

Smart Cities Roadmap



INNOVATION

**Smarter
Together**



Smarter Together

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Message from the Director

The City of San Antonio's (COSA) Office of Innovation has a long track record of challenging the status quo in local government. Since 2007, the Office has established award-winning programs that catalyze improvement to city services, including Innovation Academy, CivTechSA, the R&D League, SmartSA, and Connected Beyond the Classroom. All these programs seek to address gaps, while introducing new approaches, methods, and tools that help our city government perform the highest level of service.

Today, the need for innovation in government continues to grow. COVID-19 transformed both the need and demand for our services, with residents looking for more access to convenient, accessible, and on-demand support. It also shifted the focus of our partners towards improving the customer experience, providing equitable service delivery, and utilizing technology to meet demand. The Office of Innovation played an important role in helping both the City of San Antonio and its partners accelerate and enhance their approach to the changing demands of our community, by introducing new tools and programs including the COVID-19 Dashboard, the City's Digital Inclusion Program, and the Data-Informed Government Program. Now, more than ever before, federal funding opportunities are available to support these innovations.

Years of project development and achievement have significantly shaped our approach to innovation and inclusion. For the Smart Cities team, this means re-calibrating San Antonio's innovation ecosystem towards a more proactive vision for our future as a connected, inclusive, and resilient community. The Smart Cities team is charged with leveraging data, technology, and innovation to improve the quality of life for our residents. Doing so in a post-pandemic world means ensuring our use of technology is responsive to the real-world needs of our residents, but also addresses key organization-wide challenges that impact our day-to-day operations.

The City of San Antonio needs a smarter strategy for how it does business, manages data, and connects with residents. This Roadmap charts a path forward and aims to bring the world's best technology tools to bear on a people-centered approach to smart city development that truly represents the values and needs of our beloved city. The benefits of doing so are great. When done right, smart cities can:

- Eliminate redundancies and reduce waste of resources
- Accelerate and enhance innovation and workforce development
- Ensure technologies are deployed safely and ethically
- Address organization-wide challenges to interoperability, collaboration, and communication

This Roadmap embodies the "Innovation" core value set forward for the City of San Antonio by the City Manager. Throughout this Roadmap, you will discover a plan for finding new ways to make things better and optimizing results by working smarter. This Roadmap identifies our process for taking risks, learning, and growing, as well as how we translate lessons learned into real-world outcomes for those we serve.



Brian Dillard
Chief Innovation Officer, City of San Antonio

Executive Summary

San Antonio is faced with a historic opportunity for transformation. As a rapidly growing, majority-minority community, San Antonio represents the future of our state and country.

While the city enjoys a rich and historic ecosystem of entrepreneurship, diverse cultures, and military innovation, it also struggles with perennial economic, public health, and environmental disparities. These disparities are disproportionately experienced by marginalized groups, including Black, Indigenous, Hispanic, and Latino populations in our community. However, unprecedented investment from the federal government, presents a once in a generation opportunity to tackle some of the biggest challenges faced by these communities, in addition to our city as a whole.

“**Smart cities**” refers to how communities use technology in innovative ways to solve problems. In the past 15 years, the smart cities movement has introduced a variety of new applications for technology in cities, ranging from smart streetlights to open data platforms. Today, **emerging technologies** like artificial intelligence (AI), and autonomous vehicles (AVs) represent new opportunities for improving quality of life, but also come with significant risks and uncertainty. Communities must decide for themselves whether the use of technology is even necessary for solving problems in their neighborhoods, and if so, how it can be applied in alignment with their values and expectations.

Smart cities

Smart cities use information and communication technology (ICT) to improve operational efficiency, share information with the public and provide a better quality of government service and resident life.

Emerging technologies

Emerging technologies are technologies whose development or practical applications have yet to be realized. These technologies are typically new but also include older technologies finding new applications. Emerging technologies are often perceived as capable of changing the status quo.

SmartSA Partnership

SmartSA is a foundational partnership of nine leading local organizations dedicated to collaborating on smart city initiatives. All SmartSA partners are bound by an Interlocal Data Sharing Agreement (IDSA) to ensure that data is handled responsibly, shared openly, and in accordance with all relevant laws and regulations.

Digital transformation

The process of using digital technologies to modify and improve existing systems.

The Smart Cities team at the Office of Innovation was launched in 2017 to advance San Antonio's use of innovation, data, and technology to improve quality of life. That same year, the City Council designated three Innovation Zones (Downtown, Brooks and the Medical Center). In 2018 the **SmartSA Partnership** was established and a survey of residents who live, work, and play in the Innovation Zones was conducted. Leveraging the SmartSA Partnership and Innovation Zones, the Smart Cities team executed more than 30 pilots and projects in response to resident challenges since 2018, earning national recognition. Key lessons learned from these projects included:

- **Many city departments share similar organization-wide challenges** including access to reliable data, interoperability of systems and platforms, and effectively reaching residents where they are.
- **The widespread use of data and new technologies pose opportunities and risks** that should be critically evaluated and tested before they are integrated into public services.
- **Technology that is “looking for a problem to solve,” often fails to address the real-world problems** of San Antonio residents.
- **City staff at the frontlines of public service delivery are essential stakeholders** and collaborators for **digital transformation**. City staff must be supported through capacity building and digital skills development.
- **Anyone in our community can innovate** and supporting the acceleration and enhancement of existing innovation in San Antonio has demonstrated widespread impact.

Based on these lessons learned and considering transformations to our community brought on by the pandemic, San Antonio needs a strategic approach that aligns residents' lived experiences with the challenges faced by frontline service providers at COSA. This roadmap represents a bold and innovative approach for building an accessible, connected, and efficient city that keeps residents informed and safe. It uses a "people-centered" model for smart city development, where residents drive guiding-principles for how city government should use technology, data, and innovation to solve problems and increase quality of life.

Roadmap goals

The goals of this roadmap are to:

- Provide a vision for San Antonio as a "smart city," backed by community-driven guiding principles.
- Guide investment and partnerships including federal funding, research, grants, and private sector engagement that leverage technology for community impact.
- Present an open call to problem-solvers (entrepreneurs, civil society, research institutions, and vendors) in key challenge areas defined by our community.
- Define the role of the Smart Cities team at the Office of Innovation, present a service model, and identify opportunities for stakeholders to get involved.

This approach reflects our intention to enhance and accelerate innovation in our community so that we can problem solve today for a better tomorrow. Below is a summary of the main features introduced by this Roadmap.

Revised mission and vision for the Smart Cities team

The Office of Innovation is made up of four teams: Performance Excellence, Research & Development, Digital Inclusion, and Smart Cities (for more information see [About the Office of Innovation](#) section). This section charts out a revised mission, vision, and core values for the Smart Cities team, which became fully staffed in 2023.

San Antonio's Smarter Together Guiding Principles

The Smarter Together Guiding Principles express the values and lived experiences raised during the community engagement process for the development of this roadmap and define our community's vision for San Antonio's future as a "smart city". The guiding principles are: Accessible, Connected, Efficient, Informed, and Safe. These principles are defined in more detail in the [Smarter Together Guiding Principles](#) section.

Smart Cities as a Service

Our service model, "Smart Cities as a Service" follows a specific process for moving from Strategy to Action incorporating four stages: Understand, Scope, Test, and Serve. The Smart Cities team uses this framework to guide the development of projects in collaboration with community partners, SmartSA, and City departments. These defined stages reflect how we enhance and accelerate innovation in our community.

Strategies for Organizational Impact

A smart city doesn't just pilot new technologies, it also drives strategic organizational change. Programmatically, the Smart Cities team impacts the COSA enterprise in three key areas: Business Operations, Data, and Resident Engagement. We define strategies and activities for each organizational impact area.

Strategies for Organizational Impact (cont.)

Strategy 1: Business Operations

Ensure our city government has the capacity, expertise, and resources to safely and ethically use technology to respond to the real-world needs of San Antonio communities.

Strategy 2: Data

Grow a culture of data-informed decision making at COSA that aligns the use of technology to measurable outcomes for SA communities.

Strategy 3: Resident Engagement

Ensure all people in San Antonio can participate in COSA's digital transformation by testing tools and approaches that meet residents where they are.

Smarter Together Challenges

Through our community engagement efforts, we identified five challenges expressed by our residents as areas where technology could improve their lives, and experience with local government. In response to these challenge areas, the Smart Cities team aims to collaborate with our stakeholders to explore new alternatives to service delivery through testing and experimentation. For each challenge, insights are included from the stakeholder engagement process, and the result is intended to reflect the overall need that should be addressed through a “Smarter Together San Antonio Testbed.”

● Access to Public Information

How can San Antonio share relevant data with residents in accessible, convenient, and privacy-preserving ways?

● Resilience & Environmental Quality

What innovative approaches to mitigate the impacts of climate change and increase access to data about environmental quality should we explore?

● Access to Transportation

How can we improve access to safe, convenient, affordable, and reliable public transportation to improve health outcomes, air quality, quality of life, and economic activity?

● Public Safety

What connected and responsive tools can be used to help create safe public spaces for San Antonio residents?

● Safe Infrastructure

How do we modernize and digitize our growing city infrastructure, including roads, bridges, sidewalks, and pedestrian walkways?

How to Read this Roadmap

This Roadmap intentionally reflects the four stages of our operational model: Understand, Scope, Test, and Serve. The document is divided into three parts: Context, Strategy, and Action.



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San Antonio
Stock Show & Rodeo
GET YOU

Part One

Context

Smarter Together Guiding Principles

San Antonio's Vision for our Smart City

San Antonio is a diverse community where people come to build a foundation for their future. To understand how San Antonians imagine the future of their city, we asked them what makes a city “smart,” and what they will expect from city services (see the [Community Story Map](#) for more detail). San Antonio's **Smarter Together Guiding Principles** express the values and lived experiences raised during the community engagement process. The following guiding principles were drawn from the community response to the question “What makes a smart city?” and represent a north star for our work.

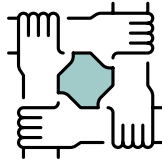


Smarter Together Guiding Principles



Accessible

Break barriers between San Antonio's residents and city services. Democratize access to data, services, and decision-making processes for residents and visitors of all ages, abilities, and identities.



Connected

Unite residents with their local government and each other. Facilitate meaningful relationships and interactions between San Antonio communities and their government, utilities, universities, and other agencies by having platforms and systems that provide access to services, information and programs for everyone.



Efficient

Improve the effectiveness of the city's services by reducing waste while maximizing existing resources. Upgrade systems and processes to handle today's needs while anticipating tomorrow's demands.



Informed

Create an environment of knowledge and understanding through transparency and user-friendly access to timely, open information. Operate with accountability by reporting successes and failures with the goal of increasing knowledge for everyone.



Safe

Prevent and protect San Antonio's communities from danger and create a safe environment where people feel secure and have the freedom to thrive.



Introduction to the Roadmap

As the 7th largest city in the United States and a majority-minority community, **San Antonio is what the future of our state and country looks like.** What we do here can serve as a national model for other communities that struggle with similar challenges. San Antonio has reached a pivotal moment of growth and change, and we must set the precedent for how we become the smart city of the future. Unprecedented funding from the federal government presents a once in a generation opportunity to invest in San Antonio's future.

