

TUESDAY 17TH MAY 2022

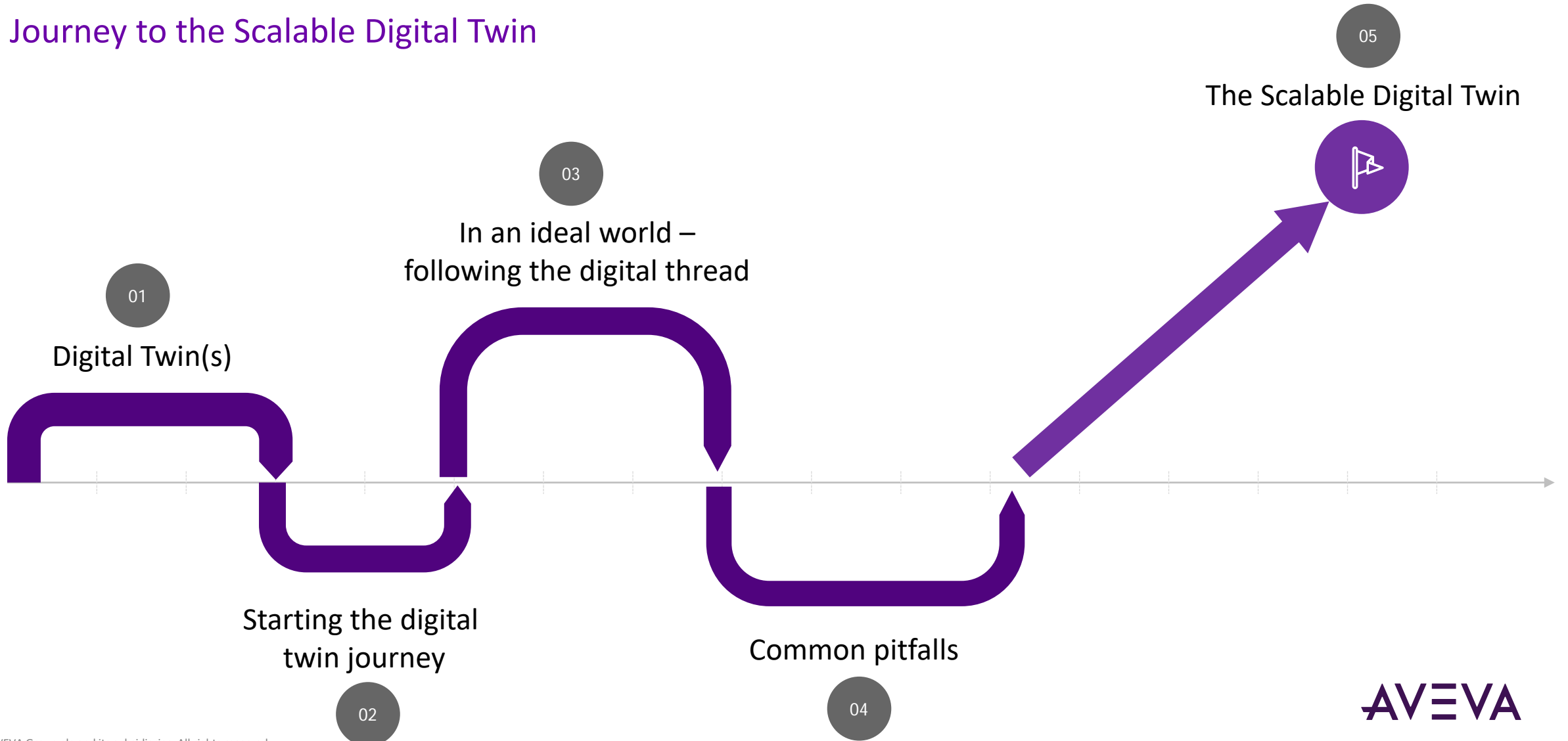
Engineering Information Management 2022: Scaling your Digital Twin

