

Enabling Production Engineers with the PI System and Self-Service Analytics

Frédéric Motte

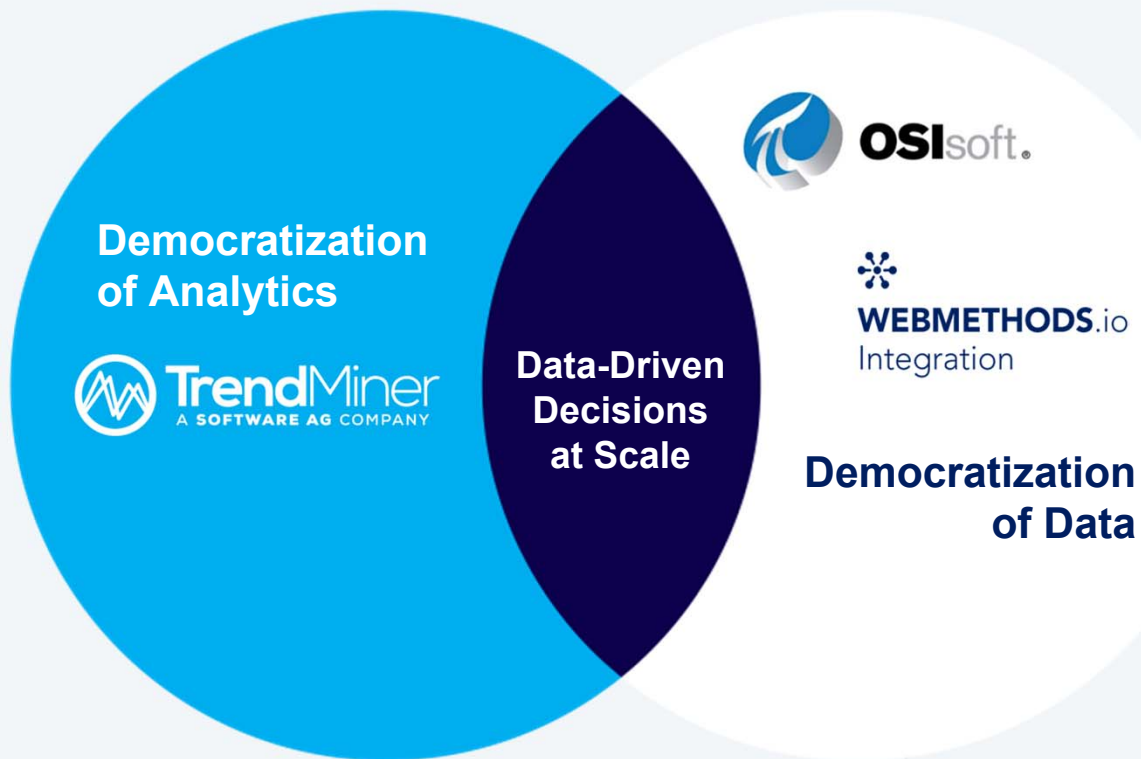
October 2020



Agenda

- About TrendMiner - Democratization of Analytics
- TrendMiner & the PI system
- Applications and Use Cases in the Chemical Industry
- Business Impact
- Summary

Turning Data into Value



*“Data in the hands of **many** creates a competitive advantage...”*

*The more **accessible** your **insights** are **to business users**, the more enterprise-wide value you can get out of it”.*

