Principles to Plan, Design, & Implement Innovative Mobility Pilot Projects

Nine principles with strategies, discussion prompts, and resources to spark creativity and innovation for mobility pilot projects

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SHARED-USE MOBILITY CENTER

Mobility Innovation Collaborative

Federal Transit Administration

April 2023

About the Shared-Use Mobility Center

The Shared-Use Mobility Center (SUMC) is a public-interest organization and a national thought leader in shared mobility. SUMC is working to replace car-centric transportation with people-focused shared mobility to fight climate change, promote equity and universal access, and strengthen community.

About the Federal Transit Administration

The Federal Transit Administration (FTA) provides financial and technical assistance to local public transit systems, including buses, subways, light rail, commuter rail, trolleys, and ferries. FTA also oversees safety measures and helps develop next-generation technology research.

The FTA's Office of Research, Innovation, and Demonstration focuses on providing funding and programs to support the advancement of technologies through pilot projects and research.

About the Mobility Innovation Collaborative

The Mobility Innovation Collaborative (MIC) is a SUMC program run in partnership with the FTA to provide technical assistance and share lessons learned from over 40 innovative mobility pilot projects from around the country awarded FTA Mobility Innovation grants. Through the MIC program SUMC supports developments of mobility pilot projects, facilitates knowledge exchanges, and convenes communities of practices and public events to foster mobility innovation.

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Cover Photo: DC Circulator

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SHARED-USE MOBILITY CENTER

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Project Background

Since 2017, the Shared-Use Mobility Center (SUMC) has been partnering with the Federal Transit Administration (FTA) to provide technical assistance to innovative mobility projects across the country that were supported by a series of FTA Research, Demonstration, and Innovation grants, and to lead initiatives towards fostering innovation in the transit industry at large[1].

In 2021, SUMC launched the Mobility Innovation Collaborative (MIC) program. The MIC supports nearly 50 innovative mobility projects across the United States that have received either an Integrated Mobility Innovation (IMI) grant or an Accelerating Innovative Mobility (AIM) grant to accelerate innovation in the mobility industry.

The MIC builds on the lessons learned from more than 70 mobility projects supported by the FTA that also include projects from the Mobility on Demand (MOD) Sandbox and MOD On-Ramp programs.

Aiming to spread knowledge to broader publics in the transit and shared mobility industry, SUMC is developing activities and tools to provide information, capacity building, and resources for organizations looking to initiate or accelerate their mobility innovation projects. This document serves as a starting point or reference to support leaders in transit and mobility innovation.

The Challenges & Opportunities of Innovative Mobility Pilot Projects

SUMC conducted industry-wide research on mobility innovation to understand what excites, challenges, and stumps people in the world of mobility innovation. To do this, SUMC turned to leaders in the mobility industry to understand their needs and gathered qualitative data from innovators in the field through expert interviews, surveys, and workshops.

[1] Shared-Use Mobility Center. "Multimodal Innovation for Transit Agencies." Shared-Use Mobility Center. https://sharedusemobilitycenter.org/multimodal-innovation/

Through these efforts, SUMC found that **innovators in the mobility industry need a resource that guides processes, tools, and best practices to effectively conduct needs assessments, capture the right datasets and quality of data, develop strong and lasting partnerships, and have access to mobility precedence for reference to accelerate innovation at their organizations to be better suited to implement innovative mobility projects.**

Why Use this Guidebook

This guidebook is intended for anyone in the transportation sector who knows that their community's transportation systems can do better and are ready to pilot new ideas. It is designed to help mobility innovators before and during a pilot project.

The goal of this guidebook is to provide a series of principles to better plan, design, and implement innovative mobility pilot projects. These principles have supporting information about strategies to execute this principle, examples of this principle in action, resources about this principle, and questions to prompt team discussions.

The principles have been developed from SUMC's research to provide strategies, resources, discussions, and examples to catapult action and to bring the principles to life. The principles included in this guidebook summarize a wide range of experiences from stakeholders working in different types of innovative mobility projects. As a result, this guidebook intends to serve a variety of mobility pilot projects and organizational change processes, as well as to support as many mobility professionals working in different contexts as possible. SUMC's hope is that this guidebook will help teams plan, design, and implement innovative mobility pilot projects better.

Photo: Pi.1415926535, Wikimedia Commons

The Principles

Here are the nine principles with a brief introduction. Each principle is expanded upon in the following sections.

1. Define end users' needs, wants, and pain points before brainstorming a pilot project.

A proposed mobility pilot project should have a clear *why* and be supported by observations and data that outline the mobility challenges end users face. Work with end users to clearly understand the transportation pain points they face and to brainstorm solutions. Transit agencies must conduct a robust community needs assessment to learn more about what problem the pilot is hoping to solve and who will be impacted by the pilot.

2. Reflect on whether technology is desired or required.

Technology is transforming the way we plan, design, and operate transportation services. Before piloting a new product or service and introducing new technologies, agencies need to consider whether these technologies are compatible with existing systems and infrastructure (e.g., broadband infrastructure and stable internet) and whether these technologies are well-suited for the end users.

3. Build a strong, functional, and creative team with the skill sets to implement and iterate pilot projects.

Having appropriate skills is essential to building a strong team that can understand the end user's pain points, brainstorm solutions, and execute an innovative mobility pilot project. Identify the directions a pilot project can go and bring together members that fill critical gaps

for a strong, functional, and creative team. Strong project management is key to keeping that team—and the project—on track. Effective project managers can help the innovative process by inspiring project teams to see the project through without suffering from burnout.

4. Foster partnerships to pursue and sustain new mobility projects.

Engage stakeholders and establish partnerships to build consensus and craft a cohesive vision around pilot projects. Partnerships among private mobility companies, software developers, government entities, academic institutions, community organizations, and residents support efforts to create and sustain new mobility services and products.

5. Establish thorough data agreements to avoid disputes.

Agencies must understand and clarify their data wants and needs before establishing an agreement with a mobility vendor so that the process is clear on how to measure a pilot's performance, make necessary improvements, meet user needs, and gain new insights.

6. Connect with innovators that were involved in similar mobility pilots.

While every project is unique, peer agencies and mobility innovators often have valuable lessons learned from previous endeavors that can be applied broadly. Connect with people involved in similar projects to get a sense of challenges you can plan for and include in a project schedule. By building on precedence, you can prepare for unknowns and be inspired with ideas for your own pilot project.

7. Leverage existing resources effectively.

Some of the most frequently cited barriers to innovation are lack of time, funding, and organizational capacity. Agencies can deploy strategies to leverage their existing resources by flexing federal funds, creatively utilizing current staff and equipment, incorporating desired skills through internship or apprenticeship programs, partnering with local organizations or academic institutions, and benefiting from technical assistance resources.

8. Be creative with testing the pilot to get feedback and iterate quickly before full-scale implementation.

A pilot project acts as a demonstration of how feasible an innovative idea might be. An ideal pilot phase will help an agency determine what works and what might need to change if a project is to be made permanent. Despite their nature as a temporary step towards a larger goal, pilot projects can still carry enormous cost and time burdens. It is therefore important to be creative in testing before fully implementing a pilot, to be diligent about collecting data and feedback, and to apply lessons learned that can help make the pilot go smoothly once it launches.

9. Build flexibility into the pilot's project approach to better navigate uncertainties.

New trends, technologies, and companies are constantly emerging, changing, and dissolving in the mobility landscape. Pilot projects are unique opportunities to test new concepts and ideas. Unlike established transportation services, pilots inherently entail uncertain outcomes. Building flexibility into the project schedule, design, team, and third party contracts allows for uncertainty along the way and increases the project’s resiliency.

PRINCIPLE #1

Define end users' needs, wants, and pain points before brainstorming a pilot project.

