Rakuten Cloud

Transforming Manufacturing with Cloud-Native Computing with Rakuten Cloud
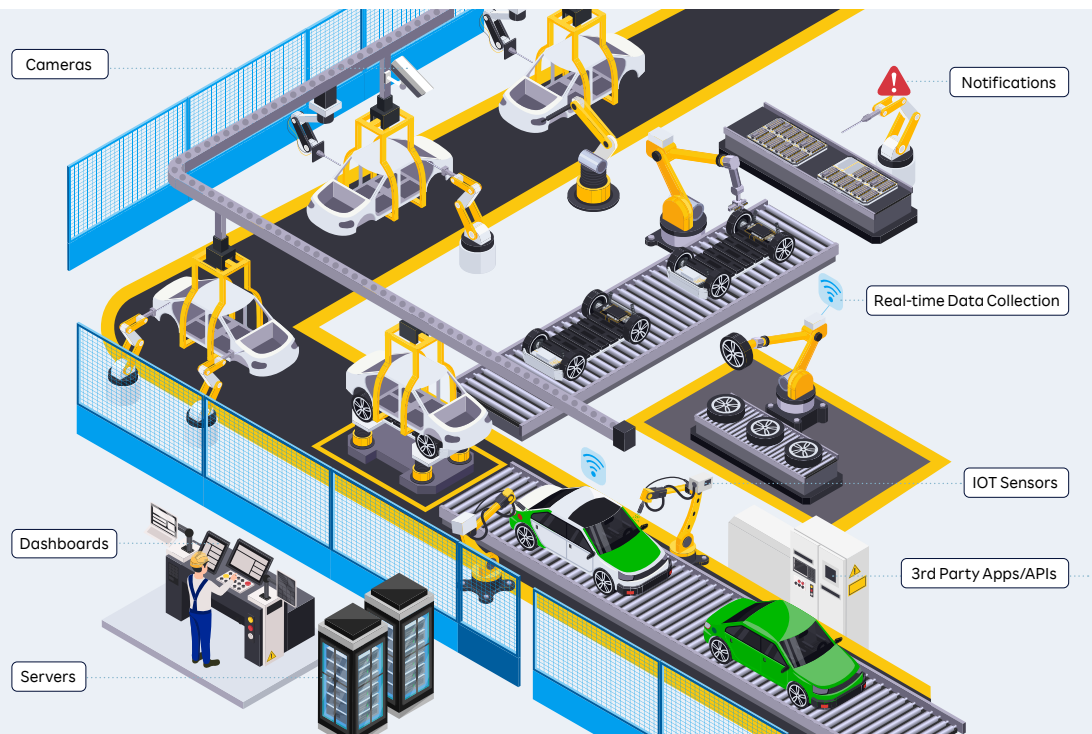
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Summary

The manufacturing industry is undergoing a profound transformation driven by the Industrial Internet of Things (IIoT), advanced analytics, and the need for increased efficiency and agility. To thrive in this competitive landscape, manufacturers require robust, scalable, and secure IT infrastructure that can process data in real-time, optimize operations, and ensure worker safety. This new wave of edge modernization isn't just about cost savings; it's about unlocking new levels of productivity, improving product quality, and gaining a competitive edge. This solution brief outlines how Rakuten Cloud solutions empower manufacturers to build a robust and future-proof cloud-native edge infrastructure. By leveraging these technologies, manufacturers can unlock new levels of operational excellence, improve safety, and drive significant business value.

Smart Factory

Cameras · Notifications · Real-time Data Collection · IOT Sensors · 3rd Party Apps/APIs · Dashboards · Servers

