DataOps Toolchain for Continuous Control Monitoring

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apoIO

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Who is apoIO?

We work with our clients to optimize their **Digital Journey**

- Cloud Architecture
- Internet Of Things
- Industrial Big Data: PI System

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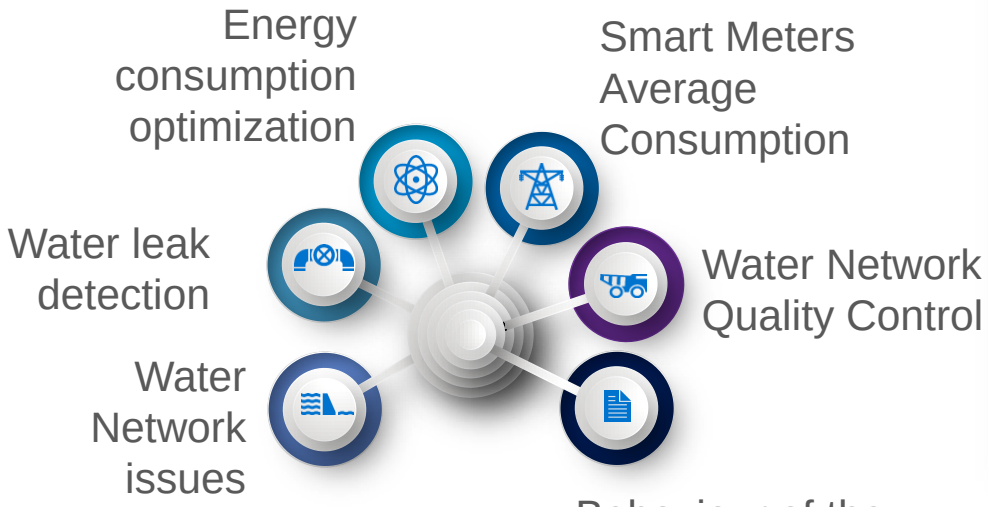
A Typical Client and her Use-Cases

Laura is a P&U Project Manager and Business Analyst



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Business Challenges on Data Quality

Sensors from the Water Network send by GSM values in a non chronological way : Invalidates all rules based on events

Optimisation of substances use on a supply chain :

Many timeranges contain **exceptions** because of

Data Quality

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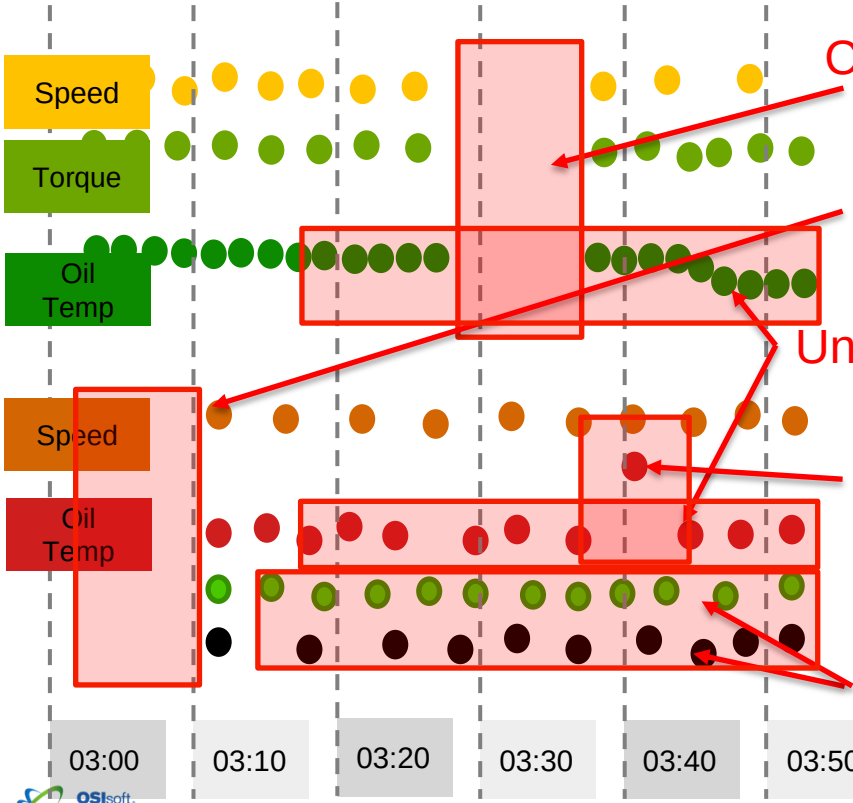
Data has imperfections : Welcome to Reality!