About this Principle

A proposed mobility pilot project should have a clear *why* and be supported by observations and data that outline the mobility challenges end users face. Work with end users to clearly understand the transportation pain points they face and to brainstorm solutions. Transit agencies must conduct a robust community needs assessment to learn more about what problem the pilot is hoping to solve and who will be impacted by the pilot.

Pilot projects are about testing and iterating on an idea. Sometimes the end of a pilot means completely re-examining the idea, and in other cases, it means the beginning of a permanent program. Regardless of the pilot's outcomes, provide high-quality customer and community experiences with project transparency, reliable feedback channels, and a communication plan to ensure communities are aware of the pilot's impacts, outcomes, and costs.

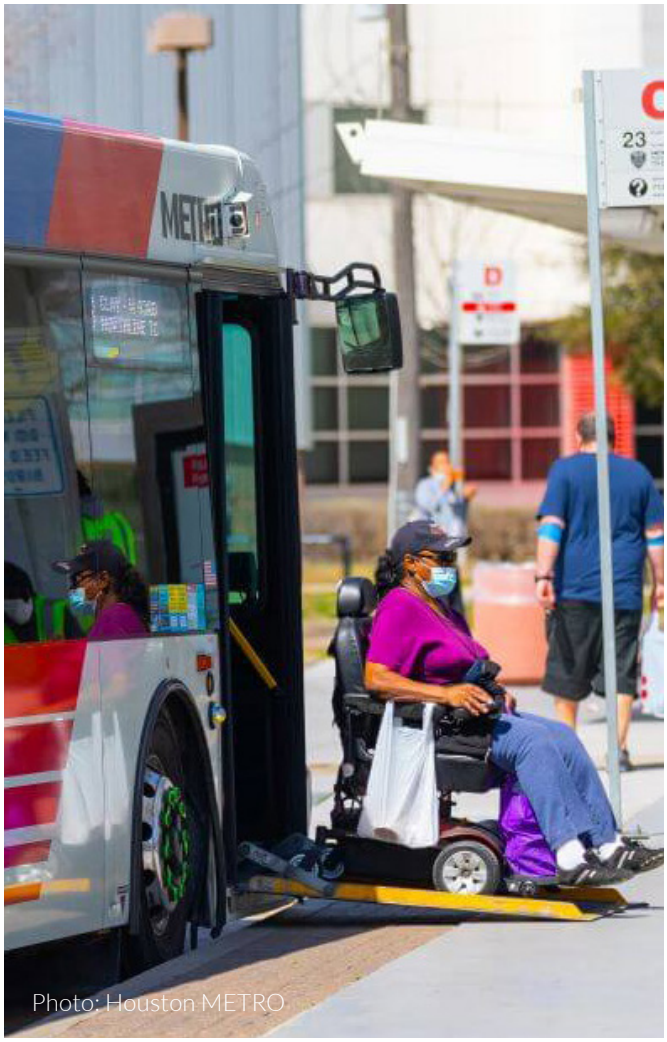

Photo: Houston METRO

Strategies to Execute this Principle

1. **Define who your end user is.** Understand who will be impacted by a mobility pilot project and who has been historically marginalized and/or overlooked by the government and markets.

2. **Create research methods and systems** to capture observations about end users and the spaces in which the pilot project will take place. Examples of systematic ways to capture observations include data-gathering forms, photos, mode counts[2], films, personal notes, surveys[3], interviews, and sketches[4].

3. **Conduct a needs assessment and engage with end users** to understand their needs, wants, and pain points. Examples of engagement include one-on-one discussions and interviews, focus groups, town halls, open houses, and interactive workshops.

4. **Create personas** to help build empathy for the end user and to remind the project team who they are designing solutions for. The Interaction Design Foundation defines personas as the following: "Personas are fictional characters, which you create based upon your research in order to represent the different user types that might use your service, product, site, or brand in a similar way. Creating personas helps the designer to understand users' needs, experiences, behaviors and goals."[5]

5. **Visualize the problem** by conducting spatial analysis. Use maps, demographic data, photos, and measurements to make connections and understand the magnitude of the problem and where it might be concentrated.

6. **Share findings with end users and co-create the pilot ideas.** Use reliable channels of communication like a website, a live slide deck, workshops, or recurring meetings to communicate research methods, outcomes, and next steps with community members and to use their feedback as action items for the project team.

7. **Be consistent, transparent, collaborative, and trustworthy.** Having these intentions and values throughout the course of the project supports a successful pilot.

[2] Boston Region's Metropolitan Planning Organization. "2-hour Bicycle-Pedestrian County." https://www.ctps.org/data/pdf/programs/livability/tally_sheet.pdf

[3] Supply Chain Transportation & Logistics Center. "Evaluation of Sound Transit Train Stations and Transit Oriented Development Areas for Phase 1 Research Project." University of Washington. *Page 59.http://depts.washington.edu/sctlctr/sites/default/files/research_pub_files/Evaluation-of-Sound-Transit-Stations-and-TOD-for-Lockers.pdf*

[4] Global Designing Cities Initiative. "What is a Street." Global Designing Cities Initiative. https://globaldesigningcities.org/publication/global-street-design-guide/defining-streets/what-is-a-street/.

[5] "Personas." *Interaction Design Foundation.https://www.interaction-design.org/literature/topics/personas*

Example of this Principle in Action

SPIN is a scooter share company with an equity program. In 2019, SPIN worked with Gehl, TransForm, Thrivance Group, The East Oakland Collective, Toole Design, D-Ford, Urban Footprint, and Populus to rethink SPIN's equity program.

By taking a people-first approach and using spatial analysis to visualize pain points, the team piloted a new access program, performed first-hand user research, and then went from pilot to program. SPIN's equity program has made improvements that focus on inclusion, easy enrollment, price transparency, reliable availability, and low-tech redundancies.

Read more about SPIN's equity program.

Photo: Spin

Resources for this Principle

1. Community Engagement Learning Module | Shared-Use Mobility Center
2. Community Engagement Principles & Recommendations | Elevated Chicago
3. Conducting Needs Assessment | Community Tool Box
4. Customer Experience Action Plan | Connecticut DOT
5. Customer Experience Action Plan | TransLink
6. Engage the Community, Mobility Project Implementation Toolkit, Step 4 | Clean Mobility Options
7. Field Guide to Human-Centered Design | IDEO
8. Incorporating UX Design into Transportation Solutions | Shared-Use Mobility Center
9. Making Equity Real in Mobility Pilots | The Greenlining Institute
10. Promising Practices for Meaningful Public Involvement in Transportation Decision-Making | Federal Transit Administration
11. Redesign SPIN's Equity Program | Gehl
12. The Basics of User Experience Design | Interaction Design Foundation

Questions to Prompt Team Discussions

Here is a list of prompts about this principle to discuss with the project team:

- [ ] Who are the end users?
- [ ] What are the end user's pain points?
- [ ] What are your and your project team's assumptions? Have you challenged them?
- [ ] How is the proposed pilot project equitable, inclusive, and culturally appropriate?
- [ ] How is the proposed pilot project useful to the community?
- [ ] How is the proposed pilot project accessible to the community?
- [ ] What feedback channels are available to community members before, during, and after the pilot project? Are they reliable? How are those channels maintained?
- [ ] How will communities be involved to co-create the pilot project?
- [ ] Where can communities see the status of this project? Is this source reliable?
- [ ] What is the plan to go from pilot to program if the pilot project is successful?

PRINCIPLE #2

Reflect on whether technology is desired or required.

About this Principle

Technology is transforming the way we plan, design, and operate transportation services. Before piloting a new product or service and introducing new technologies, agencies need to consider whether these technologies are compatible with existing systems and infrastructure (e.g., broadband infrastructure and stable internet) and whether these technologies are well-suited for the end users.

