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ESSEN

CASE STUDY

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Large vehicle dealership in Bahrain pilot evaluation of a RFID-based VEHICLE PARKING MANAGEMENT SYSTEM

Automated vehicle tracking and parking management

Real-time vehicle stock and parking availability data

Real-time viewing of entire parking layout on screen

Automated reports and history of incoming and outgoing vehicles from the parking compound

INSIDE:

TECHNOLOGY

Solution:
EPC Gen2 compliant vehicle tracking and management solution

Tag Type:
Parka™ UHF Passive
Metallica™ UHF Passive

Reader/Antenna:
Xtenna Proximity™
HandyScanna™

Method:
Single Tracking via hand-held Reader/Antenna device

Integration Platform:
RFID Middleware:
Xtenna™ WebToolkit
Xtenna™ Studio
Application: Essen RFID's Vehicle Parking 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

Xtenna™ Integrated RFID Antenna/Reader

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KEY REQUIREMENTS:

The company operates a large dealership of imported motor vehicles in Bahrain and is the local distributor for Nissan vehicles. Its premises include a large parking and display area. From its premises, vehicles are selected and taken out for test drives by prospective clients. Vehicles also leave the parking area for periodic cleaning and maintenance functions. Sales representative also need prompt retrieval of vehicles to ensure early delivery to customers and manage empty parking locations for the arrival of the next lot of imported vehicles. The company was previously using a manual system which was quite time-consuming and inefficient since a particular vehicle had to be manually searched amongst many other similar vehicles inside a large area. Therefore an automated system was required that would efficiently manage this process, while ensuring correct vehicle authentication as well as provide instant vehicle status information.

Main challenges:

- Distinct identification of each vehicle based on unique parameters.
- Tracking any particular vehicle within the large parking compound in minimum time.
- Keeping track of empty parking locations for incoming assignments.
- Automated maintenance of history records of all vehicles with their IN and OUT timings.
- Automated status overview of all vehicles currently in stock at the premises, providing the company with a ready guide for future vehicle imports.

SOLUTION:

Essen RFID provided an efficient RFID-based solution for tracking and managing vehicles inside the company parking compound, through its Vehicle Parking Management System. This system utilizes RFID tags that are affixed to each vehicle and parking location area, and hand-held HandyScanna™ reader devices to track vehicles across various locations and maintain status records in the database.

IMPLEMENTATION:

A PARKA™ RFID tag is issued to each vehicle that is imported by the company, on arrival at the dealership. This enables each vehicle along with its full details to be associated with a unique tag ID in the database. A METALLICA™ RFID tag is affixed to each parking location inside the premises. A hand-held HandyScanna™ device is used for tracking vehicles at these locations, at parking entry and exit, and for reading location tags. It runs a mobile-based application that maintains the tracking system and communicates with the central server through Wi-Fi. SQL Server is used as the back-end database.

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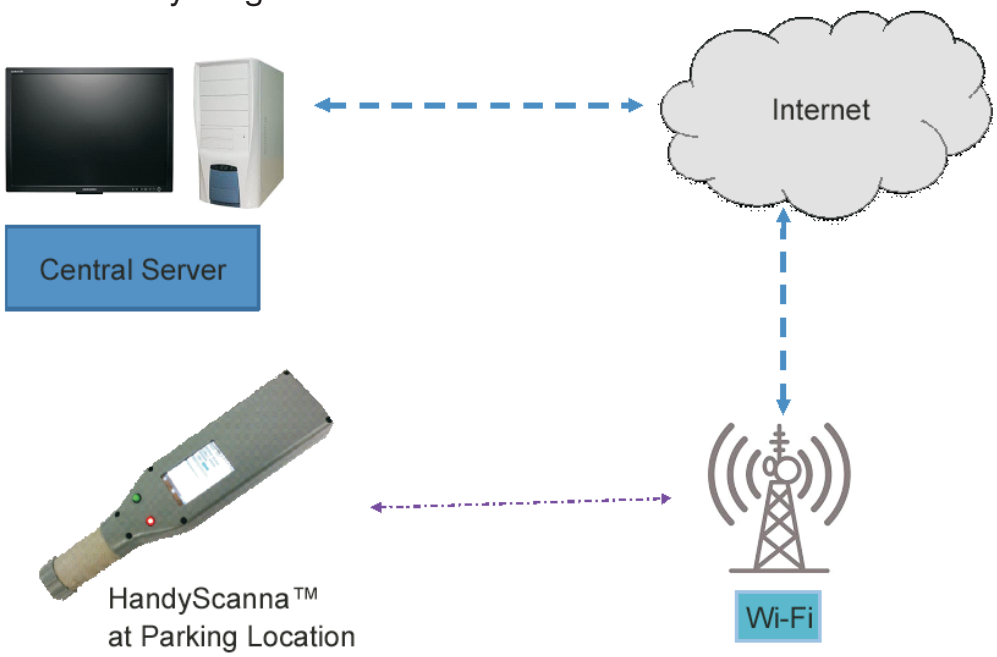
Connectivity Diagram



