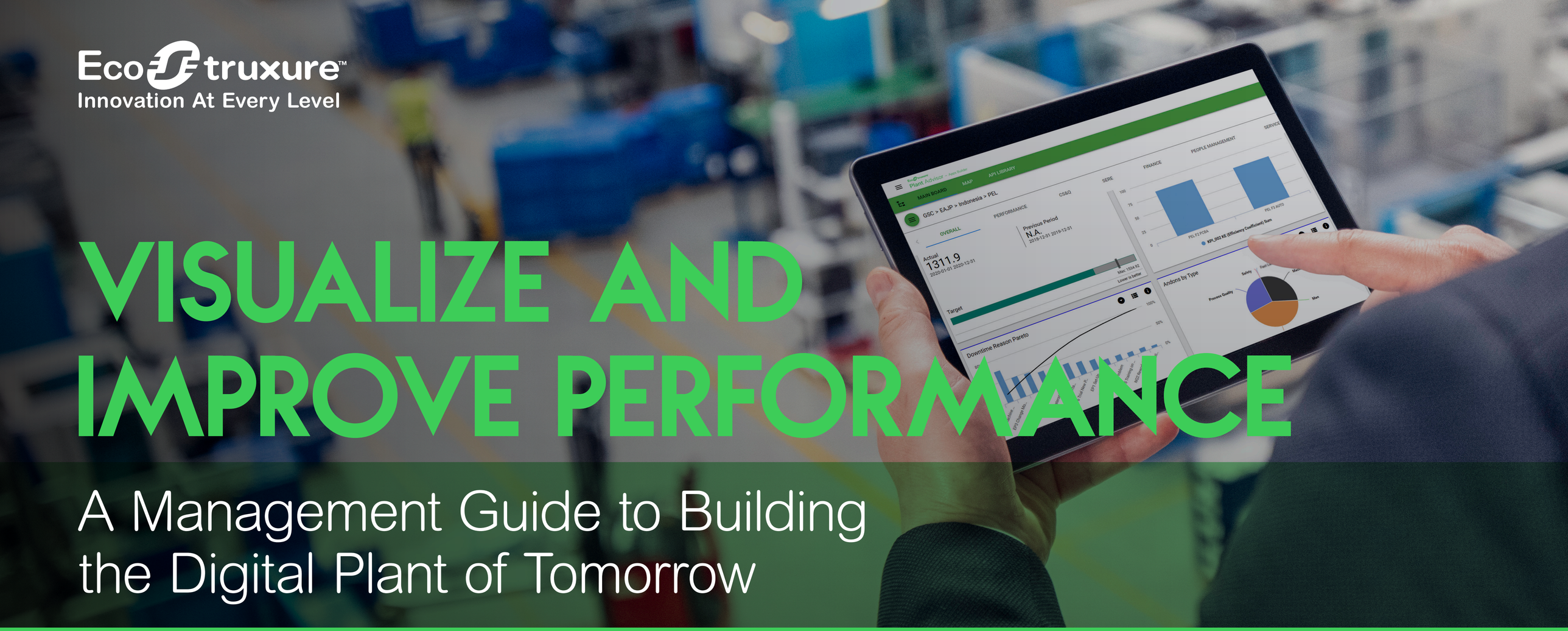
EcoStruxure™
Innovation At Every Level



VISUALIZE AND IMPROVE PERFORMANCE

A Management Guide to Building the Digital Plant of Tomorrow

Transforming end-to-end data into specialized real-time insights to drive business optimization

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Global manufacturing trends and challenges

In today's hyper-competitive business environment, manufacturers face daunting challenges in the quest for growth. Leadership manages profitability pressures on a monthly basis. Changing consumer tastes require rapid response and mass customization in real time. Investors, employees, and customers will only associate with companies who operate sustainably – a strategic survival issue impacting industry.

