

# RIDECELL

## Reinventing carsharing as a modern (and profitable) service

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## Abstract

This paper analyzes the best methods for quickly launching new mobility services and for scaling them to achieve maximum profitability.

- Learn how vehicle utilization in new mobility services drives profitability and which techniques can help achieve the highest utilization rates.
- Learn what's required to launch a new mobility service offering, including end-to-end workflow, dispatch, scheduling, balancing supply/demand, CRM, and payments.
- Learn what's the best way to prepare for the autonomous future.
- Examine lessons learned from launching one of the largest car sharing programs in the US market.

## Introduction

### The Intersection of the Sharing Economy and Autonomous Transportation

The extended automotive industry is entering a period of unprecedented disruption due to two forces: the sharing economy and autonomous vehicle technology.

Over the past decade, ridesharing services (such as Ola, Uber, and Grab) and carsharing services (such as Zipcar, car2go, and ReachNow) have proliferated in many urban areas. By providing on-demand, point-to-point mobility, these shared services already represent attractive alternatives to car ownership. Meanwhile, automakers, technology giants, and startups are in a global race to develop and deploy self-driving vehicles. As autonomous technology rapidly improves and governments work to provide the necessary regulatory structures, self-driving vehicles are no longer seen as a possibility, but an inevitability.

Shared mobility services have introduced consumers to concepts that will underpin the future of mobility: on-demand access, sharing vehicles and space within vehicles, and per-mile pricing. Autonomous vehicles will greatly accelerate the growth of shared mobility service models, thus enabling autonomous mobility-as-a-service. As consumers opt for the convenience and experience of autonomous services, the personal car ownership paradigm that has defined the automotive industry from the past century will steadily dissolve.

Autonomy will accelerate shared mobility from evolution to revolution. For consumers, the revolution will offer greater convenience, time savings, cost savings, and new experiences not yet imagined. For automakers, dealers, and other potential new mobility service providers, this future will bring massive challenges and opportunities.

## The Path to Autonomous Mobility-as-a-Service

The number of global miles travelled in vehicles is projected to nearly double between 2015 and 2030, while global vehicle production is not expected to keep pace. In addition, many cities are already facing major congestion issues, so doubling the number of vehicles on the road is neither viable nor attractive. For this reason, shared miles will become an increasingly appealing and natural solution. In 2015, only 4% of global miles travelled were shared, but Morgan Stanley estimates that proportion to quadruple by 2030.(1)

