



# DataOps Toolchain for Continuous Control Monitoring

Mahyar SEPEHR

apoIO

# Who is apoIO?

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

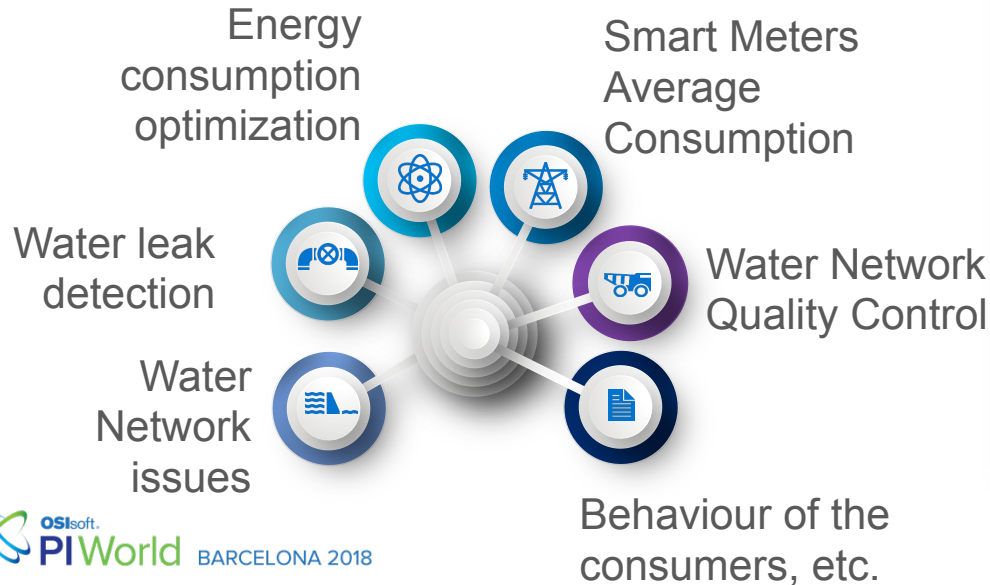
- Cloud Architecture
- Internet Of Things
- Industrial Big Data:  
PI System