New mobility technologies are already improving and tackling different aspects of transportation. For example, ride-hailing applications and carshare services allow individuals to conveniently request a ride or travel when needed without owning a private vehicle. Mobility-as-a-Service (MaaS) platforms like Move PGH, which integrate various transportation modes onto a single software platform, improve travel experiences by providing real-time travel information, making it easier to plan and pay for trips. Autonomous vehicle (AV) shuttles, as seen in Arlington's RAPID AV service, are improving road safety and expanding transit options for riders with limited mobility. While intelligent communication frameworks such as vehicle-to-infrastructure (V2I) and vehicle-to-vehicle (V2V) communication are still developing, they can help improve driver safety and avoid congested routes by allowing vehicles to exchange information with each other and the infrastructure around them.

However, there are a number of potential downsides to integrating new mobility technologies into an existing transportation system. These technologies may be expensive to implement and maintain, vulnerable to cyber-attacks and software outages that directly impact their use, and may raise privacy concerns around personally identifiable information. Most poignantly, there can be concerns about the distribution of the benefits and costs of innovative mobility technologies and whether these technologies will disproportionately benefit certain groups over others.

The potential downsides of introducing new mobility technologies must be carefully considered to ensure that these technologies are developed and implemented in a way that is fair, broadly beneficial, and mindful of the realities of how all users perceive, use, and access transportation services. If a project involves piloting a new product or service that introduces new technologies, agencies need to consider whether these technologies take into account existing systems and infrastructure (e.g., broadband infrastructure and stable internet) and whether these technologies are well-suited for all end users (e.g., both unbanked and banked users).

Strategies to Execute this Principle

1. **Identify current transportation gaps** and determine whether or not introducing new technologies would better position the transportation system to meet access and equity goals. Make sure to involve community stakeholders in this process.

2. **Conduct an Infrastructure Audit** (i.e. process of technical evaluation that assesses the current status of systems, applications, and network) to examine the potential and limitations of technologies an agency or company currently uses.

3. **Create and formalize feedback processes** that regularly engage users and transit drivers. This creates an open and transparent channel of communication where users and drivers can offer insight and recommendations on a technology solution prior to and during a pilot's launch.

4. **Establish a cost-benefit analysis** for the evaluation and prioritization of mobility projects that incorporate transportation technologies. Ensure that the analysis accounts for equity, accessibility, and comfort impacts on users.

5. **Ensure there are processes to support staff when new technology is introduced.** Utilize the assets your organization already has when it comes to managing new technologies but also ensure that training is available for those unfamiliar with the new technology to help navigate technological transitions.

6. **Establish a back-up plan** that outlines measures to follow in case a technology software vendor changes business models, goes out of business, or otherwise goes offline, leaving users unable to book trips or receive real-time information.

7. Many mobility services are moving away from cash payments toward digital payments, which can present accessibility issues for low-income users. Many unbanked individuals remain unable to use conventional contactless credit or debit cards. For pilots that include payment technology, **ensure that unbanked users are still able to access services.** Inclusion of unbanked users should be a part of the project strategy and approach. Unbanked users refer to individuals who utilize mobility services but do not use any services offered at banks or credit unions. With no traditional checking or savings accounts, these individuals have no or limited access to credit cards and often rely on prepaid cards.

a. Explore options for mobility users to reload accounts or transit cards with cash at retail stores, frequented destinations in the community, or ticket vending machines.

b. Distribute reloadable fare cards through social service organizations, religious institutions, or other community institutions.

8. **Develop and conduct travel-training and educational programs** to help familiarize existing and new riders with transportation services or products. Suppose a transit agency launches a customer-facing mobile application for booking trips or transitions to an electronic payment system. In that case, teaching users how to book rides or reload money onto a virtual card is imperative to whether the target audience uses the new services.

Example of this Principle in Action

To transition to a cashless transit system, Greater Dayton Regional Transit Authority (RTA) launched its new fare payment system, Tapp Pay, in 2020. Tapp Pay is an account value payment system that uses fare-capping technology, which ensures that users never pay more than the price of a daily pass for multiple journeys. In other words, no matter how many trips you take, your Tapp Pay account will cap at $4 per day. Users can access Tapp Pay via smartphones on the Transit App or through reloadable smartcards. The agency introduced reloadable smartcards to ensure that users without smartphones or the internet could still utilize the contactless fare payment system and continue riding Greater Dayton RTA services. Users can add funds to their reloadable smartcard using debit or credit cards. And to serve unbanked users or anyone who prefers using cash, cards can also be reloaded via cash at Greater Dayton RTA transit center kiosks or participating retailers. Customers can convert cash to Tapp Pay value at around 300 retail outlets near Greater Dayton RTA fixed-bus routes.

[Read more about Tapp Pay here]

Photo: Greater Dayton RTA

Photo: Wake County, NC

In the summer of 2021, Wake County Human Services launched GoWake SmartRide NE, a microtransit service in Wake County, North Carolina, that utilizes a software platform to manage trip booking and scheduling. GoWake Access Transportation partnered with Kramden Institute to create adult education programs to help adults with lower technological literacy learn how to book rides and become familiar with the new mobile app. The program consisted of four weeks of training, during which participants learned how to use the mobile app, create an account, book rides, and use other app features. Those who did not own smartphones were given model phones when testing the app. While there is no data on how the program impacted GoWake SmartRide NE ridership among participants, the training was popular, and several senior centers have requested additional classes.

Read more about GoWake SmartRide NE

Resources for this Principle

1. Potential Impacts of Technology on the Customer Experience | Shared-Use Mobility Center
2. A Framework for Making Successful Technology Decisions | N-CATT
3. Technology Readiness Assessment | N-CATT
4. New Fare Payment Systems and Payment Technology Guidebook |N-CATT
5. A Decade of Research in New Mobility and Technology NITC Research Roadmap: Lit Review | NITC
6. Increasing Access for Unbanked Riders | Next Transit

Questions to Prompt Team Discussions

- [ ] What is your problem statement ?
  - Reminder: The solution to your problem may not be the introduction or purchase of a new technology.
  - N-CATT offers a framework for how to define a problem statement from identified pain points.
- [ ] What do you want to achieve by introducing this technology?
- [ ] What can you achieve by introducing this technology?
- [ ] How is this technology responding to users' and communities' needs or demands?
- [ ] What factors make this the right time and the right opportunity to introduce a new technology?
- [ ] In procuring new technologies, what is the overall cost (technology product plus staff time, community engagement efforts, training sessions, etc.) and the expected lifespan of the product? Does the technology provide enough openness and flexibility to make it sustainable over time?
- [ ] Have you engaged users and communities in the process of considering this new technology?
- [ ] What role will this new technology play within the implementing agency?
- [ ] How will this new technology interact or integrate with your existing technology systems?
- [ ] What budget, staff, and infrastructure is needed to support and maintain this technology?
- [ ] What training will be required for your staff and your customers to use this technology? Who will be responsible for leading the training effort?
- [ ] How can the introduction of this technology drive changes in social attitudes and travel behavior?
- [ ] Does this technology increase the digital divide? Is there a plan to bridge the digital divide?
- [ ] Does this technology prevent or limit accessibility for unbanked users?

PRINCIPLE #3

Build a strong, functional, and creative team with the skill sets to implement and iterate pilot projects.

Photo: Shared-Use Mobility Center

Photo: Shared-Use Mobility Center

About this Principle

Having appropriate skills is essential to building a strong team that can understand the end user's pain points, brainstorm solutions, and execute an innovative mobility pilot project. Identify the directions a pilot project can go and bring together members that fill critical gaps for a strong, functional, and creative team. Strong project management is key to keeping that team—and the project—on track. Effective project managers can help the innovative process by inspiring project teams to see the project through without suffering from burnout.

