



January 31, 2018

SMART REGION SACRAMENTO

ITS Architecture and Future Technology Master
and Implementation Plan

KICK-OFF MEETING



S A C O G

Kimley»Horn

Expect More. Experience Better.

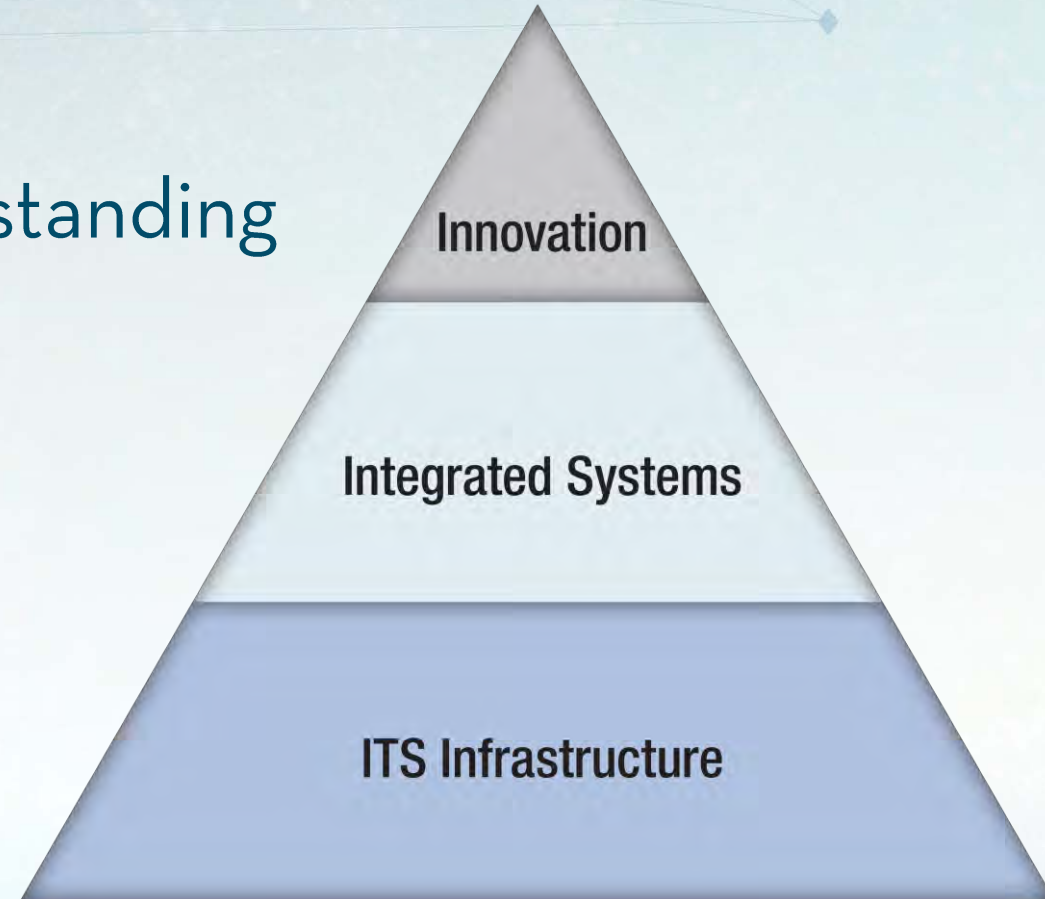
Project Team

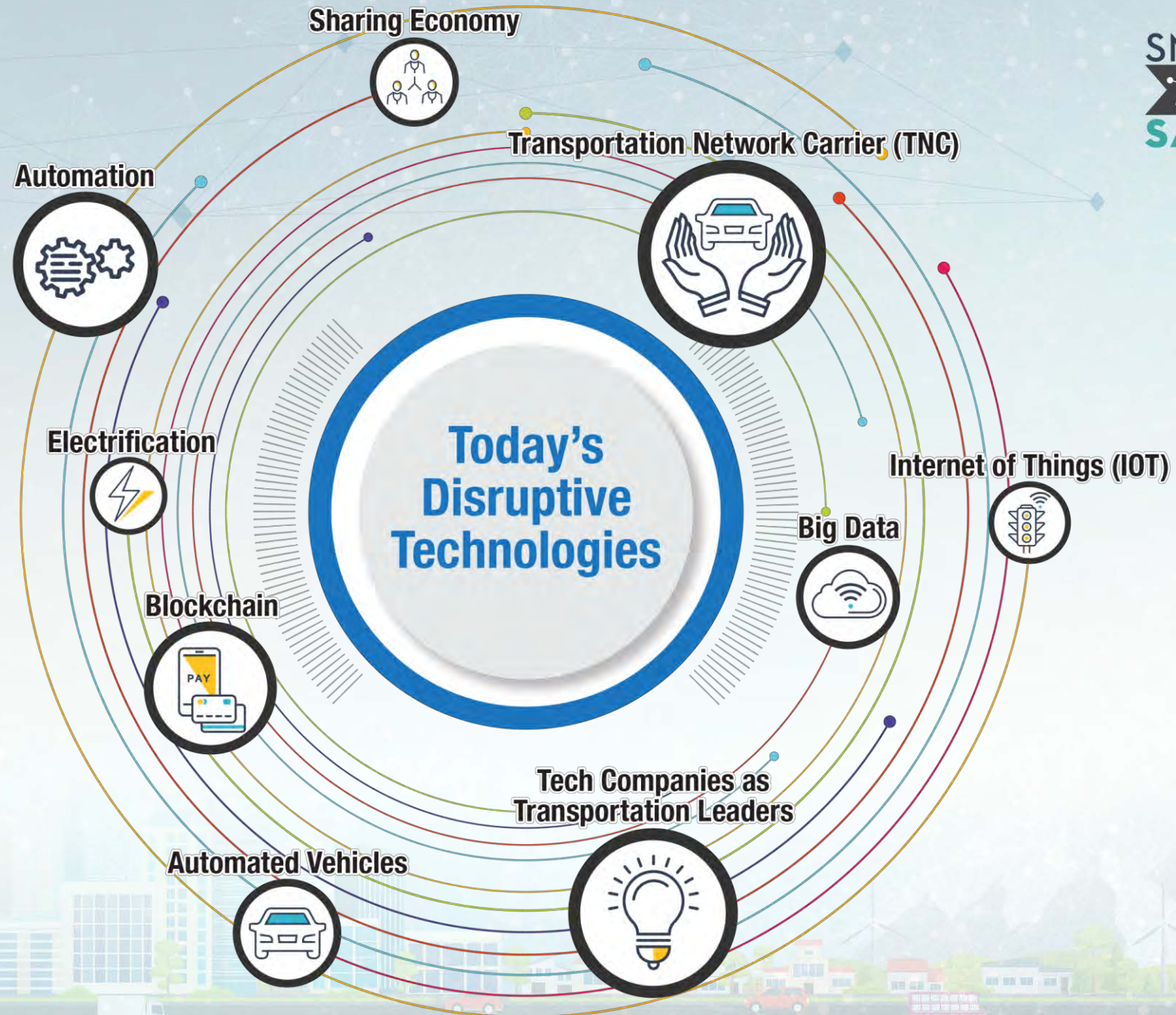
- SACOG
- Kimley-Horn
 - o AIM Consulting: Outreach
 - o Consensus System Technologies: ITS Architecture
 - o TransSIGHT: Concept of Operations/Big Data
 - o Silicon Transportation Consultants: Smart Cities
 - o Data Insight Discovery: Big Data
- Member and Participating Agencies



What is the purpose of this meeting?

- “Kick-Off” meeting
- Establish consistent understanding and expectations
- High-level discussion
- Information gathering
- Local needs focus





Electrification



VW bringing electric car testing program here

BY DALE KASLER
AND RYAN LILLIS
dkasler@sacbee.com

Sacramento motorists probably know this already: For all its sprawl and lengthy commutes, the city is far more manageable than Los Angeles.

Which is why Sacramento, and not Los Angeles, is about to be showered with a fleet of electric cars supplied by Volkswagen.

The carmaker announced Thursday it has chosen Sacramento as its first "Green City," the place where it plans to spend \$44 million building an electric car-sharing service, a slew of vehicle-

charging stations and other benefits.

The program is part of the \$14.7 billion settlement Volkswagen made with state and federal officials last fall after admitting it rigged thousands of diesel cars with software designed to get around air pollution regulations. Of the \$14.7 billion, Volkswagen pledged to spend \$800 million over ten years promoting electric car usage in California.

Mark McNabb, president of Volkswagen's Electrify America subsidiary, said a car-sharing program is a way of making electric cars available to moderate-

SEE VOLKSWAGEN, 2F

GROVE San Rogue S

COMSTOCK'S
ALL THE HITS NOW TO MONEY STATE OF THE SECTOR OUT OF OFFICE FEATURED EVENTS CAP CARES

In the Driver's Seat

James Corless, new CEO of the Sacramento Area Council of Governments, on transportation, housing and autonomous vehicles.

James Corless has been called "a world-class visionary and leader" in transportation, land use and creative urban planning by Roseville Mayor Susan Rohan. He became CEO of the Sacramento Area Council of Governments in April, after serving as the founding director of Washington D.C.-based Transportation for America. We sat down with him to discuss the future of the Capital Region.

You've only been at the helm for a few months. What's your vision for SACOG?

I think Sacramento is poised to punch above its weight, to use a lot of the assets it has to attract talent and to build a really competitive economy. A lot of that is transportation and just making sure people and goods can move from point A to point B. But it's also the type of communities and neighborhoods that we build. It's everything from airports and goods-movement down to building into people's lifestyles — walking and biking and healthy options that are [also] transportation.

You've said mid-sized regions like Sacramento are in a good position to accomplish great things. In what way?

