Autonomous Vehicle Business Plan for Los Angeles (Beta)

The City is preparing for the testing and deployment of autonomous vehicle technology for its fleet. Find out what is happening.
How is Los Angeles preparing its fleet for the autonomous future?
Autonomous vehicle technology will reshape the transportation infrastructure of Los Angeles

Autonomous vehicle (AV) technology has the potential to drastically improve safety, mobility, and equity outcomes for Los Angeles’s future transportation system. Under the watchful and vigilant eye of the always-on machine, AV technology can potentially eliminate more than 90% of the crashes resulting from human error. Improved operational efficiency represents opportunity to extend the reach and service levels for city vehicle fleets while also increasing the efficacy of each transportation dollar spent. In the process, AV technology can enable better mobility options for all, including senior adults, the disabled, and socio-economically disadvantaged, while also curbing traffic and greenhouse gas emissions by facilitating more efficient and optimized usage of vehicles. AV technology will not only reshape the transportation infrastructure of LA, it can also reshape the broader urban environment by decreasing road and parking requirements, enabling more green, pedestrian, and social spaces.

Yet this exciting future is far from certain. If left to its own devices, AV technology is just as likely to increase vehicle miles traveled by allowing single-occupancy and zero-passenger vehicles to saturate our streets, leading to even more congestion, sprawl, and greenhouse gas emission, not to mention exacerbating inequity and anomie that have characterized LA’s auto-centric social landscape since the 20th century. AV technology can potentially provide us with a once in a life-time opportunity to address many of the existing shortcomings in the status quo. But to do so, LA must actively work with our research, industry, citizen, and non-profit partners to influence the AV product development trajectory. As a key automobile market and regulator of roadways and infrastructure, LA must take the lead in ensuring that the AV future is a positive one.
City of Los Angeles

Los Angeles, officially the City of Los Angeles, is the cultural, financial, and commercial center of Southern California. With a census-estimated 2015 population of 3,971,883, it is the second-most populous city in the United States and the most populous city in California. Located in a large coastal basin, Los Angeles covers an area of about 469 square miles (1,210 km²). The city is the focal point of the larger Los Angeles metropolitan area and the Greater Los Angeles Area region, which contain 13 million and over 18 million people, respectively, as of 2010, making it one of the most populous metropolitan areas in the world as well as the second-largest in the United States and the densest urban area in the United States.

94% Percentage of crashes caused by human error.

7.5M Number of motor vehicles in Los Angeles County.

23.2$B Cost of congestion for Los Angeles due to value of fuel, time wasted, and increased cost of doing business, as of 2013.

Source: NHTSA, California DMV, Cebr.
To that end, LA has developed a vision, business strategy, and a list of tactical action items that can help us incrementally upgrade our fleet and supporting infrastructure to prepare the way for the future. The AV future LA envisions is people-focused, agile, multi-modal, and operationally efficient. Within this paradigm, AV technology solves genuine transportation problems for LA residents by actively engaging with and soliciting feedback from them regarding route, timing, and type of service required on a real-time, on-demand basis. AV fleets will come in various sizes, from smaller autovots/pods/taxibots to service vehicles to mini shuttles/buses. This is so that service provided is right-sized to fit the use case according to time and space, enabling operational efficiency and agility. (A large AV bus may be appropriate for a major arterial during peak-hours, while a smaller taxibot may be sufficient for serving only a few, limited passengers in the middle of the night.) The fleet will be connected to each other and the city infrastructure to maximize safety and coordination. They will minimize environmental footprint by utilizing electric power sources. AV fleets will be integrated with transportation investments already made by the City and our transportation partners in the region, complementing and enhancing existing transit investments, rather than replacing them. Seamless synchronization with the existing system will improve the attractiveness of the multi-modal and shared usage paradigm compared to today’s private car ownership model from efficiency, affordability, and safety perspectives. To enable such a future, we believe that the AVs should be connected, data-enabled, shared, and electric.

