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MICROTRANSIT

Microtransit is a privately or publicly operated, technology-enabled transport service that typically uses multi-passenger/pooled shuttles or vans to provide on-demand or fixed-schedule services with either dynamic or fixed routing (Cohen & Shaheen, 2016; SAE International, 2018). Route and scheduling possibilities for microtransit are described in Table 4.1 below.

Table 4.1 Forms of Microtransit Operations		
	Fixed Route	Dynamic Route
Fixed Schedule	The service operates on a schedule and fixed route similar to fixed route transit service. However, additional routes may be created using crowdsourced information from a service's users.	The service can adjust its route, but the pick-up and drop-off times are fixed.
Dynamic Schedule	The service operates on a fixed route but may offer demand-responsive passenger pick-up and drop-off.	The service can dynamically adjust to its routes and schedules according to the origins and destinations of its users.

Different microtransit service models are introduced in the following section. This toolkit identifies potential use cases for microtransit and provides case studies of pilot programs, public-private partnerships, and permit programs for private operators. The toolkit concludes with a summary of opportunities and challenges for microtransit services.

Microtransit Services

Microtransit services can be further classified by their business model and relationship to the public sector:

- **Private Microtransit** - Private microtransit services operate without a public-sector subsidy and are intended to make a profit. Jurisdictions can choose to regulate private microtransit services to achieve goals, such as safety and social equity. A discussion of private microtransit operator Chariot (now defunct) is available in the case study section.
- **Public-Private Partnership** - Governments may pursue partnerships with microtransit providers to achieve specific goals, such as expanding coverage or increasing efficiency. In these partnerships, microtransit companies may provide vehicles and software expertise (Lucken, Frick, & Shaheen, forthcoming) or operate the entire microtransit service through a turnkey operation.
- **Public Microtransit with Third Party Vendor** - The public agency takes the main role as an operator of the microtransit service and contracts with a vendor to provide particular components of the service, such as vehicles or software through a technology license.

Why Implement Microtransit?

There are a variety of potential use cases for microtransit such as:

- **First- and Last-Mile Connections** – Microtransit services can fill gaps in existing public transit systems, enabling users to connect to high-capacity public transportation.
- **Transit Replacement** – Microtransit services can replace underperforming routes, such as lower-density built environments, that may be more cost effectively serviced with right-sized and demand-responsive services.
- **Paratransit** - Microtransit can be a cost-effective solution for providing demand-responsive paratransit service for public agencies.
- **Peak Shedding** - Some high performing public transit routes may experience overcrowding during peak hours. Microtransit can provide an opportunity for “peak shedding” to relieve the stress on these crowded routes by providing additional capacity during peak hours.
- **Late Night Service** - Microtransit can provide a late-night transportation option.

Case Studies

The Kansas City Area Transportation Authority (KCATA) RideKC Pilot

In March 2016, Kansas City Area Transportation Authority (KCATA) began a pilot program to test how on-demand services could be integrated into the suite of transportation options available in the Kansas City region. The partnership between Bridj, KCATA, and Ford was the first U.S. public-private collaboration to bring together a major U.S. public transit system, an automaker, and an urban technology company to enhance existing mass transit by providing greater mobility options. The pilot was designed to share lessons learned, inform future project/programs decisions, and provide a demonstration project to public transportation providers relating to how service adaptations are required to meet the needs of an ever mobile, connected populace (KCATA, n.d.),

Researchers at the Transportation Sustainability Research Center at the University of California, Berkeley conducted an evaluation of the pilot program to assess the service impacts (Shaheen, Stocker, Lazarus, Bhattacharyya, 2016). Key findings from the pilot evaluation include:

- Price affordability and convenience were the most common reasons for using microtransit, with 57 percent of respondents saying they used microtransit because it was cheaper and 39 percent saying it was more comfortable than other modes. A third of respondents said that microtransit offered them greater flexibility.
- A majority (89%) of users walked to or from their microtransit stop from a workplace or residence.
- More than half of the survey respondents used the service in the afternoon only. This may have occurred because a service area surrounding a hospital had many workers with shifts that fell outside of the pilot's operating hours.
- While all respondents said they would "maybe," "probably," or "definitely" use the microtransit service for \$2.00, 23 percent said they would not use it for \$3.00.
- Interviews with experts involved in the pilot project found that the microtransit service would need to expand operating hours and geographical coverage to achieve a critical mass of users.