Given both our proximity to the Bay Area and the universities and colleges we have in our region, we could be an innovation economy. I look to Denver and Salt Lake City and Nashville — all state capitals that 15-20 years ago people did not really want to move to — and infrastructure investment. I'm not going to say transportation is the key to everything, but Denver and Salt Lake made huge commitments to build out a modern transportation network because tech leaders from Silicon Valley said, "We're not moving here until you clean up your air and give us much better transportation." Look at Denver: People want to move there for the mountains, for the great weather

THE SACRAMENTO BEE
\$245 IN COUPONS

IT'S UBER vs. RT

Can Sacramento public transit survive competition from ride-shares?

RT ridership

Year	Ridership
2010	13.5 million
2011	14.5 million
2012	15.5 million
2013	16.5 million
2014	17.5 million
2015	18.5 million
2016	19.5 million
2017	20.5 million
2018	21.5 million
2019	22.5 million
2020	23.5 million
2021	24.5 million
2022	25.5 million
2023	26.5 million
2024	27.5 million
2025	28.5 million
2026	29.5 million
2027	30.5 million
2028	31.5 million
2029	32.5 million
2030	33.5 million

SEARCH TRAVEL & HOTELS

LOCAL HOMELESS ADRIAT WITHOUT PARKWAY

Supervisors fear potential crackdown will send commuters into neighborhoods.

STARS CARS

Guaranteed TOYOTA CAMRY every Sat & Sun at 7pm 11/1 July 4

CACHE CREEK CASINO RESORT

SMART REGION
SACRAMENTO

Transportation Network Carriers

Automated Vehicles



PHOTO BY JEFFREY M. HARRIS FOR THE SACRAMENTO BEE
Mayor Darrell Steinberg, left, U.S. Rep. Doris Matsui, and Kings owner Vivek Ranadive announce a public-private partnership to bring driverless car testing to the capital.

City leaders offer streets as test area for driverless cars

BY TONY BIZJAK
tbizjak@sacramento.com

Sacramento stepped up its push to become a national testing ground for driverless cars Wednesday, holding a private meeting downtown with automakers and technology company representatives, then calling a press conference to say Sacramento is hungry to be an robot car leader.

Mayor Darrell Steinberg and Rep. Doris Matsui convened an invitation-only group of several dozen manufacturers, entrepreneurs, regulators and business community members to offer its streets as a proving ground for the technology that many say will revolutionize driving in the next few decades.

King's managing partner and former tech CEO Vivek Ranadive, said he feels that Sacramento is in a race with other communities, some of whom including San Francisco, Pittsburgh and Phoenix, already have autonomous

vehicles on their streets.

During the meeting, he said, he issued "what I call the Kings challenge: by the time we open for the new (basketball) season, Nov. 1, we'd like to have 50 people, including the three of us, ride to the game in autonomous vehicles."

Speaking afterward, Steinberg, Matsui and Ranadive said they solicited industry leaders' advice on what steps the city should take to position itself, including what policies and regulations need to be created, what insurance and liability issues need to be addressed, and what technology needs to be in place to accommodate vehicle testing.

City officials say the downtown street grid, and Interstate 5 between downtown and Airport could serve as the testing areas. That means testing areas, said he can check out the technology.

The city is calling its

effort the Autonomous Transportation Open Standards Lab. Matsui said she wants the city to take a lead role in helping the state Department of Motor Vehicles and the federal Department of Transportation during their efforts this year to come up with testing standards.

"This is not a pipe dream at all," she said. "There is momentum. I really feel this is the moment. We want to know what they need."

Matsui, who was injured last year in a car crash in Washington, D.C., said her goal is to help make driving safer. She cited data showing that 94 percent of crashes are due to driver error.

Steinberg, who took office in December, has said one of his chief goals is to make the city more attractive to entrepreneurs, new technology companies and people with a creative bent.

"Today's message was, 'We are all in,'" Steinberg said. "We are willing to take risks. We are hungry for change. Sacramento is the perfect petri dish to not only test this technology, but to show how it can be brought to scale."

The trio offered only a few names of the technology, auto and other companies that participated in the morning meeting, including Uber and Lyft.

"Everyone you'd expect," Steinberg said.

That included Daniel Kan of Cruise Automation, a San Francisco autonomous technology company that was recently sold to General Motors for \$1 billion, according to Fortune magazine. Kan declined comment.

Tony Bizjak: 916-321-1059, @TonyBizjak



PHOTO BY JEFFREY M. HARRIS FOR THE SACRAMENTO BEE

Self-driving cars are on a roll – and sometimes crashing



ACCIDENTS INVOLVING SELF-DRIVING VEHICLES

The following 30 accidents reported since late 2014.

Date	Company	Vehicle	What happened?
1. 1/10/15	Google Auto	Lincoln	Hit a curb in a street and hit a vehicle's side door.
2. 1/20/15	Google Auto	Lincoln	Hit a curb in a street and hit a vehicle's side door.
3. 1/20/15	Google Auto	Lincoln	Hit a curb in a street and hit a vehicle's side door.
4. 1/20/15	Google Auto	Lincoln	Hit a curb in a street and hit a vehicle's side door.
5. 1/20/15	Google Auto	Lincoln	Hit a curb in a street and hit a vehicle's side door.
6. 1/20/15	Google Auto	Lincoln	Hit a curb in a street and hit a vehicle's side door.
7. 1/20/15	Google Auto	Lincoln	Hit a curb in a street and hit a vehicle's side door.
8. 1/20/15	Google Auto	Lincoln	Hit a curb in a street and hit a vehicle's side door.
9. 1/20/15	Google Auto	Lincoln	Hit a curb in a street and hit a vehicle's side door.
10. 1/20/15	Google Auto	Lincoln	Hit a curb in a street and hit a vehicle's side door.
11. 1/20/15	Google Auto	Lincoln	Hit a curb in a street and hit a vehicle's side door.
12. 1/20/15	Google Auto	Lincoln	Hit a curb in a street and hit a vehicle's side door.
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14. 1/20/15	Google Auto	Lincoln	Hit a curb in a street and hit a vehicle's side door.
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29. 1/20/15	Google Auto	Lincoln	Hit a curb in a street and hit a vehicle's side door.
30. 1/20/15	Google Auto	Lincoln	Hit a curb in a street and hit a vehicle's side door.

and the reports show that accidents and damage were not a surprise. The technology has evolved over time. It also shows the need for a better way to design and test self-driving vehicles.

California has passed 10 bills related to self-driving vehicles, including the 2014 law that allows limited testing on public roads. The law also requires manufacturers to report any accidents involving self-driving vehicles to the state.

Manufacturers had filed 30 accident reports with the state between late 2014 and mid-April, records show. In most of the crashes, a conventional vehicle was involved.

SEE DATA TRACKER, 2B

SEE DATA TRACKER, 2B



Never Offline.

The Apple Watch is just the start. How wearable tech will change your life—like it or not.

BY LEV GROSSMAN AND NATE VELLA



THURSDAY JUNE 4, 2015
\$ACR6.00

BY ANITA CHADHA
a.chadha@sacramento.com

Wireless giant Verizon and the city of Sacramento want to make a deal.

Mayor Darrell Steinberg on Thursday will announce a plan in which the city would give Verizon fast permitting and access to city pipes for next-generation internet services such as free WiFi at 27 parks.

Steinberg said he believes the technological leap could expand internet access in the city's disadvantaged communities and position the city as a testing ground for new technology.

Steinberg said Wednesday the proposed deal represented "a new era of

Capital, Verizon seek a deal on internet system

Free WiFi at parks if firm can run wire through city's pipes

Sacramento" as it pushes to become a destination city for tech firms. He said the deal doesn't tie the city to Verizon and he hopes it will become a model for similar partnerships with other companies.

Details of the proposed contract were not available Wednesday, but a public-private partnership said Verizon would get free use of 101 small cell towers for 10 years, and low-cost rates for 5G cell locations when that technology becomes commercially available in coming years.

Verizon also could use a network of conduit the city owns to pull its own fiber-optic cables through, saving on construction costs.

According to the memo, the deal could bring residents free WiFi in 27 parks for five years; digital kiosks with free lightning-fast service; traffic signals connected and controlled by a main city brain; and police cameras that can follow subjects.

Verizon would build a fiber-optic backbone capable of supporting bandwidth-hungry new technologies, Steinberg said that would boost economic development by attracting companies eager to test products that rely on fast wireless connections—such as self-driving cars.

The City Council is expected to vote on the deal Tuesday.