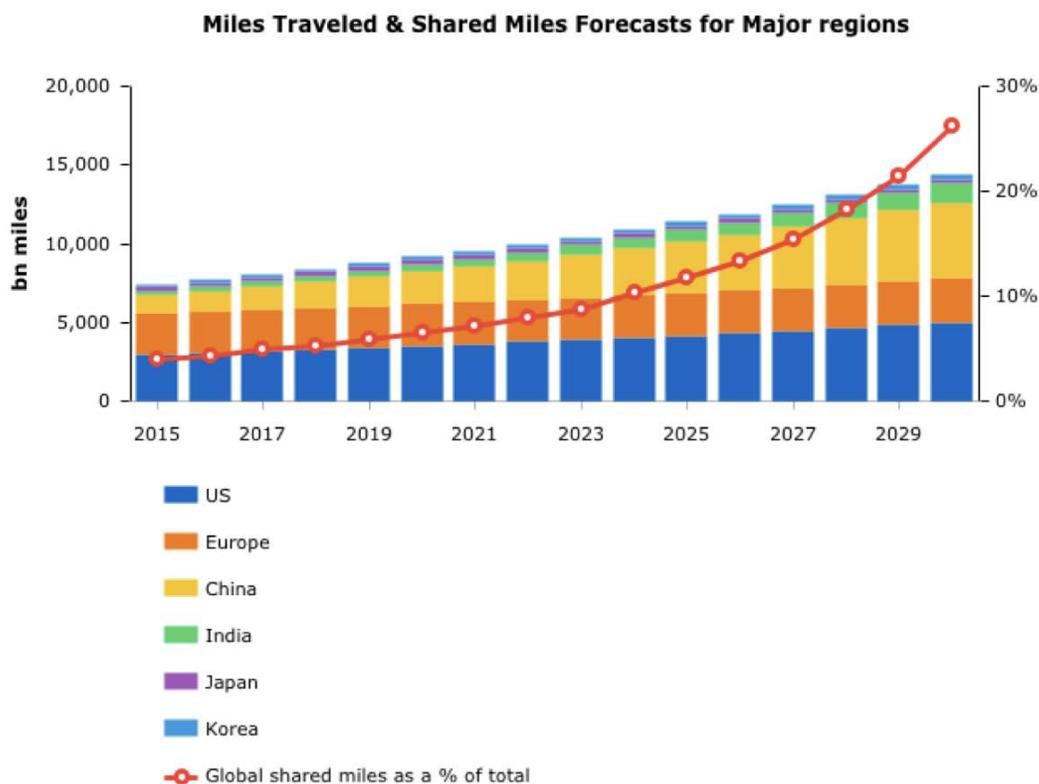


FIGURE 1: Miles Traveled and Shared Miles Forecasts for Major Global Regions (1)

Shared mobility is growing quickly even before autonomous vehicles are widely deployed. Still, the average per-mile cost of ridesharing services remains two to three times higher than owning and operating a personal vehicle (2). As shown in Figure 2, the driver is the greatest cost for ridesharing service providers today.

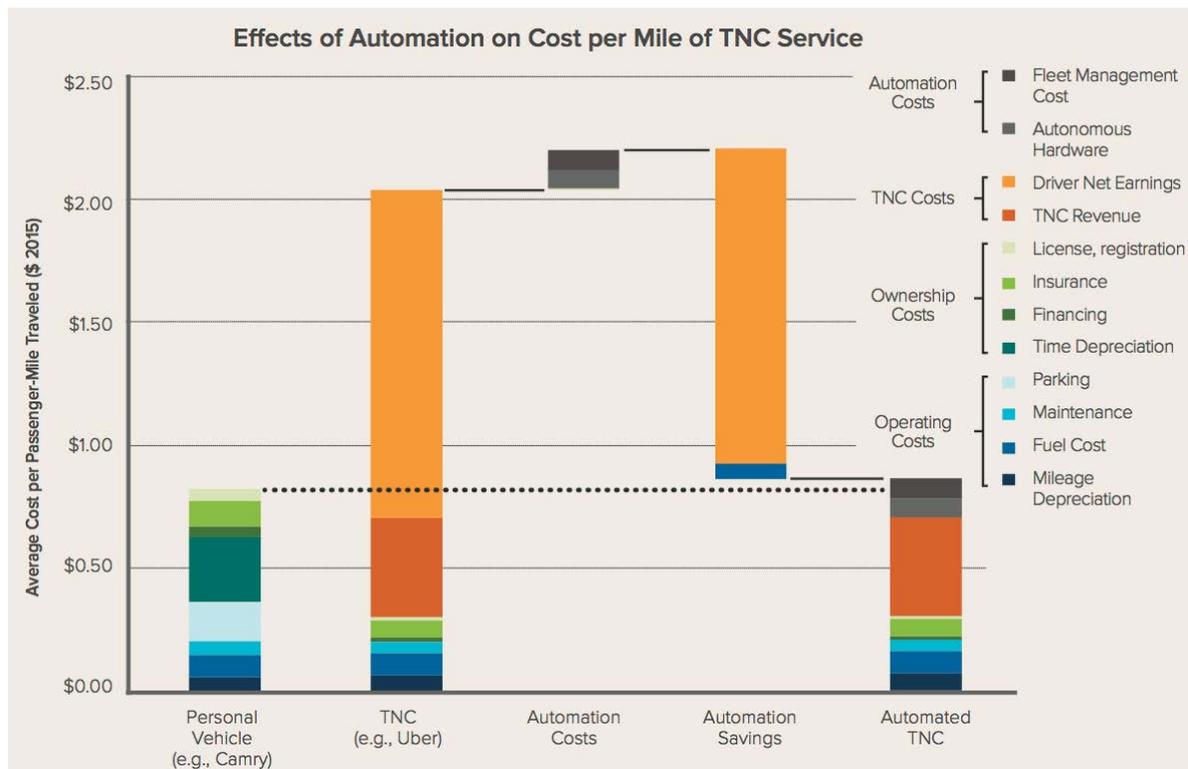


FIGURE 2 Effects of Automation on Cost per Mile of Ridesharing Service (2)

Autonomous vehicles will eliminate the human driver from the equation, which could immediately bring the estimated cost per mile of an autonomous ridesharing service to parity with a personally owned vehicle. Even in the early days of autonomous vehicles, this significant cost reduction will entice many consumers to forgo personal car ownership and instead opt for the convenience and experience of autonomous mobility.