Manufacturing Edge Challenges Addressed by Rakuten Cloud

Modern manufacturing demands real-time insights and responsiveness at every stage of the production process. Traditional centralized IT architectures struggle to meet these demands due to latency, bandwidth limitations, and the complexity of managing distributed infrastructure across factory floors and remote sites. Key challenges include:
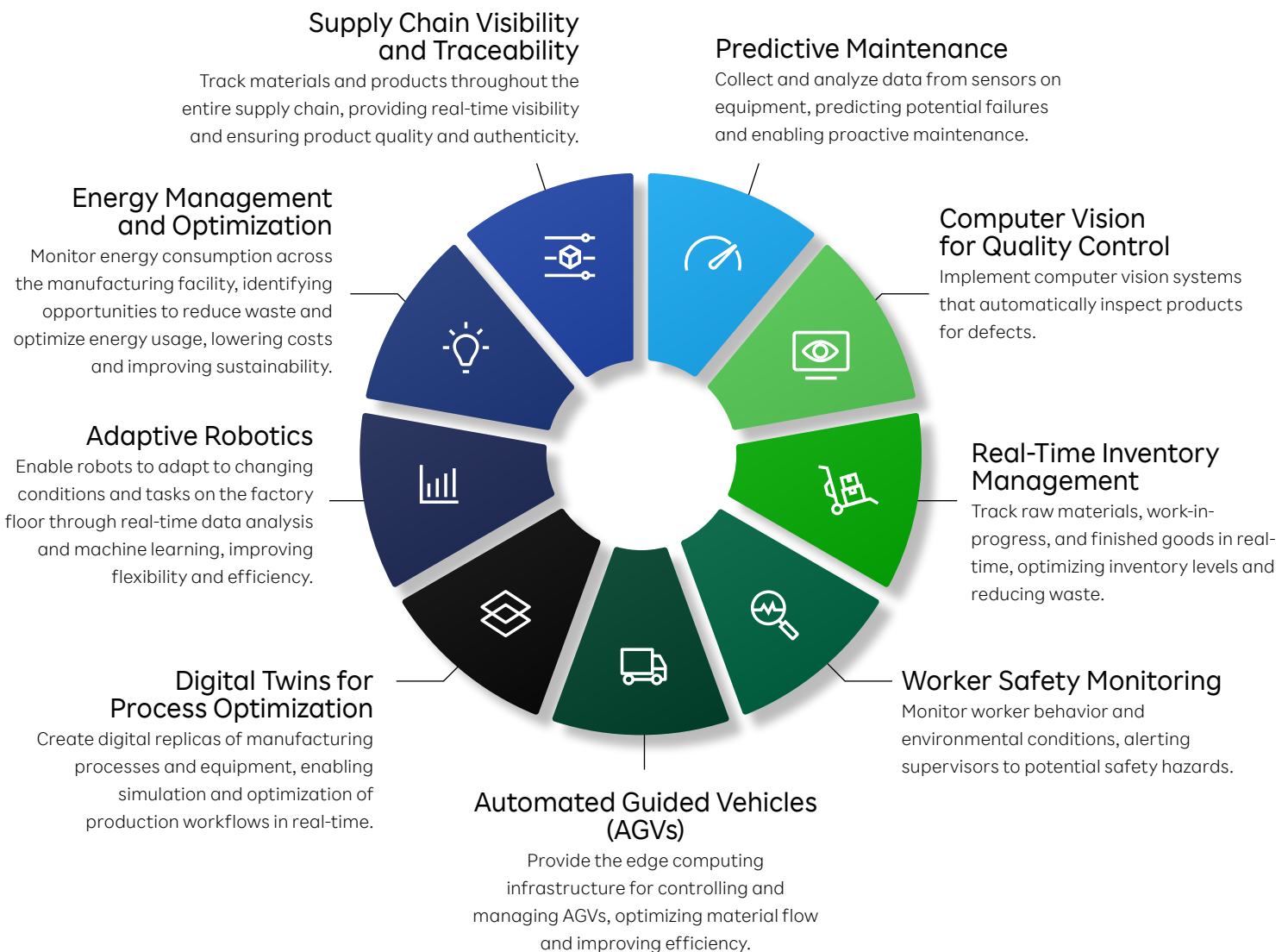
- **Processing High-Volume IoT Data:** Managing and analyzing the massive amounts of data generated by sensors and devices across the factory floor.

- **Optimizing Inventory Management:** Tracking raw materials, work-in-progress, and finished goods in real-time to minimize waste, reduce costs, and improve supply chain efficiency.

- **Enhancing Worker Safety:** Implementing safety measures and monitoring worker behavior to prevent accidents and ensure a safe working environment.

- **Predictive Maintenance:** Identifying potential equipment failures before they occur to minimize downtime and reduce maintenance costs.

