A Playbook for Multi-Sector Innovation:
San José and Autonomous Vehicle Pilots

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This document was produced by two students from the Stanford Graduate School of Business, as part of the school's "Impact Labs" program. It draws from interviews with officials from the City of San José, corporations, and third parties/NGOs to inform its conclusions. The views expressed herein are the authors' alone, and do not represent those of the mayor, the City, or the corporations and organizations involved.

Purpose

Across the country, America's mayors are reimagining what it means to innovate. Technological advances, changing demographics, and competition for human capital are forcing city governments to rethink their investment strategies and partnerships. This document is intended to be a "playbook" for cities wishing to partner with the private sector, providing a series of questions that a city might have to answer as it undertakes such partnerships. It uses the case of the City of San José, and its experience with piloting autonomous vehicles, to illustrate how one city answered those questions in a proactive, constructive fashion. It draws from the experiences of the City, corporations, trade associations, and other partners in an attempt to help other cities through a process for which there is no single standard. It also provides a chronology of events, to better understand the order of operations needed to yield a series of impactful pilot programs.

This playbook was constructed through an extensive interview process that included 7 representatives of the private companies selected for the pilot, members of the industry organizations that have directly or indirectly contributed towards this pilot, as well as members across the public sector institutions responsible for and/or affected by the pilot.

Background on San José – the beginning of the effort

"Just as the world looks to Silicon Valley to provide the most creative, impactful technologies to disrupt industries and transform lifestyles, so too can San José become a global leader for civic innovation. Becoming a 'smart city' means that game-changing technologies and data-driven decision-making will drive continuous improvement in how City Hall serves our community, and promote concrete benefits in safety, sustainability, economic opportunity, and quality of life for our constituents." - San José Mayor Sam Liccardo

San José, already America's 10th largest city, is estimated to grow 40% by 2040, giving it an additional 470,000 residents. Mayor Sam Liccardo came to office with the goal of making San José the most innovative city in America by 2020. To that end, San José became one of the first cities to employ a Chief Innovation Officer when it hired Shireen Santosham in December 2015.

Together they developed the "Smart City Vision," a roadmap to achieving the mayor's goal by making it a Safer, Inclusive, User-friendly, Sustainable, Demonstration city, that exists as a "laboratory and platform for the most impactful, transformative technologies that will shape how we live and work in the future." The Smart City Vision lays out an ambitious agenda across sectors.

In the area of transportation, the Mayor's team believes a smart city is one that:

1. Eliminates all traffic-related fatalities and reduces severe injuries
2. Reduces the environmental impact of vehicle miles traveled
3. Creates a more balanced and equitable transportation system
4. Creates a more livable and walkable city
5. Shares and utilizes data to optimize the transportation system while protecting residents' privacy

After unanimously adopting the Smart City Vision in early 2016, the City Council created the Office of Civic Innovation & Digital Strategy, to make tech-based innovation a full-time responsibility under San José's City Manager regardless of election cycles. The City also hired a full-time Innovation Manager in the Department of Transportation to spearhead transportation-related innovations in the City. Together, these parties set out to determine how San José could best engage with the technological innovations affecting mobility. Given Silicon Valley's focus on innovation, as well as San José's proximity to leading technology

companies, they decided to explore public-private partnerships as a potential vehicle for progress.

Why Public-Private Partnerships

The Public-Private Partnership (PPP) Knowledge Lab at the World Bank defines a PPP as "a long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance."[1] Especially in innovation-rich industries and ecosystems, the pace of technological change is outpacing the public's ability to respond. Taken alone, even the most beneficial of these technologies or innovations may seem threatening or provoke a public backlash (consider Uber as an example). But when taken together with a more comprehensive understanding of stakeholder interests and public needs, they may be deployed for collective gain.

