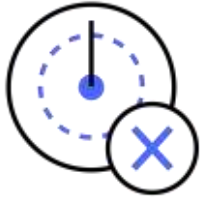# Digital innovation in large infrastructures through Industrial DataOps
Examples of how to liberate data and make it valuable

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Oliveira e Sousa

30.08.2022

Agenda

Challenges within large infrastructures

5 min

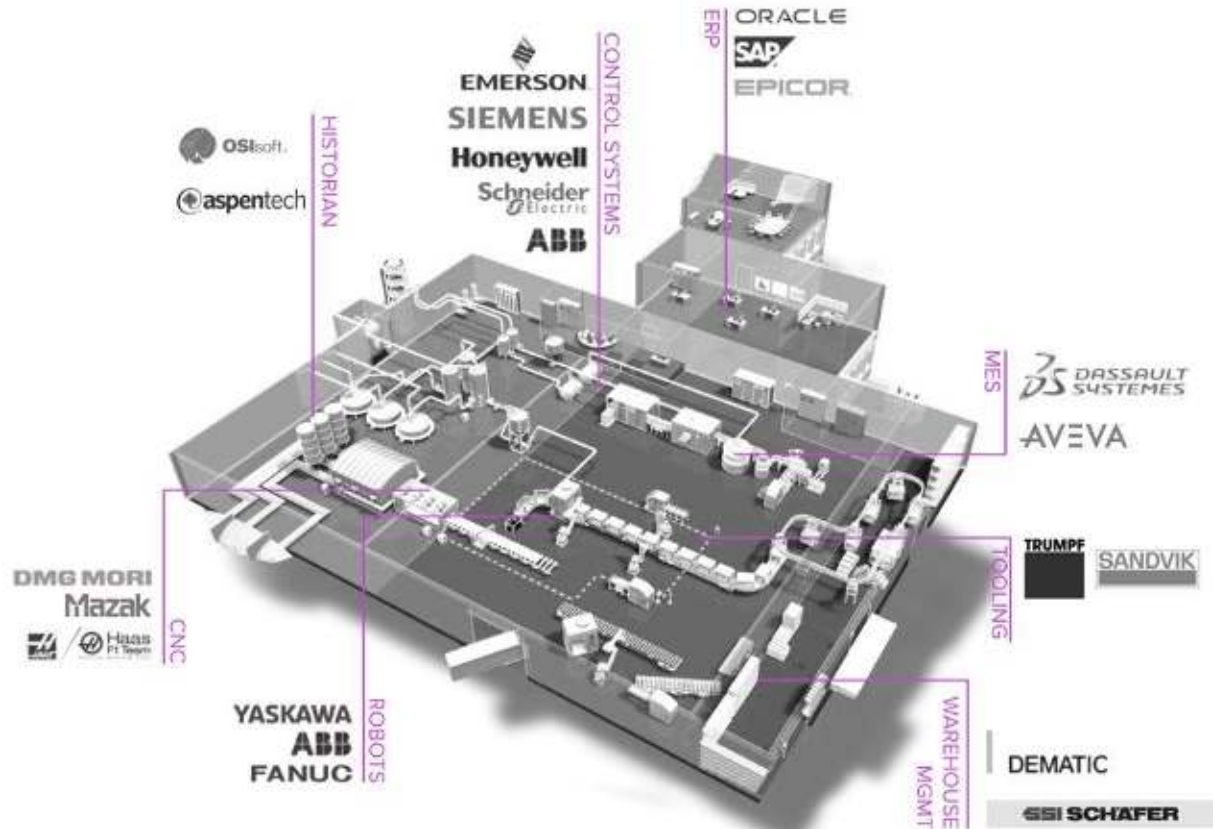**Examples of Digital Innovations**
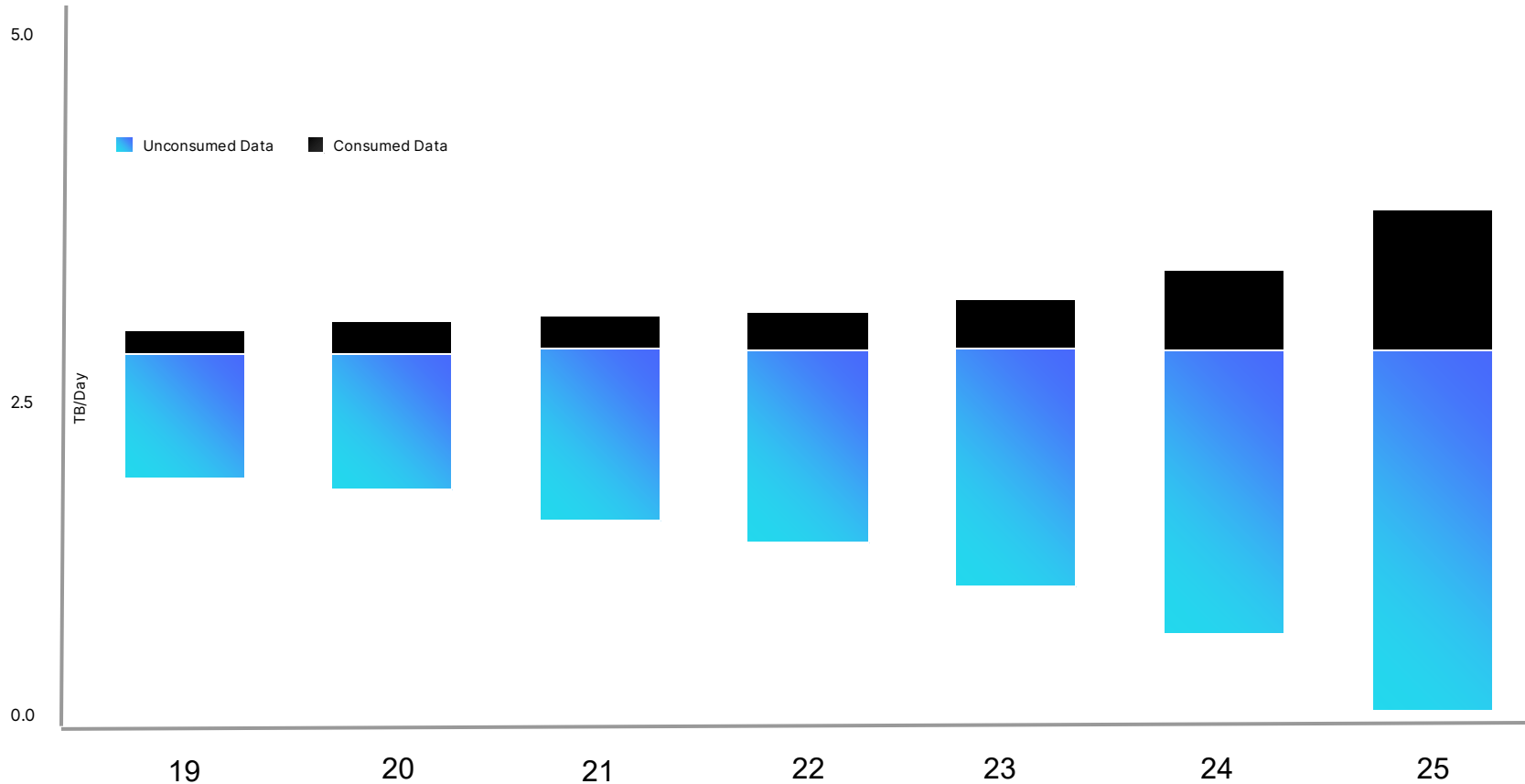
15 min