DEMOCRATIZING INDUSTRIAL ANALYTICS

①



We need more business **insights** from data



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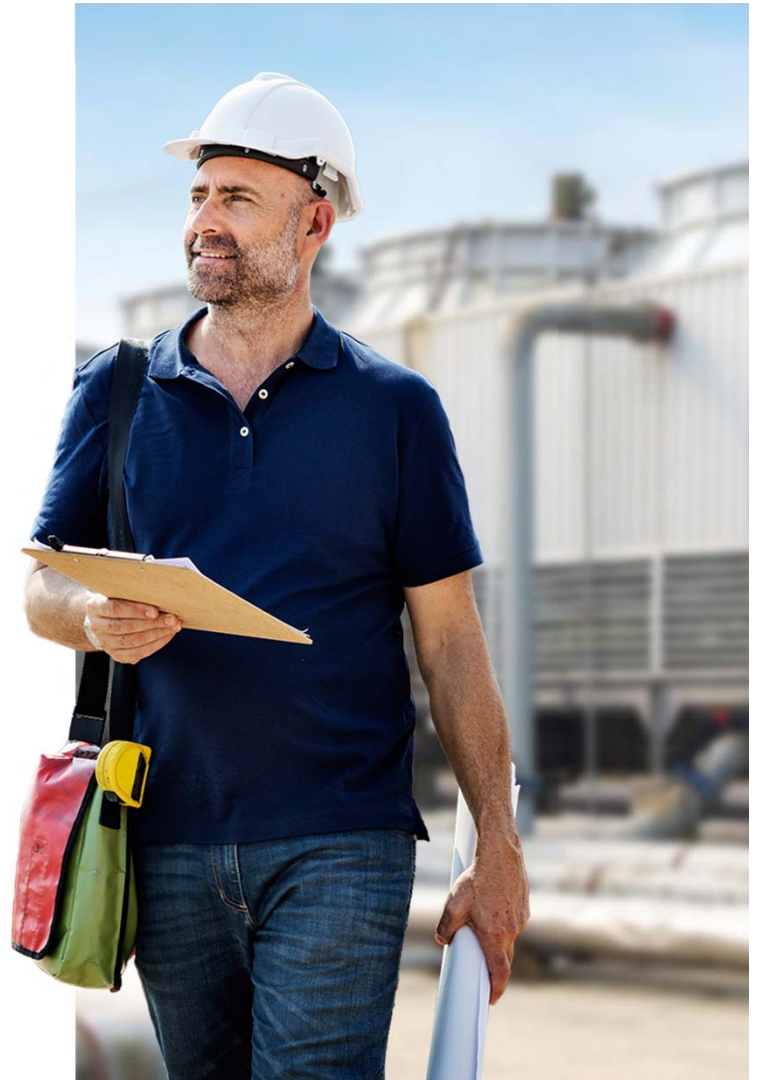
②



We should hire **more** data scientists



Virtual Industry Summits



DEMOCRATIZING INDUSTRIAL ANALYTICS

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We need more business **insights** from data

②



We should hire **more** data scientists

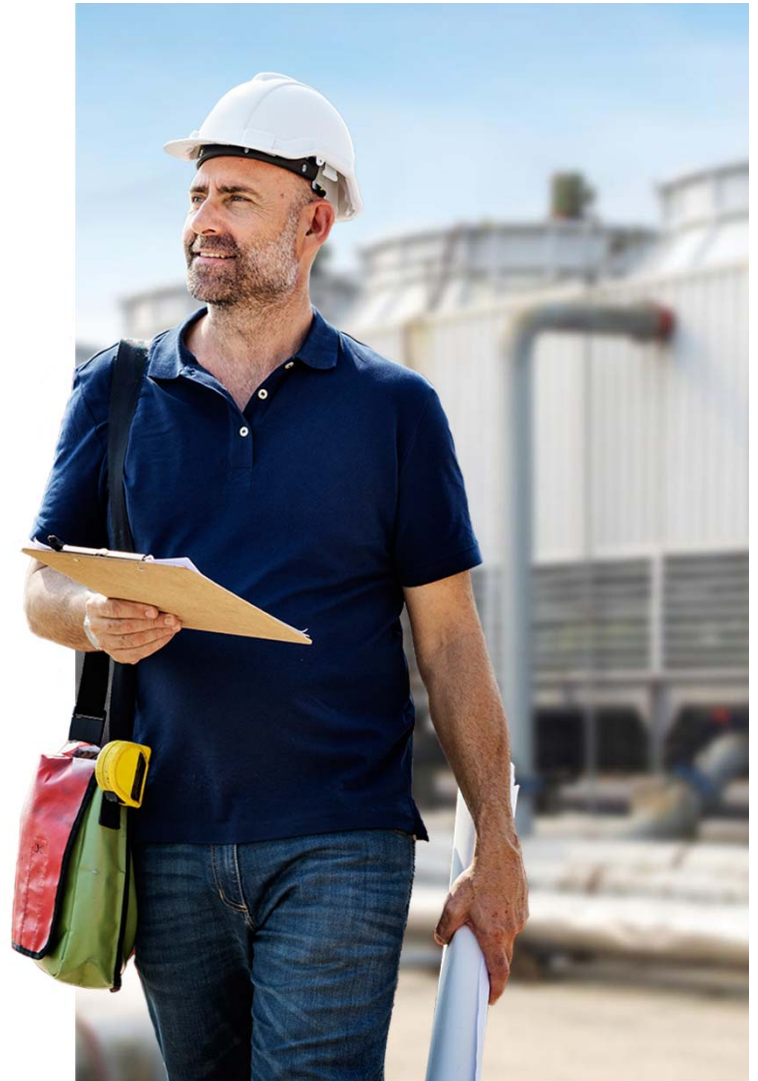
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We don't have **enough** data-scientists
(with process expertise)



