

CASE STUDY

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Large residential complex adopts RFID-based VEHICLE TRACKING SYSTEM

Independent, non-stop system for security, parking and access control

Accurate identification of authorized vehicles

Automated entry and exit logging

Allows rule-based conditional entry and restrictions



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TECHNOLOGY

Solution:

EPC Gen2 compliant
vehicle tracking solution

Tag Type:

Parka™ UHF Passive
Personna™ UHF Passive

Reader/Antenna:

Xtenna™
Xtenna Proximity™

Method:

Multiple Tracking via Integrated
Reader/Antenna modules

Integration Platform:

RFID Middleware:

Xtenna™ WebToolkit
Xtenna™ Studio

Application: Essen RFID's
Vehicle Tracking System

Database: SQL Server 2005 Exp. ed.

Tag Manufacturer/Supplier:

Essen RFID, with US based chip inlay

Reader/Antenna Manufacturer:

Essen RFID, with US based module

Systems Integrator:

Essen RFID

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KEY REQUIREMENTS:

The property currently consists of two buildings, but has single entrance and exit gates, and a common parking lot.

Main challenges in implementation:

- Restricting the entry of unauthorized vehicles in the premises.
- Tracking the entry and exit of authorized vehicles with date and time.
- Maintaining track record of visitor's vehicles and taxis entering the premises.
- Restricting entry to vehicles of service providers to a certain time and also to certain types of vehicles only.

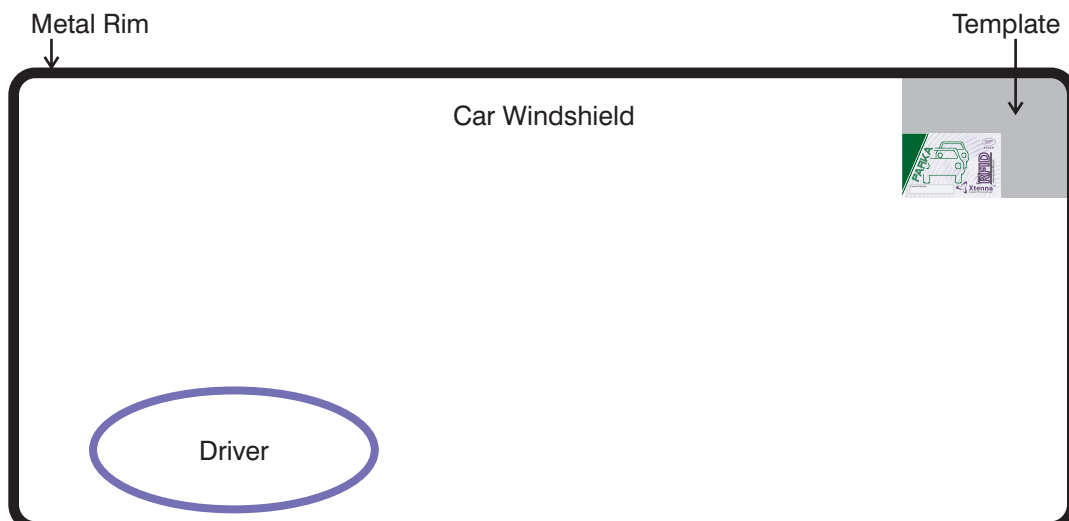
SOLUTION:

Essen RFID provided a comprehensive solution for efficiently tracking vehicles entering and exiting the parking lot, through its RFID-based Vehicle Tracking System.

IMPLEMENTATION:

Xtenna™ RFID Antenna-Readers are installed, one each for the 'Entry' and 'Exit' gates of the premises. A PARKA™ tag is issued to each vehicle and affixed to its windshield. PERSONNA™ tags are issued to security personnel employed at the property. The tags are registered using an Xtenna Proximity™ Antenna-Reader. The tracking system incorporates a signal light as well as a trigger switch for triggering a boom barrier that blocks entry of unauthorized vehicles. The system also makes use of a camera mounted at the gate that is triggered by RFID.

The property has a single control room for use by the RFID system, which is situated in one of the two buildings.





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WORKING:

The vehicle tracking system is used to manage the following:

- Residential parking
- Visitor's parking and temporary vehicles

Residential Parking:

1. All relevant owner details are obtained for the system database.
2. Details of each vehicle are also entered into the system database.
3. A permanent RFID tag is assigned to each vehicle. Essen RFID's PARKA™ Tag is used for this purpose. The tag is read by the Xtenna Proximity™ Antenna-Reader and is registered in the database as assigned to the particular vehicle. The tags are affixed on the vehicle's windshield.
4. When a vehicle enters the premises, its tag is detected at the 'Entry' gate by the Xtenna™ Antenna-Reader mounted near the gate. Xtenna™ reads the tag, and verifies that it is a registered tag belonging to the car that it has been assigned. It then logs the entry time and transmits this data back to the server situated in the control room.
5. The camera at the gate is triggered by the RFID system, capturing an image of the car and its occupants.
6. The server then triggers the switch that turns the signal light from 'red' to 'green' and opens the boom barrier at the gate, letting the vehicle enter the premises.



7. The 'Exit' gate is also similarly equipped with an Xtenna™ Antenna-Reader device that logs exit time and transmits vehicle exit data back to the server. This gate is also fitted with a camera, signal light and boom barrier, so that all departures are monitored.



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8. Cars continuously parked near the gates are filtered out by the system logic so that they do not interfere with entry/exit monitoring.
9. The system has report generation functions that provide details of vehicles and their owners, tags, entry and exit times, and the vehicles parked in the premises at any given time.

Visitor's Parking and Temporary Vehicles:

1. Visitors parking their cars overnight within the premises can be optionally issued temporary RFID tags.
2. Visitors with cars are asked by security at the gates as to how long their vehicles will be present inside the premises.
3. Visitor's parking is handled similarly to residential parking, except that the visitor's vehicle is issued a temporary tag when it enters the premises. All relevant details of the visitor and his vehicle are stored in the database.
4. When visitor's vehicles exit the premises, the temporary tag is returned.
5. Report generation and logging for visitor's vehicles is similar to that of residential vehicles, facilitating accurate records of all visitors.
6. Service vehicles are allowed conditional entry based on rules framed by the administrator. These vehicles have time restrictions such as being allowed inside only during certain hours. Entry and exit times of service vehicles are automatically logged and periodic reports generated.

BENEFITS:

- Accurate identification and access for authorized vehicles.
- Unmanned, secure, automated parking lots functioning on RFID technology.
- Automated report generation enables ready record reference.
- Automated entry and exit logging enables quick movement, preventing congestion and time wastage at the gates.
- Prevention of unrestricted entry for untagged vehicles.
- Entry and exit of visitor's vehicles is efficiently monitored.
- Service vehicles are strictly monitored as per laid down rules.



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LINKS:

Hardware:



Tags:



Software:



Reference Example:

<http://www.essenrfid.com/Mailer/accessparking-flash-demo.pdf>