Rick Standish - VP Engineering Information Management

AVEVA

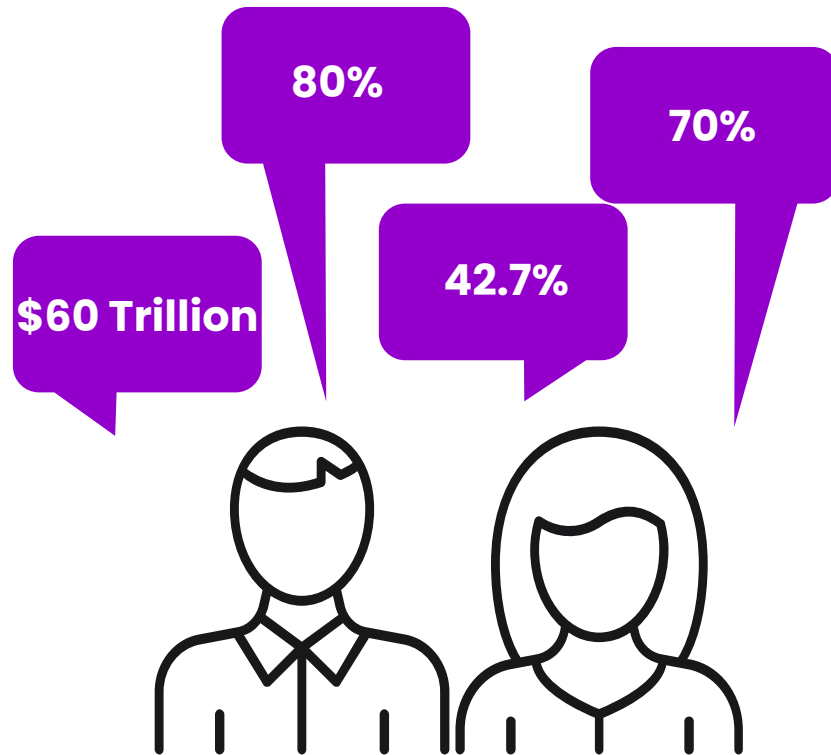
Overview

Journey to the Scalable Digital Twin



Digital Twins and Standards

Market Landscape: Digital Twins are here to stay....



IoT Market Value: \$60 Trillion

"Taking advantage of sensor-data and data analytics can make an enormous impact in the way energy is generated, distributed, consumed and stored, and thus global investment in IoT [Internet of Things] is expected to surpass \$60 trillion over the next 15 years."

80% have Digital Twins Underway

A 2019 Gartner Research survey revealed that 75% of organizations implementing Internet of Things (IoT) already use Digital Twins or plan to within a year.

70% will simulate processes by 2022

"By 2022, 40 percent of IoT platform vendors will integrate simulation platforms, systems, and capabilities to create digital twins, with 70 percent of manufacturers using the technology to conduct process simulations and scenario evaluations"

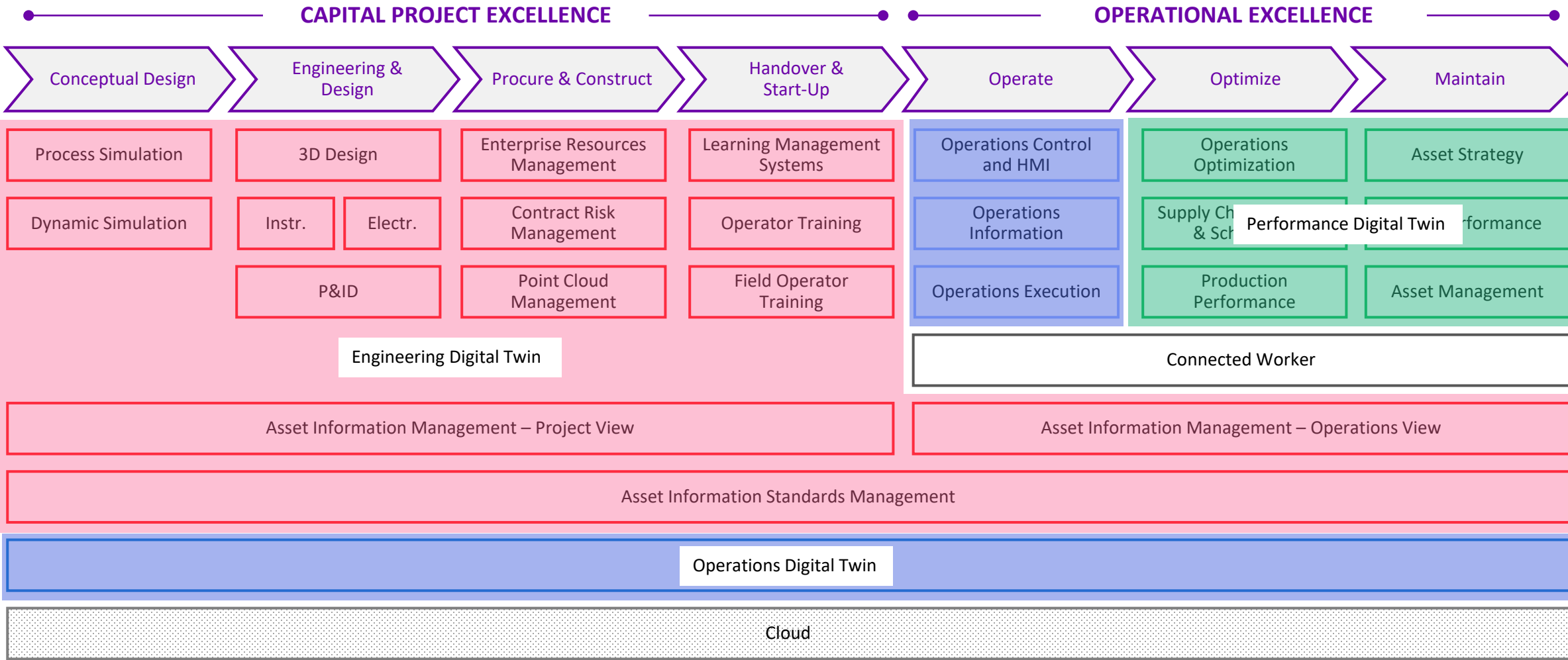
Source: IDC Projects

Digital Twin Market Growth: 42.7%

"The global digital twin market size was valued at USD 5.04 billion in 2020. It is expected to expand at a compound annual growth rate (CAGR) of 42.7% from 2021 to 2028"