To build a team that supports the pilot project's goals and performance, leadership must plan programs that train existing staff, develop partnerships to pipeline future staff with the right skills, or plan for strategic third-party hires. Scenario planning for the different directions a pilot project can go can be useful for building a strong, functional, and creative team.

Once the scope of a pilot project has been finalized, create a workforce development plan that includes details about training to upskill the workforce and third-party hires to support the pilot project to fill occupational or skills gaps.

Photo: Shared-Use Mobility Center

Strategies to Execute this Principle

1. **Conduct a skills gap analysis** by making an inventory of existing skills and the skills needed for the pilot project's optimal performance. This analysis will also inform staff training needs or a hiring plan.

2. **Connect with innovators that were involved in similar mobility pilots** to learn about their reflections regarding their team's skills, skills gaps, and ideas on how to preempt specific skills gaps that they experienced.

3. **Work with external partners to conduct staff training.** Partners may be community colleges, first responders, training centers, technical schools, trade schools, or workforce training programs. If possible, leverage institutions and knowledge that already exist in the community.

4. **Develop your own training program** with in-house experts to leverage their knowledge and to customize the training program.

5. **Dedicate a percent of project funds for training programs** or apply for U.S. Department of Labor Workforce Development Funds for training programs. According to the Federal Transit Administration's (FTA) report, *Identifying Current and Future Training Needs of the Public Transportation Industry*, the FTA recommends that three percent of payroll should be dedicated to training, even though data shows that transit agencies commit less than one percent of payroll on average to training.[6]

6. **Recognize and incentivize participation in training programs** with college credits, flexible work time, certificates, promotions, and competitive wages.

7. **Create a mentorship program supported by leadership and developed by staff.** This way, the mentorship program can have a safe space for staff to support each other.

[6] Noland, DiPetrillo, Lubin, and Voorhees. "Identifying Current and Future Training Needs of the Public Transportation Industry." Federal Transit Administration Report. March 2021. https://www.transit.dot.gov/sites/fta.dot.gov/files/2021-06/FTA-Report-No-0191.pdf

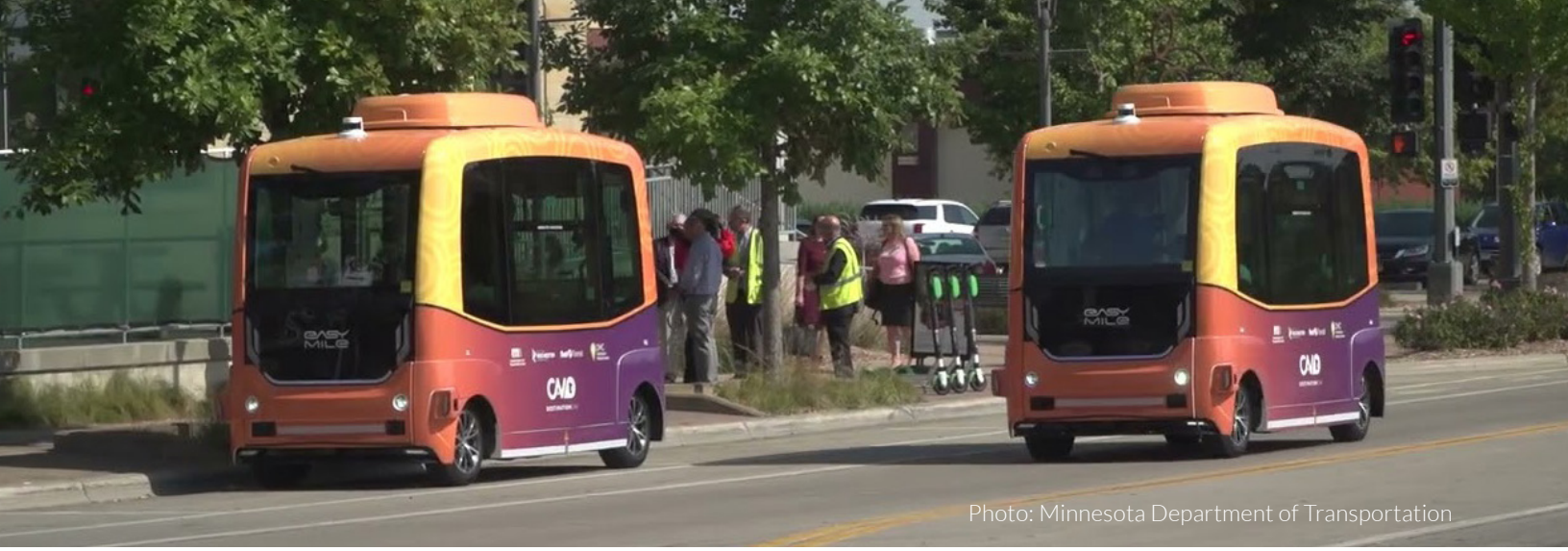

Photo: Minnesota Department of Transportation

Example of this Principle in Action

The Minnesota Department of Transportation's (MnDOT) Office of Connected and Automated Vehicles (CAV-X) recognizes that there is a need to train people for an autonomous future who have the skills to build and manage connected and automated infrastructure.

MnDOT has a Labor and Workforce Development Committee that is dedicated to planning for the skills and jobs that connected and automated vehicles will require. In fact, MnDOT and Minnesota state colleges and universities are partnering together to create CAV training programs that prepare the workforce for the new skills that will be in demand. Skills that have been forecasted by the state for connected and autonomous vehicles include: cyber security experts, data scientists, electrical engineers, electricians, equipment operators, mechanics, mobility managers, network architects, directory, server and database administrators, permits and right-of-way staff, and radio frequency engineers.

Read more about MnDOT's goals, plans, and preparation for a connected and automated future.

Resources for this Principle

1. Activity: Pilot Next Steps - Ditch, Iterate, or Scale | The Learning Center Accelerator
2. Connected and Automated Vehicle Strategic Plan | Minnesota Department of Transportation
3. Fundamentals of Mentoring | International Transportation Learning Center
4. How to Conduct a Skills Gap Analysis | Resources for Employers
5. Identifying Current and Future Training Needs of the Public Transportation Industry | Federal Transit Administration
6. Innovative Transit Workforce Development Program: Key Lessons Learned | Federal Transit Administration
7. Strategic Workforce Planning: Developing, Supporting, and Strengthening Your Incumbent Workforce | International Transportation Learning Center
8. Transit Workforce Development | Transit Workforce Center

Questions to Prompt Team Discussions

- [ ] What did you learn from your skills gap analysis?
- [ ] What challenges did the team face in past projects, and how can the team preempt those challenges in this project?
- [ ] With whom have you connected that was involved in similar mobility pilots to learn about their team's skills and skills gaps? What did you learn from that conversation?
- [ ] If there are skills gaps in your team, can training programs upskill existing staff and close that gap? Which institutions might be good to lead these training programs?
- [ ] Is there a healthy training budget to continue training staff throughout the course of your pilot project?
- [ ] How will members of your team be recognized for the skills they continue to develop?
- [ ] Which team activities are in place to create a team culture based on collaboration and trust?

PRINCIPLE #4

Foster partnerships to pursue and sustain new mobility projects.

About this Principle

Public-private partnerships (PPPs) are in many ways a backbone of innovative mobility projects. Agencies and local governments have used PPPs to leverage funding to finance large capital projects, increase operating efficiencies, and bring new products and services to their communities. It is therefore critical to engage stakeholders and establish partnerships to build consensus and craft a cohesive vision around pilot projects.

However, despite their pivotal role in many mobility projects, PPPs come with their own set of challenges. Navigating partnerships can be one of the most difficult aspects of a mobility project. Because of the uncertainty that comes with many innovative mobility pilots, PPPs can face major and unexpected challenges which can impact the project's development. In a worst-case scenario, a project partner can go out of business or reorganize in a way that prevents it from continuing the partnership.