- **Ensuring Quality Control:** Implementing quality control measures at every stage of the production process to ensure that products meet the required standards.

- **Managing Distributed Infrastructure:** Deploying and managing IT infrastructure across numerous factory locations and remote sites can be complex and costly.

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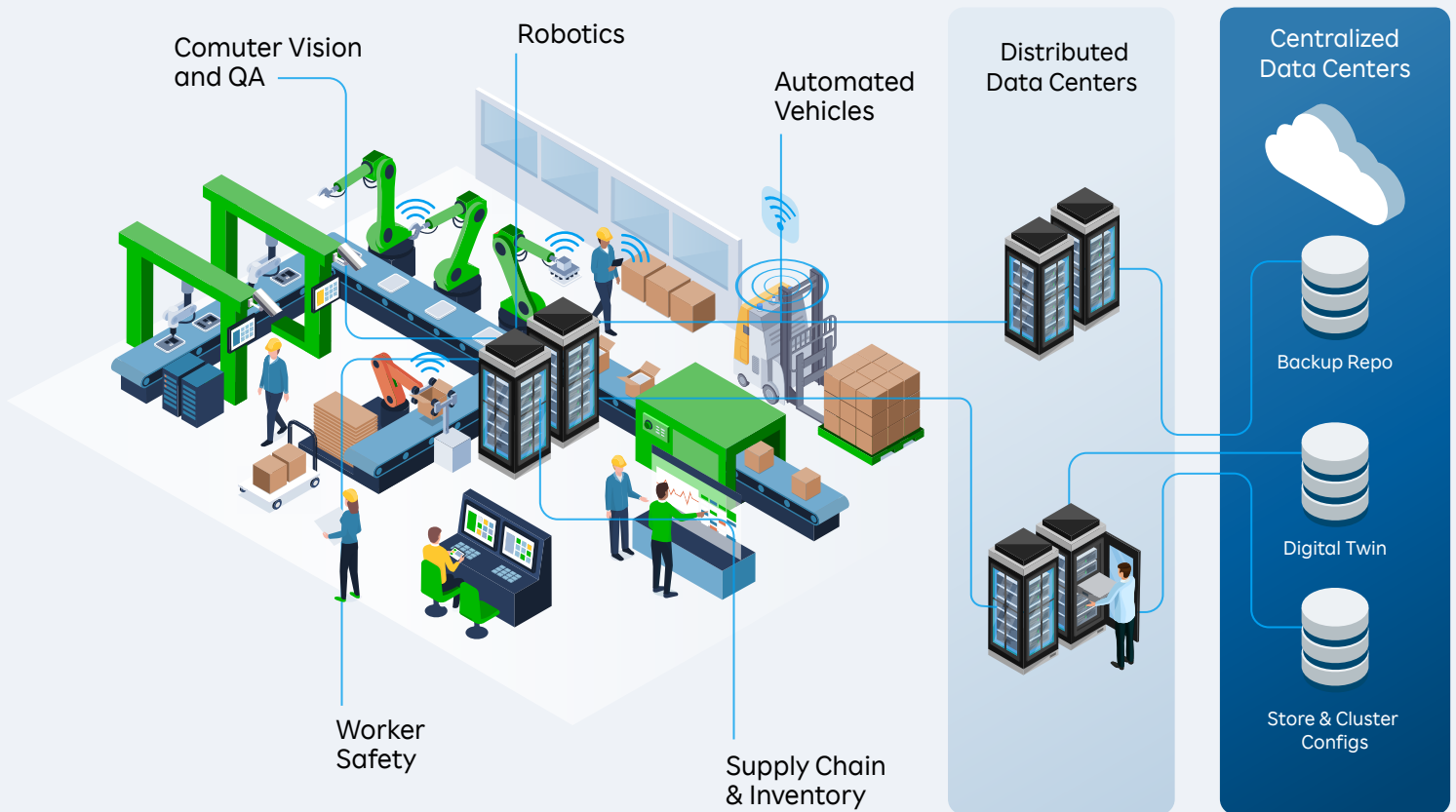## Manufacturing Outcomes Addressed by Rakuten Cloud

Rakuten Cloud solutions provide a comprehensive and integrated approach to addressing these challenges, enabling manufacturers to achieve the following business outcomes:

- **Improved Operational Efficiency:** Streamline operations, automate tasks, and reduce IT overhead.