As a local government working in community, we believe those closest to the problem are best equipped to describe and solve it. **This Roadmap reflects our intention to enhance and accelerate innovation in our community by taking a people-centered approach to how we problem solve today for a better tomorrow.**

Now is the time to tackle some of the biggest challenges faced by our community. In 2022, San Antonio was designated as the most impoverished major city in the country according to the U.S. Census Bureau², where 15.7% of Bexar County residents experience poverty – higher than both the state and national average. According to San Antonio Metropolitan Health District's *SA Forward Plan*, almost every major adverse health outcome and cause of death is disproportionately represented in Black and Hispanic/Latino communities³. Public health issues such as obesity and diabetes continue to be significant challenges for San Antonio where 13.2% of adults in Bexar County reported they had diabetes in 2020, higher than the average reported for Texas⁴. Additionally, San Antonio ranks as the least walkable major city in the United States.⁵

According to the US Census Bureau, San Antonio was named the fastest growing city in terms of population growth in 2022⁶. This rapid growth has also led to an increase in greenhouse gas emissions, which negatively impacts environmental quality. The City's *SA Climate Ready Plan*, predicts that this trend will lead to a hotter and drier future, with an average of 24 more days exceeding 100°F by 2040⁷. The city is also situated in "Flash Flood Alley", one of the most flood prone regions in North America, posing a significant risk to public safety. Adding to public safety risks, homicide rates in 2022 reached a 30-year high⁸, reflecting the urgency of addressing these challenges today.

Advances in technology can help us tackle these problems. In 2023, technology is embedded in nearly all aspects of our lives, from how we navigate our streets to how we pay for goods and services. It is estimated that more than 90% of people with smartphones keep them within three feet of themselves 24 hours a day⁹. This radical shift in the prevalence of technology is an opportunity to make progress

2
Cunningham, Waylon. "Census: San Antonio remains most impoverished major U.S. city despite some gains," San Antonio Report, 2022. Accessible: <https://sanantonioreport.org/census-san-antonio-most-impoverished-major-us-city/>

3
SA Forward Plan, pg. 9, 2021. Accessible: <https://www.sanantonio.gov/Health/AboutUs/SAForward>.

4
City of San Antonio Metropolitan Health District, Status of Diabetes in Bexar County, Texas – 2020 Update, June 2022. Accessible: <https://www.sanantonio.gov/Portals/0/Files/health/News/Reports/Diabetes/DiabetesReport2019-2020.pdf?ver=20220701>.

5
"San Antonio least walkable city." San Antonio Express News, 20 July 2022. Accessible: <https://www.expressnews.com/news/local/article/San-Antonio-least-walkable-city-17653984.php#:~:text=In%20July%2C%20Walk%20Score%2C%20an.it%20a%20car%2Ddependent%20city.>

6
"Fastest Cities are Still in the West and South," U.S. Census Bureau, 2022.

7
SA Climate Ready, pg. 7, 2017. Accessible: <https://www.sanantonio.gov/sustainability/SAClimateReady>.

8
"San Antonio saw most homicides in 2022." San Antonio Express News, 27 Dec. 2022. Accessible: <https://www.expressnews.com/news/local/article/San-Antonio-saw-most-homicides-2022-17728657.php>.

9
Eric Schmidt and Jared Cohen, *The New Digital Age: Reshaping the Future of People, Nations and Businesses* (London: John Murray, 2014) 172.

Introduction to the Roadmap

towards solving our community's greatest challenges. **“Smart cities” refers to how communities use technology in innovative ways to solve problems.** In a smart city, quality of life can be enhanced by technologies that promise to support and inform us. For example, Houston uses real-time data to help drivers find parking spots faster throughout the city¹⁰, San Jose is building neighborhood dashboards that help residents access and share information about their neighborhoods¹¹, and Barcelona has introduced policies to safely incorporate artificial intelligence into government services¹². Estimates of global spending on the smart cities market ranges from 820.7 billion to 2.5 trillion dollars by 2026¹³.

However, the promise of new smart technologies also comes with risks, uncertainty, and disparity. For example, massive quantities of personal data created by interaction with digital services oblige communities to ask how this data will be used, protected, and accessed. Sensor technology and the Internet of Things (IoT) have created new opportunities for digitizing infrastructure like streetlights and energy meters but have also introduced new cybersecurity vulnerabilities that cities must build capacity to manage. Artificial intelligence can create efficiencies, but risks reducing human oversight of important public processes. As local governments strive to update and digitize their services, they must also address a persistent digital divide that hinders access to connectivity, digital literacy skills, and devices for low-income groups, marginalized communities, and older adults. Meanwhile, global crises like climate change call for more efficient inter-agency coordination, reduction of cities' carbon footprint, and the urgent development of resilient emergency response services.

For all these reasons, **San Antonio needs a bold and innovative approach to building an accessible, connected, and efficient city that keeps residents informed and safe.** San Antonio cannot afford to waste time, capacity, and funding on technology solutions that are inequitable or fail to address the critical needs of our city departments and residents.

This Roadmap takes a strategic approach that aligns both residents' lived experiences with the challenges faced by frontline service providers at COSA. **This “people-centered” approach aims to ground smart city technology in real outcomes for real people.** To accomplish this, we aim to deliver a flexible and robust service model that directly responds to the needs expressed by our stakeholders. We demonstrate how we collaborate with innovators in our community to understand, scope, test solutions, and ultimately serve residents more equitably by transforming how the City of San Antonio builds services, uses data, and connects with residents.

¹⁰ Houston's Smart City Vision, 2018. <https://houstontx.gov/smartcity/>.

¹¹ San Jose Smart City Vision. <https://www.sanjoseca.gov/your-government/departments-offices/information-technology/smart-city-vision>.

¹² “Government measure for a municipal algorithms and data strategy for ethical promotion of artificial intelligence.” https://ajuntament.barcelona.cat/digital/sites/default/files/mesura_de_govern_intel_ligencia_artificial_eng.pdf.

¹³ “Creating the Smart Cities of the Future,” Price Waterhouse Cooper, 2019.

“People-centered” approach

A multi stakeholder approach to digital transformation that allows residents to define guiding principles, and balances user needs, lived experiences, stakeholder capacity, socio-political landscape and administrative processes in decision-making.

Introducing the Smart Cities Team

Accomplishments & Lessons Learned

The Smart Cities team was formed in 2017 with a **mission to leverage data and technology to improve quality of life for San Antonio residents**. Upon the team's founding, the Office of Innovation held a workshop with community partners to identify what focus areas were critical to the development of San Antonio as a "smart city". Three focus areas emerged as priorities from this process: Mobility, Sustainability, and Access to Services.

To act on these community priorities, a collaborative partnership formed in 2018, named "SmartSA" (for more information see [What is the SmartSA Partnership?](#)). The SmartSA partnership provides a structure for local organizations that represent critical aspects of resident life to work collaboratively on San Antonio's future. The partnership adopted a "Smart Cities 3.0," model, where local government works closely with residents to shape smart city projects and initiatives. This approach was a step beyond Smart Cities 1.0, which is primarily vendor driven, and Smart Cities 2.0, which focuses on top-down solutions introduced by government.

That same year, City Council approved the selection of three geographic areas Downtown, Brooks, and the Medical Center as Innovation Zones (see Innovation Zones graphic on p.42). These areas are designated as proving grounds for the Smart Cities team and SmartSA partners to prototype, test, and develop solutions to challenges identified by residents and businesses. To further specify what kinds of challenges residents face in these areas, the Office of Innovation conducted a community engagement survey of residents and visitors who live, work, and play in San Antonio's three Innovation Zones.

Leveraging the SmartSA Partnership and Innovation Zones, the Smart Cities team executed more than 30 pilots and projects in response to resident challenges since 2018 including:

- Installed 30 Digital Kiosks providing convenient access to public information in high traffic pedestrian areas including local parks and the central business district.
- Launched the SmartSA Smart Streetlight Pilot Program testing remote lighting controls, and five environmental sensor use-cases on up to 40 streetlights in each of the three Innovation Zones.

Introducing the Smart Cities Team

- Ratified the Interlocal Data Sharing Agreement that unlocked privacy-preserving data sharing across all nine (9) SmartSA partners, earning recognition as one of the top 50 innovative smart city projects internationally by winning a Smart Cities Connect Smart50 Award.
- Executed four (4) SmartSA Sandbox events connecting over 1,500 residents to smart city technologies.
- Distributed the 2019/2020 Digital Divide Assessment which led to the creation of the Digital Inclusion Program that has since been designated a 2021/2022 Digital Inclusion Trail Blazer by the National Digital Inclusion Alliance.
- Spearheaded the Data Informed Government Program with the Performance Excellence team and established San Antonio's first data governance policy helping San Antonio achieve What Works Cities Silver Certification from Bloomberg Philanthropies.
- Established urban agriculture pilots with City and community partners including San Antonio's first "Smart Farm" at the Young Women's Leadership Academy that has since been awarded a federal grant from the USDA in 2022, and the Tamōx Talōm Community Food Forest at Padre Park.
- Managed the development and launch of San Antonio's first COVID-19 Dashboard in partnership with Metro Health and Information Technology Services Department (ITSD).

The past five years of project development have greatly influenced San Antonio's approach to **digital innovation**, however the COVID-19 pandemic accelerated the urgency for improving our service delivery, as residents demanded more convenient access and equitable distribution of services. This calls for introducing new programs to address critical challenges such as transportation access, affordable housing, and workforce development. The pandemic also transformed the priorities of city departments and SmartSA partners, shifting towards a greater focus on customer service, accessibility, and equitable outcomes considering the disproportionate impact it had on underserved residents and communities of color.

Lessons learned, transformations to public life brought on by the pandemic, and recent developments in technology signaled a new era for smart cities. The Smart Cities team seeks to meet changing demand with a robust service delivery model and a new roadmap reflective of the current priorities of our diverse communities. We plan to accomplish this in alignment with existing work undertaken to improve San Antonio's quality of life including: SA Tomorrow, VIA Vision 2040, Brooks Master Plan, SA Forward, Ready to Work SA, Strategic Housing Implementation Plan, and SA Climate Ready. We continue to reference, coordinate, and draw inspiration from the future these plans collectively envision. What follows is a revised vision, mission and core values that guide the Smart Cities team and their work moving forward.

Digital innovation

The application of digital technology to facilitate existing business processes efficiency, improve customer experience, develop new products and services, or create new business models.

Vision, Mission, & Core Values

Team Vision

The Smart Cities team's vision is our forward-looking "why" and reflects what we hope for San Antonio.

San Antonio is on the leading edge of digital innovation in local government, providing a seamless experience where all current and future residents are heard, supported, and thrive.

Team Mission

Our mission describes how we will strive to achieve our vision.

Be a people-centered smart city that serves our residents by collaborating with our community to build responsive and responsible approaches to technology in government and civic life.

Team Core Values

Our core values define who we are and how we make decisions as a team.

Receptive Initiative

We create responsive solutions by listening, learning, creating space for open dialogue and meeting people where they are.

Proactive Leadership

We embrace an adaptive mindset to anticipate change and build a resilient future.

Inclusive Action

We uphold the highest standards of inclusivity and equity in our work by incorporating representative perspectives that reflect, respect, and serve our diverse community.

Responsible Service

We encourage innovation that is ethical, privacy-preserving, and secure by developing pathways for accountability and fiscal stewardship.

Cooperative Edge

We leverage a broad and diverse range of stakeholders to drive informed decision-making and deliver meaningful impact.