Major changes like this can lead to drastic changes in the project's course or, at worst, the termination of a pilot project altogether. For an innovative mobility project to succeed, it is therefore necessary to foster close collaboration with all parties, quickly and carefully work out legal and operational details with partners, and be willing to grow and adapt. If done thoughtfully, relationships between private mobility companies, software vendors, government entities, academic institutions, community organizations, and residents support efforts to bring and sustain new mobility services and products in communities.

Strategies to Execute this Principle

1. **Evaluate whether and why a partnership would be beneficial to the project.** Can a partnership help provide services that the agency can't alone? Will forming a partnership help with funding the project? Will a partnership help mitigate other resource burdens on the agency like staff capacity or time?

2. Find partners that are both **willing** to meet the needs of the project and **capable** of meeting those needs.

3. Be flexible and ready to adapt to changes, and **have contingency plans.** Partnerships do not always work out exactly as planned for a multitude of reasons. The more flexible and willing to adapt agencies can be throughout the project, the better position the partnership will be in to continue to deliver what they set out to provide.

4. **Consider the project community.** Partnerships should be used first and foremost to achieve public goals. How does the partnership further these goals? Is the private partner a local business? Is there representation from the community in the partnership? Make sure to collaborate with community leaders. Local leadership can bring out voices that have unique perspectives on the project area that government entities and private mobility companies do not have.

5. **Engage with procurement and legal teams as early in the process as possible** to discuss specific requirements and considerations to avoid potential contracting delays.

6. Consider **outcomes** from both the agency's and partners' perspectives. Is the mobility project sustainable for all parties?

7. Engage with partners and other key stakeholders to build consensus and craft a **cohesive vision** around the project.

8. A partnership should be a **resource.** Think of a partnership not as a be-all, end-all for a mobility project, but a tool to overcome specific project shortcomings.

9. **Think long-term.** Building and maintaining durable relationships with partners can make adapting to changes more manageable. Knowledge and experience with a partner can be an invaluable asset, and can not only diminish some of the project uncertainty, but also make the contracting process more streamlined.

Photo: Norwalk Transit District

Example of this Principle in Action

Wheels2U is a microtransit service based in Norwalk, Connecticut, since 2018, the first of its kind in the state. In developing the pilot program, Norwalk Transit formed partnerships with both public and private stakeholders, including the Connecticut Department of Transportation and the FTA, as well as Via for its technology platform provider. Additionally, Norwalk Transit took a grassroots approach to local partnership building and formed partnerships with local restaurants and businesses to offer promotions and discounts to Wheels2U riders. Participating businesses could also display a Wheels2U poster, further promoting the partnership and the microtransit service. This local approach helped to foster a community-based service, build a ridership base for the program, and emphasize the benefits of Wheels2U to the local community and business district.

Read more about Wheels2U.

Resources for this Principle

1. Public-Private Partnerships in Public Transportation: Policies and Principles for the Transit Industry |American Public Transportation Association Task Force on Public-Private Partnerships
2. Public-Private Partnerships (P3s) in Transportation | Congressional Research Service
3. How Do You Build Effective Public-Private Partnerships? |Yale Insights
4. 8 Crucial Factors to Consider Before Embarking on a Public Private Partnership | JLL
5. Forging Partnerships between Healthcare Facilities and Transportation Agencies |National Center for Mobility Management
6. Public-Private Partnership (P3) Procurement: A Guide for Public Owners | USDOT and Build America Bureau
7. FHWA P3 Toolkit | Federal Highway Administration

Questions to Prompt Team Discussions

- [ ] What needs does your project have that your agency cannot provide?
- [ ] How can a partner fulfill those needs? How do you plan to address the needs a partner cannot fulfill?
- [ ] Have you performed a stakeholder analysis? A stakeholder analysis can help you identify relevant partners before the project begins, assess how best to involve them, what their impacts on the project could be, and how their specific interests could be addressed.
- [ ] Have you budgeted enough time and labor to establish, develop, and finalize agreements and contracts with your partner(s)?
- [ ] Is there anything one potential partner can offer that others cannot? If so, what is that one thing?
- [ ] What specific requirements and considerations will your agency have of your partner(s)?
- [ ] Have you gone over proposed agreements and contracts with your legal and procurement teams?
- [ ] Have all parties agreed on milestones and service levels, to ensure that progress is steady and well-monitored and service is satisfactory throughout the partnership?
- [ ] Do you and your partner(s) have a cohesive vision for your project, its operations, and its goals?
- [ ] What are your backup plans in case a partner changes course or goes out of business?
- [ ] Are there any events, incentives, or other opportunities for you to pursue with your partner(s) that will help build a mutually beneficial relationship and strengthen your project?

PRINCIPLE #5

Establish thorough data agreements to avoid disputes.

About this Principle

Mobility data, which includes information on real-time vehicle locations, trip origin and destination locations, trip time, and other travel characteristics, is often closely held by private mobility operators when they control the vehicles or technology used to provide mobility services. Operating or regulatory entities who oversee these projects, like cities or transit agencies, need access to this data to fully understand the impacts of the new service or product and if it is meeting its intended goals. Thus, data sharing agreements between public or private mobility providers and the piloting agency are essential.

Agencies must understand and clarify their data wants and needs before establishing an agreement with a mobility vendor so that the process is clear on how to measure a pilot's performance, make necessary improvements, meet user needs, and gain new insights.

Strategies to Execute this Principle

1. **Consider your project's objectives and performance metrics.** Identify the types of data required to measure progress toward these objectives before drafting a contract with a mobility vendor.

2. **Set up discussions with peer agencies that have established public-private partnerships** to gain insight into their experience in receiving and sharing data. Agencies who have undergone similar projects may share challenges, best practices, and lessons learned in accessing data that can help inform how another entity chooses to address data-sharing agreements, data visualization, and communication procedures.

3. **Explore open data standards** to support the exchange of mobility data between systems. Prioritize working with mobility providers who use open-source data standards like the General Transit Feed Specification (GTFS) or the General Bikeshare Feed Specification (GBFS).

4. **Explore what potential providers' approaches to data sharing are** and aim to select a partner who can support and respond to the level of data sharing and analysis the project requires.

5. **Before partnering with a specific mobility vendor, request a demonstration of their agency-facing data dashboards.** Make sure there is a complete understanding of the ways in which necessary datasets will be presented for analysis to avoid future data analysis challenges. Also take this time to establish a clear understanding of your ability to export/download this data locally or connect it to a data pipeline via APIs or other means.

6. **Ensure data handling and security protocols are discussed thoroughly** ahead of forming partnerships and are clearly defined in agreements.

7. **Encourage or require that entities meet Data Specification Standards.** Due to their established uniformity, these standards can help operators communicate with more than one municipality or governing body using the same data reporting. Commonly used transportation data specifications include GTFS and its extensions; GBFS; and the Mobility Data Specification (MDS).

8. When formalizing a data agreement, consider the tips below:

   — Use broad language when defining use rights in data sharing license agreements with mobility providers to allow for flexibility and avoid contract renegotiation.

   — Historical data can be integral for analyzing trends, therefore, if available, ensure you can access historical data and/or pre-pilot data. The operator data license should indicate the need for historical data collection.

   — Entities should use the same data sharing license agreement format for each mobility provider they work with to ensure and maintain their right to necessary datasets.

   — Ensure data agreements allow access to mobility data even after a provider ceases operation.

9. If obtaining or holding the necessary data is hindered by constraints related to public records disclosures or agency capabilities, **agencies should consider using a third-party data repository,** as long as the information made available through this repository aligns with the agency's objectives. Utilizing a third-party repository would also require a clear access agreement, guaranteeing the public agency access to "views" of the data at the levels needed for accomplishing its work.