LA’s infrastructure—including the ATSAC (Automated Traffic Surveillance and Control) system—will play a critical role in this future. By becoming a control and coordination infrastructure for AVs, ATSAC can intelligently optimize the movement, routing, and speed of AVs, improving vehicle usage and energy efficiency. Because anonymized data will be shared and analyzed, the system will provide key insights into transportation trends to inform urban and transportation planners, and will also improve itself continually and make decisions through machine learning and artificial intelligence capabilities. Real-time data concerning passenger occupancy and travel will enable granular pricing mechanisms to manage demand and encourage shared, multi-modal behavior, while discouraging zero-/single-occupancy travel. Because AVs and infrastructure will communicate real-time with pedestrians and cyclists, AV technology will play a critical role in facilitating Vision Zero goals to eliminate traffic deaths by 2025.

The City has already begun laying the foundation for this connected, data-enabled, shared, and electric future. In 2016, LA released our Transportation Technology Strategy that articulates the importance of shared mobility, data, and infrastructure. Since then, we have secured funding to deploy DSRC (dedicated short-range communication) equipment in LA’s Promise Zone that will connect our DASH fleets to traffic signals on a real-time basis, enabling signal prioritization and improving bus service. In early 2017, we launched our EV car share pilot that will help us understand how shared and electric concepts could work hand-in-hand, while also addressing equity issues in underserved neighborhoods. We are currently in the process of piloting on-demand microtransit to test how our transportation system can become more nimble and adaptable to customer needs. We have also been at the forefront of the AV regulation discussion to ensure that connected, data-enabled, shared, and electric AVs have a clear path forward for public deployment.

LA has a tremendous opportunity to reshape its transportation infrastructure. Although AVs will spread slowly at first, as costs fall rapidly, they may eventually spread across the region even faster than the automobile in the 20th century. In the near-term, we must proactively engage with our industry, research, non-profit, and other government partners to shape the discussion about how we envision the AV future and seek to co-create it through joint testing, piloting, and deployment exercises. By taking advantage of the window of opportunity in the coming years to align the development of AVs with our vision, LA can ensure that it takes hold of its transportation destiny.
Connectivity technologies can drastically improve the safety for drivers, pedestrians, and cyclists, as well as increase the coordination and optimization levels for vehicular movement. These technologies include vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I), and vehicle-to-everything (V2X), among others. Dedicated Short Range Communication (DSRC), Cellular, Wi-Fi, and Bluetooth are a few of the most well-known enabling technologies currently in development.

Data sharing between vehicles, infrastructure, pedestrians, and other modes of transportation and analytics can highlight valuable trends and behaviors that can facilitate fact-based decision-making for planners and other transportation decision-makers. With the advent of edge computing, machine learning, and artificial intelligence, vehicles and infrastructure can adjust to real-time conditions and significantly improve safety and transit services.

Shared autonomous fleets are a key piece of LA’s vision for its transportation future. By cost efficiently providing high frequency first and last mile services, these vehicles could dramatically increase transit service levels, access, and ridership, while mitigating congestion and pollution. These fleets can also be deployed on an on-demand basis and come in different sizes based on need.

Electricity is a cleaner source of power for the fleets of the future. Not only is electrification better for the environment, electric vehicles are also inherently more efficient at turning energy into miles driven. LA will need to account for sufficient electrification infrastructure for its future fleets and is currently engaged in expanding its electrification capabilities through new installments and sharing agreements for existing infrastructure with regional partners.
Rapidly evolving AV technology means that the near-term goals for the City should be engagement, learning, adaptability, and co-creation.

AV technology is evolving on a daily basis. And many years will need to pass before we have a clear sense for technology winners and losers. Hence the focus for the City in the near-term should not be about picking specific AV solutions or technologies in which to invest at scale, but to structure itself for engagement, learning, adaptability, and co-creation of the AV future.

One of the best ways to do so is by partnering with industry and research groups on small scale testing and piloting projects using the City’s fleets and infrastructure. Technology is meant to serve people, and the best ways to ensure this is to give people opportunity to interact with and provide feedback on the technology, as long as it can be done safely. The City staff is in a unique position to facilitate such pilots as stewards, technical experts, and regulators of public roads to ensure safety and public interest. This type of engagement can
LA will deploy a Platform-as-a-Service business model to enable itself to co-create the autonomous future with industry, research, non-profit and other government partners.