# apoIO



# A Typical Client and her Use-Cases

Laura is a P&U Project Manager  
and Business Analyst



# Business Challenges on Data Quality

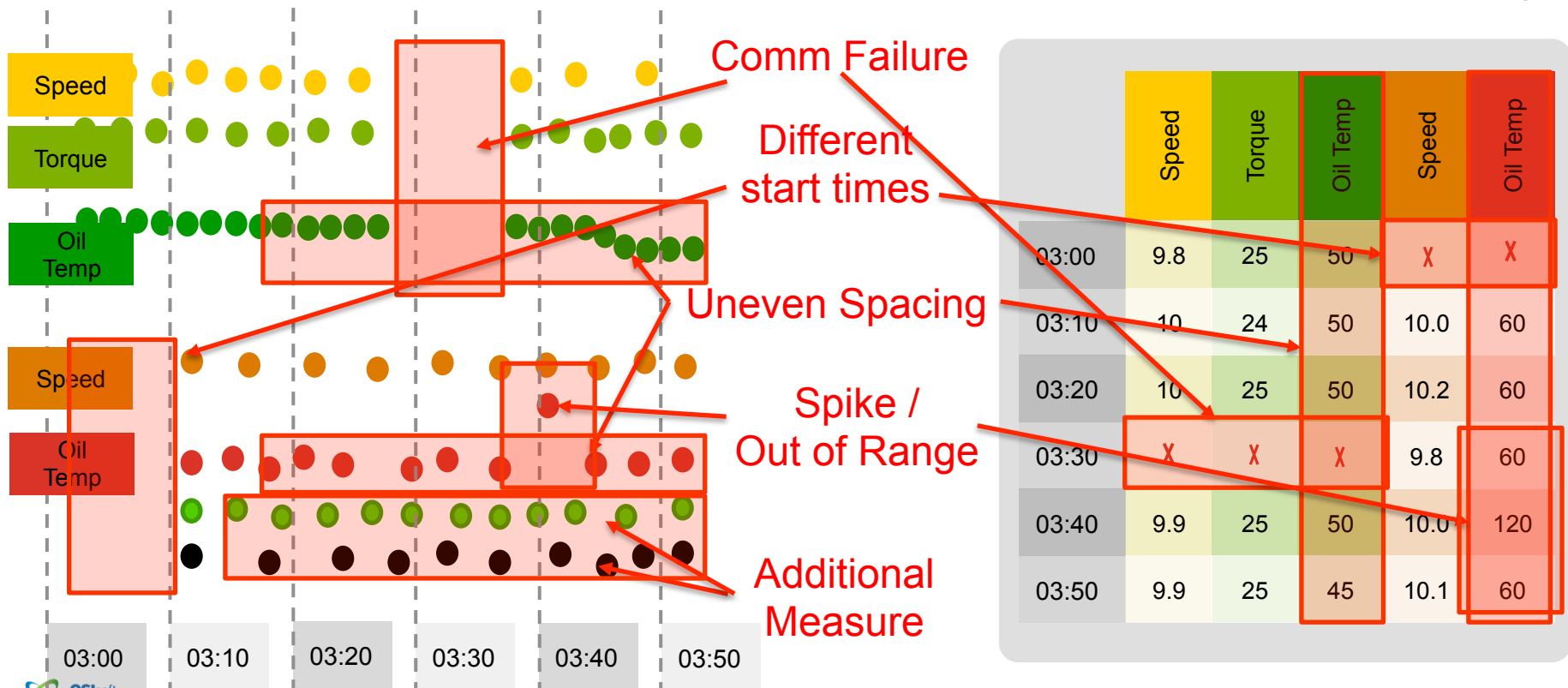
Sensors from the Water Network send by GSM values in a non chronological way : Invalidates all rules based on events



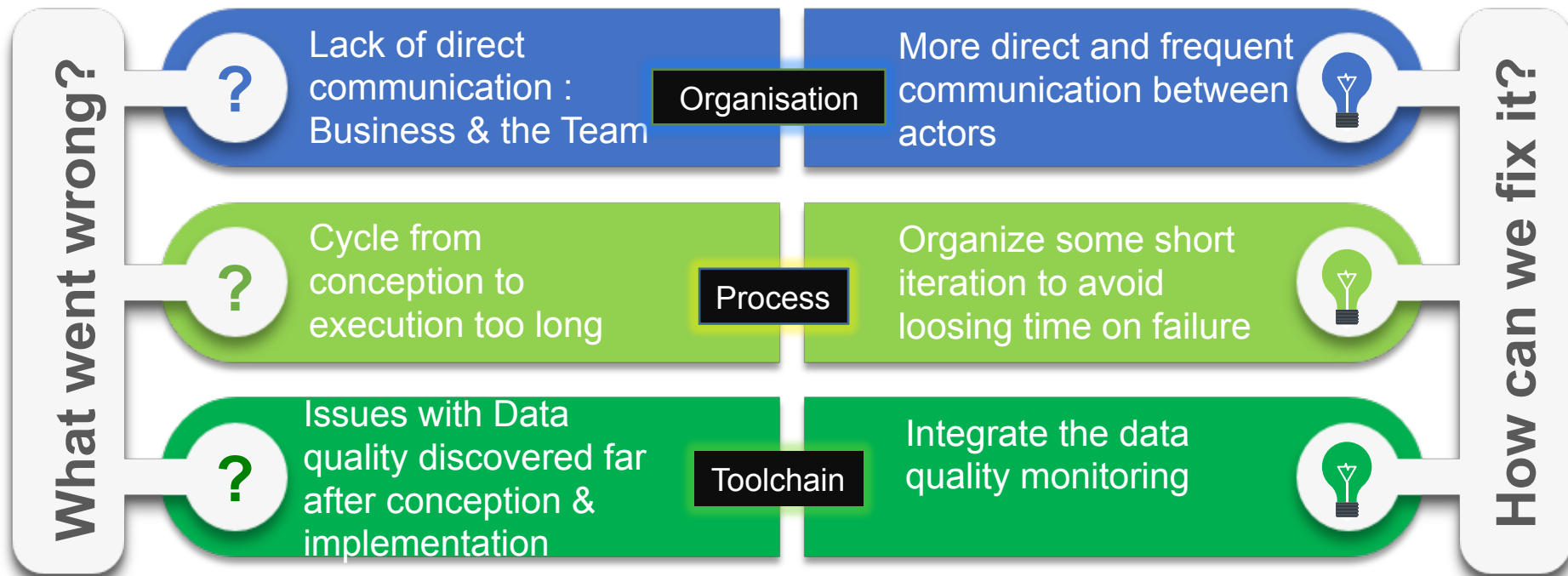
Quantity optimisation of substances used on a supply chain : Many timeranges contain **exceptions** because of Data Quality



