School bus tracking the technology behind better safety and monitoring

Technology driven ‘smart tools’ are empowering educators to deal more effectively with a wide range of issues including student safety. A noteworthy example is the deployment of location based service technology to improve the safety of school buses.

School bus tracking, built upon location-based service technology, is gaining traction across India as a non-intrusive yet complete service for fleet operators to keep track of the buses they operate on behalf of different schools and institutions. It is fast demonstrating that the investments made, more than repay themselves in improved school and parent satisfaction, loyalty and referrals.

So, how does it work?

School bus tracking uses location-based service technology, enabled by machine-to-machine (M2M) communications, also known as the Internet of Things (IoT), to automatically track vehicles. The technology relies on two key items to work properly: the quality of the connection, and the integrity of the device and the software platform that processes the location data to provide real-time updates.

The components of a school bus tracking service

1. **In-vehicle tracking unit**

   This is a transmitting device, mounted on or inside the vehicle, which constantly collects and transmits information about its location. It therefore requires a long battery life (or must be able to use the vehicle’s power source), and must be both secure and tamperproof to ensure all data transmitted is accurate. Easy to retro-fit onto the school bus, the device runs continuously to relay a constant stream of data on its location, speed and status to the online management and administrative portal.

2. **The network**

   The data that is collected by the in-vehicle tracking unit then needs to be transmitted and analysed. Two main types of transmission methods can be used to send location data from the bus: satellite or mobile networks. Satellite technologies are reliable but can become expensive. With reliable 3G networks now available across almost all major cities, today, it is both cheaper and more effective for data transmission from the in-vehicle device to servers for analysis.

3. **Management and administrative portal**

   The management and administrative platform is the third component of the solution. It comprises analytics that compares the real-time data from the school bus against pre-agreed routes and times that have been set by the fleet co-ordinator.

   Sophisticated software is able to process the information at very high speeds to give constant visibility of the buses’ location, speed and progress. Based on the parameters that have been agreed, if there is any deviation from the route, timetable or any stops that are not at pre-designated bus stops, an alert is triggered to enable action to be taken.
The front-end of this system is a management and administrative portal which is easily accessible via a web browser or in some cases a smartphone app.

A top of the line solution offers a customisable menu of features like real time tracking; route replay; geo-fencing, parent alerts, over-speeding alerts and more. It can be upgraded to include options like access card and live image capture. Managed solutions are scalable, future proof and work on a pay-as-you-go model.

A no-snags commute requires transparency, communication and control. Managed school bus tracking solutions from a reputed service provider like Tata Docomo Business Services empower schools and fleet operators with all three. This turns the school commute into a fun filled journey for kids and a worry-free service for parents, schools and operators alike.