Photo: City of Arlington, TX

Example of this Principle in Action

In August 2017, the City of Arlington, Texas, sought proposals from qualified companies in the mobility service and technology sectors to help develop a pilot project for a demand-responsive ride-sharing service. The city selected Via Transportation, Inc. to operate the rideshare service and entered into a contract agreement. The partnership between the city and Via yielded a trove of publicly available documents from the issuance of the request for proposal through implementation. The contract includes provisions for performance and data reporting, service performance guidelines, and fare structure and payment.

When it comes to data agreements, different agencies are willing to agree to different parameters and aggregation levels of the data within their partnerships. Under its agreement with Via, the City of Arlington has access to the following data on a periodic basis:

- Individual ride data (anonymized): requested origin, requested destination, number of passengers, time and length of ride, fare paid
- Aggregated service data (for a given period): completed rides, active drivers, driver hours, utilization (rides per vehicle per hour), average trip duration (minutes)
- Performance standards (for a given period): average estimated time of arrival to pick-up, percentage of on-time rides, percentage of rides completed, rider satisfaction metrics
- Historical trends (over longer periods): overall ride volume/growth, top requested origins and destinations, demand 'heat maps'

Read more about how the City of Arlington was able to work towards mutually agreeable terms through an iterative procurement process

Resources for this Principle

1. The Mobility Data Sharing Assessment |Mobility Data Collaborative
2. Practical Guide to Mobility Data Sharing & Personal Privacy under GDPR ruling | Vianova
3. A Practical City Guide to Mobility Data Licensing | REMIX
4. Objective-Driven Data Sharing for Transit Agencies in Mobility Partnerships |Shared-Use Mobility Center
5. Managing Mobility Data | NACTO
6. CAL-ITP Standardizing Statewide Mobility Data With California's GTFS Guidelines |CAL-ITP
7. Six Tips for Fostering Trust in Data Sharing Partnerships | The Data Values Digest

Questions to Prompt Team Discussions

- [ ] What planning and management activities depend on accessible data?
- [ ] What does leveraging data help you accomplish?
- [ ] Are your data needs driven by your objectives?
- [ ] How can data help users complete a trip? What type of data is most helpful for users to receive as they plan for and complete trips?
- [ ] How will data be communicated within and outside of your organization/entity?
- [ ] Does your organization have the capacity to safely ingest, process, and archive potentially large amounts of data, which may also contain personally identifiable information?
- [ ] What questions do you need your data to answer?
- [ ] Are our data systems or formats compatible with the formats and systems of the vendor?

PRINCIPLE #6

Connect with innovators that were involved in similar mobility pilots.

About this Principle

While every project is unique, peer agencies and mobility innovators often have valuable lessons learned from previous endeavors that can be applied broadly. Connect with people involved in similar projects to get a sense of challenges you can plan for and include in a project schedule. By building on precedence, you can prepare for unknowns and be inspired with ideas for your own pilot project.

Use knowledge exchange platforms like the Mobility Learning Center, the Mobility Innovation Collaborative, or Peer Networks to learn about similar pilot projects and who has been involved. In addition, use existing professional networks like LinkedIn's Urban Planning Group to create your own forum to exchange ideas about your pilot project.

Strategies to Execute this Principle

1. **Read about similar pilot projects,** their challenges, and their outcomes through online resources, and contact the author if there are any outstanding questions.
2. **Join peer networks** and **professional organizations** explicitly designed to exchange ideas and experiences. For example, there are NACTO's Peer Networks and LinkedIn's Urban Planning Group.
3. **Use social media accounts** to ask for pertinent information.
4. Identify which cities have mobility innovation offices or chief innovation officers (CIO) and **review their portfolio of work** for ideas.

5. **Identify transportation conferences with themes and topics that align with the pilot project.** Use the conference program to know experts in the industry with whom you can meet at the conference or connect on social media.

6. **Know which universities have labs or institutes focused on transportation and mobility innovation.** If their work is relevant, meet with them to pitch the pilot project idea and get their feedback.

Example of this Principle in Action

A few state-level organizations in the United States are committed to coordinating knowledge and resources to advance efforts in city planning. For example, the Clean Mobility Equity Alliance (CMEA) is a peer-to-peer network that brings "organizations, municipalities, transit agencies and mobility providers 'together' to meet California's climate, air quality and equity goals." The Texas Innovation Alliance (TIA) is also a peer-to-peer network that brings together "Texas cities, transportation agencies, and research institutions'' to work together to improve "safety, congestion, and accessibility." Since 2020, Minnesota Department of Transportation has supported the Greater Minnesota Shared Mobility Webinars, a monthly webinar series that is open to the public and is dedicated to increasing knowledge amongst one another about "shared use technology and services" across the state.

Photo:
RideKC Streetcar

Resources for this Principle

1. Clean Mobility Equity Alliance | Clean Mobility Options
2. Get to Know: Chief Innovation Officers | Data-Smart City Solutions
3. Greater Minnesota Shared Mobility Webinars | Minnesota Department of Transportation
4. Urban Planning Group | LinkedIn
5. Mobility Innovation Collaborative | Shared-Use Mobility Center
6. Texas Innovation Alliance | Texas Innovation Alliance
7. Transit Lab | MIT
8. Mobility Data Membership Program | Mobility Data
9. Peer Networks | NACTO
10. Open Mobility Foundation - Participate | Open Mobility Foundation
11. Pilot Projects | Planetizen
12. Mobility Learning Center (MLC) | Shared-Use Mobility Center
13. Transportation Technical Assistance Coordination Library (TACL) | TACL
14. Urban Freight Lab | University of Washington
15. Global Research on Cities | World Resources Institute

Questions to Prompt Team Discussions

- [ ] What did you learn from your review of similar pilot projects, their challenges, and their outcomes? Create a shared document that captures this information for the project team.
- [ ] Which learnings from the literature review can be action items to improve your pilot project?
- [ ] Has the project team prepared a list of questions about the major unknowns or anticipated roadblocks of the pilot project?
- [ ] Who have you and the project team contacted to learn about a similar pilot project? Did you and your team ask questions from the list of unknowns?
- [ ] Which research institutions or individual researchers have worked on similar projects or concepts? Have you contacted them to provide feedback on your pilot project?
- [ ] Which peer networks or membership programs would be beneficial to the pilot project for members or your team to join?

PRINCIPLE #7

Leverage existing resources effectively.

About this Principle

Some of the most frequently cited barriers to innovation are lack of time, funding, and organizational capacity. Agencies can deploy strategies to leverage their existing resources by flexing federal funds, creatively utilizing current staff and equipment, incorporating desired skills through internship or apprenticeship programs, partnering with local organizations or academic institutions, and benefiting from technical assistance resources.

While it may not be possible to produce new resources where none existed before, by carefully and creatively leveraging existing resources, agencies can reduce the burdens of time, money, and staffing.

Photo: Momoneymoproblemz, Wikimedia Commons

Strategies to Execute this Principle

1. Keep the project and agency's **strategic planning goals** in mind when considering how to allocate resources. The clearer the project's goals and priorities are, the easier it will be to make resource allocation decisions.

2. **Start from the *inside* out.** If your agency is piloting a mobility project, assess first what existing resources

(e.g. vehicles, facilities, and staff) you already employ that could be reassigned, reorganized, or adapted to the new project. The more adaptable your agency is with its existing resources, the more opportunities you will create to leverage those resources to support a new project.

3. There are opportunities to **flex federal funds.** Transit agencies can use funds from a variety of sources outside of FTA funding. For example, in some situations Federal Highway Administration (FHWA) dollars can be transferred for public transportation projects so that administrative duties are assigned to the FTA. This allows agencies to use federal funds to make transit, pedestrian, and bicycle improvements that would otherwise be difficult to achieve. Eligible programs for flex funding include (but are not limited to) the Congestion Mitigation and Air Quality (CMAQ) and the Carbon Reduction Program.