At the factory level, managers are entrusted with reducing operating costs while optimizing the performance of their assets. Aging infrastructure must be upgraded or replaced with limited capital budgets. As veteran employees leave the company, the retention of institutional knowledge becomes a critical issue. And the demands of the next-generation workforce around digitization, information accessibility and mobility, and quality of life must be fulfilled to maintain and improve productivity.

Adapting to this rapidly evolving environment requires new approaches to data collection, management, and analytic technologies.

- Growing volumes of plant and system data feed single applications in siloed departments.
- Multiple data sources that supply legacy and multi-vendor IT/OT ecosystems are difficult to aggregate and analyze.
- IT solutions are challenging to scale across multiple plants.
- Data must be analyzed, visualized, and transformed into insights to effectively meet the needs of different plant departments.

These issues must be overcome to build the digital plant of tomorrow.

Digital transformation opportunities

Digital transformation opportunities

Every day, manufacturing plants waste money in raw material consumption, unplanned downtime, maintenance costs, and energy expense – the list goes on and on. Management and process improvement teams require easy access to the data and analytics that help address these sources of lost profitability. With the development of Industrial Internet of Things (IIoT)-enabled devices and Industry 4.0 production systems, the data exists to produce the insights that fuel process and profit improvements.

The opportunity: Employ a digital solution that collects, processes, and analyzes data from multiple sites and departments. Then, visualize the data for specific positions, functions, and applications. This digital solution would transform data into business insights – arming managers and teams with considerable new power.

Accelerating digitization will transform data collection, management, and analytics across the manufacturing enterprise to drive step change improvements in industrial efficiency, profitability, and sustainability.

	Today	Tomorrow
REDUCE OPERATING COSTS	– Costly development & maintenance of different IT/OT systems & vendors across multiple sites	+ Single infrastructure & application environment for all sites + Reduced development & maintenance costs
OPTIMIZE PERFORMANCE	– Limited view of performance due to siloed data systems – Lack of enterprise-wide, real-time insight & alerting	+ Industrial data model collects & correlates data from across sites to enable root-cause solutions + Real-time mobile apps enable rapid executive decision making
SUSTAIN EMPLOYEE KNOWLEDGE	– No multi-site/multi-function performance understanding – Different manufacturing environments prohibit data visualization by management	+ Multi-site/multi-function data accessible for performance analysis + Single viewing environment for all applications & positions
MANAGE AGING INFRASTRUCTURE	– Monolithic tools lack flexibility – Sites have different digital maturity levels – Technological limitations to deploy advanced analytical solutions	+ Scalable solution follows sites to maturity + Advanced analytics unlock hidden value of data

Guidance for technology deployment

Guidance for technology deployment

EcoStruxure™ Plant Advisor

Imagine a scenario where all data you need, across multiple systems and sites, are available in a standard format, in a single environment, enabling IT/OT integration. Data is aggregated, analyzed, and presented through dashboards, insights, and alerts tailored to specific managers across multiple systems and sites. The general manager at a packaged goods plant receives productivity, product traceability, and value-chain information. The maintenance manager views asset reliability status and service requirements. The operations manager sees waste, line stoppages, and production KPIs.

On the enterprise level, the company's vice president of manufacturing analyzes the performance and sustainability of the entire production system while running scenarios that improve profitability. The chief procurement officer evaluates supply chain data and input costs. In the past, aggregating and visualizing enterprise manufacturing data have been difficult and laborious tasks. EcoStruxure Plant Advisor helps companies overcome these challenges with a proven solution that Schneider Electric has deployed in its own operations. A key element in building the digital factory of tomorrow, it eliminates data silos and provides the missing operational intelligence that improves plant and enterprise performance.

Guidance for technology deployment

What it does

EcoStruxure Plant Advisor's capabilities empower manufacturers with considerable competitive advantages. The solution's IIoT platform employs a common data model that correlates information from sources across the enterprise. Then, it harmonizes and processes the data in different visualization and analytic applications. EcoStruxure Plant Advisor performs the following:

- Collects and aggregates operational data
- Manages asset and application lifecycles, all within the same industrial data model
- Builds tailored, real-time dashboards to visualize plant performance, KPIs, and analytics
- Creates actionable insights on operations from a customized IIoT application seamlessly deployed over multiple sites
- Incorporates pre-packaged analytics by specific application and segment for fast deployment and easy configuration

Schneider Electric helps solve your most important business challenges and maximize market opportunities.