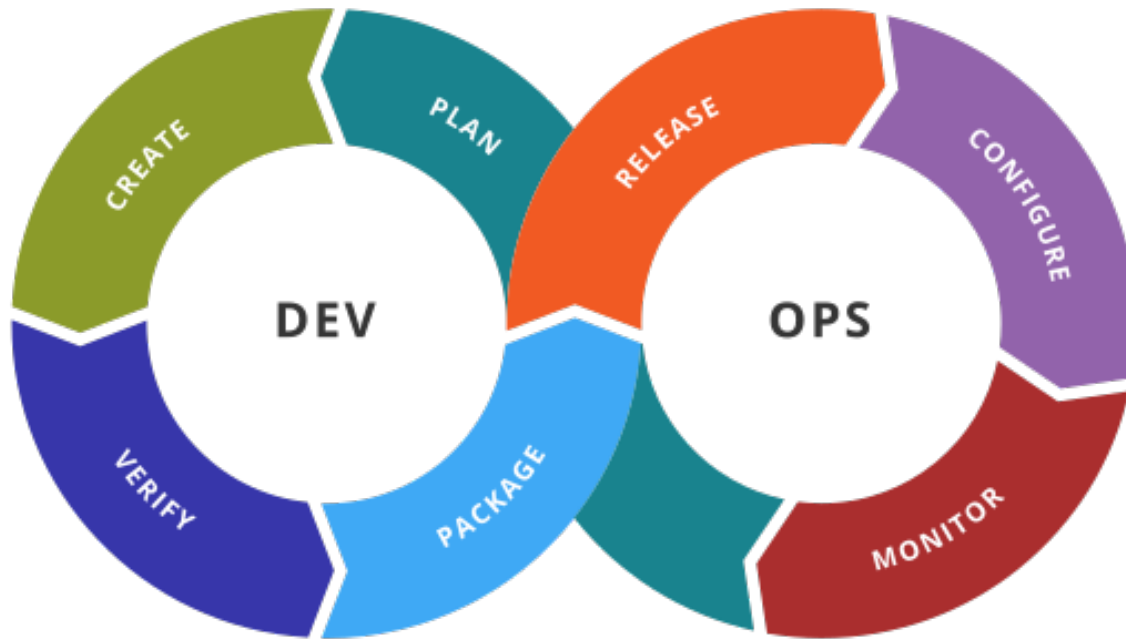
# Data has imperfections : Welcome to Reality!