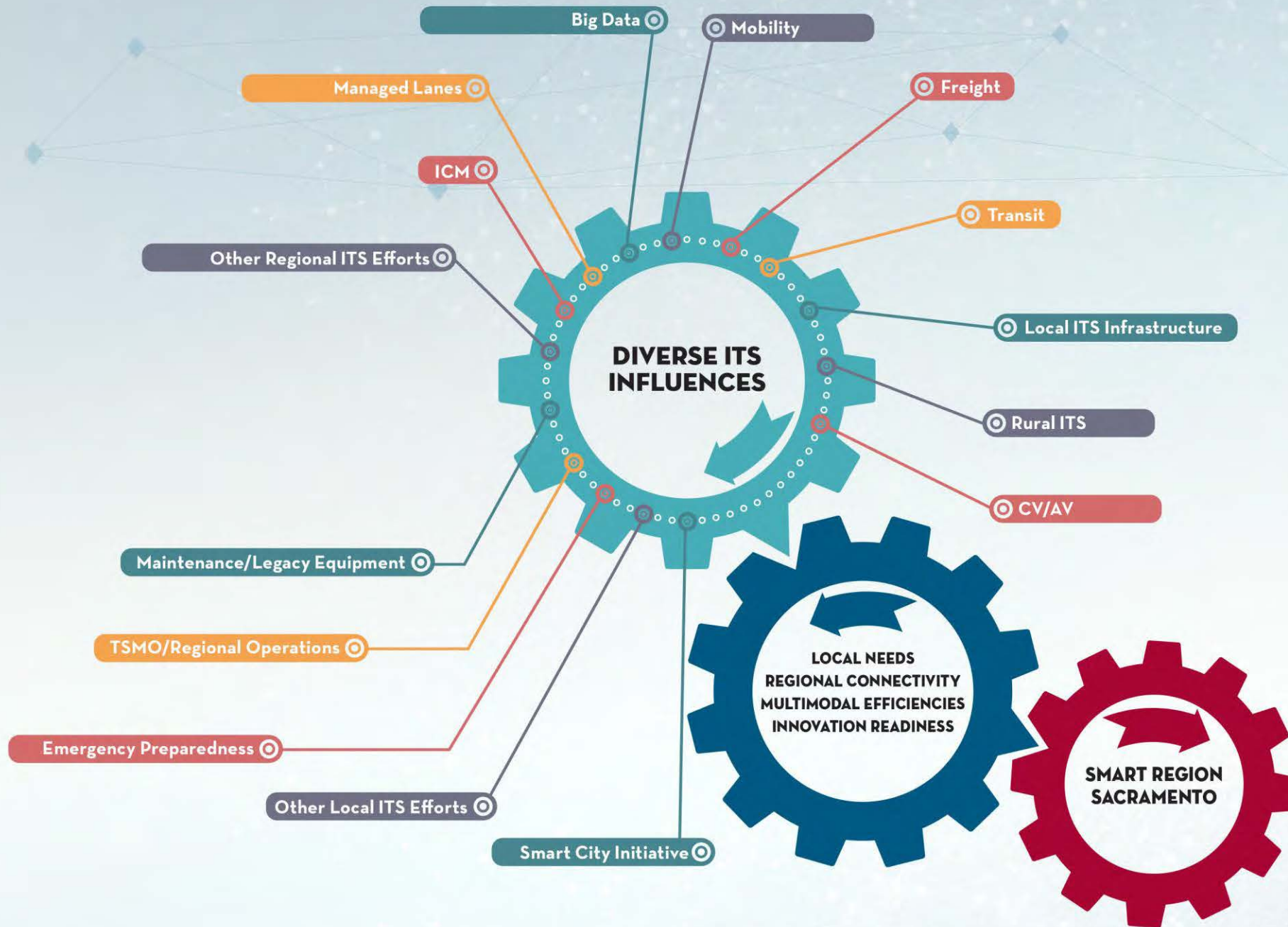
cause it has the potential to create a showcase city that the company can use to sell the concept in other markets.

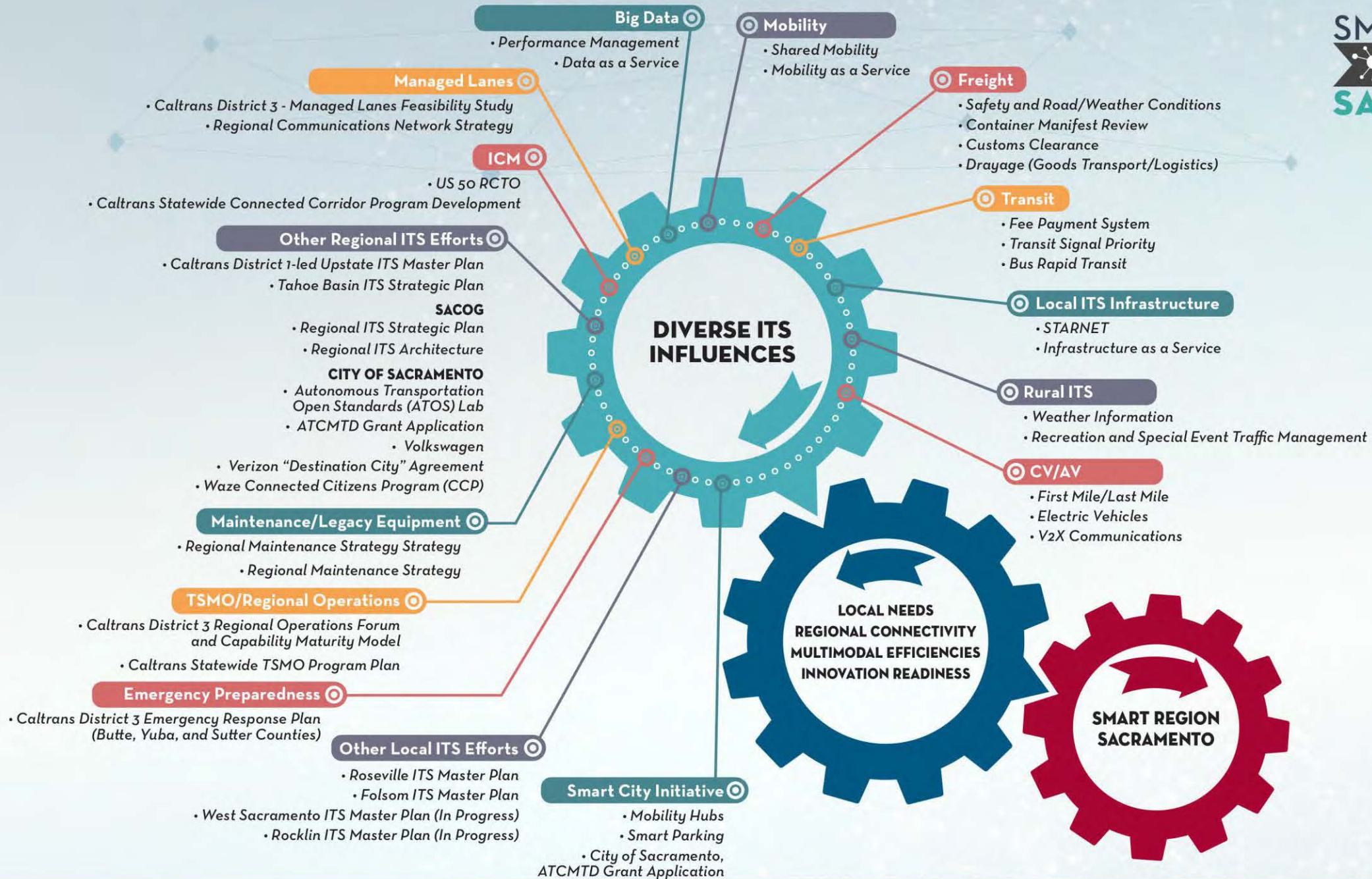
"We would love to be able to do something here and then be able to bring lots of other folks over to Sacramento and say, 'Look what's possible,'" said Ingram.

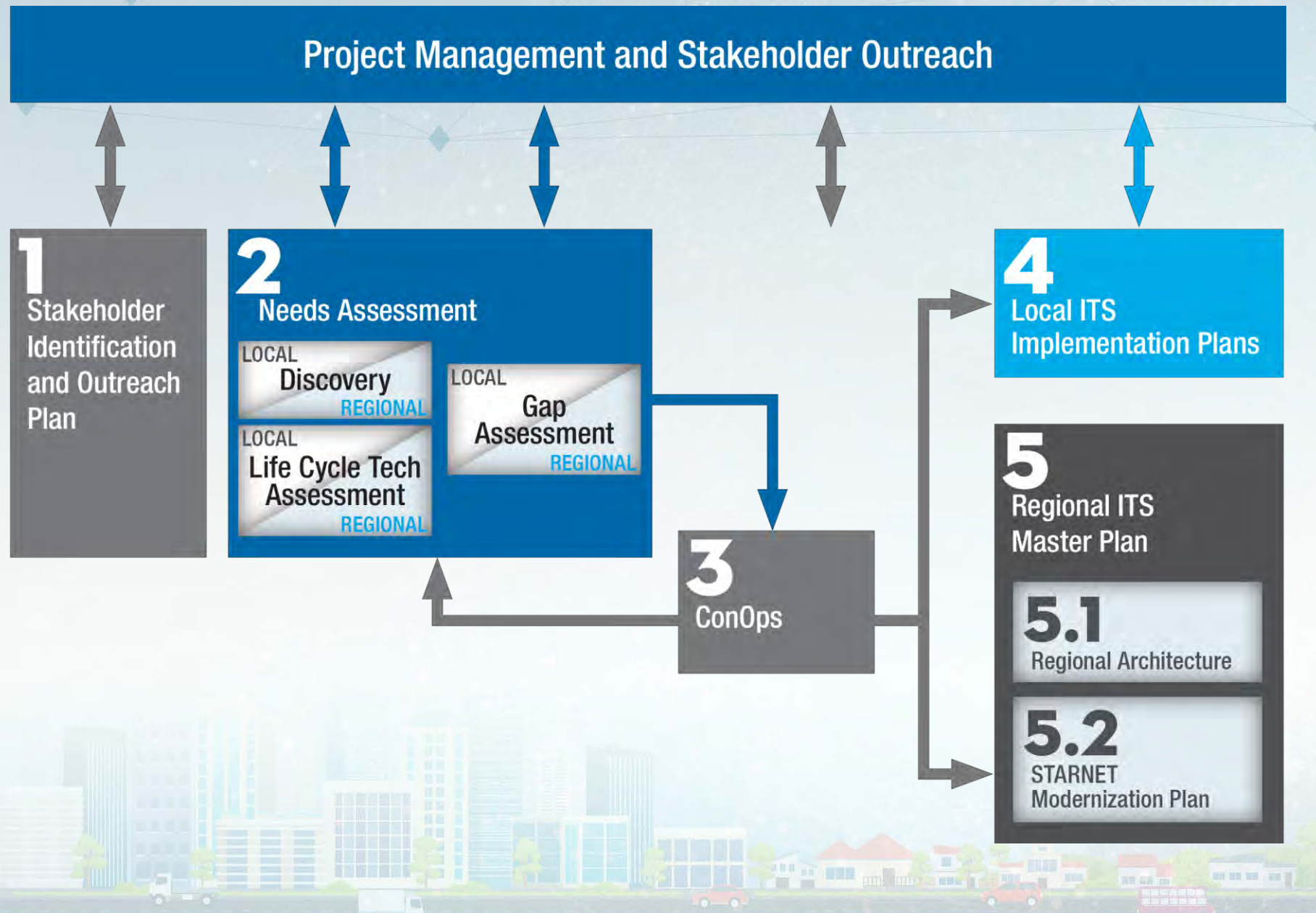
Pablo Spiller, a business and technology professor emeritus at UC Berkeley Haas School of Business, said the proposed partnership was not an uncommon model in smaller cities. Spiller said "in general these types of programs are good in the sense they provide a boost to deployment" of new technologies.