Given that California state law had previously cleared the way for autonomous vehicles on the roads, rather than fight it, the City of San José sought to maximize the opportunity by attracting companies to develop AV solutions that would simultaneously ameliorate existing city issues. Instead of waiting to react to private sector moves, the City believed engaging the AV innovators early and often could be beneficial for all involved. But deciding to pursue a PPP was just a first step. Structuring it in a way that benefitted all parties has been a much longer, ongoing endeavor.

Key Questions for Public-Private Partnerships

A public-private partnership is a large undertaking that requires maneuvering various stakeholders, policies and procedures. The World Bank's Isabel Marques de Sá states that "the process of structuring a PPP involves a large number of people, often takes many years, and is expensive in itself." She estimates that 50% of proposed projects fail and are never implemented.[2] As such, San José, like any city considering such an endeavor, needed to address the following key questions:

1. What mobility-related challenges are cities facing today?

[1] http://ppp.worldbank.org/ppp/overview/what-are-public-private-partnerships
[2] https://insights.som.yale.edu/insights/how-do-you-build-effective-public-private-partnerships

2. Why is it difficult to innovate in the mobility space?
3. Which stakeholders are currently engaged in solving this challenge?
4. Who else could be involved? Who are the stakeholders, broadly defined?
5. How do we create an inclusive stakeholder environment that maximizes collective resources?
6. What are the incentives to collaborate?
7. How should we scope potential projects??
8. What are the evaluation and decision criteria?
9. What are the critical enablers for this process (communications, resources, policies, etc.)?
10. What are the next steps?
11. How do we measure success?

Key Questions, Explained

1. What mobility-related challenges are cities facing today?

Traffic in the Bay Area is among the country's worst. The Metropolitan Transportation Commission (MTC) found that traffic congestion in the Bay (defined as going slower than 35 miles per hour for 15 minutes or longer at a time) increased 80% from 2010-2016. The southbound Highway 101 commute from Mountain View to San José is the third worst in the region.[3] Without transformational change to the design, management, and use of the City's transportation system, the mayor feared that quality of life for residents would degrade through longer commute times, higher greenhouse gas (GHG) emissions, and possibly more traffic fatalities and severe injuries. In the heart of Silicon Valley, amid the hype around autonomous vehicle technology, the mayor began investigating potential avenues for collaborations with local organizations leading the work in this space.

The December 2015 launch of the U.S. Department of Transportation's Smart Cities Challenge provided a perfect entryway to get the City working on mobility issues. The

[3] https://www.mercurynews.com/2017/09/18/report-traffic-on-major-freeways-has-grown-80-percent-since-2010/

challenge "asked mid-sized cities across America to develop ideas for an integrated, first-of-its-kind smart transportation system that would use data, applications, and technology to help people and goods move more quickly, cheaply, and efficiently."[4] The DOT then awarded $40 million to the winning city. The incredible response to the initiative demonstrated the scale and breadth of mobility challenges across the country; San José was one of 78 cities to apply. This outpouring of interest was enough to spur the creation of a new nonprofit organization, Transportation for America, "an alliance of elected, business and civic leaders from communities across the country, united to ensure that states and the federal government step up to invest in smart, homegrown, locally-driven transportation solutions."[5] It was against this backdrop that the City of San José decided to engage with the leading AV organizations to see what they could (together) achieve.

Key Takeaway(s):

- Identify a challenge first; then seek out purpose-fit resources and partners for a city to address it

2. Why is it difficult to innovate in the mobility space?

There are a number of factors that make addressing mobility challenges difficult. Chief among them are:

- The introduction of new technologies at a rate that outpaces the government's ability to respond. As a result, it's not immediately clear what new policies are needed, and how they might best be structured to fairly account for the interests of all parties (think ridesharing regulations for Uber/Lyft, or dealer restrictions for Tesla as examples). PPP's require an element of planning and resource allocation that might seem to inhibit rapid innovation
- Ambiguous benefits of said technology. It's not empirically clear whether the growth of AVs will ameliorate or exacerbate traffic problems, depending on how they're managed.