Public-Private Partnership - West Sacramento

In May 2018, the City of West Sacramento, California launched a public-private partnership with microtransit operator, Via. The year-long pilot is intended to test a service model that would provide more efficient transportation in certain areas and potentially replace underperforming public transit routes. The pilot program cost approximately \$749,000, with most of the funds coming from state and local transportation funding, including a \$149,000 grant from the Sacramento Area Council of Governments (Yoon-Hendricks, 2018).

Via operates a fleet of ten, six-passenger Mercedes vans for a flat user fee of \$3.50 (\$1.75 for seniors) or a \$15 weekly pass allowing for up to four rides a day. The service operates weekdays 7:00am to 10:00pm and Saturdays 9:00am to 10:00pm within city limits. Via allows users to request rides through either a smartphone application or a phone call. Users with disabilities can request a wheelchair or mobility device-accessible vehicle, as well as assisted door-to-door service. Additionally, while the service does not accept cash, users can load cash onto pre-paid credit cards to pay for services.

The city of West Sacramento released an update on the program after nine months of operation. As of February 2019, over 50,000 rides had been completed. Normalizing over nine months, the service cost the city around \$11 per ride. In comparison, the Sacramento Regional Transit estimates that it spends \$8.11 per passenger ride for bus service (SACRT, 2019). Ridership averaged around 350 rides per day on weekdays and 250 rides on Saturdays. These findings are almost double the original estimates projected for average daily ridership. Similarly, over 60% of the rides were pooled (i.e., two or more passengers). The City Council is considering a contract renewal for another year (City of West Sacramento, 2019a and 2019b).



Figure 4.1. A Via Van in West Sacramento. Photo Courtesy of Via

Private Microtransit Operations - SFMTA's Private Transit Vehicle Permit

In the past, private jitney services were a popular transport mode in San Francisco. However, jitney services lost popularity in the city by the 1970s, and in 1978, voters passed Proposition K outlawing the sale of jitney permits. When a jitney operator retired or died, the city absorbed the permit and it was never reissued. The existing regulations for jitneys remained in place until 2011, when the SFMTA Board of Directors repealed them to leave a placeholder for new regulations. With the emergence of technology-enabled microtransit, the city became concerned about unsafe or illegal stops by microtransit and shuttles and the operational impacts of frequent stops on public transportation operations. In October 2017, the San Francisco Municipal Transportation Agency (SFMTA) approved the Private Transit Vehicle (PTV) permit program (DeNike, 2016; Jose, 2017).

SFMTA requires microtransit and shuttle providers to apply for a PTV permit. With this permit, the SFMTA ensures that stops are located at designated passenger loading zones. The operator is required to share GPS and ridership data with the agency and pay an annual permit fee to cover administrative and enforcement costs. Chariot was the first microtransit service to receive a PTV permit and the agency assisted Chariot in relocating over 100 stops throughout the permitting process (SFMTA, 2017). Chariot was acquired by Ford Motor Company in September 2016. However, Chariot announced the end of its microtransit operations, and the service ended in March 2019.



Figure 4.2. Chariot Microtransit Van. Photo Courtesy of Wikimedia Commons

Public Microtransit Operations with Third Party Vendor - AC Transit Flex Pilot

In 2015, AC Transit released a Request for Proposals (RFP) for a vendor to develop and implement a technology platform that would enable the agency to operate an on-demand microtransit service for two of its lower ridership routes in the San Francisco Bay Area. This pilot was meant to allow riders to schedule pick-up and drop-off locations. DemandTrans Solutions was selected as the technology vendor and was responsible for integrating the software and providing the hardware for AC Transit vehicles.

AC Transit decided to operate their own microtransit service and hire a vendor for support for a variety of reasons. First, the labor union was concerned that a private vendor might replace current AC Transit labor with contract labor. Second, the agency was concerned that a contract solution would not be accessible to disadvantaged communities. Finally, AC Transit had already procured 14-passenger transit vehicles before the development of the project.

In 2016, operation of AC Transit Flex began in two zones. One microtransit route replaced a low performing bus route that connected the cities of Newark, Fremont, and Union City. Another Flex service zone in Castro Valley complements two existing bus lines. The pilot was intended to address declining ridership, improve service quality, and reconfigure networks in low-density communities. AC Transit also wanted the pilot to be cost neutral.