Virtual Industry Summits

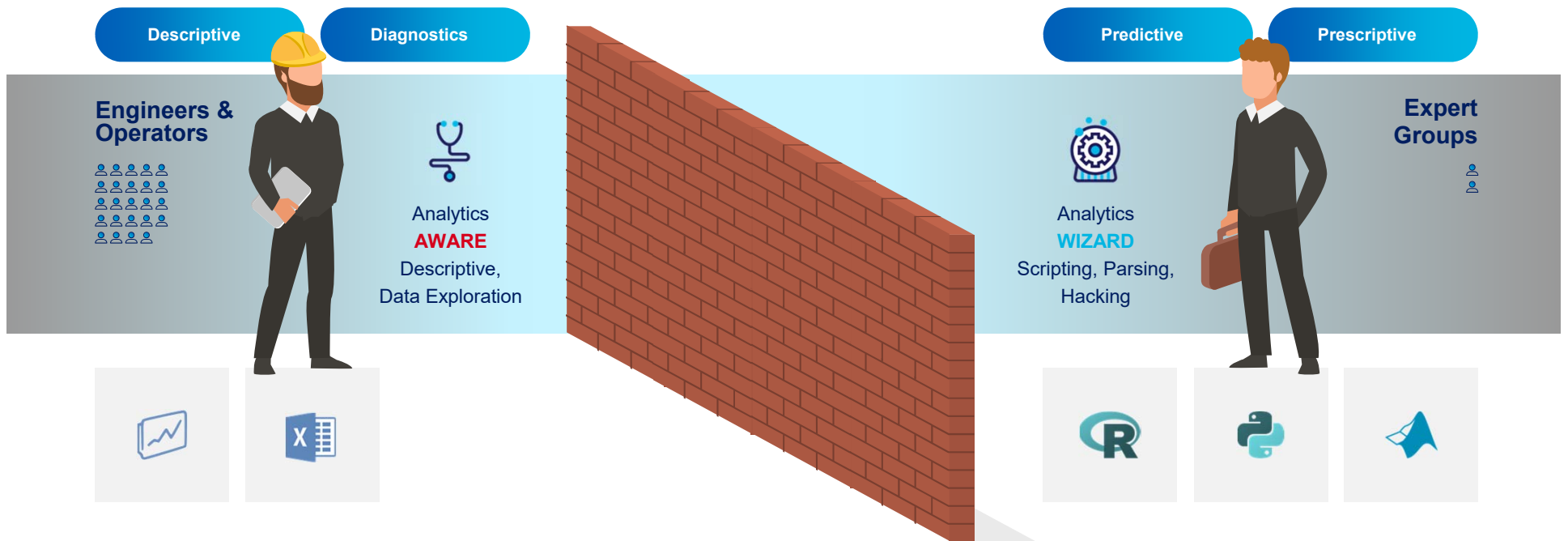


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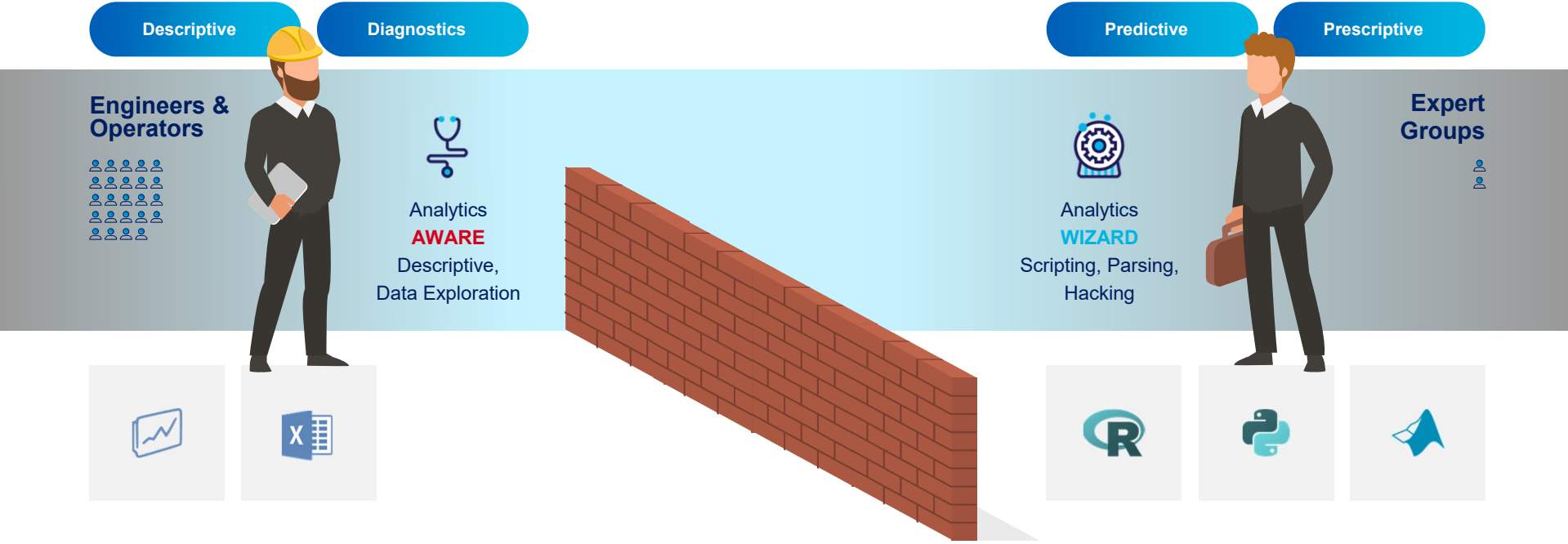


*We need to empower
everybody else!*

