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Smart Cities – Making the Investment

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SMART CITIES SOLUTIONS ARE IN DEMAND

The smart cities market in the U.S. is estimated at

\$233.9 Billion
in 2021



Among respondents surveyed by S&P Global, citizens are most interested in smart city initiatives to improve:

44%
quality of life

44%
public safety

35%
public health protections

77%
sustainability (e.g., reduction of greenhouse gas emissions, decarbonization, increased use of renewable energy sources, etc.)

PUTTING CITIZENS AT THE HEART OF YOUR SMART CITY

- ▶ **Successful smart cities are people-centric**, so citizens should be the heart of any smart city
- ▶ **Citizens should be involved from the very beginning** to encourage proactive use of technology
- ▶ Citizens can also be **engaged in solution design** through events such as hackathons
- ▶ **Educating citizens on how technology works and the benefits** of it can reduce concerns around privacy or accessibility

GET STARTED BY FINDING THE RIGHT PARTNERS AND DISCUSSING HOW TO CREATE YOUR PEOPLE-CENTRIC SMART CITY



BECOMING A SMART CITY

FUNDAMENTALS OF A SMART CITY

SENSOR LAYER

Devices that collect real-time data of certain conditions e.g., temperature, humidity, noise level, etc.

NETWORK LAYER

Where data is sent through to be processed in the next stage

DATA PROCESSING LAYER

Where data volume is further reduced through analytics and machine learning tools

APPLICATION LAYER

Where data is analyzed in-depth to determine whether action needs to be taken



IMAGINE A CITY WHERE...

- **Smart Lighting** improves energy efficiency, creates cost savings, provides the pole infrastructure for connected devices and facilitates both safer driving and public safety.
- **Smart Waste Management** enables significant efficiencies, cost reduction and improved aesthetics.
- **Smart Water Management** protects the water infrastructure, prevents and detects shortages and leaks, improves water quality and drives efficiencies.
- **Smart Buildings** operate more efficiently, offer a more appealing environment, and help drive cost savings and economic development.
- **Digital Twins** allow cities to predict the effects a new infrastructure project will have on the city without incurring any construction costs.

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Utilities & Infrastructure



WHAT IS “SMART INFRASTRUCTURE”?

Smart Infrastructure is the result of combining physical infrastructure with digital infrastructure.

It provides improved information to enable better decision making that can be faster to respond to changes, less expensive to deploy and provides a platform to accelerate city initiatives.



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WHY MAKE THE COMMITMENT?

- Cost Savings & Increased Asset Value** Hard data is emerging that proves economic advantages realized through elevated productivity and ROI on infrastructure assets.
- Improved Services & Delivery** Digitally transformed operations enable greater efficiencies and services delivered at the right place, at the right time.
- Decision Making & Citizen Involvement** Not just more data but improved data quality which enables more informed operational decisions and the ability to shape future smart city initiatives.
- Quality of Life** Less roadway congestion, safer environments, reduced air pollution and higher water quality are just a few ways living, working and playing are impacted.
- Economic Development** City brand is enhanced: attracting new talent, supporting start-ups, elevating tourism and economic development, and increasing citizen engagement.

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TRENDS IN SMART CITY INFRASTRUCTURE

People and Processes

People

- Creation of executive roles tasked with exclusive focus on driving smart city initiatives
- More defined vision for smart cities, with infrastructure and networks as the foundation
- Digital transformation becoming a reality for citizens and city workers
- Formal messaging development and evangelism, increasing awareness for citizens, government agencies and businesses

Processes

- Standards are evolving and organizations are forming to share best practices and resources
- Siloed departments are beginning to collaborate and share data to gain actionable insights
- Businesses, governments and anchor institutions are forming “Public Private Partnerships” (PPPs)
- Security policies are being defined to address the increase of data being collected to ensure privacy for the public
- Moving from planning to pilots and eventually to implementation

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TRENDS IN SMART CITY INFRASTRUCTURE

Technology and Data

Technology

- 5G, WiFi, LoRaWAN, NBIoT ... are complementing traditional communication protocols being used
- Network providers are taking on the role of partner/trusted advisor in smart city discussions
- Security is evolving to make networks smarter, more resilient
- IoT devices are proliferating, becoming more mature and more secure

Data

- Massive influx of data generated through connected infrastructure and IoT devices
- Artificial intelligence and other data analysis technologies turning data actionable and visible
- Data standards enabling interoperability are being more widely adopted
- External data, including citizen-generated data, is being integrated
- Data integrity is improving, with blockchain slowly becoming integrated

Internet of Things (IoT) connected devices across the globe are expected to exceed 66 billion in 2026 at a compound annual growth rate (CAGR) of nearly 15% from 2017, according to Frost & Sullivan*

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SMART INFRASTRUCTURE IN ACTION