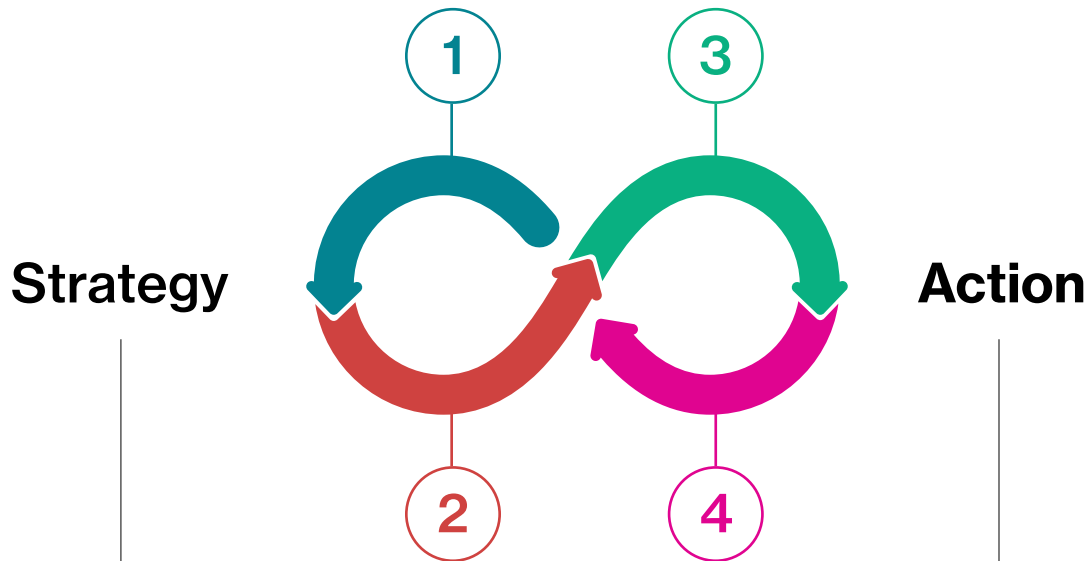
Smart Cities as a Service: Moving from Strategy to Action

Creating a seamless experience for residents when they interact with their city government requires a flexible approach to how we design and deliver services. In the technology world, “anything as a service” or “XaaS” refers to creating a business model where customers can use products and services when they need it, without having to make a large upfront investment. The Smart Cities team has adapted this model for the public sector and offers various services to our stakeholders on behalf of San Antonio residents. This is meant to **enhance and accelerate innovation** in our community, and we call it “Smart Cities as a Service (SCaaS).”

The Smart Cities as a Service model follows our process, outlined below, to move between Strategy and Action both within our own projects, and projects that we advise and support in collaboration with city departments and partners. Our process involves four stages: Understand, Scope, Test, and Serve. City departments and partners can initiate projects with the Smart Cities team at any point in the process, though the team may determine a project would benefit from additional work in a previous or later stage.



Smart Cities as a Service



1 Understand

- Use a people-centered approach
- Understand stakeholders' needs and lived experiences
- Understand social, political, and technical context



2 Scope

- Consult with stakeholders and city departments
- Balance priorities, constraints, risks, and market readiness
- Identify capacity and budget for successful prototypes & projects



3 Test

- Establish scope and key performance indicators
- Collaborate and experiment within a defined project area on a timeline
- Develop and execute a communication plan



4 Serve

- Provide final project report to internal and external stakeholders
- Recommend actions and policies based on lessons learned
- Transition successful projects to departments to scale solutions into city services

Smart Cities as a Service

Strategy

Strategy refers to how we understand our residents and operating environment to scope the most responsive projects, products, and services. Too often, technologies are looking for problems to solve without considering the real-world needs of residents or the social, political, and economic context in which we work. This can lead to wasted taxpayer dollars, redundant technology, safety risks, and lengthy procurements that fail to solve for resident needs.



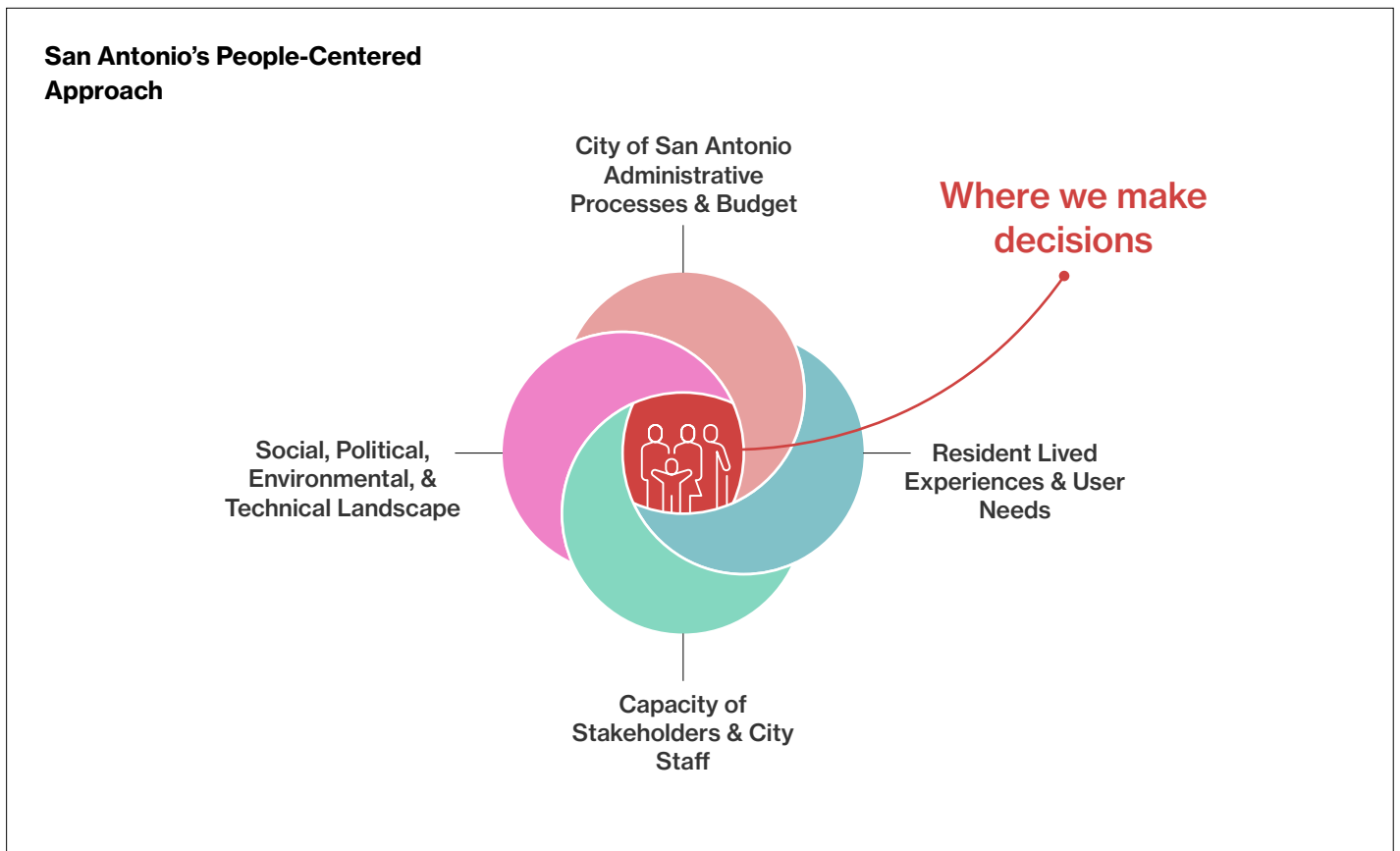
1. Understand

We take a people-centered approach to understand from stakeholders their needs and lived experiences, as well as the social, political, and technical context in which we operate.



2. Scope

We balance what we understand about stakeholders and context with the real-world constraints of capacity, budget, and business needs of the organization.



Smart Cities as a Service

Action

Action is all about how we mobilize resources, partnerships, and real-world testing environments to experiment with and evaluate smart city solutions, products, services, and ideas. The central challenge for using technology in local government is how digital tools must operate in complex real-world settings and are often relied upon for access to critical benefits. Taking action isn't just about piloting but includes transitioning and scaling pilots and projects into services adopted by the City of San Antonio. The Smart Cities team works with city departments and partners to help them devise strategies to implement new approaches in compliance with the city's procurement, technology, and data governance policies.



3. Test

We test potential solutions activating San Antonio's established Innovation Zones, where applicable, and share what we learn.



4. Serve

If a solution shows promise, we make recommendations to expand it to improve the city's services and support alignment of that service with the City's governance policies and safeguards.

Safeguards

Safety, privacy, and security for San Antonio residents is paramount. To address these issues, the City of San Antonio has established policies and regulations to guide our work. Where established policy does not exist, our team stays up to date on the latest industry guidance to inform our work. The Smart Cities team is committed to being transparent and accessible to all stakeholders, while protecting the public interest and minimizing risks associated with emerging technology.

Our smart cities work adheres to the City of San Antonio's [Principles of Data Informed Government](#):

- Data Integrity as an Essential Service
- Transparency and Accountability
- Efficient and Safe Data Sharing
- Data Informed Decision-Making
- Privacy
- Security
- Ethical use of Data and Data-Driven Technology
- Data Sovereignty

Additionally, the following policies are available at www.sanantonio.gov/EmployeeInformation/Directives and define the regulatory environment in which we work:

- [AD 4.7 Healthcare Data Protection Administrative Authority](#)
- [AD 7.12 Data Governance](#)
- [AD 7.3A Data Security](#)
- [AD 7.5A Establishing IT-Related Directives](#)
- [AD 7.8D Access Control](#)
- [Open Data Policy](#)



Part Two

Strategy

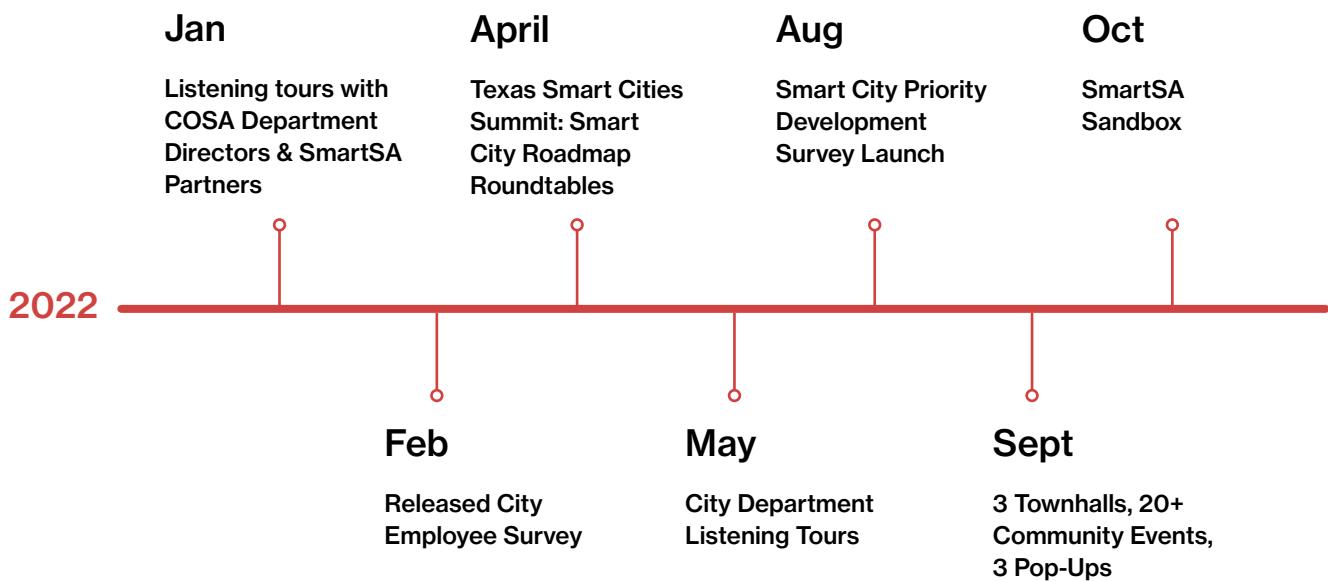


Understand

In some cases, technology solutions are applied to problems that may not require any technology at all. That’s why we take a strategic approach to project development by ensuring we consult and collaborate with residents and evaluate the conditions and constraints of our environment before launching a project, prototype, or pilot. This is at the heart of our mission to be a “people-centered smart city.” Understand refers to how we take a people-centered approach to understand from stakeholders their needs and lived experiences, as well as the social, political, and technical context in which we operate.



