moovit

Providing the Right Mobility as a Service (MaaS) Application for Your Riders

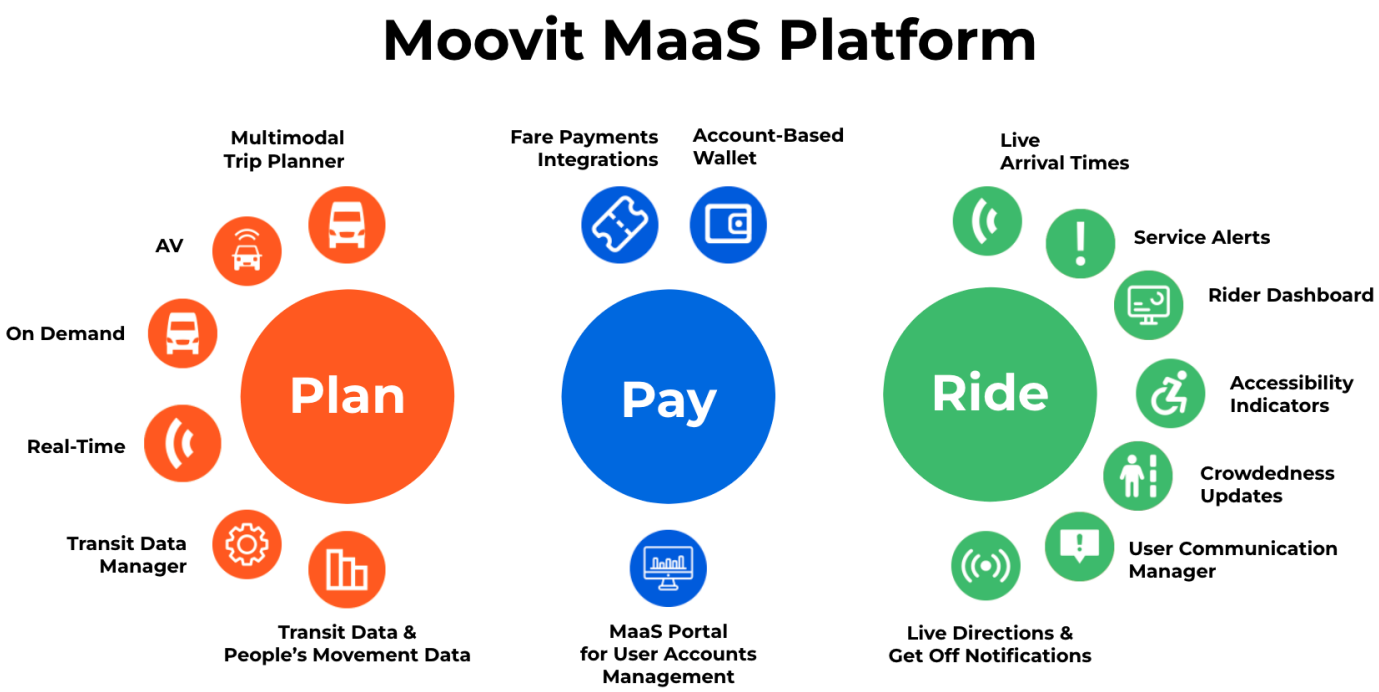
Which is better, a Consumer or a Branded MaaS Mobile Application?

Mobile apps have become part of the most useful ways for users of public transportation to plan their journeys. Since GTFS was established, schedules and real-time data have been available for Apps to access transit data and help riders view their options and select the most suitable trips. Two main approaches to providing this service have emerged in the past few years: using a generic consumer mobile app (e.g. Google Maps) or establishing your own branded app (e.g. MyMTA app in New York) which has a few ways to implement. This document compares between the two approaches, describes the pros and cons of each approach, and gives you the tools to make the right decision, based on your organization's priorities.

What is a Mobility-as-a-Service Application?

Mobility-as-a-Service Application (also known as MaaS App or Unified Mobility App) refers to the concept of using a single platform where riders can plan, pay and ride across multiple transportation agencies and modes. For some people, MaaS represents a shift away from personally owned transportation (i.e. cars, bikes, scooters) and a focus on shared mobility and mass transportation. For others, it's simply a more effective and efficient way to get around town. That's how people define MaaS but there's a lot more "under the hood" that brings everything together.

