

# DRT SERVICES: just the 'emperor's new clothes or a viable solution?

Buses need to get passengers back on board and attract travellers away from other forms of transport. But it is proving to be a case of easier said than done, reports **Beate Kubitz**



## ABOUT THE AUTHOR

**Beate Kubitz** is a writer, researcher and consultant in new mobility. She is the author of the *Annual Survey of Mobility as a Service in the UK*, as well as reports on car clubs, bike-share, open data and transport innovation. She is director of policy and communications for TravelSpirit and previously worked for CoMoUK.

**D**emand-Responsive Transport (DRT) has become one of the buzz phrases of new mobility. Over the past five years, a number of schemes have trialled digital 'on-demand' buses – now referred to as DRT. They have variously been touted as the panacea to reverse declining bus ridership and decried as the emperor's new clothes – dial-a-ride services dusted with digital glitter.

What everyone agrees on is that they are hard to make profitable.

While a lot has been learned through trials, no DRT public transport model has proved to be self-sustaining through fares alone and most of the pilots have ended.

With this in mind, it's important to look at what led to the rise of DRT – and – as funding is directed at further trials through the Future Transport Zones and Rural Bus programmes – what continues to fuel interest in it.

Pilot projects have yet to become long-term services, but a lot has been learned that hints at eventually successful stable business models being established. Importantly though, those involved in the sector note that profits are not always the point.

Jonathan Hampson, UK Country Manager Partnership, ViaVan, says: "It's clear that good local public transport needs investment – and many local authorities support bus services with subsidies. The question is, what is the best investment? Is it a fixed route, demand responsive transport or even a blended model?"

This view is supported by Peter Hardy, Technical Director at ITS, who says: "DRT should not be seen as something that will be cheaper than conventional bus services – the costs may well be quite similar. However, DRT provides flexibility to better meet diverse demands or meet the needs of different user groups. In many cases, financial support/subsidy will be required for DRT, particularly in rural areas where distances are greater and needs more dispersed."

This debate is framed by the fall in bus ridership which has become an intractable problem – verging on a crisis – for public transport.

Reinventing buses to attract new riders has become critical to the survival of the bus industry. One dimension of the problem is that bus services no longer truly form networks. As rider numbers have declined, commercial services in some regions have been cut, reducing operations to the busiest corridors. Meanwhile, subsidised services that connect low density areas have been cut as local authorities respond to austerity – reducing the reach of services into ►

► communities and creating sparser timetables. A second issue is that (outside London) multiple operators often mean that fares and ticketing are overly complex and expensive for passengers. While bus use has declined, car dependency has accelerated.

National and local government policy-makers have long realised that any exodus from buses to the private car creates congestion, social and environmental issues that are insoluble without a change in behaviour.

Against this backdrop, DRT has become, in some people's eyes, the most obvious lever of change. It has the potential to create services that appeal to groups put off buses by previous poor experiences or limited services or who have not traditionally never used buses.

DRT has the potential to provide a better customer experience – combining the digital experience and 'in control' feeling of Uber – but at fixed bus fare prices. DRT is also loaded with expectations that it can simultaneously increase the size of bus networks, expand the catchment area and, therefore, the numbers of people who can access bus services, but without expensive investment in new routes.

The early digital on-demand services were very much 'learning projects' and took many forms. Slide Bristol, set up by RATP to trial a digital shared 'taxi-bus' model ran from 2016 to 2018. The service was set up to meet commuter demand from key neighbourhoods to employment areas. The mini-vans ran along set corridors with no fixed stops and passengers requested rides to fit with their schedule.

The first ArrivaClick DRT scheme was a 'corner-to-corner' scheme which operated minibuses across a set area of Sittingbourne in Kent. Passengers requested their journeys by app and would be picked up and set down on street corners rather than from one doorstep to another. The Sittingbourne project also ran for two years.

First Bristol's 'MyFirstMile' was set up to connect passengers in underserved residential areas to main bus corridors. Again, the passengers used an app to request a shared taxi which would shuttle them to the bus routes. It drew passengers from a relatively small area and dropped them at designated bus stops.

Then Ford Chariot came along – connecting areas in Greenwich with poor bus services by providing corridor-based routes bookable by app.

