



Long Range Wireless Personnel Badges for
Automated Workforce Management
Proven to Deliver Efficiency, Security and Safety
in a Common System Solution

Executive Summary

Managing employees manually is no longer a viable option in the enterprise. The employee-to-supervisor “span of control” ratio, a management measure of the number of employees supervised by a given manager, has continued to increase unabated with pressures to become more efficient. Reducing labor costs is the number one priority when it comes to workforce management (WFM). The number of people to watch over, staff, account for and even protect personnel is streamlined more each year. This drive for efficiency has negatively affected many operational areas in the enterprise including: direct employee performance supervision and workforce optimization, time and attendance data capture, access control and internal security, and environmental health and safety.

Automated WFM systems offer the promise of using technology in organizational processes to manage employees automatically on an exception basis, thereby dramatically improving labor efficiency and optimization, security and safety. The use of long range wireless personnel identification (ID) badges has proven to be the key technology enabling this change.

According to Aberdeen Group’s study “Beyond Time and Attendance, Agility Meets Efficiency in Workforce Management,” organizations that have embraced the deployment of Automated WFM systems have experienced “ROI figures of 25% to 450% or more.”

An automated system benefits enterprises and employees by providing increased labor efficiency, security and safety, including compliance to safety laws and reduced exposure to liability.

Wireless personnel badges have been found to bring a number of high power solutions to enterprises particularly, but not solely, with shift-based and project-based workers.

- 1) Automated wireless tracking of performance against Key Performance Indicators (KPI’s) has yielded reduced labor costs, optimized labor assignments and improved customer satisfaction.
- 2) Automated wireless accounting for time and attendance has demonstrated examples of the improved accuracy of those records by 10% and yielded savings of 14% in contractor costs.
- 3) Automated wireless access control systems for personnel, even those persons entering inside vehicles, has yielded examples of increased access speed of 10% and more, which increases their time for productive work.
- 4) Automated internal security monitoring is enabled using wireless badges to provide visibility into the movement of employees out of assigned and

authorized areas. Product shrinkage in the retail industry of 2% has been found to come from employee theft and has been eliminated using automated surveillance.

- 5) Automated custodial assignment to high value assets enables the protection of key corporate assets such as computers containing critical data, test equipment being checked in and out, and even sensitive documents.
- 6) Automated emergency evacuation management is now possible using long range wireless credentials, enabling organizations to have real time personnel accounting information about incidents. The system complies with OSHA's regulations (CFR Part 1910.38c4) and significantly reduces liability exposure.

Long range wireless credentials from Axxess International (Axxess) operate in their unique frequency band and interface seamlessly into legacy systems including those for personnel and accounting, enterprise resource planning (ERP) and security. The badges, which are the same size as standard access control identification cards, are carried or worn in the same way as the standard cards. They are light and sturdy and just slightly thicker. The new credentials can even be worn together with old legacy cards without being bulky. The badges cost only pennies per month per employee more than their obsolete counterparts while yielding significant value for the corporation.

This new product from Axxess is called Dot™ Credential. It is a lower cost, more feature rich version of the ActiveTag™ wireless RFID tags successfully implemented by the Company over the last several years and proven in commercial industries including the enterprise, financial services, education, manufacturing, government, utilities, petrochemical and petroleum operations.

Background

WFM systems are perceived to offer great benefits to organizations. According to the Aberdeen Study, a WFM system will provide significant productivity improvements, labor cost savings, customer satisfaction increases and revenue increases. Typical metrics, which should be available from a WFM system, include: labor cost as a percentage of sales, overtime as a percentage of labor, service level achievement as a percentage and the absenteeism percentage. The conclusion of the study was that "best in class firms assure that they can track individual operating data in real time, with prioritization of labor resources according to customer impact and access to sharable labor across work units." Real time data requires real time data collection. Real time data collection requires a tool that can automatically gather the necessary data.

Automated methods are needed to reduce security risks since shrinkage and data theft are largely related to employees. Finally, the ability to manage safety incidents better has been the conclusion of recent government investigations.

Electronic access control systems came on the scene yielding employee badges (or credentials), which have proven to bring solid perimeter security to organizations. With the increased security came reduced productivity since personnel are required to “badge-in” manually. Nonetheless, the automatic nature of electronic access control stands as the initial starting point for automated WFM.