# Analysis of the problem



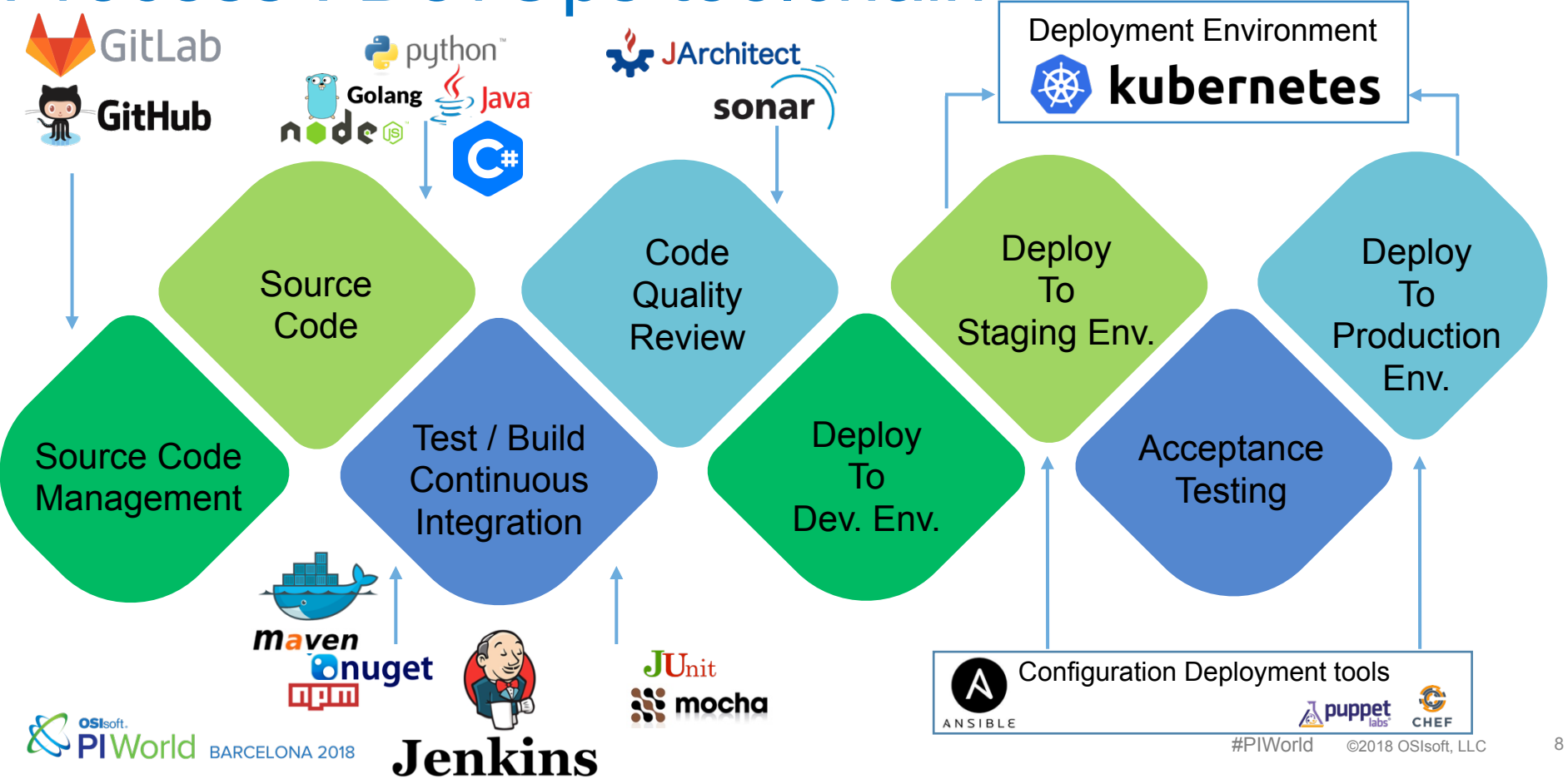
# DevOps Approach : Continuous Improvement



© [https://en.wikipedia.org/wiki/DevOps\\_toolchain](https://en.wikipedia.org/wiki/DevOps_toolchain)



