IMPROVING OPERATIONAL AWARENESS THROUGH CONNECTED OPERATIONAL DATA

Who We Are

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Strategic Accounts Manager

- 6+ Years with SAIM & Argus
- Mechanical Engineering, University of Kansas
- Tank farm design, pump sizing, 3D modeling, stress analysis, software deployment project management
- Background in both engineering design and operational implementation

What We Are Talking About Today

SAIM™
INFRASTRUCTURE INTELLIGENCE

Over the past decade, energy and aviation sectors have invested heavily in digital systems to improve uptime, accountability, and efficiency.

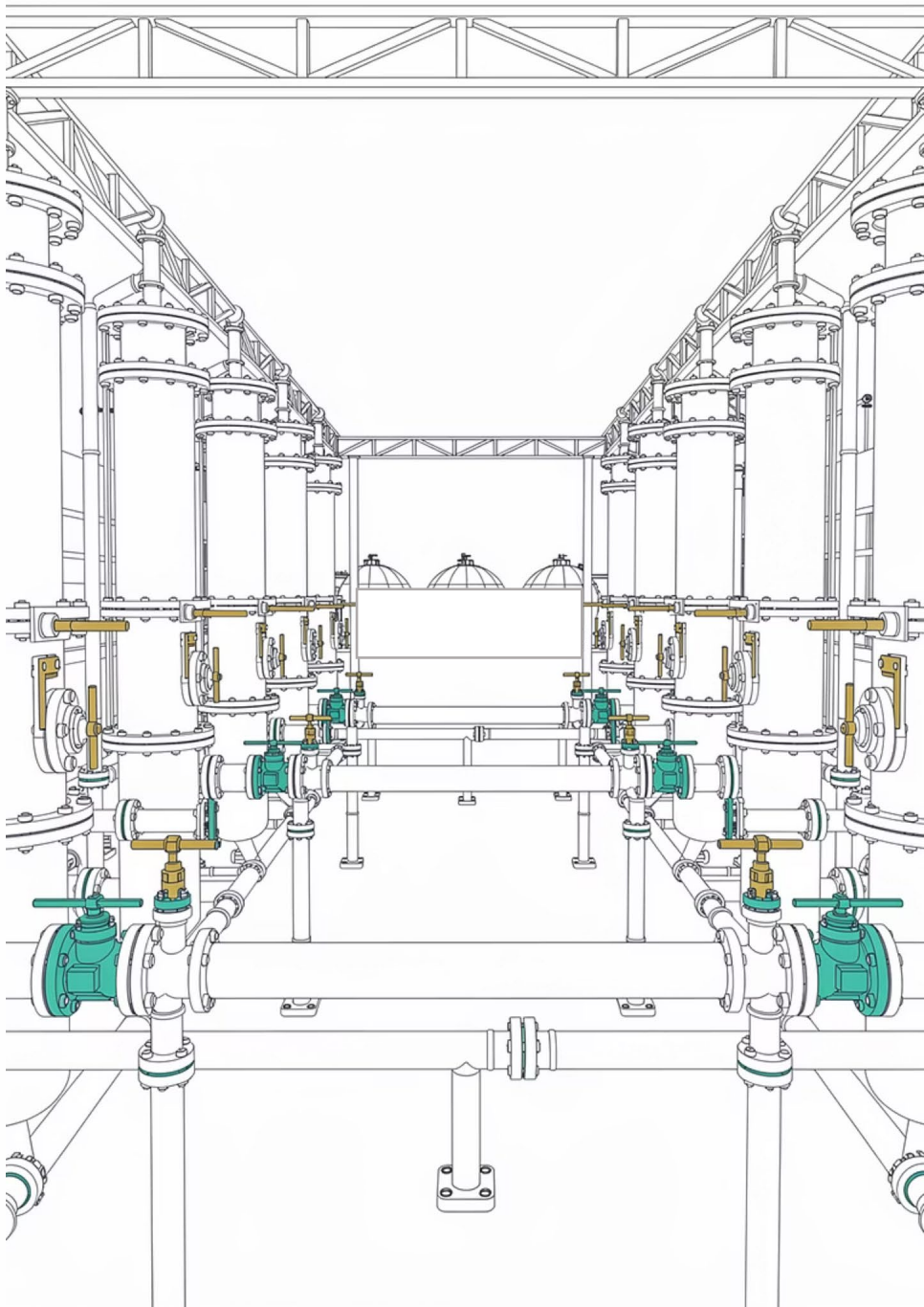
Today, the conversation has evolved.
The challenge is no longer simply digitizing operations.
It's integrating them.

The Operational Reality of Fueling Systems

- Mechanically complex
- Continuous operations
- Multi-stakeholder oversight
- Compliance-intensive
- Decentralized teams
- Aging infrastructure

Fuel continuity supports mission continuity.

Small Issues carry Large Consequences.



The Fragmentation Challenge

Common data fragmentation patterns:

- Asset operational signals reside in SCADA / PLC systems isolated from maintenance tracking records
- Compliance documentation is managed separately
- Engineering records and as-builts are archived elsewhere
- Institutional knowledge lives with individuals

Operational Challenges

Complex Data Environment

Aviation fueling involves many components generating extensive data and signals continuously.