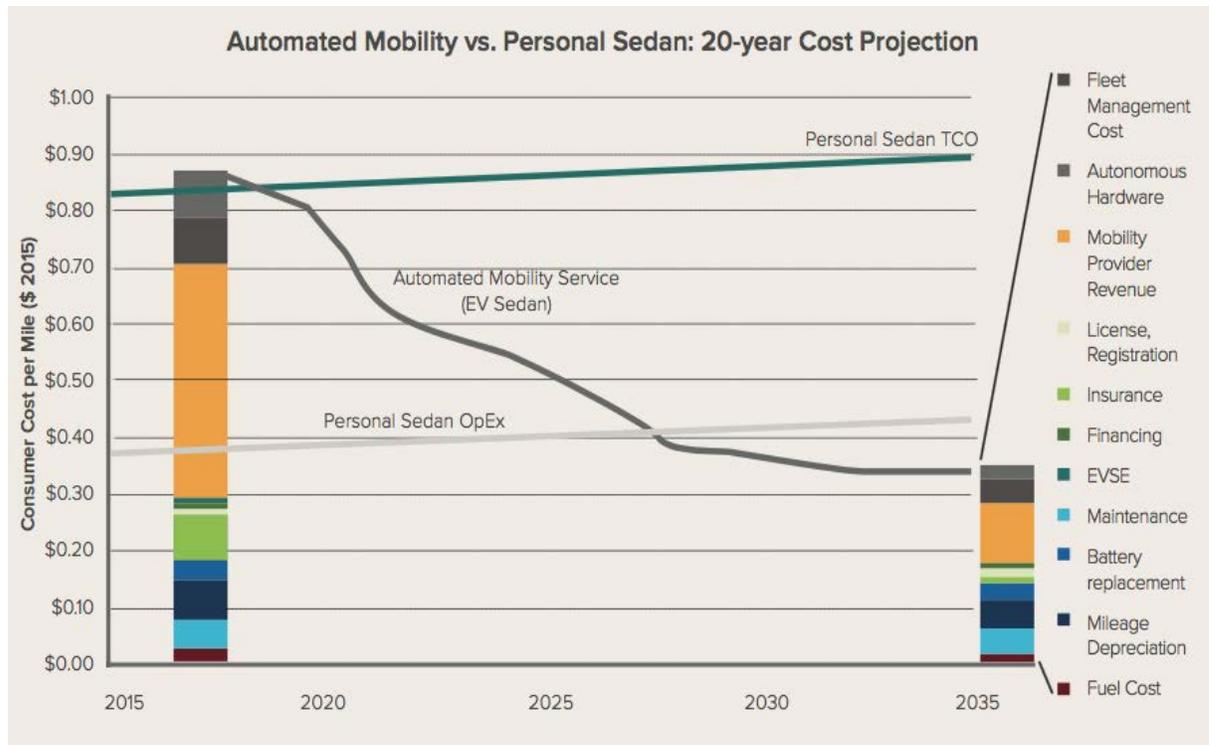


FIGURE 3: Cost per Mile over Time of Autonomous Mobility Service vs Personal Sedan (2)

The initial (and significant) cost reduction by replacing human-driven vehicles with autonomous vehicles is only the beginning. As mobility services mature, the associated components will become increasingly commoditized, driving down costs even further. While personal vehicles today are, on average, used only 4% of the time, autonomous mobility services will enable much higher utilization rates, so fixed costs will be amortized over many more miles. As this scenario plays out, the cost per mile of autonomous mobility is estimated to quickly plummet to around \$0.30 per mile, or 70% cheaper than the cost of personal vehicle ownership (2).

As these dynamics are understood, the path to autonomous mobility-as-a-service becomes clearer. Mobility services will continue to grow globally as the number of miles travelled outpaces vehicle production. The introduction of autonomous vehicles into new markets will be the inflection point for mobility service growth, as many consumers choose to rely heavily, and possibly primarily, on autonomous mobility services.