[4] https://www.transportation.gov/smartcity
[5] http://t4america.org/about/

- Challenging coordination. No single government entity is capable of researching, convening, and implementing an AV project on its own. There are multiple transportation agencies involved, and each has slightly different interests.

Key Takeaway(s):

- Understand the root causes of the problems, and exacerbating factors, ensuring solutions are user-centric with a broad inclusive stakeholder engagement strategy
- Identify all potential stakeholders and be intentional around their inclusion

3. Which stakeholders are currently engaged in solving this challenge?

By the time City Hall decided to take up AVs as a priority issue, there were already a number of potential partners and critical stakeholders working on San José-related transportation issues. Any new efforts therefore needed to consider:

A. State Government: The California Department of Motor Vehicles (DMV) announced in February 2018 that the Office of Administrative Law approved regulations governing the driverless testing and public use of autonomous vehicles on California roads. Prior to these rules, since September 2014, autonomous vehicles could only be tested in California with an approved driver. Under the new regulations, vehicle manufacturers must obtain a remote driver testing and/or a deployment permit from the DMV and comply with the permit requirements if they wish to either test an autonomous vehicle without a driver or allow the public to use their autonomous technology. These new regulations meant that with or without City participation, corporations would begin to test autonomous technology on a broader scale.
B. Local Department of Transportation: While the mayor's office initially spearheaded this initiative, they recognized they could not do so alone. Without the Department of Transportation (DOT) involved, not only would the pilot have been cumbersome and contentious, but it likely would have failed. Bringing in senior leadership early, in the form of Assistant Director Kevin O'Connor, ensured that this was a joint effort, not just a mayoral priority. Though the outreach from the mayor's office was essential in getting the right people in the room, the technical know-how and follow-through of the DOT catalyzed the implementation of the pilots.

C. Santa Clara Valley Transportation Authority (VTA): The VTA is an independent special district that manages the region's public transportation, including bus, light rail, and paratransit services. It is also a funding partner in regional rail service including Caltrain, Capital Corridor, and the Altamont Corridor Express. As the county's congestion management agency, VTA is responsible for countywide transportation planning, including congestion management; design and construction of specific highway, pedestrian, and bicycle improvement projects; as well as promotion of transit-oriented development
D. Corporations: Since the 2014 regulations allowed testing of autonomous vehicles with a driver in the state, 50 manufacturers have obtained permits to participate in testing. With the April 2018 enactment of new regulations allowing for testing without drivers, corporations were eager to begin testing on San José's roads.

Key Takeaway(s):

- Consider existing stakeholders (active and inactive) and how their efforts might intersect with, oppose, or inform your own

4. Who else could be involved? Who are the stakeholders, broadly defined?

Mobility problems need not be addressed by the existing stakeholders alone. For the City's Chief Innovation Officer (CIO) and the Innovation Program Manager, determining who else ought to have a seat at the table meant attending a series of conferences, participating in events, and being publicly visible while seeding and promoting the idea of a Request for Information on autonomous vehicle pilots. Defining stakeholders broadly allowed City Hall to expand the zone of opportunity.

Initially, the CIO and Assistant Director of Transportation traveled to a national conference (the "Smart Cities Collaborative") hosted by an organization called "Transportation for America" (T4A) in partnership with Google's Sidewalk Labs. The meeting provided a forum for city leaders from around the country to come together and discuss the future of mobility, while drawing up concrete action plans and sharing resources to make progress in the short- and long-term. Around that time, the CIO reached out to a cleantech innovation hub called Prospect Silicon Valley, which was already under contract to help the City

interface with the valley's many technology firms. Prospect maintains relationships with more than 50 cities, and is recognized as an adept convener of corporations, public sector partners, startups, venture capitalists, engineering firms, and more. They put forward individuals and organizations the City may want to include as well as helped to secure experts to advise and participate in convenings.