MaaS platforms have sophisticated, multimodal, data driven, algorithms that rely on real-time interfacing with multiple mobility service providers to allow riders to **plan** trip itineraries.
The ability to electronically **pay** for the trip is critical to a MaaS offering and communicating with riders up to, during and after their **ride** is completed drives satisfaction and higher adoption rates.



Why is a MaaS Application Valuable to Riders?

Urban and suburban areas offer riders multiple modes of transportation to get from point “A” to point “B”. Discovering and comparing the various transportation options may not be intuitive to riders and they may not understand their trade-offs (e.g time versus cost). This includes public transit (passenger ferry, rail, light rail, bus, microtransit, etc.), micromobility options (docked bikes, undock bikes, scooters), ride hailing options (TNCs, Taxis) and even walking.

For most large metropolitan areas looking to increase the number of riders providing a MaaS App to passengers breaks down barriers to ridership in a number of ways:

- Provides information - by listing available transportation options, along with real time information and service alerts, passengers can make informed decisions about their travel, compare costs, travel times, carbon footprint, and other considerations. Sometimes, knowing is the biggest obstacle.
- Makes taking transit convenient - Help in finding the stations, making the connections, alerts before reaching a stop, integration of fare payment, and App based validation greatly simplifies the rides. Anything agencies can do to reduce friction of taking transit is advantageous.
- Enables passenger engagement - Passenger communication (advising of service changes, unavailability of stops) for trip planning and real-time notifications when to “get off”, collecting service feedback and creating targeted marketing campaigns all increase adoption of the app as well as driving utilization of transit.
- Simplification - A unified MaaS App greatly reduces “App fatigue” which is having too many apps to do the job of a single unified app. Consolidating a trip planning app, a faring app, a communication app, a microtransit app (and frankly, all the mobility services provided in the region) all into a single, unified app is something passengers and transit agencies both desire creates a better overall rider experience.

In summary, the value of a unified mobility app comes from combining journey planning, fare collection, and trip guidance with a goal toward increasing transit utilization.

What are My Options to Provide a MaaS App?

When providing a unified mobility app for your passengers, you can take a few different approaches:

- **A Branded App** - which has a few manifestations
  - **Bespoke Mobility App** - Build your own bespoke app developed by an outsourced provider
  - **Mobile Fare Collection App** - Buy an app from your fare collection provider
  - **Branded MaaS App** - Buy the app from a provider of MaaS Apps
- **Consumer MaaS App** - Utilize existing consumer facing apps to provide the service

Here are the most important selection criteria that can help you decide the best approach for your needs:

1. **Annual Costs**: Those include the obvious costs of licensing fees, if you license the App from a provider, or base development costs, if you invest in a bespoke App. There are many additional more hidden costs like data curation costs, hosting costs (or IT costs if you have an on-prem solution), App store management costs, App maintenance cost (even if you don't add any features, the app requires continuous development to adhere to changes in the mobile operating systems, emerging privacy requirements, evolving data standards, etc.). In addition, you have to consider customer acquisition and marketing costs.
2. **Connected Transportation Integrations:** Most users would like to see a breadth of transportation options from multiple mobility providers. The App should integrate data from all the relevant local mobility providers. It could be services connecting to different fixed line services - e.g. bus and light rail, it could be ride hailing services - e.g. taxis or TNCs, it could include micromobility providers - e.g. scooters, or microtransit services for first/last mile services - e.g. OnDemand services. You would want to maximize the breadth of the integrated data to provide choice and selection to users. The journey planning component of the App must consider all those modes in the search for available modes to get from point A to point B.
3. **Data Quality**: There is no greater frustration for a rider than to find out that the station they are at is out of service, or the bus they are waiting for is out of service. The Static GTFS data is a "slow moving" data source that rarely supports short-term changes. Those are usually issued as "service alerts" that users must pay attention to. You need to make sure that the App handles service alerts accurately, and announces them to users. Even better, the trip planner should consider those service alerts and avoid suggesting itineraries that include services that are not operating at the time of the journey. Data accuracy, and hence data curation, is a key factor in user satisfaction using Unified Mobility Apps.

