

# From Chaos to Clarity:

Data Standardization for  
Manufacturing Operations



# About this guide

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The transformative power of data is undeniable. For the manufacturing industry, the question is no longer whether to adopt digital systems but when. Embracing this transformation is not merely an option but a necessity for survival and competitiveness.

In order to standardize data, many factors must be considered, such as how the data is collected, managed, and analyzed. Without standardization, it will be difficult to collect actionable data due to the disparate formats and siloed systems, especially for global organizations.

But before going any further, let's start with the basics. In the context of manufacturing, what does data standardization really mean? And how does its importance matter to manufacturers on their digital transformation journey? In this guide, we explore why data standardization is one of the most critical steps in a truly lean manufacturing environment.



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# The foundations of data standardization

## The what

Simply put, data standardization means your data is internally consistent across every site and location, not just within each individual facility. Every data source, regardless of where it's generated, uses the same format. This standardized language allows for seamless integration and analysis, even when you have multiple factories or production lines spread geographically.

For example, imagine you have a set of plants across the globe, all manufacturing the same product. Each plant, however, measures performance using different metrics and data sources, making any comparison meaningless.

- Plant A tracks production speed but excludes quality control data
- Plant B measures efficiency based on material usage but doesn't factor in machine downtime
- Plant C monitors defect rates as a primary indicator but doesn't consider process stoppages

Without standardization, comparing their performance becomes a complex and error-prone task. It's like trying to compare apples and oranges.

- **Identifying trends:** are production speed increases in Plant A offset by higher defect rates in Plant C? It's impossible to tell without standardized data
- **Benchmarking:** how does Plant B's material usage efficiency compare to industry best practices? You can't be sure without comparable data points
- **Optimizing operations:** optimizing across plants becomes a guessing game without a unified understanding of performance

However, with standardized performance metrics and data collection methods, things change dramatically. All plants track production speed, material usage, defect rates, and safety incidents. The data is collected in the same format and units.

In essence, standardization is the key to unlocking the true potential of multi-site operations. It transforms a jumble of disparate data into a powerful tool for driving performance and achieving operational excellence.

## The foundations of data standardization

# The how

Standardization involves putting systems and standards in place to ensure that key processes and metrics are the same or similar from site to site, for example. Standardized data can then be seamlessly integrated into existing data repositories, including data warehouses, cloud-based platforms, data lakes, or traditional relational databases.

This standardization process enhances the usability of data for factory and shop floor personnel, as well as various business departments like supply chain and operations. Standardized data also becomes a crucial element in decision-making when integrated into other computer operating systems (e.g., MES and BI software).

Having standardized data means that everyone operates on the same page with a single source of truth.



# The foundations of data standardization

## The why



In the **pursuit of operational excellence**, data standardization stands as a cornerstone of a holistic strategy. By enhancing data integrity and accessibility, manufacturers can uncover and rectify inefficiencies and curtail costs.



The [Corporate Sustainability Reporting Directive \(CSRD\)](#) is a new European Union directive that requires large companies and listed small and medium-sized enterprises (SMEs) to report on their sustainability performance. This includes reporting on their environmental, social, and governance (ESG) impacts. For manufacturers, this means that they will need to report on a wide range of topics, such as their use of energy and water, their greenhouse gas emissions, their labor practices, and their supply chain management.



In the era of **Industry 5.0**, where humans and machines play in harmony, a common language is critical. Data standardization enables a seamless exchange between diverse systems. Without it, information becomes isolated, stifling the collaboration and intelligence that define this new industrial era. Standardizing data ensures machines speak the same tongue, unlocking a range of benefits: streamlined processes, accurate insights, and ultimately, agility and personalization. It's the key to unlocking the full potential of this human-machine collaboration and future-proofing your operations.



As manufacturing companies face the relentless demands of a dynamic market and evolving customer preferences, the **need for agility** has never been greater. Standardized data empowers manufacturers to swiftly navigate these challenges, enabling them to make well-informed decisions and adapt to changing circumstances with greater efficiency.



Standardized data unlocks a wealth of possibilities, enabling manufacturers to **develop predictive models, optimize production processes, and enhance product quality.**

# The **challenges** and opportunities of data standardization

While data standardization brings about substantial advantages, it also presents certain obstacles:

Manufacturers often have a mix of legacy systems and new technologies, each with its own data formats and protocols. Standardizing data in this case can be a complex and time-consuming task.

