

**Deloitte.**

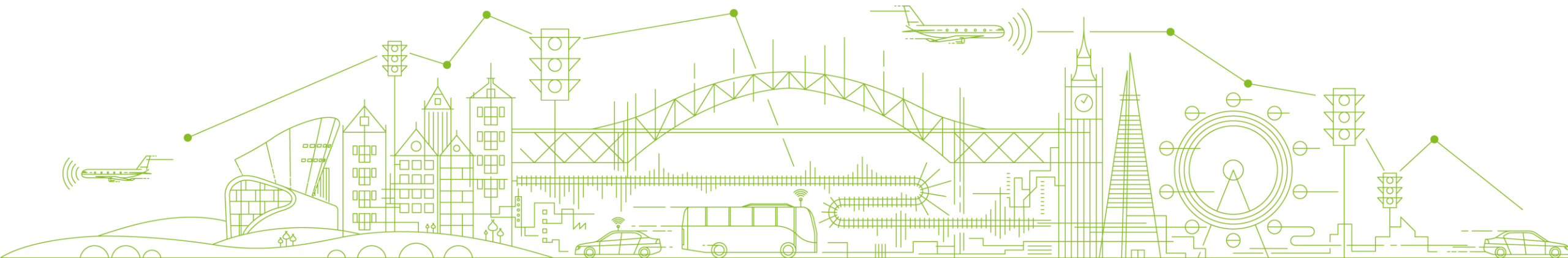


**Smart City | Smart Nation**

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<https://youtu.be/5pzt68Wvr50>

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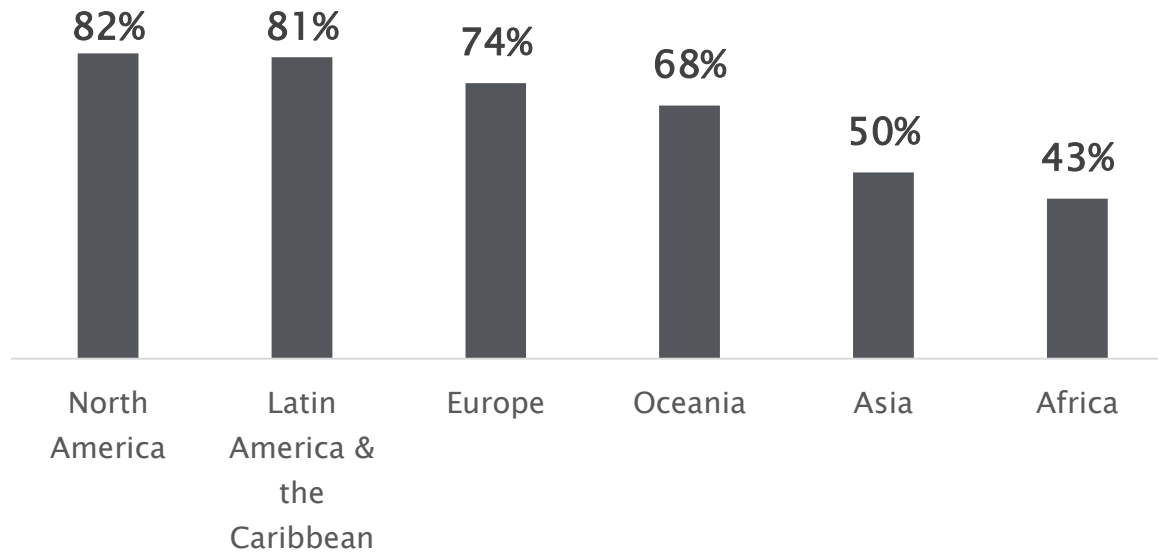
# Smart City | Smart Nation