Data Fragmentation Issue

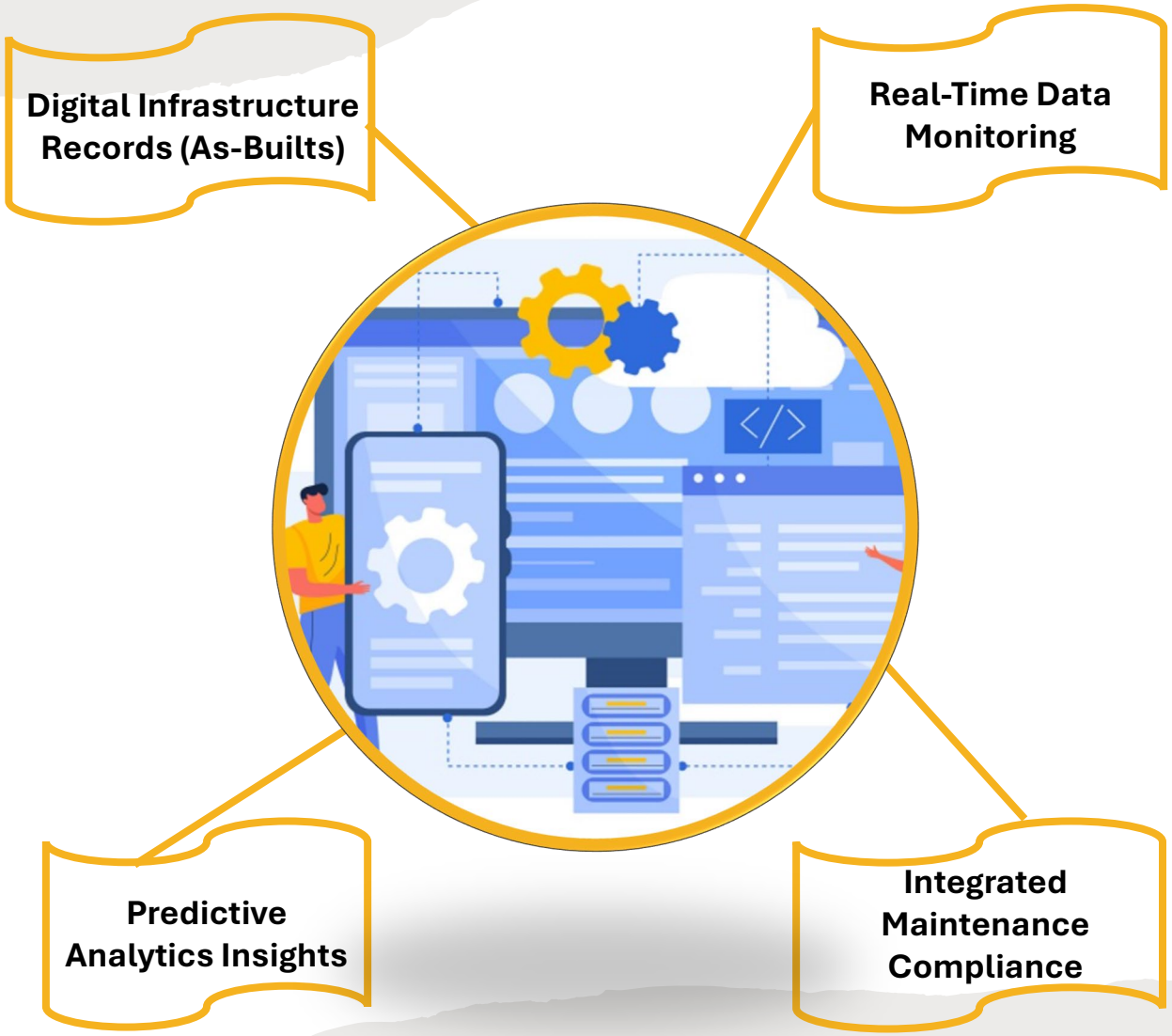
Isolated data points create fragmented awareness without integration or actionable insights.

Need for Contextual Insight

Operators require contextual understanding to respond effectively to events observed.

Proactive Operational Model

Goal is to use integrated data to inform timely decisions and proactive responses.



Transformative Data Role

Data transforms aviation fueling from simple digitization to actionable real-time intelligence.

Enhancing Safety and Compliance

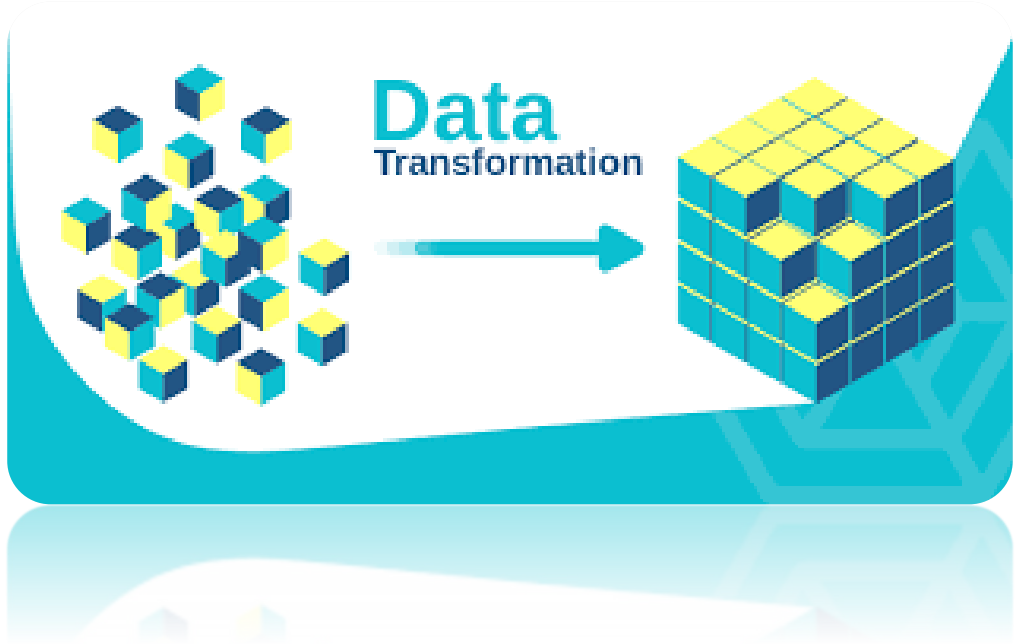
Real-time data helps improve safety measures and ensures regulatory compliance in fueling operations.

Operational Efficiency

Intelligent data integration boosts operational efficiency and responsiveness in fueling systems.