Manufacturing organizations often have separate divisions and departments that operate independently. Standardizing data across these silos requires collaboration and a shared understanding of data goals.

Cultural inertia, wherein employees may be hesitant to adopt new data standardization procedures, particularly if they have become accustomed to the existing systems and data formats. A comprehensive change management strategy is essential to overcome this resistance and ensure a smooth transition.

# The challenges and **opportunities** of data standardization

Despite these challenges, there are also significant opportunities associated with data standardization:

Data standardization optimizes data management processes, leading to significant cost savings in data integration, maintenance, and reconciliation.

Improved data security as standardized data is more resilient to unauthorized access and cyberattacks, enhancing overall data security.

The ability to monitor performance across multiple sites in a standard way. This allows global and regional leadership to identify areas for improvement and track progress towards goals.

Streamlined, standardized data serves as a strategic asset, empowering manufacturers to gain a competitive advantage by fostering informed decision-making, boosting productivity, and trimming costs.

# How do you know if data standardization is a challenge?

The sheer volume and complexity of data generated in manufacturing processes can hinder the extraction of meaningful insights and informed actions. This is where the concept of data standardization emerges as a critical enabler of manufacturing efficiency, ensuring consistency and comparability across diverse data sources.

During our own conversations with manufacturers with multiple sites, both domestic and global, there are several common challenges associated with the lack of data standardization.

The effectiveness of your digitalization strategy will likely be called into question if you are unable to leverage data to answer these fundamental questions.

The below questions will help you understand if standardization is a challenge in your organization.



**Can we use data dashboards and visualizations to make performance data accessible and actionable for our shop floor personnel?**

**Can we identify and disseminate best practices across our factories and production lines?**

**Can we use data to assess the impact of our improvement initiatives on KPIs such as productivity, quality, and efficiency?**

**Can regional or global leadership monitor performance across multiple sites using standard common parameters or KPIs?**

**Can data better support day-to-day operations and internal communication between teams?**

**Can we identify and highlight key success stories from our improvement initiatives to demonstrate our impact?**



# Use cases for data standardization

The potential applications of standardized factory data are virtually endless. Standardized factory data holds immense untapped potential. However, its true value stems from its unparalleled accuracy as the most direct and unfiltered source of information from the production floor.

For this reason, you rely on the data to make better decisions on a daily basis. Here are some of the most compelling use cases:



## Data visualization

Standardized data empowers advanced analytics to provide real-time insights into equipment health and performance. Operators can visualize current production levels, identify potential faults, monitor machine status, and access other relevant data in real-time through intuitive dashboards and interfaces.



## Automation

Data-driven action requires manufacturers to glean meaningful insights from their data. These insights can inform them of critical events like machine downtime, production shortfalls, or higher-than-normal defect rates. However, extracting these insights depends on the data's ease of comprehension and usability. When data is readily understandable, manufacturers can leverage it to make informed decisions more rapidly, ultimately leading to automation.



## Production management

Standardized data can be analyzed and integrated with other business intelligence tools through API connections, enabling predictive product trends, field failure identification, quality issue analysis, and more. These insights empower manufacturers to make informed decisions regarding corporate growth strategies, process optimization, and cost reduction. Edge-based data standardization, facilitated by a machine data platform, facilitates data transfer into downstream systems like MES or ERP, providing deeper production insights and enhancing decision-making capabilities.



How Cara Partners **increased uptime by 10%** by moving from reactive to preventative maintenance with EviView's downtime insights

[Learn more](#)

Use cases for data standardization

# Maintenance

Emerging from the shackles of traditional calendar-based maintenance, organizations can embrace a data-driven approach that proactively identifies and addresses equipment issues. By leveraging historical data and real-time insights, maintenance teams can transition to condition-based maintenance, a strategy that optimizes resource utilization and extends asset lifespans.

As digital transformation deepens, maintenance operations can even venture into the realm of predictive maintenance, anticipating failures before they occur and taking preemptive actions to prevent costly downtime.



# The impact of data standardization

Streamlining data collection, ensuring data standardization, providing contextual insights, and conducting comprehensive analysis are all crucial steps in enhancing operational efficiency.

Let's examine the key benefits of a digital solution like EviView that empowers these data-driven practices.

