L.E.K.

Special Report

On-Demand Public Transport

Key Learnings from Global Pilots

Contents

Overview

Many jurisdictions around the world are asking whether it is possible to use on-demand technologies to complement or replace some conventional public transport services. Authorities and operators have been conducting on-demand public transport pilots to test and learn. This report summarises emerging insights from some of these pilots and provides a blueprint for execution for public transport authorities and operators.

A challenge for transit authorities

- Public transport networks need to serve different passenger markets and typically comprise a mix of high-density and lower patronage routes
- Cost recovery (the proportion of operating costs covered by fares) can vary significantly by route: trunk routes with higher frequency services and faster journey times tend to carry the most passengers and have higher cost recovery, whereas other routes servicing first mile / last journeys or operating in the outer suburbs often carry fewer passengers and have much lower cost recoveries
- Poor cost recoveries inevitably lead to significantly higher government subsidies
- On-demand public transport offers significant potential for lower density, first mile / last mile services, delivering a more efficient service with improved customer service levels

Solution choices

Key choices to make when considering deploying an on-demand solution include:

- Route — flexible (demand-driven) or fixed / semi-fixed
- Schedule / timing / hours of coverage
- Fleet — vehicle type, size of fleet, fuel type
- Relationship to existing fixed-route public transport network — supplementary / or substitute
- Payment — linked to transit smart card or stand-alone
- Fares — equivalent to transit fares or premium priced
- Technology / digital platform — platform providers; integration with existing public transport app
- Service area — urban core, urban fringe (first mile / last mile) or regional
- Branding — identifying platform provider or other local or service feature

Best-practice procurement

Pilots conducted to date provide some key lessons for transport agencies. There are eight key actions transit authorities should consider when looking to deploy on-demand public transport:

- Look to the market for on-demand solutions
- Carry out pilot schemes designed to inform and learn
- Move quickly from commencing procurement to putting pilots into place
- Collaborate throughout procurement, pilot and operational phases
- Continual optimisation of ride-matching platform and operations
- Target high-priority areas and routes
- Disrupt the procurement and contracting process to make it more agile
- Be flexible with contract structure and terms in early stages
- Development phases — use of pilot phases versus full-scale deployment

There are critical lessons for transport providers considering similar on-demand services or pilots

- Changing customer behaviour can take time. Allow sufficient time to influence customers' behaviour before evaluating pilot performance
- Technology is still evolving, and deployment-specific adjustments may be required
- Understanding the economics of on-demand is critical. In the longer term operating costs will need to be below existing service costs to be a viable substitute for scheduled bus services
- Knowledge of the target market is important in providing on-demand solutions that meet local needs
- Integration with the broader public transport network (wayfinding and ticketing) is a priority
- Different contract structures and key performance indicators (KPIs) will be required from those traditionally used in service procurement

Introduction

Ride-hailing and ride-sharing services delivered by platforms such as Uber, DiDi, Ola and Lyft (known as transportation network companies or TNCs) are transforming the ground transport sector.

Many jurisdictions around the world are considering whether some version of "on demand" transport could also be used to deliver improved public transport services (see Box 1). Public transport authorities and operators are asking how best to deliver on-demand public transport services both at pilot stage and operationally as part of broader public transport networks.

Some jurisdictions have begun to explore a variety of on-demand pilots, in an attempt to learn more about the opportunities (see Figure 1). Many of these pilots have commenced just in 2018 and 2019, so these are relatively early-stage experiments. Some pilots have already ceased due to low uptake or other challenges (e.g. ride-matching technology problems).

This report:

- Outlines some of the relevant transit challenges facing cities around the world and the role that could potentially be played by on-demand public transport
- Highlights the various ways in which on-demand public transport has been piloted and implemented
- Outlines the types of choices to be made, and
- Outlines some best practice procurement considerations.

Ultimately it demonstrates how these experiences can offer a blueprint for transport on-demand innovation.

