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# Technology Action Plan



An action plan to realize the visions outlined in the Urban Mobility for a Digital Age and Great Streets for Los Angeles: 2018-2020 Strategic Plan

V 2.1 – Updated January, 2020



“ Nothing happens unless first we dream ”  
- Carl Sandburg



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# INTRODUCTION

In 1886, Karl Benz patented the first internal combustion engine. Considered one of the most important inventions of the 19th century, Benz’s invention ushered in the motor vehicle industry which has been at the heart of the economic development and rise of countries throughout the world. Spurred by Henry Ford’s 1928 “Opening roads to all mankind” campaign and his development of the assembly line, we reshaped our cities to serve the new technology of the 20th century – cars – instead of the other way around. This reshaping occurred predominantly in low-income neighborhoods of color, subsequently destroying whole neighborhoods and cultures.

Los Angeles, like many cities, recognizes that what have traditionally been considered the elements of transportation — roadways and vehicles, railways and rolling stock — are embedded in a complex web of social, economic, environmental, and health factors and cannot be treated as the standalone responsibility of engineering.

In the city of Los Angeles, you can reach **12 times as many jobs** in an hour by car as you can by transit.

Decades of highway construction and associated land use decisions have created inequities in cities. One's zip code determines their chance at upward social and economic mobility. When polled, Angelenos consistently rank street safety as one of their top three concerns. The transportation sector is now the primary emitter of CO2 and the largest contributor to global warming and climate change. Mobility outcomes, and any responsible technology plan that enables them, are about a great deal more than moving people and goods from place to place. In short, treating movement as a fundamental human right unlocks economic mobility and social wellness.

In 2016, the Los Angeles Department of Transportation (LADOT) released a foundational document titled [Urban Mobility in a Digital Age](#) that fundamentally changed the direction for mobility in LA and the region. For the first time, the City of Los Angeles drafted a planning document acknowledging that the current transportation system was inadequate and ill-prepared to handle the reality of the challenges before it. With 22 million people projected to live in the LA metro region by 2040, coupled with diminishing natural resources and physical space, *Urban Mobility in a Digital Age* acknowledged that the current consumption of mobility in the form of one person in one car was no longer sustainable.

Today, transportation is undergoing a massive transformation that will change the way we conduct business in the public and private sectors. We are at a unique point where not all technology advancements in transportation or new forms of mobility provide clear benefits to cities and their residents. Moreover, they are changing the foundational assumptions of how we build and manage transportation systems. As private companies build wealth using public streets, cities have been mostly passive. Being mindful of the mistakes of the last century will serve us as we attempt to put cities in an active role to facilitate the movement of vehicles on the ground and in the air, and the services and associated physical public realm design which will serve the 21st century and beyond.

LADOT recognizes the crucial role that technology can play in everything from streamlining customer service, to value-engineering infrastructure projects, to creating safer streets, to empowering private companies to provide services equitably and responsibly. However, technology merely facilitates our mission to serve the people of Los Angeles.



To realize this mission effectively, cities must approach innovation with the same curiosity and urgency as the private sector. As such, we view LADOT as a service delivery organization with clearly communicated physical and virtual platforms that maximize equity and livability. We need to work together with private industry and community-based organizations to co-create the solutions to some of the largest problems faced by Los Angeles in public safety, environmental stewardship, and economic vitality. New solutions to seemingly intractable problems require thoughtful risk-taking, pilot projects, and partnership of public, private, non-profit, and philanthropic entities.

We are mindful that in the past, rushing into the future without examining the foundation of our decisions resulted in consequences that require a reckoning. The digital age is no different. Our goals are clear. The tools to achieve them are still emerging. How do we focus on Transportation Happiness and Universal Basic Mobility with the same intensity as we have traditionally focused on moving cars and people faster? How do we make transportation investments support the greater social good?

LADOT believes this Technology Action Plan (TAP) and the groundwork laid by the preceding documents is one step in the right direction.

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# FRAMEWORK

## Vision

In Los Angeles, all people have access to safe and affordable transportation choices that treat everyone with dignity and support vibrant, inclusive communities.

## Mission

LADOT's mission is to lead transportation planning, project delivery, and operations in the City of Los Angeles. We work together and collaborate to deliver a safe, livable, and well-run transportation system in the city and region.



# First Principles

LADOT's approach to developing its Transportation Technology strategy is built on six principles. In the previous version of this document, there were five first principles. In this version, we add modularity - the ability to use elements of the Mobility Data Specification (MDS) to satisfy the planning, regulating and / or operating stewardship of both the physical and digital public realm.

**Open-Source:** Allow any city or company to take product developed by Los Angeles and run it as a service within a city free from any royalties or license fees.

**Competition:** Foster a competitive market for solicited requests to run, on behalf of cities, reference products as a service differentiated by service level and customer satisfaction.

**Data and Privacy:** Cities should earn their own data through the digital services they provide while also adhering to best practices for privacy standards.

**Harmony:** Avoid a patchwork of regulation by enabling low cost, homogenous services that span municipality borders.

**Sustainability:** Build product that any city can afford with new types of business models to ensure sustainable transportation networks for generations to come.

**Modularity:** Create a flexible kit of parts and framework that public agencies may designate to fit their needs.

# ROLES OF A CITY

The public sees a city in part through the eyes of their neighborhood and use of the transportation system. Internal to cities however, the configuration of our agencies is complex and needs to evolve with the transportation landscape, both in infrastructure and services.

Cities and their transportation departments have multiple, interrelated roles in urban mobility systems, and these are constantly becoming more complex:

- We **regulate and enforce** the physical public realm, which consists of various rights of way including roads, walkways, bikeways, bridges, and airspace, as well as the signs, signals, and paint that organize travel from place to place.
- To deliver this product, cities **plan and build** infrastructure and operational investments, ideally coordinated with land use planning and development.
- And as a services agency, a city transportation department must **operate** the system on top of the infrastructure by offering parking services, enforcement, public space use permits, and various types of transit, among many other services.

