Connected Mobility

Demand Responsive Transport - Lessons Learnt

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TRANSPORT FOR THE NORTH

Introduction

Demand Responsive Transport (DRT) is a flexible public transportation system that responds to the demand of individual passengers.

Outside the franchised bus network in London, Local Transport Authorities can use public subsidy/local funding to provide additional coverage as required to meet local needs, e.g. comprehensive geographically, early mornings, late evening or seven days in the week. This is because there are times and geographies where it is not possible to run bus services commercially because of the low levels of patronage, but where there is still a social or economic demand.

Whilst a service with an average of perhaps ten to fifteen passengers might be considered a viable target for subsidy, there are occasions when a regular service cannot be justified. However, a solution is needed so that places do not become isolated for people who do not have access to private transport. Increases in flexible working and travelling patterns also mean that a DRT solution may have wider application as an important adjunct to the standard public transport offer.

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In some areas DRT services have been around for decades and normally fit around school services in the morning and afternoon. These have typically needed subsidy to maintain due to the high running costs vs the income from fares (anywhere from 5 to 10 times difference depending on how rural the services are) that can sensibly be charged to users.

Recent years have seen private companies invest in developing DRT solutions, seeking partnerships with private Operators or Local Transport Authorities with the aim of adding DRT to supplement existing bus services, particularly in areas where ridership levels do not support the running of a full-time service. These services, typically made available through a mobile application, allow customers to book bus services, with the DRT solution matching available buses to waiting customers, dynamically creating best routes between them. However, these services are also typically reliant on government or subsidies.

High costs and reliance on subsidy mean that DRT is hard to maintain and, despite many examples of its use, few examples exist of a sustainable and well-used service.

[1] https://ridewithvia.com/
https://moovit.com/resources/videos/flexiride-melbourne/

Purpose

The purpose of this report is to:

- Summarise the key lessons learned from various DRT projects and programmes implemented in the UK, focused primarily in Scotland due to similar demographics with many of TfN member LTAs; and
- Provide a set of recommendations for any LTAs looking to introduce digital forms of DRT.

Process Followed

We interviewed the project leads for a number of diverse DRT implementations, some very successful, others not so, some supporting areas with higher concentrations of population vs some very rural areas.

Using notes taken during these interviews we have collated a number of lessons learnt and suggested a set of recommendations to repeat positive lessons and overcome negative ones.

Key Lessons Learnt

Meet the business and customer needs

Many of the successful DRT projects ensured that the digital platform was targeted for the business and customer needs (e.g. lack of traditional services or accessibility needs catered for by the technical solution) vs fit the technical solution on offer, which struggled during implementation and operation and needed additional effort to work around issues that arose. DRT typically works well where there isn't an abundance of either scheduled bus services or on-demand taxi services.

DRT can only be sustainable (profitable) at scale

This is both in terms of available vehicles and customer uptake. Several implementations reported good uptake and are now expanding their services both in terms of additional vehicles (using capital funding from grants from government schemes) as well as geography.

Integration with existing transportation systems

Where possible DRT should be integrated with existing transportation systems, such as bus and rail networks, to increase accessibility and convenience for passengers and in turn ridership. This can be achieved by the use of mobile apps that link up journey planners with DRT services, this is not just a technical exercise as it will also need to consider the commercial integration (e.g. sharing of data, retailing costs and commissions).

Technology adoption

The implementation of DRT requires the adoption of advanced technologies, such as real-time passenger information systems, GPS tracking, and dispatch management systems. Whilst some of the traditional DRT schemes that support dial-a-ride or school services are planned very much manually, newer entrants into the market have developed a full web/mobile application that provides full customers account management and journey planning capabilities, and back-office services to manage available transport resources and plan the most effective routes to service customers in real-time.

Effective pricing and pricing strategies

A well-designed pricing and pricing strategy can increase the adoption of DRT services and make them more cost-effective for both operators and passengers. This can support uptake which in turn improves commercial sustainability. Pricing is expected to be between transitional bus fares and on-demand taxi pricing, which can create a challenge in ensuring service profitability. Hence the typical need for subsidy. Services are likely only able to become profitable at scale (as per lesson 2).

Sustaining DRT longer term can be a challenge

Costs for running the services must be considered upfront to ensure longer term sustainability, it may never be commercially viable without external funding for some locations. Increased utilisation can make it much more sustainable, with DRT services only becoming financially self-sustaining once a certain level of take-up is achieved.

Upfront funding

Many of the successful trials/pilots have had upfront capital funding (mostly from government grant funds) to make the commercial case. Those without sufficient funding have struggled to implement digital DRT services

Customer service and engagement

DRT providers must prioritise customer service and engagement to increase customer satisfaction and build trust in the service. This can include providing real-time information, responding to customer feedback, and engaging with customers through various low cost, high impact channels, such as social media, posters at strategic points etc

Marketing and communication strategies

DRT providers should develop and implement effective marketing and communication strategies to raise awareness of the service and increase uptake among potential users, in particular younger users as DRT services have typically been associated with dial-a-ride for the older generation. The increase in uptake can make some DRT offers more commercially sustainable

Data collection and analysis

Collect and analyse data on usage patterns, customer behaviour, and performance to continually improve the service and meet changing customer needs. This is much easier with commercial DRT solutions and the improved technology adoption that comes with such services. Due to the nature of intermittent services that have to fit around Community Transport service schedule, the business case for technology adoption to offer compelling DRT for such services is much harder to make.