In all, the City must structure itself into an attractive and nimble platform to be able to meaningfully engage and co-create the autonomous future with industry, research, non-profit, and other government partners.

The City’s effort can be framed using the Platform-as-a-Service business model where its vehicle fleets and infrastructure, regulatory support, and technical/safety know-how can be leveraged to create a hosting environment for testing and deploying innovative services/products from industry and startups. This shifts the City’s role from owner and operator of transportation services to broker/facilitator/regulator of transportation services. The Platform-as-a-Service model would encourage healthy competition, and help the City identify and nurture the most promising technologies, while also mitigating capital, technology, and execution risk for the City. Rapid, iterative learning should be prioritized, and cheap, small, and real-life tests should examine key business assumptions around customer needs/interaction, technology constraints, and business model; this would be done with an eye towards identifying scalable, replicable, and transferable deployment models for the future. The City would retain full control over parameters, including pricing, scope, and service levels, so it can make sure that the technologies are aligned with the City’s safety, mobility, and equity outcome goals.

To engage with AV technologies in this manner, the City must develop its screening, technical, financing, and evaluation capabilities by building out an internal AV innovation team. Developing the right AV technologies for the City will be a long-term effort, hence similarly long-term funding sources should be identified and committed. Measure M provides a unique, once-in-a-decade funding opportunity. Since recruitment can take time, fellowships and secondment programs from research and private industry can provide a talent bridge in the short-term.

The City will also reimagine its procurement and financing models to enable flexibility and speed. Many of the piloting efforts can be outsourced to nearby research institutions such as UCLA and USC, local incubators such as the Los Angeles Cleantech Incubator (LACI), communities, and private industry, while the City provides the aforementioned platform support. A bench comprising of pre-qualified industry partners will be created to speed up the procurement process for testing and piloting technologies in various proving grounds throughout LA.

inform the City and its partners regarding potential of the technology, as well as limitations, while providing an opportunity for the City to guide the future AV technologies in the direction that is best aligned with its outcome objectives.

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Tactical actions
Los Angeles is taking to get AV right

Ten tactical action items have been identified to ensure that the City is able to successfully engage, test, and deploy AV technologies.

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Goals and metrics

LA has outlined key outcome goals as improving transportation safety, mobility, and equity. Additional goals include environmental protection and local economic development. Quantifiable goals and metrics should be articulated and all testing and deployments should be measured against them. These goals and metrics should also be articulated as market signals to spur the development of technology solutions that are aligned with LA’s goals. To the extent possible, goals and metrics should remain technology agnostic to keep options flexible and allow for sufficient latitude in creativity.
LADOT has identified several key AV R&D positions that the agency plans to secure in the near future. The specialized capacity will help ensure that LA can actively screen for, manage, evaluate, and co-create AV technologies with our partners. Additional capacity will also facilitate the financing of AV development efforts. A regional cooperation structure has been also set up involving our partners in the Coalition for Transportation Technologies (LA Metro, Caltrans District 7, Department of Public Works, etc.). The partnership would enable regional and multi-modal resource pooling and joint testing.

LA sees industry and research communities as critical partners in developing AV technologies that align with our vision for the City’s transportation system. We are currently working with industry partners to identify collaboration opportunities. LA also has a rich history of integrating cutting-edge research from UCLA, USC, Caltech, and other universities into our transportation system, and we will continue in this tradition. Universities will also provide evaluation support. Local technology incubators will provide screening/technical support and access to the startup community.