As the initiative picked up steam at home, the Program Manager maintained an email list for all interested, so they were invited to all meetings and kept abreast of developments. She also made a commitment to meet with every company that wanted to meet, making her schedule public so that meetings could be requested by all. This was a conscious decision that involved real tangible tradeoffs; though many came through pitching products or services that the City was unable or unwilling to procure at this point, these meetings served as an opportunity to build relationships, educate potential future partners on city procurement processes, and establish the Program Manager as the central hub of communications for all things related to autonomous vehicles in San José.

Key Takeaway(s):

- Define potential stakeholders broadly, and engage them inclusively to maximize the potential solution set

5. How to create an inclusive stakeholder environment that maximizes collective resources?

With a better understanding of who cared about mobility issues, and who might help solve them, the City turned to the question of how best to engage these parties, both within the government, and outside of it.

Externally

The City could have sent out an RFI from the get-go, without any pre-briefings or meetings. Instead, they chose to employ a consultative process to generate interest and buy-in for the concept. In partnership with the Silicon Valley Leadership Group (a local industry association that lobbies on behalf of local companies), Prospect Silicon Valley, and drawing on their own contacts, the CIO and Program Manager created an initial invitation list for a roundtable at City Hall. The goals of the meeting were:

1. To understand the needs from the companies in interacting with City Hall and the limitations and possibilities for the technology in meeting the City's needs
2. To convey that City Hall is "open for business" and a willing partner with the private sector to advance innovation. To that end, the City offered to partner with companies to help manage the public response to autonomous vehicle tests, to provide access to City Hall, and to demonstrate executive leadership in this space, pledging that it would not be an uphill battle with City Hall to move things forward;
3. To introduce San José's Demonstration Policy, which allows the testing, evaluation and implementation of various projects that improve a service or develop prototypes and new technologies; and
4. To introduce the idea of autonomous vehicle pilots, and understand how this might work in San José.

This first meeting received a great response. The attendees requested more frequent meetings to explore new ideas, for additional clarity on potential pilot areas (i.e., what the City was actually looking for), and additional details on potential data sharing agreements. The City was also interested in better understanding what infrastructure companies required to successfully execute pilots throughout the City.

The meeting was a catalyst for the work at City Hall. The positive corporate response galvanized the San José team, which committed to come back to the companies with more clarity on what the City was seeking, and to put together a framework through which interested companies could submit their ideas to San José. City Hall then recruited two volunteer interns from nearby Stanford University's Graduate School of Business to draft a Request for Information (RFI), and placed the effort under a new Program Manager in the Department of Transportation, Jill North.

About 4-5 months after the initial roundtable discussion, the City convened a second roundtable. Over 80% of the attendees from the first meeting returned, along with new interested parties joining. After recapping their progress, the City team unveiled the RFI. In addition to clearly showing that the City had met their commitments, this served as an opportunity to get feedback on the document (in person or written), to lay down the process for application and further engagement, and to field questions. Only after this

feedback period had ended, and the feedback adjudicated, did the City move forward with posting the document.

Internally

Delivering on any promises internally would require partnerships that extended beyond any single government office. For the team at City Hall, this meant getting initial pre-clearance (informally) for what the City might offer. This included meetings with the Planning Department, VTA, the Airport, Operations, Sustainability, Policy, and Leadership functions. It was important to know whether the datasets existed and if they had permission to share them. For example, the Program Manager began by checking with colleagues in the Sustainability department to clear the possibility of providing additional electrical charging stations. While those pulsed were willing to go along with what the City proposed to offer to the companies, it's important to note that not everyone was equally excited. Therefore, it was all the more important to narrow pilot projects down to geographies and functions that would be providing a clear and demonstrable service in zones of full City control (so as not to add dependencies, complexities, and commitments that might not be fulfilled).

Key Takeaway(s):

- Give stakeholders a voice early on, then demonstrate how their ideas have been addressed or incorporated
- Start with a single point of contact who can help set expectations early and often

6. What are the incentives to collaborate?

Once identified and engaged, the City still needed to develop a value proposition for each party; why should they work together rather than compete? In this case, each interest group brought something unique to the table.