Guidance for technology deployment

The approach: four key principles

EcoStruxure Plant Advisor is designed to accelerate IIoT solutions deployment — enabling cross-functional plant data collection and management plus easy scalability across multiple plants. Its benefits are structured around four key principles:

- **Specialized** – End-to-end IIoT solutions fulfill essential manufacturing performance requirements as the result of Schneider Electric's and its partners' extensive industry and application knowledge.
- **Scalable** – Solution expands easily to all sites and equipment thanks to a hybrid, multi-site architecture and modular applications.
- **Tailored or Pre-packaged** – Fully custom or pre-made, ready-to-use applications, addressing use cases such as end-to-end traceability or mining performance, offer modular design and plug-and-play configuration for quick, easy implementation.
- **End-to-end** – The expertise of Schneider Electric and our partners is available to support and benefit every stage of the IIoT solution lifecycle – from project definition to implementation to maintenance.

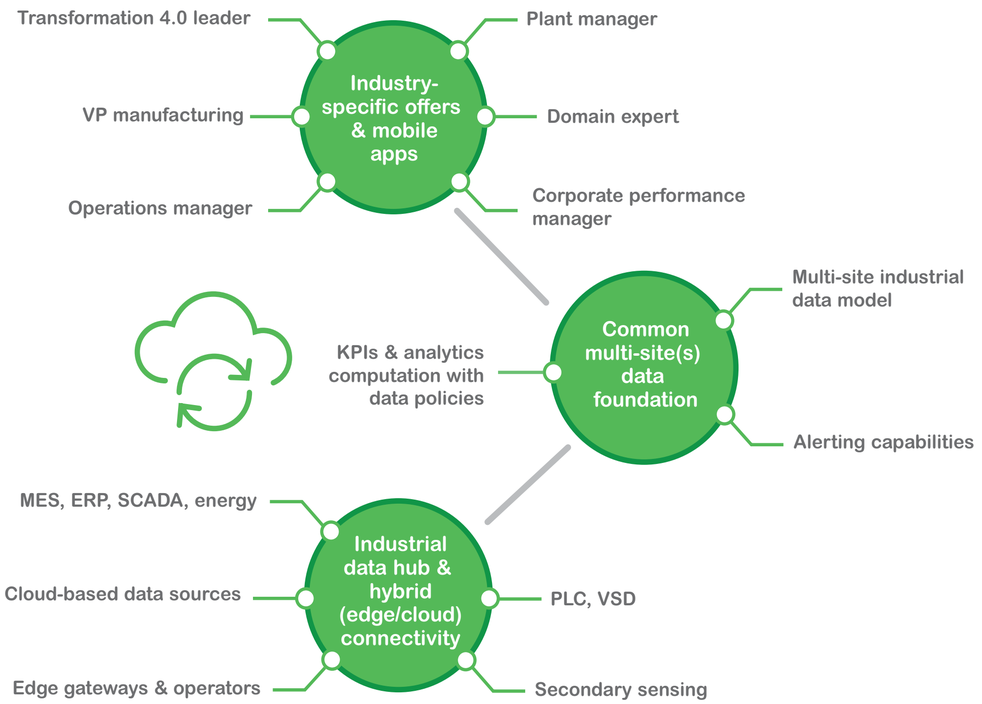
Guidance for technology deployment

How it works

Leveraging standard industrial protocols, EcoStruxure Plant Advisor makes it easy to collect IT/OT data from virtually any connected plant device or system. Its Plant Data Expert module comes with an extensive library of protocols for almost all automation and IT suppliers. The solution stores and processes the data, monitors and visualizes KPIs and metrics in dashboards, and incorporates collaboration tools and business logic virtualization to provide actionable insights.