LA has been actively engaged with NHTSA, California DMV, and other cities to advocate for a standardized regulatory framework that enables driverless testing, while also protecting city interests. LA recognizes that California currently does not allow for vehicles that are above 10,001lbs and is working with regulators to identify a path forward for deploying shared AVs that fall beyond the weight limitation. LA is also advocating for a connectivity and data sharing regulatory framework that can facilitate our shared, connected, and data-enabled AV vision.
Risk mitigation

Risk will be allocated to those that have the most control over the activities generating the risk. The City will manage the regulatory and political risk, while industry should bear technology and execution risk. Small bets should be made, so losses are limited in the event of failure, which is inevitable in innovative projects. P3 models will be used to mitigate capital, technology, and execution risk for the City. Cybersecurity and privacy will be prioritized, and technologies that can enhance safety in the near-term will be given preference. Deployment areas will match the readiness of the technology.

Innovation financing

Creative financing facility comprising both public and private sources should be developed to support AV capacity building and testing/deployment activities. Long-term, public funds, such as Measure M, are ideal sources of capital for securing R&D staff and capabilities. Short-term funds, such as development impact fees, industry/VC capital, and philanthropic contributions, are ideal for limited duration, project level activities. An AV accelerator fund can be also created to act as seed and bridge capital, as well as matching capital for federal funds. Revenue and value capture fees generated from AV activities can replenish the facility.

Community engagement

Communities and customers living in them are at the center of LA’s AV strategy. This means that prototyping will be conducted with specific community needs in mind. Senior citizens, the disabled, and underserved communities should be prioritized, as well as millennials and technologist groups. All community members affected by pilots will be consulted through regular workshops prior to, during, and after pilots to understand their needs, ensure buy-in, and secure long-term engagement. AV ideation competitions could be held to engage communities developing prototyping ideas and locations.
Labor preparation

Structural change is inevitable with automation. However, preliminary research also asserts that human involvement will be required for many decades to come as safety, comfort, and technical limitations continue to require AV operators, safety/security officers, and technicians on board or nearby. In the coming few decades, AV technologies could be used to enhance human productivity, rather than displacing it. This is an opportunity for existing transit drivers to become higher-value specialists in the burgeoning AV industry, and we hope to partner with local training institutions to enable this transition.

Competition and iteration

Competition and data-driven iteration form the basis of the AV testing and deployment process. An annual competition would be held to identify the best AV technologies for LA. In addition to focusing on technologies that would enable shared, connected, data-enabled, and electric AV future, we will also focus on maximum learning and iterating towards market/business fit. The selected technology partners will be given the opportunity to collaborate closely with City engineers, gain regulatory support, and access LA’s fleets and infrastructure. These partners may be also given short-listing or bonus credits for future procurements.

Incremental scaling

Scaling will be considered on an incremental basis as technologies are proven out, customer needs are appropriately identified, market and business model fit is achieved. Additionally, safety tests and demonstrations, along with improved operational and cost efficiencies (compared to the status quo), will dictate whether LA decides whether certain AV technologies are fit for broader scaling. Some of the shared mobility, connectivity, and electrification concepts are already being tested and will be considered for scaling in the near-term. Others will require many years of testing and iteration before being considered.
An estimated timeline and milestones have been created, building on the shared mobility, connected infrastructure, data-sharing, and electrification experiments that are already on-going in LA.
La is building towards a connected, data-enabled, shared, and electric AV future in a deliberate and targeted fashion. We are piloting microtransit buses in the City to understand how shared behavior can be encouraged using flexible, on-demand technologies. We have built out fiber optic connectivity between traffic signal infrastructure hubs and are deploying DSRC technologies to evaluate how V2I technology can better optimize transit fleets and improve service levels. We are inventorying transportation data across the City and are establishing data rules of engagement to facilitate data sharing activities. We’re also collaborating with regional transit partners to build and share electrification infrastructure and testing EV car sharing in underserved neighborhoods. The AV business plan represents a continuation and integration of these on-going efforts and provides a context in which these existing efforts can come together to render a cohesive shared, connected, data-enabled, and electric AV picture.