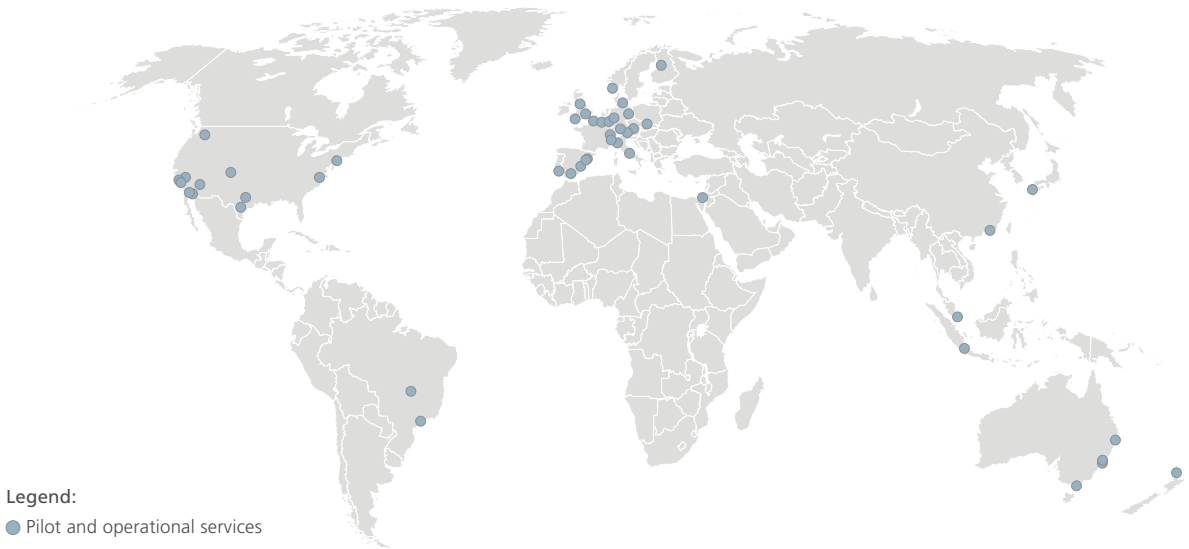
Box 1: What is on-demand public transport?

There is no universally accepted definition of on-demand public transport (sometimes referred to as demand-responsive transport or DRT). For L.E.K., on-demand public transport is a form of **publicly subsidised** transport that takes **multiple passengers** within a **defined area** from one place to another on a **next-available** or pre-book basis. Typically, the service provides travel to or from a transport hub or local point of interest. On-demand public transport is most applicable where there is insufficient demand for a frequent and direct mass transit solution.

On-demand public transport is not the same as commercially available ride-share services such as Uber, DiDi, taxis and others (although there may be scenarios where ride-share providers could participate in on-demand public transport). Commercial on-demand services more typically focus on optimising the journey for individual passengers to reduce waiting and / or travel times. On-demand public transport focuses on optimising the journey for groups of passengers going to or from a hub for a subsidised price. This may result in relatively longer waiting and travel times compared with commercial on-demand services and will more likely involve shared journeys (see Figure 1). This is similar in concept to pooled ride-share services such as UberPool and LyftLine, but these are not generally subsidised.

Figure 1

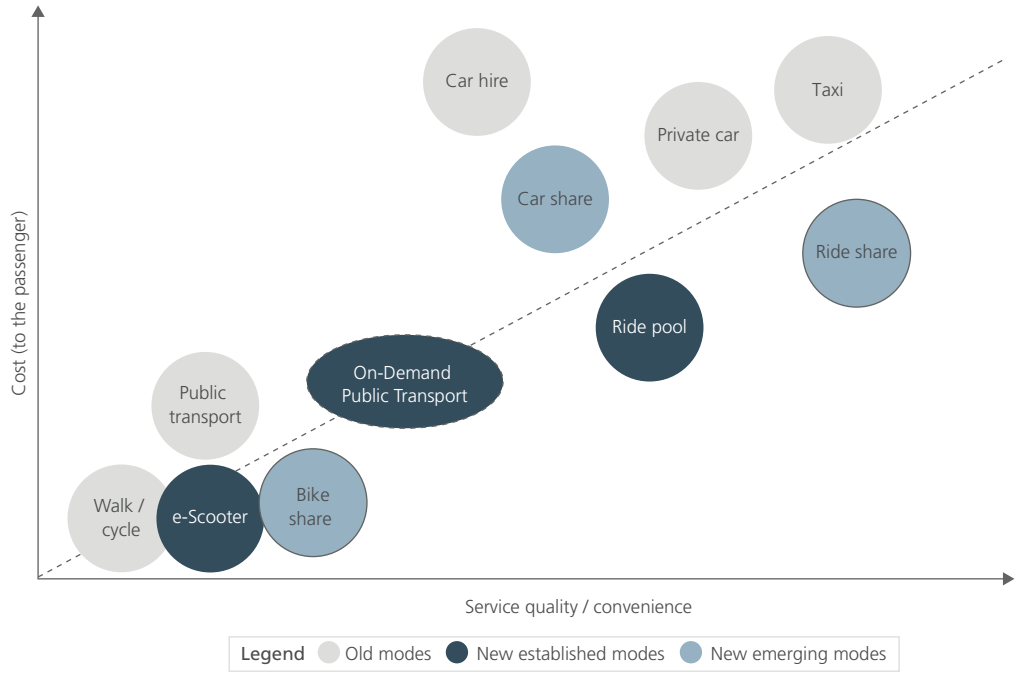
There are over 40 cities globally that are trialling on-demand public transport pilots and operational services around the world



Challenges for transit authorities

Recent evolutions in technology and business models have led to a much greater diversity in available transport offerings. Historically, private vehicles and public transport accounted for the vast majority of trips in urban areas, with taxis, cycling and walking making up the remainder. Fast-forward 10 years and now all manner of different modes have emerged, including **car share** and **ride share**, as well as **dockless bicycles** and **electric scooters (eScooters)**. Notwithstanding these new offerings, there remains a significant gap in the market between relatively low-cost / subsidised public transport and walking / cycling and commercial rideshare and taxi services. There is growing interest in whether **on-demand public transport** can fill this middle ground (see Figure 2).