Figure 4.3 provides a description of the booking and travel experience for users of AC Transit Flex. By 2017, the pilot had approximately 700 unique users with 23,000 annual trips. On-time performance improved from 70 to 85 percent, with 94 percent of riders preferring the Flex service over fixed route transit service. However, Flex served just three passengers per revenue hour on average, less than half of the previous fixed route that averaged seven passengers per revenue hour. For AC Transit Flex the service cost \$72 per passenger in comparison to \$25 per passenger for fixed route service. In November 2017, AC Transit recommended the continuation of Flex for routes with less than seven passengers per revenue hour. Ultimately, the success of AC Transit Flex will depend upon its ability to provide coverage, while enhancing the frequency and ridership of high-capacity fixed route service (AC Transit, 2019; Goodman, 2018; Hursh, 2017; Eno Center for Transportation, 2018; Uργο, 2018).

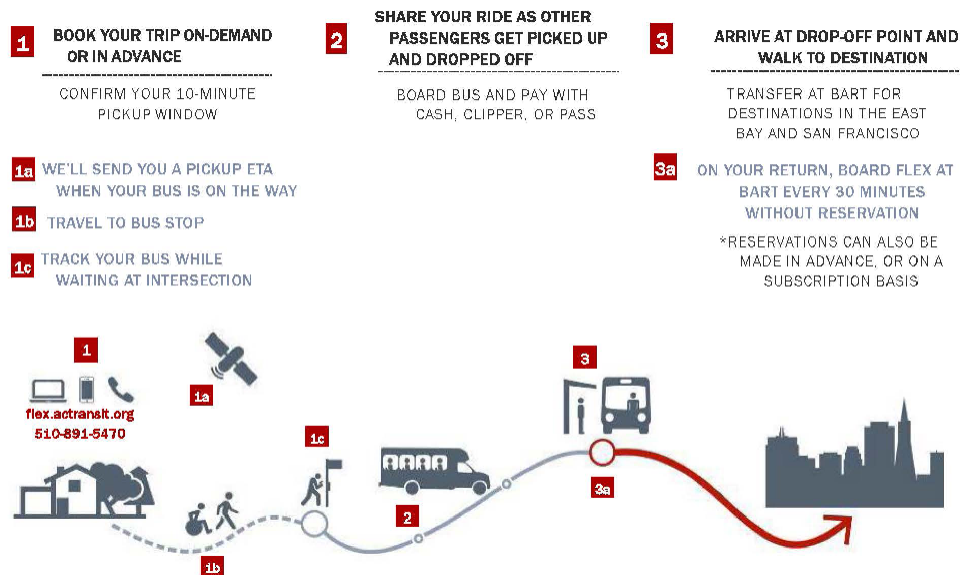


Figure 4.3. Illustration of an AC Transit Flex trip from booking to arrival at destination. Photo courtesy of John Uργο.

Opportunities and Challenges for Microtransit Partnerships

Microtransit can present a number of opportunities and challenges such as:

- **Marketing Microtransit Services Effectively** – Since these services typically operate differently than traditional public transportation, microtransit depends on effective communications and marketing to explain the operational differences and how to use the service.
- **Operations and Labor** - Agencies pursuing microtransit service may encounter challenges such as: procuring smaller vehicles, providing employee training, and managing potential issues with union contracts.
- **Social Equity** - The technology used by microtransit to provide dynamic routing and scheduling could create challenges for disadvantaged communities (See Social Equity Toolkit). Title VI of the Civil Rights Act requires that agencies perform an equity analysis, if they are replacing fixed-route service with microtransit to make sure the services do not have a disparate impact on disadvantaged communities.
- **Integrated Payment** - While some microtransit services may have integrated fare payment with public transportation (such as AC Transit Flex and the Clipper

Card in the San Francisco Bay Area), this may not always be the case. Integrated fare payment can enhance rider convenience and help ensure that microtransit complements fixed-route public transit services. For more information on ticketing integration, see the Shared Mobility and Public Transit Integration Toolkit.

Key Takeaways

- Microtransit is a privately or publicly operated, technology-enabled transport service that typically uses multi-passenger/pooled shuttles or vans to provide on-demand or fixed-schedule services with either dynamic or fixed routing.
- Microtransit can serve a variety of potential uses cases, such as first- and last-mile connections to public transportation, replacement of underperforming fixed-route services, supplement late-night transportation services, and provide additional options to augment or replace paratransit services.

RECOMMENDED READING

Cohen, A., & Shaheen, S. (2016). *Planning for Shared Mobility*.