Cities host a daily suite of operational and regulatory services which include helping move people to safety during emergencies, sometimes shutting down streets, providing safe passage to those wishing to gather and demonstrate, as well as managing and pricing the curb to regulate parking and deliveries. And cities do this in addition to the maintenance of all the above infrastructure 24 hours a day, 365 days a year.



# Three Functions of Stewardship

## Planning

Land use,  
where to invest,  
what to invest



## Regulatory

Ensuring all those operating in the  
public right-of-way do so aligned with  
policy-based outcomes



## Operations

Orchestrate the public right-of-way  
to ensure safety and balance  
among users



All done through a city lens of  
**social and economic equity**

LADOT leverages these stewardship roles and invites innovation into the city with an intersectional aim: economic mobility, emissions reductions, harm reduction, and community happiness. [The Sustainable City Plan](#), [Mobility Plan](#), [LADOT Strategic Plan](#), and the [Vision Zero Plan](#) envision mobility as a means to address some of the biggest challenges the city faces: saving lives, preventing climate change, improving socio-economic equality, easing congestion, and improving public health outcomes, all of which are interconnected.

Digital modes pose a different set of challenges and opportunities for city transportation leaders. Managing daily operations of transportation digitally offers a testing ground to build a system that could be exponentially more effective, equitable, and sustainable than existing analog methods if handled thoughtfully. We must participate in the digital transportation marketplace as a peer and partner with the private sector or we risk limiting the ability of digital private companies to scale their businesses and offer solutions to common problems residents face.

## Vision and Strategy Origins



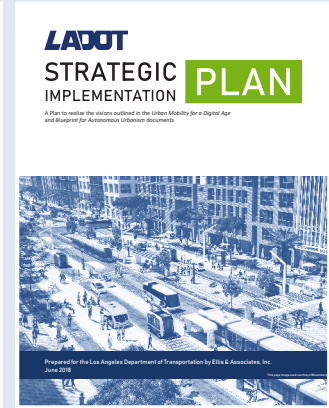
**City of LA**  
2015



**LADOT**  
2016



**NACTO**  
2017

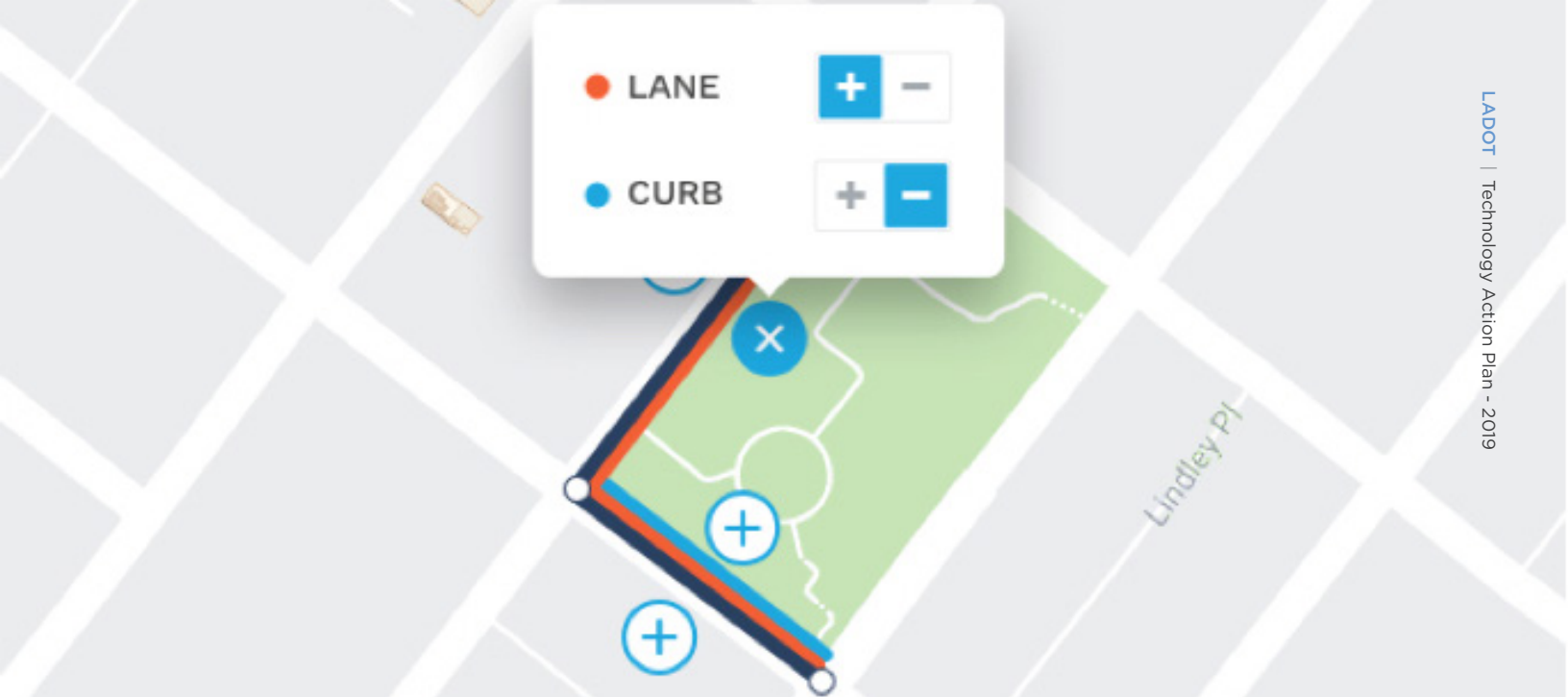


**LADOT**  
2018

# BACKGROUND

Several major trends define Los Angeles' transformation into a thriving hub for mobility innovation: most prominently, shared mobility services, peer to peer networks, and smart phones with geolocational functionality that have changed the way urban populations move.

LADOT spearheaded *Urban Mobility in a Digital Age* which recognized these radical shifts and laid out a vision for Los Angeles in the 21st century as a platform for data, mobility, and infrastructure as a service. Since then, NACTO's *Autonomous Blueprints* (V1 and V2) were released, as well as two previous iterations of this LADOT Transportation Action Plan (SIP 2018, TAP 2019), and the International Transport Forum's (ITF) 2019 document, [Governing Transport in The Algorithmic Age](#). The interplay between these documents has been critical to building a body of work that recognizes the complexity around the physical and digital public realms and accompanying business models, privacy implications, and impact on city systems and people.