Our future activities will continue to target technologies that we believe feed into our integrated AV vision. In the coming years, we will ratchet up our engagement with our industry, research, startup, and non-profit partners to solve specific use cases in various AV proving grounds across the City. We will give preference to technology applications that are near-term ready, such as lane departure technologies and blind spot detection for our fleets, followed by ATSAC data integration and Data-as-a-Service program. But we’re also open to moonshot ideas that can have significant impact if realized. The prototyping activities will be conducted on an annual basis and set up for maximizing mutual learning, iterative development, and co-creation. We look forward to getting started.
A few prototyping ideas to get us started

We are considering multiple prototyping concepts for exploration and experimentation. We are open to new ideas.
Prototyping CV/ITS transit priority

Los Angeles’s Promise Zone is a socio-economically disadvantaged area of the LA where transit priority, blind spot detection, lane departure warning systems, and other connected vehicle technologies can significantly improve the safety and attractiveness of the transit system in the near-term.

§ 1 - Key Partners

CV microtransit bus:
• CV transit manufacturers and service providers

Connectivity:
• DSRC, cellular, wifi, and bluetooth providers

Data platform:
• Data aggregators and processors, UCLA/USC

Management and evaluation:
• University research centers and affiliated faculty
• Regional transportation partners (Metro, Caltrans D7)

§ 2 - Key Activities

• CV technology enabled transit priority
• First/last mile solution
• Increased frequency and efficacy of existing services
• On-demand services

§ 3 - Key Resources

• LADOT management capabilities
• LADOT safety expertise
• Financing from federal/state funding sources (i.e., ATCMTD)

§ 7 - Cost Structure

• Hardware/software costs for vehicle, comms, data platforms
• Engineering and integration expenses
• Operational expenses
• Community outreach/marketing costs
• LADOT management and safety expenses

• CV operator/chauffer
• Other
§ 4 - Customer Relationships
• LADOT District offices
• University researchers and faculty
• Community outreach / education program
• Marketing campaign

§ 5 - Channels
• CV buses providing high-level preemption services for the local communities
• V2X connectivity to ATSAC enables timing and preemption optimization

§ 6 - Customer Segments
• The primary demographic segment targeted are the socioeconomically disadvantaged that make up a large segments of the local population.
• Senior citizens and/or the disabled also have material presence in the community and can benefit from higher quality transit services

§ 8 - Revenue Stream
• Per-ride fees or monthly/quarterly membership
• Community payment
• Advertisements from sponsors or naming rights
• Business community sponsorships
• Data monetization
• Tax revenue
• Other
Prototyping V2I/V2X deployment

USC/Exposition Park is located along the High Injury Network where V2I/V2X technologies using ATSAC data can have significant safety impact. Prototyping activities can also help develop an AV road network along transit and enhanced vehicle networks and launch a Data-as-a-Service program for AV/CV platforms.

§ 1 - Key Partners

Connectivity:
• DSRC, cellular, wifi, and bluetooth providers

Data platform:
• Data aggregators/processors, security vendors

AV/CV shuttle:
• AV/CV shuttle manufacturers and service providers

Management and evaluation:
• USC/UCLA research centers and affiliated faculty
• Regional transportation partners (Metro, Caltrans D7)

§ 2 - Key Activities

• ATSAC data access and integration
• V2I/V2X safety enhancement technology
• Development of AV road network
• ATSAC Data-as-a-Service program for AV/CV platforms

§ 3 - Key Resources

• LADOT R&D and management capabilities
• LADOT safety expertise
• USC/UCLA research institutions and faculty
• National Science Foundation/USDOT funding
• UTC/University research funding

§ 4 - Cost Structure

• Hardware/software costs for vehicle, comms, data platforms
• Operational expenses
• Community outreach/marketing costs
• LADOT management and safety expenses

• AV/CV operator/chauffer
• Other
§ 5 - Customer Relationships

- LADOT District offices
- USC/UCLA faculty and researchers
- Community outreach/education program
- Marketing campaign

§ 7 - Channels

- AV/CV buses and vehicles can be connected to ATSAC signalized intersections and V2I/V2X platforms
- V2X technology can be connected to pedestrian smart phones to improve safety

§ 6 - Customer Segments

- Multiple customer segments can benefit from improved integration of ATSAC data with AV/CV platforms. These include student and faculty populations that ride on DASH buses to socio-economically disadvantaged populations that are disproportionately represented in transit ridership.