The role of Industrial DataOps

10min

Large infrastructures are inherently complex

While large infrastructures are drowning in data, it is not always available

Legend: ■ Unconsumed Data ■ Consumed Data

Y-axis: TB/Day (0.0, 2.5, 5.0)

X-axis: 19, 20, 21, 22, 23, 24, 25

Gopal, C et al (2020). IDC FutureScape: Worldwide Data and Analytics 2021 Predictions. [Online]. IDC. [19 March 2021]. Available from: https://www.idc.com/getdoc.jsp?containerId=US46920420

And even when it is available, there are challenges in making data usable and valuable

"Proofs of concept are common in industry.

Scaling them isn't."

ABUNDANT digitalization ambition and necessity

Most industrial companies have run at least a handful of AI proofs-of-concept (POCs)
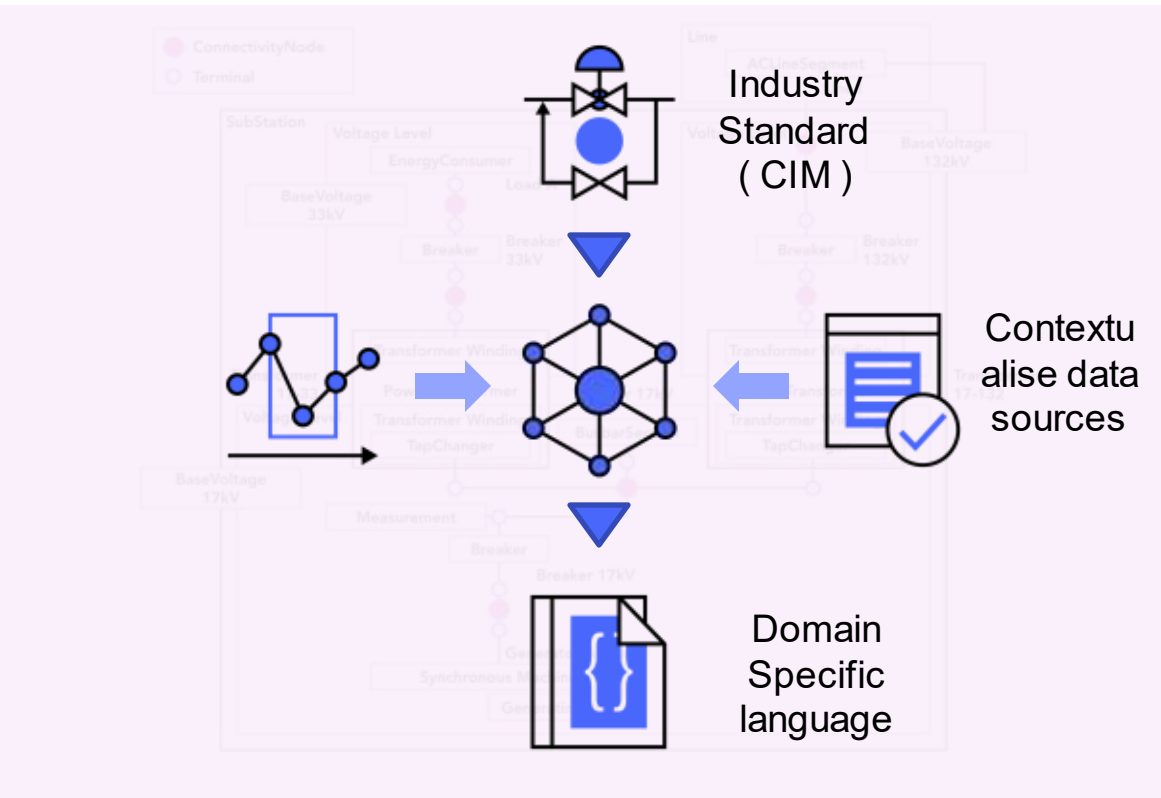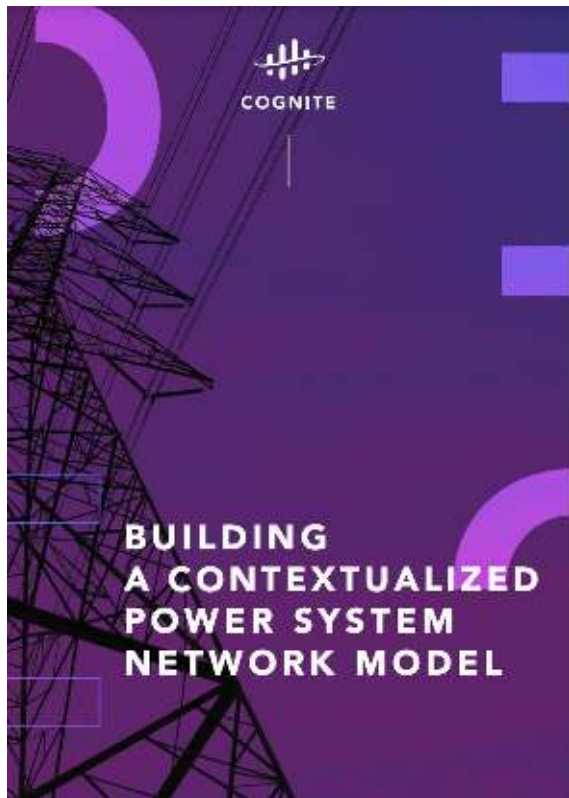
Many POCs are considered successful

Few POCs ever make it into production

Very few POCs end up providing substantive ROI (by becoming proofs-of-scale)

COGNITE

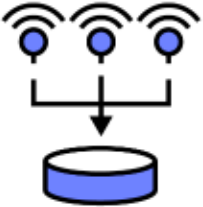# Speeding up the power grid connection process...