Access control badges have become such a success that many additional uses have been tried – only to fail. If the ability only existed to identify personnel automatically, an automated means would be available to capture information and automate other processes in the organization including: automatic identification of personnel for productivity measurement and optimization, premises access for employees and vehicles, internal “control” zones for compliance and security, automatic employee/contractor time and attendance, emergency evacuation counts and asset custodial assignments to track and protect assets by linking asset tags to personnel badges and tracking the movement of both.

However, none of these applications proved viable as these access control systems use cards that are capable of only extremely short range transmissions (e.g. six inches) and must be manually presented. Because of their short range, they are called proximity access control systems as the user must present the card in “proximity” to a reader to be authorized to enter and have the door unlocked. Automated solutions require automatic identification without human intervention.

The Solution

Wireless credentials are now available that provide reliable automatic identification from a distance, typically up to 100 feet or more. These credentials come in a standard access card size form factor and are only a few dollars more per card than the existing manual cards. The magic comes from a battery and transmitter resident in the card. A chip from Axxess, called Dot, enables this capability. Dot is the smallest, most powerful, battery-powered wireless computer ever developed, and it is embedded inside employee and contractor credentials, hence a “Dot Credential.”

Dot Credentials provide multiple advanced WFM applications that save money, provide greater safety and improve security.

Applications

- 1) Automated productivity measurement – The use of Dot Credentials enables the tracking of performance as employees or contractors move throughout the organization. The start and stop time for tasks is automatically captured as well as “dwell time,” or the time it takes between tasks. These data are collected and analyzed against real time analytics filters to extract summaries and exception reports. Exception reports or alerts are then automatically sent to key supervisors who can address performance deficiencies and, if needed, re-allocate personnel.
- 2) High speed vehicle access control – Dot Credentials are being used to open exterior vehicle gates automatically, enabling “rolling access,” where the vehicle is not required to stop to gain authorization and to open the gate. In addition, there is accountability for everyone inside the vehicle. Employee entrance speed is increased, and this increased process flow amounts to a minimum of 10% savings off the time previously required.
- 3) High speed personnel access control – Personnel can wear the Dot Credential and gain building access without stopping, gaining a similar 10% improvement in throughput. Improved throughput translates into more time for employees to work and be productive, also called “wrench time.”
- 4) Automatic contractor time and attendance data collection – Dot Credentials linked over the corporate network collect data on arrivals and departures and provide dwell time information for attendance. In particular, this provides accurate timekeeping for contractor billing reconciliation and payment. Recently published cases have shown a three-month payback for these systems, which included elimination of a 14% over-billing problem and a 70% reduction in contractor staff management headcount.
- 5) Improved internal security – Dot Credentials enable automatic identification of personnel at secure control points in a building. Without the pressure of “tracking employees,” the system simply recognizes personnel internally, providing an array of virtual security control zones that ensure personnel are not out of position and, in rare, occasions breaching security. Typical employee theft statistics average 1.5% or greater of sales in retail-oriented businesses. The theft of IT hardware amounts to an average of \$43,500 per company per year.
- 6) Automatic asset custodian assignments – Corporate asset loss in terms of IT hardware, software and intellectual property amounts to an average of \$43,000 per company per year. By using Dot Credentials automatically linked to IT assets, the functional linkage of the two can be automatically monitored to ensure proper handling of the assets. For example, laptop computers now outsell desktop computers. With this mobility comes increased loss. Laptop computers with Dot tags are automatically

identified at exit doors and assessed for their proper authorization to leave the premises with the proper custodian.

- 7) Emergency evacuation accounting – Evacuation incidents are frequent in many industries with accident rates per year ranging from 5 per 100,000 to as high as 80 per 100,000. OSHA's Code of Federal Regulations, Part 1910.38 (c)(4) requires procedures to account for all employees after an evacuation. Dot Credentials do that automatically, and in medium to large workforce sites, it is the only centralized, automated method to account for personnel in an emergency. The system also provides comprehensive reports and instantaneous alerting.

Real World Examples

Automated Beverage Server Performance Management in the Entertainment Industry

At a large Las Vegas hotel casino operation, Axxcess implemented a real time beverage delivery performance monitoring and reporting system designed to monitor beverage server production and loop times and, when necessary, to auto-alert the beverage manager when production and loop times continue to fall "out of standard." The system uses the ActiveTag Dual-Active tag technology to monitor dwell times – how long it takes beverage servers to fill and deliver orders.

