



RFID TECHNOLOGY

Radio-frequency identification (RFID) is the use of an object (typically referred to as an RFID tag) applied to or incorporated into a product, animal, or person for the purpose of identification and tracking using radio waves. Some tags can be read from several meters away and beyond the line of sight of the reader.

Components of RFID

- *Tags*
- *Readers*
- *Middleware*

Tags

Most *PASSIVE RFID* tags contain at least two parts. One is an integrated circuit for storing and processing information, modulating and demodulating a radio-frequency (RF) signal, and other specialized functions. The second is an antenna for receiving and transmitting the signal.



PROPOSED SYSTEM OF MUSEUM



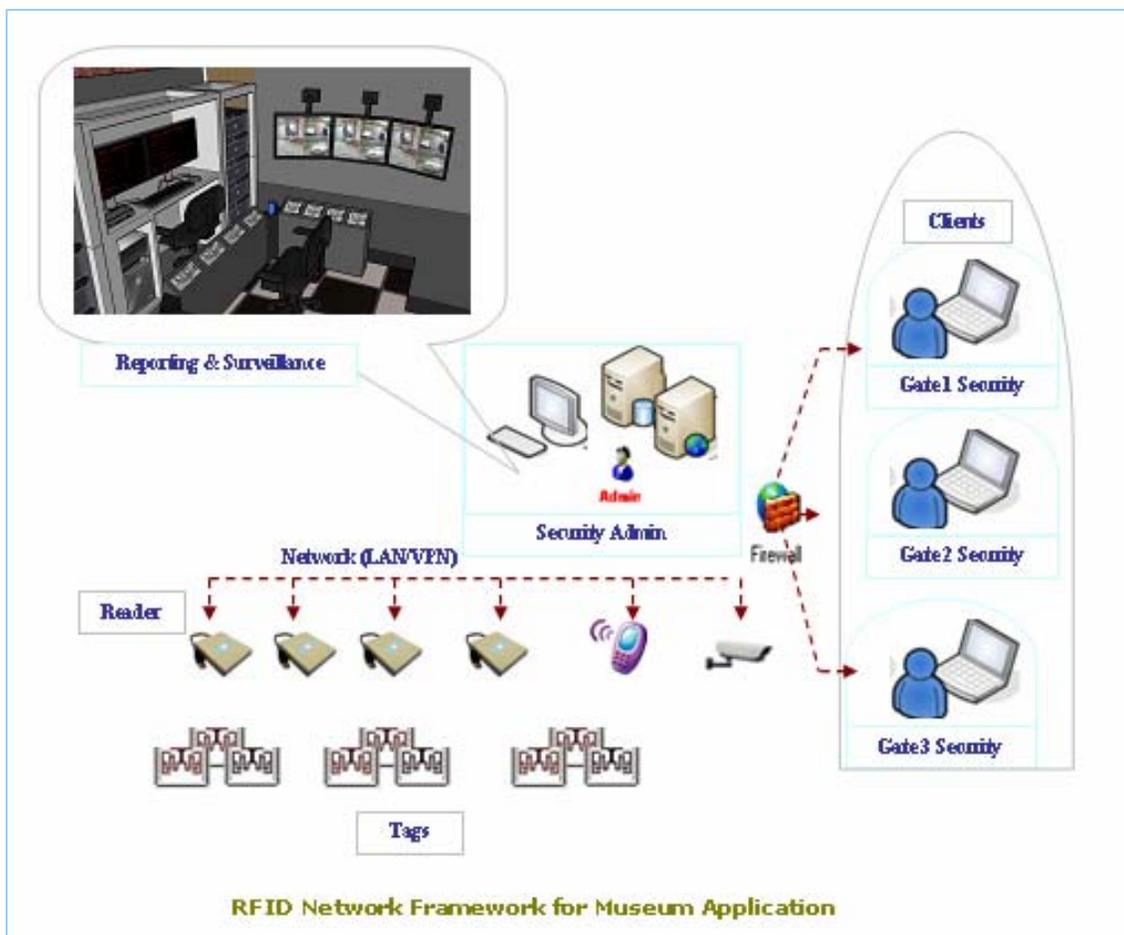
Readers

RFID Readers are the main communication initiator between reader and tags. The Reader sends the modulated signal to tags and after that tags respond back with specific commands. Reader then collects the information from tag and sends it to the middleware.

Middleware/Application

Middleware is the software which manages the whole data for the application. Most of the middleware has the connectivity with the existing ERP (Enterprise Resource Planning) system. Also connectivity can be provided with existing application software of the present

A typical RFID network framework is given below in Fig 1.0



IMPORTANCE OF RFID MUSEUM



Museums and Art Galleries, all small, medium and large, keep huge collections of objects, antiques and artworks. These collections always remain dynamic – they are constantly moved or checked for a variety of reasons e.g. display, conservation, photography, research, storage redevelopment, inventory, audits, maintenance etc.