## Navigating the Shifting Landscape

In markets where on-demand fleets of shared autonomous vehicles dominate, automotive leaders will sell far fewer cars to consumers. For the last century, automotive leaders have sold products, and new vehicle sales has been the key performance metric. In the autonomous mobility-as-a-service markets of the future, consumers will buy transportation, not cars. As a result, new vehicle sales could decrease, and will likely be sold to very different customers. Deloitte predicts that as much as 80% of new car sales in US urban in 2035 will be to service providers instead of to individual consumers. (3)

Forecast of new vehicle sales distribution in urban areas in the United States

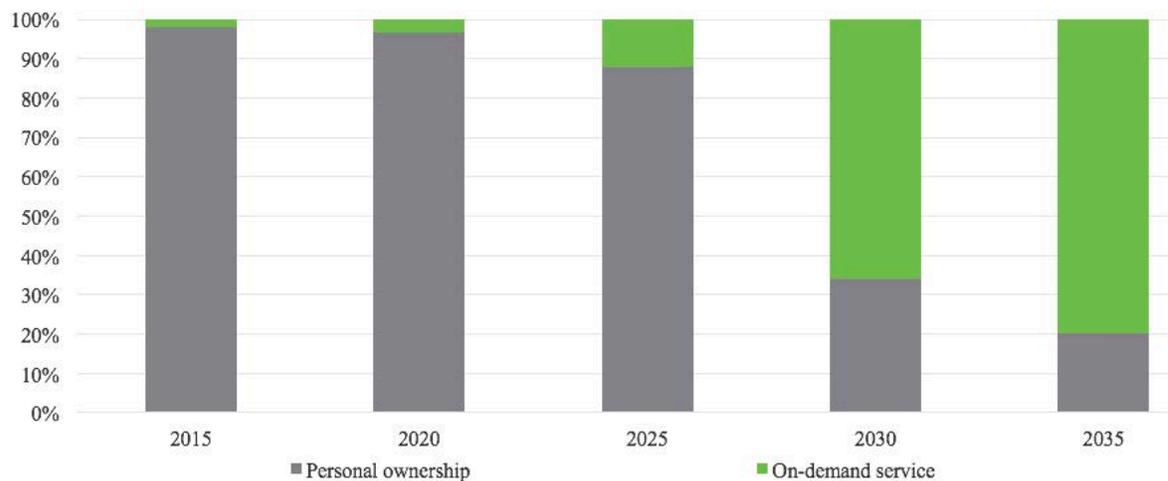


FIGURE 4: New Vehicle Sales Distribution in U.S. Urban Areas (3)

While this shift will bring significant challenges, it represents a great opportunity for automakers and others to reinvent themselves as mobility service providers. Autonomous mobility-as-a-service enables companies to more easily reach new customer groups—the disabled, the elderly, those who can't afford a car—along with markets with pent-up demand for mobility, such as China and India. For automakers, new mobility services can serve as a sales channel for the existing vehicle business, while positioning them for success as autonomous mobility takes hold across geographies.

Fundamentally, when the autonomous world takes shape, there will be no distinction between carsharing and ridesharing, since a hired driver is no longer in the picture. For businesses that want to capture massive value in the autonomous revolution, deploying a free-floating carsharing model today will provide the best preparation for future success.