Figure 2
Price and service attributes of different transport modes



Public transport typically fulfils two broad roles in communities:

1. Facilitating mass movement of people to and from dense inner urban areas, thus reducing road congestion
2. Providing mobility to people without access to private transport to allow them to work and access services or education

While this is an oversimplification, it helps explain why governments and communities choose to subsidise public transport — it provides a significant public good. However, the commercial attractiveness of these two types of transport can be very different, leading to large differences in subsidy depending on the route, time of day, etc. Trunk routes that offer higher-frequency services along key corridors and faster journey times are generally well patronised and therefore have higher cost recoveries (the proportion of costs covered by fares). Feeder services to key nodes or trunk routes (sometimes referred to as 'first mile / last mile' services) are typically less frequent and involve slower journeys. These services often suffer from lower patronage and can have much lower cost recoveries. All costs not covered by passengers must be subsidised by government.

A typical cost recovery profile for a bus network in a large, low-density city is depicted in Figure 3. While the network as a whole may have cost recovery of ~40-60%, about half the routes may be operating at 30% or lower, with several consequences:

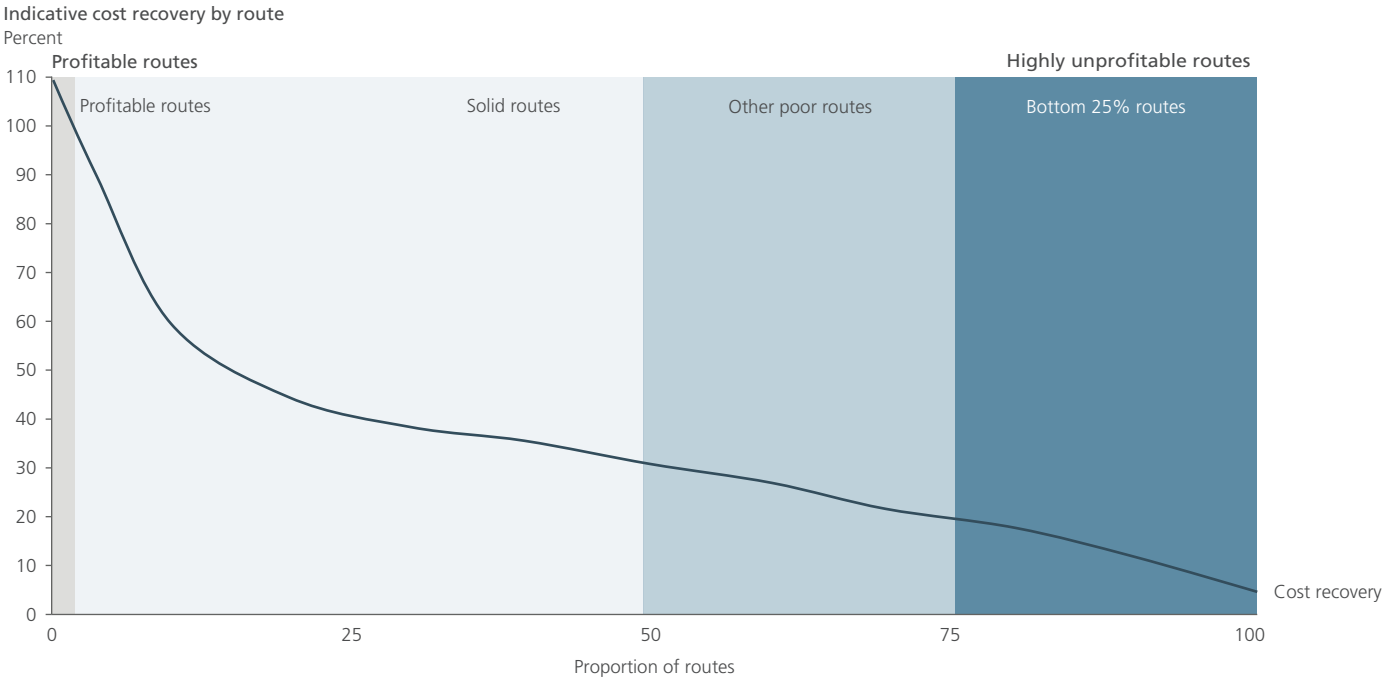
- Significant government subsidies for carrying a small number of passengers, and a large number of empty seats
- Poor service frequencies, meaning those who have access to a car will prefer to drive (particularly to railway station car parks), which increases road congestion and demand for parking
- Routes with low levels of demand, particularly non-commuter or cross-city routes, have insufficient patronage to justify a service at all

DRT has existed around the world for many years, often providing community-based transport for people with special needs. These services were historically based on telephone bookings with a voucher system; however, they have generally proven to be quite costly to operate, requiring significant public subsidy, and therefore have not proved very economic to scale up.