# Process : DevOps toolchain





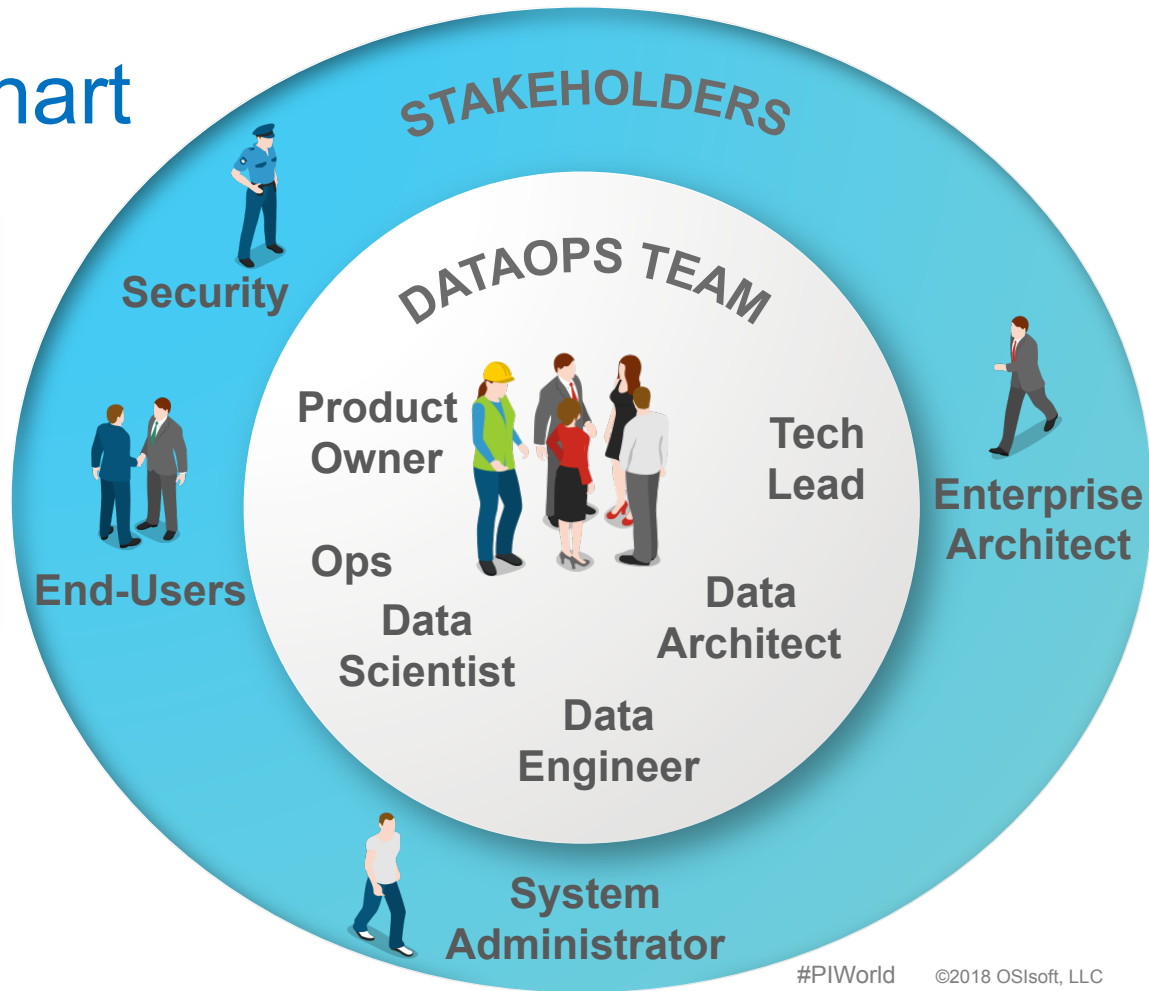
# PI System Project life-cycle: Data Driven Processes