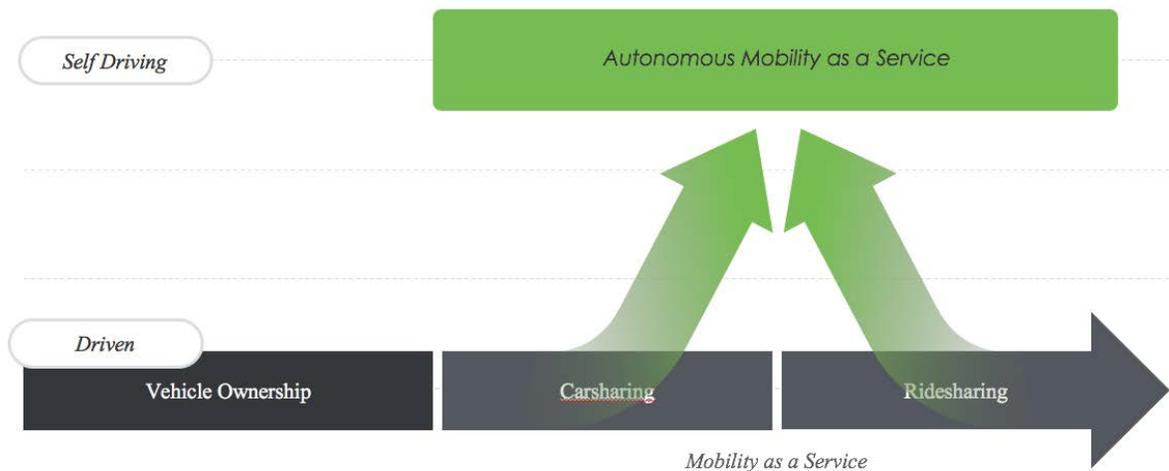


FIGURE 5: The Evolution of Mobility-as-a-Service

The key strength of today's (few) large rideshare services lies in their supply of human drivers. These providers are heavily focused on onboarding and maintaining driver relationships, leaving maintenance of the actual vehicle to individual drivers. But as the world moves to autonomous, on-demand, shared mobility, the driver supply advantage will quickly become irrelevant. And as the utilization of autonomous cars increases, fleet management and other critical capabilities will emerge.

In contrast with rideshare providers, carsharing service providers own their vehicle fleets. They already have capabilities around vehicle supply maintenance and management—the same skills that will translate directly to and determine success in an autonomous world. Moreover, carsharing has proven to be a profitable business today. Surveying where the mobility market is now and where it's quickly heading, the path for new entrants becomes clearer: Launch a profitable free-floating carsharing business today, gain key operational capabilities, and apply those strengths in the near future as an autonomous mobility-as-a-service provider.

## Hallmarks of a successful carsharing operation

In the past years, most carsharing services have followed a station-based model. The service operator owns a fleet of cars, which are available to consumers at a selection of locations. The driver picks up a car and returns it to the same location. The inflexibility of this service model limits the pool of consumers to those with a strictly round-trip use for the car.

Station-based carsharing services today are operating at fleet utilization rates of about 15%—which is OK, given that a typical carsharing business breaks even at 12% utilization. But the key to increasing profitability is to increase vehicle utilization. The figure below illustrates the impact of increased utilization rates on profitability, demonstrating that profitability doubles for a service operating at a 30% utilization rate.

**4000 car fleet annual revenues (\$ millions) by utilization rates**



FIGURE 6: Profitability of Car Fleets by Utilization Rate

## Boosting Utilization Rates

Here are some key capabilities that can help carshare operators drive up utilization rates:

**Machine Learning.** An advanced understanding of demand and supply enable service operators to position vehicles where they're most likely to be needed. As a result, cars are used more frequently and provide more value to the business.

**Predictive Fleet Management.** Operators can achieve greater operational efficiencies through predictive fleet management—predicting vehicle service requirements and determining the best times to take them out of service. Vehicles can be cleaned or repaired only when they would not have been utilized.

**Multiservice Support.** The demand curves for carsharing and ridesharing services differ significantly based on time of day, indicating the efficiencies of using a single fleet to deliver multiple services. By pairing, for example, a ridesharing service with a free-floating carsharing service (which allows one-way rides), operators can double the typical single-service utilization rate—boosting utilization from about 15% to beyond 30%.