There are also broader considerations in the design of public transport networks beyond financial performance alone. Social and environmental issues impacted by the availability of public transport options include:

- **Underserved communities** — many urban communities are underserved or not served at all by existing public transport options; these populations may be inefficient to serve by traditional public transport, which impacts their participation in society
- **Environmental considerations** — public transport networks are increasingly the focus of broader government attempts to reduce greenhouse gas emissions or meet other environmental targets (e.g. pollution reduction)

Figure 3
Indicative cost recovery by route



The role of on-demand public transport in addressing these challenges

On-demand public transport offers new possibilities to address some of these historical transit challenges:

- Internet-enabled smartphones allow passengers to cost-effectively communicate their transport needs in real time
- Payment for trips can be integrated into booking applications
- Vehicle routes can be optimised in real time to efficiently collect passengers in different locations
- Mapping software can direct vehicles to the right location and also advise customers of the most efficient pick-up point

On-demand public transport has the potential to:

- Address pain points in the customer journey
- Better meet the needs of underserved communities
- Provide more seamless interchanges
- Reduce unnecessary travel
- Better match vehicle type to journey needs
- Reduce the total cost to deliver public transport

In aggregate, this offers the potential to both reduce costs and improve the customer experience. At the same time, it needs to be recognised that some users will not have smartphones or access to a credit or debit card. Therefore, on-demand services will need to be set up to meet the needs of these groups as well.

Addressing pain points in the customer journey

One widely acknowledged pain point in the customer journey is the **first mile / last mile** (see Box 2). For a range of reasons (including service frequency, route design and the distance from home to a stop), many potential passengers are deterred from taking the local first mile / last mile service (usually a bus service) from the beginning of their journey. Passengers may switch to other non-public means of transportation, such as driving a personal vehicle to a train station or trunk route and interchanging; utilising private car-share or car pool options; or using their personal vehicle for the full journey. In most cities, railway station car parks tend to fill very quickly, with demand often exceeding available space and spilling out onto local streets. Those cars will then sit idle, typically for nine to 12 hours per day.

Box 2: First mile / last mile services

First mile / last mile services are typically the first leg of a customer's trip, or the last leg on the return journey. These services are sometimes referred to as 'feeder services' as they deliver passengers to a train station or other public transport hub.

For example, a commuter using public transport to / from a central business district may take a local bus from the outer suburbs to connect with a train station or a stop on a trunk bus route.

Uber has reported a significant demand for ride-share services to and from railway stations, with these trips accounting for a material proportion (c.25% of trips) in some cities, helping to contribute to growth in rail patronage. This indicates there is significant latent demand for first mile / last mile services to transit hubs, even at commercial fare levels.

On-demand public transport could address first mile / last mile pain by providing an alternative or even substitute to the existing fixed public transport network. It could be more frequent and use an algorithm-generated route (most likely more direct from trunk route to home, with minor detours for other passengers to disembark and / or alight). This typically delivers passengers to their door, a nearby street corner, a railway station or a bus stop.

Meeting needs of underserved communities

Many passengers are deterred from accessing transport (both public and private) due to perceived inaccessibility for the mobility impaired and / or the elderly, minimum age for private ride share, and general route and service frequency concerns. In other situations, public transport may be too costly to provide, meaning private transport solutions are the only option.

On-demand public transport technologies can go some way towards addressing these concerns:

- Mobility-impaired users do not need to make their way to their local bus stop, but instead can be collected from their door or close by. The passenger has the additional benefit of knowing that the vehicle will be able to accommodate any mobility equipment or companions they wish to take with them on their journey — for example, users of the BerlKönig

service in Berlin (provided by Berliner Verkehrsbetriebe [BVG] and ViaVan) need only register once in their app as a low-mobility user in order to automatically receive a wheelchair-accessible vehicle for future trips.

- Unlike many private on-demand ride-share services (e.g. Uber, Lyft) which have minimum age restrictions for travellers, many on-demand public transport services could have a more flexible approach to children travelling without an adult, enabling parents or older children to use on-demand public transport to more directly transfer to / from school or weekend activities. For example, BerlKönig in Berlin, Germany, allows people aged 14 and over to use their service independently. Some jurisdictions however, will have seat belt laws that may create challenges for carriage of children, requiring specific vehicles to be used. Also creating accounts for payment and pre-booking for these can require more sophisticated customer interfaces.
- Elderly passengers can use on-demand public transport services to travel directly to or from services in their neighbourhood (e.g. medical services) without relying on relatives or friends or having to navigate to a bus stop. An on-demand service in Newton, Massachusetts, USA, is only available to residents aged 60+.