# CODE IS THE NEW CONCRETE

Using the “code as concrete” metaphor opens up dynamic and granular opportunities to coordinate and manage the public realm on behalf of citizens. A digital infrastructure can mirror the current hardscape and gives transportation assets like curbs, streets, sidewalks, airspace, and subterranean space a digital identity.

With this digital infrastructure, what was once a fixed sign, or fixed paint scheme on a curb, can become a dynamic, digital service. The City can begin to guarantee curb space and dwell time; react immediately to public safety issues; and explore a variety of government-to-business pricing models. Navigation systems, apps, and connected transit shuttles can read a digital parking sign in addition to the human-readable equivalent. Road closures can be digitally communicated to vehicles, mobility service providers, and navigation products like Google Maps and Waze.

## SPOTLIGHT:

### CODE THE CURB

Bringing technological solutions to Los Angeles.

Code the Curb is an undertaking to inventory more than 1 million signs, 37,000 parking meters, curb paint, and regulatory tools along 7,500 centerline miles of streets in Los Angeles. When complete, the digital inventory will allow for citywide dynamic pricing, management, and regulations.



**SPOTLIGHT:**  
**ATSAC**

A smart network to keep Los Angeles flowing.

The Automated Traffic Surveillance and Control System (ATSAC) is the brain of the Los Angeles street network. LADOT engineers use ATSAC to optimize traffic flow and reduce congestion.

Thanks to ATSAC, LADOT improves vehicle flow, reduces travel time by more than 10%, and increases speeds during peak commute. In addition to improving traffic flows, ATSAC provides valuable information on travel speeds and traffic volumes that are used for planning and project development.

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**4 Million**  
Angelenos

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**7.4**  
**Terabytes**  
Real-Time Data  
Processing Per Day

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**4,700**  
Traffic Signals

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**23,800**  
Traffic Sensors

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**7,500**  
Miles of Streets

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**1,500**  
Transit Bus Signals

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# PUBLIC REALM

The public realm broadly refers to those areas of a city to which the public has access. It includes streets, curbside, footpaths, parks, squares, bridges, and public buildings and facilities. These public spaces give a city its character and also determine how inhabitants and visitors circulate, travel and interact within the city's environment. The public realm therefore has a significant impact on how a city functions and on its attractiveness as a place in which to live and work, or as a destination for tourism and investment.

The digital public realm is a less fixed, more dynamic medium for the exchange of information with potential to address the dynamic demand for our limited physical environment. Cities have long been working to manage and regulate the public right-of-way, embedding information in the built environment for a very long time. Markers on buildings, pavement striping, curbside signs and wayfinding, for example, serve as either a temporary or permanent record of public policies, rules, and regulations — guides to the expected use of our physical world. How the physical public right-of-way is actually used is a good model as we consider what a real digital public right-of-way might be like.

Rather than prescribing fixed regulations, however, a digital layer enables public agencies to express policies digitally via Application Programming Interfaces (APIs), and ideally in partnership with providers, and then regulate in real time. This unlocks the inefficient model of hoping that companies will adhere to crucial safety or sustainability regulations, and then manually catching and enforcing after the fact. In short, cities do not have the resources for manual enforcement, companies want clarity for their operations and investors, and the public expects safe and efficient services and rely on the government to assure it the first time — thus the promise of the digital public realm.

The digital public realm aims to reinforce and match in power the progressive analog in street design shifts and accompanying equity, health, and safety measures set by Los Angeles policy makers. The public realm currently hosts a myriad of digital, networked objects. In any large city there are thousands of networked (and solar-powered) parking meters, bus shelters displaying real-time transit information, even public trash cans networked to report status.

# Digital Infrastructure Vision

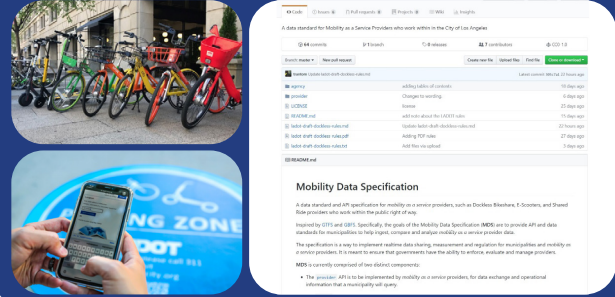
## Current State: Analog APIs

How cities have managed for 100+ years



## Future State: Digital APIs, with MDS

How they will manage the next 100+ years



In addition, there are public shared bike stations, fleets of dockless bikes, and scooters with cellular connections onboard, all the non-networked screens on the sides of buses and buildings, and infrastructure systems like traffic signal controls, streetscape irrigation, and video cameras. And yet none of these municipal devices are interoperable, very few work from a common platform, and only a handful are actually open in the sense that a sidewalk is open and public. As we confront the public sector's role in this space, there are a few things to bear in mind:

1. People have become data sources, but rarely are on equal footing with either government or business.
2. That means government holds a tremendous responsibility to weigh the upside and downside risk of using that data, reminded ever of our mixed history of doing that to the benefit of all.
3. Collect as little information as we need; automate only what we must; and, hold a transparent connection to the goals we pursue.

The sidewalk is the original social network, and its lessons have much to teach the designers of our digital overlay of public spaces. It is no less public than the physical realm, but it may be slightly more difficult to notice. We must remember that in this public right-of-way, and including its digital elements, every member of the public has a right to equal access and safety and to have their needs cared for. LADOT both supports innovation and new services on our streets and prioritizes our role to provide for and protect the rights and safety of the general public. We must live up to our stewardship responsibilities to the public both digitally and physically if we are to do our jobs, and fulfill our mandate and the laws requiring it.