Timeline of Stakeholder Engagement Process



Resident Engagement

San Antonio is a vibrant, thriving, and growing city with a rich history. The Smart Cities team utilized [San Antonio's Equity Index Atlas](#) to target engagement with residents in ways that address the socioeconomic barriers they face. By layering City Council district boundaries over the Combined Score Index (a combination of median household income and demographic race variables), the team was able to create a customized outreach approach for each district. This helped the team understand the need to engage with residents by meeting them in spaces they frequent to address barriers such as lack of digital, financial, or transportation resources required to provide their input. Our multi-pronged approach included in-person events, social media campaigns, digital kiosks, partner supported outreach, city-wide text notifications, and partnerships with City Council district offices.

Smart Cities Priority Development Survey

Resident engagement began with the development and distribution of the [Smart Cities Priority Development Survey](#) which was hosted digitally on SASpeakUp. The information obtained from the survey aimed to develop a baseline of what residents consider priorities when it comes to using data, technology, and innovation for public services and infrastructure investments, as well as privacy preferences while using City services online. The survey was open for three months from August to October 2022. Overall, we received 2,267 survey responses including 3,393 comment responses. Our team distributed paper surveys, met with residents at three libraries, two senior





Understand

centers, and over 23 community events across the city. The team partnered with City departments such as Metro Health and Parks and Recreation to capture unique perspectives from healthcare workers to San Antonio's youth.

[Review the survey results here.](#)

Creating Connection for Deeper Understanding

Beyond the distribution of surveys at various events and community-based spaces, the Smart Cities team partnered with Able.City, a community engagement consultant, who supported efforts in developing additional qualitative methods for resident engagement. This approach was used to gain an understanding of the “Why” behind responses to two main questions: “What is a smart city?” and “What are your priorities?” This engagement was intended to create a dialogue facilitated through interactive activities at three pop-up events, three public meetings, and a closing activity at SmartSA Sandbox.

- **Pop-ups**

Pop-ups were casual activations that provided opportunities for direct interactions with community members in City Council districts that ranked higher in the Equity Atlas Index for disparities and their surrounding neighborhoods. Intended to meet the community where they are, pop-ups were placed where people gather, organize, and activate.

- **Public Meetings**

Public meetings were held to engage a wider audience, creating a platform for information, updates, and presentation. Public meetings were hosted in each of our three Innovation Zones, capitalizing on established relationships.

- **SmartSA Sandbox**

The closing stakeholder engagement event for the roadmap was hosted at the annual SmartSA Sandbox where families were encouraged to provide their feedback through illustrations and mapping out their priorities on a map of the city. SmartSA Sandbox is an opportunity for SA youth and families to have hands-on access to smart city tools, innovative technology, Science Technology Engineering and Math (STEM) education, and a chance to imagine and build the future of San Antonio. In speaking directly to youth, the team was able to collect data, qualitative as well as quantitative, on their ideas for the city's future.

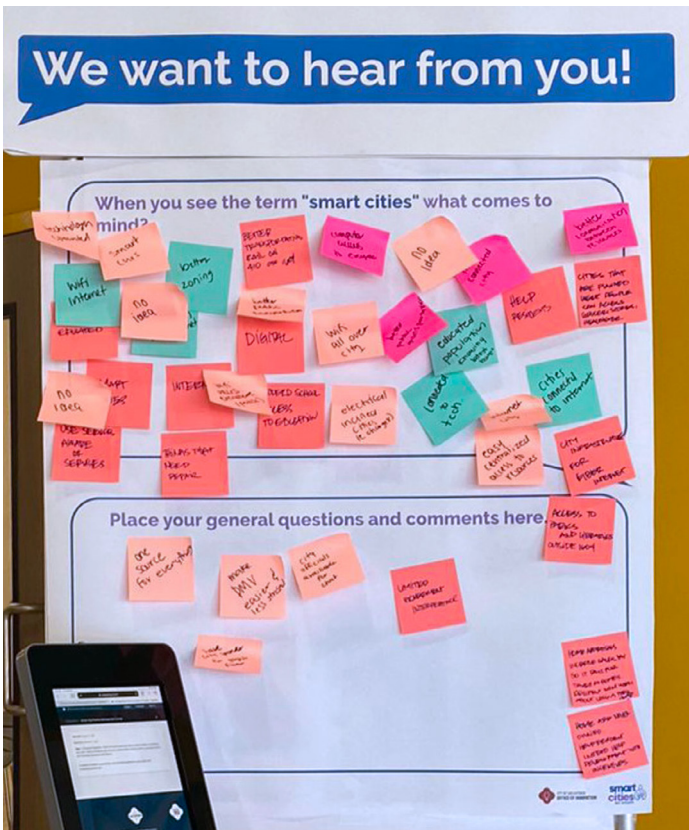
Through the survey and the in-person events, the Smart Cities team aimed to work with residents' imagination, knowledge, and ideas of the future of public services to better understand their needs. Through this understanding the team gained insight into a community vision of what San Antonio's future as a smart city should look like.

To view the full report and findings of the in-person resident engagement events see our [Community Story Map](#).





SmartSA Sandbox



Pop-ups



Public meetings



Understand

City Employee Engagement

To understand where there may be gaps in providing resident facing services and learn how our team can better serve the organization, we conducted three engagement initiatives specifically to understand the city employee experience: an employee survey, distributed to all COSA staff, cross department mixers, and a listening tour with middle and upper management teams of more than 20 COSA departments aligned with our resident engagement priorities.

Smart Cities Roadmap Employee Survey

The [Employee Survey](#) helped us understand the challenges, needs, and opportunities that departments face when it comes to using data and technology in public service. It allowed us to gain insight into how departments are currently using technology and what improvements or changes could be made to better support their goals. With this understanding, we can focus on areas where our team can be most effective.

- 478 COSA employees from 40 departments participated in the survey.
- The top three project types leveraging data or technology within COSA are: Business Operations, Data, and Community Engagement projects.
- 37% of participants responded they have project plans utilizing data analysis and big data and 5% had project plans involving Artificial Intelligence (AI).
- [See an overview of more key findings from the survey.](#)

COSA Department Listening Tour

Meeting with departments directly helped build on insights gained through the Employee Survey. According to the Employee Survey, the highest rated challenges were knowing who to contact for technical assistance, having sufficient digital skills or access to technology, and having enough staff to design and implement tech and data tools. Through engaging with department leadership, we opened a dialogue about areas for collaboration, improvement, and coordination. Selected key findings are included below:

- There is a need for increased strategic alignment and coordination projects involving the Office of Innovation.
- There is often a lack of capacity to manage innovative projects outside of department service mandates.
- Enterprise-wide solutions and centralized systems are preferred.
- There is a desire for best available software solutions, but difficulty in procuring quickly enough to provide best-in-class services.

Cross Department Mixers

Led by the Smart Cities team, the Office of Innovation held three cross-department mixers that saw over 500+ city employees across 40 departments gather to share ideas, build relationships, and ideate about the type of legacy that they want to leave behind. These events gathered perspectives from all levels of departments resulting in over 75 project ideas and the identification of key collaborators.





Understand

Collectively, these three initiatives helped the Smart Cities team map employee sentiment across the organization and at various levels of professional seniority, as well as better understand the needs and capacities of departments.

SmartSA Partner Engagement

The SmartSA partner community is integral to how we align and execute projects across sectors. A fundamental piece of our collective impact is to ensure we can navigate and work with key partners who have the capabilities and access to data to improve daily services. To create opportunities for collaborative efforts, the Smart Cities team facilitated two engagement opportunities for SmartSA partners. The first was a SmartSA partner listening tour in January 2022, with executive and middle management partner members and a second round of listening tours during and post the 2022 Smart City Summit.

SmartSA Listening Tours

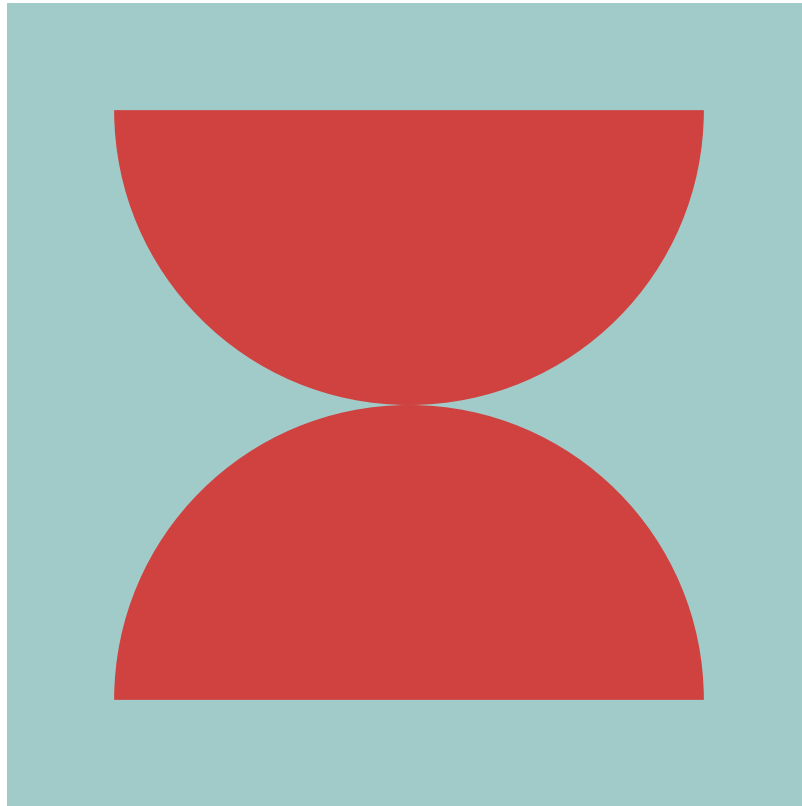
Similar to the city department engagement, our team met individually with each partner organization to understand their needs, capacity, and vision for leveraging our partnership to deliver for San Antonio residents. Through these meetings we learned about the need to better utilize the Interlocal Data Sharing Agreement (IDSA), narrow our focus to impactful, achievable, and meaningful projects; improve communication; and restructure meeting cadences.

Texas Smart City Summit 2022: Round Tables

The topic areas for these sessions brought local leaders together to discuss how they envision a collective approach to improving services within key topic areas including: Responsive, Inclusive, and Resilient Infrastructure, Data Dignity, Participatory Futures, and Digital Services for All. The sessions began with a brainstorming period where each participant had the opportunity to share, from their perspectives and roles, applicable projects for collaboration. Participants at each roundtable were charged with completing a template that organized their ideas into potential actions across three time-horizons.

Collectively, our stakeholder engagement across residents, city employees, and partners informed the next step in our process, “Scope.”