Flow Diagram

Enter all the necessary details related to the vehicles and the parking locations using the desktop application, such as location code, chassis no.

Synchronize the data entered in the desktop application into HandyScanna™

Assign METALLICA™ tag to each parking location using HandyScanna™

Assign PARKA™ tags to each vehicle using HandyScanna™

Assign vehicle to parking location, mapping vehicle and location tag ID using HandyScanna™

Actual parked location of the assigned vehicles can be displayed live in the Parking Layout Viewer

Once a vehicle is out of the parking location, it can be de-assigned from the location where it was parked by using HandyScanna™

Once a vehicle is de-assigned from a location, an empty space is now visible in the Parking Layout Viewer for same location.

The same location can now be assigned to another incoming vehicle by repeating the above step using HandyScanna™

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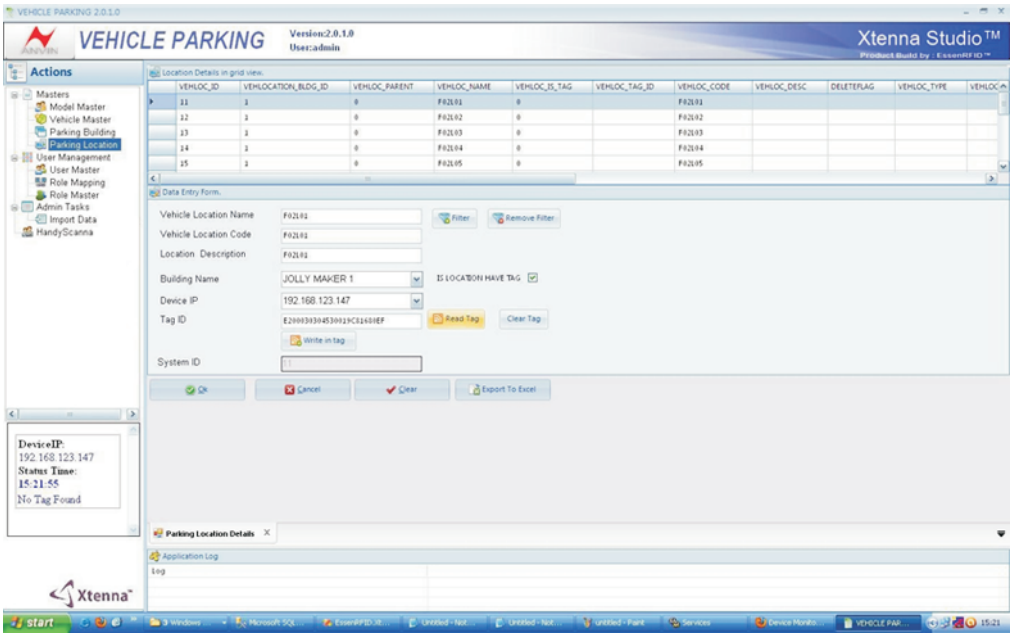
WORKING:

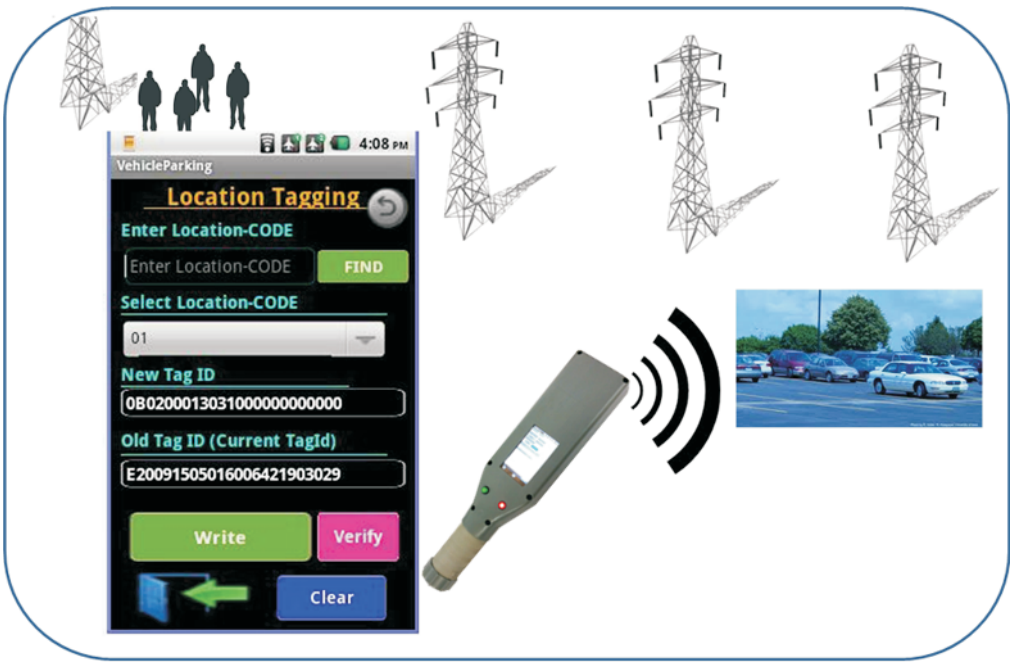
The process flow of the RFID-enabled Vehicle Parking Management System is as follows:

Application Process Flow:

1. The details of all parking locations within the premises are entered into the Vehicle Parking Management System along with their respective IP addresses.



2. A METALLICA™ RFID tag is affixed to each parking location within the parking compound. The tags are assigned to