Comm Failure

Different start times

Uneven Spacing

Spike / Out of Range

Additional Measure

	Speed	Torque	Oil Temp	Speed	Oil Temp
03:00	9.8	25	50	X	X
03:10	10	24	50	10.0	60
03:20	10	25	50	10.2	60
03:30	X	X	X	9.8	60
03:40	9.9	25	50	10.0	120
03:50	9.9	25	45	10.1	60

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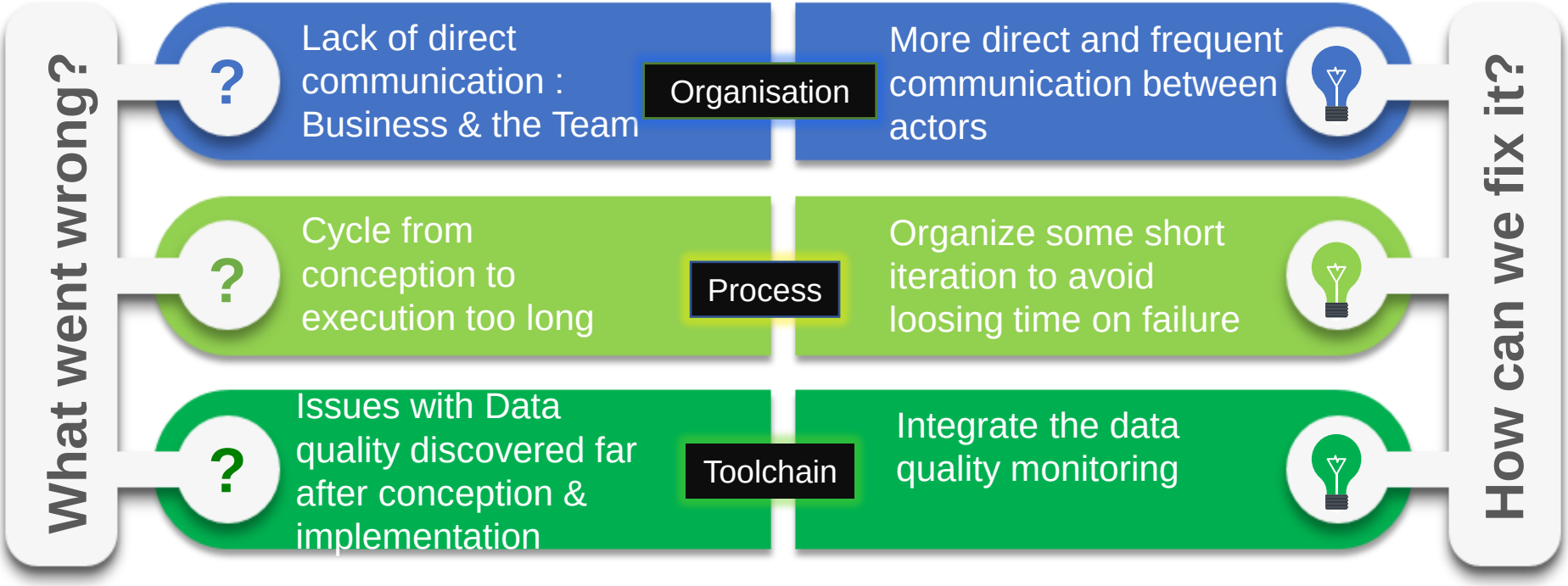
Analysis of the problem