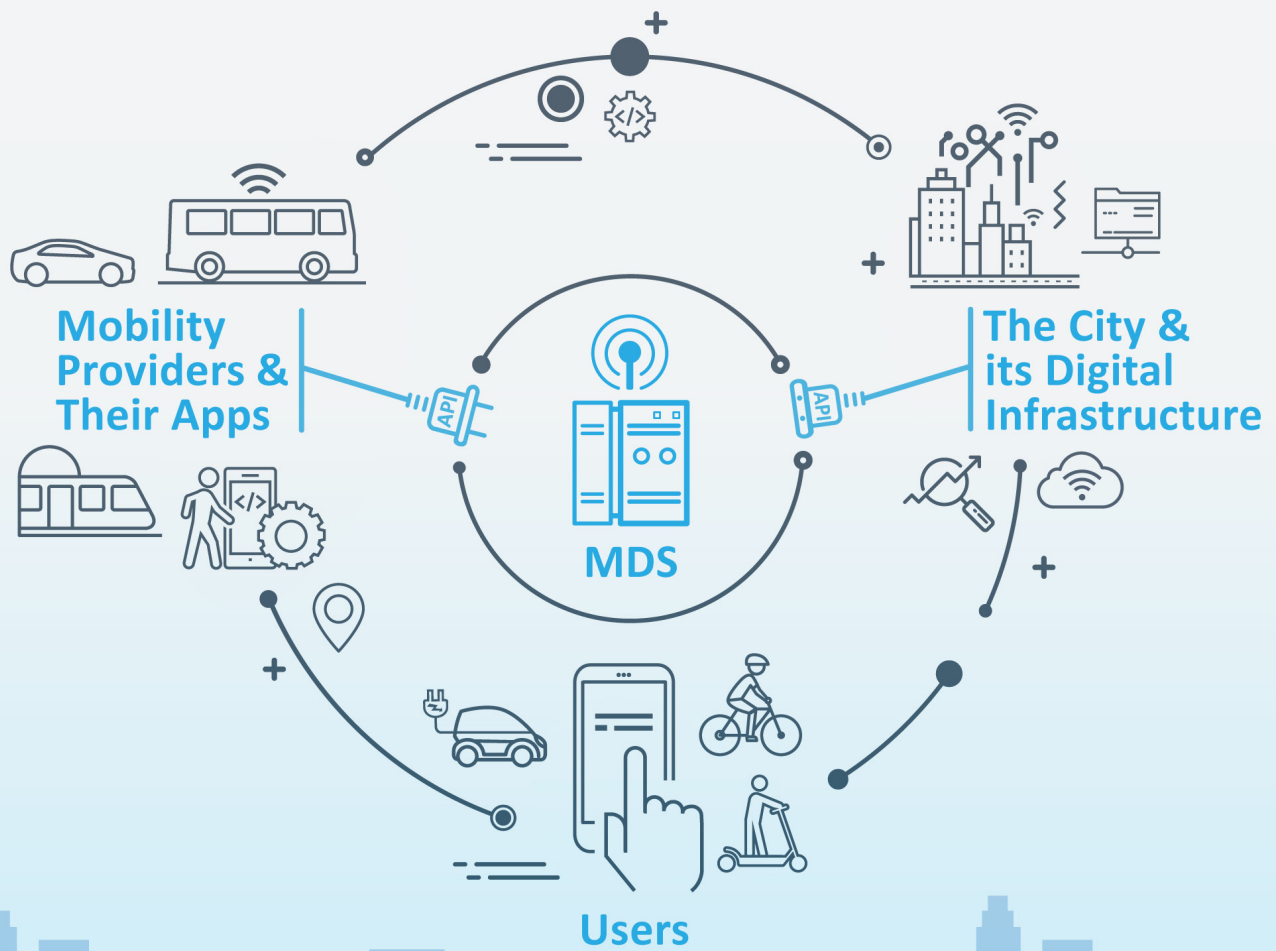
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# MOBILITY DATA SPECIFICATION

While there are many ways to bridge the physical public realm and the digital public realm — QR codes and near-field communication devices, augmented reality, and projection mapping to name a few — these are point-in-time solutions, not frameworks for an evolving ecosystem of devices, vehicles, and information needs. Because of that, we created the Mobility Data Specification (MDS) as the connective tissue between the physical and digital public realms.

LADOT introduced MDS to provide a digital supplement to fulfill its core mission of assuring safe, equitable, and sustainable transportation to Angelenos, regardless of whether the service is provided by government or the private sector. To do this meant changing the dynamic between cities and private companies operating on the public right-of-way by creating a set of open source tools that facilitate a low-cost, harmonized implementation of communication, information exchange and parameters of use. In simple terms, these Application Program Interfaces (APIs) allow the city and the companies providing transportation services to communicate digitally.

The initial development of MDS consists of a toolkit of interface points, depending on need. One of these interface points allows LADOT and Mobility Service Providers to share mobility information on both real-time and historical bases. This includes information such as vehicle location and trip durations (provider to city), and vehicle caps and service areas (city to provider). Other interface points offer digital methods for LADOT to provide real-time management information such as street closures, time-of-day and parking restrictions, and positioning of moving emergency vehicles to keep users safe and on their way.



LADOT is developing the Mobility Data Specification (MDS) and its digital infrastructure to give the City an efficient and cost-effective way of managing the right-of-way for transportation modes enabled by technology. In short, technology allows us to get to our goals faster, and at scale, rather than concrete and asphalt alone. Both digital and analog infrastructure matter. We will need both to succeed. We must also remember that there is one (fiscally constrained) LADOT, and hundreds of mobility providers wanting to provide services with varying degrees of benefit and ultimate viability (transportation is not a historically profitable business). Without adequate digital infrastructure on the government side, it is simply not possible to test, allow growth of many providers vs. few, or allow scale for these services. LADOT wants to be in the business of providing equal opportunity to companies of all sizes vs. picking winners and losers due to a lack of ability to manage a highly complex system.

The MDS does not set policy. That role lies squarely with elected city leaders and the associated policy experts in city agencies. MDS enables policy application through technology, using the language of product companies embedded in the DNA of the new Transportation as a Service business model.



LADOT developed MDS, including the software products LADOT uses to dynamically manage dockless mobility programs, publicly in github, an open source software repository. From here, the code base was transferred to the non-profit [Open Mobility Foundation \(OMF\)](#) where it will be further developed and iterated upon by a much wider user base than LADOT. The OMF leverages LADOT's foundational work and empowers any municipal transportation agency to deliver digital services and customize as needed based on local regulations.

