# OPTIMIZING IOT IN MANUFACTURING AND DISTRIBUTION ENVIRONMENTS

*Spotlight: Automated Guided Vehicles (AGVs)*

**7SIGNAL**®

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# INTRODUCTION

In manufacturing and distribution environments success can be measured in many ways - from cycle time and throughput to capacity utilization and production attainment.

Largely, success often depends on technology and as wireless networks become more critical for day-to-day operations, reliable wireless communication is an ally in the battle between operating costs and profits.

Enterprise Wi-Fi optimization from 7SIGNAL is the linchpin to reliable Wi-Fi providing actionable data that keeps devices connected, and the organization successful.

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# THE IOT PROMISE

The integration of wireless IoT technologies in manufacturing and distribution environments promises unparalleled improvements in data-driven decisionmaking, process efficiency, and resource optimization.

As industries grapple with the demands of modern commerce, including the need for real-time analytics and the agility to respond to market changes, IoT emerges as a key enabler of such transformative capabilities.

However, organizations have found it to be much harder to keep wireless IoT connected to the enterprise network. Without 7SIGNAL, there is a visibility gap.

# THE IMPERATIVE OF IOT ORGANIZATION

Wi-Fi has evolved from being a luxury or convenience to an essential element of modern enterprise operations.

When enterprise Wi-Fi is not optimized for IoT operations, the impacts to the business are widespread.

**1** **Operational Efficiency:** IoT devices streamline production workflows, reduce downtime, and enable predictive maintenance, directly impacting productivity positively.

**2** **Data-Driven Decisions:** With real-time data, businesses can make quicker, more informed decisions that align closely with market dynamics and internal performance metrics.

**3** **Scalability and Flexibility:** Wireless IoT allows for the quick reconfiguration of industrial environments to meet changing demands without significant infrastructural upheaval.

**4** **Cost Management:** By automating routine tasks and monitoring systems, IoT devices help in curtailing operational and energy costs.

**5** **Quality Control:** Constant monitoring ensures product standards are met consistently, minimizing waste and maximizing customer satisfaction.

**6** **Safety and Compliance:** IoT enhances workplace safety through environmental monitoring and facilitates regulatory compliance via automated reporting.

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# THE ROLE OF AGVS IN IOT-ENABLED ENVIRONMENTS

While the optimization of enterprise Wi-Fi is a requirement for all IoT , Automated Guided Vehicles (AGVs) are at the forefront of IoT-enabled improvements in the manufacturing and distribution sectors. These self-guided vehicles are instrumental in optimizing material handling and logistics, leading to increased productivity and operational efficiency.

**Material Handling Optimization:** AGVs reduce the need for manual transportation of materials, thereby decreasing labor costs and enhancing safety.

**Workflow Integration:** AGVs seamlessly integrate into existing workflows, communicating with other IoT devices to synchronize operations across various segments of manufacturing and distribution.

**Scalable Deployment:** The implementation of AGVs can be scaled to match the size and complexity of any operation, allowing for incremental investment and expansion.

**Reduced Operational Downtime:** By operating around the clock and minimizing errors associated with manual handling, AGVs contribute to a more consistent and reliable production flow.

**Collection and Analysis:** AGVs are equipped with sensors and communication technologies that gather critical data contributing to the wealth of information available for optimizing operations.



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MATERIALS HANDLING

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# THE CHALLENGES CONTINUED...

**Environmental Factors:** Extreme temperatures, humidity, dust, and dirt common in manufacturing and distribution centers can damage networking equipment and degrade signal quality if the hardware is not specifically designed to withstand these conditions.

**Network Load:** IoT devices, handheld scanners, mobile devices, and other smart equipment constantly transmit and receive data. This can put a heavy load on the network, leading to bandwidth issues, latency, and connectivity problems.

**Security Concerns:** Wi-Fi networks are more susceptible to security breaches than wired networks. The open nature of wireless communication makes it easier for unauthorized users to intercept data. Manufacturing and distribution operations often involve sensitive data that require robust security protocols, making network security optimization a complex task.



**Dynamic Changes:** The layout and operational needs of manufacturing and distribution centers can change rapidly. A Wi-Fi network must be adaptable to these changes, but constant recalibration and re-optimization can be resource intensive.

**Power Supply Limitations:** Deploying additional access points to improve coverage often requires not just data connectivity but also power, and running power to these points in large or complex environments can be logistically challenging and expensive.

**Mixed Service Levels:** Different tasks may require different levels of service. For example, real-time communication may be essential for AGVs and monitoring equipment, while other devices might only need intermittent connectivity. Prioritizing and managing these varying service levels is difficult.

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# 7SIGNAL'S UNIQUE APPROACH

7SIGNAL is not just another monitoring tool. It is uniquely tailored to provide an overarching health metric of both the wireless network and endpoints using both "Agents" and "Sensors". What sets it apart is its ability to give engineers, IT teams and executives a macro view of the WLAN performance, yet, at the same time, allow them to delve deep into specific issues. This dual capability ensures that teams can quickly identify potential problems and then drill down to understand the root causes within the five pillars: Roaming, Coverage, Congestion, Interference, and Connectivity.

## A Comprehensive Overview of IoT & Network Health
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## Complementing, Not Competing
One of the misunderstandings some might have is seeing 7SIGNAL as a competitor to WLAN infrastructure vendors. "Doesn't my WLAN vendor do that?" This couldn't be farther from the truth. Instead, 7SIGNAL complements these vendors by providing added layers of visibility and diagnostic capabilities that WLAN tools don't offer. 7SIGNAL's is vendor agnostic and provides independent data. It bridges the "visibility gap" between the infrastructure and end-user experience, ensuring that organizations get the most out of their Wi-Fi and endpoint investments.

## Closing The Visibility Gap
By providing a comprehensive health overview and allowing deep dives into specific issues, 7SIGNAL ensures that network engineers and IT teams are always a step ahead in ensuring optimal Wi-Fi performance. By complementing WLAN vendors and offering a unique outside-in perspective, 7SIGNAL is setting new standards in Wi-Fi network performance and user experience optimization.



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