Source: Grand View Research

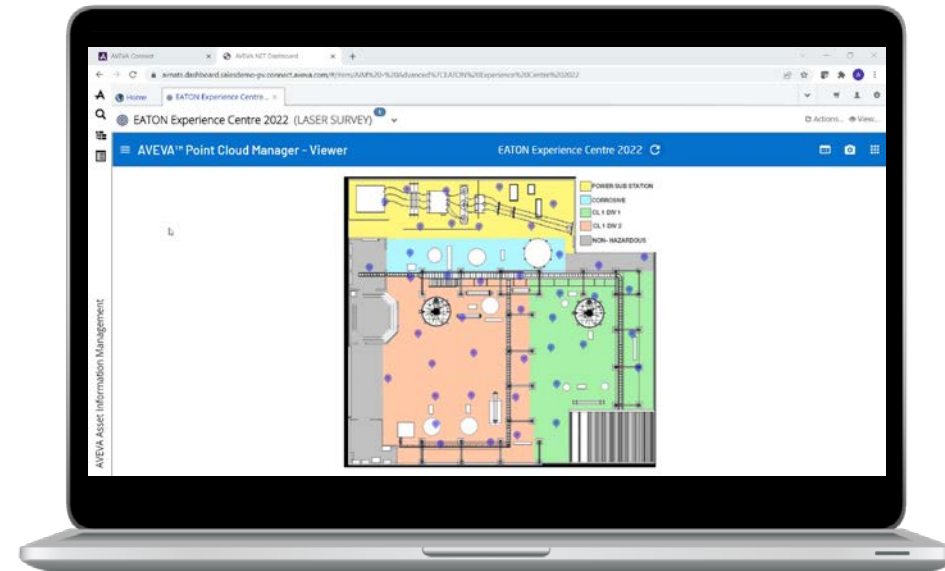
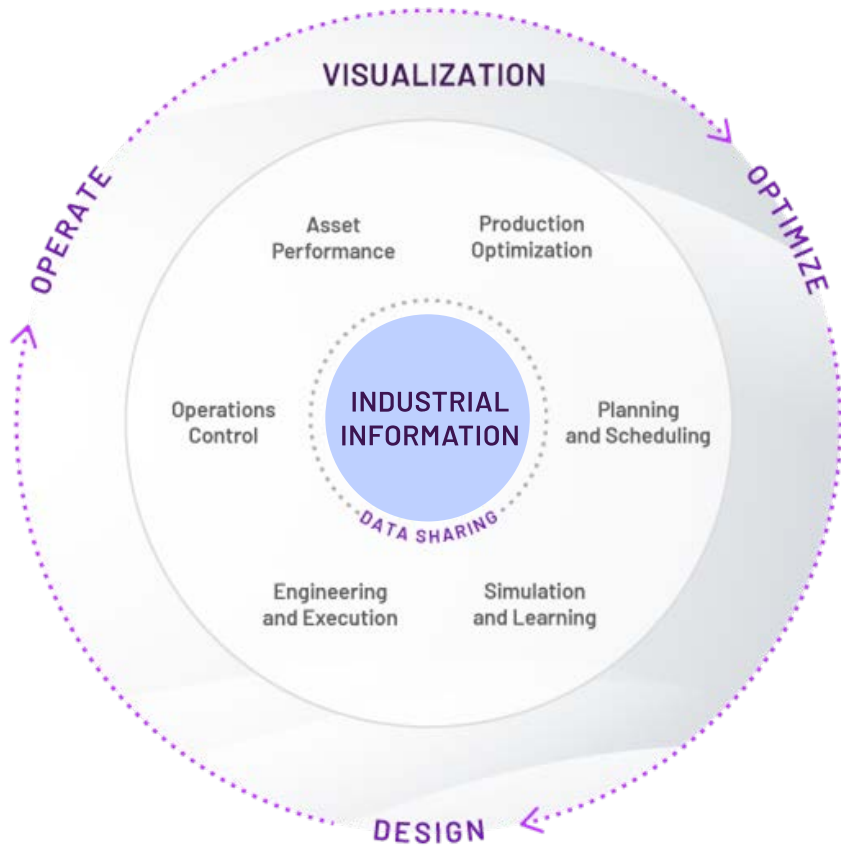
The Digital Twin(s)



Starting the Digital Twin Journey

Improve decision-making with quick access to trusted information

Delivering intuitive, meaningful, agnostic, trusted engineering data into context in the cloud