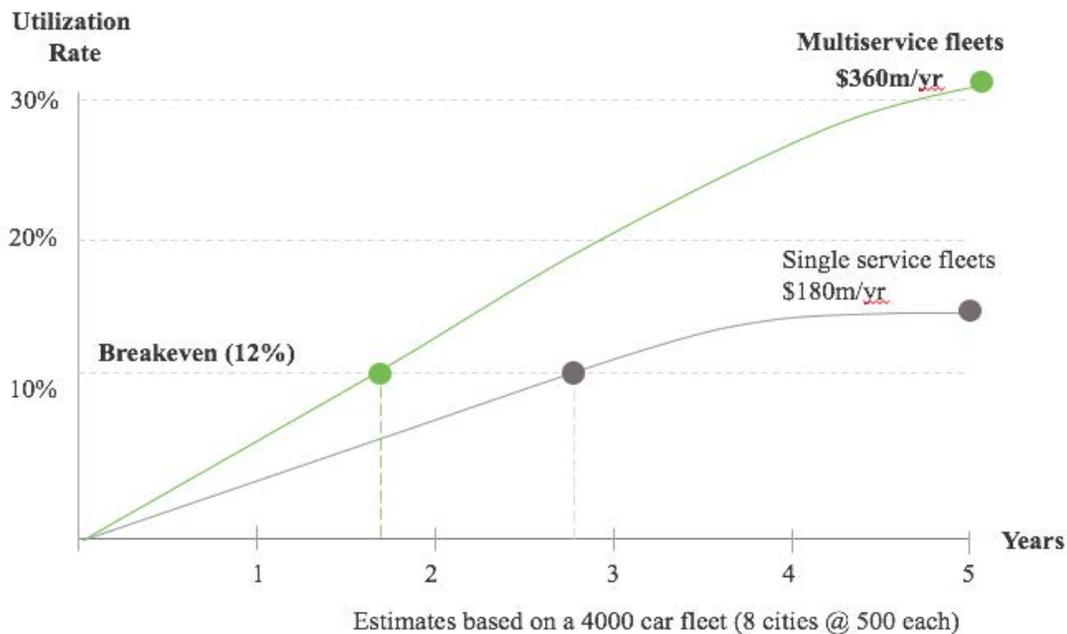


FIGURE 7: Utilization Rates for Multiservice vs Single-Service Fleets

**Cross-Network Collaboration.** By cooperating with other service providers in an agency model, service operators can offer consumers better coverage and a better experience without having to manage an unwieldy fleet. If another provider has a car that's closer to the consumer, the consumer is offered a more convenient option and the primary service operator gains a satisfied customer.

Carsharing and multiservice offerings provide the best opportunities for maximizing fleet utilization rates, driving profitability, and preparing new mobility innovators for the future. The strategic benefits of fleet ownership—and fleet management capabilities—will be crucial in an autonomous model.

## Strategies That Work

As new service operators enter the mobility market, they're contributing new ideas and new approaches. Here are some of the ways in which transportation innovators are accelerating carsharing service growth:

**A Modern Style.** New mobility-as-a-service entrants are starting to replace the station-based carsharing model with a free-floating model, allowing for the flexibility of one-way transportation. Consumers can reserve a car, drive it, and park it anywhere in the service zone when they're done—much more convenient than the station-based model.

**The Right City.** When choosing where to launch their new mobility projects, service providers are taking into account a city's culture, lifestyle, technology adoption attitudes, and regulatory challenges. For example, university towns—with many young, open-minded people who don't own cars—are a great fit for carsharing services.

**A Tailored Offering.** It's also important to consider who will likely be using the service. Building off the university town example, a carsharing service operator would want to set a low age requirement and flexible payment options. And since college students represent an especially valuable demographic over the long term, operators would want to nurture relationships that build lifelong loyalty—both to the brand and to new mobility services in general. An excellent consumer-focused service design is GIG Carshare, which recently launched in Berkeley and Oakland, California. GIG offers a Prius fleet equipped with bike racks, allowing consumers to drive part of the way and then finish their trip or return home on a bike.

**Multiservice Fleets.** Automakers are innovating in the new mobility market with their own branded carsharing programs. For example, BMW's ReachNow provides carsharing, ridesharing, residential carsharing, and rental service in one integrated

offering. Available in three cities, ReachNow has strong vehicle utilization rates and over 50,000 members after only nine months of operation. In addition, Volkswagen Group of Poland (VGP) has launched a station-based carsharing service from Skoda dealerships in the Warsaw area. Customers have the option to rent a Skoda car for days at a time—which serves as an extended test drive—effectively transforming dealers into hybrid mobility service operators.

**Rapid Experimentation.** In the burgeoning mobility-as-a-service market, operators need to be willing to experiment, to learn, and to respond quickly. By adding features, such as faster onboarding or personalized vehicle settings, transportation innovators are learning what's important to their audiences, while helping their businesses grow in all the right ways.

## Ecosystem requirements for deploying carshare services

As transportation innovators launch their own unique carsharing operations, their ultimate success will depend on the breadth and scalability of their offerings. Much more than a fleet of cars and an app, a viable carsharing service must connect with a wide range of industry players.

The following capabilities are essential to launching and growing a seamlessly integrated carsharing business:

**Onboarding.** Signing up drivers goes beyond collecting standard profile information. It requires verification, with government databases, of license, driving history, insurance coverage, and criminal checks—as well as camera-based ID authentication.

**Payments.** Onboarding also involves setting up secure direct payments, via credit or debit cards, in the appropriate currencies. In addition, operators need a way to manage invoices for additional costs (cleaning, damage, tolls, etc.) and the ability to settle payment disputes.

**Diagnostics.** With predictive maintenance technologies, on-vehicle sensors, and proactive alerts, operators can learn when vehicles need to be serviced, cleaned, refueled, or repaired.