BUILDING A CONTEXTUALIZED POWER SYSTEM NETWORK MODEL

Industry Standard (CIM)

Contextualise data sources

Domain Specific language

Links: online whitepaper

.. to drive faster analytics & solutions

Less time spent collecting and cleaning data

Assets connect to the grid faster

Data-driven maintenance planning

Links: case study 1 – demo

Bringing survey video to the fingertips of engineers
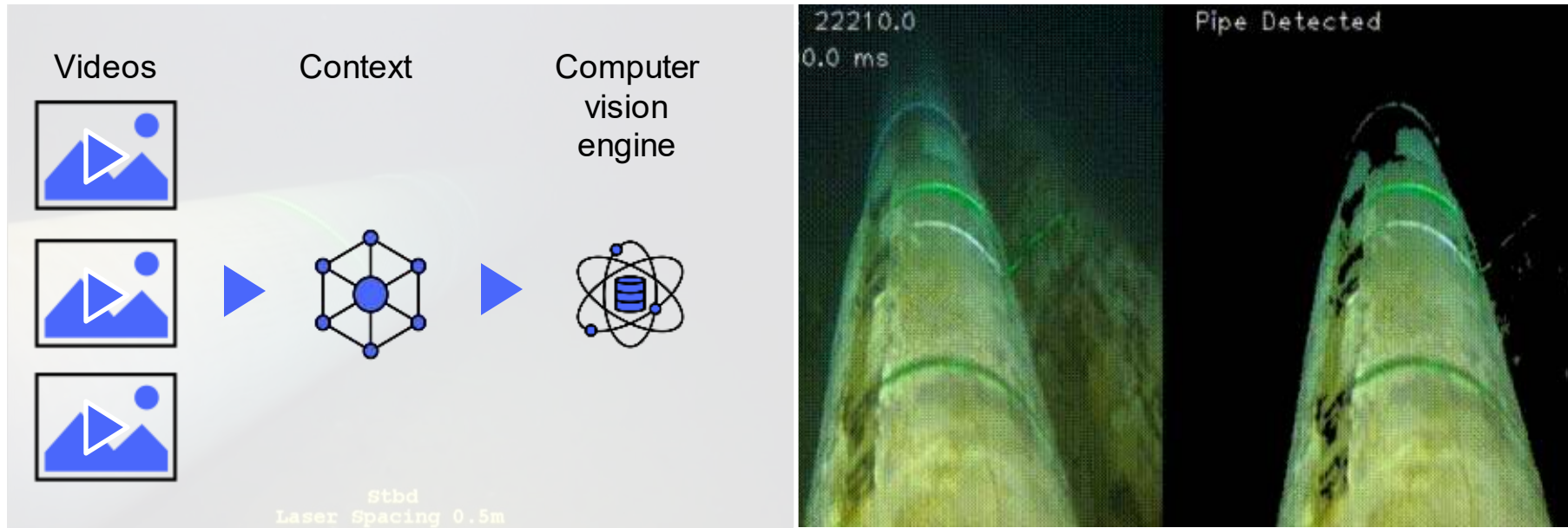
Data-driven approach to wildlife conservation

Links: case study

Business model Innovation with unlocked data

OILFIELD SERVICES PROVIDER

→ Calendar-based services / run to failure

OPERATOR

Data locked in silos
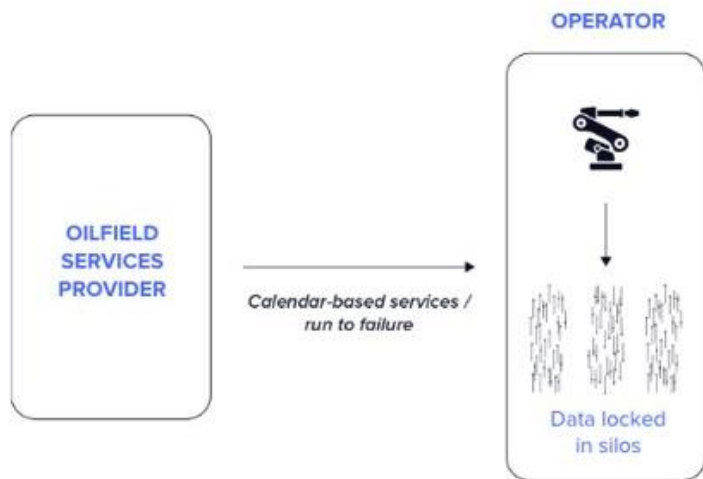
Eliminate IT/OT/ET data silos and lock-in