Goal: Deliver cloud data connectivity between
ET OT and IT Domains

Digital Transformation



In an ideal world – following the digital thread
across the lifecycle

The Digital Thread

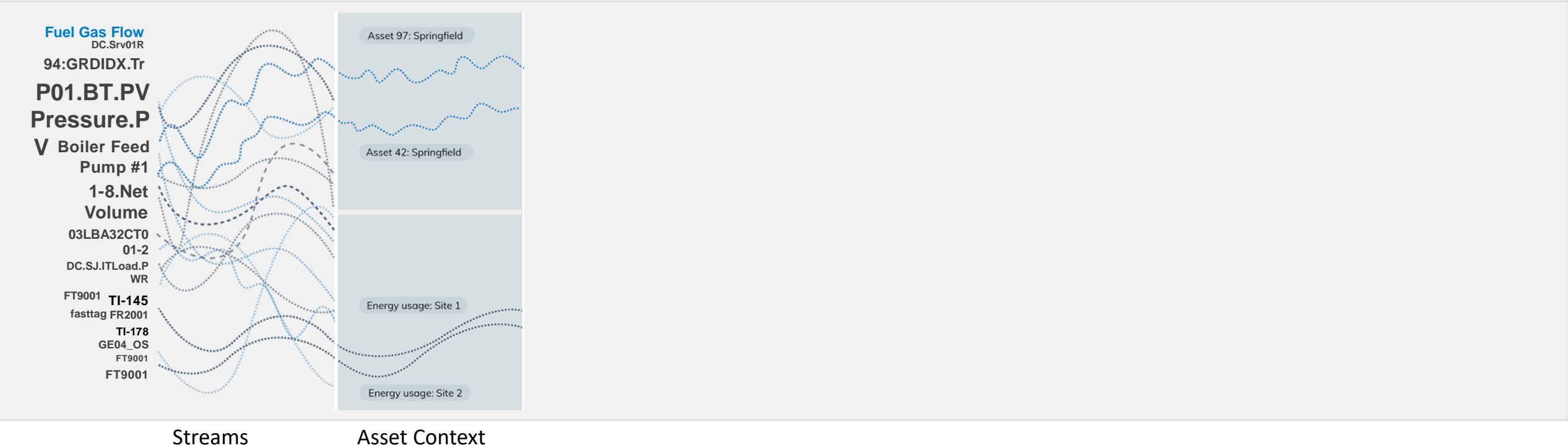
Individual Services Combined to form the Digital Thread

Fuel Gas Flow
DC.Srv01R
94:GRDIDX.Tr
P01.BT.PV
Pressure.P
V Boiler Feed
Pump #1
1-8.Net
Volume
03LBA32CT0
01-2
DC.SJ.ITLoad.P
WR
FT9001 TI-145
fasttag FR2001
TI-178
GE04_OS
FT9001
FT9001