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HOW TO GET STARTED

STARTING SMALL: COLLECTING DATA WITH SMART LIGHTING POLES

BENEFITS OF SMART LIGHTING POLES

- ▶ Replacing 14,000 lightbulbs with LEDs led to a **\$2.5 million savings**
- ▶ Light sensors further reduces **energy consumption**
- ▶ Emergency button reduces **emergency response time**
- ▶ IP cameras and light sensors reduces **crime rates**
- ▶ Water detection and seismic sensors detects **natural disasters**



SMART CITY SOLUTION EXAMPLES

Your smart city journey starts here



SMART TRANSPORTATION
Managing timing of traffic lights and roadway traffic

VISION ZERO
Cars – bicycles – pedestrian crossing

SMART LIGHTING
LED retrofit

SMART PARKS
Data governance

PUBLIC SAFETY
Situational awareness



Smart City Solutions



Digital Services & Economic Development

- Connected communities
- Digital government
- Open data & civic engagement
- Smart kiosks
- Workforce Development



Utilities & Infrastructure

- Smart lighting
- Smart waste management
- Smart water management
- Smart building, venue, & campus
- Asset tracking & remote monitoring
- Digital Twin



Intelligent Transportation

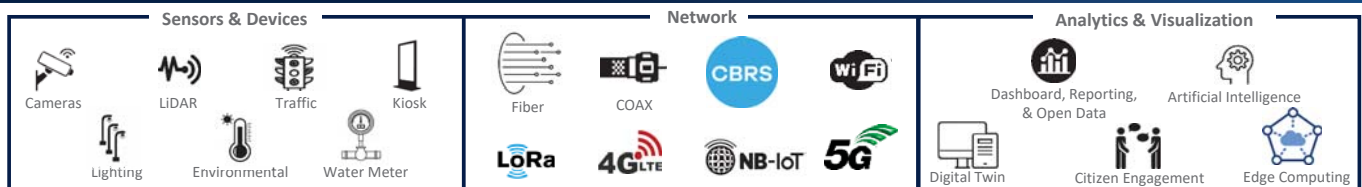
- Intelligent traffic management
- Connected vehicles
- Autonomous vehicles
- Smart parking
- Fleet management
- Curb management
- Vision Zero



Public Safety

- Video & Data analytics
- Critical infrastructure monitoring
- Smart Parks
- Situational awareness
- Environmental monitoring
- Drone monitoring
- Emergency management

Smart City Infrastructure



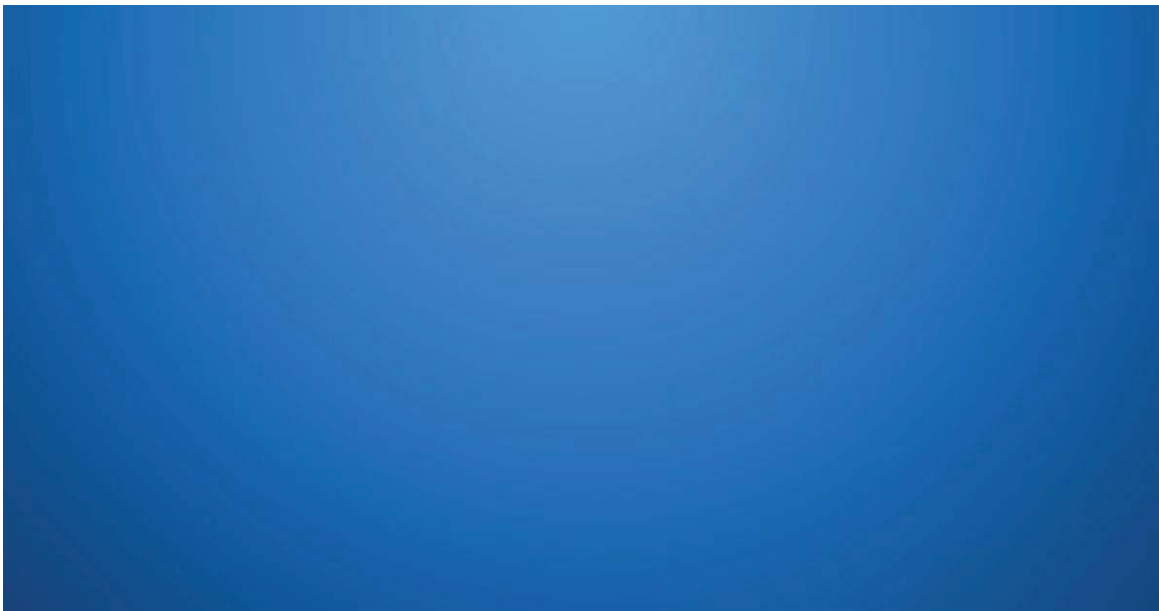
Curb Management



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Vision Zero



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Smart Train Crossing Reroute



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DATA IS THE KEY TO UNLOCKING SMART CITIES

- ▶ The smart cities market is growing rapidly – Smart city initiatives can make your city **competitive, efficient, and connected**
- ▶ Pure data collection is not enough – Use a **high-performance network, the right technology and actionable data** to unlock the limitless potential of your smart city
- ▶ Realize the power of data by **developing a plan and engaging your citizens** (via education, forums, hackathons, etc.)
- ▶ **Start small** – One or two initiatives that meet your city's needs is all it takes

GET STARTED BY FINDING THE RIGHT PARTNERS AND DISCUSSING HOW TO SOLVE THE UNIQUE CHALLENGES FACING YOUR CITY.