Providing seamless interchanges

Interchanges between public transport services need to be short enough to promote a quick overall journey but long enough to allow efficient, cost-effective solutions and avoid unnecessary rushing by customers to meet transport links. While existing first mile / last mile services often attempt to synchronise with trunk train / bus services, service frequencies may not allow full synchronisation to all services, such that waiting times for connecting may be prohibitively long. Further, not all first mile / last mile services have real-time rival data available, so passengers are reliant on fixed schedules to predict when the next connection may arrive, or they may be impacted by service disruptions.

Most on-demand public transit options are able to be scheduled in real time. While wait times will vary across services, it is likely that the average wait could be less than traditional first mile / last mile services. Users of on-demand who have booked through an app will also typically have access to live service arrival information.

Reducing unnecessary travel

Many first mile / last mile services involve circuitous bus routes which provide good area coverage but are inefficient for the average passenger trying to get directly to / from their home and a major trunk station or stop.

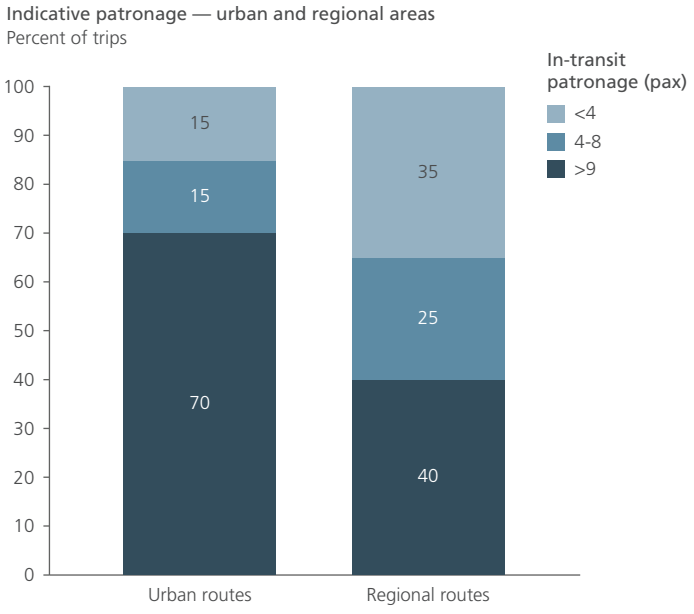
On-demand public transport platforms use proprietary algorithms that capture existing demand and calculate the best route to transport the current passengers. While they may not travel the most direct route a passenger would take in a private vehicle, an on-demand service route is likely to be more direct than a circuitous bus route.

Matching vehicle type to journey

L.E.K. experience indicates that many bus routes have a low number of passengers, especially relative to the capacity of a standard bus. In one urban system, L.E.K. found that 15% of bus services carried fewer than four passengers, and 30% carried fewer than eight passengers (see Figure 4).

Figure 4

Indicative patronage — urban and regional areas



Despite lower patronage, typically, public transport operators utilise standard-size buses for most of the routes that fall into the lower patronage categories (i.e. eight or fewer passengers per trip). This means that a similar cost base is used for less fare return. Greater flexibility is needed in using the right size and type of vehicle to suit the location and passenger demand. This will result in operational and cost efficiencies and a better customer experience.

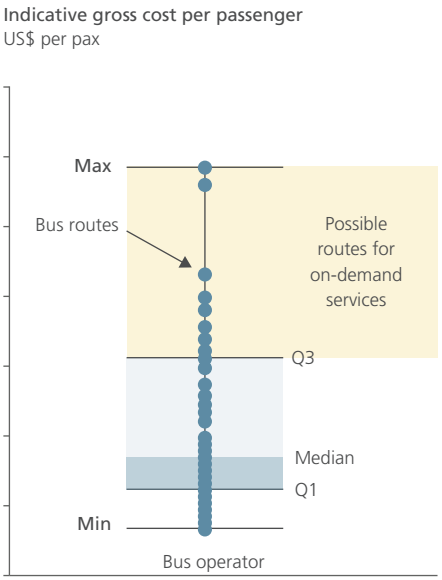
On-demand services can provide this flexibility, with smaller vehicles (minibuses, vans, cars) making more direct trips on an as-needed basis. This reduces the number of services running at low capacity, but incurring similar costs.

Reducing total cost to deliver public transport

The total cost to deliver public transport is high. L.E.K. experience indicates that there can be very significant variations in cost per passenger across different routes within a bus operation (see Figure 5).

If on-demand services can be substituted in areas currently serviced by highly costly fixed schedule / route services (e.g. greater than US$10 per passenger) at a lower cost than the operations, this should reduce the overall cost to deliver public transport.