their respective locations in the database using the application within the HandyScanna™ device.



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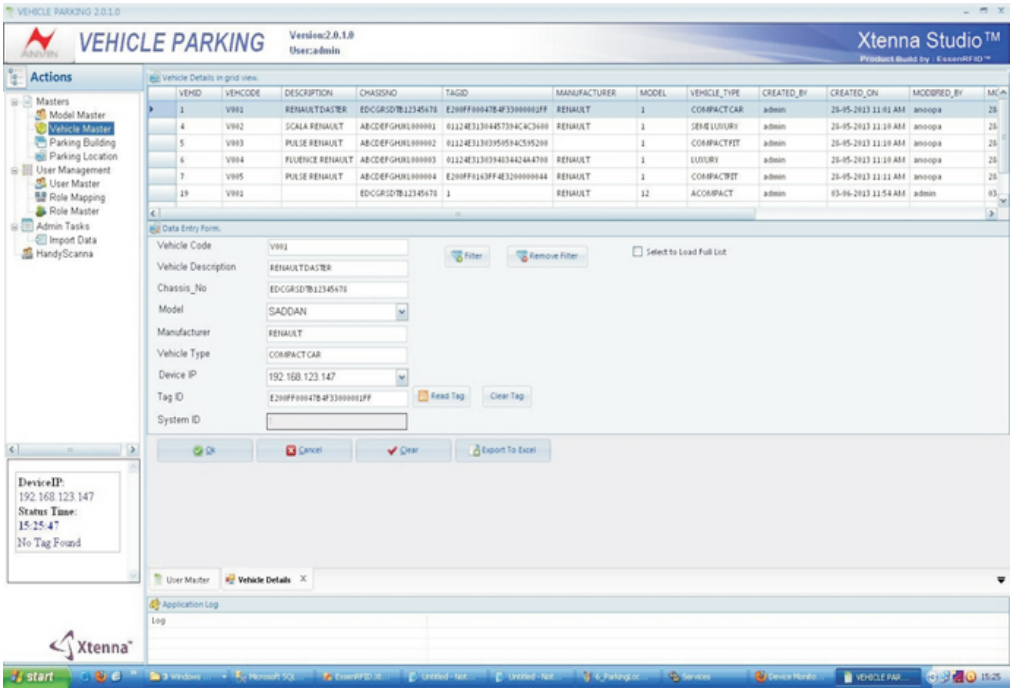
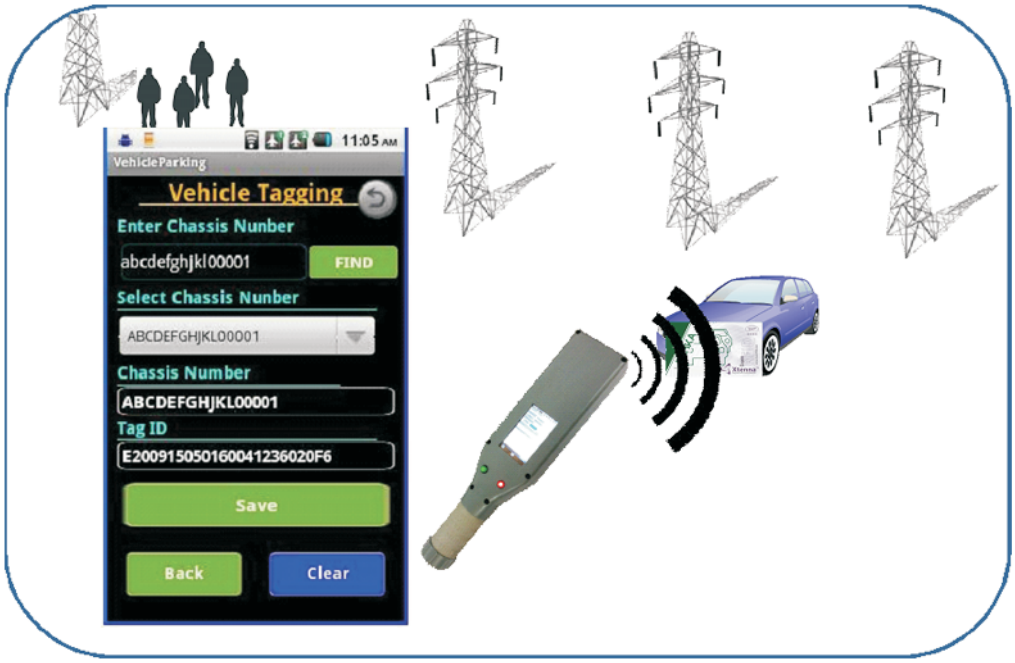
3. All vehicle details are saved into the Vehicle Parking Management application. Whenever new vehicles arrive at the premises, their details are also added here and updated in the database.