What they have in common is that they have little physical infrastructure (no paper timetables and only occasionally physical bus stops) and are organised digitally –



whether the passenger calls a call centre or uses an app to book a ride. This means that routes are devised by algorithms, with dynamic planning of pick-up and drop-off within parameters. Passenger pick-up and drop-off points, times and routes are communicated to the driver in real time through a driver app. The data gathered from passenger requests can be aggregated over time to plan service improvements or optimise vehicle numbers and driver shift patterns.

The other common thread, however, is that these services have all been withdrawn. Whether – as with Ford – deciding to change tack entirely or because (as in the other cases) profit levels weren't achieved and pilot funding came to an end.

Critics, like transport commentator Roger French, the former managing director of Brighton and Hove Bus Company, point to this lack of profitability as a major drawback.

He says: "It's the emperor's new clothes. We already have numerous flexible services – dial-a-ride and rural bus routes – that will divert to pick up or drop off passengers – that don't need expensive software to run. Adding DRT won't make an unprofitable route profitable."

Others are less dismissive. Hardy says: "Evidence shows that it is difficult to create a commercially-viable on-demand bus service. Again, this points to finding the most effective solution for each service. It is important for a service to seek to meet a variety of needs, rather than merely relying on one market segment."

"This could involve looking to integrate with other existing services, such as with a dial-a-ride service for older and disabled

▲ **ViaVan provides the technology behind pilot services such as Go-Coach in Sevenoaks and Tees Flex**

**52%**  
of ArrivaClick customers switched from private motor transport

people who are unable to use conventional public transport."

**SECOND GENERATION DRT**

Early DRT had to prove it could achieve multiple paradigm shifts at once. From proving to passengers that digital booking and payment would work and buses would turn up on demand, to managing flexible routes and training drivers with new skills. In addition, (largely) new vehicles were commissioned to give a better experience with Wi-Fi and nice seats. Passengers with conflicting requirements (e.g. needing a pram or wheelchair space) were accommodated through the booking process.

In addition, these schemes had to prove that they would tap into groups that were previously not using buses and expand the overall market rather than cannibalising other services' existing ridership.

This was clearly the case to some extent. For example, 52% of ArrivaClick customers switched from private motor transport. This comprised those who moved from taxis (22%); those who had driven their own car (18%) or those used to being a car passenger (12%). Some users migrated from other bus routes, but the new

customers do not seem to have switched in sufficient numbers to create pure 'for profit' services.

While disappointing, it should be borne in mind that travel behaviour changes infrequently and usually at major life stages. The option to change behaviour only occurs for a relatively small fraction of the population at any given time. Bus numbers have declined over many years, although there is evidence from the sustainable travel towns that you can influence what people do by just making them aware of it, such as personal journey planning.

**VIAVAN**

Via technology has been behind more than 100 DRT services worldwide. Pilots in the UK include three ArrivaClick projects, four Stagecoach trials and some smaller operator services such as the Go-Coach Sevenoaks service in Kent. In addition, it ran its own standalone shared taxi service across Zones 1 and 2 in central London (with an investment from Daimler AG) which was suspended during lockdown and is now 'on pause'.

These services are run by operators but using a white label app which enables passengers to book and pay for trips. Behind the app, Via algorithms route the buses and provide the drivers with routes, pick-up and drop-off information.

They have enabled bus operators to launch services without having to develop their own technology. The platform also allows operators to see where their customer base is, and where it wants to get to.

ViaVan's Hampson says: "With fixed routes, you don't know what you don't know. With DRT, you learn what routes people want and when."

Hampson sees DRT as a better way for operators to serve dispersed demand. It can provide services more tailored to where and when people want to travel but he agrees this isn't necessarily going to make an unprofitable route profitable.

Services like the Stagecoach-operated Tees Flex have been commissioned and funded by local authorities – in this case by the Tees Valley Mayor and Combined Authority. [1]

**HYPE OR CUSTOMER SERVICE?**

"I'm not against DRT, what annoys me is the hype," says ex-bus company MD French. He argues that DRT is nothing new. Services like the Wiltshire Wigglybus have been providing the 'on demand' experience for years (and without an expensive technology layer).

The service makes five-to-six journeys per day with fixed stops in five villages and up to 10 hamlets that the bus will divert

to 'on demand'. However, it is booked by phone and the driver rings the control centre before setting off to check which hamlets to call at.