The platform is based on four major concepts that work across the industrial lifecycle to amplify business value.

- **Connect** – Access, collect, and harmonize operational data from edge to cloud within one industrial data model.
- **Monitor** – Flexible dashboards are customized for real-time monitoring of KPIs and analytics.
- **Optimize** – Build custom applications in a low-code/no-code environment or leverage pre-built industrial IIoT applications. The solution draws on centralized access to production data to meet specific business needs.
- **Specialize** – Pre-packaged application modules address industry-specific challenges (consumer packaged goods (CPG), mining, and manufacturing).



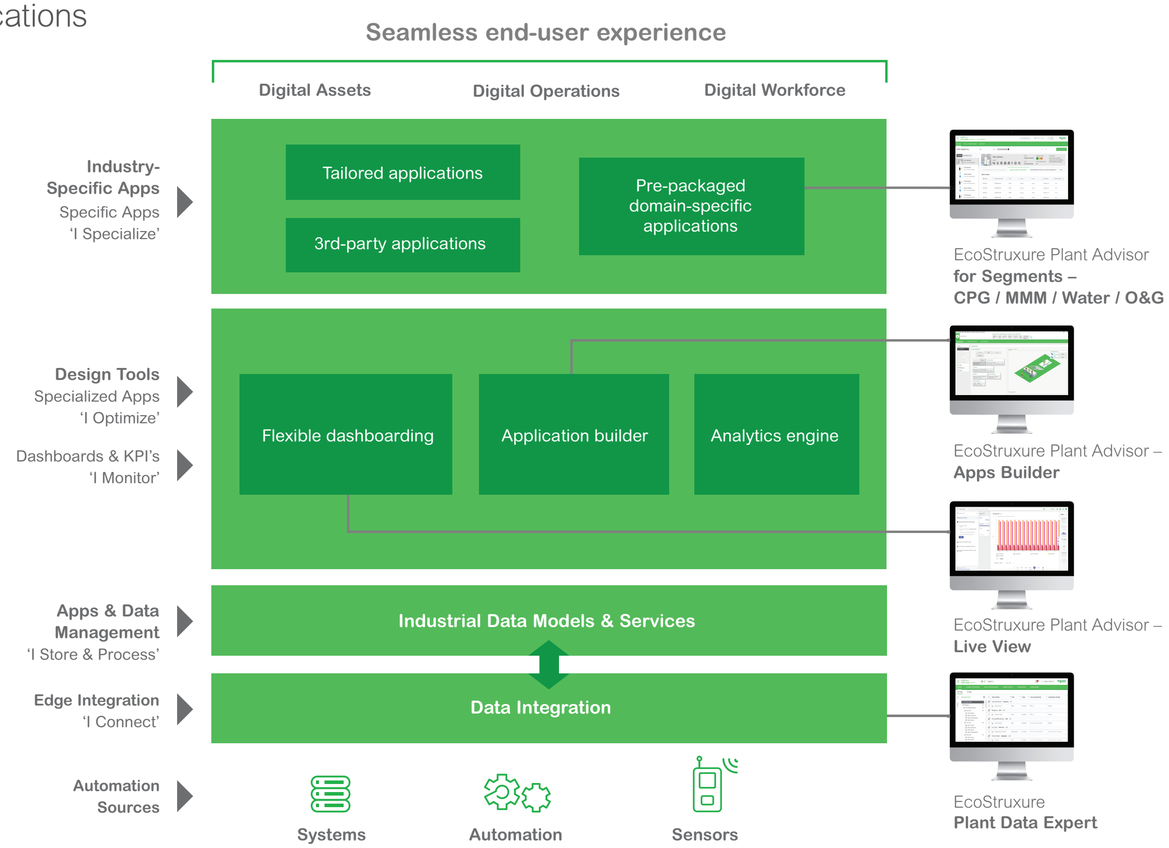
Guidance for technology deployment

Solution architecture: unified modules for simplified deployment

EcoStruxure Plant Advisor's architecture consists of several modules that work together in a simplified platform. The main modules collect, store, and visualize data. Front-end applications present information based on specific user needs.