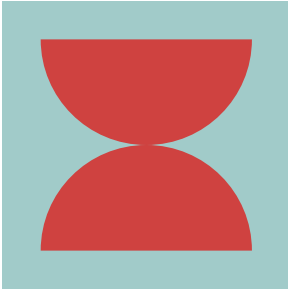


Scope

Scope refers to how we balance priorities, constraints, market readiness, and capacity to decide which solutions to pursue. Generally, we consult with stakeholders and city departments to adequately scope digital innovation projects by equipping them with knowledge about the smart city market, opportunities, and risks with using emerging technologies, and help plan for the capacity needed to successfully prototype, pilot, deploy and manage the project.

Using stakeholder engagement conducted throughout 2022, we identified three key strategies for organizational impact. These strategies represent where the Smart Cities team has capacity to act within COSA to address organizational challenges. The three strategies included in our scope support the top three areas where city departments reported trying to work with technology to improve their public services via the City Employee Survey: business operations, data, and resident engagement. We believe that for San Antonio, becoming a smart city requires taking steps to address organizational challenges in these areas.





Scope

Strategy 1: Business Operations

Ensure our city government has the capacity, expertise, and resources to safely and ethically use technology to respond to the real-world needs of communities.

Business operations at the City of San Antonio refers to the day-to-day processes that enable the city to provide services to residents. In smart cities, these processes are often enhanced with technology to make them faster, more efficient, and more reliable. For example, a paper-based case management system could be improved by introducing a digital platform that allows residents to apply for benefits remotely. However, technology can often create new challenges that arise when the solution is not responsive to real world problems or business needs, (i.e. when ‘technology is looking for a problem to solve’).

In our 2022 City Employee Survey, the top three challenges city departments reported for using technology in business operations were a lack of capacity, digital skills, and access to resources. To solve these challenges, the Smart Cities team aims to accelerate COSA’s capacity to use smart city technology that responsibly addresses real-world problems. We aim to accomplish this by undertaking the strategic activities in collaboration with our Information Technology Services Department (ITSD) as outlined below.

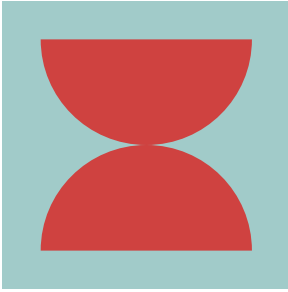
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Kolding, Marianne and Sundblad, Martin.
European Public Sector: Using the
Cloud to Address the Digital Skills Gap,
June 2021.

1.1	Grow the knowledge base and skill sets among city staff about the risks and opportunities of emerging technology.
About this Activity	City departments reported lacking sufficient digital skills as their second greatest challenge for using technology and data tools. This is not unusual for local governments today. A recent survey by the International Data Corporation (IDC) of 250 health, government, and education organizations in seven European countries showed that 63% of organizations say they lack the digital skills necessary to adopt emerging technologies ¹⁴ . This activity focuses on helping city departments grow their awareness of smart city technology, and the opportunities and risks associated with working with new technologies such as artificial intelligence, digital platforms, or Internet of Things (IoT).
Intended Outcome & Benefits	City departments are more knowledgeable about the risks and opportunities of working with technology.
Recommended Actions	<ul style="list-style-type: none"> • Develop city-wide “Smart City Project Criteria” that helps departments define and evaluate smart city technologies. • Host internal webinars with experts on a technology theme of interest in alignment with Roadmap Priorities (i.e., AI for Public Safety). • Develop informational guides for city departments about emerging technology. • Promote and support internal applicants for the Innovation Academy.



1.2	Help departments develop strategies for smart city projects and evaluate technology’s ability to solve business problems to serve residents.
About this Activity	Successful projects, programs or services that use technology consider the social context in which those technologies are meant to operate. Building a smart city strategy for a project, program or service involves not just evaluating a technology, but also addressing a business need and aligning that need to a real-world outcome for residents being served. This activity focuses on supporting city departments by understanding their stakeholders and scoping their projects effectively to avoid common pitfalls when working with smart city technologies.
Intended Outcome & Benefits	City departments are more successful working through administrative processes to align smart city technology with business needs, and the real-world needs defined by residents.
Recommended Actions	<ul style="list-style-type: none"> • Host consultation meetings with departments on smart city initiatives aligned with Smarter Together Guiding Principles and Smarter Together Challenge Areas. • Help departments understand their business need using a people-centered lens, in alignment with Smarter Together Guiding Principles and Smarter Together Challenge Areas. • Help departments scope a smart city project: define project structure, milestones, and Return on Investments (ROI) in alignment with Smarter Together Guiding Principles, Smarter Together Challenge Areas and ITSD policies.
1.3	Work with departments within their capacity to test, procure and deploy smart city technologies.
About this Activity	The technology sector operates at a quicker pace than government and is well known for its ability to “move fast and break things”. However, as new technologies continue to hit markets, local governments should be able to effectively harness their benefits while simultaneously evaluating them for their risks. This activity helps city departments build capacity to work with emerging technologies through advising, testing and policymaking.
Intended Outcome & Benefits	Business operations using smart city technology at COSA are facilitated through testing and evaluation in real world settings before becoming services.
Recommended Actions	<ul style="list-style-type: none"> • Advise on RFP processes, committees, workgroups, or taskforces for emerging technologies. • Help departments test smart city solutions including in Innovation Zones in compliance with ITSD policies. • Help departments transition smart city pilot projects into services. • Apply for grants related to smart cities in collaboration with departments and facilitate partnerships with local universities through the Innovation R&D team. • Develop policies that advance responsible adoption of emerging technologies and safeguards city resources in collaboration with ITSD.





Strategy 2: Data
 Grow a culture of data-informed decision making at COSA that ties technology for city-making to measurable outcomes for SA communities.

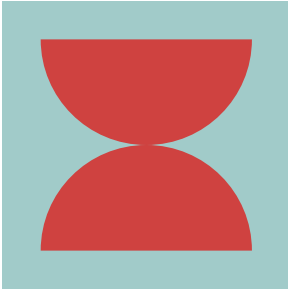
Scope

How we collect data, what it's used for, and who has access to it, shape and reflect the values of our community. Today, data is embedded across virtually all digital platforms and services and is an increasingly powerful tool for decision-making. While many cities have invested in technology teams and Chief Data Officer positions to address data management, challenges remain for bringing all city departments and staff in large organizations up to speed. Achieving an organization-wide shift in how the city collects, manages, and uses data for decision-making is necessary to improve interoperability, as well as to track the performance of the entire organization and its programming year over year. Such tools are needed to streamline how residents access and find the City's data, leading to greater transparency and increased accountability. Finally, none of this can be achieved if departments fail to successfully negotiate for access to data collected by platforms and services they procure. Therefore, it's important to provide guidance to city departments to ensure the quality and availability of the data generated by smart city technologies.

<p>2.1</p>	<p>Help residents better find, use, and understand the city's data and public information resources.</p>
<p>About this Activity</p>	<p>Data is an important public asset for residents not just to inform their own information and decision making, but also as a tool for developing their own products and services. Data can be used by the public to power original research, build mobile applications, and inform community programs and services. Residents often express finding it hard to locate the city's data, access it, and interpret it. Open data should be easy to find and use for all residents, regardless of skill level. This requires treating data not just as a tool for storytelling about the City's services, but as a critical public resource. This activity focuses on helping residents navigate and use the city's data resources effectively.</p>
<p>Intended Outcome & Benefits</p>	<ul style="list-style-type: none"> • Residents are informed and engaged through increased transparency of the City's programs and services. • City data is accessible, accurate, and easy to understand.
<p>Recommended Actions</p>	<ul style="list-style-type: none"> • Host open data workshops with residents to learn key issues and priority needs for finding and using the city's data assets. • Test new approaches for engaging residents with data using Open Data SA, with particular focus on increasing engagement among populations frequently not engaged by the City. • Identify the resources and processes that support communication and data sharing for bond related construction, large events, and other service disruptions. • Support improvements to Open Data SA.

2.2	Accelerate the adoption of tools for performance management and data sharing among City Departments and SmartSA partners.
About this Activity	The City has developed several key resources to improve data access and sharing for city departments and partners including an enterprise data sharing platform and Interlocal Data Sharing Agreement with the SmartSA partners. Significant challenges, however, remain to increase awareness and adoption of these tools among stakeholders. That requires additional work to increase the digital literacy of staff, build capacity for departments and partners to make use of these resources, and ensure these resources continue to be user-friendly.
Intended Outcome & Benefits	The City Manager’s Office, City Departments, and SmartSA partners collaborate and coordinate more effectively through data sharing.
Recommended Actions	<ul style="list-style-type: none"> • Host workgroups on data sharing use cases related to Smarter Together Challenge Areas. • Strategically support training and awareness of the IDSA and the Enterprise Data Sharing Platform among city departments and partners. • Evaluate the usability of the Enterprise Data Sharing Platform and make recommendations for further development. • Collaborate with Performance Excellence to implement a performance management governance model to establish city-wide performance metrics and coordinate actions that enable higher operational performance.
2.3	Work with departments to ensure data from their procurements is useful, accessible, and trustworthy.
About this Activity	When city departments procure new technology, they can set the standards and rules around how any data generated from the technology will be managed and used. According to AD 7.12, the COSA requires that city departments take steps to ensure ownership of data in all technology procurements. Meanwhile the fast-paced evolution of smart city technologies constantly introduces solutions that create new types of challenges and issues surrounding data. This activity focuses on how to help the city adapt to data challenges created by new technologies, while growing best-practices within the organization for managing data.
Intended Outcome & Benefits	City departments are more knowledgeable about the risks and opportunities working with data.
Recommended Actions	<ul style="list-style-type: none"> • Continue to partner with ITSD and Performance Excellence to improve and expand awareness of the City’s Data Informed Government Program among staff. • Complete a playbook for city departments defining their business needs for data ensuring data is effectively managed in procurements that include data-driven technologies. • Evaluate use cases for new types of data collected by emerging technologies, and work to develop policies and procedures that harness new capacities while protecting privacy.





Strategy 3: Resident Engagement
 Ensure all people in San Antonio can participate in COSA's digital transformation by testing tools and approaches that meet residents where they are.

Scope

Resident voices are at the heart of San Antonio's people centered smart city. As our city grows, our communities become more diverse and communication between city leaders, departments, and residents becomes more critical. According to surveys and discussions with City departments, ensuring prompt communication, accessible information, and opportunities for our communities to easily provide their input is both a challenge and a priority. We strive to intentionally use new ways of connection with our communities by meeting them where they are. This is key to developing trust and building pathways to be involved in City decision making that will drive greater impact.

3.1	Support departments in launching place based digital engagement.
About this Activity	<ul style="list-style-type: none"> As technology evolves, we can utilize tools that make accessing government information and providing feedback more convenient and accessible. San Antonio requires tools that make providing resident feedback easy and attainable for all residents regardless of ability, demographics, or income. Place-based digital engagement tools use the urban environment as part of the public input experience. That means collecting information about how residents use services when they engage in them. Such tools should meet residents where they live, work, and play while also addressing any language and ability barriers. The Smart Cities team works with the Office of Innovation's Digital Inclusion program that focuses on ensuring equitable access to connectivity, digital literacy, and devices in San Antonio.
Intended Outcome & Benefits	<ul style="list-style-type: none"> City departments receive representative resident feedback to better understand communities served. Having a culture of two-way conversations with residents and government is the norm.
Recommended Actions	<ul style="list-style-type: none"> Work with the COSA Communications and Engagement Office to study challenges residents face when interacting with city government. Work with departments to understand their engagement needs and source potential technology partners. Collaboratively prototype and pilot innovative digital engagement campaigns, tools, and platforms.

