



## Large-Scale Manufacturing: The Cisco and AeroScout Context-Aware Mobility Solution in the Automotive Industry

The Cisco® and AeroScout Context-Aware Mobility solution for the automotive industry delivers powerful asset-management capabilities to the assembly floor and yard, providing cost-effective, timely inventory administration and controls for work-in-process production in manufacturing projects. This solution is part of the Cisco and AeroScout Connected Manufacturing platform.

The Cisco and AeroScout Context-Aware Mobility solution helps automotive companies track assets and personnel in real time to minimize losses due to waste, management inefficiencies, damage, and theft. Built on the powerful Cisco Unified Wireless network, this technology allows manufacturers to achieve continuous, secure visibility from the assembly floor and yard to corporate management systems, taking advantage of:

- Complete integration with existing Cisco Unified Wireless Network WLANs, enabling fast, cost-effective deployment
- Reliable signal coverage throughout the assembly floors and outdoor areas without interfering with sensitive manufacturing equipment and robotics
- Secure, accurate inventory management systems that can locate and monitor mobile and static assets with Wi-Fi tags
- An open standards-based solution that integrates with existing corporate networks to facilitate companywide sharing and management of information

### Challenges

Automotive manufacturers today face dramatic upheaval across the industry. Companies need to find ways to remain profitable at a time when economic turbulence is curtailing consumer buying power. In the midst of these changes, plant managers must find a way to address the problem of improving processes while becoming more cost-effective.

As part of this effort, companies are re-examining asset-management practices on the assembly line and in the yard. Studies show that manufacturers often misplace mobile toolkits, machinery,

parts, and work-in-process inventory, sometimes at a cost of hundreds of thousands of dollars per incident. Each incident also risks bringing assembly to a halt, which has an immediate negative impact on direct labor costs, capital equipment utilization, and cycle time. In many cases, traditional supply chain practices are simply no longer able to control asset management processes in this rapidly changing industry. As a result, companies experience:

- A lack of visibility into the location of valuable equipment, parts, and personnel
- Inefficient allocation and use of people and equipment
- Scheduling delays resulting in a variety of higher costs
- Time wasted on manual searches and inventory checks
- Greater risk of violations of quality and safety protocols
- Security issues that stem from lack of insight into the location and movement of people and assets

## Solution

The Cisco and AeroScout Context-Aware Mobility solution helps automotive manufacturers increase asset visibility and minimize losses using Wi-Fi-based RF identification (RFID) technologies. This solution makes use of the Cisco Unified Wireless Network to track the presence and real-time location of high-value manufacturing assets, providing the reliable signal coverage needed to manage long assembly lines.

The solution also supports detailed yard management, helping to ensure prompt and accurate storage of completed vehicles and shipping to dealers. Real-time visibility of data can improve yard logistics, distribution information, and truck fleet management, decreasing costs and increasing worker and driver productivity through to delivery.

This solution is made up of a variety of components to help meet the specific needs of automotive manufacturers. These include:

- **Cisco 3300 Series Mobility Services Engine (MSE):** The Cisco Context-Aware Software resides on the MSE and integrates with the Cisco Unified Wireless Network and Cisco technology-compatible devices to expand the reach and value of the automotive asset-management system.
- **Cisco open API:** The MSE supports an open API that passes along the contextual information captured from the RFID tags attached to the assets, through the Cisco Unified Wireless Network. Developers can then integrate this information into business applications such as inventory management, and gather more detailed information about assets including availability, status of components, and usage. The Cisco Context-Aware Software supports both the enhanced received signal strength indication (RSSI) and time difference of arrival (TDOA) algorithms, improving location accuracy and performance in challenging RF environments. Access to this API is available to any Cisco technology partner and allows a full integration into the business processes of customers.
- **Cisco Unified Wireless Network:** This multipurpose network is the only unified wired and wireless network solution to cost-effectively address the wireless network security, deployment, management, and control issues that businesses face, in addition to providing context-aware mobility.
- **AeroScout Active RFID tags:** AeroScout Active RFID tags are typically attached to the asset being tracked. When they pass within the range of a mounted access point,

contextual information is passed to the MSE. AeroScout is a member of the Cisco Compatible Extensions program for technology partners, which supports tag development by helping to ensure that RFID tags comply to a predefined standard and format. This allows the advanced information they send (such as motion, humidity and other parameters) to be captured and made available to the rest of the solution, including business applications from other Cisco partners.