MDS is currently used primarily with dockless mobility, but there are plans to expand its applications to other forms of transportation including microtransit, autonomous vehicles, last-mile delivery, and urban air. This transition will expand the potential for MDS and the ability for cities to unlock greater economic potential in the use of the physical public realm.



# PRIVACY

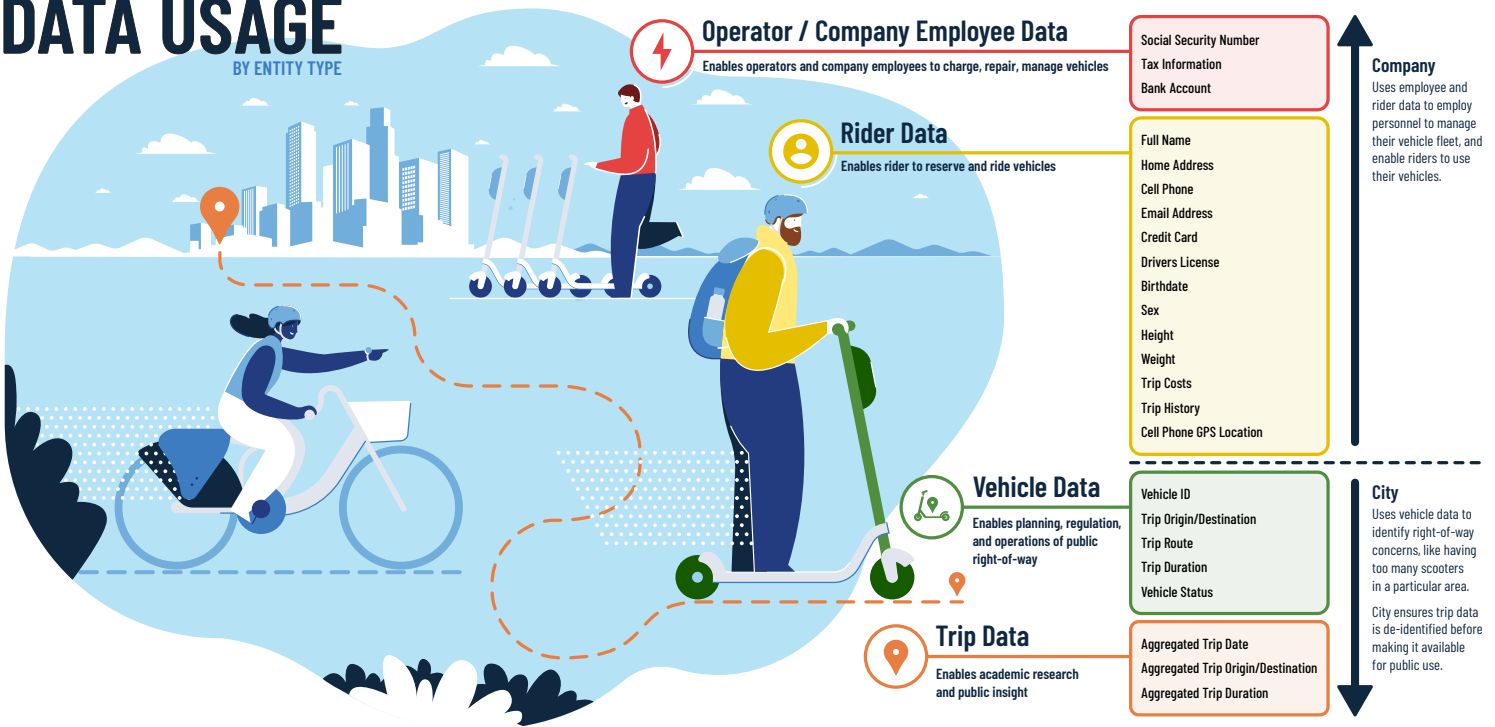
LADOT considers protecting personal privacy as one of our highest priorities and a core principle of MDS. Our vision is for all people in Los Angeles to have access to safe and affordable transportation choices that treat everyone with dignity and support vibrant, inclusive communities. As we work to achieve our responsibilities of safety, congestion relief, equity, and sustainability, we have a responsibility to protect individual privacy and promote a transportation system free from discrimination and the exploitation of personal mobility data.

Our interest is in using operational vehicular data in an open and transparent manner, for and on behalf of those in Los Angeles. For the dockless mobility program, all vehicle location data is treated as Confidential and is handled with the utmost care according to well-established, citywide data privacy and protection protocols. LADOT has developed plain language for application users to understand how and why the city collects and uses vehicular data.

In March 2019, we published the first version of the [LADOT Data Protection Principles](#). The document outlines five main principles that govern how we manage data collected from Mobility Service Providers, including an express prohibition on data monetization of any kind. In order to engage the community, we created a public commenting period for the document so that people could submit their thoughts and opinions on the principles. Some comments resulted in changes to the agreement. Subsequently, we updated the principles, released the second version in April 2019, and operate day-to-day under these principles. In November 2019, the Los Angeles city council adopted these principles, which give them the force of law whenever LADOT applies MDS.

# DATA USAGE

BY ENTITY TYPE



The above graphic illustrates how different types of data are consumed by various entities in the transportation ecosystem

# OPEN MOBILITY FOUNDATION

Within a few months after LADOT made the MDS github project publicly visible, there were cities around the world making reference to our work. By the end of November 2018, the middle of the conditional use permit period, we were aware of about 40 cities using or referencing the LADOT MDS project in their respective dockless mobility permits. By April 2019, the start of the one-year permit period, we learned there were over 75 cities using or referencing the LADOT MDS project in their respective dockless mobility permits. This growth, without marketing or outreach by LADOT, serves as a testament that what we are building and deploying in the City of Los Angeles solves a real problem; and in a way that is easily consumable and understandable by cities all around the world.

