APERIO: Imagine a World Without Poor Data Quality

Jane Arnold, Industry Expert, APERIO
Topics

Impact of Data Quality

Approach for Improving Data Quality

APERIO Data Quality Solutions

Data Quality Cases
Data Driven Decisions

Asset Performance Management

Process Optimization

Corporate Reporting

<< Data driven decisions need high quality data >>
Types of Data Problems

- Flatline
- Abrupt changes
- Out of range
- High error rate
- No data
- Noise change
- Value structure
- Spikes
- Correlated signals
- Sync loss
Meta Data Quality Must Be Addressed

Examples:

• Units of Measure
• Instrumentation
• ERP
• CMMS
Growth of Data, Systems, Users → Greater Demands on Data

- More advanced sensors (PAT)
- More data (IIoT)
- Many more users
- More and more decisions are data driven

How will you scale?

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APERIO automatically validates operational data at scale to improve data quality, visibility, intelligence, and value, allowing for smarter business decisions based on real-time, trusted, superior data.
Addressing the Problem at Scale

01 CONNECT
02 QUANTIFY
03 PRIORITIZE
04 REMEDIATE
APEROIO Products

Data Leaders
APEROIO DataWise

Ensure the highest data quality through automated anomaly detection and resolution.

Trust all your data-driven decisions.

Data Owners
APEROIO DataWise for PI

Detect data quality issues and identify systemic issues.

Improve and track the data quality of your PI systems.

Data Users
APEROIO DataWise for Analytics

See data quality issues in analytics.

Use analytics tools to exclude poor data and improve your models.
THE APER1O DIFFERENCE

✓ We connect to millions of AVEVA PI data streams for all equipment and sensor types, without needing custom configuration.

✓ We utilize automated, unsupervised ML engines that assess data health and reliability, without manually defining rules or duplicating tags.

✓ We measure, improve, and track data quality through smart workflows, rigorous root cause analyses, and efficient pattern recognition.

✓ We deliver verified data for confident data-driven decision-making, driving business value from the control room to the boardroom.
Speaking from Experience: Jane Arnold

#12 on the Top 50 Industry 4.0 Influencers to Follow

30+ Years in Manufacturing

- **Process Control**: 1989 - 2005
- **Operations**: 2005 - 2021
- **Technology**: 2021 - 2022
- **Automation**

Brands: Sterling Chemicals, Bayer, Covestro, Stanley Black & Decker
Data Excellence

Top Challenges

- Insufficient skills and capabilities
- Data security risks
- Lack of effective applications to process and make sense of data.
- Complex internal governance and processes
- Roles and Responsibilities not clearly defined

Value from Data

- Productivity increase in manufacturing and supply systems
- Enhanced customer experience through improved products and services
- Positive impact on society and the environment

Data Quality Manufacturing of Products

- Single Source of Truth for data!
  - Advanced Process Control
  - Safety Loops
  - Alarm Management
  - Instrument Health
  - Asset Performance Management
  - Unit Quality
  - Continuous Improvement

The right data available at the right time for operations to make timely and accurate decisions!


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## Industry 4.0 Design Principles and Goals

<table>
<thead>
<tr>
<th><strong>Interconnection</strong></th>
<th><strong>Information Transparency</strong></th>
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<tbody>
<tr>
<td>Easy connection of people to data in order to capture additional value.</td>
<td>Comprehensive information to operators to make decisions. Allows for mass data and information from all aspects of manufacturing.</td>
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<tr>
<th><strong>Technical Assistance</strong></th>
<th><strong>Decentralized Decisions</strong></th>
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<tr>
<td>The technological facility of systems to assist humans in decision-making and problem-solving; the ability to help humans with difficult or unsafe tasks.</td>
<td>Cyber physical systems to make decisions on their own and to perform their tasks as autonomously as possible.</td>
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You can solve any problem with data!
## Industry 4.0 Potential Value

### Expectations vs. Reality

<table>
<thead>
<tr>
<th>Industry</th>
<th>Manufacturing</th>
<th>Chemicals</th>
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<tr>
<td>Expected improvements by using technology in discrete manufacturing. Results vary depending on starting point:</td>
<td>Started 4.0 initiatives along with 3.0 activities. Delays due to long supply chain issues for IT equipment. Implementing Tulip for bottom-up approach to digitize the shop floor. $10M implemented productivity improvements in the first year by solving front-line issues</td>
<td>Built 4.0 platform on top of 3.0 solutions. Tackled issues that caused unplanned outages resulting in &gt; 120M€ EBITDA Result of OEE &gt; 95% Data Quality part of tech stack</td>
</tr>
<tr>
<td>OEE (3-50%)</td>
<td>OEE (3-50%)</td>
<td>OEE &gt; 95%</td>
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<tr>
<td>Throughput (10-200%)</td>
<td>Throughput (10-200%)</td>
<td>Data Quality part of tech stack</td>
</tr>
<tr>
<td>OTD (30-100%)</td>
<td>OTD (30-100%)</td>
<td>End users respond to data!</td>
</tr>
<tr>
<td>Inventory reduction (10-90%)</td>
<td>Inventory reduction (10-90%)</td>
<td></td>
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<tr>
<td>Energy efficiency (3-50%)</td>
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<td></td>
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<tr>
<td>Working Capital (COT)</td>
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Quality data improves decision-making
Potential economic value from IoT worldwide in 2030, by use case (in billion U.S. dollars)

Global potential economic value from IoT 2030, by use case

Note(s): Worldwide; November 2021
Further information regarding this statistic can be found on page 8.
Source(s): McKinsey; ID 1317442
Better Business Outcomes

Data driven decisions need high quality data

Smarter decision making
Accurate models
Reliable reporting
Better outcomes
Join the Data Quality Discussion

Engage with APERIO Today

Visit us at booth #11 for a product demo

Offer special AVEVA World pricing for APERIO DataWise for PI

Join Jane in the “Data Quality to Support AI” panel at 3:50 pm today in the Process Industries track

Reach out via the Swapcard app
About APERIO

Customers use APERIO to measure and improve operational data quality.

Partners
- AVEVA
- IOTA
- AspenTech
- Capula
- ADVANTECH
- canary

Fortune 500 Customers
- Chevron
- Air Liquide
- International Paper
- P&G

About APERIO
- Started in 2017
- Headquartered in Boston, MA
- A-series funding in 2020 & 2023
- 20+ employees

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ABOUT APERIO

APERIO is the leader in industrial data integrity solutions. We help customers drive profitability and sustainability goals while mitigating risk in their industrial operations. Powered by AI machine learning, APERIO automatically validates operational data at scale to improve data accuracy, security, and value, allowing for better, smarter business decisions based on real-time, trusted, superior data.