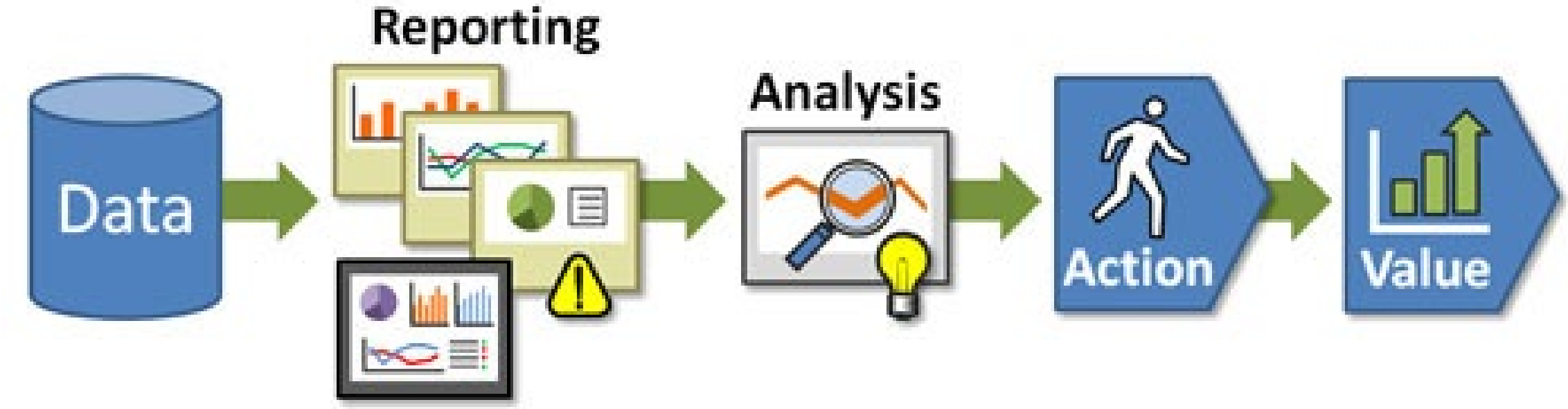
Innovative Digital Solutions

Innovative solutions that digitize and integrate fueling infrastructure effectively help owners reduce cost and increase efficiency.

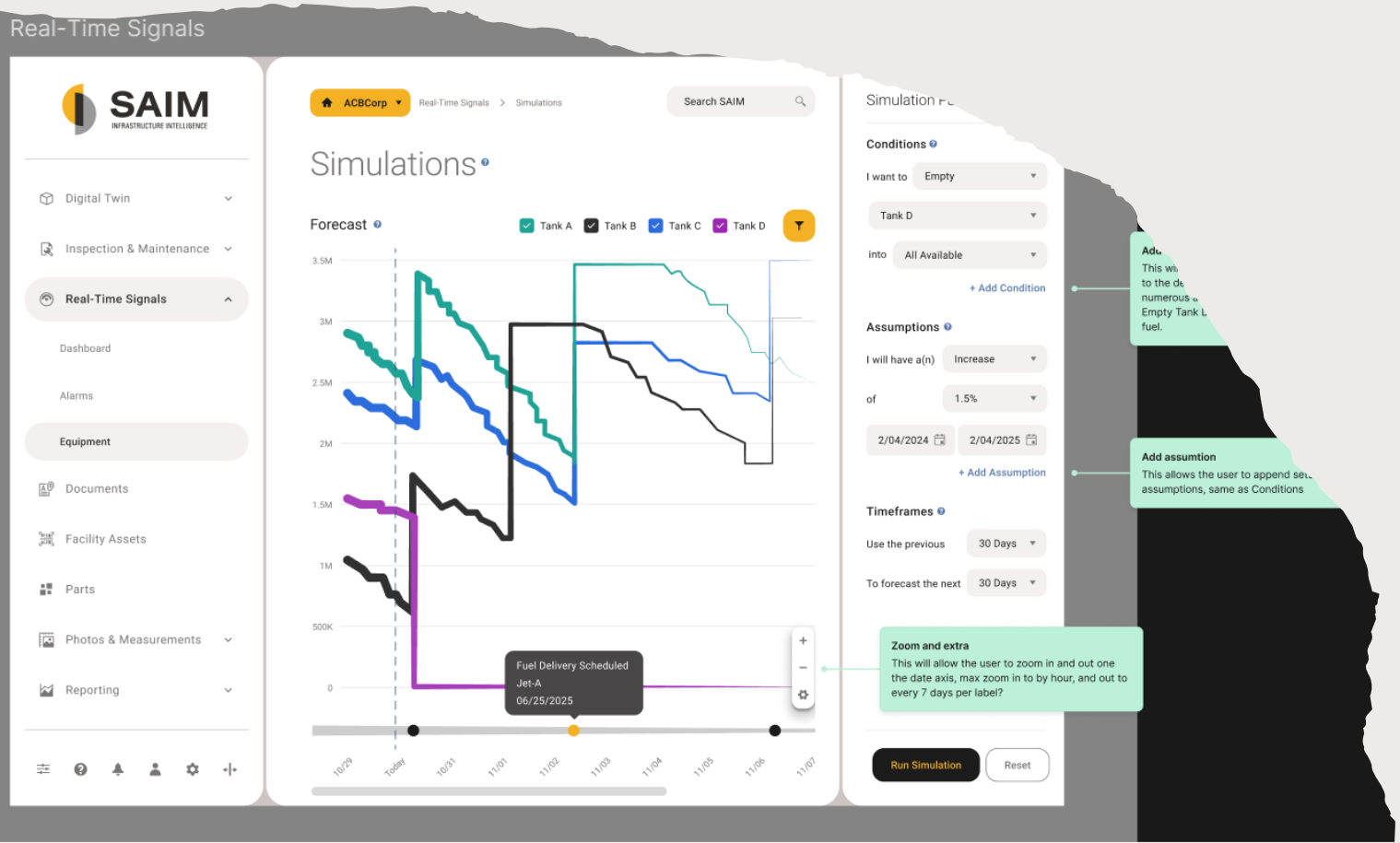


Data-driven operations can:

- Reduce unplanned downtime
- Improve visibility into recurring issues
- Faster troubleshooting
- Better audit preparedness
- Support more effective capital planning
- More efficient operational staff planning



Data Translates to Action



Integrated Data Workflows

The goal: systems that integrate data to drive workflows across multiple operational domains.