4. A PARKA™ RFID vehicle tag is affixed to each vehicle in the parking compound. The tag is assigned to its respective vehicle in the database using the HandyScanna™ device.



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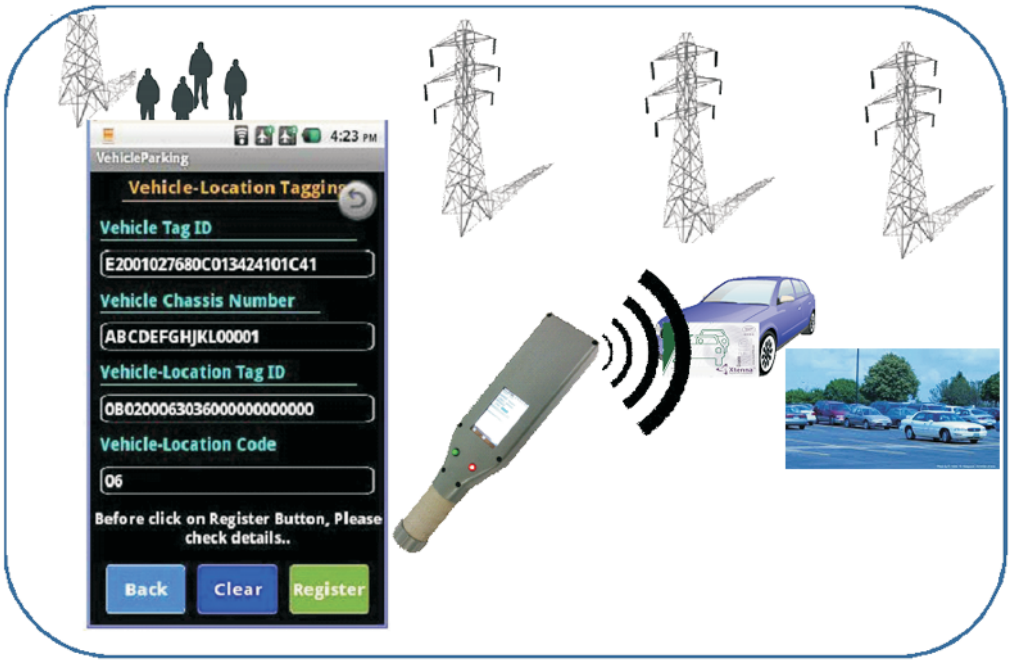
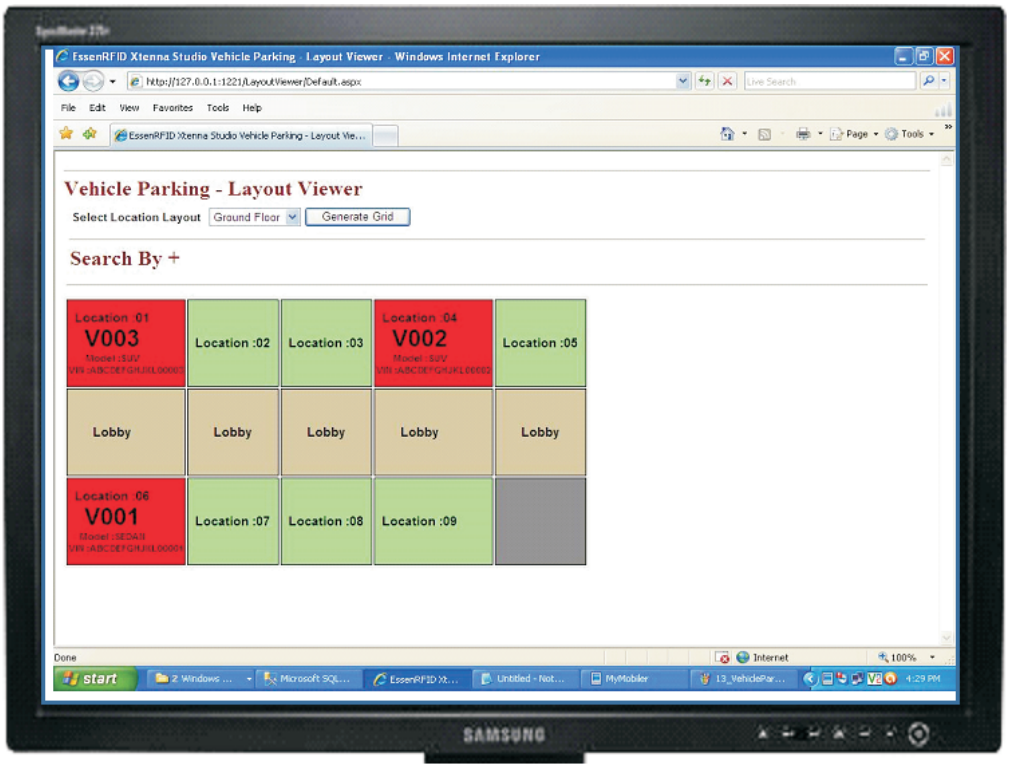
5. Each vehicle is allotted a particular parking location within the premises. Through the Parking application, the vehicle's tag ID is mapped to the parking location allocated to it, using the HandyScanna™ device.



6. Company personnel can easily identify vehicles parked at their respective assigned locations within the premises with a single glace at the Vehicle Parking Layout Viewer screen.