City

Data

The most attractive element of the City's value proposition to companies was data. Working with the corporations to understand their needs, the City identified the data that it would be prepared to share, if companies were willing to reciprocate. Before offering this in the form of a Request for Information, the San José team checked with governmental owners of the data to ensure that it was, indeed, sharable. The datasets eventually offered were:

- Wide signal data stream;
- GIS mapping of the San José area, including mapping of key city transport infrastructure such as traffic signals, number of lanes, intersections, street lights, sewers and manholes; and
- Traffic profile - average number of vehicles per day and profile of traffic density over the course of the day.

Single point of contact

Early on, the City heard that companies wanted a go-to person to manage the relationship and ensure that they were able to access what they needed, when they needed it. Jill North, the Innovation Program Manager in the Department of Transportation, was that pathway.

Communications and co-branding

Demonstration partners would be permitted to use the City of San José brand, subject to negotiated restrictions and limitations, in connection with the marketing of the specified Demonstration.

Demonstrate value proposition

San José's pilot offered the opportunity for companies to prove the value of working with a city, instead of around it. The pilots offered companies the opportunity to demonstrate their capabilities in a small, controlled environment which could be replicated elsewhere, and to share the risk in doing such testing. It was also a moment to test whether being plugged in to proprietary city data made a difference in the efficiency and effectiveness of the autonomous vehicles. This could help them gain access to important data in other contexts.

The citizens of San José are an important stakeholder in this collaborative initiative. Mobility plays a defining role in access to everything from financial services to security to employment, particularly among lower-income communities. Therefore, the City selected pilots both to test the private public partnership hypothesis, and to generate data that

could help assess the social value (including time and cost) to low-income communities. An important part of the pilot is demonstrating this value to the citizens of San José as the City embraces this new advent in mobility.

The final RFI included five candidate pilots sites and business cases. They were:

A. San José Diridon Transit Center to Mineta San José International Airport: provide the missing link between train station and airport
B. Downtown to Stevens Creek Boulevard: connect people to their jobs more efficiently along heavily traveled roads
C. North San José Transportation Innovation Zone (TIZ): explore integration of autonomous vehicles technology within a multi-mile network of combined auto, bus, rail, bike and pedestrian use while testing other critical and strategic connections
D. Homeless Veterans Emergency Housing Facility connection to Alum Rock Transit Center: enable San José's veterans to gain access to the Alum Rock Transit Center where they can access VTA Light Rail and bus service, which is in close proximity (~2 miles) to the Veterans' Emergency Housing Facility
E. Downtown San José: explore a downtown area and autonomous vehicle uses in a rich, multi-modal downtown environment

Local transit agency

The Valley Transit Authority was interested in working directly with companies that could solve first-/last-mile connections to public transportation hubs; develop an application to enable multi-modal trip planning, vehicle tracking, and fare payment; and ensure autonomous vehicles are able handle light rail and BRT lines which run alongside normal traffic.

Companies

Clear business case

The City deliberately and clearly identified five potential pilot locations to ensure that the selected companies addressed an existing community pain point, as noted above.

Data

Many companies believe that the City has information that might accelerate the development of autonomous technologies. These include timing signal lights, advance notification of lane closures and constructions, and emergency management vehicle routes.

Infrastructure

Any ability to either improve or provide access to basic autonomous vehicle related infrastructure might assist companies in executing use cases. These include painted lanes and dedicated curb-side drop-offs, all with a view to ultimately improve navigation and data gathering.

Relationship-building

From the perspective of both the City and the companies involved, this was not just about one-off pilots. Rather, it offered the opportunity to begin to cultivate a relationship that could continue to pay dividends into the future. For companies that were planning to do this work anyway, the opportunity to do it with the City, to demonstrate their commitment to the communities in which they lived, worked, and operated, was incredibly valuable.