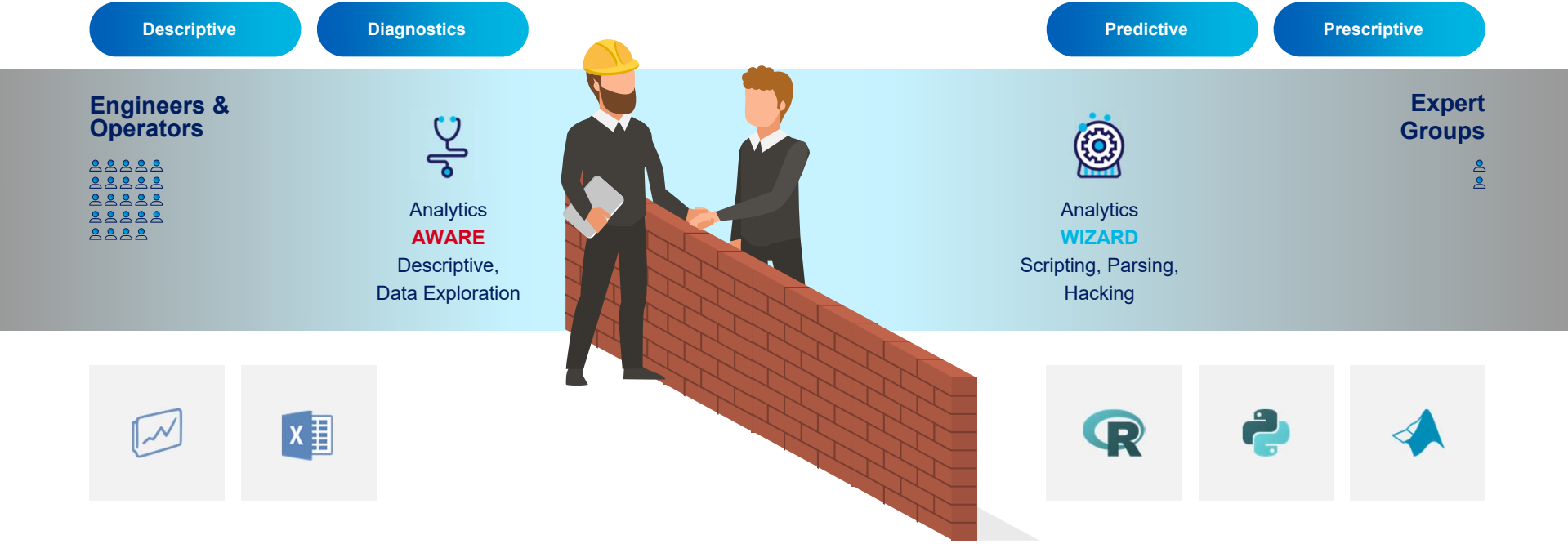
DEMOCRATIZING ADVANCED ANALYTICS



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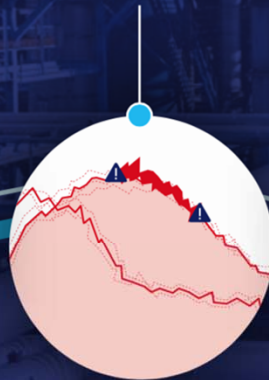
What you can do with TrendMiner:

Visualize



for operational
story telling

Analyze



to find
root causes fast

Monitor



to get
early warnings

Predict



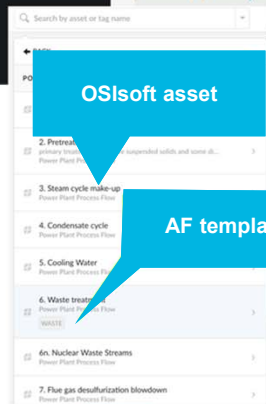
what's likely
to happen

Contextualize

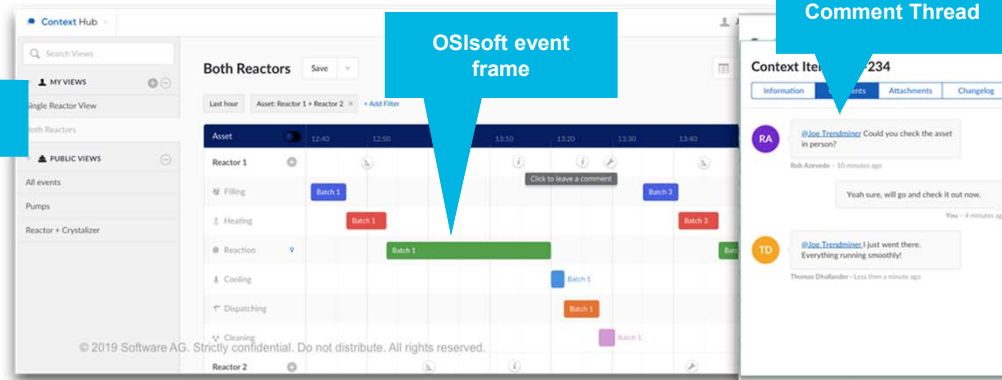


to continuously
improve
performance

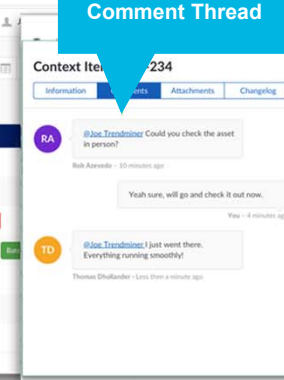
OSIsoft + TrendMiner Integration



AF template



Comment Thread