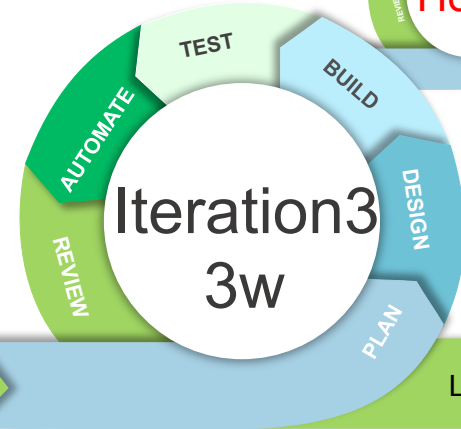
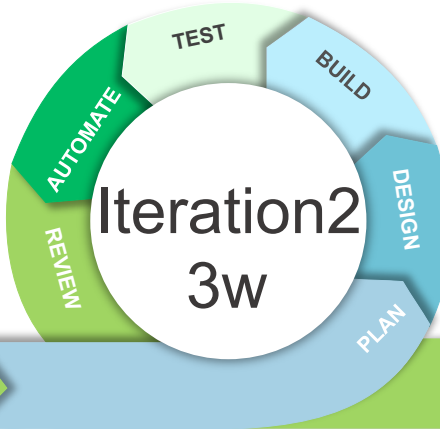
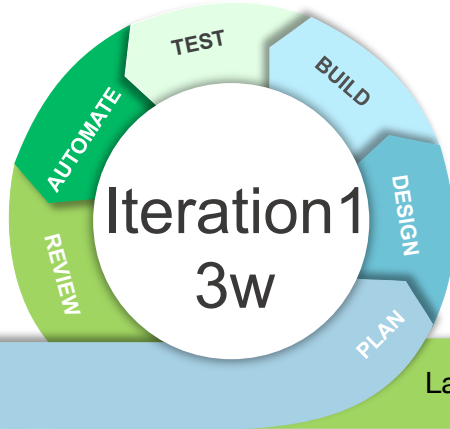
# Organization Chart