Predictive Maintenance Analytics

Signal trend analysis that can enable early detection of potential equipment failures.

Automated Task Generation

Automatic task creation based on regulatory requirements AND actionable data insights.

Compliance and Traceability

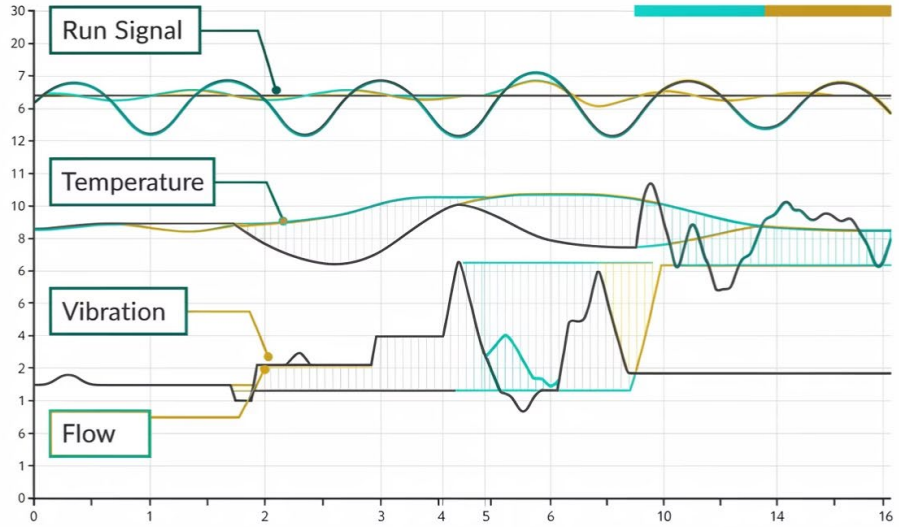
All inspections and repairs logged and linked to live data for compliance.

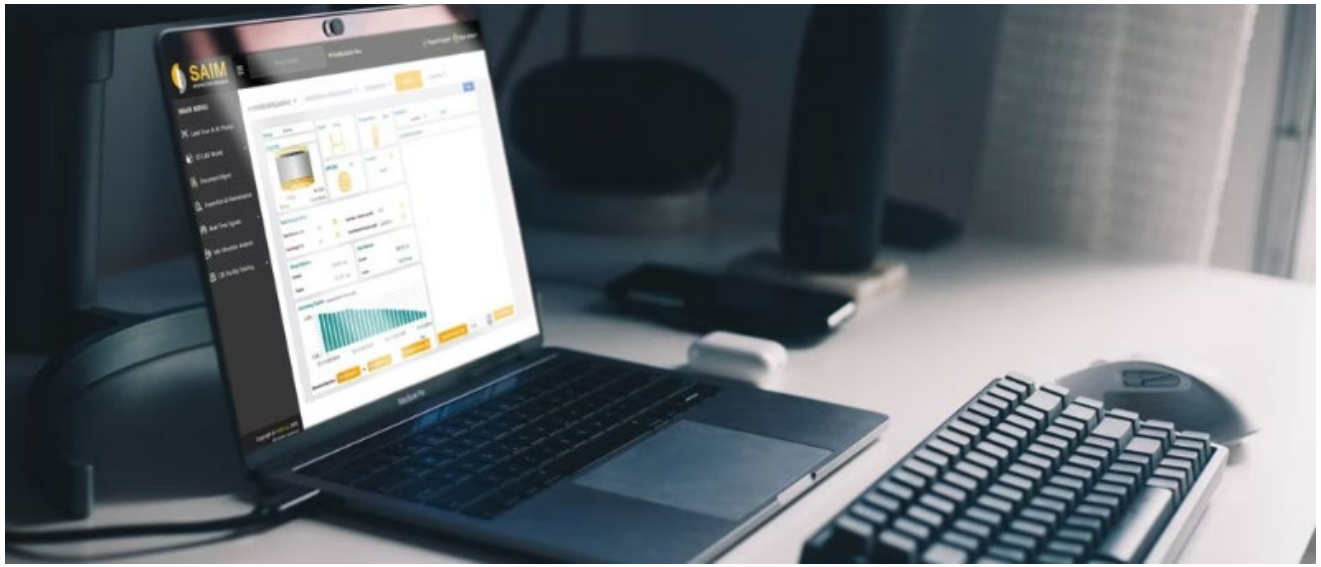
Signal Overlay for Diagnostics

Overlaying:

- **Run signals**
- **Temperature trends**
- **Vibration**
- **Flow data**

Context reduces troubleshooting time.