- **Plant Data Expert** – Collects IT/OT data from different types of devices and systems at the operations level. Stores in a standardized format and data model in cloud-based database. Information is harmonized for analytics and visualization.
- **Live View** – Presents real-time data with dashboards customized to individual user needs. Alerts users to changing or abnormal conditions. Provides visual representations of anomalies reported by machine learning.
- **Apps Builder** – Builds customized IIoT applications including data views of KPIs and processes based on customer needs. Incorporates collaborative task management tools and widgets. Performs multi-site analysis. Enables business logic visualization for simulation and scenario development to provide actionable insights.
- **Pre-Packaged Modules** – Target specific industries, business areas, and use cases such as end-to-end product traceability for CPG companies, process optimization for mining companies, or digital dosing for process plants. Offers rapid implementation with minimal programming and development costs.

Modular, integrated, and converged IIoT offering



Markets and applications

Markets and applications

Gain the efficiency, profitability, and sustainability benefits of EcoStruxure Plant Advisor. From food processors to chemical companies to natural resource firms, Schneider Electric makes it easy to implement the solution in virtually any manufacturing environment. The solution's custom-built or pre-packaged modules offer a highly flexible approach to application development. They incorporate end-to-end integration – from IT to OT, from connected products to edge control, to applications, analytics, and services. In addition, Schneider Electric brings decades of manufacturing industry experience that enhances solution value.

The EcoStruxure Plant Advisor's Apps Builder enables virtually any manufacturer to implement the solution to meet the needs of specific workers. Whether operating discrete or process production facilities, companies in the food and beverage, CPG, metals and mining, water, and oil and gas industries will find the EcoStruxure Plant Advisor a valuable solution to improve profitability and reduce cost.

Markets and applications

Pre-packaged IIoT applications accelerate time-to-performance improvement

Schneider Electric offers pre-developed, pre-tested IIoT applications that dramatically shrink development and implementation times for commonly used manufacturing workflows. Examples of these applications include the following:

- **Manufacturing Control Tower** – The application creates unique points of data access for plants and systems. The data can be displayed by plant, region, or country, making it possible to compare different facilities and geographic entities. The web-based application incorporates all the tools needed to create actionable data using its task and collaboration capabilities. Benefits include KPI visualization and empowerment to identify and escalate issues and correct poor performance.