Keeping track of the whereabouts of each and every item within the collection is a core function of every Museum and Gallery. Traditionally this has been done through manual record-keeping, updating ledgers or card files with new locations whenever something is moved.

It allows collections staff to track movement and take inventory of artifacts without physically handling them, thus greatly reducing damage to collection items. For example a hand-held reader could easily read 20 or more items stacked on top of each other in a storage drawer. Besides the reduced handling, the ability to scan multiple items also has a positive impact on staff productivity.

The unique features of RFID technology (in particular that line of sight not required to read tags and that 100's of tags can be read per second) enables Museums and Galleries to totally automate these processes, thereby providing the following benefits:

- Misplaced objects can be found
- Audits and stock takes can be fast tracked
- Collection preservation is improved through reduced handling
- Full visibility of collections, leading to increase in quality, quantity and availability of information.
- Significant labor savings in inventory, audits, stock takes, condition checks, loan processing, crate tracking, etc. RFID tagging eliminates the need to manually count and handle objects and artworks, whilst eliminating human error with less physical human interaction.
- Reduced risks to objects and artworks through the reduction in handling required.
- RFID tags can be interfaced with existing CMS'.

THE TYPICAL APPLICATION OF RFID IN MOVEMENT TRACKING

Busier museums that re-arrange their exhibits with some frequency can greatly benefit from RFID to help them track movements of their collections. The actual method of tracking could take on any combination of the following forms:

- Gate readers installed at key doors could monitor the movements automatically

- Hand-held readers connected to Personal Digital Assistants (PDA's) could be used by staff to record the movements as exhibits leave or re-enter storage.
- Hand-held readers could be used by staff to record location of exhibits in their final position

RFID FOR MUSEUM EXHIBIT RECORD

As staff passes the RFID reader over the contents of the drawer, in addition to scanning the tags attached to each artifact, they also scan a special *location tag* that is affixed to each drawer. In this way, the system is aware of the location-it knows *what* is located *where*.

Data collected in this way would be automatically downloaded to your collections management software, either on-the-fly through a wireless network, or afterwards, by dropping the RFID reader into a cradle.

RFID FOR DIRECT ACCESS OF INFORMATION

When a museum collection was labeled with RFID tags, any staff member with a hand-held reader can get instant access to information about any piece of interest. Information such as its home location (needed when putting items away), maintenance history, artist, or any other piece of information that you already have in your database can instantly be displayed.

RFID FOR FINDING MISPLACED OBJECTS

If a specific artifact turned out to have been misplaced, a portable RFID reader can be used to search for that artifact (or artifacts) in your stores. Note that this is also done automatically during the inventory process: the scanner instantly indicates to the user when it detects an artifact with a previously unknown location.

RFID FOR FUTURE INNOVATIVE USAGE

RFID tagged item's data can open the door to most exciting and innovative approach for future usage Such as automatic guided tour to museum and also multimedia information of each artifact with PDA or 3D projectors only by scanning the object of interest.

WORLDWIDE MUSEUM THEFT RECORDS



Country wise theft record of antiques	
Country	Theft antiques
USA	16 (91 items)
France	7857 (some 35,000 items)
Germany	674 reports; 2345 items
Denmark	7 (367)
South Africa	8 (8)
Argentina	40 (106)
Australia	1654 (2074)
Cyprus	14 (100)
Spain	60 (279),... several thousands archaeological items also were stolen
Russia	2492 (2827)
Greece	123 (??)
Israel	34 (40)
Italy	2023 (24505)
Mexico	20 (23)
Monaco	1 (1)
The Netherlands	93 (460)
Czech Republic	1845 (6465)
Ukraine	312 (850)
Museum wise theft record of antiques	
Museum Name	Loss
Isabella Stewart Gardner Museum	\$300 million
The Ashmolean Museum, Oxford	\$5 million
The Van Gogh Museum, Amsterdam	\$30 million
New South Wales, Sydney, Australia	\$1 million
West Hollywood, California	\$4 million
Oratory of San Lorenzo in Palermo, Italy	\$20 million