Make time-series data analytics ready

PI Archive

Use PI AF structure directly in TrendMiner + Cross Asset Search

Asset Framework

Visualize event frames as sequence diagrams

Event Frames

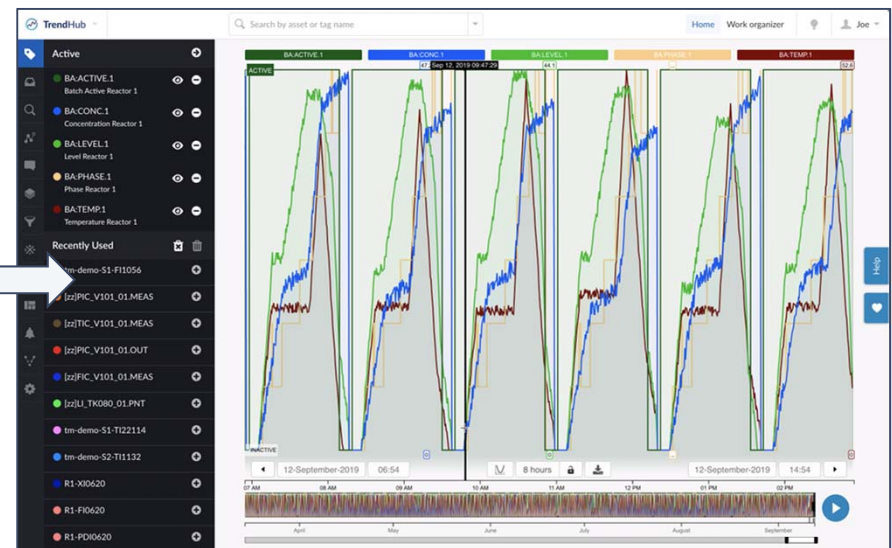
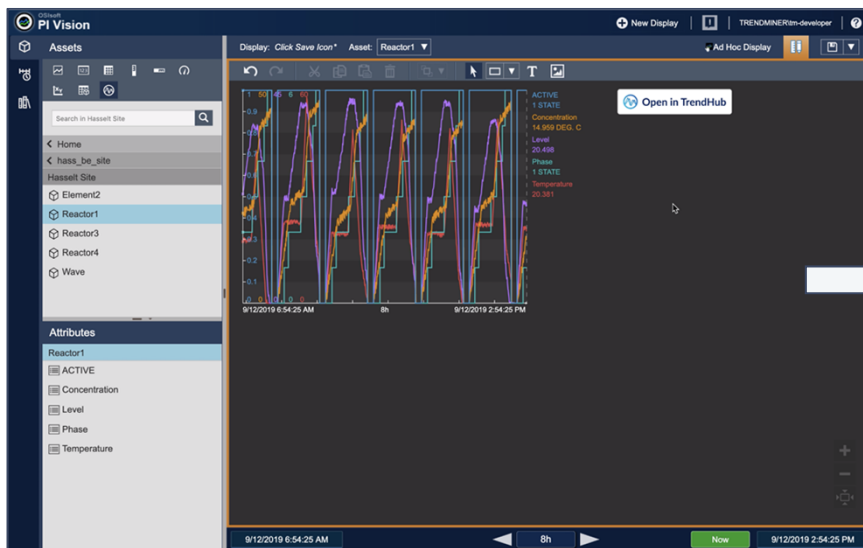
Data enablement (Multiple PI/Companies)

OSI Cloud Services

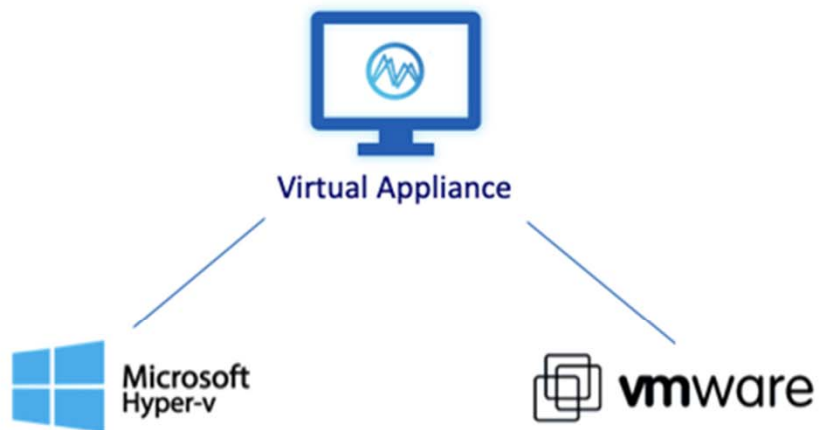
Open trends from PI Processbook & PI Vision