The system can send auto-alerts to notify when a delivery system needs support. These alerts can be sent via email to any Wireless Application Protocol (WAP)-enabled device to help ensure the standard beverage operating procedures are executed. Additionally, the system can provide detailed post operational analysis and reports.

High Speed Access Control in the Utility Industry

Axxcess implemented its vehicle access control system at Great River Energy, an electric utility company. It is being used to control vehicle access at remote locations automatically while improving security needed for homeland defense initiatives. The system provides automatic identification and validation of authorized employees, thereby improving security and tracking employee activity, while reducing the time it takes to enter the gated areas.

"We needed to upgrade our security system from a manual lock and key system to electronic gate access," commented Mark Royseth of Great River Energy. "By installing Axxcess' access control system, we are able to automate entry into the facilities for authorized personnel and greatly increase our security. Now we also

have an event log that automatically tracks employee activity across multiple locations.”

Employees are given an active tag that transmits its identification to a palm size receiver tied to the gate controller. Access is now provided immediately for authorized personnel at the gates where drivers previously had to exit the vehicle and manually unlock the gate. Now, with automatic identification and access, the driver never leaves the vehicle, thus improving security and efficiency.

Automated Internal Zonal Security in Ports

In 2007, Axxess announced that the Port of Bridgetown in Barbados, one of the leading ports in the Caribbean, awarded the Company a contract for an integrated radio frequency identification (RFID) and sensor system that would be deployed to enhance security measures in preparation of the Cricket World Cup 2007. The system includes Axxess’ unique ActiveTag™ technology and infrastructure, wireless sensors and underwater cameras that work in concert to detect and manage security threats.

The ActiveTag technology is designed to increase security coverage dramatically at the Port by automating the capture of a broad collection of real time security information. The system has the capability for real time processing of the data, which enables automatic delivery of exception-based alerts for security personnel.

“Barbados Port Inc. has a history of high quality operations,” said Everton Walters, Managing Director and CEO of Barbados Port Inc. “We are expanding, and it became apparent that we needed to deploy the most modern security tools to provide the necessary coverage and level of security. This system will leverage our security resources substantially leading up to and during the Cricket World Cup 2007 this spring and well into the future.”

Automated Contractor Time and Attendance and Emergency Evacuation in Oil and Gas

Axxess announced the use of its Active Tag Personnel Tracking System for contractors and employees at Occidental Petroleum Corporation’s (NYSE: OXY) largest operation in California. The long range access control and safety system is used to provide automatic hands-free identification and time and attendance for 2,700 personnel at the 75 square mile facility. The system also enables safety and risk managers to determine where personnel are in the event of an emergency, such as an earthquake, terrorist threat or explosion.

The Elk Hills Reserve is the seventh largest oil field in the continental United

States, with cumulative production exceeding 1 billion barrels of oil and 1 trillion cubic feet of natural gas. The new personnel tracking system has been operating for more than one year, and all employees, contractors and visitors at the oil field wear Axxess Dual-Active RFID-enabled badges.

“The Axxess personnel tracking system allows us to account for every employee in the case of an emergency,” said Armando Gonzalez, Health, Safety and Risk Management Lead at Oxy Elk Hills Reserve. “Occidental Petroleum upholds high standards for protecting the safety and health of employees, contractors and neighboring communities.”

Previously, the refinery used picture ID cards presented to guards and logs to monitor those whom entered or left the facility. The company replaced those badges because they could not accurately represent how many people were in the facility. The new system tracks employees and contractors entering and exiting the facility with time and attendance to assist with contractor management. Oxy Elk Hills will use the system to better fulfill OSHA's Safety Management (PSM) standard for tracking hours for mandatory injury rate calculations. The system records the time and attendance to compile hours on site and get a truer reflection of safety statistics.

Oxy Elk Hills is using a third party software package from Acrasoft Software together with the Axxess ActiveTag RFID tags and reader infrastructure in the Personnel Tracking and Safety System. Axxess Dual-Active RFID personnel badges transmit a unique ID number and location zone when they reach a facility gate. The badge conforms to the ISO 7810 standard size for ID cards and is powered by batteries expected to last a minimum of three years. Security gates are equipped with palm-sized, network-based receivers operating at UHF frequency band to read from 1 foot up to 300 feet away depending upon the antenna used. Badges are automatically activated as they move through a doorway or gate or into a parking or staging area. The Axxess “hands free” ActiveTag system proved most reliable and accurate in automatically detecting and identifying personnel entering or leaving facilities in an independent test conducted by the United States Defense Department’s research facility.