Deploy and scale digital twins fast
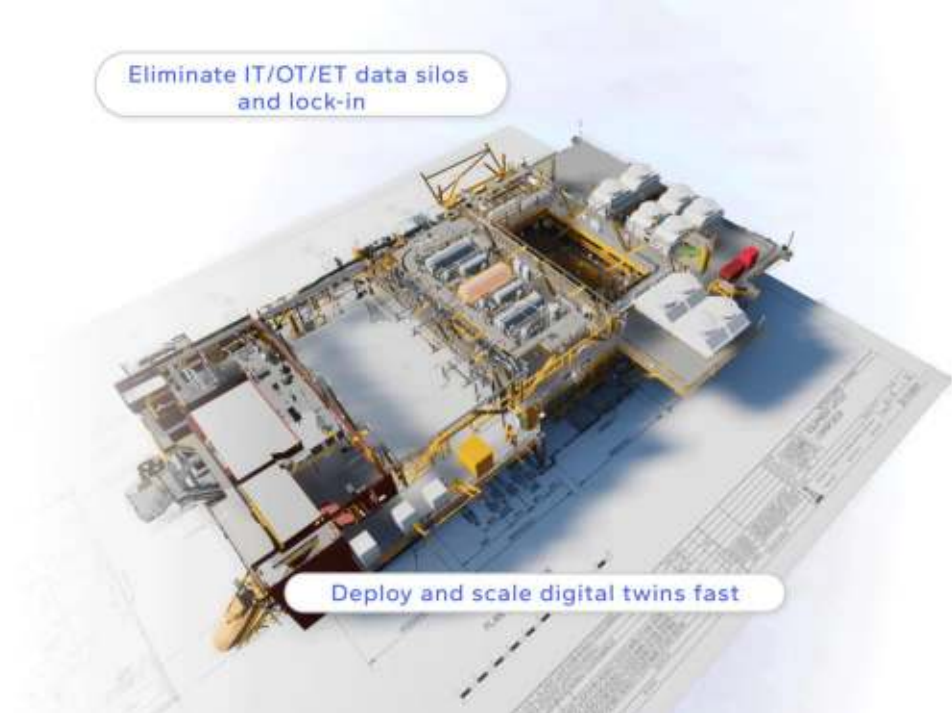
Using Machine Learning to reduce Water In Oil

Data

System representation

Data Science

Insights and recommendation

Enhancing GHG reporting to meet greater scrutiny

GHG Regulatory Reporting

GHG Financial Obligation Reporting

Energy Transparency for External Stakeholders

Improved Operational Efficiency

$$CI_{cu,t}^{pr,S} = \sum_{Au}(CI_{Au,t}^{pr,S} + CI_{Au}^{p}) * W_{Au,t}^{S} \qquad \text{(Eq. 05)}$$

