

Geodan, Intel and Oracle

Asset tracking and real-time location and visibility of hospital equipment and resources



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One of the primary barriers to efficiency and safety in a busy working hospital is the inability to find vital equipment, resources and personnel when they are needed. This not only slows down doctors, nurses and other staff in their daily duties, but can also have significant repercussions in an emergency situation.

Asset tracking is a widespread problem in hospitals around the globe, but one which can be easily addressed with sensor-based location technologies. Oracle, Intel and Geodan share a vision of an efficient digital hospital, and have created a proven RFID-based system for identifying and visualising the whereabouts of vital medical equipment, resources, vehicles, personnel and patients in real time.

Missing people and equipment costs time and money

In today's competitive healthcare environment, it is becoming ever more important to ensure that all health inputs, such as human and non-human assets, drugs, medical supplies and equipment, are used to maximum efficiency. Without an effective solution in place to minimise capacity bottlenecks, patients may end up being transferred to other facilities, leading to delays in patient treatment, loss of revenue or extra cost.

Hospitals are under pressure to provide better service, deliver higher standards of healthcare, cut waiting times and increase patient safety. At the same time, they must cope with growing numbers of patients, especially as the result of an ageing population, and reductions in available funds. In short, they must find ways to do more with less.

One of the primary barriers to achieving efficiency and reducing waiting times in hospitals is the inability to find vital equipment, resources and personnel when needed. A survey of 737 Canadian hospitals conducted in 2001, for example, revealed that many emergency departments either lacked or could not readily locate the equipment needed for paediatric resuscitation. Hospitals with multi-storey complexes, large numbers of staff and hundreds of patients rely on portable equipment such as EKG machines, defibrillators and infusion pumps to treat patients, and if these cannot be readily found, efficiency and patient safety both suffer.

Location technologies address the problem

Misplacement of vital assets is a problem that can be easily addressed with new sensor-based technologies such as radio frequency identification (RFID). Inexpensive RFID tags can be fitted to devices such as portable medical equipment, stretchers and wheelchairs, and can be issued to staff and patients in the form of wristbands. The location information from the tags can be used not only to identify the whereabouts of the person or item in real time, but also to build up a picture of the movement of equipment around the hospital, to enable assets to be managed and deployed more efficiently.

The healthcare groups at Oracle and Intel have worked with Geodan, a specialist provider of real-time location awareness technology, to develop a comprehensive system for real-time location identification and visibility of vital medical equipment, personnel, resources and vehicles, both inside the hospital and outdoors. The solution runs on Intel architecture and comprises Geodan Movida location awareness software, Oracle Fusion Middleware and Oracle Database 10g Spatial.

What is RFID?

RFID is an electronic tagging technology that allows an object, place, or person to be automatically identified at a distance without a direct line-of-sight, using an electromagnetic challenge/response exchange. An RFID implementation works with tags that transmit messages and readers that receive and process these messages.

There are two main types of RFID tag: passive and active. With passive tags, a reader generates a signal which provides the tag with power and an interrogation signal. These tags have a typical read distance of up to three metres. Active tags are battery powered, meaning they do not need a signal from a reader to transmit their information. Typically they would be configured to transmit information such as location or temperature at regular intervals. Active tags have a read distance of up to thirty metres depending on the type of tag.

RFID deployments tend to use unlicensed frequencies for their obvious cost benefits.

An increasingly popular solution is to use active tags which operate on standard wireless LAN technologies. This is known as a converged wireless network, providing voice, data and location based services. This approach can reduce deployment costs by making use of an existing infrastructure with no separate reader infrastructure required.

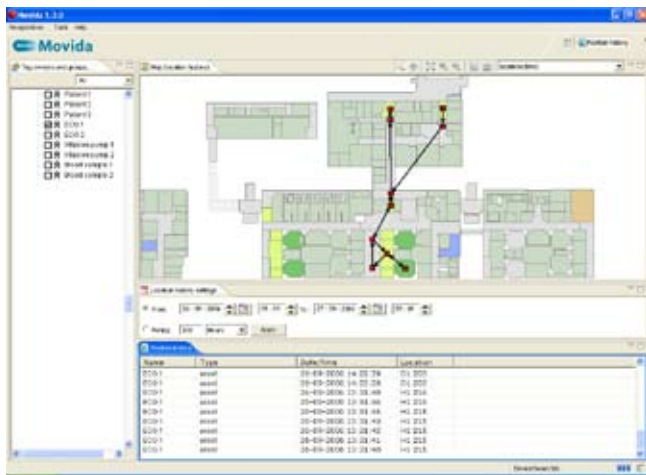


Geodan Movida

Geodan Movida is an award-winning software platform for real-time location awareness. It uses existing RFID technologies (from Wi-Fi based to active and passive tags) to identify and locate assets and people both indoors and outdoors, and presents their whereabouts onscreen using a visual map of the hospital facility. Movida can be used in the following ways:

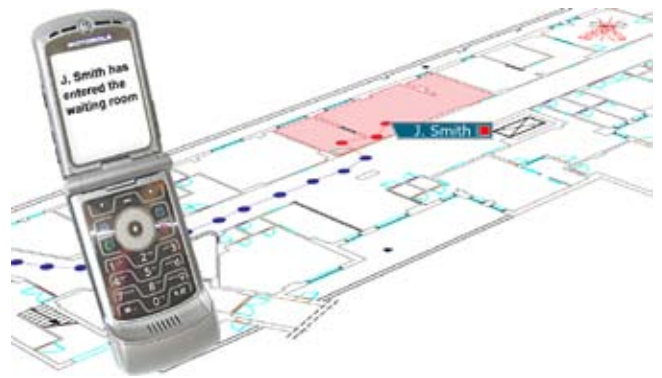
■ Monitor people, objects and resources

Hospital assets, such as infusion pumps, defibrillators, EKG machines, wheelchairs, can be organised and tagged according by floor, type, building or any other designation required. Equally, patients, doctors, nurses and other personnel can be issued with RFID-tagged wristbands.