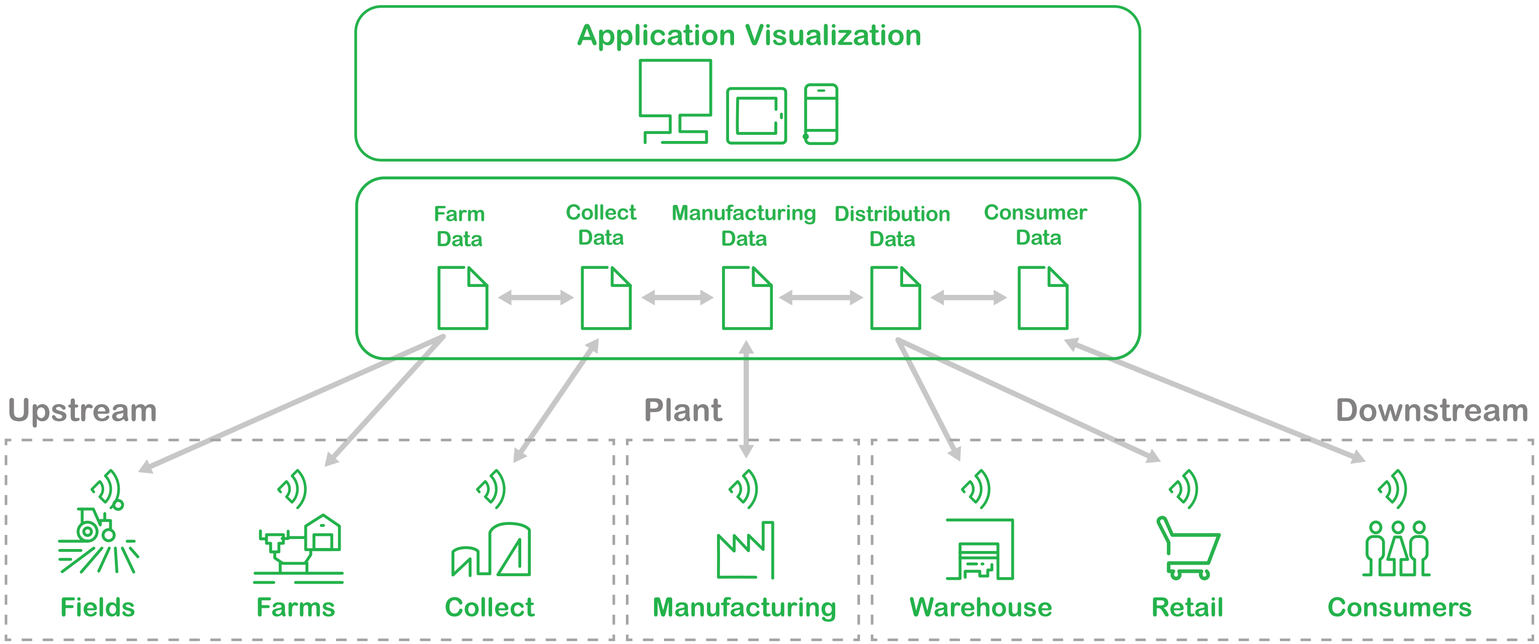
- **Digital Dosing Assistant** – The application has been applied to connect and monitor remote machines to minimize chemical waste through dosing adjustment. It creates simulations driven by AI algorithms to calculate and apply the most efficient machine configurations. The application improves asset maintenance, increases customer satisfaction, and accelerates decision making based on a global view of company sites and assets. The reductions in chemical waste directly contribute to improvements in the business's cost and sustainability KPIs.

Markets and applications

Traceability from farm to fork is a critical issue for the food and beverage industry. This application enables the manufacturer to identify, collect, and verify siloed data at various stages of the supply chain. It allows processors and manufacturers to address key information such as supplier mapping, ingredient sourcing, and certificates to build an e-passport. This allows the tracking and tracing of the finished good across the supply chain. Recall management functionality handles product recalls in a smarter, more efficient manner.

End-to-end traceability is crucial to build credible supply chains, respond to product liability issues, and grow customer trust.

Connecting, collecting, and visualizing siloed data along the food and beverage supply chain