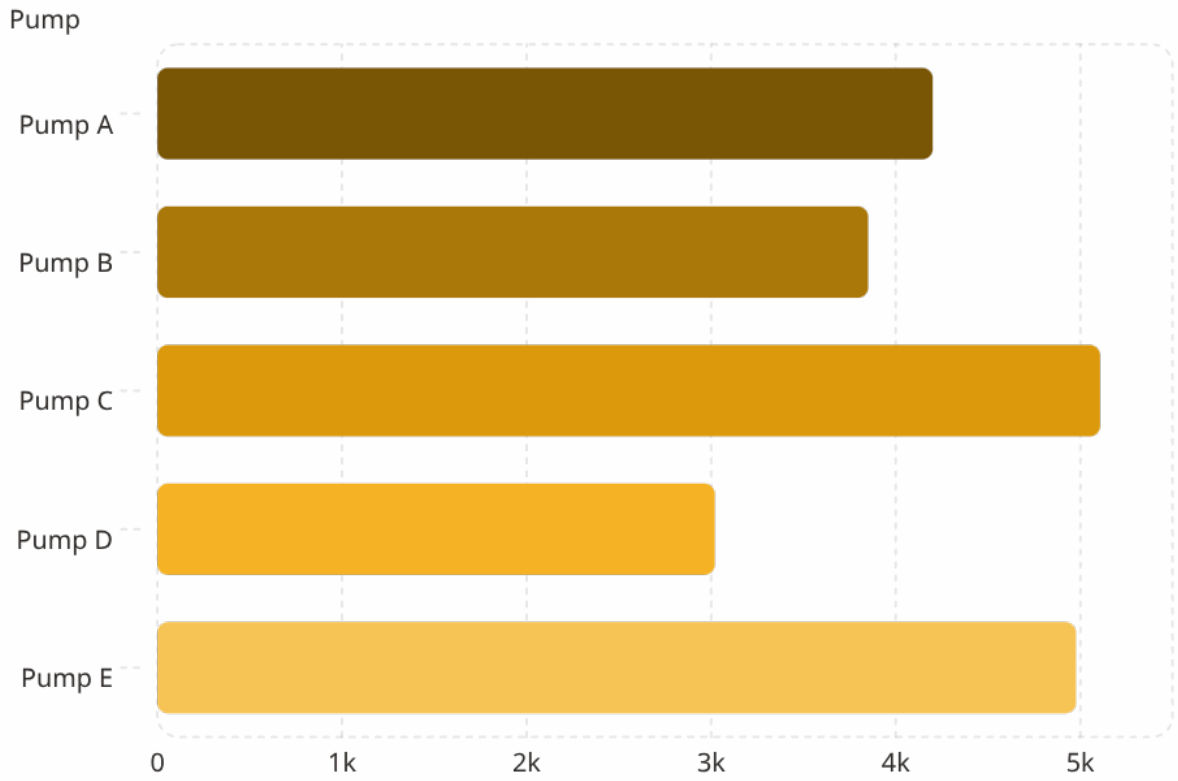


Scenario 1: Mechanical Drift Pump Runtime Imbalance

Parallel pumps, uneven load distribution.

Over time:

- **Increased vibration**
- **Higher bearing wear**
- **Reduced service life**



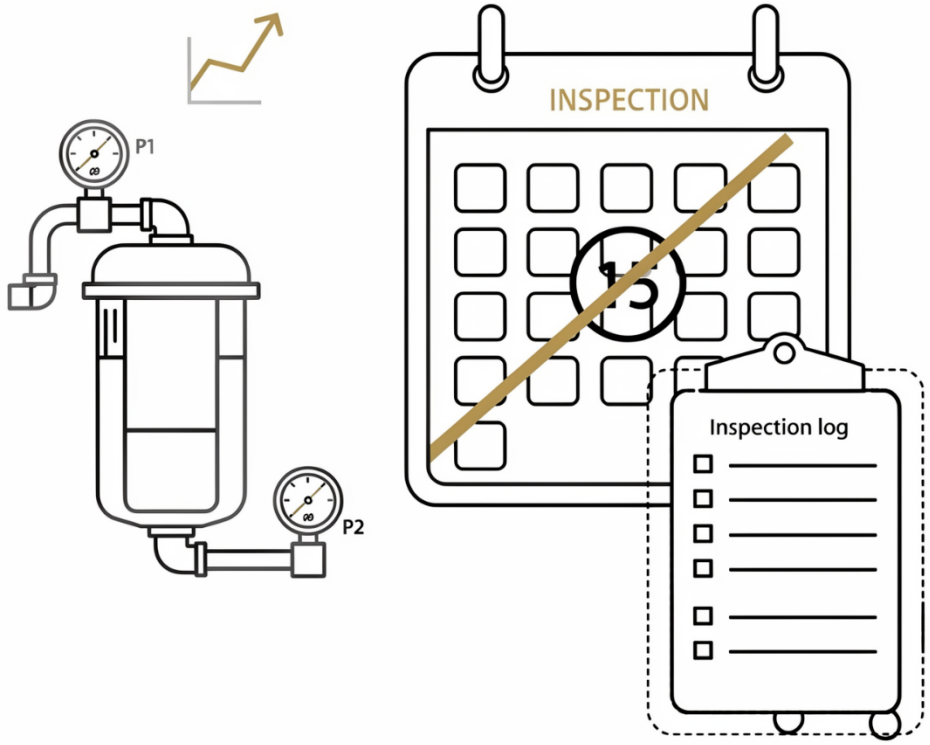
Scenario 2: Silent Degradation
Missed JIG Differential Pressure Inspection
→ Fuel Quality & Continuity Risk

What's happened:

- Filter differential pressure trending upward
- JIG inspection scheduled
- Inspection missed
- No escalation or visibility

What that means operationally:

- Flow restriction risk
- Potential bypass activation
- Fuel quality exposure
- Compliance blind spot