Laura has a new role:  
Product Owner



# Agile Management : Rethink the Journey



Writes User Stories  
Core Features  
including Data Quality



Demo  
Features



Demo  
Features

# Continuous Control Monitoring : MVP Toolchains



**Minimum  
Viable  
Product  
(MVP)**

1 Simple Excel DataLink

2 Design with Asset Analytics

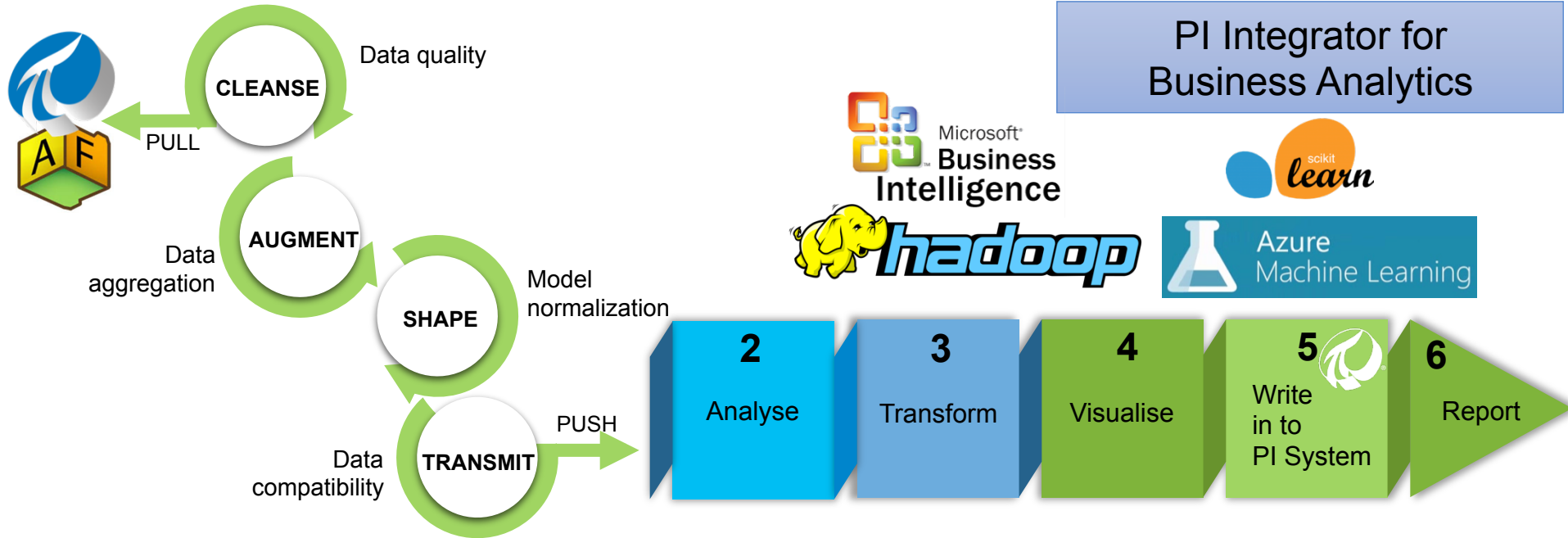
3 Design an AF SDK based Custom Program

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

# MVP : STAR with Machine Learning

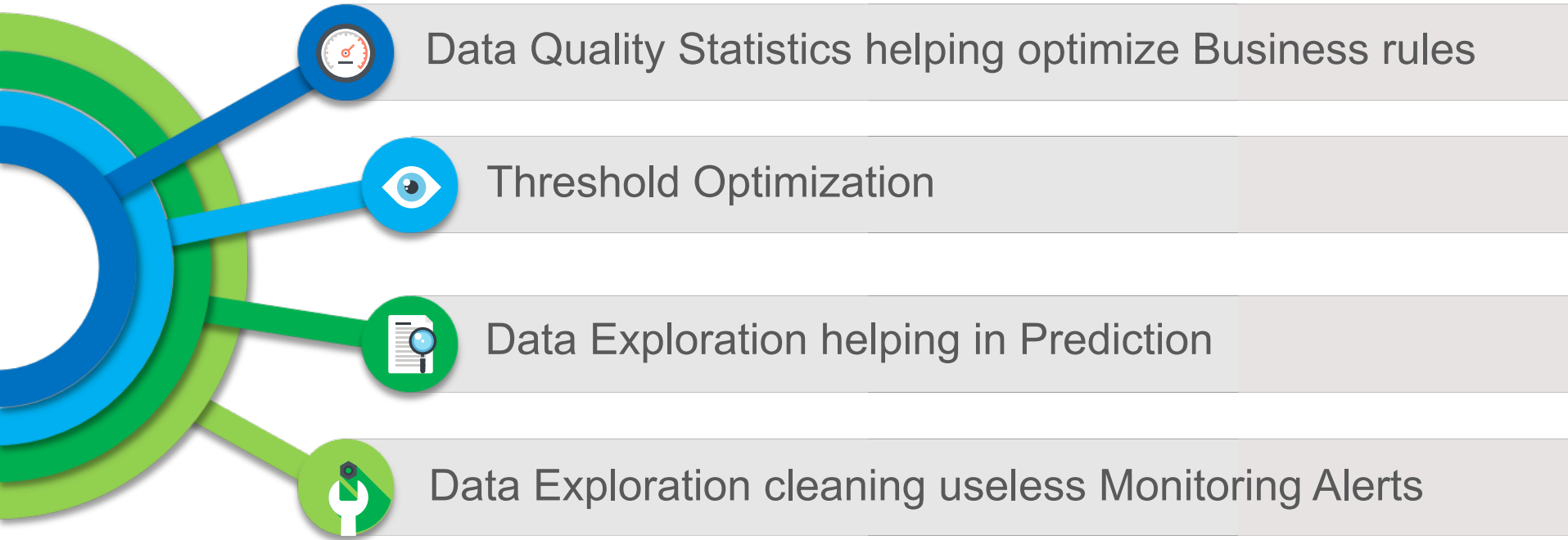


# Risks of DataOps Approach



# CCM bringing Business values

## From Data Quality to Data Exploration



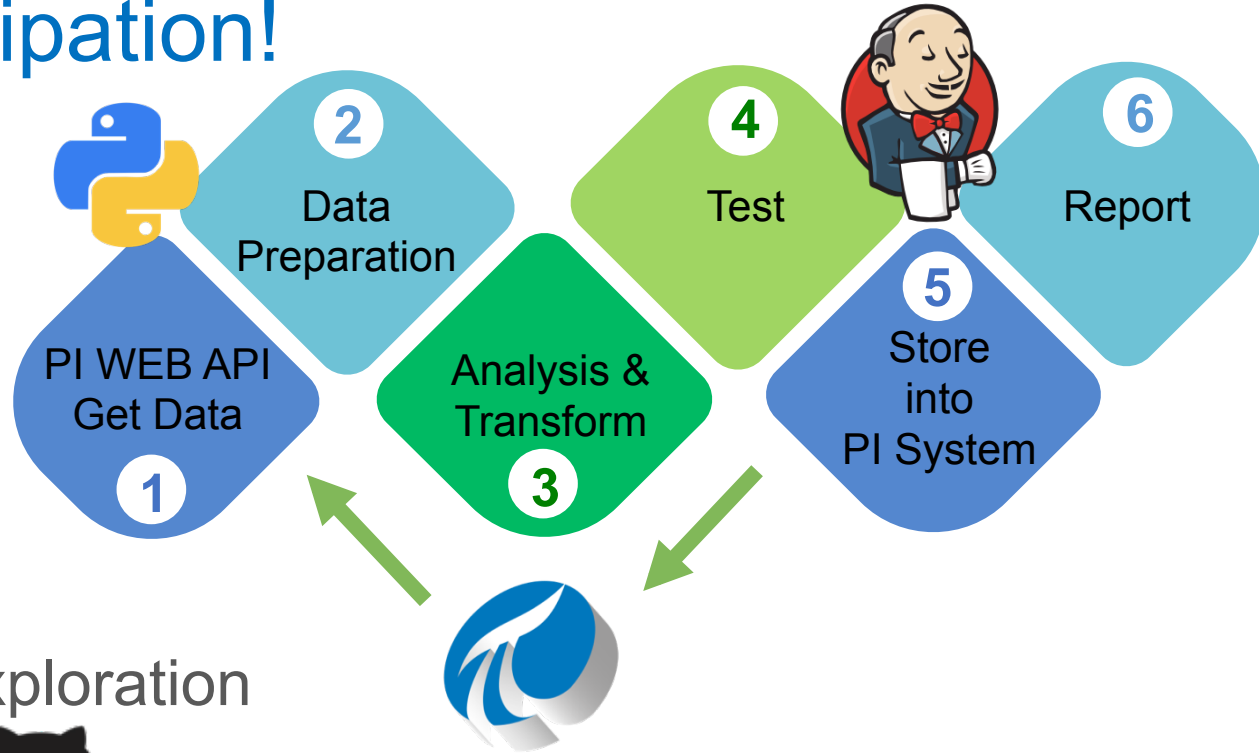


# Call for Participation!

Let's contribute to  
a Common Goal:

Answer to  
some sharp  
questions about  
PI System Data Exploration

[pi-data-exploration](#)



# pi-data-exploration Description

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

## Sharp Questions:

- Classification Modeling as Leak Detection (no threshold)
- 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