Overcome connectivity challenges

Rural areas lacking 4G/5G data access can cause issues both from consumer point of view as well as provider point of view.

Support non-digital customers

A significant percentage of customers to whom community transport with DRT services would appeal is less likely to want to use the service through digital channels (e.g. customers with accessibility needs), so alternative means to make bookings need to be put in place. Commercial DRT networks do not suffer from similar problem to the same degree, however the need to support those customers who cannot use digital channels remain.

Recommendations for DRT initiatives

Conduct Thorough Analysis:

Before implementing a DRT solution or digitising existing solutions, it is important to conduct thorough research and analysis to understand the transportation needs of the target community.

This should include:
• understanding the existing transportation systems;
• identifying transportation gaps;
• assessing demand for DRT services; and
• learning from comparable authorities based on Common Analytical Framework definitions and those in TfN's Policy & Places Framework.

This should also include analysing longer term operating costs to ensure sustainability. Examples of needs include: too rural for a regular bus service; to meet the needs of people with mobility issues so door to door is required; as a supplement to a regular service e.g. for shift workers in early mornings; etc

Develop a clear and comprehensive plan:

A clear and comprehensive plan should be developed for the implementation of the DRT solution or digitising existing solutions, taking into account the research and analysis conducted. This plan should include the technology and infrastructure requirements, operational procedures, and the roles and responsibilities of stakeholders

Engage with the community:

Engaging with the community is crucial for the successful implementation of DRT and digitisation of existing DRT. This can include consultation and feedback from potential users (through community groups and surveys in person as well as electronic), stakeholders, and local government. The engagement process can also help to build support and promote the adoption of DRT services.

Adopt advanced technologies:

Advanced technologies, such as real-time passenger information systems, GPS tracking, and dispatch management systems, are essential for the effective operation of DRT services.

These technologies can help to improve efficiency, increase the reliability of the service, and provide passengers with real-time information. For more rural locations the use of multi network SIMs or new technology such as Starlink, can overcome the majority of connectivity issues. Once these mitigations are in place, for the very rare occasion that connectivity is not available, ensuring that the service is not fully reliant on real-time online communication (i.e. bookings downloaded and stored on drivers consoles whenever connectivity is available).

Support non-digital customers:

Ensure that non-digital customers have an option to use such services. This could take the form of a call in service or voice assistants such as Amazon Echo to book and request updates, with text message updates for customers who have basic mobile phones/are uncomfortable with using apps.

Develop effective marketing and communication strategies:

Marketing and communication strategies are important for promoting DRT services and increasing awareness and adoption among potential users. This can include using traditional and digital marketing techniques (in particular to engage the youth market asDRT services have typically been associated with dial-a-ride services for the older generation), engaging with the community, and providing clear and accessible information about the service

Collaborate with stakeholders:

Collaboration with stakeholders, such as local government, transportation providers, and community organisations, can be critical for the successful implementation of DRT. By working together, stakeholders can leverage their expertise and resources to overcome implementation challenges and promote the adoption of DRT services.

Continuously monitor and evaluate:

Continuously monitoring and evaluating the DRT solution is important for continuous improvement and to ensure that the service meets the changing needs of the community. This should include collecting and analysing data on usage patterns, customer behaviour, and performance, and making adjustments as necessary.

Provide sufficient funding:

ensure that sufficient upfront funding is provided to implement DRT solutions and run for a suitable period of time to allow for uptake, and to assess sustainability. To minimise costs, trials and pilots can provide learnings to ensure that wider rollout is more efficient during implementation and operation. This can be supplemented further with the use of joint technical procurements which increase economies of scale and in turn reduction in costs.

Appendix 1 - Parties interviewed

The following were interviewed as part of this commission:

- Transport Scotland - Mobility as a Service (MaaS) Delivery Manager;
- North Yorks - Regional Transport Planning Officer, Public and Community Transport Manager and DRT Project Manager;
- Moray Council - Senior Project Officer – Bus Revolution;
- HITRANS - Project Officer – Digital & DRT;
- Tactran - Senior Strategy Officer;
- Aberdeenshire Council - Rural Transport Project Officer; and
- SESTran – DRT Project Officer.

Appendix 2 - International Case Studies

A number of useful international case studies can be found in the paper available using the link:
https://prism.ucalgary.ca/bitstream/handle/11023/3856/ucalgary_2017_wang_lin.pdf?sequence=1

In particular the following case studies are worth further analysis/engagement:

- Winnipeg (Canada);
- Canberra (Australia);
- Melbourne (Australia);
- Adelaide (Australia);
- Tyne and Wear (England);
- Gothenburg (Sweden);
- Kashiwa (Japan);
- Sakai (Japan); and
- Moriyama (Japan).

Transport for the North
2nd Floor
4 Piccadilly Place
Manchester
M1 3BN

0161 244 0888
info@transportforthenorth.com

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transportforthenorth.com