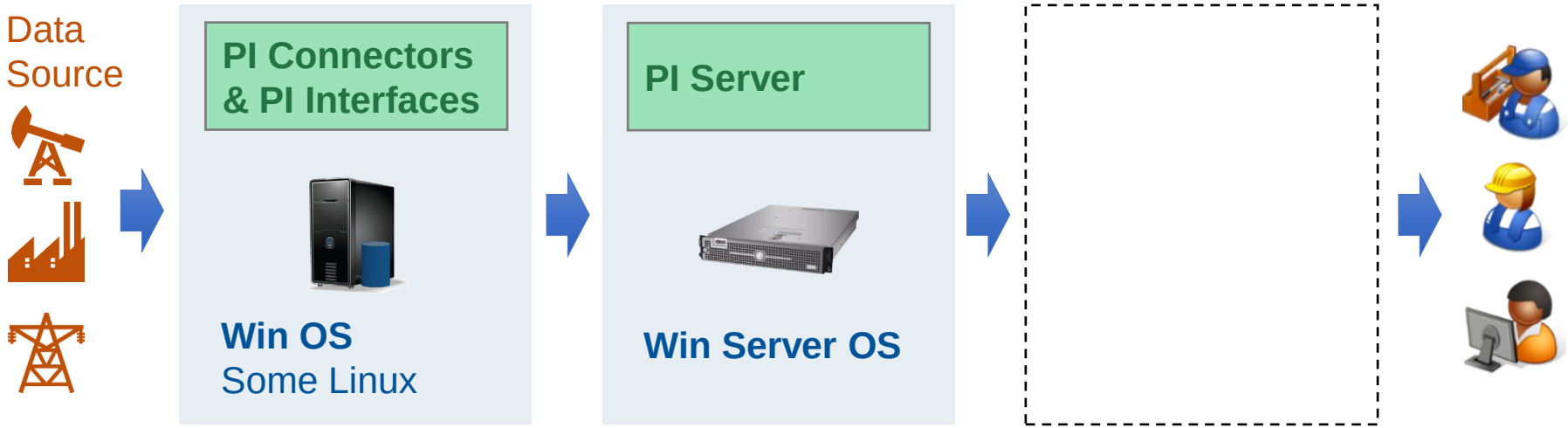
Basic Architecture

Layer 1: Data collection



- Put close to data source
- Use buffering

Layer 2: Data aggregation & normalization



- Can run a personal system on laptop
- Go bigger for production

Layer 3: Visualization

Data Source

PI Connectors & PI Interfaces

Win OS
Some Linux

PI Server

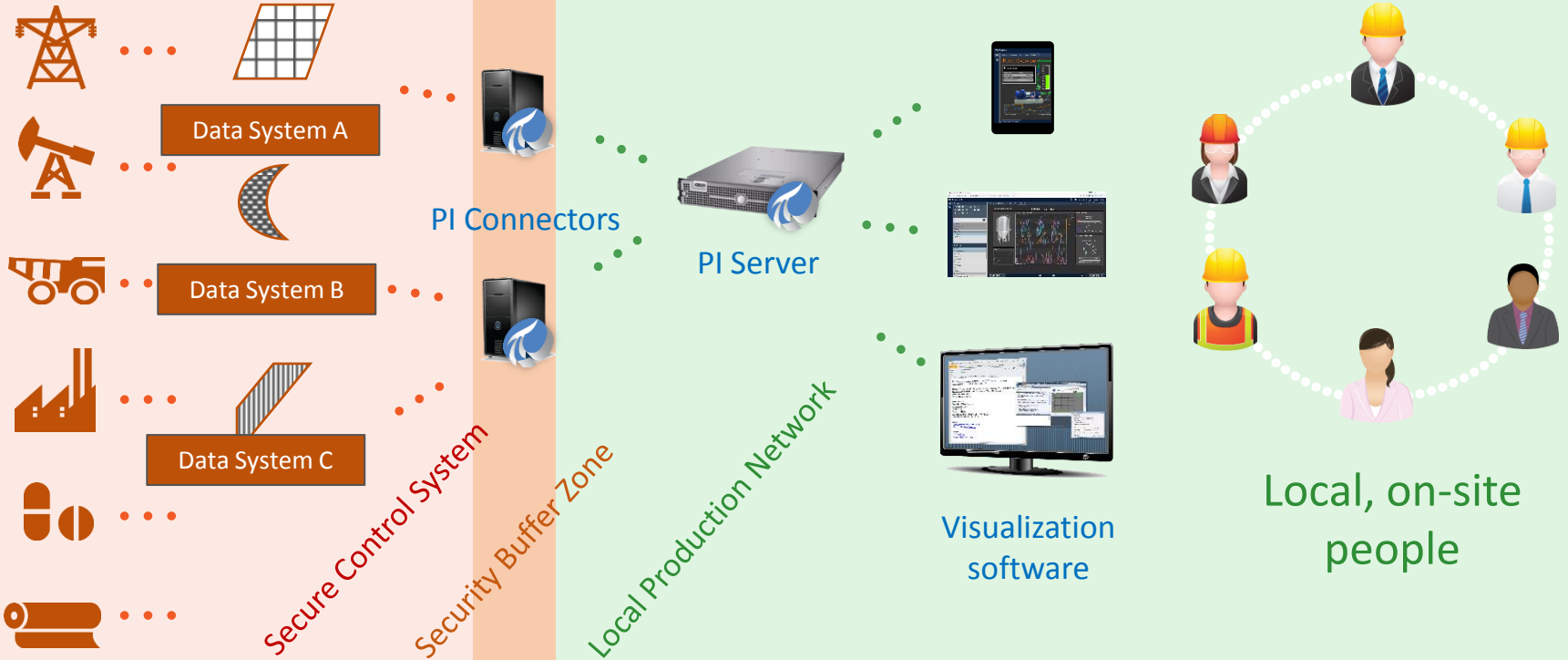
Win Server OS

Visualization Tools

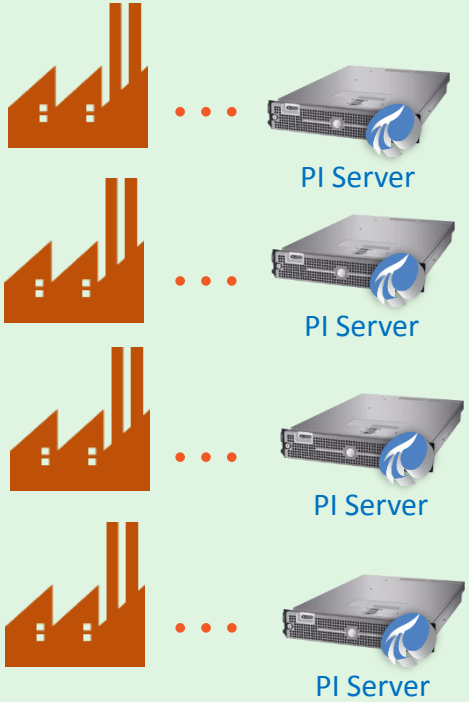
Mobile device, Win PC, browser