Streams

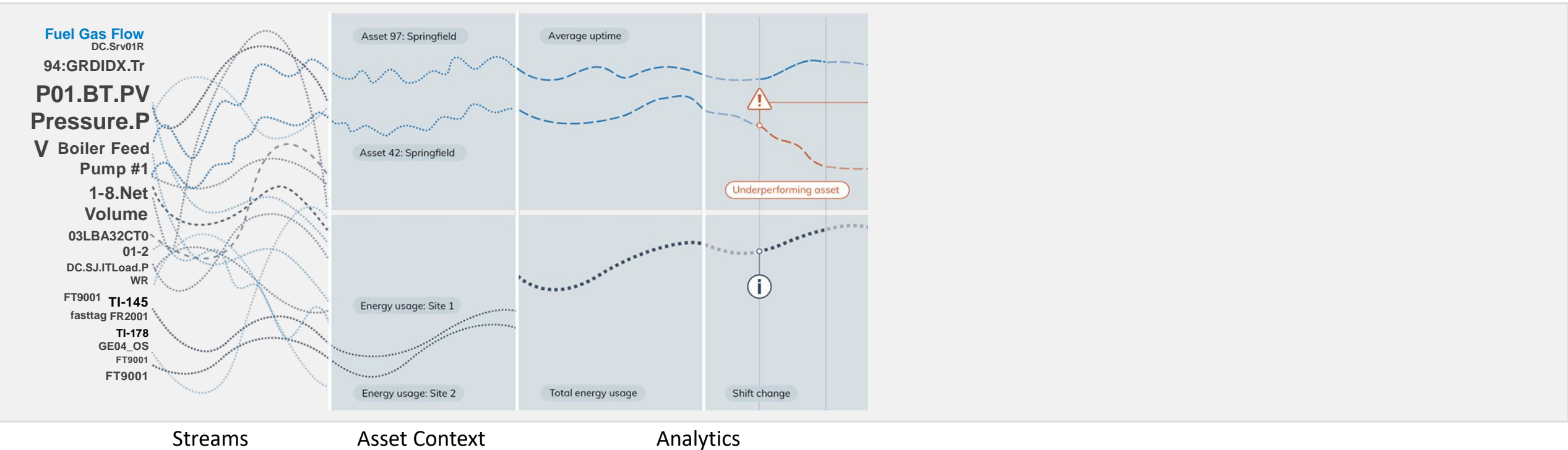
The Digital Thread

Individual Services Combined to form the Digital Thread



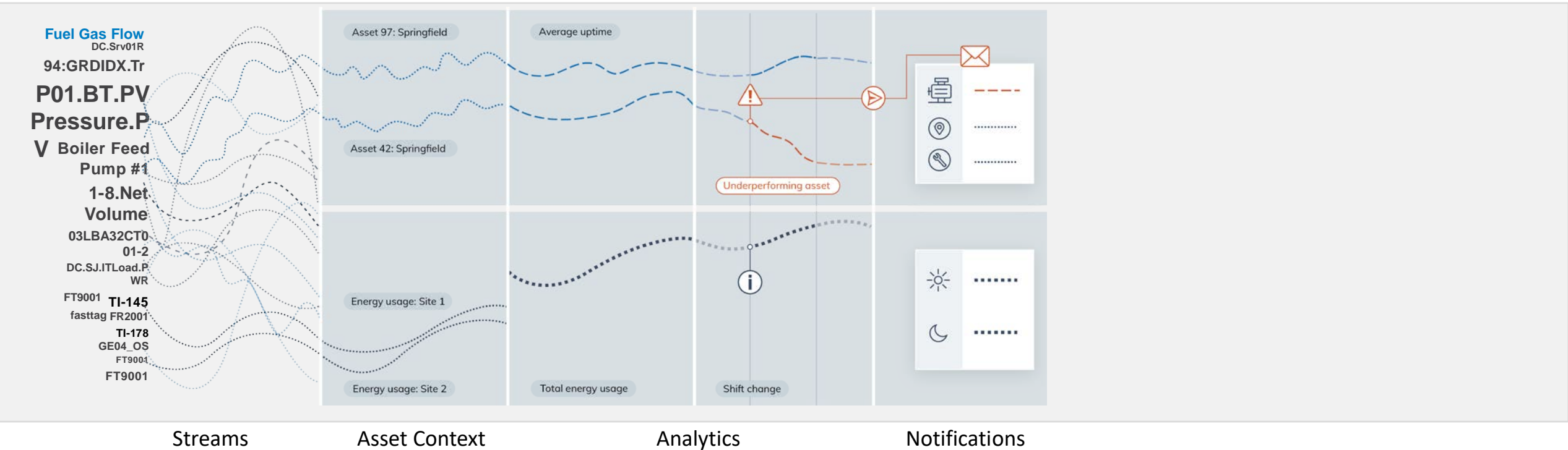
The Digital Thread

Individual Services Combined to form the Digital Thread



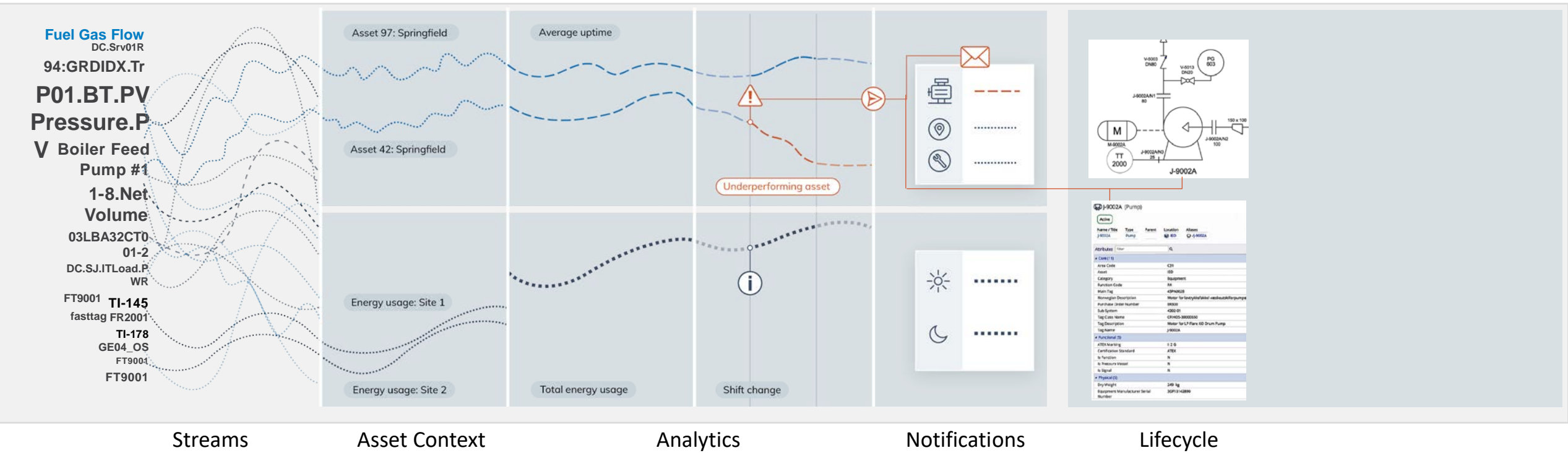
The Digital Thread