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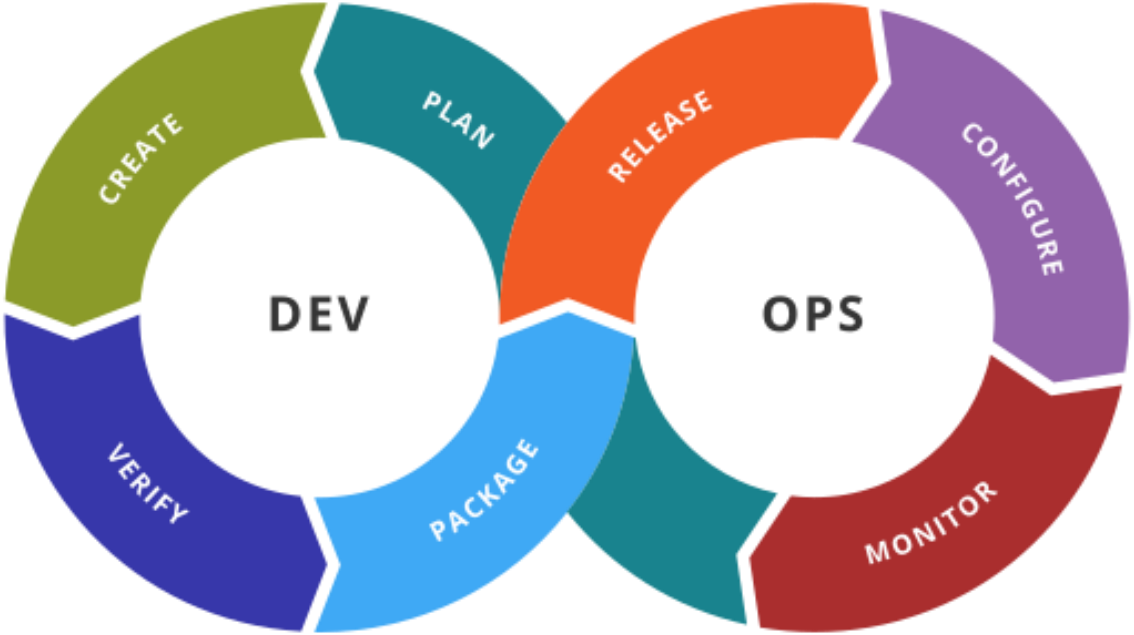
DevOps Approach : Continuous Improvement



© https://en.wikipedia.org/wiki/DevOps_toolchain

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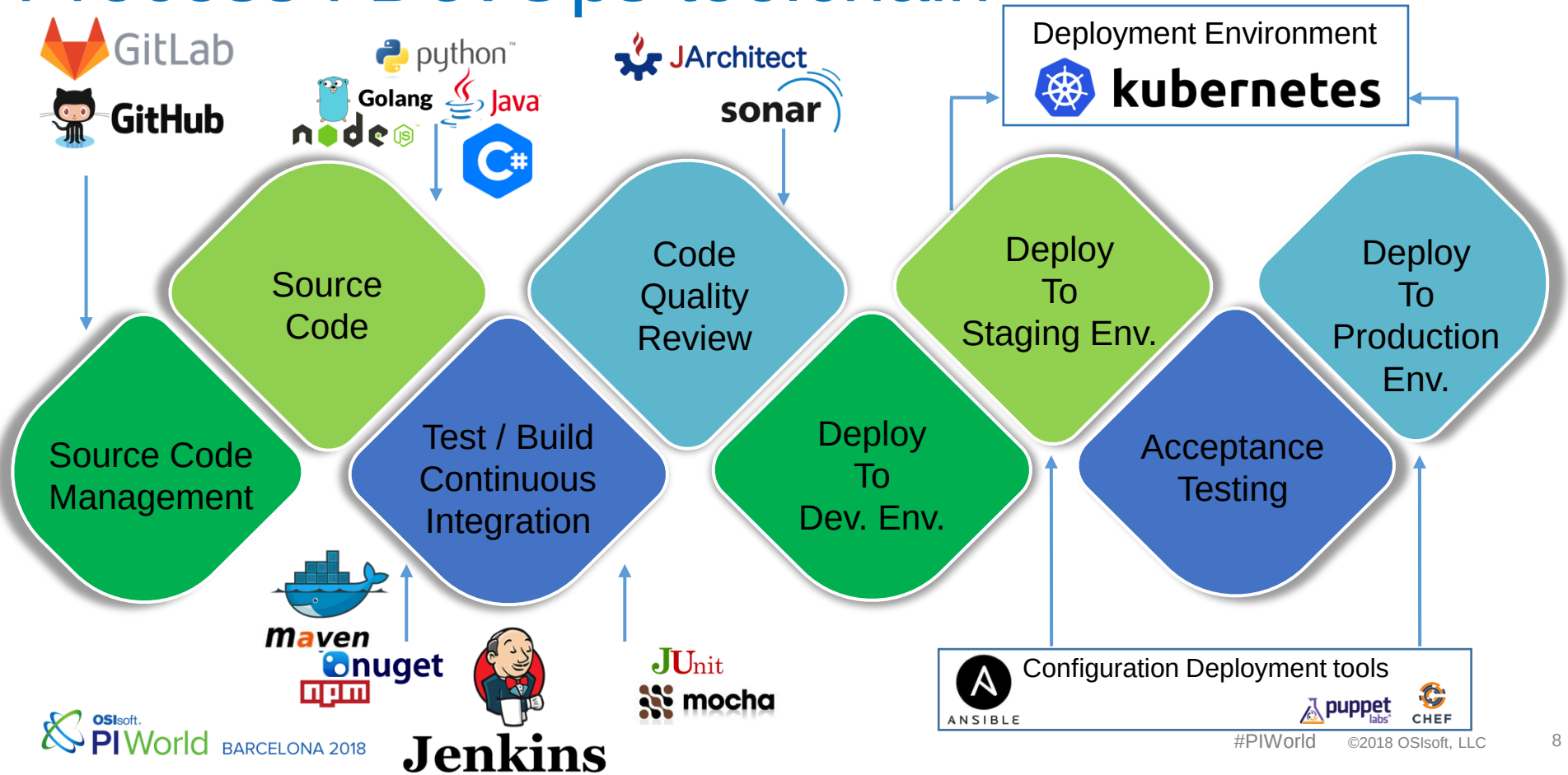
Process : DevOps toolchain