Processbook & PI Vision

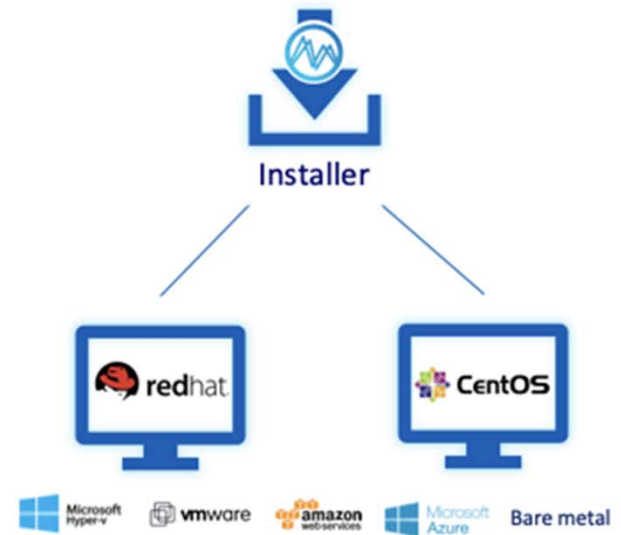
Example: PI Vision to TrendMiner



Deployment Modes - On Prem

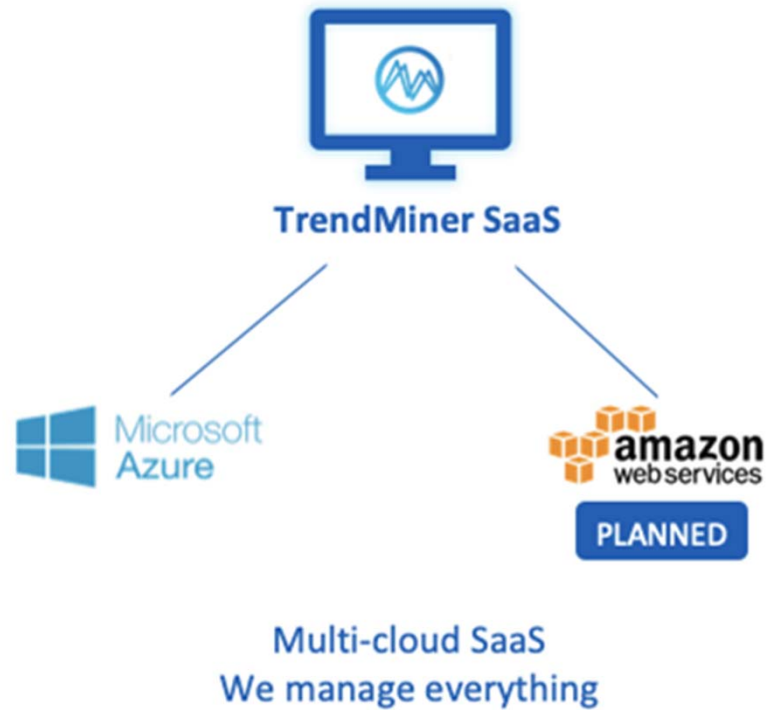


OS configuration and updates managed by
TrendMiner Platform

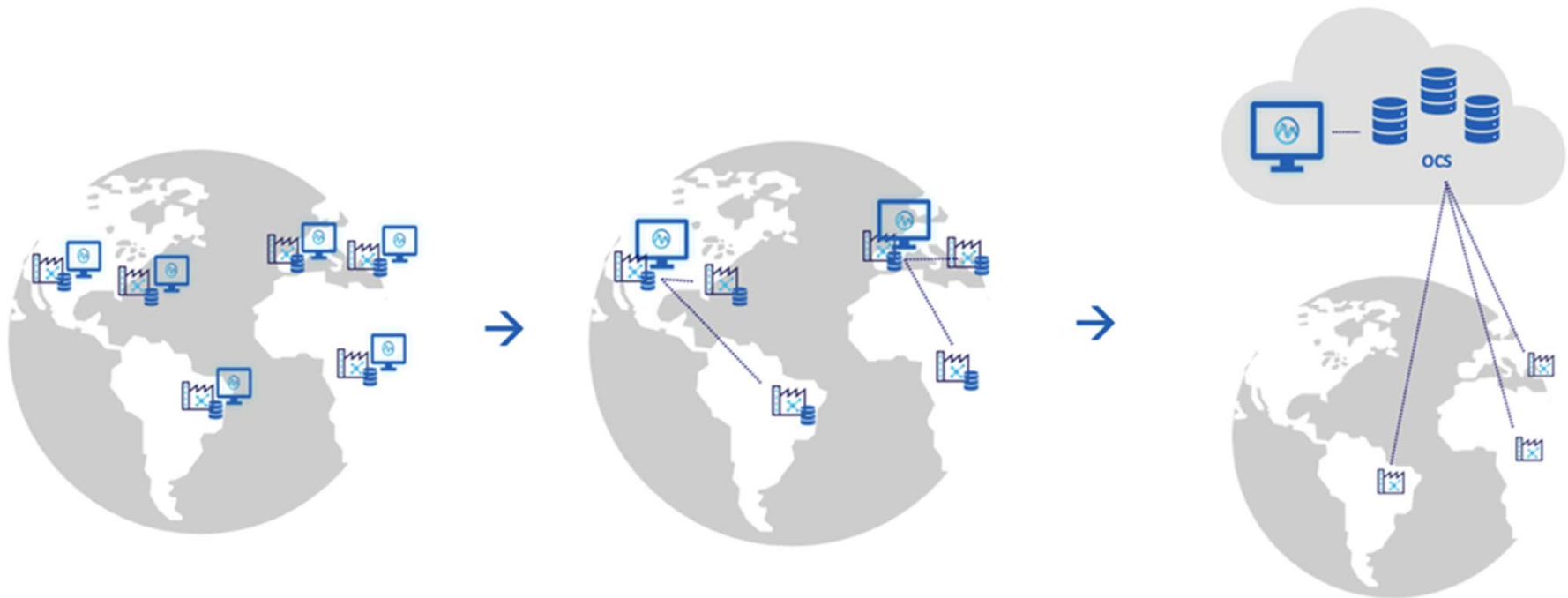


OS configuration and updates managed by Customer

Deployment Modes - SaaS offering



Many Deployment Strategies Possible



Continuous Reactor - Root Cause Analysis



Challenge

Sudden disturbances in the temperature profile of a reactor need to be analyzed quickly – how can we prevent off-spec product in the future?



Solution

An engineer jumps into TrendMiner after an operator spots the issue in PI Vision. Within a couple of clicks, the engineer has narrowed it down to the upset system



Benefits

Self-service analytics allow the engineer to **focus on answers** rather than more questions. **Immediate action can be taken.**

DEMO

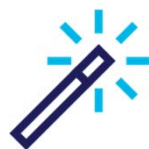
Continuous Reactor - Root Cause Analysis

OEE Analytics Supported by PI Event Frames



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OEE Analytics Supported by PI Event Frames

Capture best demonstrated Compressor startups



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DEMO

Capture best demonstrated
Compressor startups

Deploy Machine Learning Models to detect process anomalies



Challenge

It can be a challenge to detect anomalies in large scale, multi-dimensional data sets as are common in the chemical industry.



Solution

With the Data Science and Machine Learning capabilities built into TrendMiner, engineers and data experts can work together to train models and deploy monitors.



Benefits

The ability to statistically monitor large scale data sets helps the operations team monitor for anomalies and detect them early, when action can still be taken.

DEMO

Deploy Machine Learning Models to detect
process anomalies

BENEFITS

FOR COMPANY