Individual Services Combined to form the Digital Thread



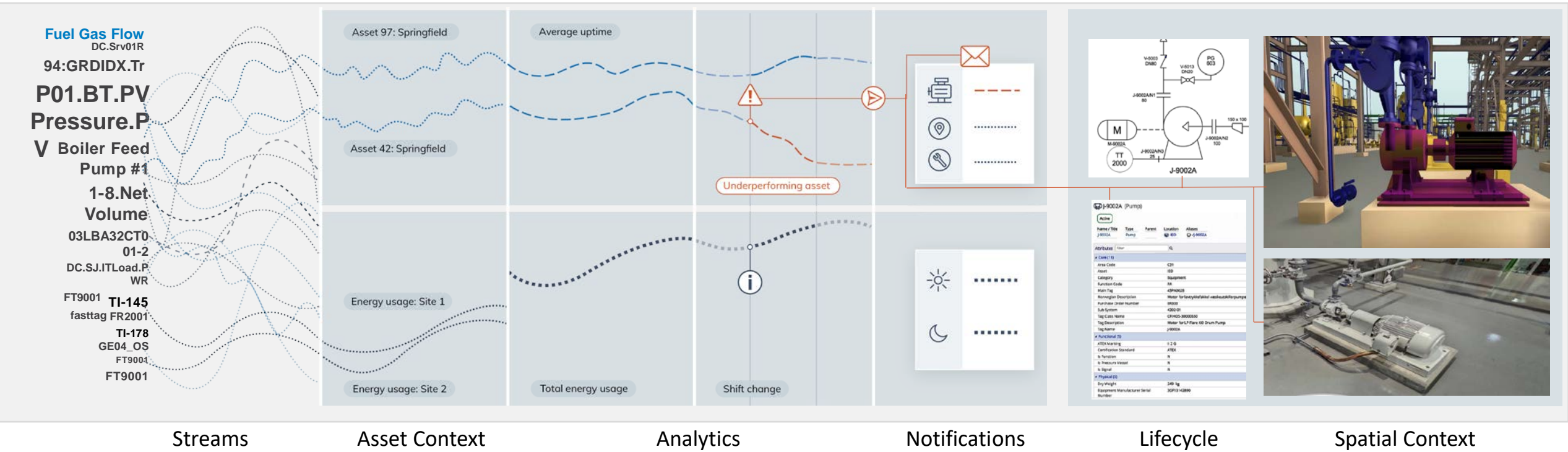
The Digital Thread

Individual Services Combined to form the Digital Thread



The Digital Thread

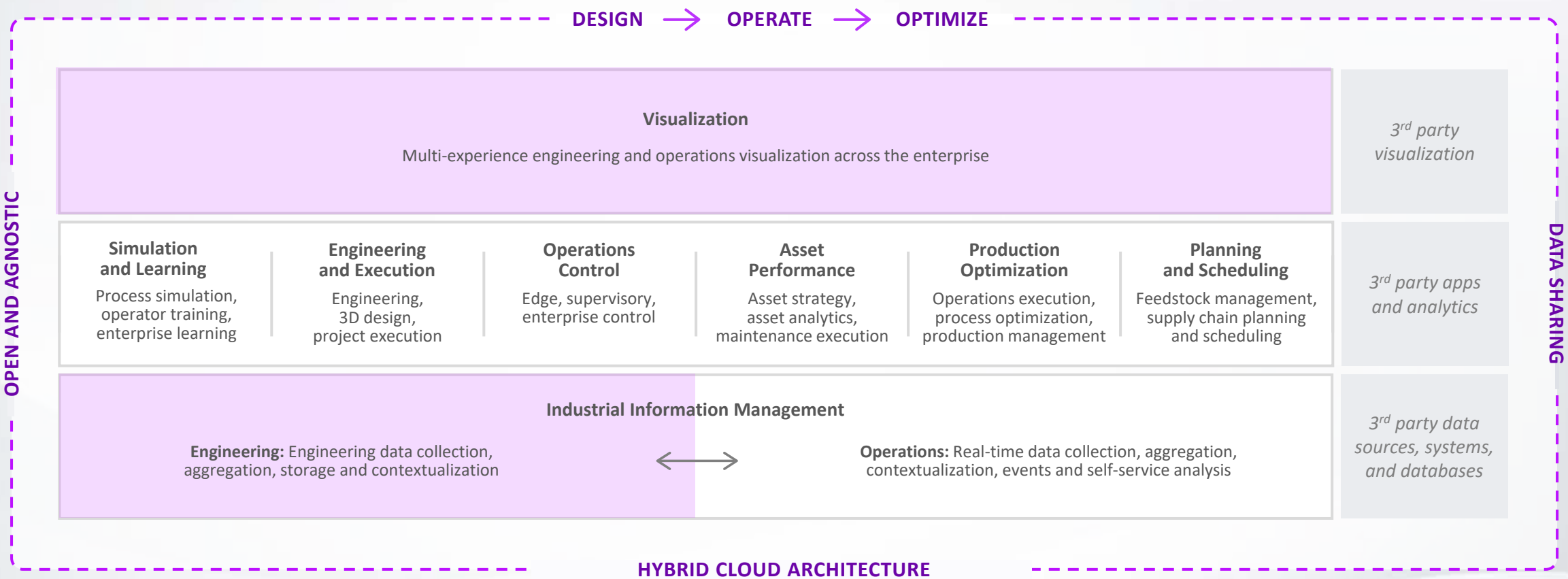
Individual Services Combined to form the Digital Thread