Figure 5
Indicative gross cost per passenger



Solution choices in on-demand public transport

Deployments of on-demand public transport solutions vary considerably across key dimensions. This section outlines the most important choices public transport authorities and operators need to make when considering deploying an on-demand solution. These choices include:

- Route
- Schedule / time of operation
- Fleet
- Relationship to the existing fixed-route public transport network
- Technology / digital platform (including platform partners)
- Service area
- Branding

These choices are described further with illustrative examples from recent global pilots and operational services (see Figure 6).

Figure 6
Solution choice in on-demand public transport

Choice	Description	Examples
Route	Routes can be flexible (based on customers' chosen origins and destinations), fixed or semi-fixed (e.g. from / to public transport hubs)	• **ArrivaClick** (Leicester, Liverpool and Sittingbourne, UK) offers passengers a completely variable route within serviced areas • **Beeline** (Singapore) allows users to suggest routes which can be activated by operators • **Keoride** (Keolis Downer, Northern Beaches, Sydney, Australia) offers a variable route with fixed start / end points
Schedule	While services typically have set operating hours, most services' actual vehicle departure times are demand-driven	• DART's **GoLink** (Farmers Brand, Dallas, USA) operates 5 a.m. to 9 p.m., Mon. to Fri. • **Via to Transit** (Seattle, USA) operates 5 a.m. to 1 a.m. Mon. to Sat., and 6 a.m. to midnight Sun.
Fleet	Services vary on the types of vehicles used, size of fleet and fuel types (e.g. petrol, diesel, electric-powered vehicles) A variety of vehicle makes, models and sizes are used, depending on the local environment and partnerships in place with vehicle manufacturers; this includes cars, minivans, small buses, etc.	• Auckland Transport's **AT Local trial** (Devonport, Auckland, New Zealand) is using electric vehicles
Relationship to the existing fixed-route public transport network	Services may supplement or replace existing public transport	• **Marin Transit Connect** (California, USA) supplements traditional public transport, connecting passengers to bus and train networks • **Shotl** (Les Planes, Barcelona, Spain) is both a substitute and supplementary service; it allowed the existing bus route to be altered to serve the central region of the town, with Shotl catering to the east and west
Technology / digital platform	A variety of technologies / platforms are available, and may be integrated with PT app or stand-alone	Platforms currently in use include Via, Shotl, Reach Now (moovel), door2door, Movia, Spare, Beeline, Bridj (not exhaustive)
Service area	Services may address demand at the urban core, urban fringe (first mile / last mile) or rural areas	• **BerlKönig** (a joint venture between BVG and ViaVan) offers an on-demand van service integrated into the public transport network in the inner city and surrounding suburbs of Berlin, Germany • **HentMeg** is an on-demand service provided by Kolumbus (in Sauda, Norway) for the cost of a standard bus fare • **Reynolds & Fogarty** (Moree, NSW, Australia) offers an on-demand service that replaced a previous town bus service
Branding	Most transit operators have chosen separate branding and may or may not identify the platform provider; providers can refer to their local authority area, target audience or service features in the brand	Some services identify the platform provider (e.g. **Via to Transit** in Seattle, Washington, USA), while others may not (e.g. **ArrivaClick** in the UK which operates on the Via platform) Some operators have chosen an entirely new brand, such as **COLT** (Cochrane On-Demand Local Transit) in Cochrane, Alberta, Canada

Best-practice procurement

The on-demand market is still in its very early stages, with relatively few scale deployments. Most cities and regions are still in the piloting stages. L.E.K. has identified eight key steps that transit authorities should consider when looking to deploy on-demand.

1. Look to the market for solutions

While public transport operators and authorities are very experienced in delivering traditional public transport, many recognise that they do not have all the answers and expertise to deliver a different and innovative type of service. They take the problem to the market to access private sector innovation, expertise and investment in on-demand solutions.

2. Carry out pilot schemes designed to inform and learn

Pilot schemes are very common in the delivery of on-demand public transport services. Many platform providers promote pilot phases as an opportunity for learning, service revision, and adjustment for themselves and for their operator / authority partners. These provide learnings about the technical feasibility of delivering on-demand services and customers' behavioural changes in response to new services.