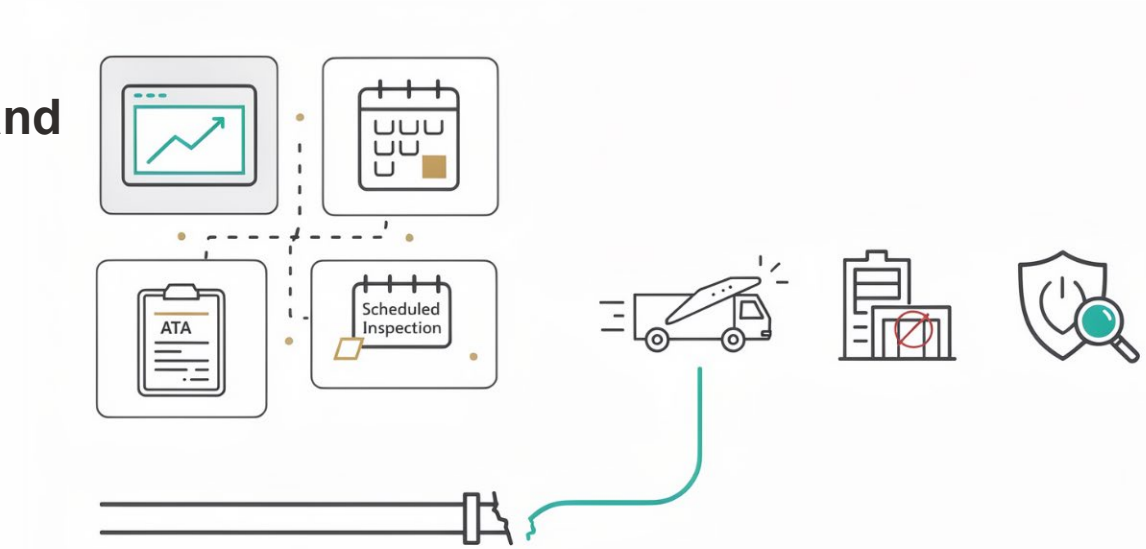


Why This Matters:
Fuel Quality, Continuity & Compliance

Data trend + task fragmentation can increase risk of:

- **Fuel quality assurance is compromised**
- **Throughput may be restricted during peak demand**
- **Potential emergency shutdown**

  instead of planned maintenance
- **Audit risk (non-compliance)**
- **Manual reconstruction of inspection history**



Small visibility gap → Large operational consequence

The Digital Twin:

The Map

The Context

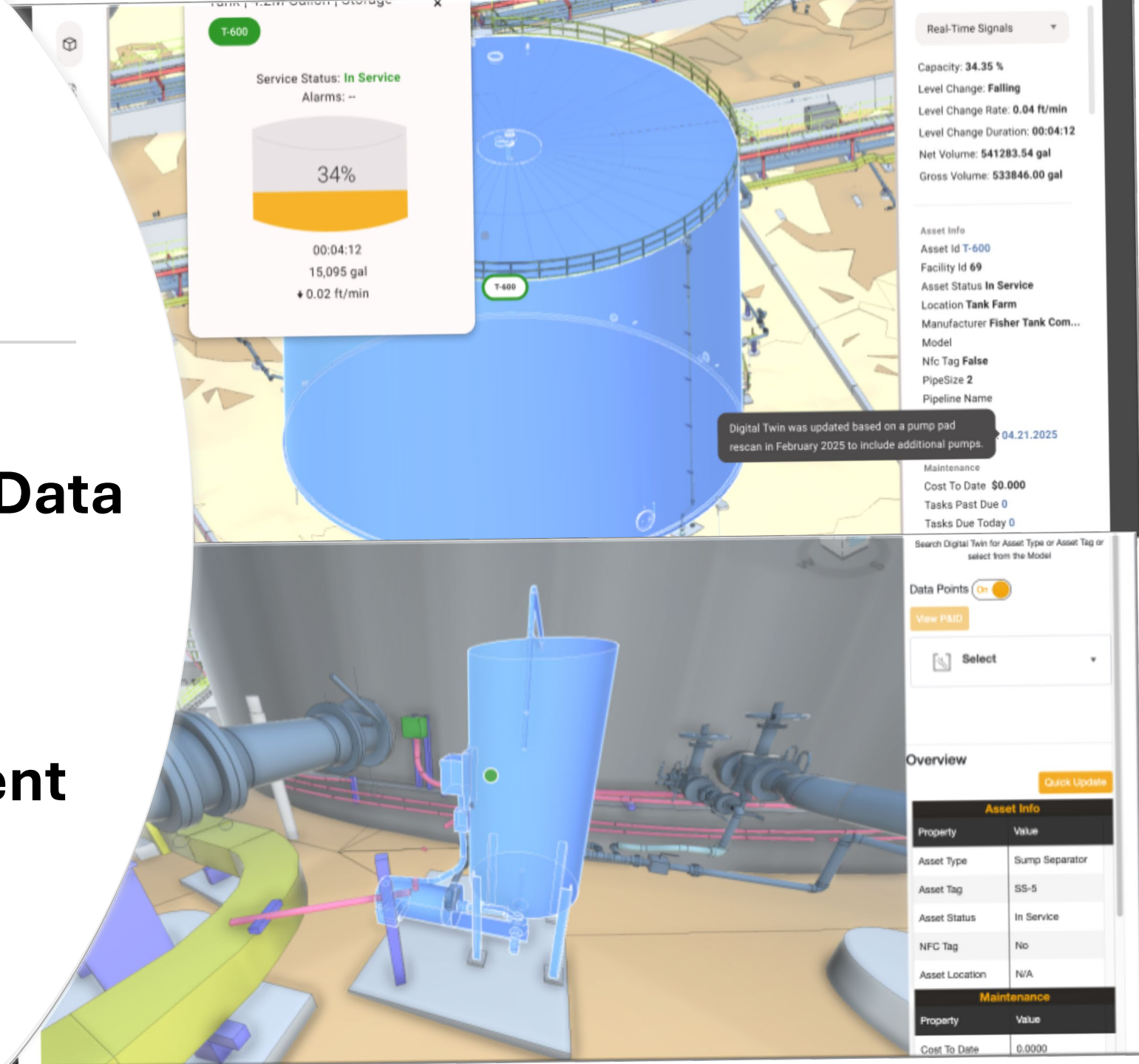
The Single Source of Truth

Integration of Real-Time Data

System Visualization

Predictive Awareness

Operational Empowerment



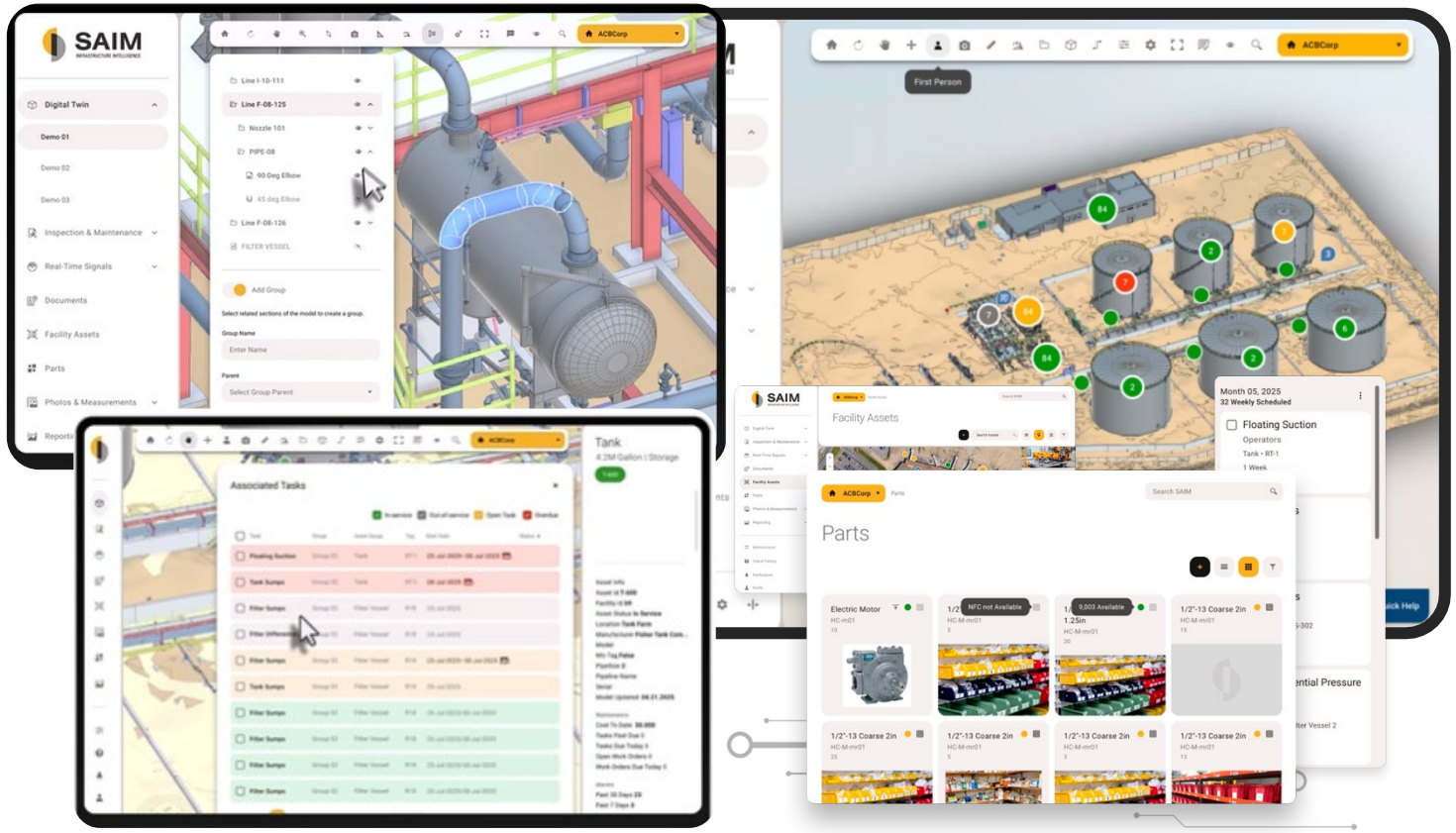
Every Asset.
Digitally Identified.
Fully Traceable.

ASSET LIFECYCLE INTELLIGENCE

Digital Twin as Operational Context

Not a buzzword.

- **Live, As-built 3D facility models**
- **Hi-Res Photos & measurements**
- **Overlay of signals, alarms & trends**
- **Task status & compliance indicators**
- **Asset-level maintenance history**
- **Parts & inventory visibility**
- **GPS tracking for mobile fleet assets**



One operational view. Multiple data levels.

No Clipboards
No Paper
No Re-Entry Errors

MOBILE TASK EXECUTION

Compliance Isn’t Prepared.

It’s Captured.