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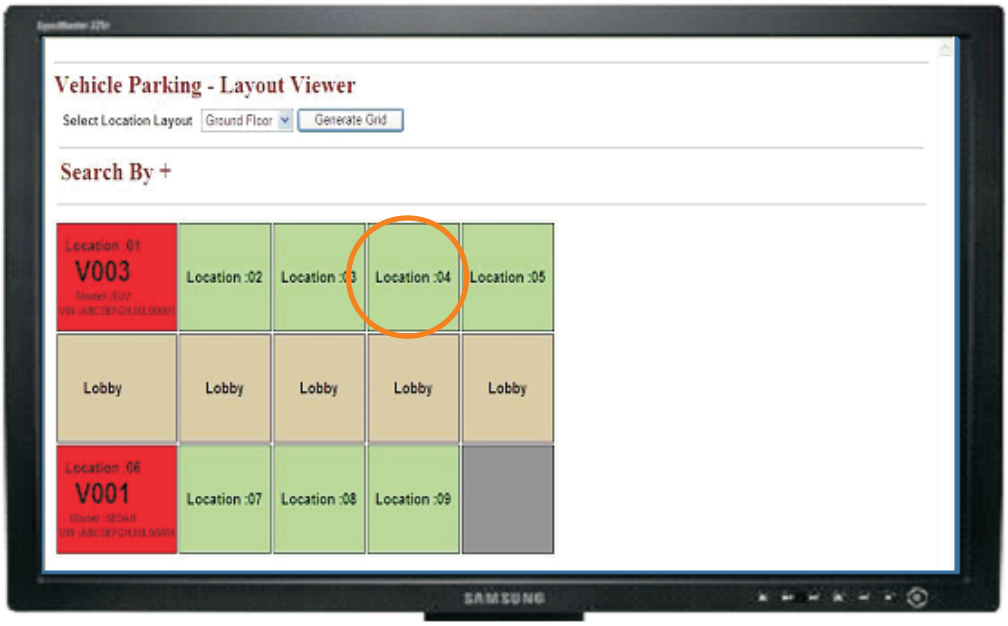
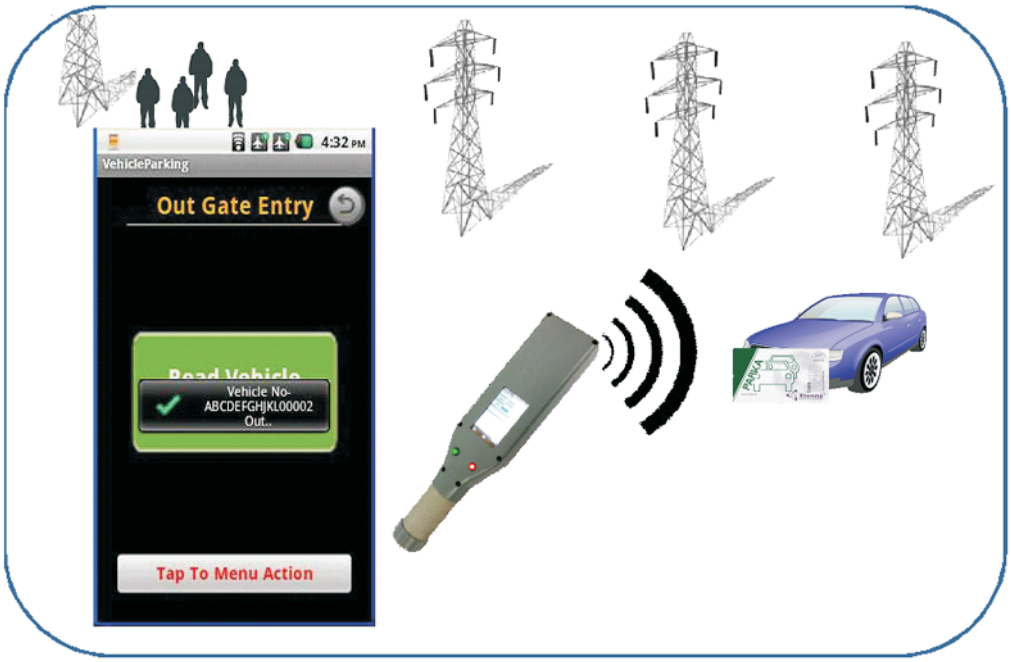
7. Company personnel can now monitor the presence of each vehicle in the premises with automated logging of vehicle ID whenever it is taken out for test drives or cleaning and maintenance. The Parking Layout Viewer indicates that the vehicle is not currently in its parking location.



8. When the vehicle is sold, the system automatically de-assigns the vehicle from its parking location when the vehicle moves out of the premises. The parking location can now be assigned to a new arriving vehicle.



9. The application manages all vehicle IN and OUT transactions in the system and retains a vehicle and parking location history in the database.

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BENEFITS:

- Accurate vehicle identification and easy tracking of each vehicle within the parking compound.
- Enables contactless operation with minimum line of sight requirement as compared with earlier systems.
- Overview of entire parking compound locations in the Parking Layout Viewer.
- Enables design of system parking layout identical to real parking locations available at the premises.
- Instant vehicle and parking availability data available in real time.
- Minimization of manual entry work and savings in manpower.
- Efficiency at all working levels of the company - management, accounting and sales - due to automated logging and real time status availability.
- Accurate and timely vehicle data enables efficient import scheduling.
- Automated report generation and history record maintenance.

LINKS:

Hardware:

Xtenna Proximity™

Handy™ Scanna

Tags:

PARKA™

METALLICA™

Software:

Xtenna WebToolkit™

Xtenna Studio™

Reference Example:

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