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Parcel carrier collaboration

Fraser MacLean, Fraser McLeod and Oliver Bates analyse whether big cities can learn from small communities.

With rapid growth in e-commerce, parcel carriers face increasing performance challenges due to stricter access regulations in cities and ever diminishing kerbside space availability. This is leading to interest in how carriers may collaborate to better negotiate the last mile.

The Scottish Highlands and Islands present a distinctly different logistics challenge from the delivery issues faced by carriers serving major urban conurbations. With a low population density (1.6% of the UK population living in 22% of the UK by area), difficult terrain (hills, single track roads, sea crossings) and road congestion during the summer tourist season, delivery trips to serve some 89 islands and rural communities can be arduous and time-consuming. Low delivery volumes (1% of the total domestic parcels volume) and infrequent ferry crossings to some of the smaller islands mean next-day delivery cannot be guaranteed and have longer delivery lead-times compared to operations on the mainland. Although delivery volumes are low, they are

strategically important to national carriers in providing the nationwide service that retailers expect. The key issue is that it would be too costly for national carriers to provide their own, unconsolidated delivery coverage across the region, so they typically subcontract to regional operators. The main company providing consolidated deliveries in Scotland is Menzies Distribution, with support from smaller regional carriers covering some of the islands. As part of the EPSRC-funded Freight Traffic Control 2050 project¹ investigating innovation in last mile parcel delivery operations, a process audit was undertaken of Menzies Distribution's operation out of Inverness to understand the key components of the system and to evaluate whether there are lessons to be learned for parcel operations in other parts of the UK.

Neutral consolidation

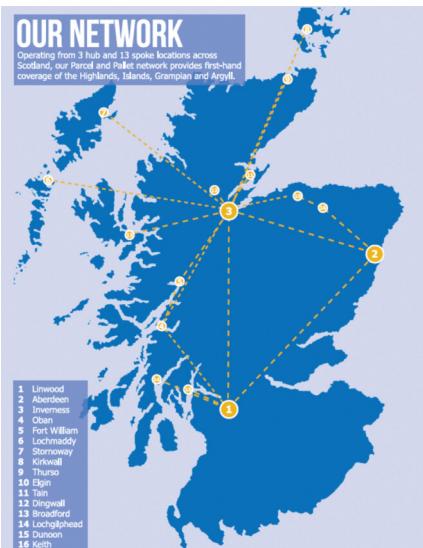
A key operating principle for Menzies Distribution is to be seen as a neutral consolidator, or 'carrier's carrier', using its own vehicle livery and not that of the

national carriers it works for, including APC, Aspray24, DHL, DPD, DX, FedEx/TNT, ParcelForce, Tuffnells, UK Mail, UPS, XDP and Yodel. This is perceived as important to these national carriers; having parcels carried on Menzies vans is acceptable, whereas the vans of direct competitors would not be. Reducing costs is the key motivation for this consolidation; it is estimated that it would cost the national carriers approximately four to five times as much to provide their own logistics to cover delivery across the Highlands and Islands.

Scope of the operation

Menzies Distribution covers the whole of the Highlands, Islands, Grampian and Argyll, using its hub-and-spoke network, with hubs at Aberdeen, Inverness and Linwood and depots at Oban, Fort William, Lochmaddy (North Uist), Stornoway (Lewis & Harris), Kirkwall (Orkney), Thurso, Elgin, Keith, Dingwall, Tain, Broadford (Skye), Lochgilphead and Dunoon – see Figure 1. The road network in the Highlands and Islands is relatively sparse, with 8,733 miles of road, 810 miles of which are trunk roads (no motorways), representing 25% of the total Scottish road network or 3.75% of the UK road network.²

For increased efficiency and to generate sufficient volumes, miscellaneous packaged and unpackaged items are →



Menzies Distribution's hub-and-spoke network serving the north of Scotland

Figure 1

→ carried together on the same vehicles, with some goods being carried on pallets. Menzies also provides its own local courier services to individuals and businesses. There is roughly a 50/50 split of work between business-to-business (B2B) and business-to-consumer (B2C) with the drop density of B2B allowing B2C to become cheaper as it fills the vans. B2C work has grown quickly in recent years, with B2B being more seasonal in nature – for example, to hotels in summer months. The Inverness hub deals with around 12,000–13,000 parcels a day, arriving on around 16 vehicles (box trailers, rigid and vans) from the various carriers where a team of around 40 employees (warehouse staff, drivers, managers and the operations team) oversee the load consolidation and onward delivery. Collections on behalf of the carriers are also made by Menzies and comprise between 5% and 10% of the total parcel volume.

The total vehicle fleet serving the Highlands, Islands, Grampians and Argyll is around 150 vans, based at the various hubs and depots, including subcontractor vehicles and spare vehicles, with 25 vans based at Inverness. The average annual mileage is around 42,000 (ranging from 15,000 to 70,000 miles a year) with vehicles rotated to spread mileage. All vehicles are currently diesel fuelled, although Menzies is interested in using some electric vehicles in the future, dependent on innovations to increase payload and the wider provision of charging points across the network.

The Menzies operation in Scotland has been growing, with the acquisition of three regional carriers since 2015: AJG Parcels, acquired in June 2015; Oban Express, November 2015; and Thistle Couriers, acquired February 2016.