In order to give all cities a voice in the governance and evolution of the MDS project, Los Angeles joined 14 other cities to found the Open Mobility Foundation (OMF) – a global coalition led by cities committed to using well-designed, open-source technology to evolve how cities manage transportation in the modern era. The OMF brings together academic, commercial, advocacy and municipal stakeholders to help cities develop and deploy new digital mobility tools, and provides the governance needed to efficiently manage them. The first project that the OMF will govern is the LADOT MDS project (which has been contributed in full to the OMF).

The OMF convenes a new kind of public-private forum to seed innovative ideas and govern an evolving software platform. Serving as a forum to discuss pedestrian safety, privacy, equity, open-source governance and other related topics, the OMF has engaged a broad range of city and municipal organizations, private companies and non-profit groups, as well as experts and advocates to ensure comprehensive engagement and expertise on vital issues.

The founding municipal members of the coalition are Austin, TX; Bogotá, Colombia; Chicago, IL; Los Angeles, CA; Louisville, KY; Miami, FL; Miami-Dade County, FL; Minneapolis, MN; New York City Department of Transportation, NY; New York City Taxi and Limo Commission, NY; Philadelphia, PA; Portland, OR; San Francisco, CA; San Jose, CA; Santa Monica, CA; Seattle, WA; and Washington D.C.

In addition to cities and public agencies, the OMF is founded in part by The Rockefeller Foundation – a premier science-driven philanthropy focused on promoting the well-being of humanity throughout the world. The OMF is also founded by micromobility operators such as Bird and Spin; technology companies such as Microsoft, Blue Systems, Lacuna and Stae; and is supported by advisors that include the International Association of Public Transport, Transportation for America, MetroLabs, ITS America, Polis, the International Transport Forum, and the NewCities Foundation.

As municipalities integrate expanded transportation options – and as the number and type of vehicles using the existing public right-of-way rises dramatically in cities across the country – this innovative coalition is focused on four primary areas:

1. **Increasing Safety.** Cities need tools to manage and measure new transportation modes in order to ensure the safety of their residents and reach the goals of Vision Zero.
2. **Ensuring Equity.** Cities need tools to ensure mobility technologies do not create or exacerbate inequality. New forms of transportation should be accessible and affordable to all residents.
3. **Improving Quality of Life.** Cities need tools to ensure transportation options do not impede sidewalks or increase roadway congestion and add to the sustainability and safety of our urban environment.
4. **Protecting Privacy.** Cities need tools that enable them to generate and analyze data through the mobility services they provide while also adhering to world-class privacy and data security standards.

Contributing the LADOT MDS project to the OMF and making this software open and free offers a safe and efficient environment for stakeholders, including municipalities, companies, experts and the public, to solve problems together. Because private companies scale best when cities can offer a consistent playbook for innovation, the OMF aims to nurture those services that provide the highest benefit to the largest number of people, from sustainability to safety outcomes.

By using collaborative methods and an open-source structure, the OMF enables cities and public agencies to access the digital tools that they need to effectively manage city streets as the worlds of transportation and technology continue to intersect and evolve.

The OMF is partnered with OASIS, a leader in the open-source and software standards industry.





# COMMUNITY OUTREACH

Everything LADOT does as an agency is for the people of Los Angeles. We aim to create a more prosperous, sustainable and equitable city in which everyone can live, work and play. We believe that Los Angeles is a place where everyone should thrive and have a high quality of life. This is why community outreach and engagement are essential for us. LADOT is eager to know what our residents think and how they feel about our work and policies and the impacts on their communities. We want to know how we can improve our agency, policies, and programs to better serve the needs of our local populations. LADOT recognizes this as a significant responsibility, and one that we take very seriously.

Over the past year, LADOT has undertaken several community outreach initiatives to engage with people on mobility and technology. As an agency, we want to ensure that mobility technology in Los Angeles is truly human-centered and only used to achieve greater prosperity, sustainability and equity. For example, with the Blue LA Electric Vehicle (EV) Carshare pilot, a first-of-its-kind program to provide 100% electric vehicles to low-income communities in Los Angeles, LADOT partnered with community-based organizations (CBOs) in the project area. This engagement not only empowered local residents to provide input on program design but provided multiple opportunities for communities to engage with the new technology, learn how to access it, and even created new jobs to support the innovative program.



We also wanted residents to learn more about what the City is doing in collaboration with dockless mobility service providers such as those that provide scooters for rent. Over the past year, we held community meetings across the city in collaboration with LAPD to inform people about scooter regulation initiatives and engage the public about their thoughts on our effort to manage micromobility. Scooters have also been integrated into the City’s 3-1-1 customer service request system (more than 1,200 reports related to scooters were filed in the first nine days of the official pilot program).

Work is underway to develop a Women’s Transportation Needs Assessment to better understand particular issues facing women as they move across the city, including how new modes and technologies impact their mobility.

#### SPOTLIGHT:

### BLUE LA CAR SHARE

Providing sustainable options through equity.

With the Mayor’s office, LADOT launched the Blue LA car share program, the largest city-funded electric vehicle car share program in the country. Blue LA brings 200 EV chargers and 100 cars to pilot locations in Westlake, Pico Union, Hollywood, and Koreatown.

Equity was at the forefront in developing this program. A steering committee made up of community-based organizations provided input on pricing, outreach, and local hiring. Discounts are available for low-income users, and the program provides equitable access to environmentally-friendly cars without the need to worry about insurance, maintenance, or gas costs.





# CULTURE CHANGE

In order to deliver on both the mandate and opportunity laid out in this document, we recognize that LADOT needs to evolve as an organization. To that end, and to best meet the needs of Angelenos, LADOT as an organization has been working to (i) be collaborative and open to change, (ii) lead on experimentation, and (iii) invest in our people by enhancing their abilities when it comes to using technology and developing new skills.

We have focused efforts on (i) continuing to clearly articulate, share, and update goals and values; (ii) listening to staff to ensure that leaders are meeting actual needs; and (iii) promoting skill building and training to ensure that staff who have spent their careers managing those that pour concrete become equally adept at managing coders.

Over the past year, we commissioned a survey to field offices all over the city to gain insight into the familiarity, thoughts, and concerns of staff in relation to transportation technology and the LADOT Strategic Plan, Mobility Plan, and Technology Action Plan.