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NOT JUST DATA, "ACTIONABLE" DATA

WHAT IS ACTIONABLE DATA?

- ▶ Actionable data is **data that has been analyzed to uncover insights** and help you make informed decisions to improve your city
- ▶ Characteristics of actionable data:
 - **Accurate** – With safeguards in place (e.g., data cleansing and data validation to ensure the data is correct)
 - **Accessible** – People who need the data should be able to access the data
 - **Timely** – Data should be as close to real-time as possible to help users make accurate decisions
 - **Easy to understand** – Data visualization tools can present data in a format that's easy for non-data professionals to understand



HOW TO GET STARTED

THE KEY TO A SUCCESSFUL SMART CITY IMPLEMENTATION IS PARTNERSHIP

Find a partner who is:

RELIABLE

Has essential network infrastructure to keep initiatives running

SCALABLE

Can quickly adapt to increasing volume of data, people, and shifting urban trends

HIGH-PERFORMING

Capable of handling next-gen big data

INTEROPERABLE

Can seamlessly move data regardless of the protocols or geographic locations



RESOURCEFUL

Offers a broad range of technology ecosystems, partners, and right connectivity solutions to your specific implementations, and the deep expertise specific to each element in the solution

EVERY SMART CITY ALSO REQUIRES A MODERN AND SCALABLE NETWORK



Every smart city initiative has different connectivity requirements.

But due to the large amount of data generated by smart city initiatives, every smart city needs reliable, high-performance network connectivity.

Next-generation network infrastructure should bring together a variety of technologies, such as: **Coax, Fiber, Low-power wireless, WiFi, 5G.**

PLANNING FOR YOUR SUCCESS



Vision & Evangelism

C-level positions tasked with developing strategies for successful execution.



Processes and Best Practices

Focusing on small projects and pilots that allow for ongoing expansion.



Technology Roadmap

Start with what's feasible for your city.



Next-Gen Big Data Analysis

Data is only valuable when it's actionable.



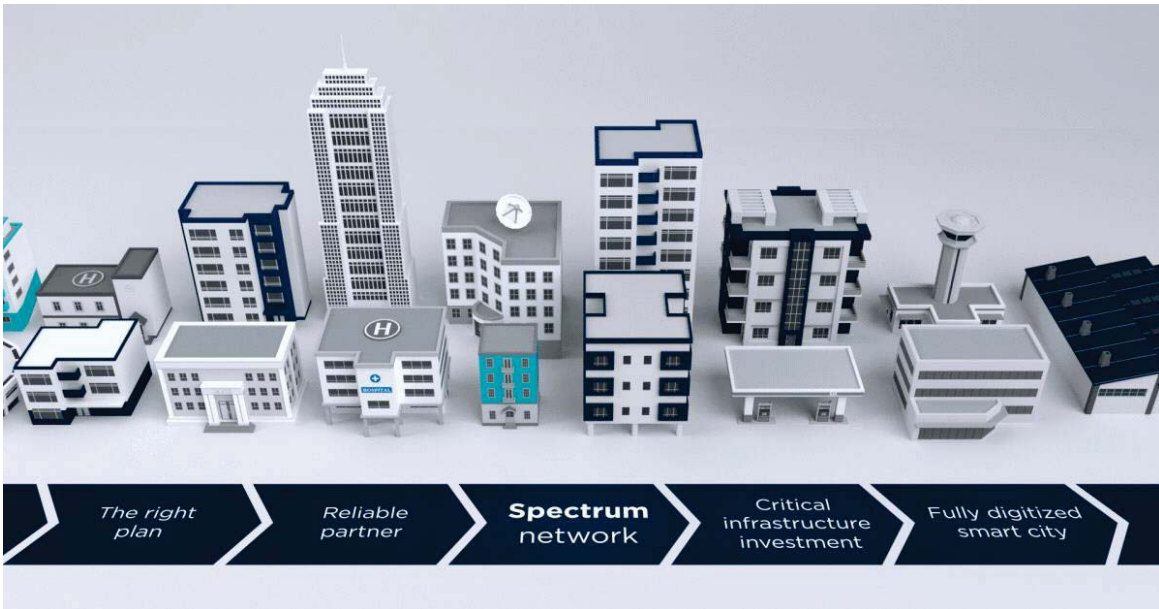
Security

Embrace the resources from your technology providers.



Don't Go It Alone

Partnering for success will accelerate the value you'll receive from your smart city solution.



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THANK YOU!

Reach out for conversations and workshops
to get started



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