Key Takeaway(s):

- Understand what stakeholders want, and what each party is prepared to offer through face-to-face meetings which are formally codified in meeting minutes initially, then MOUs and data sharing agreements
- Communicate clearly and directly, regardless of how the answers will be received

7. How should we scope potential projects?

With a sound understanding of key partners and levels of interest, the City turned next to consider what specific projects would make the most sense. After the team had scoped out the five potential pilot sites (see #6), they developed a set of principles for deciding which kinds of project ideas they would select.

- San José would be open to any type of solution that could help the City advance its transportation goals and offer high safety standards to the public.

- Given that city governments typically move slower than the private sector, the City had an interest in proposals that required San José to make fewer upgrades or changes. The more companies could bring to the table in terms of project management or other resources, the better.
- Broadly, the City was interested in data regarding:
    - Transportation planning: speed, volume, and travel time
    - Equity and mobility options: time-stamped rides, vehicle availability, and behavior of ridership
    - New tools for safety: collision data, rapid acceleration/deceleration, and other emissions-reduction benefits of the technology

Key Takeaway(s):

- Establish the decision criteria ex-ante, and communicate them clearly to the potential partners to give them the best chance to deliver value

8. What are the evaluation and decision criteria?

With the RFI out and the groundwork laid, the City waited as the deadline drew nearer and barely any submissions had been received. However the last 24 hours drew a flurry of activity - 32 concepts in all- of which 13 proposals were considered for further review at that stage. These 13 concepts directly related to the initial requirement as outlined.

The Program Manager, together with Prospect Silicon Valley (a key partner that had received a small grant for technical assistance) and a review team, evaluated each of the 13 detailed submissions. The review team consisted of key stakeholders from throughout local government; many of who are the same individuals responsible for execution of particular areas of the broader vision. This included representatives from the locations affected (e.g., the Airport), and the infrastructure support teams (e.g., IT). It also included representatives from the Valley Transit Authority, the City Manager's office, as well as the Operations team and the Planning function. The team was asked to identify the pilots that held the greatest promise for San José, were already funded, and were ready to immediately execute their concept (i.e., not still in R&D phase). None were completely eliminated or scored, as in a Request for Proposal (RFP) process, but five distinguished themselves as candidates for

immediate progression based on their fit with the aforementioned criteria. The Program Manager called all companies to let them know their status - those that were moving forward, as well as those that were on hold for the moment.

The process was not seamless; San José had not done this before, and there were certainly bumps in the road. After receiving submissions, the City invited the identified candidates in for sit-down discussions with the review team, to see if they could fit the pilot into the framework of a Demonstration Agreement, per San José's policy. However, at this stage, it was not immediately clear to the companies whether they had been selected, or whether they needed to continue to pitch their idea. There was also some back and forth about whether it made sense to go straight to a Demonstration Agreement, or to begin with Memoranda of Understanding (MOUs).

Demonstration Agreements are in-depth legal documents that require substantial review, while MOUs are more akin to non-binding letters of intent that indicate a serious commitment to keeping a process moving as negotiations continue. The desire to have something in place before any media announcement led the City to suggest completing MOUs with 2 companies, indicating the intent to sign a Demonstration Agreement.

While many companies lauded the City's clarity regarding the goals for the pilot, they also suggested that more information about the steps in the application and approval process would assist them in both meeting the City's expectations, and in managing their own internal stakeholders. Visibility over the entire process, including information about each of the approval steps, where they are in the steps, and streamlining the legal agreements review process were noted as areas for improvement. Though San José was creating this process for the first time, additional up-front communication and recognition of that fact may have helped level-set with participating companies and could prevent other future participants in similar engagements from potentially abandoning a process over confusion in the process.

How to say "no"

Equally as important as which pilots were selected were those that weren't. It quickly became clear that many companies responded to the RFI because they wanted the City to invest in new infrastructure, or they wanted access to it (e.g. streetlights). Other companies simply proposed concepts that would be more appropriate for future pilots once core

autonomous vehicle processes were running. In the review phase, the team bucketed responses based on function. Some were true autonomous vehicle pilots, but others were about the Internet of Things, mapping solutions, mobile applications, consulting services, or something else entirely.

