Transport Telematics

The application of modern information and communications technologies in a transportation management system. It involves the collection, transmission, reception, storage, analysis and presentation in a useful way of traffic related data usually in real time.

Three points where travel and transportation information is typically accessed and used:

- Pre-trip
- Enroute
- End Point

These are covered as follows:

A. Pre-Trip Applications

Mostly done via the internet but also by use of GSM and other mobile phone technologies.

- Route maps and route planning services downloaded from sites such as www.theaa.ie

- Pre-booking and prepayment of flights, ferry crossings, train & bus tickets, accommodation, parking, events etc

- Checking international border locations, restrictions, procedures, documentation requirements etc.

- Checking other people's experiences of different options for a trip on blog sites etc.

- Informing interested parties of the planned itinerary.

B. Enroute

Depends on external signs and in-vehicle devices including GSM, GPRS and GPS systems.

- Real time traffic & weather updates including accident reports via dedicated radio channels, sat-nav, VMS signs on motorways and handheld systems e.g. Palm and other PDAs

- Route management – distances travelled, fuel consumed, fuel efficiency achieved, time elapsed, current location, diversions, ETA etc via in-car GPS sat-nav systems

- Real time bus, train and flight arrival and departure data sent to mobile phones or VMS signs e.g. DART stations

- Real time direct verbal and text communications via GSM phones – delays, changes, confirmations

- Traffic management systems – SCATS for traffic lights, priority systems for public transport at junctions, LPR systems advising of journey times between set points on a route, monitoring speeds, vehicle types using dedicated lanes etc.

- HGV fleet management uses all of these and more to improve operational efficiency including RFID tags on individual packages, drivers, and vehicles.

- Tolling systems use RFID tags to identify vehicles instead of LPR and charging accounts or monitoring payment of charges e.g. London's Congestion Charge. These same tags are also used to pay for off-street parking in participating locations.

- GPS systems in fleets or individual vehicles allow independent monitoring of progress and alerting of deviations from expected routes. This is important for cash in transit or other high value cargos but is also used to find private cars that may have been stolen

- Some cars are now being fitted with behaviour monitoring systems including accident prevention systems that detect any erratic behaviour of the car or of its distance from objects in front and they can over-ride driver behaviour, slow vehicles tighten seat belts etc.

C. End Point

As motorists approach their ultimate destination on a trip they can be provided with critical data for decision making.

- Local traffic congestion including road closures, diversions etc are available via GSM systems

- VMS and similar systems advise motorists of space availability in selected districts e.g. on Northside or Southside of Dublin city centre or in specified participating off-street car parks.

- Paying for parking is possible using various GSM systems e.g. M-Park, Park by Phone or a number of in-car P&D units.

- Other payment options include credit or debit cards, smart cards, electronic purses

- Inside car parks modern technologies allow monitoring of individual parking spaces and the communication of this to inbound drivers via VMS to minimise search times and distances.

- A number of cars are now fitted with systems that will automatically parallel park a vehicle or assist the driver to parallel park.

Discussion

The recent introduction of economical sat-nav systems for use in private cars has highlighted the potential to provide driver related services via satellite navigation systems (GPS/GNSS).

Vehicle Tracking: Commercial fleet managers use vehicle Telematics not only to monitor behaviour and locations but also critical system performance e.g. engine, brakes, lights and act as a virtual speed camera.

Safety Information: Some advocates of vehicle telematics hope to see the technology reduce and eventually eliminate most road accidents and traffic related injuries and deaths. Local area radio networks are used to update motorists on local traffic and accidents.

Some insurance companies are offering young drivers reduced premiums if they agree to take a driver training course and have a monitoring device fitted in their car for a year. This device will advise the insurance company of speeding or similar behaviour by the vehicle.

These technologies are going to pervade national fleets over the next decade. It is not difficult to imagine several unintended consequences including automatic GPS speed compliance monitoring of all vehicles.

Can you see transport telematics playing an innovative role in sustainable mobility planning, in demand management schemes, in environmental traffic planning schemes, in mobility plans?