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PI System Project life-cycle:
Data Driven Processes

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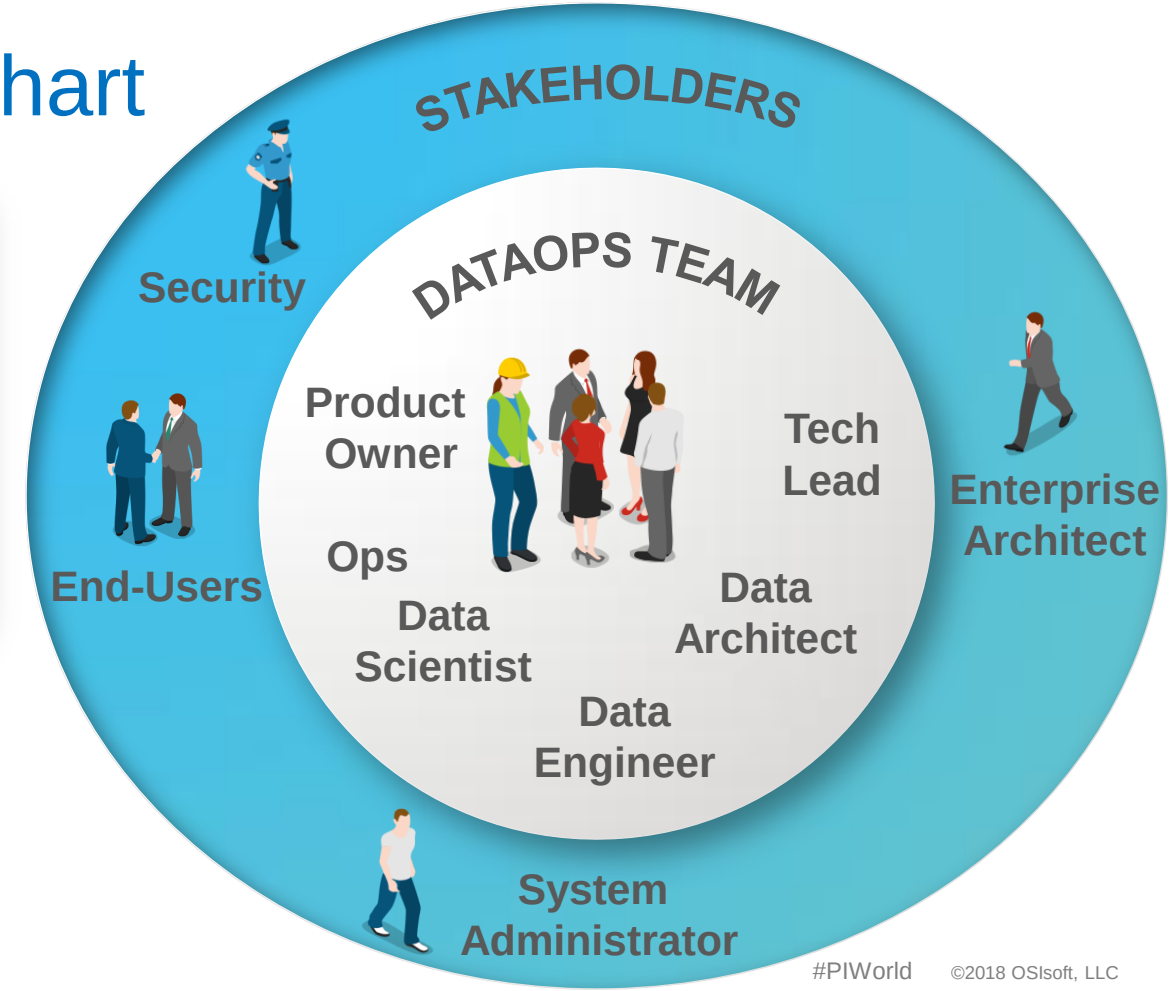
Organization Chart