It was important to establish the ground rules early, and to limit the scope of these pilots to the intended purpose. In comparing their engagement with San José to other pilot projects, companies noted that, amongst other things, the clarity and simplicity of the City's goals assisted these companies in participating meaningfully in this project.

Key Takeaway(s):

- To the extent possible, give partners a high-level view of the entire process, including legal requirements, up front
- If needed, use intermediate agreements (like MOUs) to keep a process moving forward, but make sure their purpose is clear

9. What are the critical enablers for this process?

This process was not perfect, but it would not have even been possible without a few key ingredients that brought partners to the table, and kept them there. They included:

Purpose-fit policies

When it came time to post the RFI, the City team found out that such documents typically went up on a website devoted to such requests, called "BidSync." However, technology companies of the sort the City was hoping to attract, have never used such a portal, and found it less intuitive than platforms to which they were accustomed. Ultimately, due to system malfunctions, the Program Manager had to send the RFI out to the project distribution list, and set up a Dropbox submission folder. Although administrative in nature, making sure the systems match the target audience will be a critical piece of any future engagement.

Demonstration Policy

The ability to consider pilot projects in the first place was enabled by San José's Demonstration Policy, the likes of which has been replicated by cities around the country.

Adopted in 2008, the policy serves as a "framework for engaging in and evaluating demonstration partnerships with the aim of developing, testing and demonstrating innovative solutions in San José in support of the City's Economic Development Strategy and City operations.". The policy gives the City the ability to, for example:

A. Make available temporary use of City-owned land, facilities, equipment, right of ways and data.
B. Provide financial assistance and/or absorb some costs for project implementation.
C. Agree to non-disclosure statements.
D. Request City Council to exempt the project from certain City policies.
E. Where appropriate, consider extended use of City assets that provide opportunities to demonstrate the return on investment provided by a particular innovation.

Provided that the project does one of the following:

A. Creates new markets and new jobs and/or supports existing local innovators;
B. Improves quality and efficiency of City services and operations;
C. Advances the City's Green Vision and Economic Development Strategy; or
D. Educates the public about innovative solutions.

Having this policy in place allowed the City of San José to move much faster, and with broader latitude, than would otherwise have been possible.

Single Point of Contact

Establishing the Innovation Program Manager, Jill North, as the single point of contact, provided a cadence to the process that would otherwise not have been achieved. Her role was more than just serving as a point of contact. Having a highly engaged individual, with relevant subject matter expertise, who also values relationship building is critical to navigating multi-stakeholder environments that can quickly and unnecessarily pivot direction without warning.

Clarity of Goals

Having a clear set of desired outcomes for the pilot allows companies to build a framework around which they can quickly evaluate their ability to participate in the project, but also to build their own internal justifications in seeking approval to participate.

Clarity of Resources

Having a clear understanding of what the City is able to provide not only provides data for companies to evaluate their ability to participate in the project, but also enhances companies' confidence in the City's ability to execute the project.

Senior Leadership

Having senior leadership across both the City and the Department of Transportation visibly on board creates confidence internally (with various public sector stakeholders) and externally (with private sector leadership) in the necessity and importance of the pilot.

Key Takeaway(s):

- Establish the legal authorities and policies that will allow a city to see a PPP through before beginning outreach
- Clarity, best embodied by a single point of contact, is absolutely crucial for external relations
- Senior leadership and buy-in is essential for any high-risk, first-time endeavor

10. What are the next steps?

With the groundwork agreements in place, the City and the selected companies now face the greatest challenge of all: execution. Each step of the process brings both anticipated and unexpected complexities. As the City prepared to announce the pilots to residents, an AV fatality in Arizona brought a new level of media scrutiny to the industry. The selection process has provided a unique platform and opportunity for all participants, but the implementation of the pilots and its ultimate evaluation by residents will be key determinents of success and continued support for the initiative.