*"Recently, we received the Best Process-Product Award at the Irish Medtech Awards, recognizing our innovative software's transformative impact on Merck's manufacturing procedures and commitment to operational excellence. This achievement showcases the power of EviView's holistic approach to seamlessly integrate legacy and new technologies, empowering our clients to achieve continuous improvement and reach new heights of operational excellence."*

*Karol Dabrowski, EviView CEO*

**MERCK**

[Learn more](#)

# The impact of data standardization

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## Improve data quality and integrity

Data standardization eliminates the inconsistencies and discrepancies that can arise from disparate data sources. This results in cleaner, more reliable data that is less prone to errors and inaccuracies. Accurate data provides a solid foundation for analysis, enabling manufacturers to make informed decisions based on real-world insights.

2

## Streamline data collection and transformation with effortless deployment

EviView seamlessly integrates into your existing infrastructure, enabling the capture, transformation, and contextualization of data from new or legacy equipment. It effortlessly standardizes data structures, ensuring consistent reporting and analytics across your entire operation.

3

## Increase data sharing and collaboration

Standardized data gives manufacturers an unprecedented level of visibility into their shop floor operations. Seamlessly connect your team across shifts, departments, and locations to enhance communication and collaboration, ensuring everyone has access to relevant information when they need it. This streamlined approach promotes better teamwork and coordination, optimizing operations across production, QC, warehouse, maintenance & engineering, and beyond.

Users can track and visualize performance, problems, trends, and insights, enabling them to seamlessly monitor the entire production process from start to finish.



# The impact of data standardization

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## Standardize activities across different levels of production

From individual to entire factories, yield significant efficiency gains and boost throughput. This streamlined approach minimizes human intervention and reduces the risk of errors, eliminating the need for manual tracking on whiteboards, data entry, or tedious Excel spreadsheet analysis. Managers, from the shop floor to the executive suite, will be able to easily access and interpret relevant data at the level most pertinent to their respective responsibilities.

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## Predictive analytics and maintenance

Standardized data and sophisticated analytics can empower maintenance teams with actionable insights. This can range from alerts notifying the appropriate personnel when equipment malfunctions to the development of usage-based maintenance schedules designed to ensure optimal equipment maintenance timing. These insights extend beyond maintenance to other departments as well. For instance, production teams can leverage historical data to establish accurate cycle times and standard work procedures, while quality control teams can utilize this valuable information to benchmark defect rates and identify areas for improvement.



# Getting started

## Extract value from your data

In the face of the ever-expanding data landscape, manufacturers can gain a decisive advantage by embracing the power of accurate, standardized data. This guide will empower decision-making, rapid problem-solving, and in-depth analysis to identify inefficiencies, untapped potential, and process obstructions.

By harnessing the transformative potential of standardized data, manufacturers can leap ahead of their digital transformation journey.

**Book a demo of EviView** to see how, or check out how some of our customers are driving value with a data-driven platform.



[How Cara Partners increased uptime by 10% by moving from reactive to preventative maintenance with EviView.](#)



[Achieving Operational Excellence: Merck's Transformation with EviView](#)



[EviView Celebrates Renewable Momentum with the world's leading developer of offshore wind Ørsted](#)

# About EviView

In today's business landscape, where efficiency is paramount, it is astonishing that many manufacturing companies still rely on outdated tools like whiteboards for recording information during shift handovers on process lines. Recognizing this information shortfall, EviView was established in 2015 with a mission to eliminate inefficiencies using an advanced analytics platform.

EviView believes in providing a comprehensive solution. This led us to develop our cutting-edge software designed to store crucial metrics and statistics in a single, centralized location. Our focus is on serving manufacturers and helping them enhance factory production processes.

Today, EviView collaborates with medium- to large-sized pharmaceutical, biotechnology, chemical, food and beverage, metal, and renewable energy manufacturers worldwide to optimize process performance. Thousands of users interact with our software daily, capturing essential metrics and gaining valuable insights into process performance. By enabling informed, data-driven decision-making, we empower our clients to improve efficiencies and minimize production downtime.

In summary, a system like EviView will deliver the foundation necessary to create an environment that elevates collaboration and communication among all team members and will help process manufacturers manage, monitor, and optimize plants, including work activities and operations and production assets.

For all plant operations, regardless of the level of their automation, internet of things (IoT) instrumentation, machine learning (ML), or predictive maintenance, knowledge can be pulled for analysis from any human contact point in a process. With empowered and connected teams, process-driven information sharing will ensure safe and efficient operations.

[Schedule a call with one of our experts, and we'll show you how our platform can be tailored to address your unique needs and challenges.](#)



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[www.eviview.com](http://www.eviview.com)



[enquiry@eviview.com](mailto:enquiry@eviview.com)



+353 (0)21 242 7026