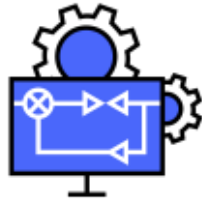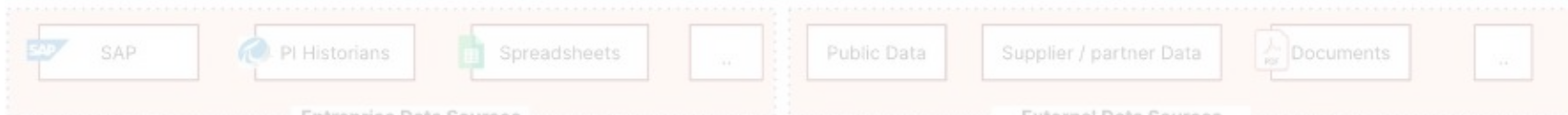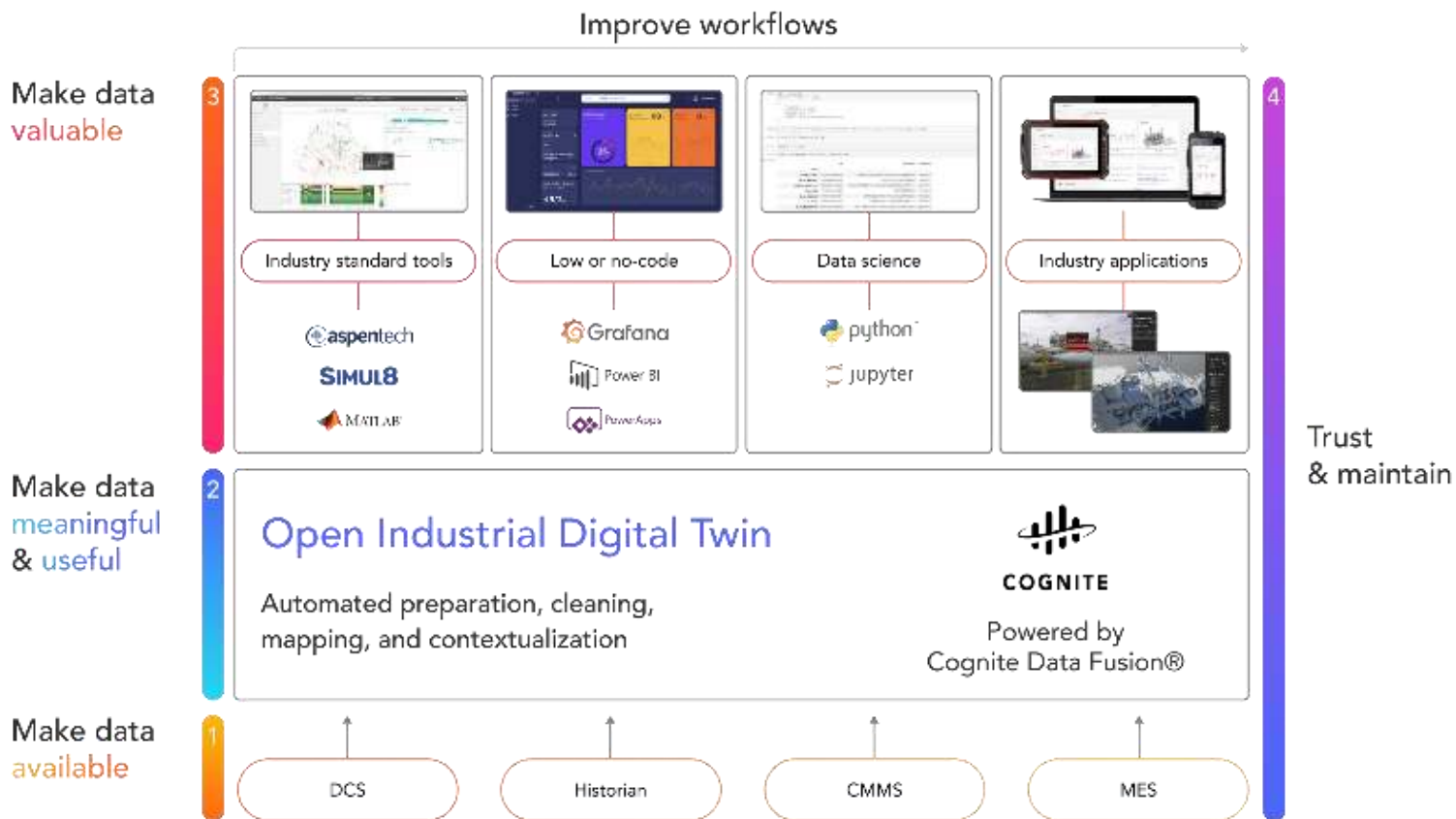$$CI_{cu,t}^{pr} = CI_{cu,t}^{pr,S} * min\left[1, \frac{P_{cu,t}^{S}}{C_{cu,t}}\right] + CI_{cu,t}^{pr,S} * (1 - min\left[1, \frac{P_{cu,t}^{S}}{C_{cu,t}}\right]) \qquad \text{(Eq. 06)}$$

$$CI_{Ar,t}^{WtT} = CI_{Ar,t}^{pr} + CI_{Ar}^{exp} + CI_{Ar,t}^{ref} + CI^{dst} \qquad \text{(Eq. 09)}$$

Illustrative data flow and equations

SAP

PI Historians

Spreadsheets

..

Public Data

Supplier / partner Data

Documents

..