The initial pilot created a platform to test core autonomous vehicle functionality within urban cities, with a focus on transportation planning, equity and mobility options, and new tools for safety. Next steps are intended to continue to be a collaborative process, and might include testing:

- Law enforcement protocols
- Emergency management service protocols

- Adverse weather condition protocols
- Economic incentives to all stakeholders: user, company, City
- Community engagement: reporting on the pilot, receiving feedback and input
- Iterating on learnings from Pilot V1.0

Key Takeaway(s):

- Agreements are the end of the first phase, and start of the second
- The process continues to be iteratively collaborative
- Both results and optics are equally important in evaluating success and next steps

11. How do we measure success?

The exact metrics of success for any PPP need to be defined according to the problem they are intended to solve. Furthermore, there needs to be alignment in expectations between the City and the company on what success entails. While a company may be satisfied with real-world testing, the City may want to see clear evidence of reduced congestion, increased mobility, or citizen satisfaction. Accordingly, the parties will need to determine when the pilot should end, and write those conditions in to early agreements. Finally, the parties will need to work together to engage the public/user and manage public perceptions of the tests, so that citizens understand their purpose and value.

Key Takeaway(s):

- Determine conditions for success prior to beginning the pilot
- Set expectations for pilot termination

Conclusion

Whether the pilots discussed herein will ultimately succeed remains an open question. What is clear, however, is that running a clear, open, and inclusive process to engage a variety of stakeholders gave the City of San Jose the best possible opportunity to reach its desired outcomes. The authors believe such a process of multi-sector engagement is vital to making progress against many of the challenges facing communities and governments today. This case study, regardless of the outcome, is a clear example of the importance of

private public partnerships in proactively navigating the complexities of rapid technology innovation reshaping critical socio economics frameworks.

Appendix - Playbook Steps

Completed:

1. Identify and source senior leadership support within both the mayor's office and the Department of Transportation
2. Appointment of a single point of contact within the Department of Transport as both the administrative and subject matter expertise focal point. Depending on the size of the pilot and the number of companies included, provide enough support capacity
3. Identify key policy frameworks that need to be considered as well as that can be used:
    a. Federal, state, and local laws
    b. Internal City procurement policies
    c. Demonstration Agreements or similar policies
4. Identify relevant national and local organizations that might provide support and/ or guidance. Engage in these forums. These can include:
    a. NGO's
    b. Technical assistance organizations
    c. Industry bodies
    d. Peer cities
5. Identify potential key stakeholders:
    a. Internal City departments
    b. Companies
6. Create First Roundtable Forum:
    a. Outline the objective
    b. Listen
    c. Ensure senior leadership attend
7. Develop pilot strategy, including:
    a. Different phases. Keep initial phase simple and achievable
    b. Cities goals. Ensure they are clear.
    c. What the City can provide participants.

    d. What does the City expect from participants
8. Develop pilot application process:
    a. RFI submission. Include data points for legal agreement drafting
    b. Initial screening
    c. Preliminary selections
    d. Final interviews and presentations
    e. Communication of outcomes
    f. Legal agreements
9. Create second roundtable (2 to 3 months post the first roundtable)
    a. Ensure senior leadership attend at least the welcome
    b. Address all points raised at first roundtable
    c. Communicate City strategy
    d. Communicate pilot strategy
    e. Communicate application process
10. Invite RFI submission (recommended length, 1 to 2 months post second roundtable). Consider technology platform used to apply/collect submissions.
11. Convene selection panel
12. One round of final presentations
13. Communicate pilot selections and provide completed draft Demonstration Agreements or MoU's

Planned:

14. Community engagement prior to launch to ensure pilots are useful to residents in targeted areas (e.g., pick up and drop off locations, frequency, on-demand app)
15. Launch pilot
16. Period pilot evaluation
17. Engage community to share and discuss pilot data and results
18. Evaluate and engage with broader stakeholders (who have we missed?)
19. Roundtable on Pilot V2.0
20. Process input and draft RFI V2.0
21. Roundtable to communicate Pilot V2.0