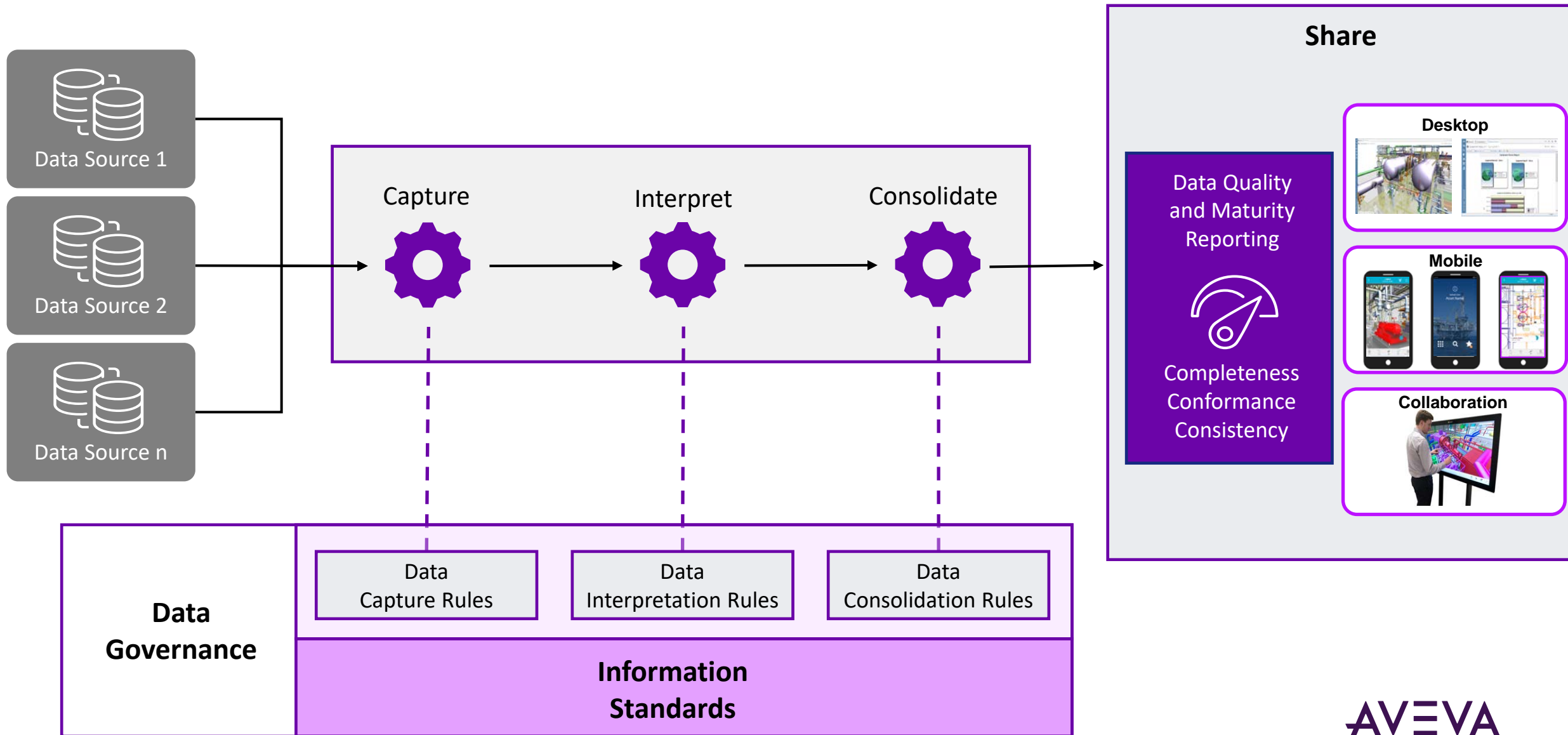
Implementing the Digital Twin - Avoiding common pitfalls

The Industrial Information Landscape

Scaling the Digital Twin



Building a Comprehensive Digital Twin



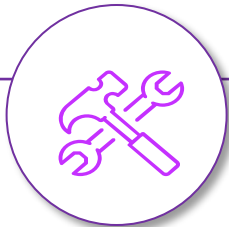
Challenges: Greenfield and legacy assets

- Greenfield projects deliver more engineering information as data and more readily support a Digital Transformation.
- Legacy Assets suffer from a degradation of information quality due to business process or history.



Common pitfalls

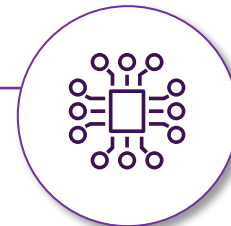
**FEATURE & FUNCTION
FOCUSED**



RIGIDITY OF APPROACH



**MISSING VALUE
ELEMENTS**



Set expectations correctly

Don't pick the facility with the best quality data and base a PoC on that

- Avoid false expectations of what is possible across the enterprise
- Doesn't test software vendors on poor quality information which is usually a blocker for some technology
- Value may be the realisation of state



Addressing *symptoms* versus *causes*

Embarking on a data remediation program without improving the organizational capability

- No change management process
- Skilled workforce
- Uncontrolled Data Sources
- Absolute Lack of Data Sources

Implementing software to provide access to data without understanding the issues

- Is the data there?
- Is it controlled?



Don't execute a Feature-rich Proof of Concept

Limited proof of scalability and repeatability

Views of capabilities achievable for a single asset.

May not be able to determine effort estimates for an Enterprise Deployment

Choice of asset determines success.