COMPLIANCE

Fuel Quality & Regulatory Overlay

Quality-Driven Maintenance

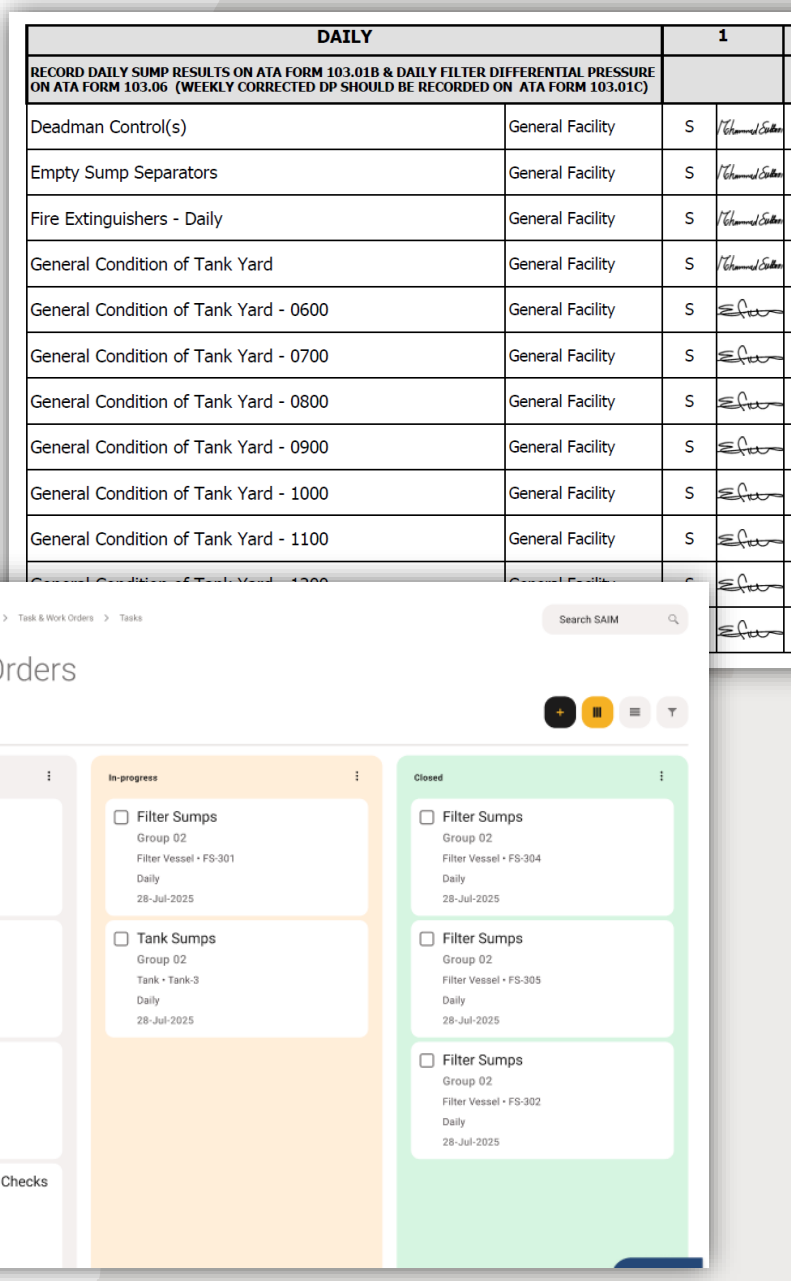
Maintenance is triggered by quality indicators instead of fixed time schedules.

Seamless Regulatory Tracking

Regulatory tasks are linked to asset records to prevent oversight and duplication that drive to automated and digitized forms supporting regular audits.

Consistent Fuel Quality Assurance

Integrated approach ensures consistent fuel quality and compliance efficiency.



A Self-Aware.
Adaptive.
Audit-Ready Facility

- ✓**Unified Data View**
- ✓**Comprehensive Dashboards**
- ✓**Actionable Intelligence**
- ✓**Swift Real-Time Response**
- ✓**Integrated Sensor Monitoring**

What Changes When Systems Are Thoughtfully Integrated

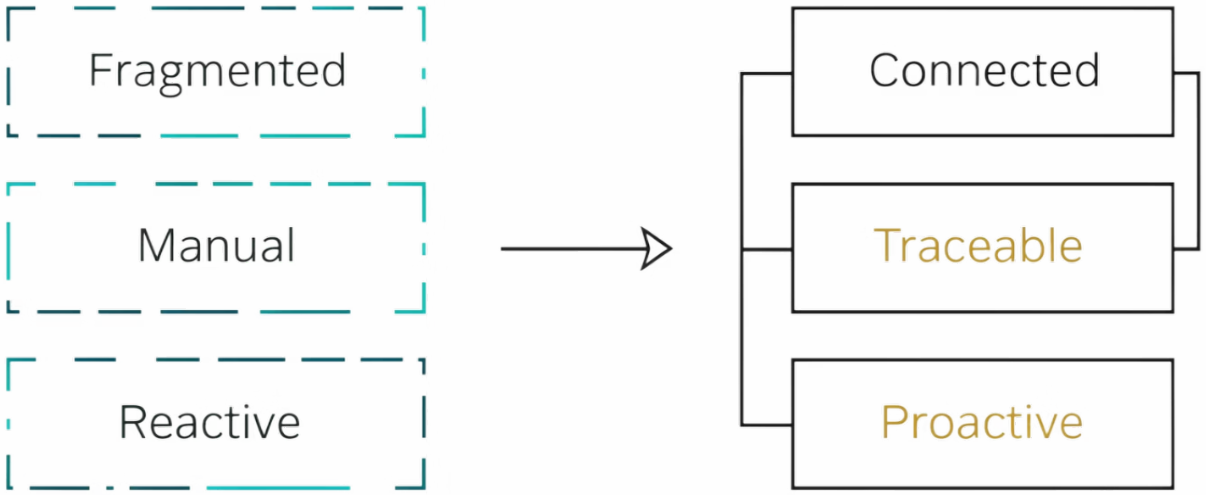
Before

- Fragmented systems & awareness
- Reactive maintenance cycles & response
- Manual audit preparation & reconstruction
- Limited cross-role/region visibility

After

- Connected operational workflows & accountability
- Condition-informed maintenance planning
- Embedded documentation support
- Shared situational awareness
- Reduced preventable disruption

Structured integration supports readiness, resilience, and clearer operational oversight.



Are you transforming your facilities?

Now is the time, the Clock is Ticking!

Deloitte notes it is extremely important for the industry to foster digital transformation—rethinking outdated business models and strategically applying technology to change them—rather than focusing on simply cutting costs.

Gartner warns, only ~15 % of asset-intensive organizations have formally aligned their ET/OT/IT road-maps to deliver intelligent industrial assets."

Questions to Consider

1. **Are we architected for readiness?**
2. **Can operational decisions be made quickly using trusted, connected information?**
3. **Do operations, maintenance, engineering, and compliance teams see the same version of reality?**
4. **Are equipment signals connected to maintenance & repair history?**
5. **Are as-built drawings accurate, current, and accessible?**
6. **How can we know if this is an isolated issue or if this is a trend in equipment reliability?**
7. **Is institutional knowledge preserved or person-dependent?**

Fueling infrastructure supports aircraft readiness. Readiness depends on visibility. Visibility depends on integration.

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Thank You.

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