Real-world project execution

Real-world project execution

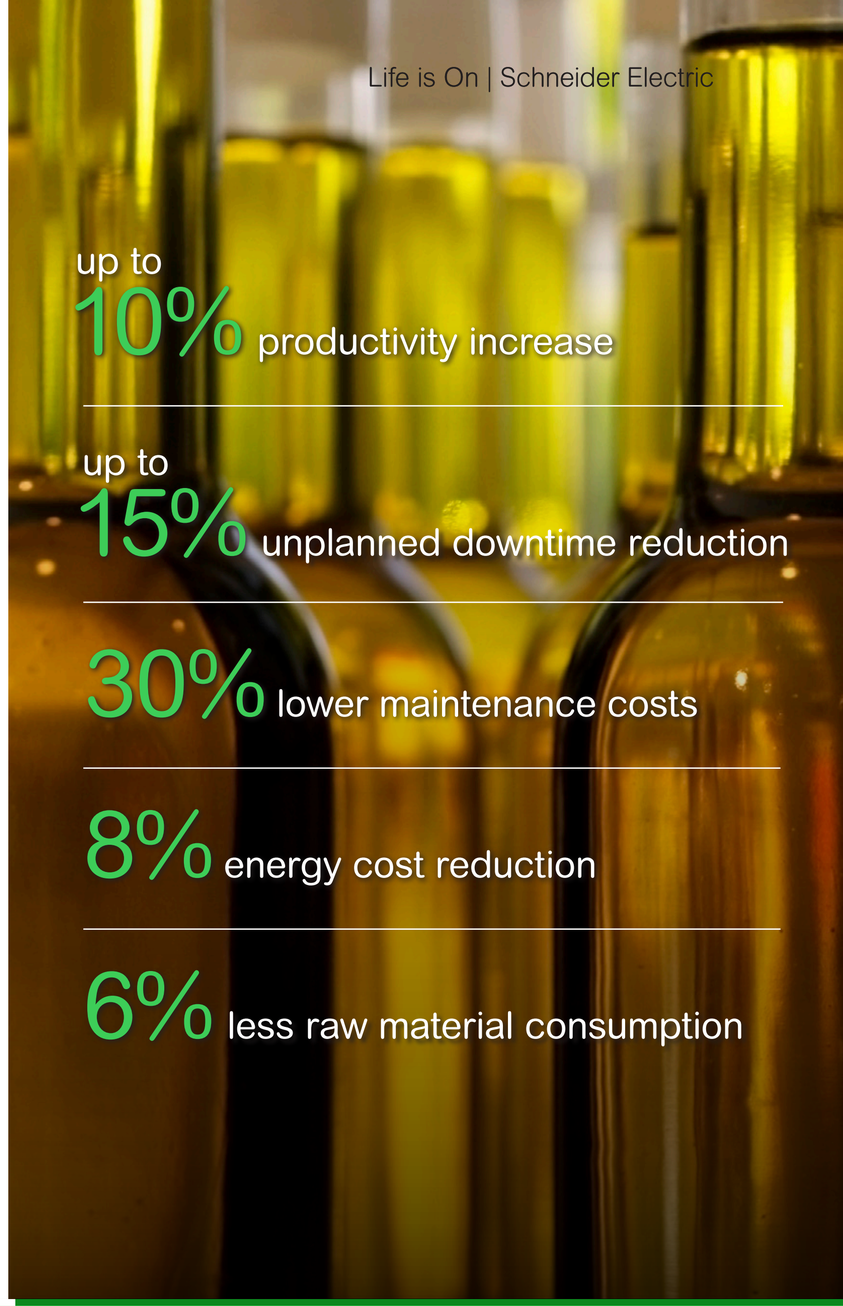
As manufacturing firms seek advantages in a global business environment, they are exploring solutions that provide differentiation and a competitive edge. These companies are turning to EcoStruxure Plant Advisor for real-time data collection and visualization to enhance performance across the enterprise.

Schneider Electric's global supply chain with its Smart Factories and Smart Distribution Centers uses EcoStruxure solutions for their own digital transformation. This includes the implementation of EcoStruxure Plant Advisor in 160 smart factories across multiple applications including multi-site control towers, digitized lean manufacturing, and quality process optimization with advanced AI. The most impactful results in operational efficiency and cost reduction have been:

- Up to **10%** increase in productivity
- Up to **15%** reduction in unplanned downtime
- **30%** lower maintenance costs
- **8%** energy cost reduction
- **6%** decrease in raw materials consumption

In addition, users experienced improved quality, reduced labor associated with shift handovers, and less maintenance deployment time. Customers also reported that EcoStruxure Plant Advisor accelerated IIoT solution implementation and scaled easily across multiple plants.

Overall, EcoStruxure Plant Advisor has demonstrated the exceptional value of faster decision making, when driven by data that reveals business insights.



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Take action today. Drive your business to higher levels of productivity, profitability, and sustainability. Only EcoStruxure Plant Advisor presents a complete picture of your manufacturing system through connecting, visualizing, and optimizing data flow.

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