- **Reduced Downtime:** Enable predictive maintenance and rapid recovery from equipment failures.

- **Enhanced Product Quality:** Implement real-time quality control and defect detection.

- **Improved Worker Safety:** Provide real-time monitoring and alerts for potential safety hazards.

- **Reduced Costs:** Optimize resource utilization and reduce operational expenses.

- **Increased Agility:** Rapidly deploy and scale applications to meet changing production needs.

Rakuten Cloud Manufacturing Use Cases

Supply Chain Visibility and Traceability
Track materials and products throughout the entire supply chain, providing real-time visibility and ensuring product quality and authenticity.

Predictive Maintenance
Collect and analyze data from sensors on equipment, predicting potential failures and enabling proactive maintenance.

Energy Management and Optimization
Monitor energy consumption across the manufacturing facility, identifying opportunities to reduce waste and optimize energy usage, lowering costs and improving sustainability.

Computer Vision for Quality Control
Implement computer vision systems that automatically inspect products for defects.

Adaptive Robotics
Enable robots to adapt to changing conditions and tasks on the factory floor through real-time data analysis and machine learning, improving flexibility and efficiency.

Real-Time Inventory Management
Track raw materials, work-in-progress, and finished goods in real-time, optimizing inventory levels and reducing waste.

Digital Twins for Process Optimization
Create digital replicas of manufacturing processes and equipment, enabling simulation and optimization of production workflows in real-time.

Worker Safety Monitoring
Monitor worker behavior and environmental conditions, alerting supervisors to potential safety hazards.

Automated Guided Vehicles (AGVs)
Provide the edge computing infrastructure for controlling and managing AGVs, optimizing material flow and improving efficiency.

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How Rakuten Cloud Delivers a Cloud Solution to the Manufacturing Industry

Comuter Vision and QA

Robotics

Automated Vehicles

Distributed Data Centers

Centralized Data Centers

Backup Repo

Digital Twin

Store & Cluster Configs

Worker Safety

Supply Chain & Inventory

Solution Components

Rakuten Cloud offers a suite of cloud-native solutions designed to work together seamlessly

Rakuten Cloud-Native
Storage

Provides secure, application-aware, and software-defined storage for distributed, stateful applications, ensuring data persistence and protection.

Rakuten Cloud-Native
Platform

Unified Kubernetes platform for both containers and VMs, enabling the deployment and management of diverse workloads in distributed data centers, with a small edge footprint.

Rakuten Cloud-Native
Orchestrator

A full stack automation platform that orchestrates the lifecycles of bare-metal infrastructure, virtual and containerized applications, and 3rd party appliances, simplifying management at scale.

Rakuten Cloud solutions work together to deliver a comprehensive cloud solution, delivering distributed manufacturing services

Rakuten Cloud revolutionizes manufacturing by addressing critical challenges and unlocking transformative business outcomes with its cloud-native edge computing solutions. Rakuten Cloud helps manufacturers overcome the challenges of inefficient operations and high costs by enabling improved operational efficiency, streamlining processes, automating tasks, and reducing IT overhead.

It tackles unplanned downtime and production losses by reducing downtime, enabling predictive maintenance through real-time sensor data analysis, and facilitating rapid recovery from equipment failures.

By ensuring enhanced product quality through computer vision-powered defect detection and real-time quality control, Rakuten Cloud mitigates the risks associated with defective products and customer dissatisfaction.

The solution addresses safety risks and potential accidents by improving worker safety, delivering real-time monitoring of worker behavior and environmental conditions, and alerting supervisors to potential safety hazards.

It also addresses rising energy costs and sustainability concerns by enabling reduced costs, optimizing resource utilization through digital twins and adaptive robotics, and lowering operational expenses.

Finally, Rakuten Cloud empowers manufacturers to respond quickly to changing market demands and production needs by providing increased agility, facilitating rapid deployment and scaling of applications to meet evolving requirements.

Ultimately, Rakuten Cloud empowers manufacturers to build smarter, safer, and more sustainable factories, unlocking new levels of productivity and gaining a significant competitive advantage.

Rakuten Cloud

For more information:

Visit **cloud.rakuten.com**

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