RFID sensors placed around the hospital facility will detect nearby tags and relay this information to the Movida application, which will display the location information in real-time on screen, to a user's PC, laptop or handheld device. Users can quickly identify the location of a particular asset or person, see where all assets in a specific group are, and drill down to see more information about a particular asset.

Outdoors, vehicles and personnel can be located and monitored in the same system using satellite (GPS) and mobile phone (GPRS and 3G) tracking.



■ Alerts

The Movida application allows users to define anomalies and activate alerts when these anomalies occur. Frequently-used anomaly types include an asset leaving a specific zone, or there not being enough assets of a particular type in a particular location. Alerts can be made in the form of screen pop-ups, phone calls or SMS messages to relevant personnel. Alerts are also logged for later analysis if required.

■ Reports

Movida can create reports on asset location and movement, allowing users to understand which areas are over- or under-supplied, and which assets are most needed in which locations. This allows assets to be more efficiently deployed over time.

Geodan Movida supports most commercial RFID solutions available today, from Wi-Fi based to active and passive tags. Movida is based on Oracle Fusion Middleware and Oracle Database 10g Spatial; the market-leading data integration and management infrastructure for geospatial information.

Oracle Fusion Middleware and Oracle Database 10g Spatial

Geodan Movida is based on Oracle Fusion Middleware and Oracle Database 10g; the information management infrastructure of choice for the worldwide healthcare industry. Oracle Fusion Middleware is a sophisticated data integration platform with comprehensive support for RFID and other sensor-based technologies. Its flexible architecture means that it can easily support new sensor technologies and sensor capabilities as they emerge, making it the ideal choice for organisations that want to exploit the capabilities of RFID now, with the reassurance the system will be able to accommodate future technological advances.

Oracle Database 10g Spatial uniquely handles mapping and geospatial data in the same database as standard alphanumeric information, allowing the location of assets and the attributes of those assets to be viewed side-by-side by applications using the database. Real-time asset location information from Geodan Movida is stored in the Oracle Database, and can be accessed by any application using the database. Hospitals that have already invested in Oracle Applications for financial and asset management, for example, can easily integrate the real-time location information from Movida into those applications.



Intel

Drawing on Intel's heritage as a technology innovator, the Digital Health Group brings Intel's knowledge and technical expertise to improve the overall healthcare experience, working with and listening to the experts from the healthcare industry. The Digital Health Group is working with both the information technology industry and the healthcare industry to deliver computing and communications solutions that connect people and information in new and important ways.

Intel-based RFID solutions can help with health care provider challenges by reducing medical errors and improving workplace efficiency. Intel architecture powers the systems that gather and manage RFID data and Intel is driving research, standards, strategic alliances and provides services to create custom solutions around RFID technology.



Why Geodan, Oracle and Intel?

Implementing a RFID-based monitoring and visibility system from Geodan, Oracle and Intel delivers the following concrete benefits:

- Significant increases in speed and productivity in treating patients, reducing waiting times and contributing to greater efficiency across the hospital
- Increased patient safety as essential equipment can be located faster in emergency scenarios, and the location of patients can be identified at all times
- Better use of existing assets by using the information from the system to deploy and distribute assets more efficiently
- Can be used as a standalone system or can be easily integrated with existing Oracle-based applications including Oracle E-Business Suite and Oracle PeopleSoft Enterprise, as well as third-party applications
- Designed to accommodate future advances in RFID and other sensor-based technologies, ensuring that the system is a long-term investment that will increase in business value over time
- Proven technology from three trusted technology leaders, each with an explicit commitment to improving healthcare by continuously researching and developing new healthcare technologies

About Geodan

Geodan Mobile Solutions is part of the Geodan Group, a company that has been active in the geo-services market for more than 20 years. Geodan specialises in IT solutions for the public and private sectors that can be used to ensure the adequate management and availability of geo- and location information. Geodan provides a wide range of location-based services for mobile geo-information applications indoors and outdoors, based on the award-winning Geodan Movidia platform. Used by governments, healthcare organisations and enterprises, Geodan Movidia is the platform of choice for enterprise real-time location awareness applications.

For further information, visit www.geodan.com/healthcare



About Intel

Intel, the world leader in silicon innovation, develops technologies, products and initiatives to continually advance how people work and live.

For further information, visit www.intel.com/healthcare



About Oracle

Oracle (Nasdaq: ORCL) is the world's largest enterprise software company. Oracle's business is information – how to manage it, use it, share it, protect it. For nearly three decades, Oracle has provided the software and services that let organisations get the most up to date and accurate information from their business systems.

Today, Oracle is helping more governments and businesses become more information driven than any other company.

For further information, visit www.oracle.com