# 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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IT Architect

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# Questions?

Please wait for  
the **microphone**

State your  
**name & company**



# Please rate this session in the mobile app!



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 TAPADH LEIBH 고맙습니다  
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 DZIĘKUJĘ CI NGIYABONGA TEŞEKKÜR EDERIM GRACIES  
 OBRIGADO شڪرا SALAMAT  
 DANKON TANK TAPADH LEAT  
 DANKIE TERIMA KASIH  
 KÖSZÖNÖM  
 СПАСИБО  
 PAKMET CIZGE  
 GO RAIBH MAITH AGAT  
 БЛАГОДАРЯ GRACIAS  
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 RAHMAT  
 HATUR NUHUN  
 CẢM ƠN BẠN  
 WAZVIITA  
 FALEMINDERIT  
 DANK JE EΥΧΑΡΙΣΤΩ GRATIAS TIBI  
 AČIŮ SALAMAT MAHALO IĀ 'OE TAKK SKALDU HA  
 GRAZZI PAKKA PĒR  
 PAXMAT CAĞA  
 SĪPAS JI WERE TERIMA KASIH  
 UA TSAUG RAU KOJ  
 ТИ БЛАГОДАРАМ  
 СИПОС  
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 ESKERRIK ASKO  
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THANK YOU



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