**Analytics.** Advanced algorithms and analytics can drive service efficiencies and profitability by enabling operators to balance supply-demand, reduce wait times, and adjust pricing dynamically.

**Civic Data.** A carshare trip can involve parking fees, bridge and highway tolls, and traffic violations. Service operators need to connect with public agencies to ensure accurate, transparent payments. In addition, real-time information about traffic laws, parking restrictions, traffic conditions, and infrastructure issues can enhance the carshare driving experience.

**Connectivity.** In today's IoT world, carshare vehicles and carshare drivers need to be always connected, whether via built-in vehicle telematics or hands-free interactivity on the customer's personal device.

**Vehicle Hardware.** Carsharing is placing new demands on hardware manufacturers. Service operators need to integrate with capabilities such as digital keys, advanced driver analytics, automatic seat/mirror adjustment and other personalized settings and even autonomous vehicles systems for the autonomous future.

**Insurance.** Pre-vetted insurance plans for new mobility services are starting to emerge. Whether for collision, damage, theft, or liability, carsharing operators need to make sure their vehicles and their customers are covered.

**Fleet Management.** Who will keep service vehicles in tip-top condition? Local fleet management firms can take responsibility for cleaning, recharging/refueling, servicing, and repairs. They can even handle repositioning to ensure vehicle availability at the best times and places to meet consumer demand.

**Demand/Supply.** Cross-network services are becoming increasingly important as specialized new mobility services launch on university/corporate campuses and within limited metro areas. Operators can bridge these gaps—as well as gaps in public transport—with first- and last-mile carsharing services.

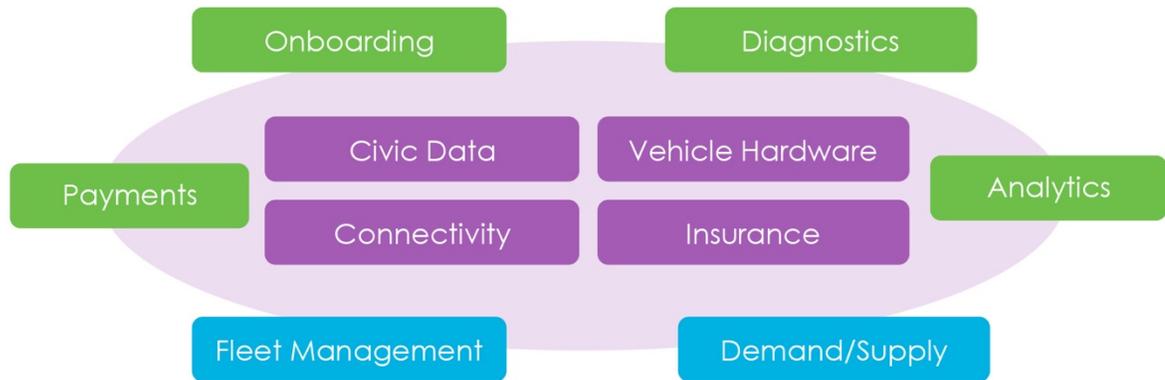


FIGURE 8: The End-to-End Ecosystem Requirements for Deploying Modern Carsharing

The first step for any carsharing operator is to understand their market and to define a service offering that will appeal to their customer base. They'll need to build partnerships with civic organizations, telecom carriers, auto OEMs, and insurance companies.

But to deliver their service successfully, operators will need to rely on a new mobility platform that can handle onboarding, payments, diagnostics, and analytics. Some advanced platforms can also handle fleet management and demand/supply requirements.

For a true end-to-end operation—and to get started with minimal upfront costs—new mobility service operators can leverage the experience and technology of platform providers that have already established relationships across the ecosystem. These proven platform providers can facilitate partnerships on behalf of operators, while their software can unify data and interactions among multiple disparate vendors.

**The future will be profitable for those who make these connections right now.**

## Conclusion

Mobility services will continue to grow globally as the number of miles travelled outpaces vehicle production. The introduction of autonomous vehicles into new markets will be the inflection point for mobility service growth, as many consumers choose to rely heavily, and possibly primarily, on autonomous mobility services. Carsharing, especially a free-floating model, is the best way to prepare for autonomous mobility-as-a-service. Running a successful and profitable autonomous mobility service will depend on operational efficiencies and a seamlessly integrated solution that unifies ecosystem relationships.

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