IBM has taken a significant step toward delivering the business benefits of mobile logistics control with its Intelligent Transport Strategy. Key to the success of this strategy is the marriage of three world-leading technology solutions from Microlise, Intermec and IBM. For the first time, logistics providers have a scaleable solution by which they can integrate accurate, reliable data from the field with other business processes with minimum human intervention, giving management a complete real-time picture of operations and full control of the logistics chain.

The Intelligent Transport Strategy breakthrough comes with the combination of Microlise’s Fleet & Distribution solution, advanced RFID tagging and mobile tag-reader technology from Intermec, and WebSphere® Business Integration (WBI) and MQ Telemetry Transport (MQtt) from IBM. Individually powerful, these solutions together turn a delivery vehicle into a mobile logistics centre, forming part of a highly transparent, versatile and scaleable distribution operations network.
**Transparent and non-intrusive**
RFID, a form of auto ID technology, is increasingly finding favour as a transparent and non-intrusive means of tracking goods and their containers such as tote bins, dollies, roll cages and pallets. Unlike barcodes, RFID tags do not require a clear line of sight between label and reader, and therefore are more versatile as a means of monitoring and updating information from the logistics chain. Operator intervention is only required if the system detects an error (e.g. incorrect goods being picked up or loaded onto the incorrect transport vehicle).

Microlise, a specialist in systems integration, has developed its warehouse and mobile logistics capability over more than 20 years. The integrated Microlise Fleet & Distribution solution monitors the operation of a vehicle, typically confirming its location against a delivery schedule and validating what goods and re-usable transport assets are collected and delivered, to obtain proof of delivery and collection.

Consequently at any point, the delivery operations staff know what is on the vehicle and where it is, based upon a planned delivery schedule.

**Independent of human intervention**
Electronic transport and delivery management solutions have emerged to supersede the often manually intensive paper trail that traditionally accompanies collection and delivery operations. RFID technology has enabled such systems to go one step further by eliminating most of the remaining manual validation in the process, such as barcode scanning. Because RFID does not require line of sight, assets and items can be validated faster, further reducing the time taken to unload and load a delivery vehicle.

Such applications of RFID have previously tended to be fixed installations on the dock doors of each warehouse and delivery point, recording goods as they pass through. While typically reducing labour effort and cycle times, this approach can be prohibitively expensive, depending upon the number of dock doors to be fitted, and can introduce technical problems of radio interference between units, leading to inaccurate tag reading.

The Microlise answer is to equip delivery vehicles rather than dock doors with RFID readers. The RFID Trailer Portal solution, the world’s first mobile RFID system using standard ultra-high-frequency (UHF) technology and components, dramatically reduces capital investment on a RFID solution, and allows RFID technology to be integrated along the supply chain within multiple customer and supplier companies. By RFID-enabling the vehicle, proof of delivery or collection can be provided for any destination. This also addresses the common situations of multiple clients and many more distribution and delivery destinations than vehicles in the delivery fleet.

**Designed for industrial environments**
Microlise has teamed with Intermec whose IV7 Intellitag Vehicle Mount RFID reader is its first packaged vehicle-mounted system. The IV7 is designed to perform in harsh, industrial environments and is sealed to IP65 ratings.

The Microlise RFID Trailer Portal consists of an array of specialist RFID antennas linked to the Intermec reader and Microlise’s In-Vehicle Computer product. Antenna arrays can be installed overhead, on the floor or at the sides of the trailer doors, depending on the location of the RFID tags on the roll cage or other re-usable transport assets (RTA) such as pallets or totes. The unique design of the antenna array coupled with Microlise’s specialist software enables the user to determine if the RTA is being loaded or unloaded from the vehicle.

Scaleability and flexibility come from the IBM middleware at the heart of the solution. IBM has developed an MQ derivative designed to work in mobile environments where memory and bandwidth are scarce resources. The IBM WebSphere MQtt solution and MQ Broker provide an ‘enterprise strength’ basis for communication with a large number of remote vehicles and readers.
Tagged Object Domain

Antenna and Reader Domain

Edge Domain

Premises Domain

Business Process Integration Domain

Enterprise and Business Application Domain

GPS satellite tracking

Optional mobile data reader

IBM WBI (ICS) with SAP* Adapter

SAP*

Tagged pallets, cages, boxes

Intermec IV7 RFID Reader

Microlise IVC

MQ Broker

Data

SAP* Idocs

RFID Reader Device Management

* Example ERP system
This also allows flexible integration with multiple host management and legacy systems via a single infrastructure. Such systems include SAP, which would typically generate the original delivery requirements in terms of orders, WMS picks and manifests, as well as, for example, linking into Microlise transport management and execution tools (including Web-enabled maps, traffic sheets and reports), which manage the delivery scheduling and execution via the RFID Trailer Portal-enabled fleet.

The IBM/Microlise integrated solution, which brings extensive IBM industry knowledge to the table, also utilises IBM’s WBI, giving a scaleable, flexible enterprise integration solution. This introduces the availability of a number of enterprise adaptors for a variety of ERP applications (e.g. SAP) and legacy systems. The use of commercial off-the-shelf (COTS) software components also means a lower total cost of ownership through reduced development and maintenance.

**Evolving with RFID standards**

With RFID standards continuing to evolve, logistics providers need multiprotocol reading capability if they are implementing RFID in an open supply chain. When fully equipped, the IV7 Intellitag Vehicle Mount RFID reader can read multiple air interface protocols, even in mixed populations of tags, including EPC UHF Generation 2 (Gen 2), ISO 18000 6-b and EPC Class 1.

The winning combination of Intermec, Microlise and IBM offers advanced technology for integrating each link of the logistics chain. It turns the delivery vehicle into a mobile logistics centre with the ability to deliver and collect from any location, and provide realtime tracking and validated collection and delivery data of both goods and the often valuable reusable transport assets themselves. This unobtrusive and flexible application of technology offers great scaleability to the enterprise and a crucial competitive advantage.