4. **Control over App Behavior:** You have to consider your ability to control how the App will suggest routes in a way that conforms to your strategic preferences. Do you want to emphasize specific services (so the trip planner prioritizes the itineraries to promote these services)? Do you want to decide which micromobiiity services and/or ride hailing services are allowed in the App? Do you want to emphasize “green” rides? The right choice of user behavior can shift the users to your preferred services.
5. **User Acquisition and retention**: User acquisition and retention is a continuous effort. The feature set, ease of use, integrated mobility services mix, and the app promotion determine the level of usage. That means a substantial continuous investment if you choose a bespoke development, and almost no investment (but high reliance on the feature progression) if you choose a consumer App.
6. **Fare Collection Adoption**: A modern unified mobility app allows users to purchase tickets on the App, and also redeem the tickets as they use the mobility services. Usage of mobile tickets reduces operating costs for the fare collection operations (less need for paper tickets, smart cards, vending machines, etc.), but in order to benefit from this a large percentage of the users should move to mobile ticketing. Great apps reach 80% use of mobile ticketing, while a lot of average apps reach less than 20% penetration. You want to find an App that will help you maximize that use.
7. **Communications with the user**: Having an App at the hands of the riders is a great tool to maintain connection with them. It could be in the form of outgoing communication to specific cohorts of users (people who ride during rush hour, people who bought 10-ride tickets, etc.), or getting feedback from them on issues they experienced during their rides (answer surveys, report cleanliness, other conditions, etc.). You would need to decide how important this communication is for you and your riders.
8. **User reports and data ownership**: A unified mobility app collects a lot of information about the riders. Each trip plan is an “intent declaration” that tells the app that someone wants to get from point A to point B. The ability to mine that data in an anonymized and aggregated way can give you great insights into the travel patterns of your riders and reveal opportunities to greatly improve the service like - where should stations be positioned to maximize ridership, Where would be a good place to operate an OnDemand service as a first/last mile service, and what should be the optimal operational hours to improve the efficiency of the service. Accessibility to this data is a huge benefit that should be considered and evaluated.

In the following sections we will analyze these attributes for each of the options you may consider for your unified mobility app.

A Branded App - Bespoke Mobility App

A Bespoke Mobility App is an app developed specifically to the specifications defined by you. Your team, or a consultant, would write the specifications, and an outsourced development firm will develop the App.
Main selection criteria considerations:

1. **Annual Costs**: This is usually the most expensive approach to building an app because everything is developed specifically for this App and the ongoing R&D costs are not shared among a community of customers with similar requirements. The costs pile up even further because you need to invest in ongoing addition of features, integrations, maintenance costs etc. Due to the high costs, in most instances, these types of apps stagnate with time and become almost obsolete as the market moves forward. In addition, there is a need for substantial investment in developing multi-language support and accessibility features into the App.
2. **Connected Transportation Integrations:** In most cases, due to the cost prohibitive nature of the integrations, there are minimal integrations included in such apps. The norm is the inclusion of only the specific mobility service that purchases and pays for this app. Clearly, if cost is not a limitation, you can include as many services as you decide to add.
3. **Data Quality**: App development firms are usually technology oriented companies who know how to build android and iOS Apps. They usually can accept GTFS feeds, but they normally do not have data curation capabilities and operations. You can order such a service from the developer, but the cost and the investment in required infrastructure is substantial.
4. **Control over App Behavior:** This is one of the most important benefits of a Bespoke mobility app. You have full control of the feature set, and its roadmap. You decide which mobility services are offered and how they are presented in the App.
5. **User Acquisition and retention**: Since the App is owned and managed by you, User acquisition and retention is managed by you. You need to have experienced staff who understands consumer behavior, consumer analytics, and how to promote the App for downloads and registrations, and how to change the App to increase retention. This is an additional ongoing expense that you need to take into consideration as part of the approach you take.
6. **Fare Collection Adoption**: Fare collection adoption has proven to be most prevalent on branded apps. Riders trust the agency and if they purchase and redeem passes, they much prefer to do it with the “agency app” vs. “independent” apps. A Bespoke App is a branded App, so it is expected to get a high adoption of mobile ticketing.
7. **Communications with the user**: The communication with the user features are based on the specifications defined by the purchaser. The sky's the limit on features that can be added. This also adds to the development and maintenance costs of the App.
8. **User reports and data ownership**: A bespoke App can have any report that is defined in the specifications. The specification should be clear about this need and define the

set of reports required, and the budget to develop these reports should also be added to the project budget.