Place-based digital engagement tools

Digital engagement tools use the urban environment as part of the public input experience. That means collecting information about how residents use services when they engage in them, regardless of where they are.

3.2	Engage, inform, and collaborate with residents on the Smarter Together San Antonio Testbed
About this Activity	Conversation with residents should be continuous and not limited to event-based engagement. This activity supports ongoing resident engagement as it relates to projects and programs undertaken through this roadmap. Continuing stakeholder engagement specifically with residents, ensures projects are best serving the lived experiences and needs on the ground.
Intended Outcome & Benefits	Residents have clear avenues to actively participate in the Smarter Together San Antonio initiatives, providing space for collaborative dialogue and learning.
Recommended Actions	<ul style="list-style-type: none"> • Develop a communications framework/campaign that includes in-person and digital avenues to educate and inform residents of the Smart Cities vision, updates, and future work. • Initiate a Smart Cities representative resident community group, open to all who would like to participate in providing focused feedback and create continued understanding of local needs. • Create a database that records community input and interactions to further Smart Cities work on resident priorities.



Part Three

 **Action**



Test

Test is about how we test potential solutions activating San Antonio’s established Innovation Zones and share what we learn. In addition to the strategic activities that we’ve identified in the Scope section, we are introducing the Smarter Together San Antonio Testbed that allows for the testing of smart city ideas, products, processes, and solutions for their ability to inform and improve public services. Our FY2023-2028 testbed focuses on five themes that San Antonio residents described as priorities during the stakeholder engagement process.





Test

The Smarter Together San Antonio Testbed

We aim to collaborate and experiment across departments and partners to explore new alternatives to service delivery through testing and experimentation both within and beyond our Innovation Zones. The Smarter Together San Antonio Testbed is an open call to entrepreneurs, researchers, vendors, and community partners to collaborate with the Smart Cities team and COSA departments to respond to five challenge areas defined by residents during the stakeholder engagement process:

● Access to Public Information

● Public Safety

● Resilience & Environmental Quality

● Safe Infrastructure

● Access to Transportation

The Smarter Together Testbed supports research, prototypes, pilot projects, and cross-sector collaboration in each of these key areas. The Smart Cities team particularly prioritizes projects that address public oversight & co-creation models, emerging technology impact assessments for policy making, and assess impact to workforce and service delivery. The Smart Cities team will explore opportunities to support Smarter Together Testbed projects responding to the five challenge areas using funding from philanthropic organizations, as well as state and federal grants including those issued by TxDOT, NSF TIP, DOE, and USDOT.

For each challenge, insights are included from the stakeholder engagement process, and the resulting challenge is intended to reflect the overall need that should be addressed through testbed activities.

● Access to Public Information

<p>Insights</p>	<p>Residents want to have their voices heard and included in decision-making, but report that they lack awareness and access to the tools and skills needed to provide feedback. Residents shared that digital literacy and internet connectivity were barriers to participating in online engagement efforts. They also consistently reinforced that information should be accessible to everyone regardless of their ability, language, or access to the internet, and that the City should use feedback to inform proactive approaches to solving problems. Residents defined accessible government as one where all information and input could be easily accessed, used, and shared to inform their own decision-making.</p>
<p>Challenge</p>	<p>How can San Antonio share relevant data with residents in accessible, understandable, and convenient ways?</p> <p>Solutions should improve how the City visualizes data for storytelling and tool-building. There should be increased public awareness about what datasets are available and availability should be tailored to interest and need. Solutions can include new approaches to drive traffic of interested users to the City’s resources, including Open Data SA. Ultimately, such tools should aim to bridge the gap between digitally native data users, and those who would benefit from access, but lack the digital skills to locate and use the information.</p>
<p>Example testbed projects could include:</p>	<ul style="list-style-type: none"> • Digital platforms & community engagement methods that provide accessible and informative updates about city services. • Approaches that provide support for residents with disabilities in accessing public information resources. • Open data workshops and digital skills programming in underserved communities. • Transparent communication using Augmented Reality, Virtual Reality, or Quick Response Code (QR) technologies about smart city technologies operating in public space. • A “one-stop” mobile application for all the City’s public services.

Public Safety

<p>Insights</p>	<p>Participants in the Smart City Priority Development Survey associated public safety with equitable public spaces, overall street safety, and walkable neighborhoods. Comments in the surveys and in-person meetings reflected how residents saw public safety as both reducing crime and being able to navigate across the city safely and easily. Residents also called for reducing response times of emergency services, as well as making it easier to access community support services. Others spoke of the need to keep diverse communities safe from discrimination. For San Antonio, being safe in our neighborhoods and on our streets is a priority.</p>
<p>Challenge</p>	<p>What connected and responsive tools can be used to help create safe public spaces for San Antonio residents?</p> <p>Smart City technologies should enable residents and visitors alike to travel in and around San Antonio neighborhoods safely, regardless of their mode of travel. This may include accessible options within public spaces to call on safety professionals and first responders, or real-time information sharing about upcoming accidents or road obstructions or introducing road elements like pavement treatments that support safe pedestrian crossings. The City needs to investigate solutions that improve public safety decision making and emergency response times while protecting resident privacy. San Antonio should explore tools that help communicate effectively with residents about actions to take in the event of an emergency, such as an extreme weather event or grid outage.</p>
<p>Example testbed projects could include:</p>	<ul style="list-style-type: none"> • Identify if drones can help emergency responders locate the safest and quickest route to an emergency. • Test and evaluate easy communication tools for residents to alert first responders about an emergency. • Integrate real-time traffic information about San Antonio with popular mobile applications. • Analyze data to understand trends in traffic levels, accidents, and road use, and how traffic impacts some population demographics more than others.

● Resilience & Environmental Quality

<p>Insights</p>	<p>San Antonio needs access to clean air, water, food, and a resilient natural environment. Resident survey participants suggested making data more accessible to inform and educate the public about environmental issues and quality. Participants suggested monitoring for clean air and water using smart technologies. Most often, residents called for mass transportation and traffic reduction as ways to reduce greenhouse gas emissions and emissions that form ground-level ozone, a public health threat. Green buildings, housing, and businesses were also themes in comments and discussions. Keeping our city clean by reducing litter and implementing environmental policies were also identified. Residents also called for the protection of native resources and plants for a more sustainable environment. Food insecurity was identified as a challenge for residents living in both urban and rural districts.</p>
<p>Challenge</p>	<p>What innovative approaches to mitigate the impacts of climate change and increase access to data about environmental quality should we explore?</p> <p>For much of San Antonio, being a resilient city means bringing data and technology to bear on large scale solutions that both illuminate the quality of our environment and health of our natural resources as well as mitigate the negative impacts of greenhouse gas emitting activities from transportation, industry, and energy. This may include new transportation options, sensors and dashboards providing real time and localized environmental updates, green initiatives and policies for new development, and resources to respond to negative environmental impacts on an individual level.</p>
<p>Example testbed projects could include:</p>	<ul style="list-style-type: none"> • Pilot a smart sewer network that uses sensors to detect water quality. • Address food insecurity through community-driven innovation such as food forests or community gardens. • Collaborate across sectors to develop community-driven innovation strategies that address food insecurity. • Develop user-friendly data dashboards that display real-time air quality, water quality or temperature information. • Pilot solutions that identify and mitigate urban heat island effects.

● Safe Infrastructure

<p>Insights</p>	<p>Survey results indicated a desire for more robust, safe infrastructure in San Antonio. Participants noted a need to fix potholes and clean up debris to improve roadway conditions. More transparent systems are desired to report and understand the state of infrastructure issues. Streetlights were noted as particularly important to feel safe walking streets. Residents often noted challenges navigating sidewalk infrastructure for all users and particularly those with disabilities. The need for preventative maintenance to proactively improve infrastructure was also cited. Overall, there was a theme to reduce roadway deaths and improve the overall accessibility of our streets for all users.</p>
<p>Challenge</p>	<p>How do we modernize and digitize our growing city infrastructure, including roads, bridges, sidewalks, and pedestrian walkways?</p> <p>San Antonio faces significant challenges in terms of ensuring safe and reliable infrastructure for its citizens. From aging roadways and bridges to outdated traffic signals and pedestrian crossings, there are numerous opportunities for improvement. This not only affects the daily quality of life for San Antonians, but also has the potential to impact the city's economic growth and competitiveness.</p>
<p>Example testbed projects could include:</p>	<ul style="list-style-type: none"> • Enabling more proactive digital approaches to identifying and remediating roadway issues including potholes, broken curb cuts, etc. • Upgrade the city's traffic signals to more advanced technology could improve traffic flow, reduce congestion, and increase safety for pedestrians and drivers alike. • Introduce safety improvements for vulnerable road users. • Implement measures to augment the City's Vision Zero efforts to make the city more pedestrian friendly and reduce the risk of accidents.