Laura has a new role:
Product Owner



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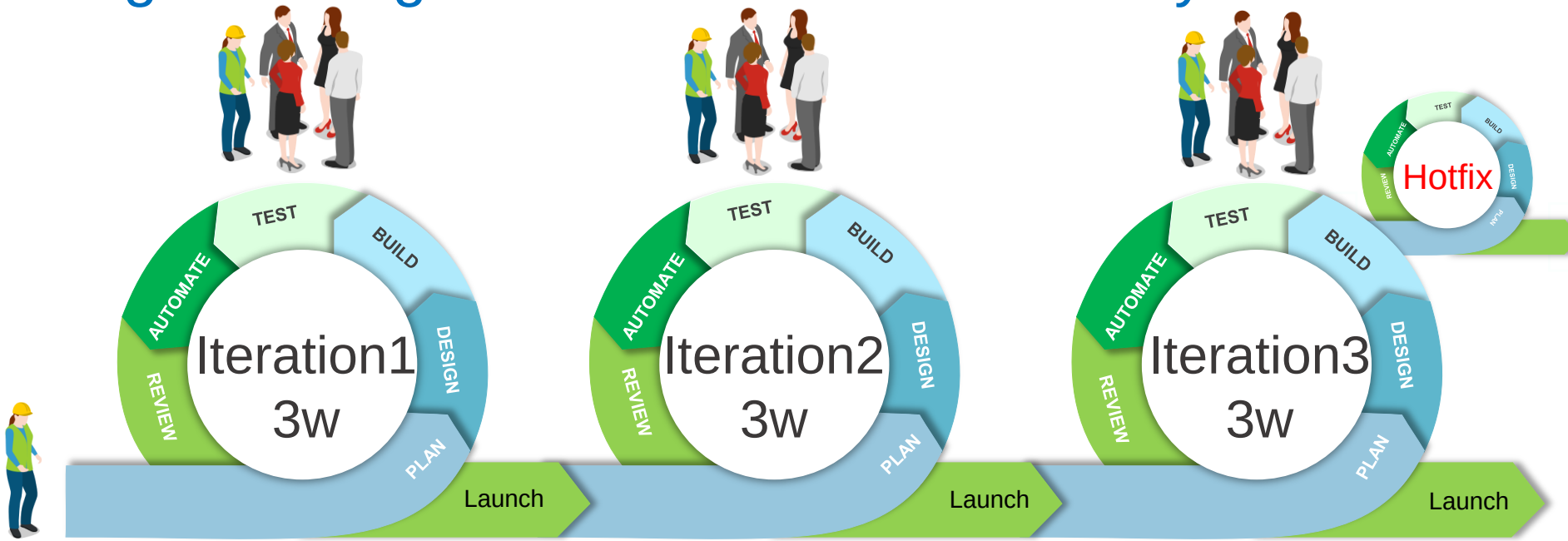
Agile Management : Rethink the Journey