4. If the agency is receiving federal funds for a project, it may be required to provide a **local match** as part of the total funding. Though it is most common for agencies to meet local match requirements supported by contributions from local or state government funds, project partners, or funds from philanthropic or non-profit sources, a few federal programs are eligible for use as local match funds on certain projects. For example, Temporary Assistance for Needy Families (TANF) funds are expressly authorized, as is FTA formula funding under certain circumstances.

5. **Be willing to adjust the plan.** During the course of the project, there may be opportunities and reasons to reevaluate and revise the plan. The *sunk cost fallacy* is the mindset in which people are influenced to continue a process only because they have invested significant time and resources in it, even if the process is not working. If an aspect of the project is not progressing as intended, be wary of letting biases get in the way. Effective resource management can sometimes mean knowing when and how to cut losses and change course in a way that is most beneficial to the budget and the project's financial sustainability.

6. Though time is a scarce resource, it helps to **be intentional about setting aside time for the team to be creative.** Making space away from tasks, projects, meetings, and deadlines to create and brainstorm helps advance the innovative process, and can help move the project along more quickly down the line.

7. Explore apprenticeship or internship programs. Initiatives like the American Transit Training and Apprenticeship Innovators Network, set up by the FTA-sponsored Transit Workforce Center, can help agencies explore new apprenticeship opportunities and connect with peer agencies who are implementing their own apprenticeship programs. Apprenticeship and internship programs are a cost-effective way to train workforce for projects using existing resources.

8. Consider partnering with **academic institutions.** Sometimes, agencies will form partnerships with colleges or universities to better support innovative projects or technologies. While there may be limitations and challenges associated with these partnerships, academic institutions can

be a resource to help connect the project with staffing, research, and technology resources in a way that could be beneficial to all parties. Being a part of a university laboratory can pave the way for good opportunities.

9. Look into **resource management tools and software** to help with project planning. Various project management programs (like Airtable, Salesforce, Asana, Monday, Trello, or GanttPRO) can help make better use of existing resources. Consider whether these tools will support a single project, or will need to further integrate with your agency's other IT systems. Tip: See Principle 2!

10. Don't understate the value of a good **project manager.** An experienced project manager will help the team stay focused and keep track of time and budget, and can help utilize each team member's skills as efficiently and effectively as possible. A seasoned project manager can also find avenues to leverage resources from partners and stakeholders to support the project.

Example of this Principle in Action

The Crawford Area Transportation Authority (CATA) in Meadville, Pennsylvania, wanted to add bikeshare to its suite of services. However, with few existing bikeshare models in rural areas to replicate, and with institutional limitations on federal funding for bikeshare, it was initially challenging for CATA to garner financial support for a new and innovative project. Thus, CATA created a separate 501(c)(3) non-profit organization which allowed the agency to maintain ownership over the program while leveraging other funding sources, like local business sponsorships.

[Read more about the Meadville Bikeshare program.]

Photo: Crawford Area Transportation Authority

Photo: Florida DOT

The Florida Department of Transportation (FDOT) partnered with the City of Gainesville and the University of Florida (UF) on the Gainesville Autonomous Transit Shuttle (GAToRS), an autonomous shuttle pilot project. The project involved two 12-passenger vehicles operating between downtown Gainesville and UF campus. UF acted as a research partner throughout the pilot, studying public perceptions of AVs, impacts of the project on riders with disabilities, and how user experience evolved throughout the project, as well as assisting with geographical and operational analyses. Research results and user feedback were shared with all project partners, and helped FDOT and the City of Gainesville determine desired modifications to the shuttle and operations. Ultimately, having UF as a research partner allowed FDOT and Gainesville to access resources not otherwise available to help improve the project.

Read more about the GAToRS AV pilot.

Resources for this Principle

1. Creative Ways to Fund On-Demand Public Transportation and Microtransit | Via
2. Course: Cost Allocation Techniques for Community Transportation | National Center for Mobility Management
3. Calculate Costs: A Guide for Budgeting a Mobility Project | Clean Mobility Options
4. Resource Center | Transit Workforce Center
5. Transit Workforce Shortage | American Public Transportation Association
6. My Economic Impact Tool | American Public Transportation Association
7. Transit Tech Career and Technical Education High School | NYC Department of Education
8. Webinar: University-Transit Agency Partnerships to Explore Emerging Technology | N-CATT

Questions to Prompt Team Discussions

- [ ] What resources have you identified as necessary to successfully implement this project? Think about vehicles, staffing, facilities, software, and other resources.
- [ ] Is your budget thorough? Have you considered all permitting, training, insurance, equipment, outreach, construction, and administration costs?
- [ ] Have you considered extra staff and time needed for cleaning and disinfecting vehicles and facilities per CDC guidelines, in light of COVID-19 or other health emergencies?
- [ ] What opportunities do your staff have to foster creativity and innovation outside of their day-to-day tasks?
- [ ] What outreach efforts are you taking to reach potential new staff? Are there blind spots in your outreach plan?
- [ ] Complex project management software may be cost- or staffing-prohibitive, even if it can assist in the long run. What is your agency's capability to incorporate new software into its toolbox?
- [ ] Have you identified any opportunities to leverage funds from other local or regional projects that may interact with your mobility project?

PRINCIPLE #8

Be creative with testing the pilot to get feedback and iterate quickly before full-scale implementation.

About this Principle

A pilot project acts as a demonstration of how feasible an innovative idea might be. An ideal pilot phase will help an agency determine what works and what might need to change if a project is to be made permanent. Despite their nature as a temporary step towards a larger goal, pilot projects can still carry enormous costs and time burdens. It is therefore important to be creative in testing before fully implementing a pilot, to be diligent about collecting data and feedback, and to apply lessons learned that can help make the pilot go smoothly once it launches.

Strategies to Execute this Principle

1. Develop **clear objectives, goals, and performance metrics,** and identify what you want to learn from the pilot. Keep expectations and goals realistic and manageable.

2. If possible, try a **soft launch of the pilot** before fully launching. Testing at a smaller scale can give more time to work out kinks, more insight to how the project might run on a full scale, and opportunity to address initial customers' feedback to improve the service.

3. **Build a prototype** before beginning the full pilot. Prototypes are "low-resource, quickly deployed versions of a policy or product that can be used to run experiments, test and decide whether to invest more fully. They offer a way to make an idea 'real' and to explore social and technical feasibility before heavy investment."[7]

[7] Fleisher, Arielle, and Chris Chou. "Scooters, Bikes and Buses: Reclaiming Pilot Projects for the Public Good." *San Francisco Bay Area Planning and Urban Research Association.* July 19, 2019. https://www.spur.org/news/2019-07-19/scooters-bikes-and-buses-reclaiming-pilot-projects-public-good

4. Make sure there is a **clear process for both users and operators to offer feedback** and create a dialogue with the planning team. This will help the entire agency understand how decisions might impact the service.

5. Create a mechanism for **reporting back to the community** on a regular basis.

6. **Don't be afraid to change course.** As more information becomes available throughout the pilot, you may need to make changes to how your service operates. It is a continually iterative process.

7. **Learn from failure.** There are plenty of risks and costs associated with demonstration projects, but the purpose of piloting is ultimately to learn if a new idea is a viable approach to solving mobility issues. Even if a pilot is not meeting its goals, there are still important insights to learn from the experience.

8. **Have a plan to scale up.** A successful demonstration pilot does not necessarily lead to a seamless full implementation. Challenge your team to consider what challenges you might face on a larger scale and what adaptations you may need.