Spiller cautioned that test products that rely on technology alone, however, doesn't always create

SEE VERIZON, 5A





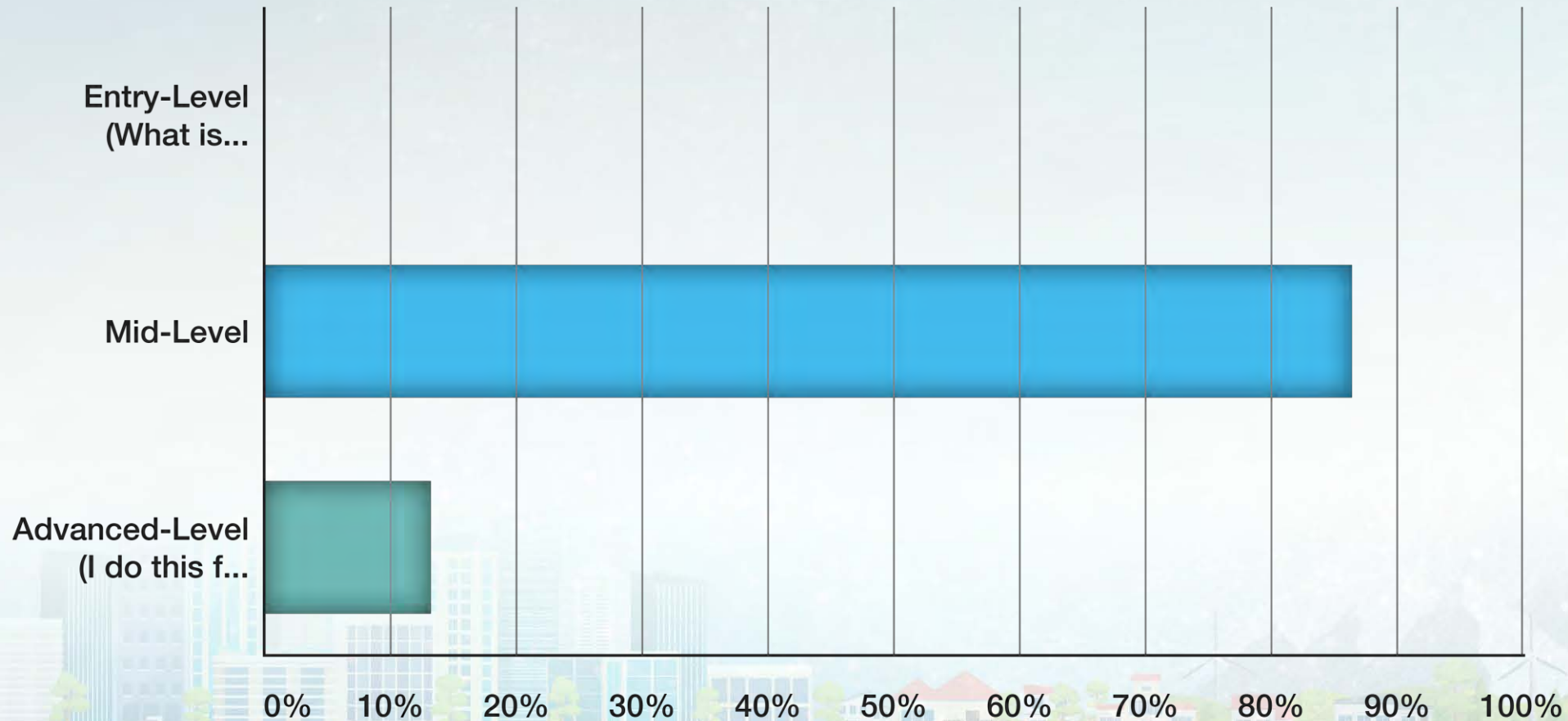


Stakeholder Engagement Activities

- Project Website (www.smartregionsacramento.org)
- Comprehensive Outreach Plan
- Advisory Committee Meetings
- Local Agency Meetings
- Stakeholder Briefings
- ITS Architecture Development and Roll-Out Workshops (2)
- Individual Follow-ups

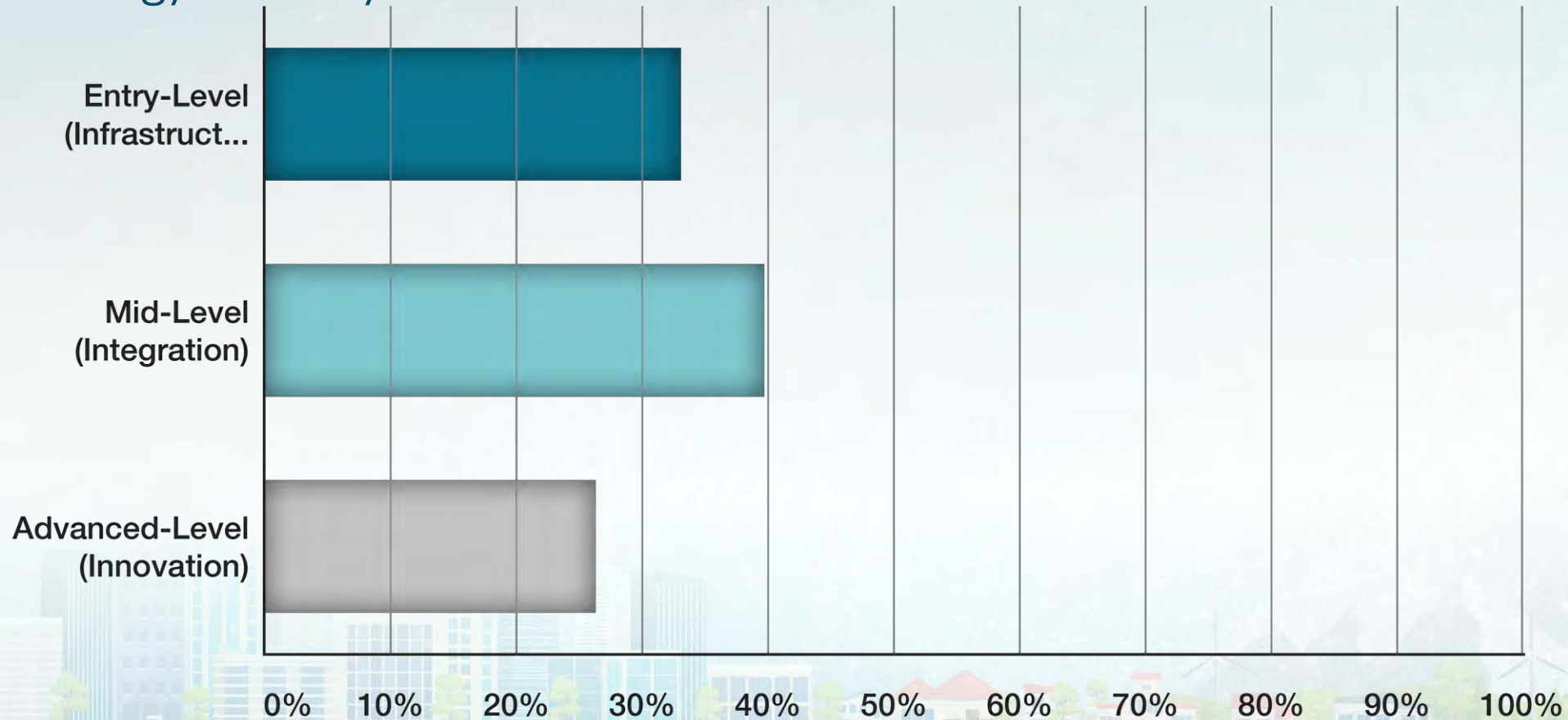
Survey Question #1

How would you rate your personal technology maturity?



Survey Question #2

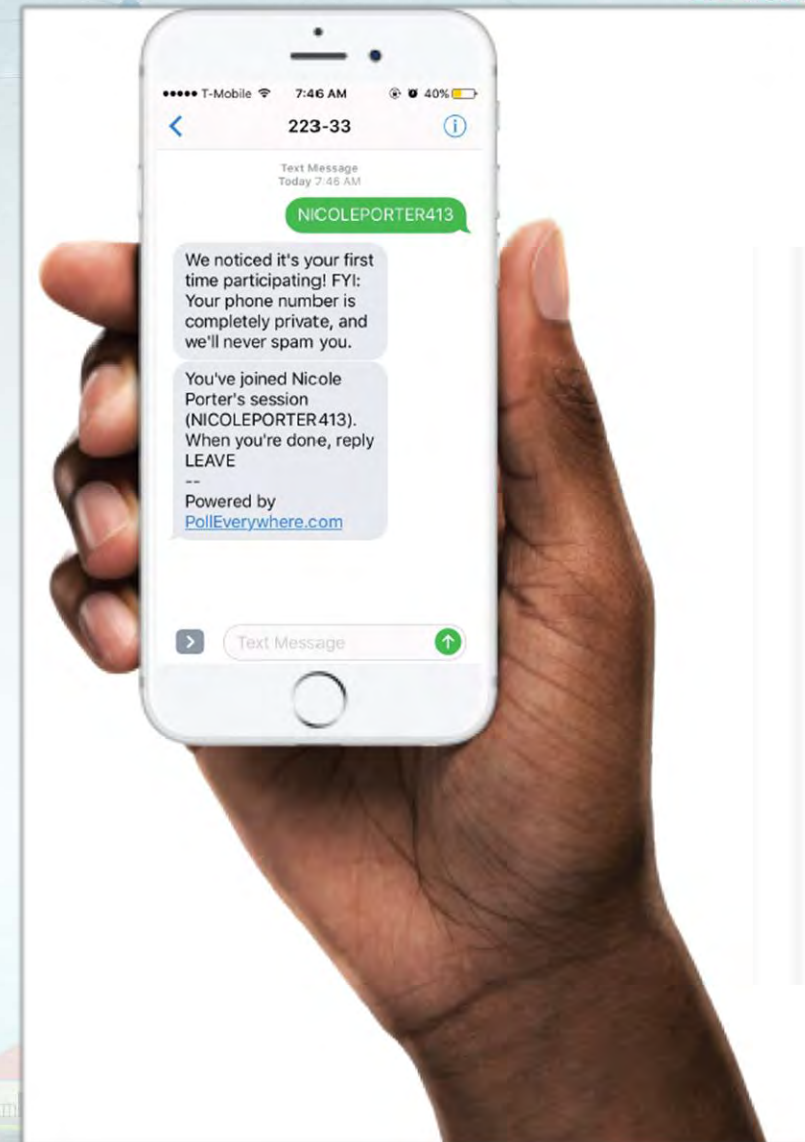
How would you rate the broad status of your agency's or organization's technology maturity?



