IT innovations reshaping the retail supply chain

Supply chain technology continues to develop apace. Simon Jack explores its potential to control key areas of retailers' logistics operations

A new generation of in-cab mobile devices, which can be used for a variety of purposes, is offering retailers the chance to control their distribution fleets much more effectively.

Specially-adapted Android and iOS-based tablets and phones are increasingly being utilised for managing areas such as telematics, navigation, CCTV recording, communications between the warehouse and driver, proof of delivery and vehicle safety checks.

But while parcel carriers have led the way in this area, retailers are now waking up to the possibilities as well.

Stephen Watson, director of product at telematics firm Microlise, says that in the past many retailers found they could not make the argument stack up for in-cab communications, which relied on heavier, brick-shaped hand-held computers. "Previously the hardware was expensive and in some cases justifying the business case was difficult. The emergence of iOS and Android devices lit a fire," he says.

In December, Morrisons revealed it had fitted telematics into 545 delivery vehicles. The system measures drivers' performance and reduces fuel consumption, but the in-cab device is also used for two-way messaging, supervising vehicle checks and, in future, will provide guided routes for drivers to follow.

There are countless uses for such technology, according to Andrew Hutson, product director at telematics firm Isotrak. These can include asking the driver whether they are feeling fit and well, asking them to carry out visual checks by walking around the vehicle, informing them of what jobs they are doing and providing them with routes. As the day progresses the system can update them about any new developments. "It can be used to guide the driver through their day safely and efficiently," he says.

HOME DELIVERY HELP

Having real-time information about schedules is particularly important for home deliveries. B&Q has installed a telematics system from Microlise on 185 vehicles that, as well as reducing fuel consumption, can monitor the status of deliveries against a schedule in real-time as each journey unfolds and take action if things are not going to plan.

Chris Blogg, B&Q's store delivery network manager, explains: "This will enable us to make significant savings while improving the precision with which we can track our home delivery vehicles."

B&Q is also linking forward-facing cameras to the system, which can analyse what was happening 30 seconds before and after any incident, and can download tachograph data to ensure it is compliant with driver hours regulations.

The ability to plan back-hauling loads (vehicles that pick up goods on their return journeys) is one of the most important benefits of improved communications with the cab, according to Liam McElroy, managing director of retail at Wincanton.

The company has created a software product called Winsight to provide visibility of where vehicles are, which can be used on behalf of clients such as Screwfix.

"It gives you a real-time view of where the

B&Q has installed a telematics system from Microlise (pictured left) on 185 vehicles that can monitor the status of deliveries against a schedule in real-time

driver is and where the possible collections are," he says.

Emile Naus, technical director of logistics consultancy LCP Consulting, believes that another significant advantage is improved management of temporary drivers and sub-contractors, who can be provided with a device or told to download certain apps, which will guide their operations. "If you have the ability to do that it creates a lot of flexibility during the peaks," he says.

As well as improving technology out on the road, advances are being made in routeing and scheduling software to plan and control vehicle movements.

Often retailers with regular patterns of delivery produce fixed schedules which are updated or re-planned every few weeks or months. This is the approach taken by Pets At Home for its in-house fleet of 40 trucks and 100 trailers. The company uses software from Paragon Software Systems to produce a new schedule for store deliveries every six to eight weeks which is then fine-tuned during that period.

"We use Paragon to produce a base plan but our own scheduling team then take it from there," Pets At Home head of distribution Terry Siddle explains.

In grocery retailing, however, there are much more complex patterns and users will update their schedules daily and sometimes readjust them further during the day.

Such software is constantly being enhanced and Paragon – which has a client list that includes Asda, Harrods, Sainsbury's, John Lewis, Tesco and Morrisons – has introduced a route control system that provides new routes if restrictions, such as the HGV-restricted zones specified by the London Lorry Control

Scheme, are identified. A calendar of events, including major sporting occasions, can be added into the system, which uses a selection of smart maps that can take into account street-level information down to minor residential streets to provide accurate timings.

Paragon managing director William Salter comments: "There is a lot of pressure on retailers operating in urban areas and our clients wanted something to enable them to avoid particular routes at certain times and avoid falling foul of the regulations."

Paul Dawsey, a director at Mapmechanics, which produces the Truckstops routeing and scheduling system, believes that retailers and their logistics providers can save large amounts of management time spent creating transport plans. "It can minimise the number of vehicles required to achieve the same workload, while saving miles and fuel costs," he says.

Maximising efficiency of distribution centres

As well as helping to manage transport, IT systems are being used to make distribution centres operate more efficiently.

Sometimes this is possible using an integrated business management system that also manages other functions. This is the case at Jigsaw, which uses Microsoft Dynamics across its business. The system will allocate the initial amount of stock for new lines which is then picked by warehouse operatives using hand-held terminals connected to the system and delivered on the company's in-house fleet.

Jigsaw group business systems and IT director Paul Owers explains: "It controls everything through to despatch and sale of the product. Picking and replenishment is one module of it."

However, many firms use standalone warehouse management systems. Pets At Home completed installation of a new system from supply chain software firm JDA at its distribution sites in Northampton and Stoke last year.

The basic functions of putting away incoming stock and picking store orders are in place, but head of distribution Terry Siddle says extra processes that will improve interaction with suppliers and fine-tune store deliveries will follow, including arranging store deliveries so that they are easier to unpack.

"We are starting a two to three year development journey that will allow us to ship more cases at less cost," he says. "It should help us to optimise space and operate a condensed amount of stock from the same distribution centre footprint."

Using data to optimise supply chain management

Geographic Information Systems (GIS), which capture and analyse large amounts of data, have the potential to greatly improve management of retailers' supply chains, according to Simon Weaver, analytics programme manager at GIS firm Esri UK.

He believes such systems could be used in both inbound and outbound distribution – for example taking into account a range of factors, such as the size and weight of loads and potential emissions, to decide on the correct mode of transport.

It is also possible to plan for geo-political and environmental factors. "You can analyse risks and

look at where future problems might be, allowing you to examine contingency plans and alternative routes," he says.

Real-time data about traffic and the weather can be used to judge journey times and geo-fences – which sound alarms if vehicles are in the wrong place or their journey time is falling behind – can alert companies to any problems on a particular day and identify where regular delays are occurring.

"The right information can then be provided for the key decision-makers. GIS is very effective in focusing on what the individual needs," Weaver says.