This works for those who are used to phoning up (and who know about it). If you want people to consider using the bus, it has to be an attractive and reliable option and it has to be accessible to people who might use it. Using old technology appeals to a declining number of people – and generations brought up with iPhones expect a digital experience.

While fixed stops seem like certainty for some, being able to see a bus approaching you on an app is more reassuring for others.

The success of ArrivaClick in Sittingbourne to attract those previously travelling by car attests to the attractiveness of the service.

This does not change the fact that the economics of small DRT buses are different from fixed 'mass transit' routes.

Large buses along busy routes have their own set of economics with peak time income offsetting the limited fares taken during the off peak. The smaller vehicles of DRT need to be full throughout the day to be viable.

Paul Bunting, former managing director of

**SOURCES**

[1] tinyurl.com/y6yr546n

▼ **This ride-sharing service is powered by ViaVan in Berlin**

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JONATHAN HAMPSON, VIAVAN

Stagecoach, says: "Driver wages are the same hourly rate whether they are driving a large bus or a small one, and they form a large part of operational costs. With a double decker, you can carry so many people during the peak that running a few emptier buses in the off-peak is affordable even though your cost base during the off-peak is largely the same. With smaller vehicles you can't maximise your income during peak hours sufficiently to cover for off-peak passenger levels."

French agrees, saying: "The schemes which have a chance of succeeding are those that have a defined plan with a number of niche markets that will fill the bus throughout the day."

"Looking at Go Coach in Sevenoaks, the service has identified users for each of the slots in the day, from commuters booking to get to the station before 8am, contracts to provide special educational needs transport from 8.00am-9.30am to shopping trips for older people in conjunction with Age UK during the day – and then the reverse trips for each of those groups at the end of the day. This is the kind of market identification required to fill the vehicles sufficiently and utilise them enough."

The Go Coach service is ►





► supported by ViaVan technology. It also provides operators with the smoothest segue between DRT and fixed routes.

Hampson again: "Go Coach in Kent removed all its fixed routes during lockdown to provide a demand-responsive service across the entire service area. As demand has risen, the information from the DRT phase has been used to decide which fixed routes to reinstate first. The service is moving towards a combination of routes and on-demand. One of the useful things about the service is that passengers can see both fixed and DRT services in the app. Where fixed routes are quicker, they will be offered to the passenger."

**REINVENTING THE 'WORKS BUS'**

There is general agreement that second generation DRT will need to either provide a better service to diffuse settlements (while still requiring some support) or provide a very niche service.

French says: "Back in the day you would have bus operators with 'works contracts' with factories which were traditionally part of bus services. They fell out of favour as people bought cars. You still see them in some places – the Dounreay Nuclear Plant service is the core of the Stagecoach operation in the far north of Scotland and, without that and school services, there would be very little in the way of a bus network."

The modern – digital – equivalent has arisen as out-of-town businesses have found it difficult to recruit and retain a workforce able to travel potentially long distances and work to shift patterns.

**ZEELO**

Zeelo is a 'bus sharing' company which provides routes specific to workplaces that don't have good public transport links.

Its market generally consists of businesses in out-of-town business parks which might be quite disconnected but require a large workforce. Many such trading estates were envisaged as car-based. However, the volumes of cars can't be accommodated any more – either because there is not enough parking or because the cars create so much congestion that it interferes with the trading activity and logistics of the businesses.

Zeelo is not an operator in the traditional sense. It doesn't own its buses. Instead, it builds a service with the employer for the workforce and commissions coach operators to provide coaches on private hire to provide the buses to the timetable it specifies. It's more of a demand responsive service than an on-demand service.

Barney Williams, co-founder and CMO of Zeelo, says: "Our clients have specific demands and their users need certainty that the bus will arrive on time."

"Zeelo works with the employer to analyse the required journeys and build a schedule. This is then publicised to users who can opt in to different journeys and book ahead."

"The majority of employees like to plan a week in advance and buy their tickets as they do in a 'carnet' type system. The costs are underwritten by the employer and revenue from ticket sales deducted from the amount underwritten."



▲▼ Zeelo provides 'closed loop' services that are not available to the general public



This is very much a 'closed loop' service which is specific to employers rather than a part of public transport network, and it is not accessible to the general public.

Zeelo is working on features to allow buses to be shared (for instance by a number of employers at a single site). However, Covid-secure measures mean there is currently more of an emphasis on the 'bubble' of employees who work together travelling together."

