

Plants of Future enabled by New Age Technologies

2026 Edition: **From Connected
Factories to AI-Native Operations.**



- DevOps Services Competency
- Business Outcomes Xcelerator
- Amazon EC2 for Windows Server Delivery

- Migration and Modernization Services Competency
- Manufacturing and Industrial Services Competency



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Plants of the Future

Manufacturing Revolutionized

The plant of the future refers to the integration of advanced technologies and innovative processes to create smart, sustainable and autonomous manufacturing facilities.

The factory of the future integrates industrial AI, GenAI copilots, governed AI agents, real-time analytics, IIoT, edge and cloud computing, digital twins, and intelligent automation. These capabilities work with interoperable industrial data to create connected, adaptive, sustainable, and increasingly autonomous manufacturing operations.



This calls for highly automated, data-driven, and agile production environments that can respond quickly and efficiently to changing customer demands, disruptions, and tech advancements by making improvements in three major areas:-

01.

Plant Structure and Processes

Use flexible layouts and future-ready systems to increase agility. Integrate sustainable production practices to improve efficiency and adaptability.

Optimization using lean management to facilitate customer centricity and continuous improvement.

03.

Connected Workforce

Drive safety, efficiency, and collaboration with digital work instructions, industrial copilots, and natural-language access to real-time plant insights.

02.

Digitization

Intelligent automation, industrial AI, GenAI copilots, AI-enabled robotics, spatial computing, interactive dashboards, digital twins, and simulation-led optimization.

What is in it for Manufacturers?

The plant of the future promises to revolutionize manufacturing and address prominent queries that Manufacturers delve into day in and day out, such as -



01.

Turn industrial data into trusted decisions

Connect IT, OT, and engineering data so teams and AI agents can act on consistent, contextual information.

02.

Increase workforce productivity with human-AI collaboration

Use industrial copilots to support operators, engineers, and planners while keeping people in control of critical decisions.

03.

Extend the value of legacy systems

Modernize OT and engineering applications through secure connectivity, APIs, edge, cloud, and AI-enabled interfaces.

04.

Scale manufacturing AI with confidence

Build for interoperability, cybersecurity, governance, observability, and long-term platform value.

Staying Ahead: Embracing Industry Trends in Manufacturing Plants

Trusted traceability and Digital Product Passports

Enable trusted product and supply-chain traceability through interoperable data spaces and Digital Product Passports, with blockchain used selectively where multi-party trust requires it.

In order to **track & trace** with real-time operational transparency, manufacturers plan to boost their investment in IIoT

Manufacturers would **simulate and assess** their entire supply chain risks using **Digital Twins**

Predictive and Prescriptive Asset Intelligence

Combine sensor data, machine learning, and GenAI to predict failures, identify root causes, recommend corrective actions, and initiate maintenance workflows.

Industrial Copilots and Governed AI Agents

Deploy industrial copilots and AI agents for maintenance, production planning, engineering, quality, and troubleshooting, with human approval for critical actions.

Secure And Responsible By Design

Embed OT cybersecurity, identity and access management, AI governance, data protection, model monitoring, agent observability, and human oversight across the manufacturing technology landscape.

Spatial Computing and Digital Work Instructions

Use immersive instructions, remote assistance, and digital overlays for training, maintenance, assembly, and inspection.

Intelligent Workflow Orchestration

Connect production, maintenance, quality, and supply-chain processes through AI-assisted and event-driven workflows.

Physical AI and Intelligent Robotics

Combine cobots, autonomous mobile robots, and AI-enabled robot fleets to support flexible and adaptive production.