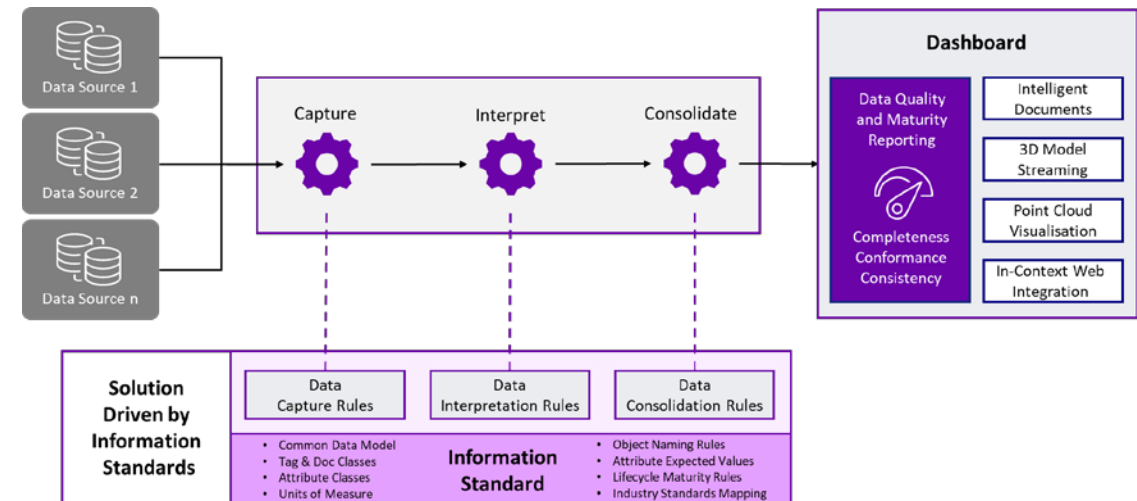
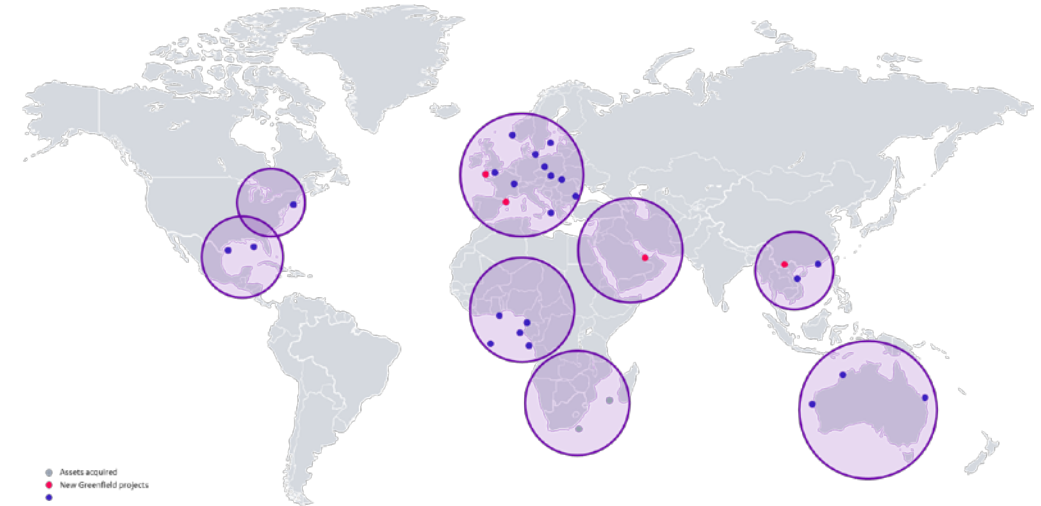
- Data quality and systems often not representative

Provides no visibility of Enterprise Scale challenges or benefits



Success criteria

- Proof of Concept
 - For large-scale deployments choose multiple assets with varying maturity.
- Repeatability
 - Solution must be deployable repeatably and reliably. Each implementation should not be back to square one. A standards drive approach is one way to achieve this.
- Scale
 - Consider solutions that are deployed regionally rather than asset per asset. Need to accommodate the data challenges that come with that.
- Working Partnership
 - Even with a good Proof of Concept there are lots of unknowns across an Enterprise Scale Deployment.



Lessons Learned

- **RFP A** – tailored approach, inability to scale.
- **RFP B** – lack of organizational capability to scale.
- **RFP C** – partnership approach to achieve baseline capability.
- **RFP D** – regional approach and willingness to evolve.
- **RFP E** – Enterprise focused and collaborative approach.

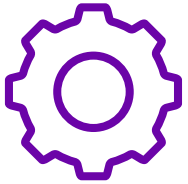
	RFP A	RFP B	RFP C	RFP D	RFP E
Use Cases Requirements	~50	> 200*	48	95	~ 50
Scalability of Performance	5	10	10	5	5
Scalability of Data Volumes	1	2	2	5	2
Scalability of Delivery	0	0	0	1	2
Solution Type Preferred Order	SaaS	SaaS/PaaS/IaaS	SaaS	SaaS/PaaS	SaaS
Proof of Concept Scope	Single Asset	Single Facility	Regional	Single Facility	Regional
Solution Levels	Single Type	Single Type	Single Type	Type based on Maturity	Baseline Solution
Engagement Type	Contractual	Contractual	Partnership	Contractual	Partnership

The Scalable Digital Twin

What are our customers doing?



Scaling the Digital Twin



Understand your business' strengths and weaknesses



Ensure that you have a strategy for the worst case and embrace it

- Leverage the value of a PoC - Digital Twin and Information Engineering are separate concerns



Prioritize order based on Remaining Production value and current regional IM Maturity



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Learn more at www.aveva.com