In addition to assessing passenger figures and other key quantitative metrics, many operators survey customers during or after the pilot phase. This leads many providers to adjust their service offering:

- myBUS in Duisburg, Germany, quadrupled its operating area after surveys showed users wanted better connectivity beyond the city centre. Their platform provider, door2door, highlights the importance of using data to simulate usage and define the right service design when expanding operating areas
- West Sacramento On-Demand, in West Sacramento, California, USA, increased operating hours by one hour each way in response to public feedback

Opportunities to learn through pilots are also valued at a macro (authority / public transport delivery) level:

- SSB in Stuttgart, Germany, believes their experiences in on-demand (SSB Flex) have allowed them to gain experience across all facets (including legal, strategy, operations, planning and the political aspects) and have helped them set up the technology, training and preparation of public transport more broadly for the expected future (i.e. shared autonomous vehicles)
- Transport for New South Wales (TfNSW), Australia, explicitly stated that the goals of their on-demand trials in Sydney and regional areas were about learning as much as possible about the on-demand format; three pilots were cancelled over the course of the first 18 months and new pilots were created

3. Move fast

Many service implementations appear to have overcome regulatory and concessional issues quickly. For example, DVG in Duisburg, Germany, worked with door2door to conduct the final launch of their on-demand ride-pooling service DVG myBUS within 12 months.

4. Collaborate throughout the procurement, pilot and operational phases

While each service operationalises on-demand public transport differently, there seems to be a general willingness by platform developers to work with transit authorities in this new space. This collaborative approach extends to flexibility in branding of the on-demand service. Rather than insist on platform branding to extend their reach, many providers of on-demand platforms have many different branding approaches in market.

5. Continual optimisation of ride-matching platform and operations

The ability of the platform to group passengers along virtual routes and determine pickup and drop-off locations, as well as the best route given traffic conditions, affects passengers' experiences of on-demand public transport.

A good platform provider is just an important as a good operator, and both are required to get the maximum benefits from on-demand. Quality platform providers are seen as essential by public transit operators. Platforms differ in a number of ways, including:

- Matching technology used
- Passenger and driver app interfaces
- Capacity for integration with the existing public transport ticketing system
- Ability to customise the software

Likewise, the providers of platforms differ in:

- Their experience with successful on-demand public transport implementations
- Their geographic locations

- The focus / strategy of their businesses (some focus on enabling on-demand public transport, whereas others operate in the broader on-demand space)

Early trials have shown a range in capability between various operators and platform providers, with the technology challenge often being harder than originally envisaged. Some platform providers and operators have previously struggled with the complexity of ride-matching software, providing customers with real-time information and customising their solution.

Ultimately there is no off the shelf solution for on-demand. All operators and software providers will need to apply some level of customisation to each specific implementation, and in some cases manual intervention in the early days of launch. Noting however, to gain the most efficiency at scale deployment, key elements of the process must eventually be automated. Further success is then contingent on continuous improvement. The most successful pilots have involved hands-on operators and software platform providers. On-demand deployments require constant iteration with software than learns and adapts from its environment.

6. Target high-priority areas and routes

When deploying on-demand as part of their public transport offering, authorities and operators target routes and areas for a range of reasons, including:

- **No or low public service to / from an area which requires public transit** — For example:
  - The pilot of the Plustur first mile / last mile service by **Movia**, in Denmark, specifically aims to provide public transport in rural areas with a low population density, to have a 'bus stop in the backyard' for every address in Denmark.
  - The **Shotl** service in Vallirana, on the outskirts of Barcelona, operates in a lower-population-density residential area. The existing fixed-route bus lines were inefficient, and residents had little alternative to private vehicles, as bicycling and walking were prohibitive given the hilly topography. The fixed-route service was replaced with a pilot of on-demand public transport.
- **Low patronage / efficiency on particular services** — In Sauda, Norway, operator Kolumbus experienced an average of 1.5 passengers per departure in 100 departures per week, and wanted to see whether on-demand could provide a better service at a lower cost.
- **Congestion** — For example:
  - Auckland Transport introduced a pilot of on-demand, **AT Local**, in the peninsula-located Devonport, Auckland, New Zealand, as the geography of the area had led to significant congestion in the two routes out of the suburb (one road and a ferry wharf, to which locals drove and parked).
  - Similarly, '**bubble**', launched by Dan Transportation and Via in Tel Aviv, Israel, aims to help tackle congestion issues in Tel Aviv and surrounding centres.

7. Disrupt the procurement and contracting process to make it more agile

Traditional public transport procurement processes are overly complex and take considerable time to execute. Simplifying processes and key documents can encourage more innovative partnerships and enable the authority or operator to move more quickly.

8. Be flexible with contract structure and terms in early stages

On-demand public transport is still evolving, and as learnings emerge in the course of pilots, public transport authorities and operators can benefit from contract structures that allow adjustments. Modifications like relocation of services or service expansions can be made in response to customer feedback, rather than waiting until the end of the pilot contract period. Contract structure and term flexibility may also enable early termination where appropriate.

Learnings from global on-demand public transport deployments

While we are still in the early stages of this evolution, early lessons are already emerging.

1. Changing customer behaviour can take time

On-demand transport requires fundamental behavioural change in how customers access transport services. Whether this is getting people out of cars onto public transport or getting people used to accessing bus services in a different way, changing customer behaviour is critical. Surveys show that once customers try on-demand transport, they become major advocates. But they have to be persuaded to try it first, and the service must be promoted to encourage awareness and take-up. Many trials highlight a 'slow start'. Raising awareness also requires active investment.