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

Basic Architecture



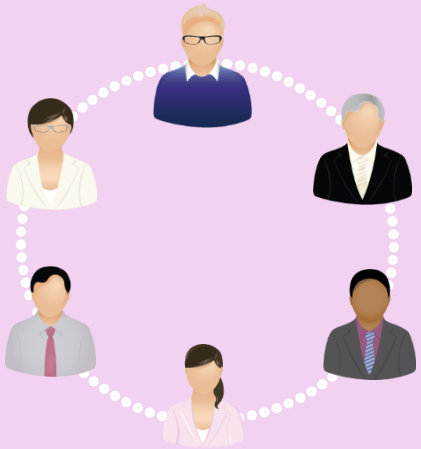
Enterprise Architecture



Local Facility

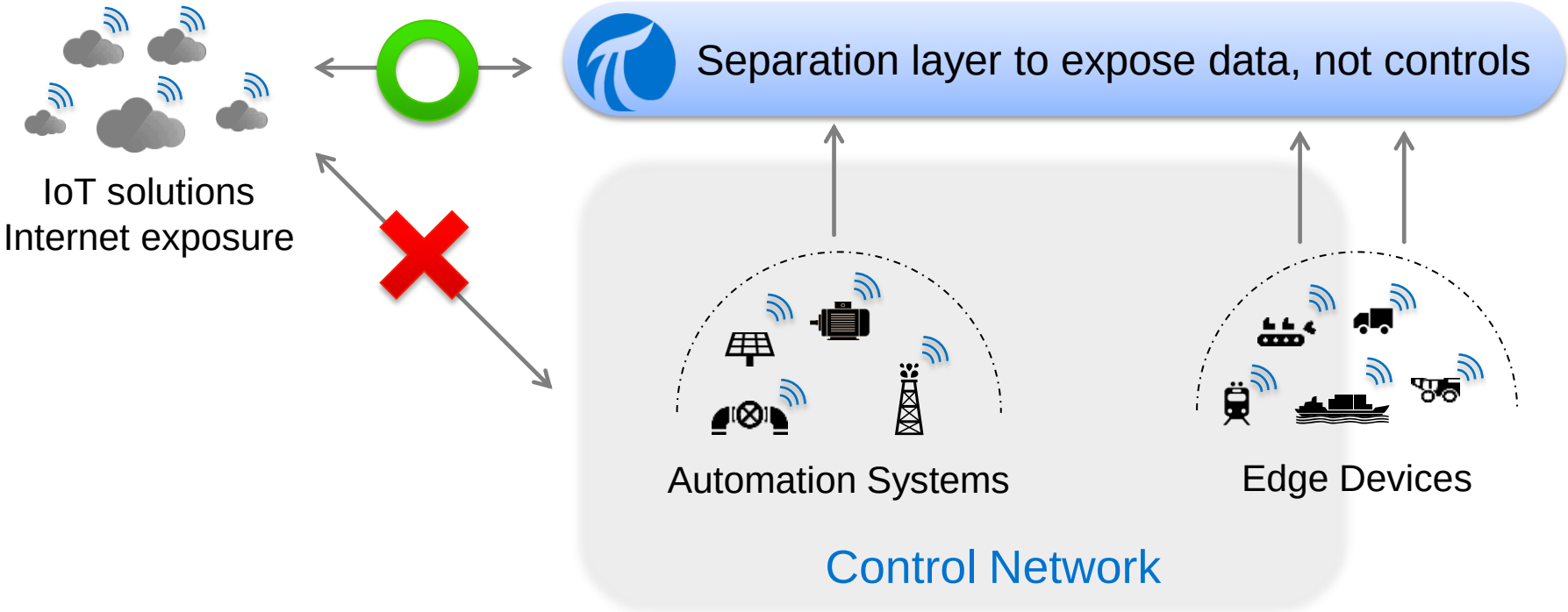
Visualization software

Far-away office

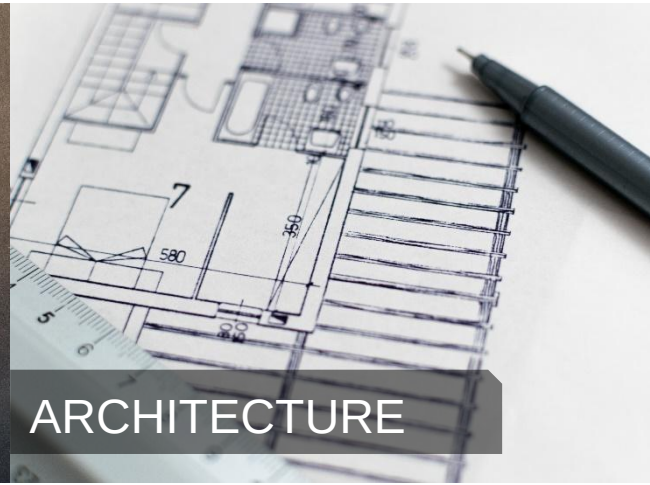


Corporate people & affiliates

Protecting control layer is especially critical in IoT era



What We Covered

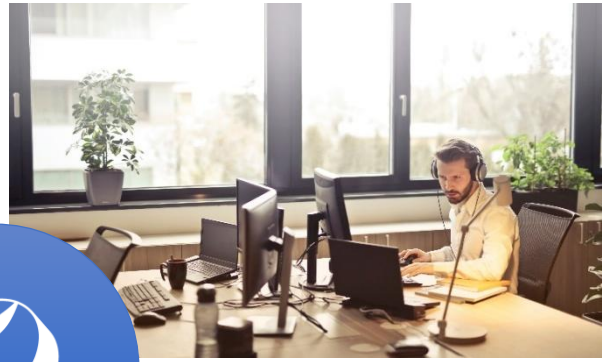


Digital data infrastructure for sensor-based data.

Sensor data is raw and coming at you in real-time. Experts make sense of it.

Create a safe viewing layer. Allow people to build intelligence back into system.

Listen for themes: Easy to get to & easy to understand



Doing so

- Securely
- At-scale

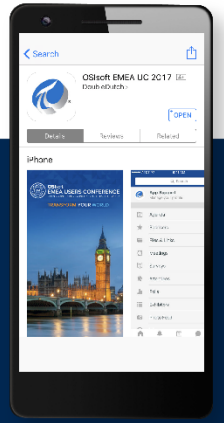
Questions

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

State your **name & company**

Please Remember

Complete the Online Survey for this session



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