<https://doi.org/10.7922/G2NV9GDD>

Eno Center for Transportation. (2018). *UpRouted: Exploring Microtransit in the United States* (pp. 1-27). Retrieved from Eno Center for Transportation website:

<https://www.enotrans.org/etl-material/uprouted-exploring-microtransit-united-states/>

KPMG. (2019). *Accelerating Mobility*. Retrieved from KPMG website:

<https://institutes.kpmg.us/content/dam/institutes/en/manufacturing/pdfs/2019/accelerating-mobility.pdf>

Shaheen, S., Stocker, A., Lazarus, J., & Bhattacharyya, A. (2016). *RideKC: Bridj Pilot Evaluation: Impact, Operational, and Institutional Analysis* (pp. 1-67). Retrieved from Transportation Sustainability Research Center website:

https://www.kcata.org/documents/uploads/TSRC_Bridj.pdf

REFERENCES

- AC Transit. (2019). AC Transit Flex. Retrieved from <http://www.actransit.org/flex/>
- City of West Sacramento. (2019a). *Regular Update on the Pilot On-Demand Rideshare Service* (pp. 1-31). Retrieved from City of West Sacramento website: <https://www.cityofwestsacramento.org/home/showdocument?id=8851>
- City of West Sacramento. (2019b). *Via On-Demand Rideshare*. Retrieved from City of West Sacramento website: <https://www.cityofwestsacramento.org/government/departments/public-works/traffic-transportation/on-demand-rideshare-via/-fsiteid-1>
- Cohen, A., & Shaheen, S. (2016). *Planning for Shared Mobility*. <https://doi.org/10.7922/G2NV9GDD>
- Eno Center for Transportation. (2018). *UpRouted: Exploring Microtransit in the United States* (pp. 1-27). Retrieved from Eno Center for Transportation website: <https://www.enotrans.org/etl-material/uprouted-exploring-microtransit-united-states/>
- Goodman, S. (2018). *Mobility on Demand for All: AC Transit's Flex Service*. Presented at the CalACT 2018 Autumn Technology & Shared Mobility Conference. Retrieved from <https://www.calact.org/assets/Mobility%20on%20Demand%20-%20Goodman.pdf>
- Hursh, M. (2017). *Staff Report: AC Transit Flex Service Update* (pp. 1-6). Retrieved from Alameda-Contra Costa Transit District website: http://www.actransit.org/wp-content/uploads/board_memos/17-128%20Flex%20Service%20Update.pdf
- Jose, B. (2017, September 14). Up for Approval: A New Permit Program for Private Transit, SF's Modern 'Jitneys.' Retrieved from SFMTA website: <https://www.sfmta.com/blog/approval-new-permit-program-private-transit-sfs-modern-jitneys>
- Kansas City Area Transportation Authority (KCATA). (n.d.). RideKC: Bridj Pilot. Retrieved from Kansas City Area Transportation Authority website: <https://www.kcata.org/transit-initiatives/bridj>

- Lucken, E., K. Frick, and S. Shaheen (forthcoming). "Three Ps in a MOD:" Role for Mobility on Demand (MOD) Public-Private Partnerships in Public Transit Provision, *Research in Transportation Business and Management*.
- Sacramento Regional Transit. (2019). *March 2019: FY 2019 Key Performance report* (pp. 1-9). Retrieved from Sacramento Regional Transit website: <http://www.sacrt.com/documents/Performance/KPI0319.pdf>
- SAE International. (2018). *Taxonomy and Definitions for Terms Related to Shared Mobility and Enabling Technologies* (pp. 1-13). https://doi.org/10.4271/J3163_201809
- SFMTA. (2017, October 17). Private Transit Vehicle Permitting. Retrieved from <https://www.sfmta.com/projects/private-transit-vehicle-permitting>
- Shaheen, S., Stocker, A., Lazarus, J., & Bhattacharyya, A. (2016). *RideKC: Bridj Pilot Evaluation: Impact, Operational, and Institutional Analysis* (pp. 1-67). Retrieved from Transportation Sustainability Research Center website: https://www.kcata.org/documents/uploads/TSRC_Bridj.pdf
- Urigo, J. (2018, May 15). Flex V. Fixed: An Experiment in On-Demand Transit. Retrieved from Transit Center website: <http://transitcenter.org/2018/05/15/adding-flexible-routes-improve-fixed-route-network/>
- Yoon-Hendricks, A. (2018, October 23). Mercedes-Benz vans or public buses? How West Sacramento residents are getting to the grocery store. *The Sacramento Bee*. Retrieved from <https://www.sacbee.com/news/local/transportation/article220439830.html>