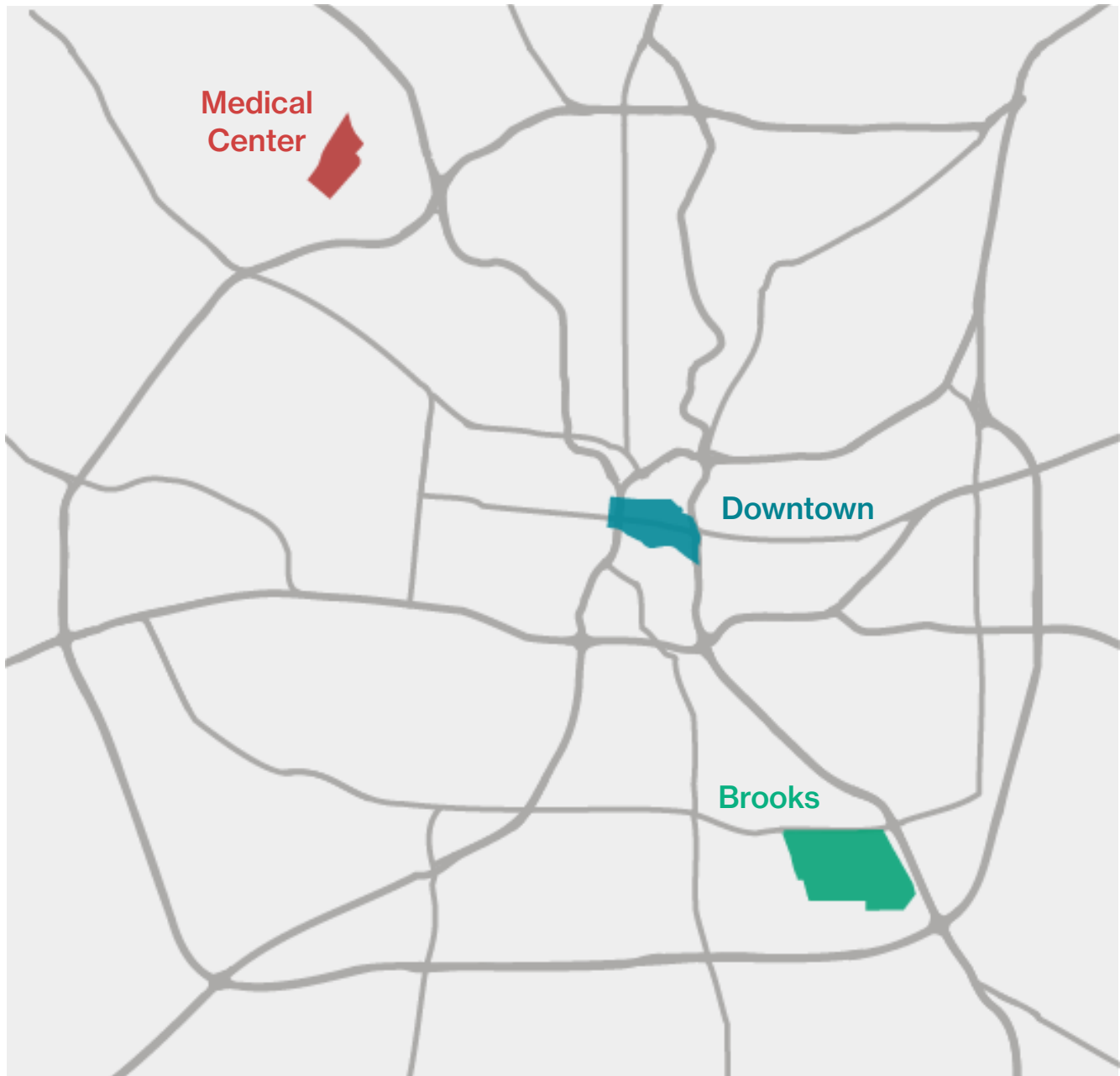
● Access to Transportation

<p>Insights</p>	<p>Residents indicated a strong desire for access to reliable, safe, affordable, and efficient multi-modal transportation options. Specifically, residents wanted to see more and safer bike lanes, rail development (light rail, streetcars, high-speed rail), easier options for regional travel, dedicated bus lanes, and improved walkability for vulnerable road users including cyclists and pedestrians. Connected to our Access to Public Information Challenge Area, residents also voiced a strong desire for better communication about alternative transportation options, roadway closures, and a more transparent and reliable communication system to enable more efficient commutes.</p>
<p>Challenge</p>	<p>How can we improve access to safe, convenient, affordable, and reliable public transportation to improve health outcomes, air quality, quality of life, and economic activity?</p> <p>Solutions should make it easy for residents to find information about transportation options and build their travel plans in real time. Innovative transportation solutions should also incorporate new methods of communication with the public about the benefits of public transportation and access to public space. Tracking traffic patterns, improving curbside management, and reducing overall congestion are key priorities for San Antonio. Complete streets should be prioritized, and regional collaboration improved to drive significant change in the way San Antonians travel.</p>
<p>Example testbed projects could include:</p>	<ul style="list-style-type: none"> • Develop a smart intersection or a “mobility hub” in a strategic location. • Capture multimodal mobility data, improve curbside management, and develop a data plan for managing connected and autonomous vehicles. • Use augmented reality (AR) or virtual reality (VR) technologies to help residents visualize and design complete streets.

As we develop and implement prototypes and pilot projects, we acknowledge our commitment to transparency and accountability are best achieved through effective communication. Using best practices to test the processes and technologies we use will help us make better decisions for our communities. Testing new services and technologies with transparency will allow for feedback from the community and make it clear which projects have the most potential benefit to the City. As we move forward with our strategies, we will provide guidelines specific to each project and keep stakeholders accountable for delivering on those objectives.

Innovation Zones

In 2018, City Council approved the selection of three geographical areas, within three of the regional centers, as Innovation Zones: Downtown, Brooks, and Medical Center. These areas are designated as proving grounds to prototype, test, and modify potential solutions to challenges identified by the San Antonio community. Innovation Zones are ideal places to conduct testbed projects and come with added benefits such as collaboration on grant solicitations or access to Innovation Zone Partners as facilitated by the Smart Cities team.





Serve

One of the greatest challenges of smart city development is transitioning projects into full-scale services. This is in part due to issues with how expectations are set for new initiatives regarding roles, governance, and funding. We aim to set these expectations up front when we initiate projects, prototypes or pilots, and subsequently work to help departments transition successful solutions into services. If a solution shows promise, we make recommendations to expand it to improve the City's services and support alignment of that service with the City's governance policies and safeguards.





Serve

How we Collaborate to Deliver Services

At COSA, we are committed to creating lasting services that benefit our community. We do this by working closely with city departments to integrate what we have learned during the testing phase into our critical path services. Our partnerships with these departments also allow us to contribute to city-wide strategy and drive culture change.

Information Technology Services Department (ITSD)

The ITSD is our closest and most critical collaborator. Their management of the IT Governance Committee and Business Relationship Managers (BRMs) are integral to the success of Smart City projects.

- **IT Governance Committee**

All technology projects at the City of San Antonio are processed through the IT Governance Committee, which includes the Chief Information Officer, Chief Technology Officer, Chief Data Officer, and Chief Security Officer. Each proposal submitted by a department is subjected to rigorous review by the Committee, including compliance with the City's security, data governance, and procurement policies.

- **Data Governance – Data Informed Government Program**

The Data Informed Government Program is an internal program at the City of San Antonio that develops and maintains the city's data governance policies and procedures. Data Stewards assigned to each city department are responsible for maintaining each department's data assets.

- **Business Relation Managers**

Business Relation Managers (BRMs) represent the technology needs of each department. BRMs act as liaisons for city departments to the ITSD and advocate on behalf of their assigned departments for the technology needs and business requirements.

Diversity, Equity, Inclusion, and Accessibility Department (DEIA)

DEIA works closely with the Smart Cities team to ensure all hardware and software solutions are accessible to all users. Their team provides technical assistance, resources, and educational materials on universal design, accessibility standards, usability reviews, and community engagement support.

Communications and Engagement Department (C&E)

The C&E department supports the Smart Cities team by managing media relations, providing guidance on best practices, assisting with graphic design, and managing best practices on community engagement. They also work to centralize services by implementing enterprise solutions that can be used by all departments.

Office of Sustainability

San Antonio's Office of Sustainability is focused on enhancing the environment, quality of life, and economic vitality through innovative programs and policies for all residents, as well as future generations. The Smart Cities team works hand in hand with Sustainability to ensure strategic alignment on projects, priorities, and goals.

City Attorney's Office (CAO)

Our team collaborates with the CAO to ensure that all legal requirements are met.





Serve

As we transition out of the testing phase, the CAO plays a crucial role in helping to develop language for Requests for Proposals (RFPs), contracts, policies, and administrative directives to achieve long-term results. The CAO also assists with complying with Open Records Requests.

City Department Wide Liaisons

Innovation Liaisons are representatives within each department that have been identified as key collaborators. Liaisons are connected to our team in multiple ways including a secure channel where we can exchange ideas, track project progress, and encourage collaboration across departments.

Funding Smart City Initiatives

The Smart Cities team works closely with the Finance Department to secure funding for projects, prototypes, pilots, and RFPs. We have a range of financing options at our disposal, including public-private partnerships, government grants, philanthropic funding, performance contracting, vendor financing, and City funding. By collaborating with COSA's Finance Department, we can ensure that our initiatives are financially sustainable and deliver maximum value to the community.

● Public-private partnerships (PPPs)

PPPs are collaborations between COSA and a private enterprise that can be used to finance, build, and operate projects.

● Government grants

COSA Government Affairs Department provides City departments with assistance in grant identification, application support, and training. State and federal grants provide support for a particular purpose including smart city projects, research, or strategic development.

● Performance contracting

Performance based contracts pay vendors based on mutually agreed upon milestones. These contracts can save on upfront cost, reduce risk, and increase efficiency.



● City funding

The City of San Antonio operates on an October-September fiscal year. Through the budget process, the City can allocate funding using the City's general fund or capital budget.

● Philanthropic foundation grants

Certain non-profit organizations and foundations provide grant funding to support Smart City initiatives including New America, the Kauffman Foundation, Bloomberg Philanthropies, the Knight Foundation, and the Arnold Foundation.





Join the Smart City Ecosystem

We invite you to join us in San Antonio's development as a smart city! Whether you are a vendor, partner, resident, or colleague within the City of San Antonio, we have identified opportunities below for you to get involved to improve our community.

■ For Vendors

We welcome ideas, solutions and prototypes that address the five challenges for our Smarter Together San Antonio Testbed from startups and large corporations alike. Companies seeking to engage with the Smart Cities team can do so in three main ways: direct engagement, participation in the Smarter Together Testbed, and formal procurement.

■ Engaging the Smart Cities Team

The Smart Cities team aims to maintain its awareness of best-in-class smart city solutions. To that end, we provide an open door for public-private collaboration. We welcome the best ideas, products, and resources to solve for our resident challenge areas. If your company can provide solutions specific to meet San Antonio community needs, there are three ways to engage our team:

- Vendors can register for 60-, 30- or 15-minute pitch sessions on our website: www.smartertogethersa.com.
- Vendors can also engage us at conferences and community events: www.smartertogethersa.com.

■ Participate in FY2023-2028 Smarter Together Testbed

We test solutions, products, and services that align with our FY2023-2028 Challenge Areas. Testbed solutions are typically at low-cost or no-cost to the City, however, they are subject to purchasing thresholds and require the use of the City's standard contracting process. Prototypes and pilots often inform the development of a Request for Proposal (RFP) for a new type of solution or service and are subject to a rigorous evaluation process.

Vendors seeking to work with San Antonio must register as an official COSA vendor. The Smart Cities team is particularly interested in **revenue generating prototypes and pilots** that can demonstrate the ability of a service or solution to generate revenue over time. Prototypes and pilots launched within Innovation Zones can realize added benefits of faster permitting, collaboration on grant solicitations, and/or access to Innovation Zone Partners.

■ Procurement

Formal procurements require a competitive bidding process following a Request for Proposals (RFP) solicitation. Interested vendors should register and establish an account with the [SA eProcurement System](#). For more information on how to complete vendor registration with the City of San Antonio, refer to the [Vendor Registration Guide](#).

<p>What are the requirements?</p>	<p>Different rules apply to a procurement process, based on the dollar amount of the proposal. The larger the contract, the more restrictions and procedures must be met. Below is a summary of actions that are required for various procurement thresholds:</p> <ul style="list-style-type: none"> • From \$0 - \$3,000: Departments may procure items with quotes • From \$3,001 - \$50,000: Informal Solicitation required under state and local requirements • Over \$50,000: Formal Solicitation required under state and local requirements • \$1M+: Qualifies as a High-Profile Solicitation: <i>These types of procurements require formal presentations to the Mayor, City Council, City Manager's Office, Executive Leadership Team Members, Department heads, and the public. A monthly high-profile report is also required.</i>
<p>What approvals are needed?</p>	<p>Depending on the dollar amount, different levels of approval may be required. Contract authority for professional services is assigned as the following:</p> <ul style="list-style-type: none"> • Department Director – capped at \$25,000 • Executive Leadership Team Member – capped at \$50,000 • City Council – over \$50,000
<p>Are there any exceptions?</p>	<p>Some procurements are exempt from following the above procedures; however these are rare and require significant evaluation to determine eligibility:</p> <ul style="list-style-type: none"> • Sole Source • Public Health & Safety (non-emergency) • Advertising/Marketing • Unforeseen Damage
<p>How long does it take?</p>	<p>On average a formal procurement takes a year or longer. Below is the typical schedule for a formal procurement.</p> <ul style="list-style-type: none"> • Pre-Solicitation Process: 1 – 2 Months • Solicitation Process: 1 – 2 Months • Evaluation Process: 1 – 2 Months • SOW / Contract Development Process: 1 – 2 Months • RFCA Process: 1 – 2 Months • Final Contract Execution: Varies

Additionally, State of Texas Statute Chapter 271, Subchapters D and F, of the Local Government Code (Cooperative Purchasing Programs) allow cities to enter cooperatives with the state or other local governments for the purpose of procuring goods and services. The state purchasing cooperative is online at www.window.state.tx.us/procurement. Additionally, the City of San Antonio purchases through the Texas Department of Information Resources for DIR. More information about DIR is available at: dir.texas.gov/about-dir.