A Branded App - Mobile Fare Collection App

Many leading fare-collection system providers have a form of a mobile app that is attached to their system. Usually there is a low or nominal price to include the app in the solution, and the functionality is focused on the purchase and redemption of tickets on the phone. Most of these apps do not have significant MaaS functionality, or integration to multiple services and they focus on the main purpose - allow fare collection and ticket redemption.
Main selection criteria considerations:

1. **Annual Costs**: The annual cost of these apps is relatively low, as the apps have limited functionality and very little integration to additional mobility services. They usually include branding capabilities. One important aspect of using the Fare Collection App is the fact that it binds you to the fare system. If you decide to change a fare collection provider, you lose the users, and have to re-invest in acquiring users to the new App. This cost may be substantial and influence your fare collection system selection. You need to consider if you want to keep this technology and service under your control or be more reliant on the fare collection system provider.
2. **Connected Transportation Integrations:** This is almost non-existent in this kind of app. They focus on selling tickets for rides on the specific service provided by you, the purchaser. Everything else is either unavailable or requires a large bespoke investment.
3. **Data Quality**: The mobility data included with these apps is limited to the services they sell fares for. The fare collection providers normally do not have data curation capabilities and operations. The result is usually a mediocre data quality and minimal data from services outside the realm of the specific service.
4. **Control over App Behavior:** There is usually minimal control over the App behavior when it involves MaaS functionality. There is full control of the offered fares and the fare collection and redemption flows. On the MaaS front you get the standard offering and have to accept it.
5. **User Acquisition and retention**: Since the App is owned and managed by you, user acquisition and retention is managed by you. The fare collection provider can give advice on how to promote the app so you have to make sure they have the expertise and are willing to share it with you. Retention of such an app depends greatly on the MaaS features of the app. If users find it unfriendly, or with low usability, you will have to convince the provider to improve the lacking features to increase retention.

6. **Fare Collection Adoption**: As stated for the Bespoke App, since the App is branded, you get high adoption of fare collection.
7. **Communications with the user**: Most of these apps do not focus on communication with the users. You have to carefully check what are the capabilities you get with the system, and if you have any control over them.
8. **User reports and data ownership**: Most of these apps focus on reports related to fare collection, and that is very valuable data. It is less related to mobility, and user intent, but you can know in which stations users boarded a ride and where they alighted. You can ask the provider to generate more reports for your needs, and they may develop those for you.

A Branded App - Branded MaaS Application

Branded MaaS Apps are apps that provide full ownership and branding of the Mobile App, but share most of the code base between multiple customers, This approach shares the high development and maintenance costs between multiple customers, so they can provide high quality service at a fraction of the cost of a full bespoke MaaS App. There is a range of providers who can supply such an App and they vary dramatically by the depth, breadth, and quality of the service. Most of these providers charge an annual license fee that includes all the services including Hosting, DevOps, Updates, Upgrades, Security, disaster recovery, etc.
Main selection criteria considerations:

1. **Annual Costs**: The cost of the service is based on an annual license, and differs according to the feature set, number of integrated mobility providers, data curation level, and other. The price is at a fraction of the cost of a commensurate bespoke system.
2. **Connected Transportation Integrations:** Most Branded Apps have already invested in many mobility provider integrations. As a result, you can get, out of the box, a large number of services which are already in the system. WIth some of the providers, you can also integrate multiple services from your organization, e.g. OnDemand and Fixed Route services. Due to the fact that you license the app, you can also get specific integrations added as part of the license fees (minimal bespoke components).
3. **Data Quality**: Many of these providers have experience in collecting and curating transit data. They usually can easily integrate with GTFS and GTFS-RT, and also with some micromobility standard feeds (e.g. GBFS). As a result, these solutions can offer high data quality. The integration of short-term changes should be investigated with each provider if you choose to go this route, as there is a significant difference between providers.
4. **Control over App Behavior:** As a branded app, you have the ability to control the app behavior to a large degree. The feature set is usually determined by the shared code

that is offered across the customer base, but the selection of services, trip planning parameters, and many other aspects of the system is defined by you.