Multimodal and Edge Vision AI

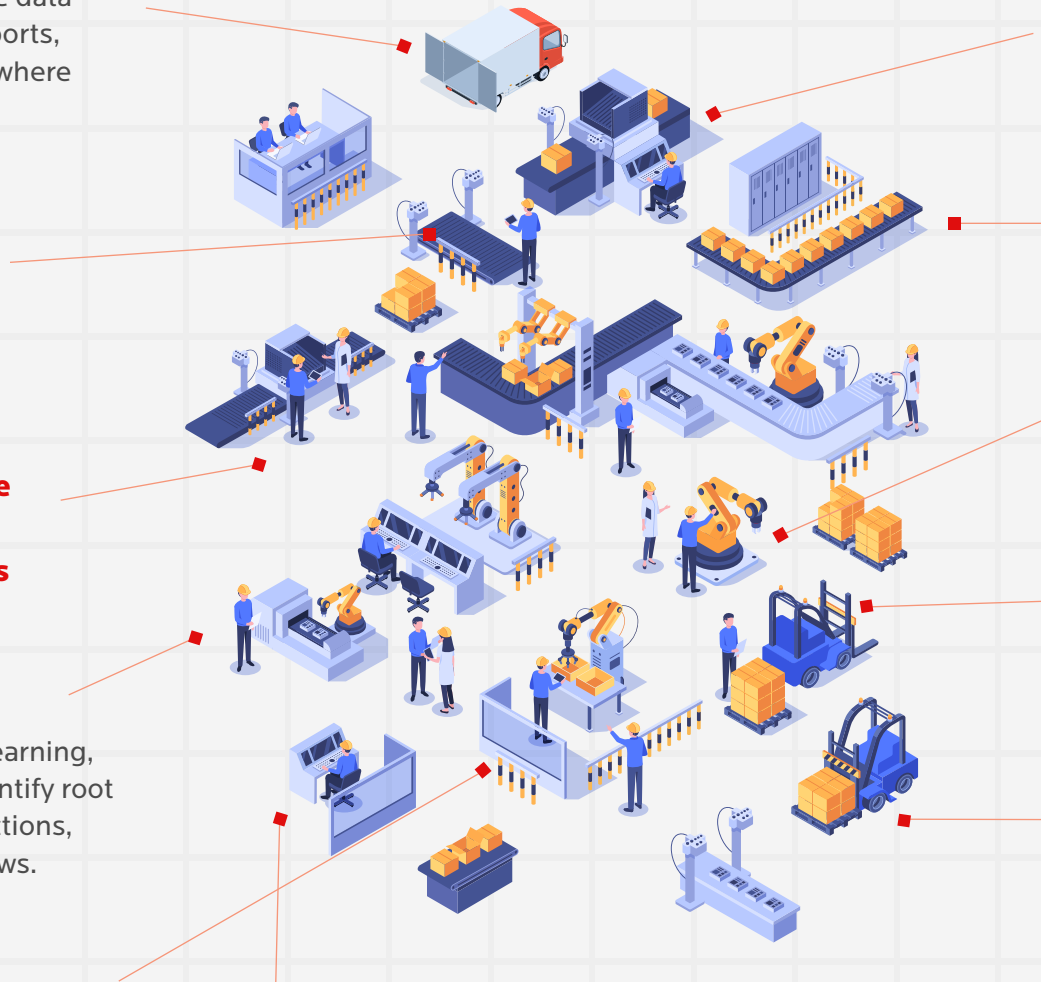
Use edge-based vision AI, multimodal models, and synthetic data to improve defect detection, worker safety, and process compliance.

Hybrid Edge-Cloud Manufacturing

Process time-sensitive data at the edge while using cloud platforms for enterprise analytics, AI training, orchestration, and cross-plant insights.

Expand the existing sustainability

message to cover energy, emissions, water, materials, circularity, and product-level sustainability traceability.



Client Success Stories



**Cement
Manufacturer
integrates 50+
plants, improving
operational
efficiency by 15%
with an Edge &
Cloud Platform**





Next-step opportunity

Industrial operations copilot, cross-plant energy optimization, and AI-generated recommendations.