2. Technology challenges to delivering on-demand are still significant

The technology challenges of on-demand services are significant. Some platforms find they must adjust technology during pilot phases to better cater to local conditions. The capacity to make these adjustments contributes to the success of the venture.

3. Some areas and routes are ripe for piloting on-demand services

Public transport operators can quickly compile a list of potential routes where on-demand may be a useful alternative to existing fixed-route public transport services, by considering those routes with high cost per passenger (i.e. greater than US$10 per passenger).

4. Understanding value for money will be critical as programs scale

The economics remain uncertain, but will crystallise over time. We estimate that to have a material impact on scheduled bus services, on-demand will need to be below $US10-15 per trip in major cities (i.e. less than a cab fare, but materially more than a typical subsidised public transport fare), but the actual cost level to be competitive will depend upon each individual bus network.

5. Knowing your target market is important

Understanding the target market is critical to designing on-demand public transport solutions. For example, many on-demand services offer a telephone number, in addition to smartphone apps for service booking, to aid the elderly and / or others with no access to a smartphone. Some services appear to have carefully considered the time of day and day of the week that is most relevant for passengers. Others have decided to actively promote the comfort and convenience factor (e.g. BerlKönig Berlin).

6. Integrating on-demand services with the broader public transport ticketing system is a priority

Providers highlight the importance of integrating on-demand public transport options with their journey planning and / or ticketing / payment:

- **Plustur,** by Movia in Denmark, is a pilot service which has one journey planning, ticketing and payment app for users
- **BVG** has a vision of one single app used to access all of Berlin's mobility services, from planning to payment

7. Different contract structures and KPIs will be required

Conventional bus contracts, often based on gross or net costs, with a kilometres- and / or time-based service payment, are not very well suited to on-demand services. New contract structures with different types of payments (e.g. per-passenger subsidies) will be required. Similarly, the types of KPIs used to measure performance will be quite different with on-time running metrics much less relevant, and rideshare-like metrics of 'average wait time' becoming a greater priority.

Where to from here?

As is clear from global experiences, on-demand public transport depends on rethinking big parts of the transport network to benefit customers and potentially save money; it should not be viewed in isolation, discretly or as a premium separate transport product.

On-demand also raises some critical strategic questions for authorities and operators.

- **Pricing models** — Should pricing be the same as existing public transport fares, or should on-demand public transport attract a different pricing structure?
- **Subsidy models** — Existing gross cost contracts with bus kilometres- or bus hours-based payments will not be suited to on-demand. What alternatives are available, and how can the risk of a subsidy overrun be managed?
- **Contracting strategy** — Should on-demand services be contracted as a subset of mass transit operations (bus or rail), or separately with a different set of providers?
- **Interface with ride-share providers** — Should ride-share providers be able to participate in the market? What local regulations or other factors would need to change to allow this?
- **Regulation** — How do existing rules and regulations about vehicles, drivers, accessibility requirements, children as passengers, etc. need to evolve in an on-demand world?
- **Business model** — Will conventional bus operators evolve into on-demand providers, or will new entrants be better placed to provide these services?

Despite the many questions yet to be answered, on-demand is increasingly seen as enabling better delivery and more-efficient public transport services and as supplementing a high-frequency / high-capacity trunk network. L.E.K. expects that it will take another three to five years or so of experimentation around the world before true economics and utility are known. Experiences of pilot and operational on-demand public transport services occurring across the globe are likely to reshape the next generation of bus contracts and, more broadly, the mobility space. Authorities and providers that participate actively in pilots will be best placed to maximise the value of the changing landscape.

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Simon leads L.E.K.'s Travel and Transport practice in Australia and in recent years has played a leading role in building L.E.K.'s New Mobility practice. He has more than 25 years of experience in strategy consulting across Australia, New Zealand, Asia and Europe and has been deeply involved in many of the major transport reforms and innovations in Australia and New Zealand over the last two decades.

Natasha Santha
Principal

Natasha is a Principal in L.E.K.'s Melbourne office and is part of L.E.K.'s New Mobility and Transport & Travel practice. She regularly advises governments and corporations on strategic, policy, and commercial issues relating to major capital infrastructure and transport, often with a focus on mitigating the impact of new mobility disruptionShe has also worked extensively across the energy value chain, including renewable technologies and alternative fuels.

Ashish Khanna
Partner

Ashish Khanna is a Partner in L.E.K.'s London office. He is the leader of L.E.K.'s Global New Mobility practice and is an active commentator on the trajectory of transportation technology innovation across connectivity, sustainability and automation. He has been at the forefront in advising governments, infrastructure investors and businesses globally on the potential impact and opportunities arising from new mobility trends.