Live Polling Exercise

To get started:

1. Text **AIMCONSULTING** to **22333**
2. You will receive a confirmation message.



Live Poll #1 (Test Questions)

- Today is?
 - Monday, Tuesday, or Wednesday
- Who will win the Super Bowl?
 - Patriots, Eagles, or 49ers

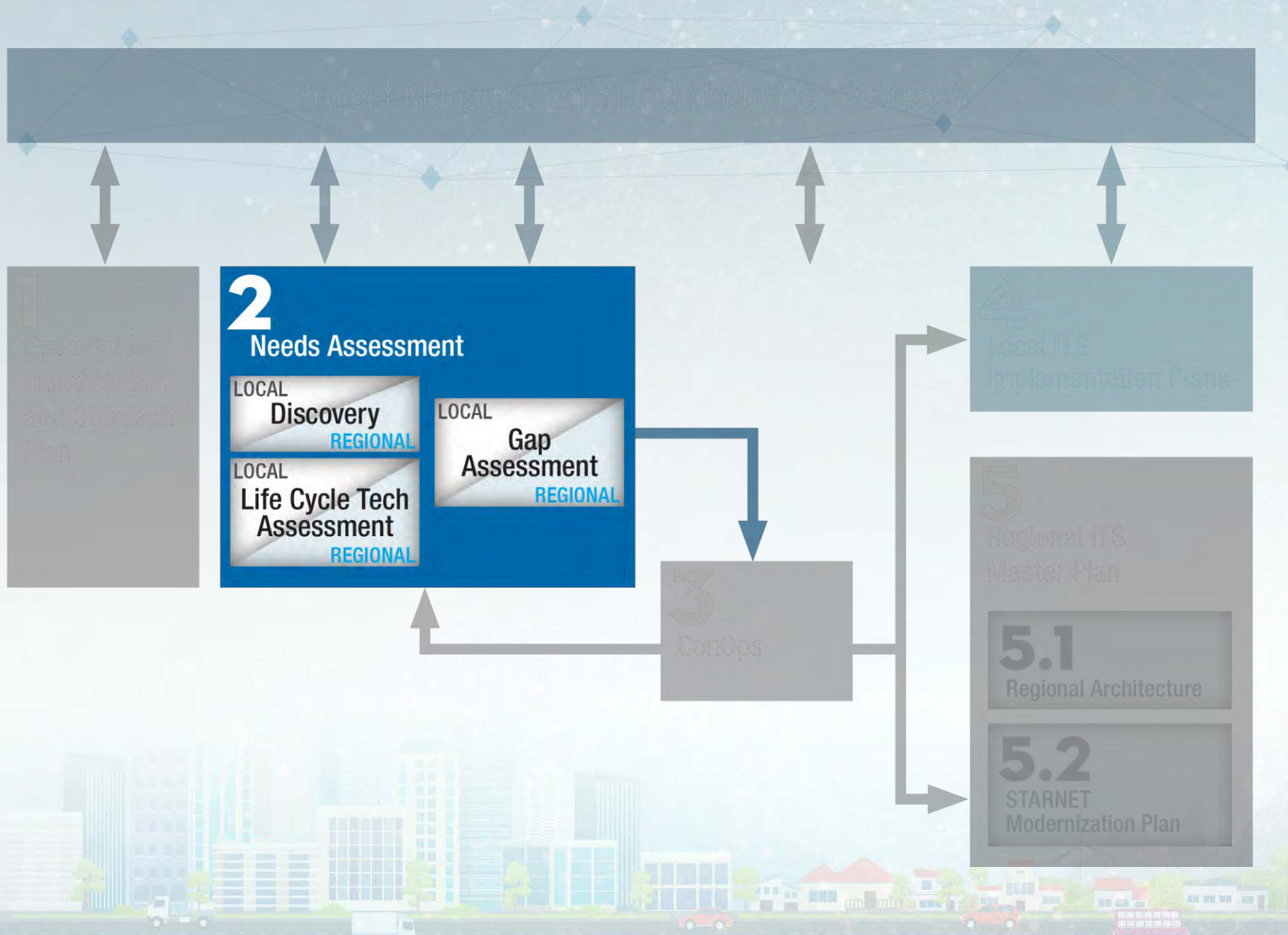


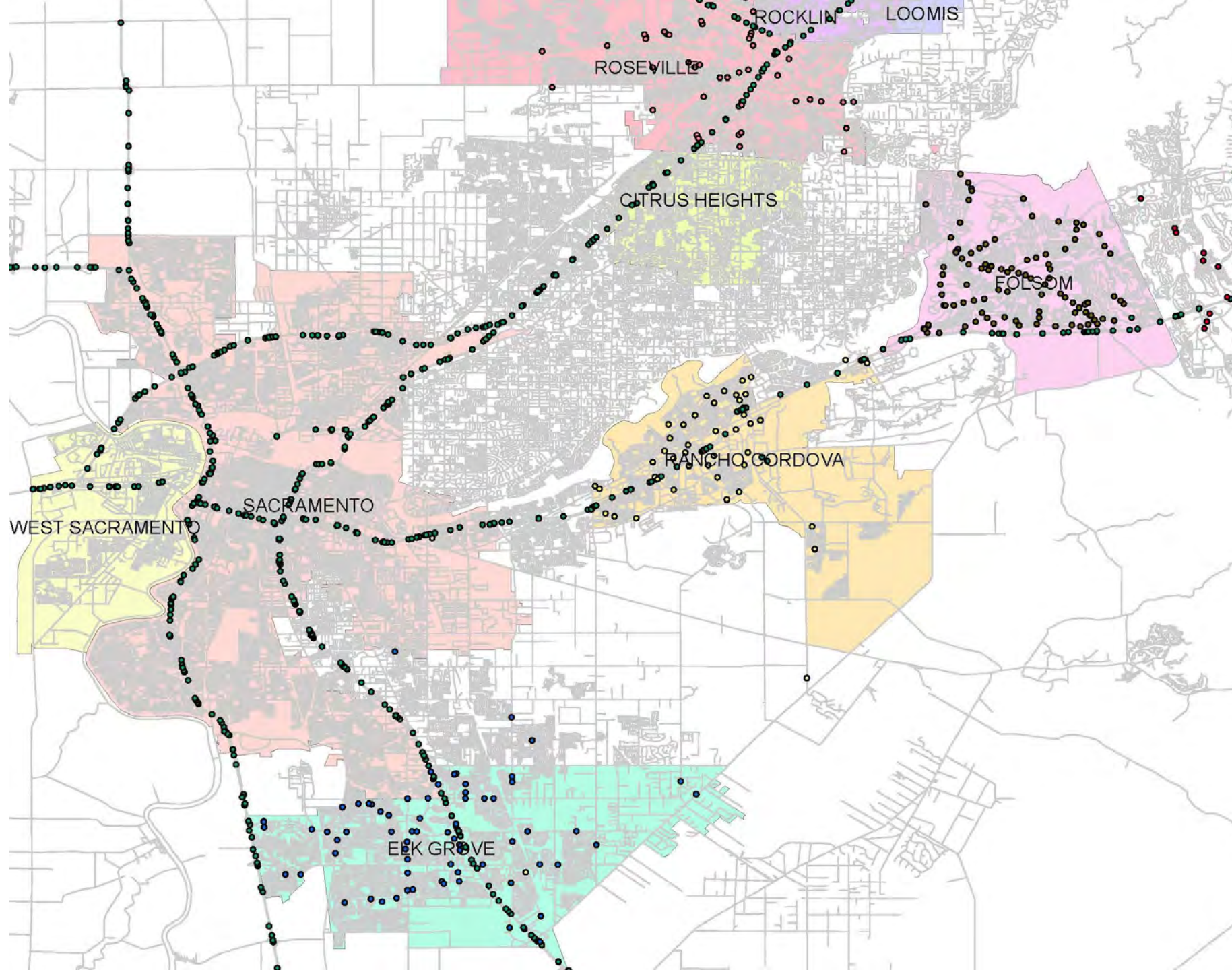
Live Poll #1

How would you rate the Sacramento Region's Technology Maturity?

- ☐ Entry-Level (Infrastructure)
- ☐ Mid-Level (Integration)
- ☐ Advanced-Level (Innovation)







Survey Question #3

What technology do you perceive as being the highest priority for your agency or organization?



Survey Question #3 (responses)

- Communications – 3
- Not Sure/Don't Know – 2
- Traffic Operations Center – 2
- CV / AV – 2
- Document and Database Management – 1
- Adaptive Signal Timing – 1
- Non-intrusive Vehicle Detection – 1
- Rural Technologies – 1
- Bus Safety and Performance Technology – 1
- ITS – 1

Survey Question #4

What do you see as the biggest challenge for implementing new technologies in your agency or organization?