Based on the results, it is clear that we still have work to do to ensure that our people are prepared for the future of mobility and ready to evolve as technology evolves. We are also committed to engaging in further discussion around the future of work, job training, and new work streams in our strategic planning process. As an example, we have invested in training for staff to develop data skills across the agency. We recognize that staff in different roles have varied competency needs when it comes to data, from using new modes for data entry to adeptness in deep analytics. Ultimately, the aim is to both ensure expertise in the agency's data capacities and that the culture places value on the use of data and information, meaning that all members of the agency understand how they are contributing to the metrics and outcomes that matter.

It takes time to develop a digital culture and like private sector products and services, it will be iterative vs. a grand unveiling on day one. With this approach, LADOT can more quickly and consistently deliver on the promises of this Technology Action Plan and be positioned to co-create solutions with varied stakeholders including private citizens and private companies that want to sit at the table.

The bottom line is clear: culture is the most important enabler of digital transformation. Without people, tools will not make any difference.



# IDEAS IN ACTION

With the ongoing explosion of technology in transportation, we are committed to ensuring that everyone in our city benefits from these new mobility choices. Los Angeles is embracing new technologies and new modes to better serve the needs of everyone. We are proud to lead the way for 21st century mobility and are also working with other cities and government agencies to develop this innovation.

LADOT is undertaking a number of transportation technology projects to test and implement a wide range of new approaches. From introducing electric car sharing programs with BlueLA to using real-time data to power and manage large-scale e-scooter implementation with the Mobility Data Specification, we are finding ways to ensure everyone benefits from innovation.

Our near-term focus is to respond to new forms of mobility and to set the ground rules for how new types of transportation operate on our streets. These evolving demands on the right-of-way, on our streets, sidewalks, curbs, and airspaces are pushing us to develop new ways to manage mobility that go beyond our 20th century traditional methods: traffic signals, signs, and paint.

On the following pages, we have provided an illustrative (rather than exhaustive) list of the types of Task Order Solicitations for Transportation 2.0 services that LADOT is considering. We envision these projects to work in coordination and partnership with the Open Mobility Foundation (OMF).

# APPENDIX 1

## Transportation 2.0 Service Task Orders

Possible Project Title	Expected Complexity	Expected Cost	Description
Promise Zone Micro-transit	Medium	Medium	Identify and launch a micro-transit service in LA's first Promise Zone service area.
DTLA Autonomous Transit	Low	Low	Launch a one-year pilot of autonomous transit in DTLA.
Universal Access to Play	Low	Low	Identify and launch a service to assist Department of Recreation and Parks with efforts to transport recreation teams to and from games; give kids in low-income communities regular opportunities to access major recreation amenities such as Griffith Park; and offer summertime transportation to public pools.
Shared Mobility Pilot Evaluation and Expansion Planning Technical Support	Medium	Medium	Provide support to existing EV Car Share Pilot, including pilot evaluation, strategic planning around expansion opportunities and funding mechanisms, and support ongoing equity framework for shared mobility services. Technical support will also include integration of existing shared mobility options.
EV Taxi Implementation, Vehicles and Infrastructure	Medium	Medium	Study a feasible approach to offer subsidy and/or rebate program for electric vehicle purchase and develop strategy for providing supporting infrastructure.
Third Party Universal Taxi Dispatch App connected with Multimodal Trip Planning App	Large	Medium	Develop a universal taxi dispatch app that incorporates the entire permitted taxi fleet and offers users real-time information for convenient and seamless trip planning, reservation, and/or payment, maximizing taxi's utility to users.
Universal Dispatch App for Wheelchair Accessible Vehicles	Large	Medium	Develop a dispatch app that incorporates entire wheelchair accessible fleet, including taxis, inspected vehicles from Transportation Network Companies, and paratransit to offer users real-time information for convenient and seamless wheelchair accessible trip planning, reservation, and/or payment.

Possible Project Title	Expected Complexity	Expected Cost	Description
Concierge service	Large	Large	Service to deliver a user experience engagement versus destination engagement. For example. What if, instead of selecting a destination, a person selects a task: "Today I want to meet friends and discover somewhere new in the City," or "Today I need an inspiring meeting space for five, with WiFi and great snacks."
Visual requirements for travel in LA	Medium	Large	Document all the areas of visual interaction for each type of travel mode within Los Angeles. Develop best practices for the design of AVs and multi-modal transportation for visually-impaired passengers.
Design Guidelines for Digital Infrastructure	Medium	Medium	With the potential proliferation of new digital infrastructure, the sensors and communications technology necessary to capture and relay real-time transportation data, the City of Los Angeles will set standards for well-designed equipment that integrates into existing infrastructure and/or is complementary. Much in the existing marketplace of sensors and communications infrastructure has been developed with little consideration for aesthetics. However, as potentially the largest market, the City and region of Los Angeles will request well-designed equipment to be installed in the public right-of-way. LADOT will be an advocate for better aesthetics and establish a mechanism to ensure that the proliferation of pole attachments and other equipment does not contribute to urban visual blight.
Design Guidelines for Autonomous Rights of Way	Medium	Large	Building on the National Association of City Transportation Officials Blueprint for Autonomous Urbanism, the City aims to create a set of initial working design guidelines for autonomous infrastructure and rights of way both on the ground and in the sky. In the next five years, as fleets of driverless cars and drones appear, the City needs to give careful thought to the implications for setting parameters and requirements for future vertiports, organizing curb space, and ensuring that placemaking, culture, and community are integral parts of new mobility.

# APPENDIX 2

LADOT is testing and implementing a wide range of technology projects to find ways to make new technologies work for all of us. LADOT will issue to the Transportation Technology bench Task Order Solicitations related to the following transportation technology projects. We also welcome suggestions at [ladot.innovation@lacity.org](mailto:ladot.innovation@lacity.org).

**ATCMTD:** Through the Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD) project, the City of Los Angeles will deploy advanced transportation and congestion technologies to our transit fleet, our very large automated transportation infrastructure and our web services. The goal of the project is to increase mobility in the City while keeping pedestrians, bicyclists and motorists safe and improving air quality by decreasing congestion.