- Riders in private AV/CV can also benefit from real-time ATSAC data as it can better inform speed and routing.

- Most importantly, pedestrians can significantly benefit from improved safety from V2I/V2X deployment.

§ 8 - Revenue Stream

- University/community payments
- Business community sponsorships
- Per-ride fees or monthly/quarterly membership
- Advertisements from sponsors or naming rights
- Data monetization
- Tax revenue

- Other
UCLA campus and Westwood provide an opportunity to prototype, test, and identify the right model for on-demand AV shuttle circulation service across campus and to nearby transit stations.

§ 1 - Key Partners

AV microtransit bus:
• AV microtransit manufacturers and service providers

Connectivity:
• DSRC, cellular, wifi, and bluetooth providers

Data platform:
• Data aggregators and processors, UCLA/USC

Management and evaluation:
• UCLA/USC research centers and affiliated faculty
• Regional transportation partners (Metro, Caltrans D7)

§ 2 - Key Activities

• First/last mile solution
• Increased frequency of existing service
• On-demand services
• Connectivity and data sharing

§ 3 - Key Resources

• LADOT R&D and management capabilities
• LADOT safety expertise
• UCLA/USC research institutions and faculty
• National Science Foundation / USDOT funding
• University research funding

§ 4 - Cost Structure

• Hardware/software costs for vehicle, comms, data platforms
• Operational expenses
• Community outreach/marketing costs
• LADOT management and safety expenses
• AV operator/chauffer
• Other
§ 5 - Customer Relationships

- LADOT District offices
- UCLA/USC faculty and researchers
- Community outreach / education program
- Marketing campaign

§ 6 - Customer Segments

- The primary demographic segment targeted are the non-driving student population that lack a user-friendly transit option to and from campus to nearby neighborhoods and to nearest MTA station.
- Westwood also has many senior adults and disabled populations that can benefit from more frequent and accessible shuttle options.

§ 7 - Channels

- AV microtransit buses providing circulator services for students and university affiliates
- AV microtransit buses can be extended to adjacent streets where they can connect to ATSAC signalized intersections

§ 8 - Revenue Stream

- Per-ride fees or monthly/quarterly membership
- Community payment
- Advertisements from sponsors or naming rights
- Business community sponsorships
- Data monetization
- Tax revenue
- Other
Prototyping AV/CV transit integration

Warner Center is a growing commercial development hub in the San Fernando Valley where AV/CV can address an existing transit gap for the technologists and senior adults that reside in the business park. The Center is also serviced by the Orange Line with a dedicated lane.

§ 1 - Key Partners
AV microtransit bus:
• AV microtransit manufacturers and service providers
Connectivity:
• DSRC, cellular, wifi, and bluetooth providers
Data platform:
• Data aggregators, UCLA/USC
Management and evaluation:
• UCLA research centers (i.e., ITS) and affiliated faculty
• Regional transportation partners (Metro, Caltrans D7)

§ 2 - Key Activities
• First/last mile solution
• Substitution of existing service
• Increased frequency of existing service
• On-demand services

§ 3 - Key Resources
• LADOT management capabilities
• LADOT safety expertise
• Financing

§ 7 - Cost Structure
• Hardware/software costs for vehicle, comms, data platforms
• Operational expenses
• Community outreach/marketing costs
• LADOT management and safety expenses
• Foregone revenue streams
• AV/CV operator/chauffer
• Other
§ 4 - Customer Relationships

- LADOT District offices
- UCLA faculty and researchers
- Community outreach / education program
- Marketing campaign

§ 5 - Channels

- AV microtransit buses providing circulator services for students and university affiliates
- AV microtransit buses can be extended to adjacent streets where they can be connected to ATSAC signalized intersections

§ 6 - Customer Segments

The primary demographic segment targeted are the non-driving student population that lack a user-friendly transit option to and from campus to nearby neighborhoods and the nearest MTA station. Westwood also has many senior adults and disabled populations that can benefit from more frequent and accessible transit options.