Entreprise Data Sources

External Data Sources

diluted bitumen

synthetic crude oil

• asphalt

OIL SANDS DEPOSIT

BITUMEN EXTRACTION

BITUMEN UPGRADING (OPTIONAL)
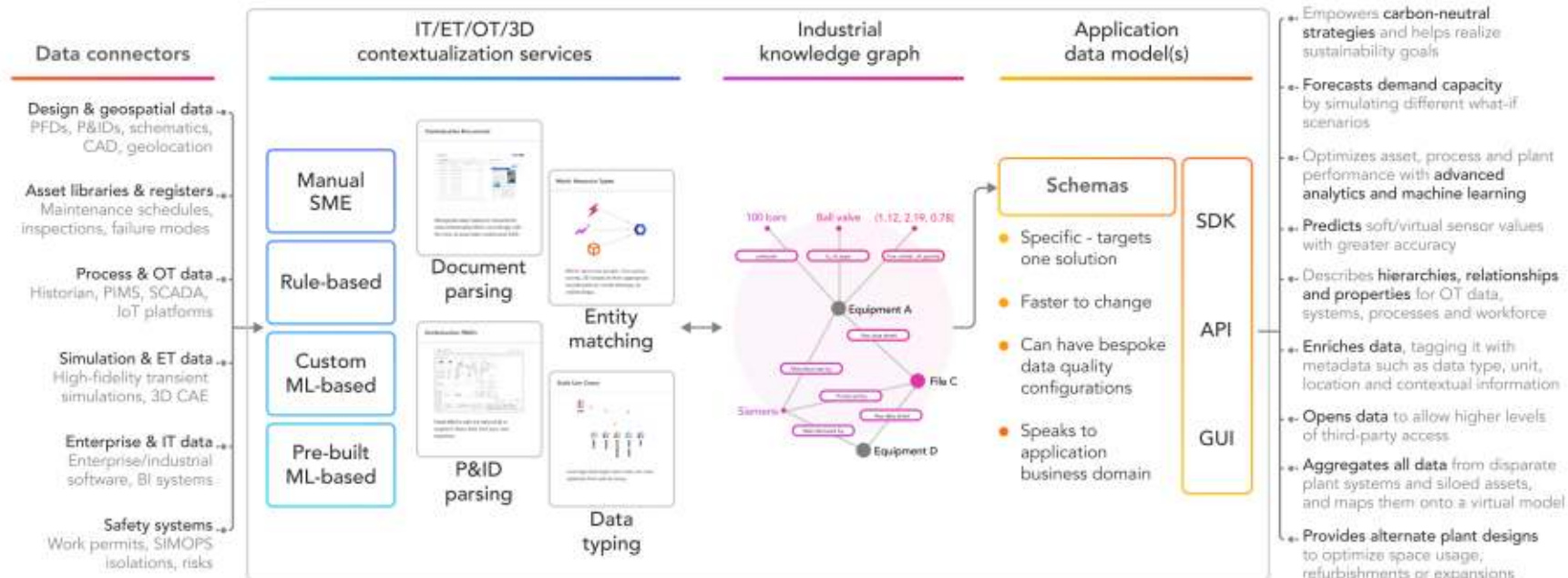
CRUDE OIL REFINING

FINAL PRODUCTS TO MARKET
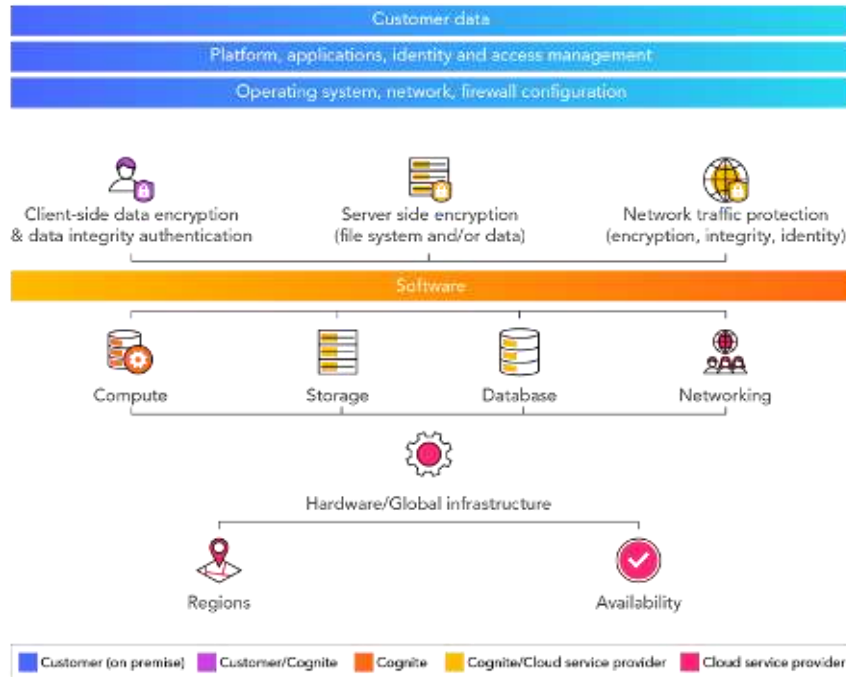
Cognite Data Fusion - leading Industrial DataOps