How to get Involved

■ For Residents

Community-based organizations, start-ups, and innovators looking to interact and engage communities across San Antonio can partner with the Smart Cities team to get involved. Engaging with residents is at the core of our work. Collaborate with our team to support, educate, and serve San Antonio!

■ Participate in Co-Creation & Place-Based Digital Engagement

As we begin to launch projects under the Smarter Together San Antonio Testbed, we will be seeking volunteers to participate as a representative on resident community groups, and to provide us with feedback through a suite of digital engagement tools. Join our newsletter to stay informed about opportunities to participate, provide focused feedback, and contribute to continued understanding of local needs. Subscribe to our newsletter at www.smartertogethersa.com/newsletter-signup.

■ SmartSA Sandbox

Design. Make. Experiment. Play! SmartSA Sandbox, is a family-friendly pop-up event that provides residents hands-on opportunities to experience innovative ideas and solutions firsthand. We invite residents of all ages and backgrounds to share in the experience of SmartSA Sandbox and provide their thoughts on what they think the future of San Antonio should prioritize and enhance.

For organizations at the forefront of innovation we invite those change makers to present state-of-the-art project demonstrations to engage resident's imagination and skills to provide feedback for a better San Antonio. Sandbox has hosted demonstrations of robotics, augmented reality, interactive learning, and more!

Want to host a table at SmartSA Sandbox and present your activity to the community? Contact us at www.smartertogethersa.com/about and follow the Office of Innovation social media accounts for updates.



How to get Involved

■ For Partners

External partners including the public sector, academic and research organizations, charitable and nonprofit organizations, and the local business industry have a variety of ways to collaborate with the Smart Cities team to improve services to our residents. We encourage your organizations to get involved and help be a part of the change you want to see. Some ways your organizations can get involved include:

■ Partner on grant opportunities

Building coalition around grant proposals increases the likelihood of success. We welcome proposal ideas and can help connect opportunities to relevant stakeholders.

■ Coordinate on community engagement

Where applicable, improved coordination and collaboration engaging communities can help better inform residents about smart city developments and efforts.

■ Join the Interlocal Data Sharing Agreement (IDSA)

Joining the IDSA allows for your organization to freely share data with participating organizations. The associated enterprise data sharing platform enables security, transparency, and access to all participating members. Aggregated and centralized data enables new insights and improved efficiency.

■ Pilot in an Innovation Zone

San Antonio's established innovation zones serve as testbeds for innovative projects. Partners can coordinate with the Smart Cities team to launch pilots to prove concepts that improve outcomes for San Antonio residents.

■ Join SmartSA Sandbox

Have a great idea/technology and want to demonstrate it or help educate our residents? Speak with our team about showcasing at our next SmartSA Sandbox event.

■ Become a SmartSA member

Partners can join our efforts, as part of the SmartSA Partnership, to collaborate on smart cities initiatives.

What is the SmartSA Partnership?

SmartSA is a foundational partnership of nine leading local organizations dedicated to collaborating on smart city initiatives. All SmartSA partners are bound by an Interlocal Data Sharing Agreement (IDSA) to ensure that data is handled responsibly, shared openly, and in accordance with all relevant laws and regulations.



■ For City Staff

City of San Antonio staff are important stakeholders and collaborators for implementation of San Antonio's vision as a smart city. We provide City staff with products and services that help them take an innovative approach to problem solving using a people-centered lens. City departments can request several services from the Smart Cities team:

■ Initiate a Testbed project with Smart Cities

City staff that would like to test a new solution to a problem that aligns with the five challenge areas can reach out to the Smart Cities team with their idea or proposal.

■ Request advisory support for Smart Cities RFPs

Smart Cities team members can support the scoping, drafting, and review processes for RFPs that involve innovation, data and technology.

■ Request support for using the People-Centered Approach to project development

The Smart Cities team can help a department from strategy to action by consulting on their approach to project development using a people-centered lens. This includes support with the Understand, Scope, Test and Serve phases of the Smart Cities as a Service (SCAAS) workflow.

■ Attend a Smart Cities Emerging Technology Webinar

Periodically the Smart Cities team hosts informational webinars or in-person meetings with expert panelists on emerging technologies of interest to city departments such as artificial intelligence or Internet of Things (IoT) technology. Stay tuned about upcoming webinars by signing up for our newsletter: www.smartertogethersa.com/newsletter-signup.

■ Access informational guides on smart cities technologies, data and procurement

The Smart Cities team publishes informational guides on topics of emerging technology and their impact to government services and civic life. Access these guides as they are completed on our website: www.smartertogethersa.com.

■ Collaborate on a smart cities grant opportunity






City departments can leverage the Smart Cities Roadmap, SmartSA, Innovation Zones and other resources to compete for grant opportunities in partnership with the Smart Cities team. If your department is interested in collaborating on a grant opportunity, please contact us here: www.smartertogethersa.com/about.

All city staff can visit www.smartertogethersa.com to connect with the Smart Cities team, stay up to date on new opportunities to collaborate, and request services as they become available.



Assets and Initiatives

The City has a variety of digital, physical, and community assets that can support smart city development. The following graphic represents a non-exhaustive list of asset types that can be leveraged for smart city development in San Antonio.

Complementary City of San Antonio Plans	Assets & Infrastructure	
 <ul style="list-style-type: none"> • Vision Zero • SA: Ready to Work • Hazard Mitigation Plan • SA Tomorrow: Comprehensive Plan, Sustainability Plan, Multimodal Transportation Plan, and Sub-Area Plans • SA Forward Plan • SA2020 • Strategic Housing Implementation Plan (SHIP) • SA Climate Ready 	 <p>Municipally Owned Infrastructure & Right of Way (Note City does not own all of the below)</p> <ul style="list-style-type: none"> • Municipal buildings • Municipal vehicles • Sidewalks • Streets • Bridges • Streetlights • Street furniture • EV charging • Public transportation infrastructure  <p>Sensors/Monitors</p> <ul style="list-style-type: none"> • Air quality monitors – Bexar County w/TCEQ • Stormwater sensors – SAWS • Public safety cameras • Traffic counters • Adaptive traffic signaling 	 <p>Network Elements</p> <ul style="list-style-type: none"> • Municipal fiber • Institutional network • Utility infrastructure • Digital kiosks • Smart water meters • WiFi in Parks  <p>Data & Systems</p> <ul style="list-style-type: none"> • Open Data SA • Computer Aided Dispatch systems • ArcGIS Online • 311 SA • SASpeakUp • Case management platforms/systems • IDSA Enterprise data sharing platform

Sign Off

The work proposed in this document is not static, rather it is a testament to our commitment to collaboration and progress as we address the changing needs of the communities across San Antonio. Through continued stakeholder engagement, we work to ensure transparency in project development and completion while also providing updates on major wins or failures. We pivot as needed and are working on ways to create consistent communication beyond this roadmap for all stakeholders. We are committed to continuous improvement and look forward to working smarter together with our stakeholders to deliver better outcomes for our vibrant San Antonio community. Follow our journey and view project updates and evaluations on our website: www.smartertogethersa.com.

Contact us

www.smartertogethersa.com/about

Connect with us



[@cosainnovation](https://www.instagram.com/cosainnovation)



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About the Office of Innovation

Established in 2007, the City of San Antonio created the Office of Innovation to identify improvements in the efficiency and effectiveness of City services and business processes. The Office has evolved over time and currently includes four core teams: Performance Excellence, Research and Development, Digital Inclusion and Smart Cities.

Performance Excellence

This team serves as internal consultants to City departments and works closely with senior management to recommend strategies for improvement. The team also manages the City of San Antonio's Innovation Academy program. Innovation Academy is an intensive training program to develop problem solving consultants embedded within City departments. The Office of Innovation partners with the Human Resources Department to deliver training to City staff on process redesign, data analysis, and user centered design.

Research and Development

Established in 2020, the Research and Development team builds resiliency and improved outcomes for San Antonio's residents by making it safe and possible to try new things and test efficacy. Via scientific analysis, small-scale trials, and grant-funding, R&D helps departments gather insights that pave the path for wiser purchasing decisions, technology-readiness, and equitable, efficient operations. The Research & Development team manages the R&D League which is a partnership that consists of the City of San Antonio, Southwest Research Institute (SwRI), the University of Texas at San Antonio, and USAA. The R&D team also manages a Master Research Agreement with UTSA.

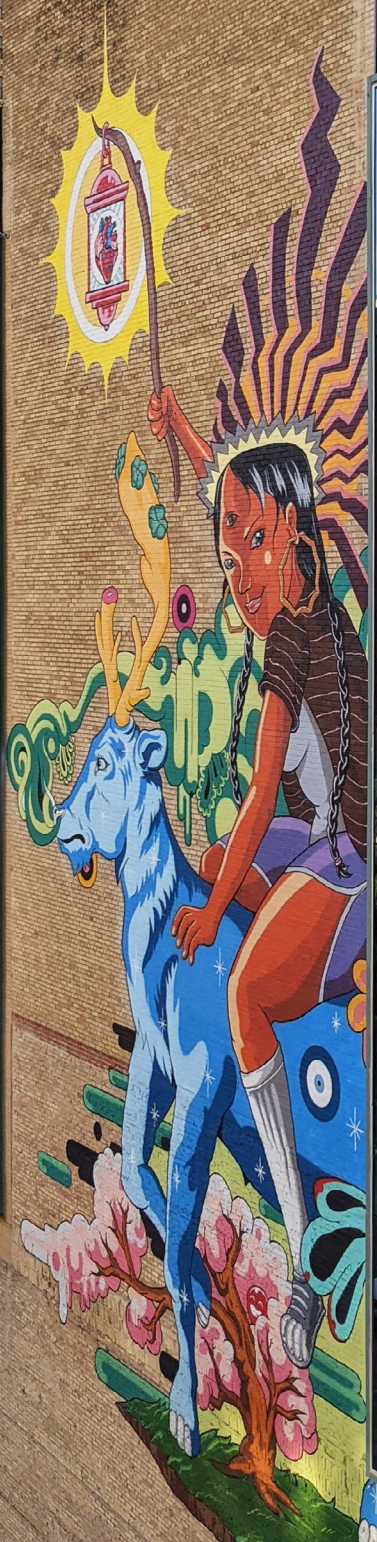
Digital Inclusion

Established in 2021, the Digital Inclusion team is responsible for the City of San Antonio's overall digital inclusion strategy. The team coordinates and collaborates with internal and external stakeholders on initiatives and projects that involve a focus on digital infrastructure, access to devices, affordability, and digital literacy. The Digital Inclusion team currently manages the digital inclusion portfolio under the City's Recovery and Resiliency Plan and supports strategies from the Digital Equity Plan along with SA Digital Connects, a private-public-community nonprofit organization aiming to close the digital divide in San Antonio and Greater Bexar County.

Smart Cities

Established in 2017, the Smart Cities team's vision is to leverage new and emerging technologies and data to improve the quality of life for residents. Their objective is for San Antonio to be a people-centered smart city that is connected, inclusive, and resilient. The Smart Cities team also manages the SmartSA partnership which is intended to ensure the City of San Antonio is taking an inclusive, community-driven approach as it collaborates with partners to build a city of the future.

It's important to note that the City of San Antonio is a Council-Manager form of government. The Office of Innovation is uniquely positioned relative to other departments, reporting directly to the City Manager's office.



Smarter Together



INNOVATION

www.smartertogethersa.com