§ 8 - Revenue Stream

- Per-ride fees or monthly/quarterly membership
- Community payment
- Advertisements from sponsors or naming rights
- Business community sponsorships
- Data monetization
- Tax revenue

- Other
Prototyping AV data business model

Playa Vista is a growing mixed-use/technology hub at the heart of Los Angeles’s “Silicon Beach.” AV shuttles can address a genuine transportation gap to nearby commercial centers and transit stations, while also providing opportunities to explore AV data business models.

§ 1 - Key Partners

AV microtransit bus:
- AV microtransit manufacturers and service providers

Connectivity:
- DSRC, cellular, wifi, and bluetooth providers

Data platform:
- Data aggregators, UCLA/USC

Management and evaluation:
- University research centers and affiliated faculty
- Regional transportation partners (Metro, Caltrans D7)

§ 2 - Key Activities

- AV/V2X data analytics
- First/last mile solution
- Increased frequency of existing service
- On-demand services

§ 3 - Key Resources

- LADOT R&D and management capabilities
- LADOT safety expertise
- Research institutions and faculty
- National Science Foundation/USDOT funding
- UTC/University research funding

§ 7 - Cost Structure

- Hardware/software costs for vehicle, comms, data platforms
- Operational expenses
- Community outreach/marketing costs
- LADOT management and safety expenses

- AV operator/chauffer
- Other
§ 5 - Customer Relationships

- LADOT District offices
- University faculty and researchers
- Community outreach/education program
- Marketing campaign

§ 7 - Channels

- AV microtransit buses providing circulator services for technologies, senior citizens, and disabled
- Data platform providing analytics and business platform for data monetization purposes

§ 6 - Customer Segments

- The primary demographic segment targeted are the young millennials and technologists that make up a large segment of the population.
- Senior citizens and/or the disabled also have material presence in the community and currently lack reliable first/last mile solutions
- Business community may be willing to pay for a circulator to move pedestrian traffic to commercial centers.

§ 8 - Revenue Stream

- Business community payments/sponsorships
- Per-ride fees or monthly/quarterly membership
- Community payment
- Advertisements from sponsors or naming rights
- Data monetization
- Tax revenue
- Other
Prototyping AV/CV platooning

Los Angeles’s I-210 and I-710 freeways are part of Caltrans’ Connected Corridors program. High Occupancy Vehicle (HOV) lanes can be made available for a fee to low occupancy AVs and freight for platooning purposes. The revenue collected can subsidize shared and transit AVs across the City.

§ 1 - Key Partners

AV vehicles, buses, and freight trucks:
- AV manufacturers and service providers

Connectivity:
- DSRC, cellular, wifi, and bluetooth providers

Data platform:
- Data aggregators, UCLA/USC

Management and evaluation:
- Regional transportation partners (Metro, Caltrans D7)
- University research centers and affiliated faculty

§ 2 - Key Activities

- Freeway platooning
- Connectivity and data sharing
- Pricing

§ 3 - Key Resources

- Caltrans D7 R&D, management, and safety expertise
- Metro R&D and management capabilities
- University research centers, faculty, and funding
- Federal agencies and funders (i.e., VOLPE, National Science Foundation)

§ 7 - Cost Structure

- Hardware/software costs for vehicle, comms, data platforms
- Operational expenses
- Community outreach/marketing costs
- Caltrans D7/LADOT management and safety expenses
- Other
§ 4 - Customer Relationships

• Caltrans D7/LADOT/Metro offices
• University researchers and faculty
• Community outreach / education program
• Marketing campaign

§ 5 - Channels

• Connectivity and data platforms would enable granular and automatic pricing through in-vehicle sensors and/or telematic devices

§ 6 - Customer Segments

• The primary demographic segment targeted are the everyday commuters that are beholden to hours of daily travel on the freeway.

• AV freight drivers and companies can also benefit from platooning capabilities.

§ 8 - Revenue Stream

• Usage fees based on occupancy and miles travelled
• Business community sponsorships
• Data monetization
• Tax revenue
• Other
Feel free to get in touch and contact us

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Autonomous Los Angeles
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