This approach to asset tracking helps ensure that before assembly begins, inventory counts and pre-positioning are as accurate as possible for the thousands of items needed. This is accomplished by tagging parts, containers, pieces of equipment, tools, and staff members with an active RFID tag, and taking an automated, real-time inventory at the start of each day's work.

The solution performs the inventory count and sends out alerts if pre-positioned parts or persons have moved, if they leave the staging area, if a station has run out of needed parts, or if an item is absent from the staging area for longer than a predefined time. Workers with handheld devices can easily locate any tagged person or item at any time throughout the shift. Call buttons may also be activated on each RFID tag to change its project status from "in process" to "complete," letting managers know the status of each assembly process.

### **Business Benefits**

From the assembly floor to the shipping yard, it is crucial for manufacturers to maintain a secure, accurate inventory of automotive parts and tools in order to fulfill delivery quotas on time. By maintaining a complete, automated inventory of the thousands of parts needed for assembly, and by tracking each vehicle throughout the manufacturing process, companies can minimize downtime and decrease labor costs caused by errors and problems on the line. The Cisco and AeroScout Context-Aware Mobility solution for automotive enables:

- Increased equipment utilization
- Decreased loss and theft
- Improved product quality
- Reduced costs
- Faster production

Based on open Wi-Fi standards, the solution can use existing access points and hardware, eliminating the need to purchase a new network infrastructure and dramatically decreasing deployment times. Integrated with the Cisco Unified Wireless Network, it makes asset information fully available to corporate systems, which facilitates companywide sharing and management of information. As a result, the Context-Aware Mobility solution provides secure and accurate automated inventory, reduced labor costs, and faster time-to-delivery for automotive manufacturers.

### **Supporting Solutions and Partners**

Cisco, AeroScout, and their partners work with manufacturers to install Context-Aware solutions from planning to deployment. In addition to a global network of qualified resellers, Cisco provides comprehensive design and support through Cisco CCIE® professionals, the Cisco Advanced Services team, and the award-winning Cisco Technical Assistance Center, all recognized as industry leaders. Cisco Advanced Services also offers services for deploying and managing this solution.

## The Leadership Advantage

Cisco is the worldwide leader in industrial networking technologies, with a 20-year track record in working with manufacturers of all sizes worldwide. The Cisco and AeroScout Context-Aware Mobility solution forms part of the Cisco Connected Manufacturing platform, a suite of collaborative business solutions that integrate information and processes, spanning the entire manufacturing work flow and giving companies a secure, customer-centered view of their organizations. These scalable solutions are founded on the Cisco Service-Oriented Network Architecture (SONA), a conceptual framework that outlines how service-integrated enterprises can accelerate applications, processes, and resources to maximize business opportunities.

Cisco is committed to the development of open manufacturing industry standards—it is a founding member of the ODVA and participates in ISA standards committees.

AeroScout is the market leader in Wi-Fi-based active RFID, and the winner of several awards and endorsements. AeroScout invented the industry's first Wi-Fi-based tracking tag, and continues to innovate and help customers around the globe solve their critical visibility problems.

## Next Steps

Manufacturing organizations all over the world are making widespread use of the solutions in the Cisco Connected Manufacturing portfolio. For more information, visit

<http://www.cisco.com/go/manufacturing>.

You can also contact your Cisco account manager or partner. To locate your Cisco partner, please visit <http://www.cisco.com/go/partnerlocator>.



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