## Point-of-View

# Smart City | World Urbanization

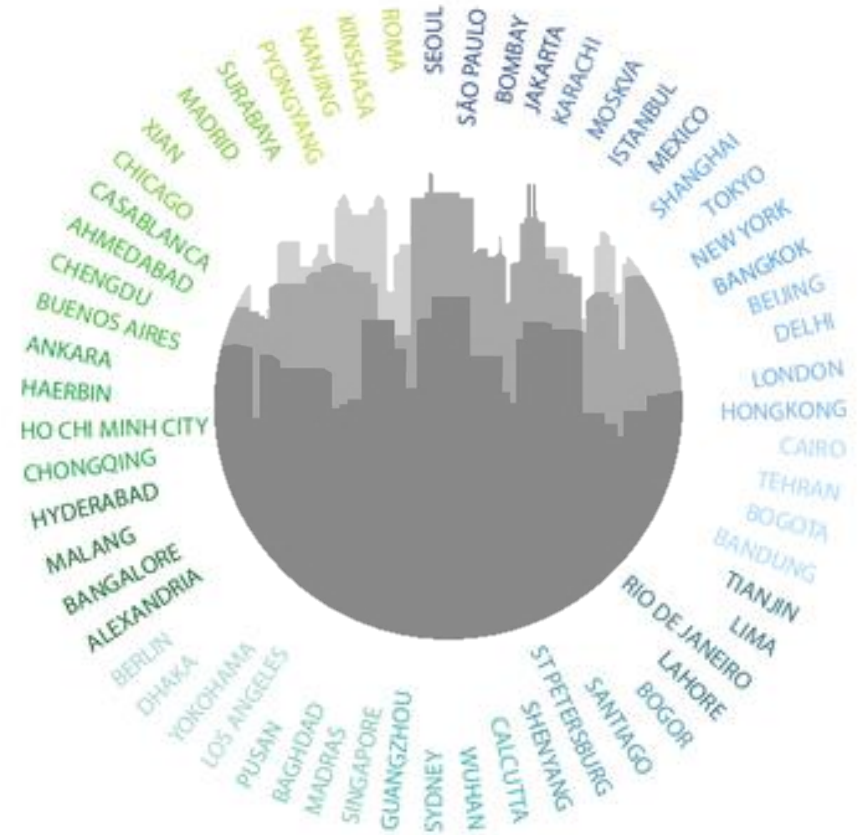
About 55% of the world's population now resides in urban areas, which is expected to grow to 68% by 2050<sup>1</sup>

### Urbanization levels (2018)



### Emerging megacities

The world is expected to have 43 mega cities by 2030, mostly in developing countries<sup>1</sup>



## Smart City | In the News

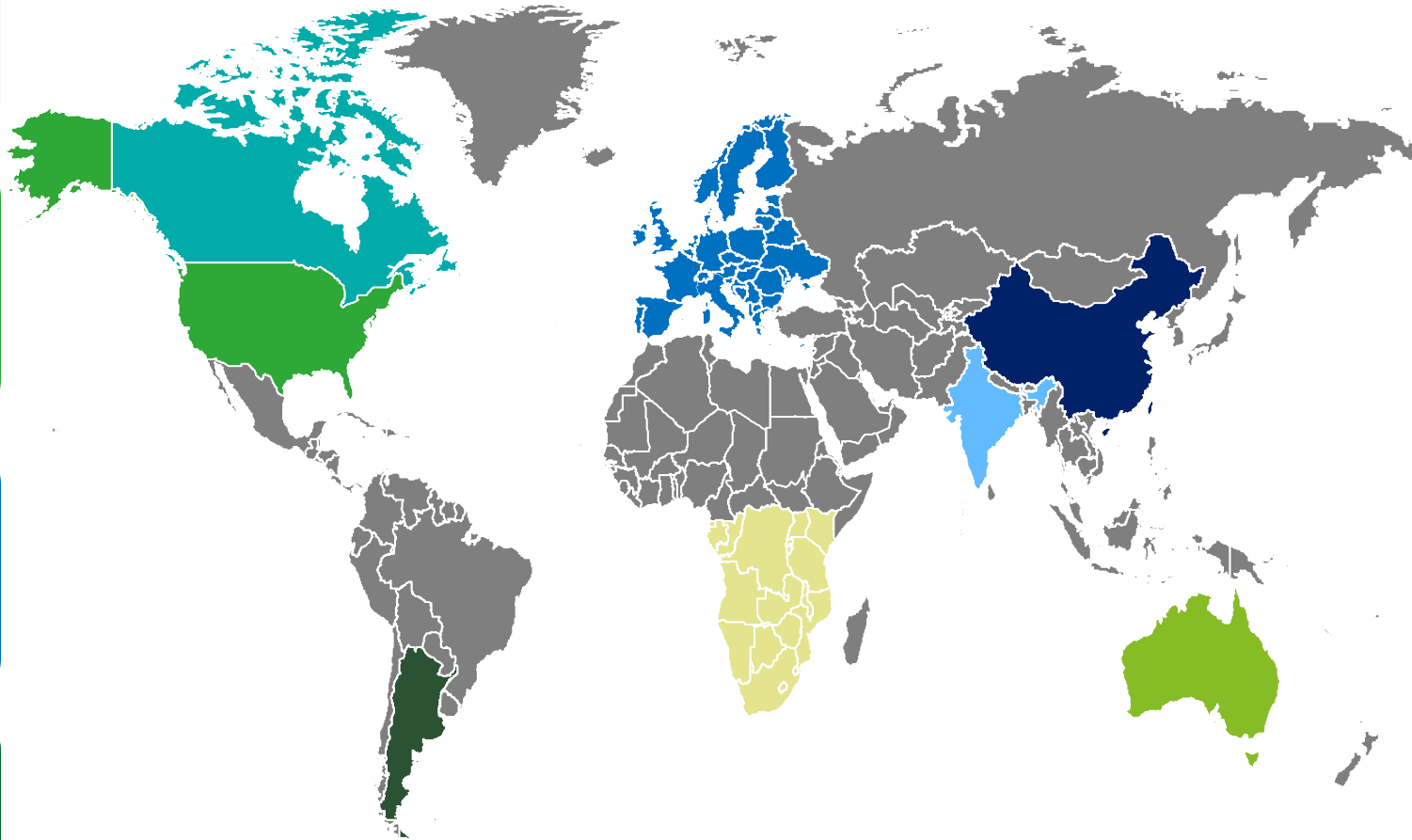
With 2.5 billion more people expected to live in cities by 2050<sup>1</sup>, governments across the globe are seeking city-level solutions for city-level problems