Fact based, data-driven
decisions making



Employee efficiency
for all stakeholders



Continuously improve
operational performance



Cross functional and
global collaboration

FOR ENGINEER



More efficient and effective
contribution to improve
performance



Find more answers, faster to
day-to-day challenges



Automate findings into early
warnings to prevent failures



Solve previously
unsolvable cases

FOR DATA SCIENTIST



Smooth collaboration without
miscommunication



Easy data preparation
by process experts



All process related and
contextual data incorporated



Reduced project throughput
time
and easy model deployment

Summary: The Analytics-Enabled Organization



Challenge

There is a wealth of data available to the organization, from production to logistics. How can we enable everyone to become data-driven and create tangible business outcomes?



Solution

Deploying the latest OSIsoft PI System technology including PI AF/EF and PI Vision as the foundation for Self-Service Advanced Analytics platforms such as TrendMiner



Benefits

- Increased production and operational efficiency
- Reduction of costs and waste
- Significantly accelerated 'Time to Value' for Advanced Analytics & ML projects

Thank You

謝謝
 DZIĘKUJĘ CI
 NGIYABONGA
 TEŞEKKÜR EDERİM
 DANKIE
 TERIMA KASIH
 СПАСИБО
 GRAZIE
 PAKMET CIZGE
 GO RAIBH MAITH AGAT
 БЛАГОДАРЯ
 GRACIAS
 ТИ БЛАГОДАРАМ
 TAK DANKE
 RAHMAT
 HATUR NUHUN
 CẢM ƠN BẠN
 WAZVIITA
 TAPADH LEIBH
 KEA LEBONA
 БАЯРЛАЛАА
 MISAOTRA ANAO
 WHAKAWHETAI KOE
 DANKON
 TANK
 TAPADH LEAT
 MATUR NUWUN
 ХВАЛА ВАМ
 MULȚUMESC
 KÖSZÖNÖM
 GRAZIE
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 SHUKRA
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 SALAMAT
 MAHALO IĀ 'OE
 TAKK SKAL DU HA
 GRAZZI
 PAKKA PÉR
 ありがとうございます
 DI OU MÈSI
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 SIPAS JI WERE
 TERIMA KASIH
 UA TSAUG RAU KOJ
 ТИ БЛАГОДАРАМ
 СИПОС
 FALEMINDERIT