Survey Question #4 (responses)

- Cost / Funding
- Applicability / Choosing the Right Technology
- Knowledge / Staff Resources / Staff Training
- Integration With / Upgrading Existing Systems
- Bureaucratic Processes and Public Agency Funding Restrictions
- Developing Standards / Implementation Plan
- Multiple databases / Different Objectives

Survey Question #5

What rural transportation challenges do you think technology can address?



Survey Question #5 (responses)

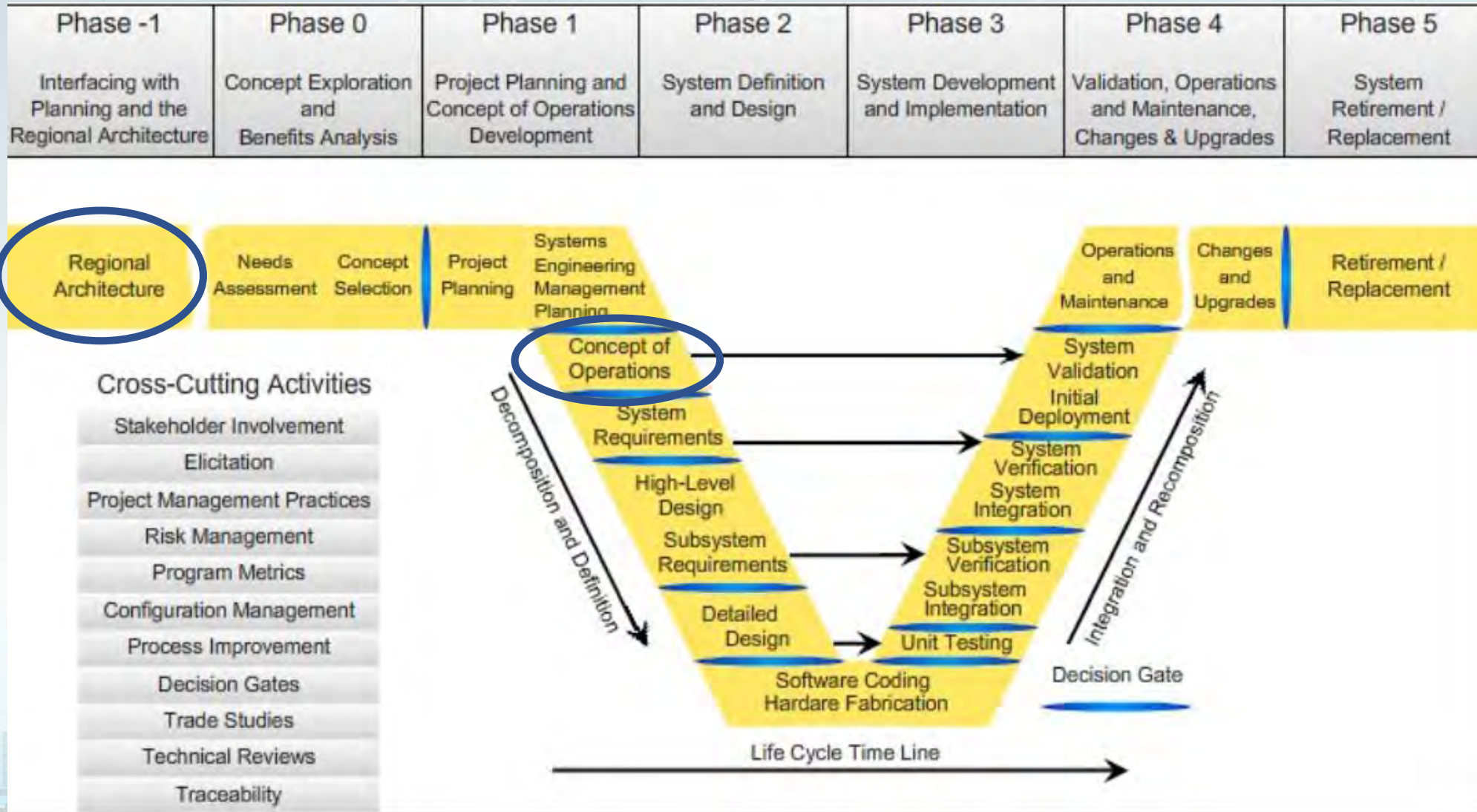
- Traffic Data Collection – Real-time and Planning
- Traveler Information
- Advanced Warnings
- Accessibility to Services
- Trip Conglomeration / Tourism Congestion
- Closing the Digital Divide / Wireless Network Capabilities
- On Demand Transit
- Infrequent Demand / Low Demand
- Customer Payment

Live Poll #2

What are the top three transportation issues in your jurisdiction?

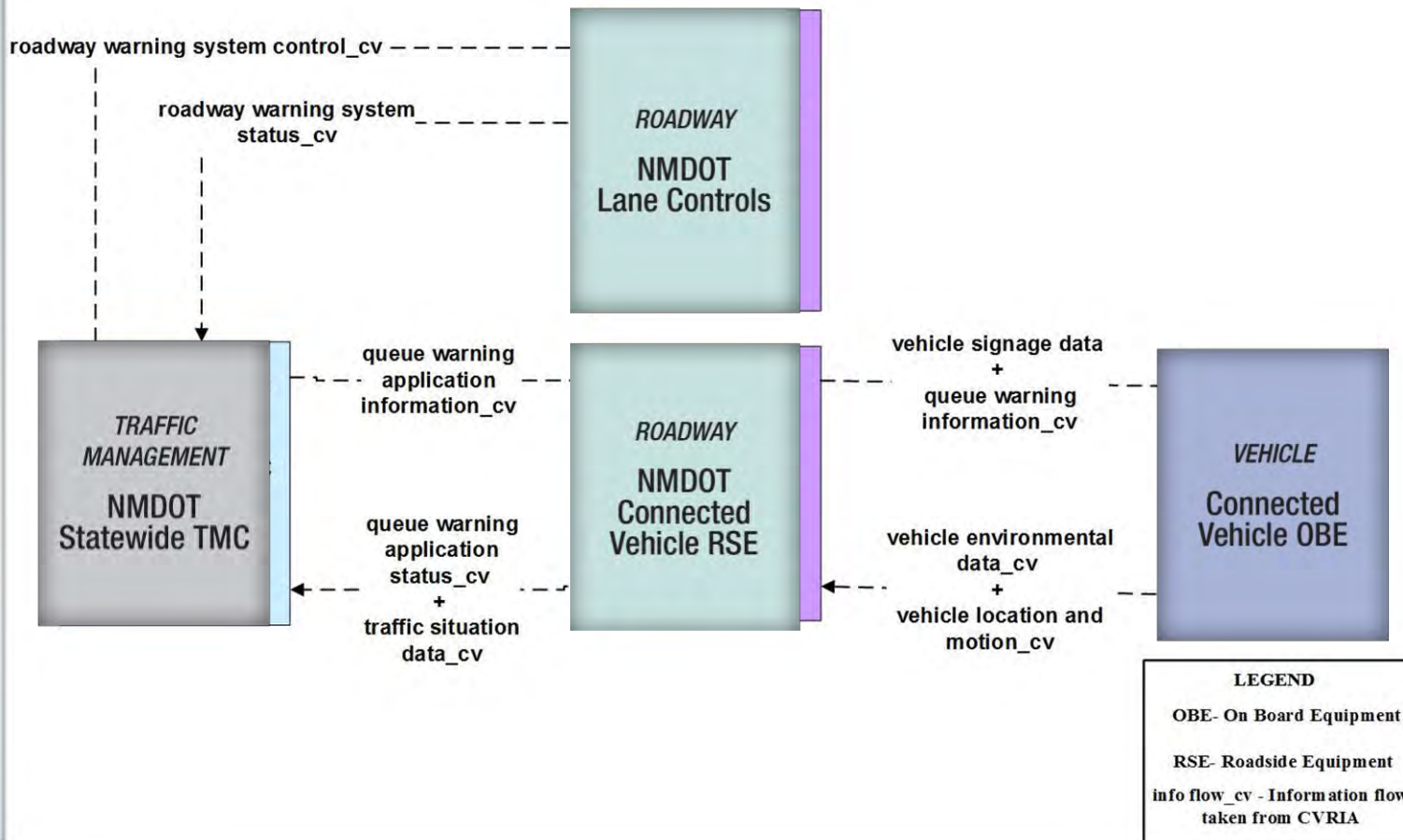
0 Incidents, Traffic Congestion, Transit Ridership, Bicycle/Pedestrian Mobility/Safety, Extend of communications network, ability to process big data, knowing how other agencies are operating their systems, freight mobility, first mile/last mile service, special events, tourist/recreational traffic, enhancing legacy equipment

Systems Engineering Process



ITS Architecture

AVSS12 – Cooperative Vehicle Safety Systems NMDOT Queue Warning



- ITS Plan at 50,000 ft level (or 330,000 ft)
- Long-range plan of existing and planned services
- Focused on information sharing, connections between systems

Concept of Operations



- Includes roles and responsibilities
- Operational scenarios – typical peak, special events, major incident, etc.

- Explains operations, not technology
- Every stakeholders' perspective
- Should include maintenance
- Lays the ground work for requirements



Smart Region Sacramento: ITS Architecture and Future Technology Project



Site Under Construction

MISSION

To improve system performance, safety, sustainability, and reliability by ensuring efficient investments in regional smart transportation projects.