Tracking technology and IT systems

The Menzies operation has become more sophisticated in recent years, responding to demands from carriers and their customers for parcel tracking, expected times of arrival, proof of delivery (with some carrier's requiring photographic evidence) and other information. Integration of the IT used by Menzies with the carriers bespoke systems has been the key to the success of this carrier's carrier operation. System integration can be problematic, due to the legacy systems involved and the individual security requirements associated with managing the data from each carriers operation which has required significant time commitment and effort from all parties to overcome. The Menzies IT system – see Figure 2 – was largely developed in-house and has two core components:

- **Parcel Manager** – interfacing with carriers and providing the back-end for tracking parcels and a front-end view of the operations of parcels and drivers



Single scanner used for all carriers

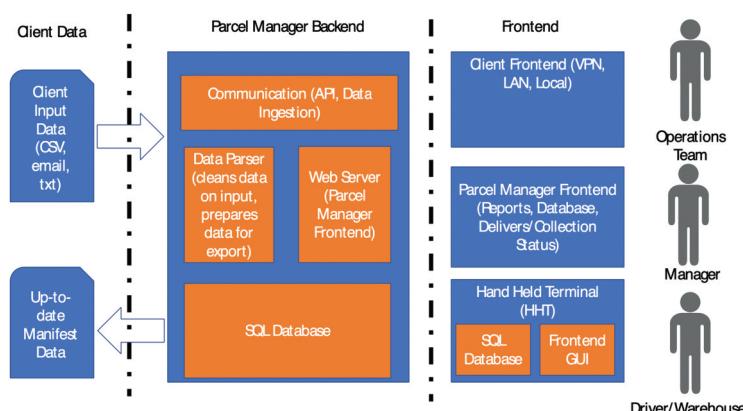
- Hand Held Terminal – software designed on Windows Mobile to allow drivers and warehouse workers to use one scanner for all the different carriers to send parcel status updates to the relevant carrier.

Carriers typically do not provide Menzies with advance parcel information, which precludes any pre-allocation of items to vehicles. Parcels are scanned as they arrive and grouped into pre-specified postcode areas for subsequent loading on to vehicles. The ability to use a single scanner for delivery is the real key to success and significantly reduces the time and inconvenience associated with swapping between different devices. It should be noted that it took time for Menzies to grow into the service provided today, with carriers gradually gaining confidence in their IT systems capabilities, allowing them to integrate and collaborate with ease.

General applicability of the carrier's carrier model

One carrier delivering on behalf of another is highly suited to sparsely populated regions where parcel volumes are relatively low and driving distances relatively high, due to the difficulty and costs involved. Conversely, and perhaps surprisingly, the business model may also be appropriate in densely populated urban areas. In this case, the main difficulties include:

- High levels of road congestion affecting the time taken to deliver and overall reliability of service, which is a specific concern for premium services where items have to be delivered by a stated time
- Restricted access and parking making it difficult to get close to the delivery address and with the risk of receiving a penalty charge notice; in a separate



Menzies Distribution's IT system overview

Figure 2

study, the FTC2050 project team found that parcel delivery vans in London are parked for 62% of the total round time, while the driver walks 8km during a typical round – see Table 1

- Other charges that may be incurred – for example, the congestion charge and T-charge in London

With more than 40 UK towns and cities having exceeded air pollution limits set by the World Health Organisation³, city authorities are under increasing pressure to take action to improve air quality. In 2015, Birmingham, Derby, Leeds, Nottingham and Southampton were identified by DEFRA as having breached legal limits for air quality, leading to the planned introduction of Clean Air Zones by 2020 and the use of ultra-low emission vehicles.⁴ It seems likely that in the near future, more cities will introduce charges for the most polluting vehicles and that freight operators will be affected either through incurring these charges or through updating their vehicle fleets to meet specified emissions standards. These added costs and difficulties in meeting service requirements may act as drivers towards more consolidation in the industry.

	Including stem	Excluding stem
Round duration	7.3 hours	6.3 hours
Parked duration (proportion of time)	62%	73%
Distance driven	23.8km	11.9km
Driving speed	3.6km/h	2.3km/h
Items delivered + collected	118 + 8	
Addresses visited	72	
Parking places	37	
Distance walked	8km	

As part of the FTC2050 project, a detailed study of 25 vehicle rounds of two parcel carriers operating in the West End of London (postcode areas WC1, WC2 and WI) gave the above average statistics for the daily activity of one vehicle/.driver

Parcel vehicle round statistics in London

Table 1

'The Scottish Highlands and Islands present a distinctly different logistics challenge from the delivery issues faced by carriers serving major urban conurbations.'

Gnewt electric van operating in London



An existing example of consolidation in an urban setting is provided by the parcel carrier Gnewt in central London, that, coincidentally, became part of Menzies Distribution in September 2017. It is a carrier's carrier, based four miles from the City of London at Bromley-by-Bow, using an all-electric vehicle fleet. Its proximity to central London and not having to pay the London congestion charge attracts larger carriers to employ its services. In future, with more cities introducing low-emission zones and/or congestion charges, carriers will be under increasing pressure to find cost-effective delivery solutions, which may result in more collaborative working like the Gnewt/Menzies examples. At present, though, collaboration in cities remains a relatively niche and small-scale market, with brand identity and fierce competition between carriers being barriers to implementation.

We consider the key elements for transferring the carrier's carrier concept to other parts of the country to be:

- Developing a unified system based around common data – for example, barcodes, parcel status, proof of delivery – so that processes remain the same for the driver, irrespective of the carrier
- Building and maintaining trusted relationships with clients, carriers, and couriers
- Maintaining agility and flexibility in core operations; expect variation in loads, demand and delivery times

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