Solution

- Complex integration and interface development for Edge platform data collection and acquisition with old legacy Historian and DCS system
- Enabling Predictive and Prescriptive analytics at the Edge
- Design & Development of IIoT Platform integrating 50+ plants with 75 OPC servers connected using OPC as a data source comprising of 150,000 tags

- Development of application with real time monitoring dashboard (25 Mimic Screens) and future-ready stack built on modern architectural concepts and cutting-edge technologies

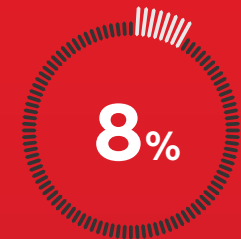
Key features

- Scalable solution architecture starting with building the foundation with a cloud-based OT data model which can be leveraged for future analytics
- Flexible to accommodate future requirements and to establish a connectivity with cloud gateway to connect seamlessly and securely

Business Impact



Improvement in Operational Efficiency



Improvement in Throughput



Reduction in specific Energy Consumption

A global engine manufacturer gains real-time operational visibility across 1,000+ connected assets and 85+ KPIs

Client wanted to gain useful insights from their factories, machine systems at multiple locations to improve the production process by increasing asset efficiency, reducing defective units, shortening delivery time and improving throughput.





Problem Statement

- Inability to generate insights from vast amount of uninterpreted data
- Lack of real-time visibility and inability to monitor multiple KPIs
- Reduced throughput and machine productivity
- Increasing machine downtime across locations
- Operational costs rising due to unexplainable reasons

Need for KPI Monitoring to
enable Operational
Excellence, Predictive Asset
Maintenance, Decarbonization

Solution Highlights

- **User Empowerment**– Role based (Business, Engineering, Maintenance, Supervisor, Planner, Operator) with **Situational Awareness Platform**
- **Independent** Production, Asset, Energy Performance, Insight and Intelligence templates
- **Unified data model** – IT – OT system, process data convergence
- **Intelligent actionable** alerts and alarms
- **Production insights and Operations Intelligence** for Smart Production, Quality, Inventory, Maintenance
- **Interoperability** – Supports different data connectivity and communication protocols
- **Extensibility**- Interfaces to connect with different Enterprise, SCADA, Maintenance systems
- **Domain-based configurable** system, KPI, Diagnostics, Predictive analytics, Actionable Report Template
- **Highly Scalable** - Supports 100+ concurrent users and 1000+ connected assets
- **End to End security** (Plant, Asset, Network, User)

Value Created

Real Time Visibility, Actionable Alerts & Alarms for Manufacturing, Machine Health and Energy KPIs to drive:

Productivity increase

OEE increase

Quality cost reduction

Energy efficiency increase

Time to market reduction

Reduction in GHG

Real-time operational visibility across 85+ KPIs and 1,000+ connected assets

Next-step Opportunity

Natural-language KPI analysis, a semantic manufacturing data model, and intelligent alert prioritization.

**Connected Smart
Factory solution
reduces asset
downtime for a
global textile
machinery and
components
manufacturer by
30% with
Predictive
analytics & IOT**





Problem Statement

- Improve asset utilization and uptime
- Control production costs
- Overcome unplanned downtime of critical assets
- Identify potential weak points in the system and perform preventive maintenance

Solution Highlights

Connected factory solution leveraging digital technologies like **predictive analytics and IIoT** with real-time shop-floor monitoring, improved asset utilization, minimized downtime and enhanced operational efficiency

- Birlasoft Big Data Platform was leveraged to manage near real time data and analytics
- Developed Predictive Maintenance Expert System to ensure high utilization and to avoid unplanned downtime of spinning machines
- Captured real time sensor data and applied Conditional and Correlation alarm generation
- Developed abnormal behavior detection and known fault predictive models to proactively predict the occurrence of faults
- Planned maintenance and ticket generation

Value Created



Reduction in Asset Downtime



Reduction in Overall Maintenance Cost



Faster Data Availability for Operational Control

Next-step Opportunity

GenAI maintenance assistant, automated work-order preparation, and prescriptive maintenance.