OBJECTIVES + STRATEGIES

1. **Address smart transportation strategies for urban, suburban, and rural communities**
 - a. Identify latest strategies and solutions for rural areas
 - b. Active fleet management
 - c. Plan and create a communication protocol between partner agencies
2. **Prepare for smart region infrastructure adapting to new technology**
 - a. Create traffic operations center at all agencies
 - b. Create lifecycle infrastructure replacement program (urban/suburban/rural)
 - c. Define how systems will operate together
 - d. Create plan for infrastructure compatibility
 - e. Share operational control of ITS field elements/systems
 - f. Identify technology pieces of shared mobility plan
 - g. Implement ICM along regionally significant arterial corridors
3. **Reduce user frustration by providing consistency and reliability**
 - a. Utilize high resolution data
 - b. Improve multi-modal options
 - c. Improve multi-modal reliability
 - d. Improve public outreach regarding planned lane/road closures
 - e. Centralize signal control
 - f. Improve traffic signal infrastructure
4. **Proactively improve transportation system safety**
 - a. Create ITS projects to proactively improve safety
 - b. Use ITS to prevent secondary collisions
5. **Improve traveler information and dissemination to public and within region**
 - a. Integrate third party data
 - b. Consolidate public information systems
 - c. Implement integrated parking management strategies
6. **Disaster preparedness**



Kimley»Horn

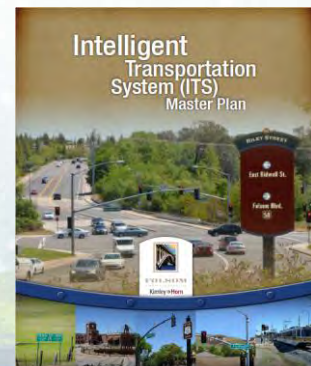
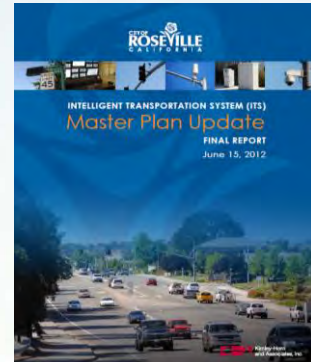
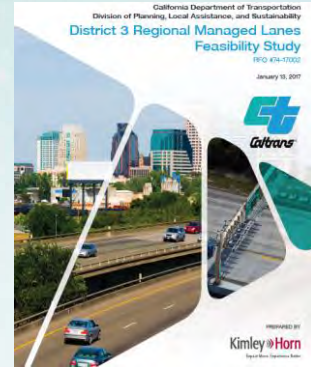
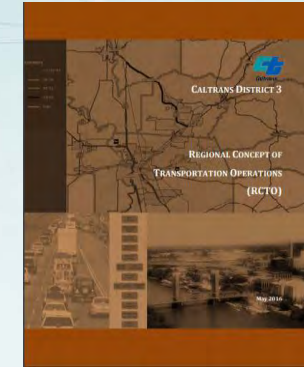
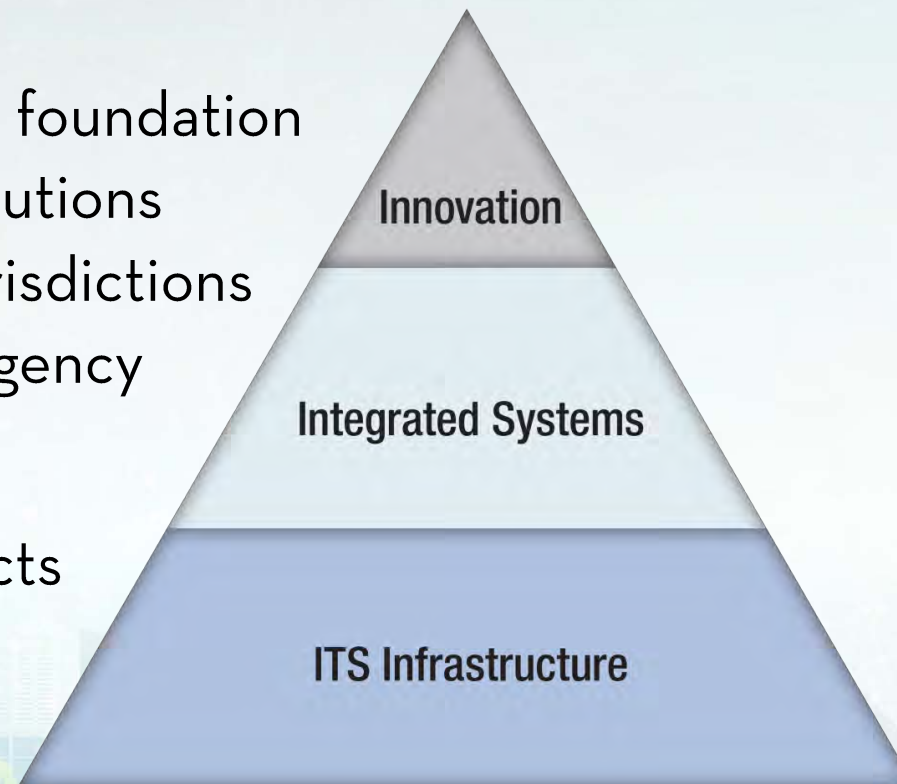
Local Technology Implementation Plans

- Online documentation
- Customized reporting options
- Local Plans
 - City of Citrus Heights
 - City of Elk Grove
 - City of Folsom
 - City of Rancho Cordova
 - City of Sacramento
 - El Dorado County
 - Sacramento County
 - Caltrans District 3



Local Technology Implementation Plans

- Leverages and builds on other plans and initiatives in the region
 - Focus on local needs
 - Enhance infrastructure foundation
 - Rural, urban, transit solutions
 - Connectivity across jurisdictions
 - Customized for each agency
- Outcome highlights
 - Prioritized list of projects



Regional Technology and Mobility Master Plan

- Prioritized list of projects based on different categories to ensure equitable funding distribution
- Compiles similar projects across region for synergy



Industry Roundtable Summit



City of Sacramento



Golden 1 Center



Kimley»Horn

Industry Roundtable Summit

- Identify opportunities to leverage initiatives
- Introduce concept of Pilot Demonstration Program



Pilot Demonstration Initiatives

- Establish a process for agencies to allow Pilot innovative technologies for a short period of time
- Define a criteria for evaluating performance
- Use results to inform future deployment opportunities

Live Poll #3

What technology companies have approached your jurisdiction for partnering/piloting?

- ☐ Audi
- ☐ BMW
- ☐ GM
- ☐ Uber
- ☐ Lyft
- ☐ Honda

- ☐ Volkswagen
- ☐ Verizon
- ☐ Google
- ☐ Inrix
- ☐ Daktronics
- ☐ Adeptia

- ☐ Easy Mile
- ☐ Global Traffic Technologies (GTT)
- ☐ Kapsch
- ☐ Clever Devices
- ☐ None

Survey Question #6

What are the emerging/disruptive technologies that are affecting all things transportation today?

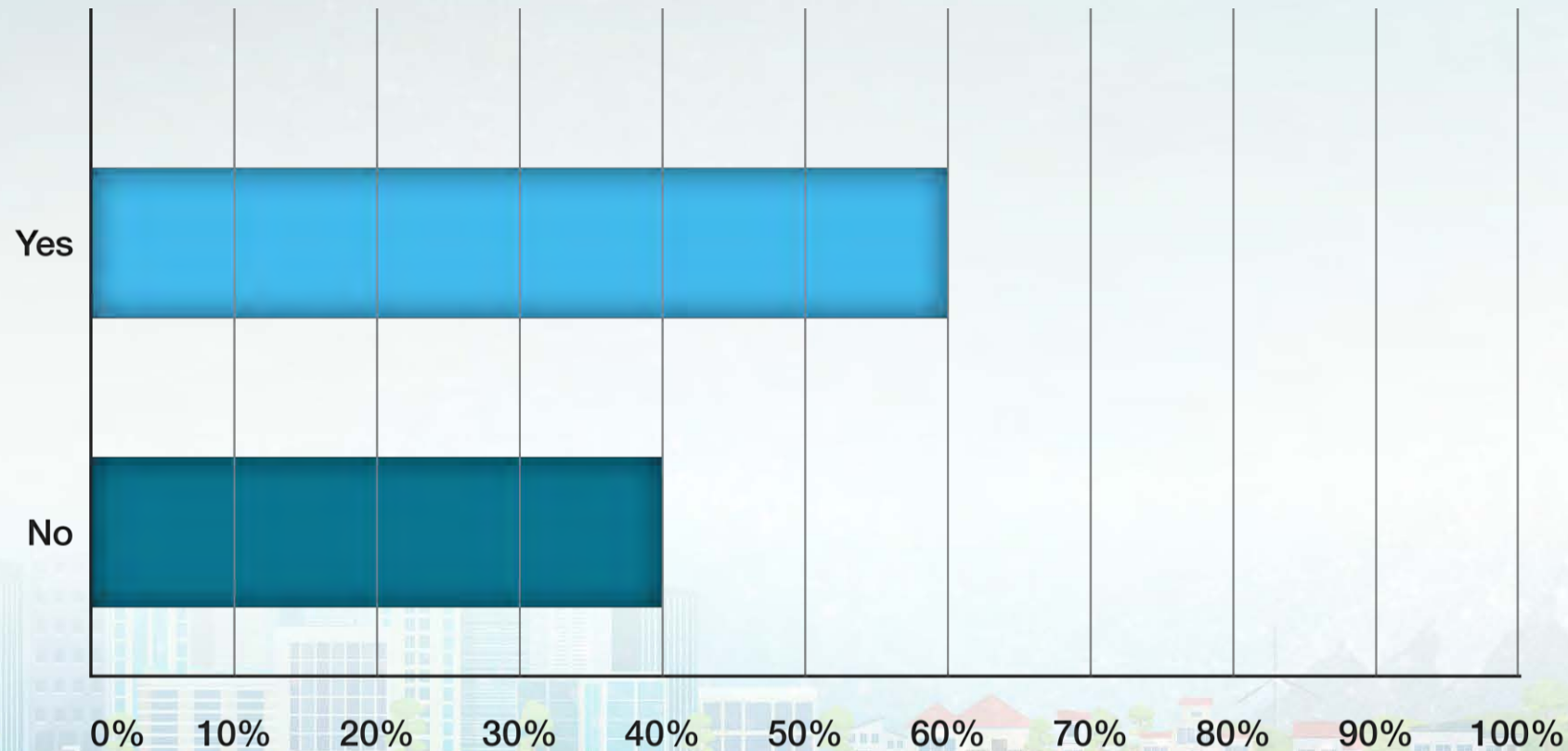


Survey Question #6 (responses)