The Zeelo model means it provides a layer which manages the technology – including ticketing and routing – and seeks out the appropriate vehicles to fulfil journeys.

Its fixed costs are not those of driver wages or vehicle depreciation. Those are born by the coach operator.

Equally, it is profitable because some employers are willing to subsidise staff travel to ensure that they have access to a workforce (which may not own or

drive cars) or that their operations or site infrastructure are not overwhelmed by staff arriving by car.

**TANDEM**

Tandem also provides a mix of flexible routes with key pick up points, core fixed journeys and multiple drop offs. Rather than buses, it partners with local taxi and private hire operators and creates groups of passengers and provides routes for drivers to drive.

Like Zeelo, it also operates in areas with minimal traditional bus services and provides transport at consistent fixed fares for people getting to and from work.

While Tandem has so far worked with private sector partners, helping to underwrite budget-friendly commutes for their staff, Alex Shapland-Howes, its CEO, also sees that their technology has a role in a broader transport system working with bus operators and local authorities.

"We're beginning to work with operators. Our team is able to model the actual demand, so we have a case where a large port has a highly subsidised bus service with inconsistent usage. We can tailor the service to provide one which requires lower subsidies."

"In another instance, we're working with a bus operator to create a 'blended' model of a large bus (with booking) at peak and a flexible taxi fleet to ensure trips can be made outside core hours."

Both Tandem and Zeelo point to their ability to flex the fleet because they do not directly own vehicles or employ drivers. They can commission services from private suppliers rather than bearing the overheads of fleet and drivers which enables them to match their vehicles to demand.

**PUBLIC OR PRIVATE? SUBSIDISED OR PROFITABLE?**

Services like Tandem and Zeelo are currently not part of the public transport network and are not directly regulated as such. They provide a smart, cost-effective service to employers to solve workforce recruitment and transport problems. They have a different cost base, different overheads and fewer regulatory constraints.

For Tandem to become part of the public network, there would need to be revolution in regulation, fares and ticketing to enable bus tickets and private hire fares to be integrated with the wider network. It's unlikely to happen without a Mobility as a Service (MaaS) approach to public transport.

Part of the reason for the diversity in DRT services is down to the legislative frameworks – smaller vehicles are run as, essentially, shared taxis under private hire licences while schemes with larger vehi-

cles are regulated by the traffic commissioner as registered bus services. This has implications for the design of the service (the operating area and times of operation and how much the operator can vary these) and how well they can be integrated with the wider public transport system.

Vehicles used in DRT schemes that can carry up to eight passengers can be licensed as Private Hire Vehicles (Slide Bristol, MyFirstMile, Tandem), and those carrying nine or more require a Bus Operators Licence (ArrivaClick, MyPickMeUp).

This is not an insignificant administrative detail. It has implications for design, operation and scaling of services and for the cost base.

For instance, employing bus drivers and managing fleet is quite different to subcontracting to private hire drivers (who are generally self-employed).

Local private hire licenses will differ across the country meaning scaling from area-to-area can be complex. And those services with fewer than nine seats attract 20% VAT on fares while bus operations are exempt.

The different costs and regulatory frameworks also makes scaling up or down

**Zeelo works with the employer to analyse the required journeys and build a schedule. This is then publicised to users who can opt in to different journeys and book ahead**

**BARNEY WILLIAMS, ZEELO**

▼ Tandem partners with local taxis and private hire operators in areas with minimal traditional bus services

across the vehicle sizes between vans and buses within an area much more complex.

The other issue is that nominally 'for-profit' (and profitable) services like Tandem and Zeelo operate with a subsidy from employers.

If the private sector cannot make the 'modern works bus' pay for itself out of fares, it begs the question whether public transport operators should expect DRT to be financially self-sustaining without some form of support.

There is enthusiasm for DRT in many quarters, from new passengers to local authorities keen to optimise slim budgets, but the devil is in the detail.

To connect with a wider system of services that offers seamless interchanges and integrates fares for 'feeder services' so that they're attractive and logical to passengers will require a shift in the bus landscape – and possibly private hire too.

Maybe as Covid-19 has forced a major rethink of bus funding and services, it will accelerate these shifts. **ST**

**TURN OVER FOR THE PEER REVIEWS**