Writes User Stories
Core Features
including Data Quality

Demo
Features

Demo
Features

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Continuous Control Monitoring : MVP Toolchains

1. Simple Excel DataLink
2. Design with Asset Analytics
3. Design an AF SDK based Custom Program
4. Design a PI WEB API Custom Program
5. STAR : Self Test And Repair by Code
6. STAR : Self Test And Repair with PI Integrator

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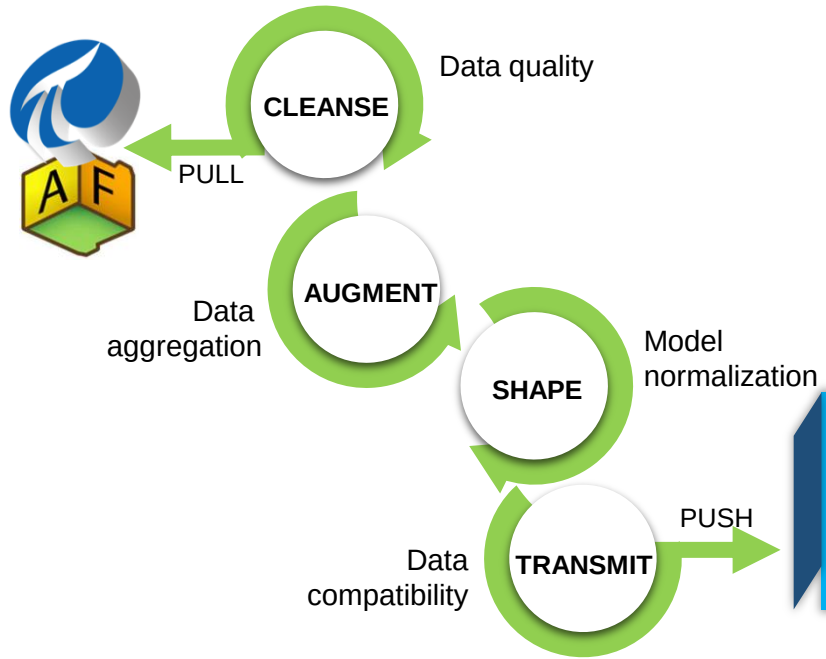
MVP : STAR with Machine Learning



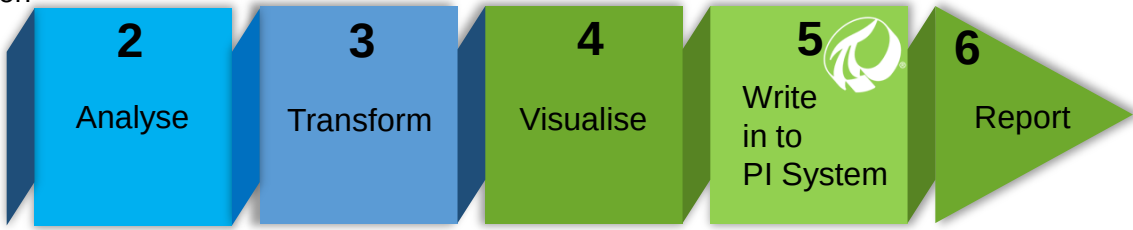
PI Integrator for Business Analytics

Microsoft Business Intelligence

scikit learn

hadoop

Azure Machine Learning



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Risks of DataOps Approach

Count on a clear Data Governance & Support?

Data Exploration managed by Business need

Tasks in iterations depending on other Teams

Does DataOps Team have Testing Background?

