Trolley Scan (Pty) Ltd

TROLLEYPONDER/ECOTAG/RADAR RFID Newsletter #95

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Your latest copy of our regular newsletter keeping you up to date with developments.

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1. Linking Android tablets to RFID readers

Recently Trolley Scan were approached to deliver a solution by a refuse collection service which needed to monitor the exact location of their wheelie bins and provide information such as weight of refuse collected, exact location of the bin and time and date on an automated basis.

The intention is to fit each of the wheelie bins (about 300 000) with a transponder in the lip of the bin, and have a reader on top of the compacting vehicle that would read the identity of the transponder as the contents of the bin were tipped into the compactor. A load cell would also be fitted on the lifting mechanism to measure the mass of the each bin as it is picked up and dropped off.

Using a standard long range EcoTag RFID reader from Trolley Scan and standard EcoTag RFID transponders, the RFID part of the project is easy to implement.

This is a data gathering application and an onboard computer is needed in each vehicle to determine the exact GPS position of the lift, the identity of the bin, the mass of the bin, the date and time and route number. All this information needs to be logged for future analysis and transferred to HQ either at the end of the route or via 3G during the route.

The development of the Android based tablet has delivered some hardware that can drastically simplify the solution. The Android operating system connects modules inside tablets together. Typical modules that the operating system handles are GPS receivers, accelerometers, compass, WiFi, Bluetooth, 3G, USB ports, cameras, displays and keyboards. Due to mass production these devices have become very cheap costing between US$100 and US$200 for a 10 inch display.

There is also a lot of recent development in programming languages for these devices allowing

programs to be created that easily gather data from the sensors and save the information and generate reports.

The negatives of using mass produced cheap tablets for a project that would have a long operating life are:

1) The production cycle of the tablets is short before new generations of equipment are released with newer operating systems which means problems with repair, spare parts and compatibility with software in future versions.
2) Currently the Android operating system is going through fast development with new versions being released frequently. The new versions do not seem to be compatible completely with the hardware of earlier versions. This means that often one will not be able to upgrade the operating system with existing hardware as developments happen.
3) The tablet itself is not necessarily rugged enough to cater with the operating environment inside a truck.
4) New modules for control by the Android operating system are being added all the time. At present the latest versions of Android can handle serial communications only via a specific RS232/USB adapter.

The advantages of using the cheap tablets are:

1) A complete package with an extensive range of sophisticated modules that are incorporated into the tablets, such as GPS sensors, WiFi, 3G.
2) It has a large display for man-machine interface.
3) It operates on low voltage using little power that makes it suitable for operating from the truck battery.
4) That programming languages have been developed for the android package to allow simple programming of the modules to easily extract the measurement data from the sensors.

Not all android tablets are the same as although they might have similar sensors, the physical packaging is often different - for example whether the antennas are internal to the tablet or an external antenna can be used.

There seems to be a lot of potential for using cheap Android based tablets as data collection platforms in automated data collection projects where RFID systems are used. The version we have been using for development has an external GPS antenna which can be mounted on the roof of the compactor to accurately position the vehicle and the bin locations when being emptied.

2. Product range

Trolley Scan are a manufacturer of UHF RFID systems. Trolley Scan manufacture fixed readers, portable readers and RFID-radar systems (Real Time Locating systems that give accurate position information) as well as a variety of transponders for different applications. Transponders come in the form of passive transponders with operating ranges up to 20 metres and battery assisted transponders with an operating range up to 40 metres. Trolley Scan also combine some of these components into packages for end users which are supplied with the appropriate software. Typical applications are asset management, notebook tracking, equipment barriers, store control, sheep and cattle tracking, event logging and sports timing systems.

Trolley Scan have been delivering their RFID solutions for the past 15 years and offer full support for all their equipment.

3. Getting your own complete RFID/radar system

You can order RFID systems or RFID-radar systems from Trolleyscan.com

Trolley Scan provide small RFID reader systems which give new users the ability to evaluate UHF RFID and their applications without needing specialised skills.

Trolley Scan provide a variety of easy starter systems for first time users who have an application that needs a solution. Typical packages are :
? Standard UHF long range readers with antennas and 100 transponders
? RFID-radar system comprising long range reader, antennas and a variety of different transponders.
? RFID-asset tracking systems comprising portable reader, antenna and a variety of transponders with software.
? RFID-notebook/laptop tracking system comprising reader, antennas, transponders and software

In addition components such as readers and transponders are available

These systems are already operating in 52 countries.

To find out details of the systems and to order see http://trolleyscan.com/