**Distributed
Quality Control
leads to 30%
reduction in
rejection for a
leading
motorcycle
manufacturer**





Problem Statement

- Lack of visibility and real-time monitoring of processes which are critical to the quality at vendor's end
- This resulted in delayed response in controlling critical quality parameters

Solution Highlights

Coverage across 23 processes including 2 In-house plants & 12 supplier locations

- The solution was developed on **IIoT Platform**
The process parameters data is captured from the **OPC layer** from the **local SCADA system servers**
- Edge Connector Programs were developed for some of the systems and **industrial connectivity** of Kepware was leveraged in some cases, optimizing the overall costs further
- **Reports & Customized Dashboards**
- Tracked standard SOPs of vendors to manufacture high quality products, avoiding unnecessary inspection at later stages for the identified processes
- **Real-time monitoring of processes** and anomaly detection
- **Performance Monitoring dashboard** and reports with role-based access
- Digitization of the processes as a foundation for further analytics and process improvements

Value Created



Reduction in Rejection



Reduction in Scrap

Reduction in Rework

Next-step Opportunity

Edge vision AI, synthetic defect data, and supplier-quality data sharing.

A global wood products manufacturer improves supply-chain visibility and delay prediction with a Digital Twin

The client is one of the world's largest wood products manufacturer. Facility processes the raw material from forests and timberlands to manufacture OSB products.





Problem Statement

- Unavailability of a digital system to predict the delays in the entire process of finished goods
- Lack of alerts or notifications to inform the operator when the actual time elapsed surpasses the estimated time of loading and strapping in the mill
- Lack of digital devices to identify vehicle occupancy, tracking of the truck movement and time elapsed (Cycle Time/TAT) throughout the finished goods loading process in the mill
- Inability to estimate exact loading and strapping times for different trucks

Solution

The vision of the program was to build a **cutting-edge scalable Digital Twin solution and Cloud IoT Platforms** to build a web application that empowers the client to do the following -

- Monitor the movement of the truck at all stages and determine cycle time/TAT
- Track, trace and analyze truck movements and state variable
- Calculate the occupancy in parking, loading, and tarping bays
- Alert or notify the operator users when the actual time elapsed exceeds the estimated time of parking, loading, and strapping
- Predict and simulate the delays in loading process of the finished goods using Digital Twin

Value Created



Increase in Near Visibility of Truck Movement and Occupancy



Increase in Accuracy of Identifying the Delays in On-time Shipment



Increase in Accuracy of Identifying the Exact Turn Around Time (Cycle Time)

Next-step Opportunity

Closed-loop digital twin, AI-assisted scheduling, and product traceability.

What does the future hold?

The factory of the future has the potential to revolutionize manufacturing, and companies are already investing in this vision. The plant of the future is evolving from a connected, data-driven environment into an AI-assisted, adaptive, and increasingly autonomous enterprise.

Agentic AI acts as the intelligence layer, enabling autonomous decisions, orchestrating digital workers and industrial copilots, and driving continuous optimization through human-guided actions. By combining industrial data, digital twins, secure edge-cloud architectures, AI-enabled workflows, and a connected workforce, manufacturers can improve resilience, productivity, sustainability, and speed to market—supported by trusted data, cybersecurity, responsible AI governance, and human accountability.



RESOURCES

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Accelerating Impact

Birlasoft combines the power of domain, enterprise, and digital technologies to reimagine business processes for customers and their ecosystem. Its consultative and design-thinking approach makes societies more productive by helping customers run businesses. As part of the multibillion-dollar diversified CKA Birla Group, Birlasoft with its 11,500+ professionals, is committed to continuing the Group's 170-year heritage of building sustainable communities.

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Birlasoft has its in-house Consultative Assessment Framework which helps manufacturers to assess their plants of future journey being rated on four stage maturity

Connected and Visible -
Unified asset connectivity and real-time operational visibility.

Predictive and Optimized -
Predictive insights, process optimization, and intelligent decision support.

AI-Assisted and Adaptive -
Industrial copilots, contextualized data, and AI-enabled workflows.

Autonomous, Sustainable, and Governed -
Closed-loop operations with human oversight, cyber resilience, and measurable sustainability outcomes.

These levels are based on current technology landscape & help manufacturer build the future roadmap to achieve the highest maturity level of plant of the future.

Let's Begin



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