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CCM bringing Business values
From Data Quality to Data Exploration

- Data Quality Statistics helping optimize Business rules
- Threshold Optimization
- Data Exploration helping in Prediction
- Data Exploration cleaning useless Monitoring Alerts

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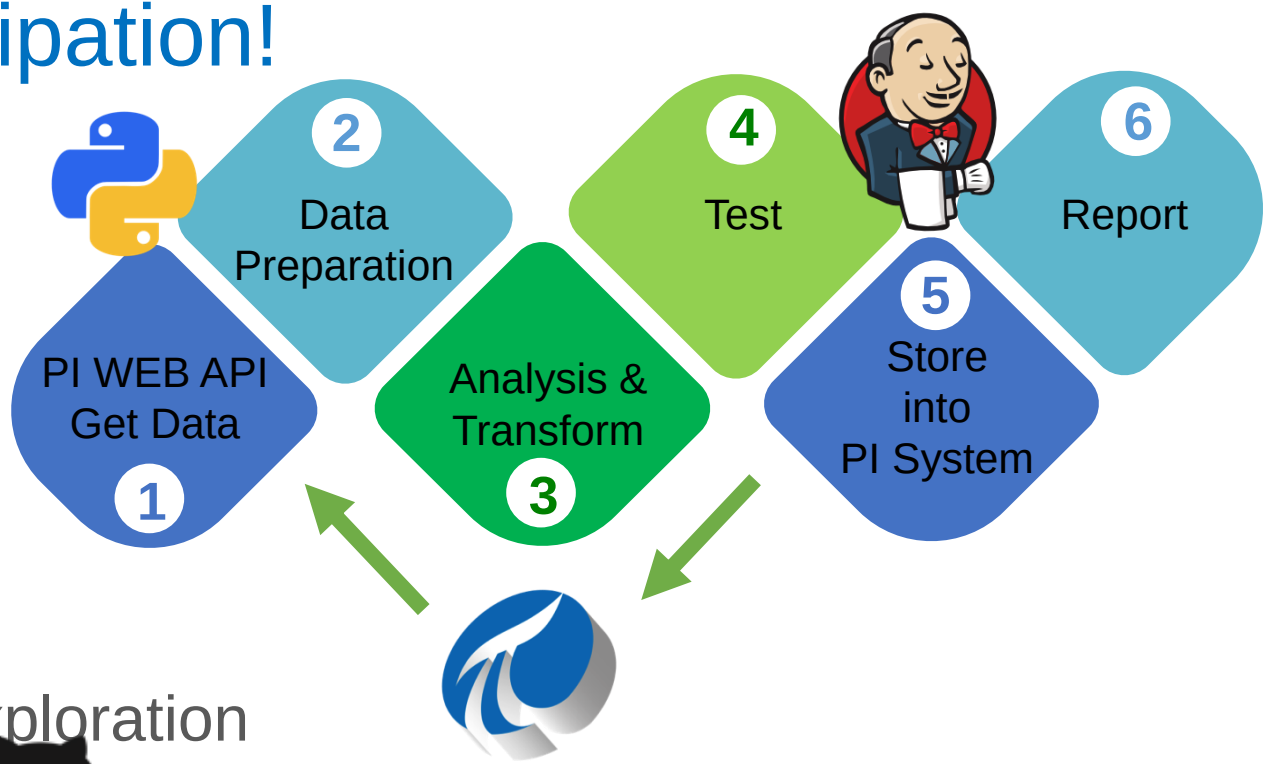
Call for Participation!

Let's contribute to a Common Goal:

Answer to some sharp questions about PI System Data Exploration

pi-data-exploration



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pi-data-exploration Description

https://github.com/msepehr/pi-data-exploration

Sharp Questions:

- Classification Modeling as Leak Detection (no threshhold)
- Autofill on Missed Data
- Statistics over the data as Missed Data

Python Dependencies:

- PI-Web-API-Client-Python : PI Client for Python
- pandas : Data structure manipulation
- numpy : perform calculations over the data

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Key Takeaways

Key Insights Lessons learned from our journey

01

Blueprint for success

Do not let your transformation initiative fail because of a lack of anticipation on the project due to the data

02

Data Exploration, Data Discovery

more & more vital in Businesses in any sector

03

Agility with a clear Roadmap

Iteration on core features is completed with a real vision in a long term

04

Empowering End-Users

Better and faster communication, interactions with DataOps Team

05

New Roles to Integrate

PO, Data preparation, Data Scientists, Business Intelligence, Data Visualization

06

Automate, automate, automate!

From Data Exploration to Business Rules, Industrialize as much as you can

Data Exploration makes us grow up…

Let’s grow up together!

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Questions?

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State your **name & company**

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