In more details

Open Industrial Digital Twin
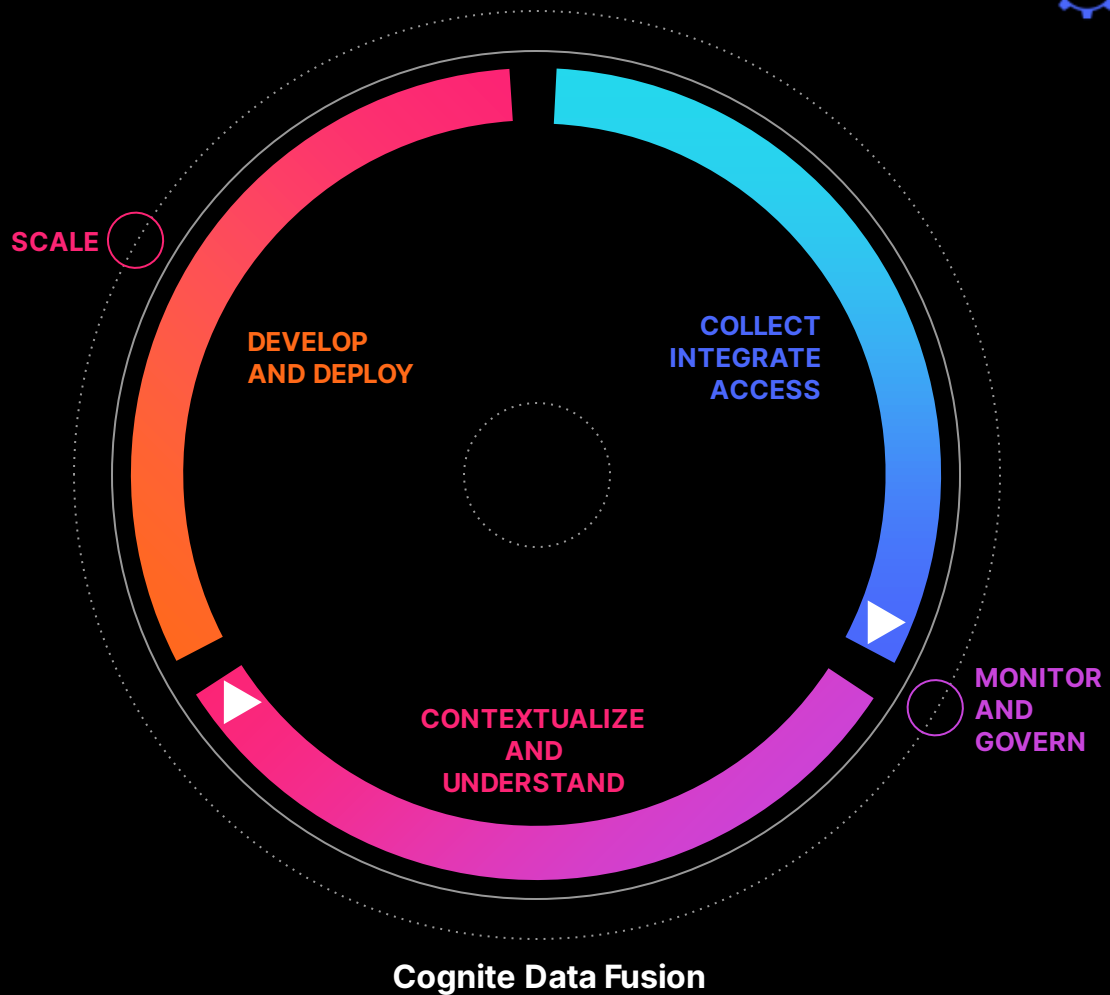enabled by underlying graph database and analytical toolkit

Security built in for critical infrastructure

- Aligned with industry standards
- Secure Software Development Lifecycle with integrated DevSecOps practices.
- Shared Responsibility

Industrial DataOps is the answer

—

to capturing value from data and drive innovation

SCALE

DEVELOP AND DEPLOY

COLLECT INTEGRATE ACCESS

MONITOR AND GOVERN

CONTEXTUALIZE AND UNDERSTAND

Cognite Data Fusion

THANK YOU