Example of this Principle in Action

Copley Connect was a 10-day pilot project in the Black Bay neighborhood of Boston, Massachusetts, which transformed a portion of Dartmouth street into a plaza space. During the pilot, the street was closed to motor vehicles (with the exception of emergency vehicles and food trucks), and the city added cafe tables, turf grass, spaces for public activities, and connections to civic destinations. The City of Boston used this pop-up project to study the impact of closing the street and examine both the positive and negative impacts on pedestrian and vehicle traffic in the area. Though the pilot only lasted for 10 days in 2022, the insights gained will be applied to future initiatives towards pedestrian-friendly infrastructure in the city.

[Read more about Copley Connect.]

Photo: Ted Schwartzberg/
The Daily Free Press

Resources for this Principle

1. Tactical Urbanism Guides
2. From Pilot to Permanent | NACTO
3. Policy Brief: Urban Mobility Pilots | Harvard Kennedy School
4. Webinar: Pop-up to Permanent: Delivering Lasting Impacts from Pilot Projects | NACTO
5. Stories of Delaware's Complete Communities: Pop-Up Demonstration and Pilot Projects interactive map | Institute for Public Administration at the University of Delaware
6. Scooters, Bikes and Buses: Reclaiming Pilot Projects for the Public Good | San Francisco Bay Area Planning and Urban Research Association
7. The Global Nighttime Recovery Plan
8. Course: Creating Innovative Transportation Solutions | National Center for Mobility Management

Questions to Prompt Team Discussions

- [ ] What do you intend to learn from your pilot?
- [ ] Who is your target audience? Who might be a good sample of your target audience?
- [ ] Can you test launch on a smaller scale to get a feel for how the project will run? That may mean operating with fewer customers, a smaller service area, limited service hours, or for limited purposes than your initial plan.
- [ ] What data and performance metrics will you collect? What will that information help you learn?
- [ ] How do you plan to collect feedback? How will you communicate progress and insights with the community?
- [ ] What challenges do you anticipate facing if you scale up?

PRINCIPLE #9

Build flexibility into the pilot project's approach to better navigate uncertainties.

About this Principle

New trends, technologies, and companies are constantly emerging, changing, and dissolving in the mobility landscape. Pilot projects are unique opportunities to test new concepts and ideas. Unlike established transportation services, pilots inherently entail uncertain outcomes. Building flexibility into the project schedule, design, team, and third party contracts allows for uncertainty along the way and increases the project's resiliency.

Flexibility is built through a deep understanding of the project and its relationship to external factors. By periodically assessing tasks, workloads, and team capacities, and carefully balancing time, resources, priorities, risks, and opportunities, teams can remain nimble and creatively adjust to changes as the project evolves.

Photo: TAP App

Photo: Shared-Use Mobility Center

Strategies to Execute this Principle

1. **Scenario plan** by "identifying and analyzing situations that could happen in the future."[8] For example, scenarios could explore situations in which the budget or staff members significantly change.

2. **Create a risk response strategy by incorporating contingency reserves and management reserves in the budget to respond to and manage risks.** Contingency reserves are for "known unknown" risks, while management reserves are for "unknown unknowns."[9] Having these reserves is a form of risk management and may reduce major compromises to the pilot project.

3. **Have regular recurring meetings focused on reviewing and revising the project scope, schedule, and budget.** This is key to ensuring that the project captures the latest conditions.

4. **Acknowledge resource limitations and understand how to better flex the pilot project** by assessing what trade-offs you are encountering and discussing who can collaborate with you in addressing those challenges.

5. **Design projects that are service-provider agnostic.** Even if a project partner provides a valuable service, it is important to think about the mobility project without a specific vendor in mind. By planning the project to be service-provider agnostic and designing the RFP broadly, you can ensure that the vendor is adapting to the project and its needs rather than adapting the project to the product or service a vendor provides.

6. **Break up the procurement process to diversify project partners.** Instead of investing heavily in a turnkey service provider, consider breaking up the procurement process to create a diverse team made up of specialized suppliers that work together to create a solution custom to the project. Establish mechanisms and responsibilities for coordination between different partners.

[8] Monday. "What is Scenario Planning and How Can It Increase Agility?" April 14, 2021. https://monday.com/blog/project-management/what-is-scenario-planning/

[9] Shrivastava, Narendra K. "A Model to Develop and Use Risk Contingency Reserve." *Project Management Institute Global Congress.* October 26, 2014. https://www.pmi.org/learning/library/model-risk-contingency-reserve-9310

7. **Develop flexible contracts.** One way to incorporate flexibility is to have short-term contracts including the option for frequent renewals. A short-term contract can give you the ability to be nimble and adapt to changes in technology and partnerships, and can allow for more accountability than multi-year contracts. Another way to incorporate flexibility is to have contracts with flexible start/durations dates that "allow contractors to schedule their work during dates that optimize schedules and minimize the public impact of their projects."[10]

8. **Ensure that your contracts with partners support close collaboration** to fill any knowledge gaps. Avoid working in silos with your partners. Promote knowledge exchange opportunities between cross-functional teams to ensure that everyone has a holistic understanding of the project.

9. Future-proof pilot projects by planning for when and how it might integrate into local and regional transit systems or adapt to new specs and technology changes.

Example of this Principle in Action

The Automated Bus Consortium (ABC) is spearheaded by AECOM, and is a membership-based group of transportation organizations looking to implement automated bus pilots within their jurisdictions. Given the high cost of manufacturing automated buses, manufacturers need a market to cost-effectively produce these buses. By joining the ABC, transportation organizations can pool together their funding and create that market. Together, they can invest in a larger fleet of Level 4 automated buses to meet minimum purchase requirements and share some of the financial risk. Through the ABC, agencies can be flexible with procuring automated buses without taking on the full burden by themselves.

Photo: AECOM

Read more about the Automated Bus Consortium.

[10] Smart Work Zone Deployment Initiative. "Flexible Start/Fixed Duration Contracting for Construction of Transportation Projects: A Case Study of the Paseo Bridge Maintenance Project." July 2007. https://intrans.iastate.edu/app/uploads/2018/03/2007-maze-flex-schedule.pdf

Resources for this Principle

1. Best Practices in Future Proofing for Emerging Technologies | Enterprise Program
2. Pilot Plan | Six Sigma
3. Addressing Assumptions and Expanding Flexibility | Smart Growth America
4. A Model to Develop and Use Risk Contingency Reserve | Project Management Institute
5. 10 Top Ways to Future Proof your Transit Service + More Expert Insights | TripSpark
6. Statewide Data Standards to Support Current and Future Strategic Public Transit Investment | Oregon Department of Transportation
7. Future Transportation: These Emerging Technology Trends Will Transform Our Roads and Skies | The Zebra
8. What is Scenario Planning, and How Can It Increase Agility? | Monday
9. Contract Flexibility: Improving Terms to Support Your Digital Transformation | ISG
10. Flexible Start/Fixed Duration Contracting for Construction of Transportation Projects: A Case Study of the Paseo Bridge Maintenance Project | Iowa State University
11. Building Flexibility into Fare-Collection Systems | Mobility Payments

Questions to Prompt Team Discussions

- [ ] Have you practiced scenario planning by identifying and considering possible situations that could arise throughout the course of your project?
- [ ] How have you built contingencies into your project's budget?
- [ ] How frequently does the Project Manager revise the project schedule and project budget? What is the cadence for their reporting out to the larger team?
- [ ] How are you regularly monitoring your project's progress? Have you built in ways to course correct if necessary?
- [ ] What are you doing to address or remove biases in your RFP process?
- [ ] How have you built flexibility into your contracts with your vendors and project partners?
- [ ] How regularly are you meeting with your project partners to make sure you are all on the same page?
- [ ] How is your team prepared to integrate with future technologies, partners, or services? What challenges might your team face with future integration?

Principles to Plan, Design, & Implement Innovative Mobility Pilot Projects

SHARED-USE MOBILITY CENTER

Mobility Innovation Collaborative

Federal Transit Administration

Shared-Use Mobility Center
Chicago | Los Angeles
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