Recent Theft Records in India

1. According to data available with the directorate of antiquities in Delhi, at least 40 rare sculptures have been stolen in the last three years, mostly from Madhya Pradesh, Rajasthan and Tamil Nadu.
2. In India the 1913 Nobel prize for literature (awarded to poet Rabindranath Tagore) was stolen from a museum in Baruipara. In the United States (Las Vegas, NV) thieves stole more than \$300,000 worth of Elvis Presley's jewelry from the Elvis-A-Rama museum. The haul included "the King's" ruby diamond ring, a high school ring and his diamond pendant and chain.
3. Lord Sabranath was stolen from a Jain temple in Kurdi village of Baghpat district in UP. Unidentified men entered the temple and took away the idol. The idol was never recovered.
4. A rare manuscript written by Mughal Emperor Aurangzeb called 'Gulistan' was stolen by unidentified miscreants from a library in Bihar's Gaya district.
5. The country's first Nobel Prize, won by Rabindranath Tagore in 1913 was stolen with several of his personal belongings from the safety vault of the Visva Bharati University Museum at Shantiniketan.
6. 10 precious idols were stolen from a Jain temple in Gurgaon, on the outskirts of Delhi. The idols are made of 'asthadhatu' or eight metals, and some of them are up to five centuries old.
7. A 900-year-old idol, stolen from a temple in Uttar Pradesh, was recovered in Delhi and two persons were arrested earlier this month.
8. Three 700-year-old Jain idols costing Rs.130 million on the international market were recovered in Delhi last week from a man who allegedly planned to smuggle them out of the country.
9. A watch gifted to former Indian Prime Minister Lal Bahadur Shastri by his Russian counterpart was stolen from a museum in New Delhi. The theft was discovered on September 3 but was reported on September 7. The watch, belonging to country's second PM, was stolen from the museum inside the Lal Bahadur Shastri Memorial. It was gifted to Shastri by Alexei Kosygin, during the historic Tashkent conference in 1966.

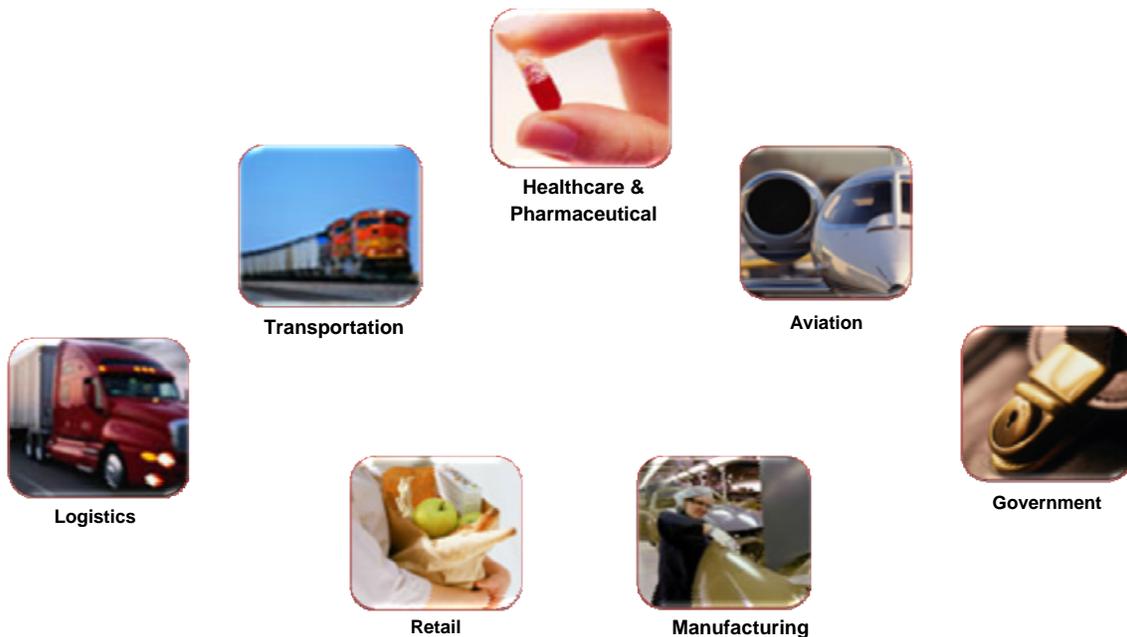
About IAITO



IAITO provides state of the art tracking and locating solutions for embedded system as well as advanced applied Radio Frequency Identification systems. IAITO delivers RFID readers, RFID tags, as well as turnkey RFID solutions that consist of highly integrated hardware and software and professional services. These professional services include 'proof-of-concept', systems integration consulting and 'prototyping' services. Our team of experienced professionals has a mandate to recognize and understand your business's RFID needs. With this knowledge, we are able to help you deploy RFID technology that will maximize your ROI right from the start and ensure its expandability as the applications grow through the evolution of the technology.

The potential for profitable deployment of RFID technology spreads across virtually any market in any industry. With heavy R & D investments, we have developed RFID solutions for various industries and carry one of the most comprehensive lines of RFID Readers, RFID Tags, and RFID Antennas.

IAITO Solutions Target Market:



Contact-Us for Details or Demo:

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