**ATSAC 3.0:** The Automated Traffic Surveillance and Control (ATSAC) 3.0 project will modernize the computing infrastructure as well as integrate all the other active management digital capabilities LADOT is pursuing. The ATSAC system is the heart of the Los Angeles surface transportation system and covers the entire 7,500 miles of city roadways, 40,000 parking meters, 4,700 traffic signals, 1,500 transit signals and 23,800 traffic sensors.

**BlueLA Car Sharing:** LADOT launched a zero-emission car sharing program to provide point-to-point car access servicing low-income communities and offering subsidized rates to families in need. LADOT offers 100 all-electric vehicles and 200 charging stations in communities throughout Los Angeles including Westlake, Koreatown, Pico-Unions, Downtown, Echo Park, Boyle Heights and Chinatown.

**Code the Curb:** This digital inventory project aims to electronically inventory all the City's parking assets in the public right-of-way including paint color, signs and any other markings all linearly and correctly represented. The result will be an online, spatial inventory database of all signed traffic and parking regulations within the City of Los Angeles.

**Demand-Based Parking "Express Park":** LADOT was an early adopter of technology that matches the cost of parking to demand. When demand for parking is low, rates are low. When demand is high, rates should match. LADOT will expand Express Park to LADOT-owned and managed facilities and at special events.

**Data Inventory:** LADOT created an inventory of all the data sets and data sources used by and generated by LADOT staff in the core processes of their work. Using the Data Roadmap tool, staff can explore data sets and learn about data formats, locations, access and data ownership.

**Micro Transit Pilots:** Micro-Transit fleets are similar to pooled ride-hailing services. In select neighborhoods across Los Angeles, users can download an app to hail a small van or bus and be dropped off within the neighborhood. The micro-transit vehicle bases its trip routes based on other customer trip requests. Micro Transit programs offer a low-cost alternative to single passenger ride-hailing services and provide connections to rail and fixed bus services.

**Mobility Hubs:** The Mobility Hubs project aims to provide individual travelers with mobility choices to accommodate seamless trips to and from transit centers to employment, education, and major activity centers. Mobility Hubs will provide convenient and inventive physical spaces at existing Metro Rail stations designed to integrate a suite of mobility services and real-time trip planning information with the regional transit system.

**Transportation Happiness:** As part of an effort to improve user experience through technology and data, LADOT is exploring ways to measure Transportation Happiness and integrate that metric into all LADOT transportation projects. Leveraging existing and future data resources, both quantitative and qualitative, LADOT will assess and track how the agency is upholding the Principles for Transportation Happiness (BETA).

**Vision Zero:** In 2015, Mayor Eric Garcetti launched a citywide initiative called Vision Zero to eliminate traffic fatalities in Los Angeles by 2025. With a focus on delivering safety improvements in high impact areas, LADOT uses innovate street design education and a data-driven approach to make our streets safe for everyone.

# APPENDIX 3

Task Order Solicitations (TOS) as of 01/09/2020

TOS Date	Project Name	TOS #	Consultant Subconsultant/s
<b>Community Organizing CBOs</b>			
10/17/18	Technical Assistance for LADOT People Street Program	F-001	Kounkuey Design Initiative <i>Toole Design Group</i>
12/20/18	VZ 2019 Dignity Infused Engagement	F-002	Fehr & Peers
2/8/19	Collaborating with Communities to Build Better Bicycle Connections (CBO)	F-003	LANI
Original: 8/27/19 Reissued: 10/30/19	Placemaking on Venice Blvd	F-004	Orig: <b>No proposals received</b> Reissue: <b>Pending (1/23/20)</b>
<b>General Professional Services</b>			
6/6/18	Transportation 2.0 Program Manager	G-001	Ellis & Associates
8/23/18	Wilshire Grand Secure Bicycle Parking	G-002	Fehr & Peers
10/31/18	MyFIG public engagement	G-003	Alta Planning
11/9/18	Technical Assistance & Community Engagement - New Mobility Program	G-004	Shared-Use Mobility Center
2/8/19	Collaborating with Communities to Build Better Bicycle Connections (Tech)	G-005	Arcadis
5/2/19	Analysis of Asset Management to Support Transportation 2.0 Initiative (Code the Curb)	G-006	Cambridge
5/8/19	VZ Transportation Assessment	G-007	Fehr & Peers
6/10/19	Evaluation on Demand Dockless Vehicle Pilot Program	G-008	Nelson Nygaard
6/12/19	DTLA Mobility Investment Program (MIP)	G-009	Fehr & Peers <i>Emerson &amp; Associates</i>
6/4/19	Women's Transportation Needs Assessment	G-010	Kounkuey Design Initiative <i>UCLA</i> <i>Toole Design Group</i> <i>Cityfi</i>



TOS Date	Project Name	TOS #	Consultant Subconsultant/s
6/18/19	VMT Calculator	G-011	Fehr & Peers
8/9/19	Urban Air Mobility Policy	G-012	Designworks Arup Expert Council Consensus
8/23/19	AHSC Round 5 Application	G-013	Alta Planning NDS NTE
<b>Data Technologies</b>			
6/3/19	Measuring Accessibility Platform	H-001	RSG Inc. IBI Conveyal
7/11/19	LADOT Development Review Portal (CLATS) 2.0	H-002	No Award
8/14/19	Understanding Travel Behavior through Location-Based Big Data	H-003	StreetLight Data
<b>Electrification</b>			
9/16/19	Feasibility Study of an All-Electric Bus Maintenance Facility	L-001	Hatch HDR Jacobus & Yuang
9/25/19	Project Manager for Electrification of Transit Facilities	L-002	AECOM Energeia
12/13/19	Financing Electric Mobility Infrastructure: Evaluating the Feasibility of a Partnership Between LADOT and a Local Utility Provider	L-003	Pending (1/16/20)

Piggyback Requests by City Departments as of 01/09/2020

Request Approval Date	Project Name	Project Duration	Requesting Department
<b>General Professional Services</b>			
5/30/18	Urban Cooling Strategies for Residential Neighborhoods Serviced by the Orange Line Grant	12 Mo.	Bureau of Street Services