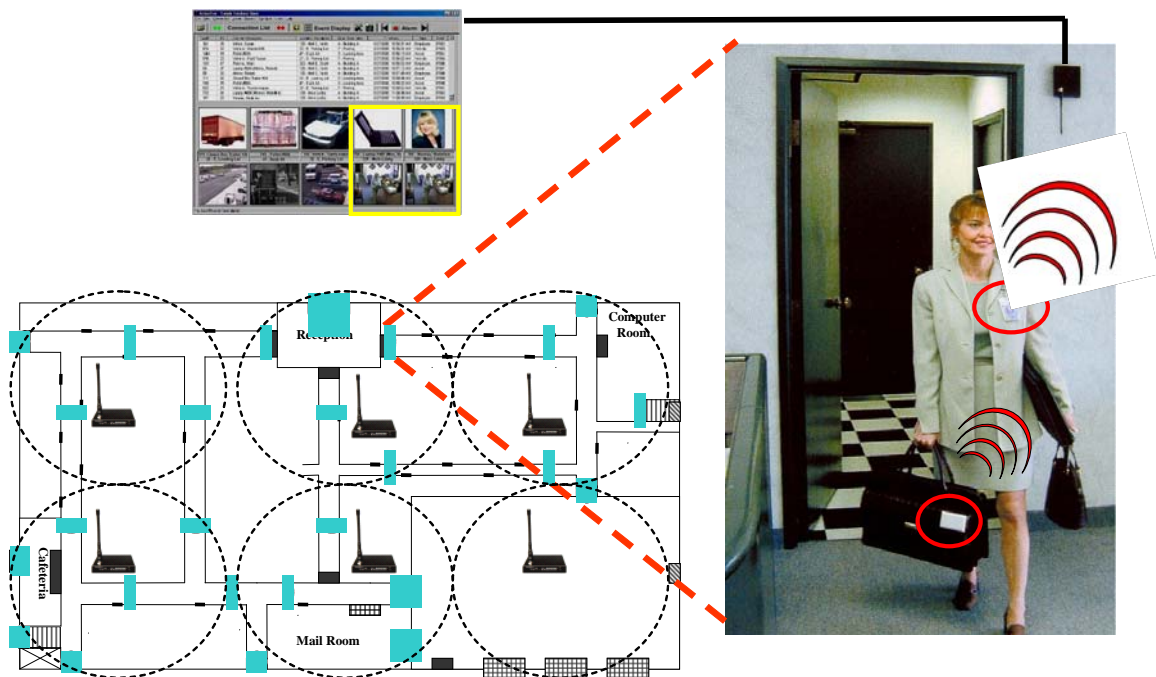
The System

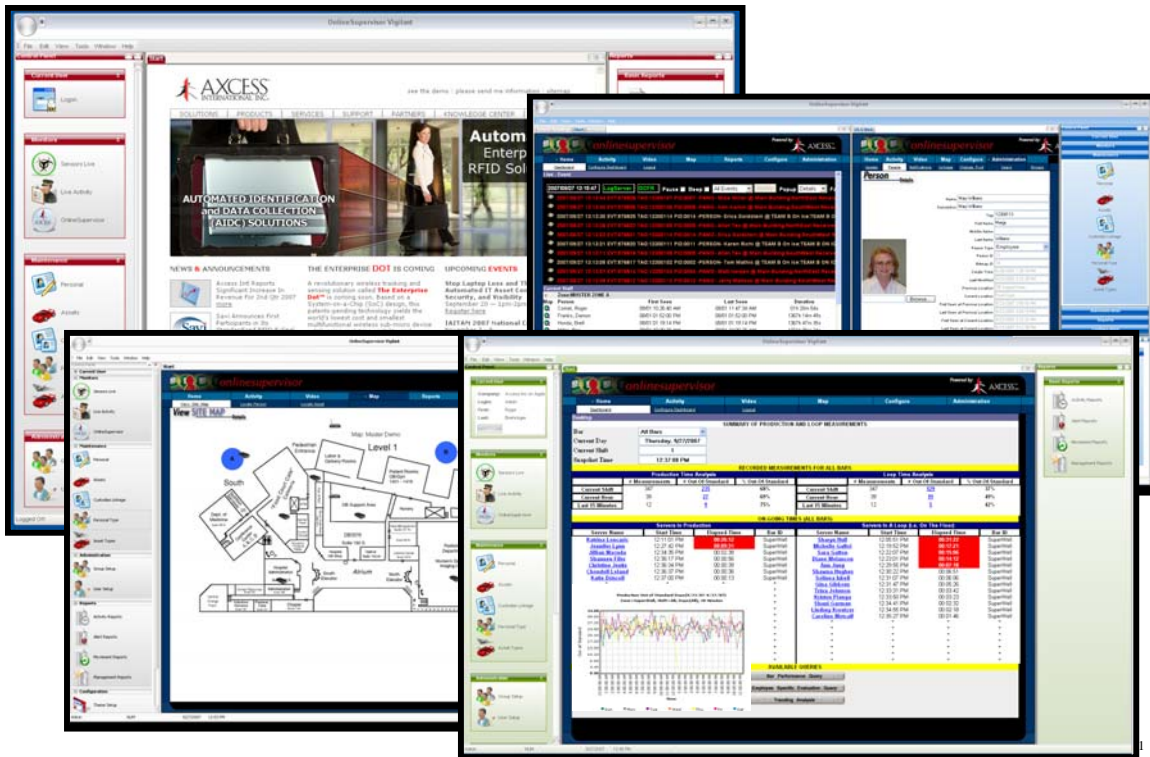
Dot combines the beneficial elements of today’s monolithic wireless technologies such as RFID, RTLS and wireless sensing systems into a single, low cost chip. Dot is a one-of-a-kind hybrid, a single wireless source, common to multiple industry standards and supporting virtually all industries including manufacturing, the enterprise, oil and gas, utilities, education, government and the military.

Dot is a better solution than access control badges, passive RFID product tags, active RFID asset tags, Real Time Location Systems (RTLS) and distributed

sensor transmitters. Memory and sensor inputs enable Dot to be tailored to each specific data capture need. Bringing together the new functions of Dot and building on the current Axxess micro-wireless infrastructure for enterprise management creates an open architecture for multiple sources of data to be acquired to deliver previously inaccessible business intelligence.

The active RFID and RTLS portions of Dot's capabilities are built on and are backwardly compatible with the existing Axxess 433 MHz frequency platform, which automatically activates tags on-demand to transmit micro-wireless messages as needed from 1 to 300 feet to hidden palm-size receivers. The receivers are connected via standard network (either 802.11X wireless or wired) simultaneously to the enterprise system software and the existing security alarm equipment.





The system supports standalone middleware and end-user software provided by Access under the e-Supervisor™ label or via an easy connection to third-party middleware and software solutions.

Conclusion

In addressing the ability to reduce labor costs through implementing a WFM system, the Aberdeen study concluded that Best in Class firms see WFM as essential for developing three critical capabilities:

- 1) Definition, measurement and management of critical WFM KPIs
- 2) Achievement of greater visibility/control over all labor resources, including project-based workers
- 3) Identification of skills required, skill levels available, labor requirements and labor availability by hours and by skills.

Clearly these requirements can only be met by a system that can automatically identify, track and monitor individual employees. Automatic identification has been proven to increase safety, provide compliance to safety laws and reduce liability exposure. Automatic identification has also been proven to improve enterprise security by speeding up employee access and protecting corporate assets. In total, Access' Dot system has proven its ability to meet all of these requirements and has delivered results demonstrating significant improvements

in productivity, security and safety in multiple industries. So the common access card is getting an upgrade to a “hands-free,” automatic identification capability enabling numerous, high rate of return, flexible applications to save money, provide greater safety and improve security.

About Axxess International Inc.

Axxess International Inc. (OTCBB: AXSI) delivers wireless intelligence through real time business activity monitoring solutions that improve productivity, security and revenue growth. The systems derive wireless intelligence from automatic advanced WKM, workflow management, asset monitoring and distributed sensing. Its revolutionary and patented Dot micro-wireless technology platform combines RFID, RTLS and wireless sensing for better decision-making and control throughout the enterprise. Axxess is a portfolio company of [Amphion Innovations plc](#) (AIM: AMP). For additional information on Axxess, visit www.axcessinc.com.