- Connected Vehicles (CV); Autonomous Vehicles (AV) / Shuttles; Vehicle to Infrastructure (V2I)
- Competing Communications Standards - 5G versus DSRC or Bluetooth versus WiFi
- Ride Sharing Services
- Reduction in employment market share – Sacramento CBD
- Traffic Apps
- AEV
- TaaS
- TNCs – Uber and Lyft
- ITS elements – Video/Radar detection
- Mandatory emission requirements. Electrification. Unlicensed/unregulated transportation options.
- How to incorporate emerging/disruptive technologies without starting from scratch on the infrastructure

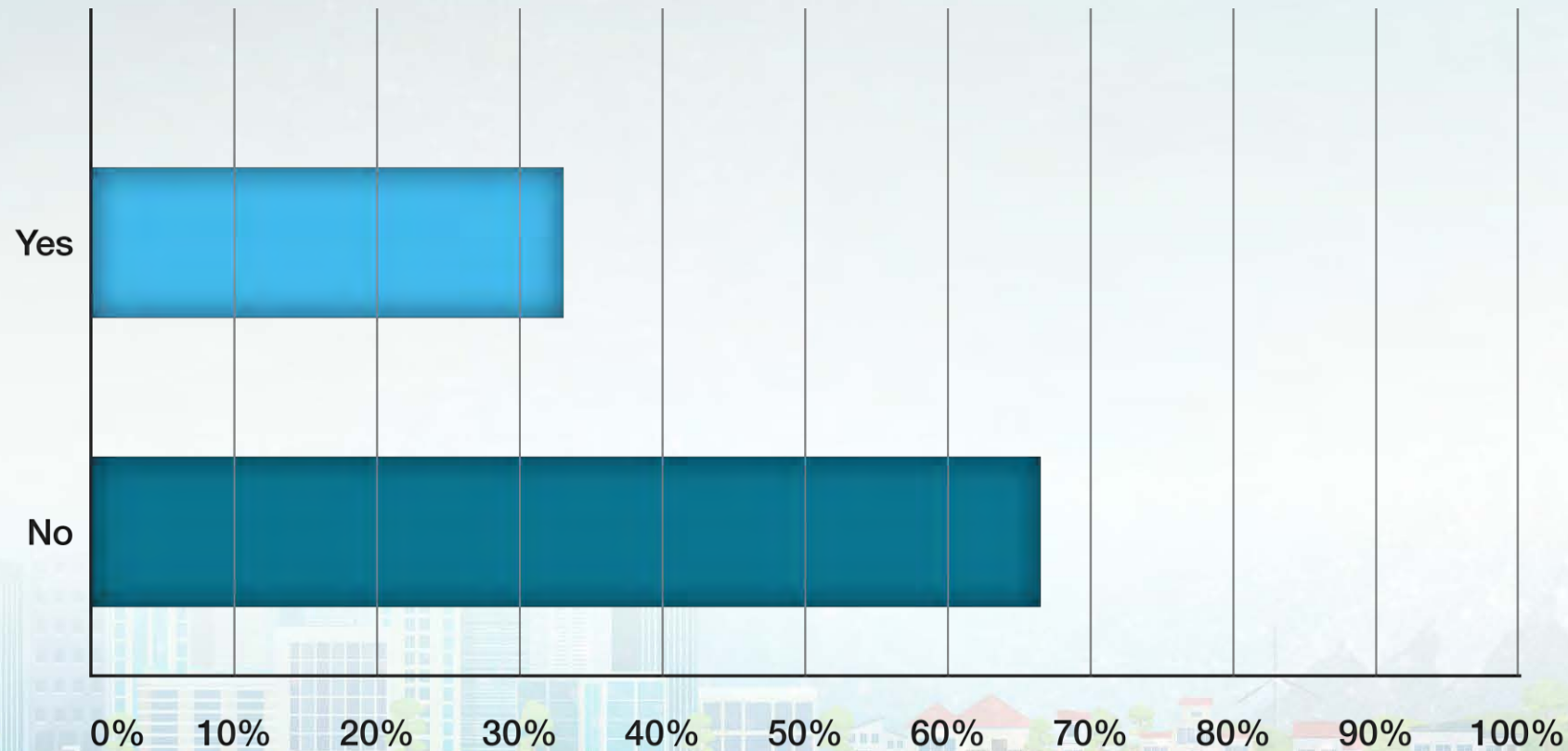
Survey Question #7

Is your agency or organization actively discussing how to respond to emerging/disruptive transportation technologies?



Survey Question #8

Have you heard from the public or decision-makers in regard to emerging/disruptive transportation technologies?



Survey Question #9

If yes, what types of inquiries or comments are you receiving?



Survey Question #9 (responses)

- How are we incorporating them into the long-range plans?
What technology can we use in El Dorado County?
- What the future holds?
- Interest in using the available disruptive technology
- The location (or non-location) of carshare opportunities
- It just started in the past two months, conditioning developers and to find grants to place signal technologies and eventually get a Traffic Operations Center

Task	2018 Month											
	January	February	March	April	May	June	July	August	September	October	November	December
0	Task 0: Project Administration											
	Notice to Proceed (December 18)											
	Quality Control, Progress Meetings, Etc. (12 months)											
1	Task 1: Stakeholder ID and Outreach Plan											
	Stakeholder ID											
	Develop Outreach Plan											
	Advisory Committee Meetings											
	Initial Workshop											
	Concept of Operations Workshop											
	Local Agency Meetings											
	Architecture Workshops											
2	Task 2: Needs Assessment											
	Discovery											
	Life Cycle Technology Assessment											
	Gap Assessment											
3	Task 3: Concept of Operations											
	Prepare ConOps											
4	Task 4: Local Technology Implementation Plans											
	Prepare Local Implementation Plans											
5	Task 5: Regional Technology Master Plan											
	Prepare Regional Master Plan											
	5.1. Regional Architecture											
	5.2. STARNET Modernization Plan											

Survey Question #10

What do you desire to accomplish through your participation in Smart Region Sacramento?



Survey Question #10 (responses)

- Information gathering and funding opportunities
- Learn what others are doing, what is available, what is coming, and what is possible – lessons learned
- See how we fit in this effort
- ICM strategies for I-5, US-50, SR-99 and I-80
- Advancement of ITS deployments and strategies
- Inclusion in corridor connection planning
- Coordinated and consistent regional approaches to industry strategies/solutions (adaptive signal systems, use of disruptive technology, smart technology implementation, integration for regional growth, and traffic growth)

Live Poll #4

How likely are you to attend the next meeting?

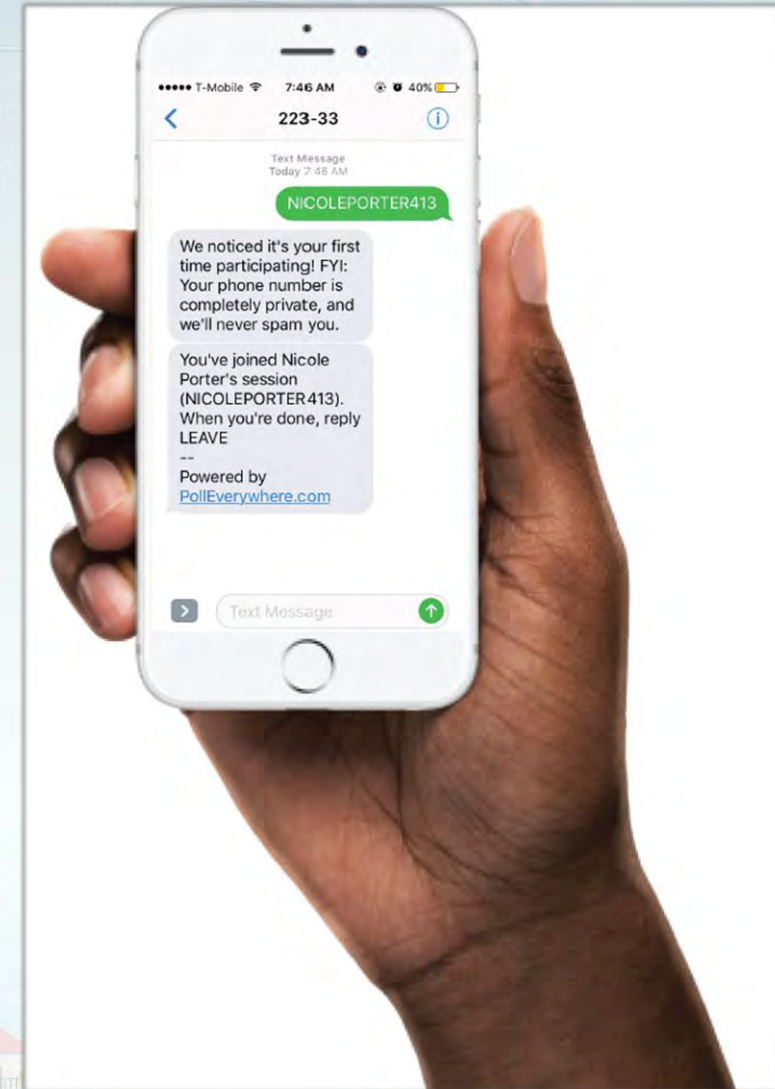
- ☐ Very Likely
- ☐ Somewhat Likely
- ☐ Not sure
- ☐ Not Likely



Live Polling Exercise

To exit:

1. Text **LEAVE** to 22333
2. You will receive a confirmation message.



Next Steps

- Individual Agency Meetings/Data Collection
- Industry Summit
- Monthly ITS Partnership Meetings (Core Advisory Committee)



THANK YOU



Kimley»Horn
Expect More. Experience Better.