5. **User Acquisition and retention**: Since the App is branded to you, user acquisition and retention is also managed by you. This means that you have to take the operation under your consideration in allocating staff to managing it. To help you with that, since the app is built based on an existing app with a large user base, a lot of the usability issues have already been ironed out, and the provider has a lot of experience on what works in this area and can dramatically help you get going.
6. **Fare Collection Adoption**: As we have discussed before, fare collection adoption has proven to be most prevalent on branded apps. For example, at RTD Denver, tickets were offered through the Denver mobile app as well as other 3 apps (ride hailing and consumer facing apps). 95% of mobile tickets were purchased through the branded app, and the other 5% were split between the other 3 apps (Source: https://www.mobility-payments.com/2021/06/05/in-depthfirst-agency-to-sell-tickets-through-uber-app-sees-relatively-few-takers-two-years-on/). A Branded MaaS App is expected to get a much higher adoption rate than a consumer or third party app.
7. **Communications with the user**: Branded Apps differ greatly in their offerings of communication tools. Some do not provide anything, while others provide an extensive set of capabilities. It would be important to discuss this with the specific provider and get their take on this subject.
8. **User reports and data ownership**: For most Branded MaaS Apps, the data belongs to you. That means that you should have access to all the data the App collects. You want to make sure that privacy laws are kept, and that the data is collected, aggregated, and anonymized to avoid exposure to those issues. Like with user communication, the providers offer greatly different services around the data. You should understand what reports and data access you get, and how privacy is maintained by the specific provider.

Consumer MaaS Application

Consumer MaaS Apps, like Google Maps and Apple Maps, are generic consumer apps that are available to the public. When you choose them as the recommended Apps for your riders, you can get some integrations, if they deem them relevant and worth the investment. All they need from you is access to your data feeds - and they add them to their consumer app at no cost.

Main selection criteria considerations:

1. **Annual Costs**: These apps usually do not cost anything to partner with. Some of them charge subscription fees, but the most prevalent ones are completely free.
2. **Connected Transportation Integrations:** Only services that have standard data feeds can be added to these apps. A few providers can add some bespoke integrations, but they are extremely limited. The idea is that they rely on standard data and they do not invest non-standard fees unless they decide they are important for their business model. A strong example of the limitation of this approach is that most of your specialty services (Dial-a-ride, paratransit, on-demand) are not supported by any standards and as a result, they can not be included in the MaaS app.
3. **Data Quality**: In general, these apps accept standard based data, and have minimal curation to the data. There is usually no support for short term changes, so the probability of getting stranded by a non-functional journey offering is significant.
4. **Control over App Behavior:** You have no control over the behavior of the App. You get whatever the vendor decides. You also do not have any branding capabilities, so you are dependent on whatever the App presents without regard to your branding needs.
5. **User Acquisition and retention**: You don't have anything to do with user acquisition and retention. All these activities are managed by the App providers. This approach gives you an advantage with visitors and tourists, who are reluctant to download a local app, but due to the poor fare collection performance of these apps, commuter adoption is lacking as they don't provide the full MaaS experience.
6. **Fare Collection Adoption**: As stated above, consumer apps are not trusted by users for fare collection, and there is very little adoption of this feature in Consumer apps. If mobile fare collection adoption is important to you, this could be a major challenge.
7. **Communications with the user**: Since you don't have any relationship with the App or with its users, there is no communication offered. Some providers can get standards based service alerts and present them to the user, but any other communication, either outgoing or incoming, is not available.
8. **User reports and data ownership**: Since you don't own the data, there is very limited data you can get from the consumer app providers. Some can offer you some access for a fee, but they are focused on the consumer data and bound by privacy laws on how much they can disclose to you.

Summary

The table below provides a summary of the comparison between the different approaches to provide a MaaS App to your riders. Clearly, there is no one solution that is perfect and covers all your potential needs under your constraints. I hope you can make smarter decisions and maximize the value by asking the right questions.

While most MaaS App providers can offer only one of the approaches, a few providers, Moovit among them, can offer a combination of a Consumer App and a Branded App. Using a combined approach can minimize the limitations of each selection and provide a more optimal solution. For example, if you want the Branded App, you may lose usage by visitors who are hesitant to download the local App. Having a consumer app side-by-side with the branded app solves this problem, providing a parallel channel of service that includes the same services offered by the Branded App.

Criterion	A Branded App			Consumer App
	Bespoke App	Fare Collection App	Branded App	
Annual Costs	Very High	Low	Medium	Very Low
Connected Services	Low	Low	Very High	High
Data Quality	Medium	Medium	Very High	High
Control over App behavior	Very High	Very Low	High	Very Low
User Acquisition and Retention	Hard	Hard	Medium	Easy
Fare Collection Adoption	High	High	High	Low
User Communication	Medium	Very Low	Very High	Very Low
User Reports	Medium	Low	High	Very Low

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Moovit, an Intel company, is a leading Mobility as a Service (MaaS) solutions provider and creator of the #1 urban mobility app. **www.moovit.com**