*"Canada launches smart city challenge"*  
- Smart Cities Connect

*"Top 24 US metro cities support smart parking to reduce traffic and carbon emissions"*- Smart Cities World

*"European investments in technologies enabling smart city initiatives forecast to reach \$19 billion in 2018"*  
- International Data Corporation (IDC)

*"Buenos Aires uses sensor driven analytics to reduce flooding"*  
- Forbes



*"China tops world in smart city construction"*  
- Ministry of Commerce, China

*"Indian Government nominates nine more smart cities"*  
- The Economic Times

*"22 City, Smart Africa Alliance signs MoU with ICT companies to accelerate PPPs"*  
- CNBC Africa

*"Australia funds 52 smart cities projects with \$28.5M AUS"*  
- Smart Cities Connect

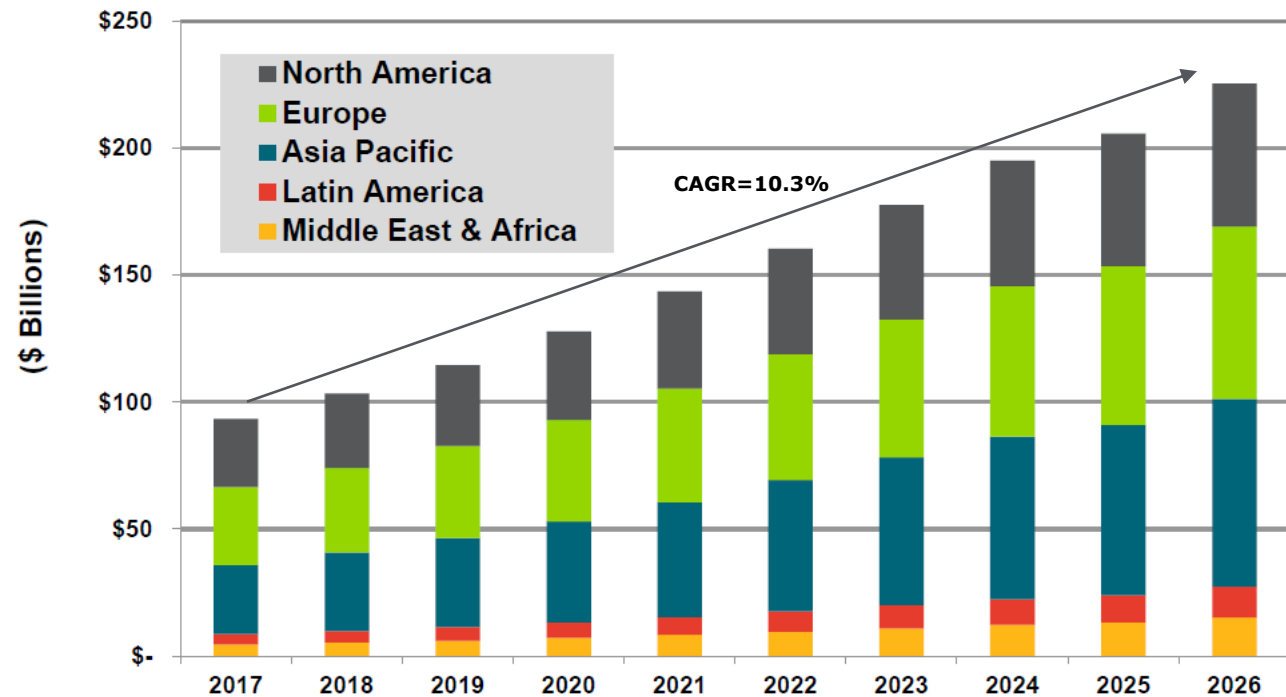
## Smart City | Market Size

Responses to market trends will continue to drive technological innovations and generate growth in the Smart City market

Annual Smart City Services Revenue by Region, Global Markets: 2017-2026<sup>1</sup>

The global market for smart city services is expected to grow from **\$93.5 billion** in 2017 to **\$225.5 billion** by 2026 at a compound annual growth rate (CAGR) of 10.3%<sup>1</sup>

On a cumulative basis, the market revenue is anticipated to be worth **\$1.5 trillion** between 2017 and 2026



<sup>1</sup>Navigant Research, Smart Cities Services Market Research Report, 1Q 2017

## Smart City | **Key Drivers**

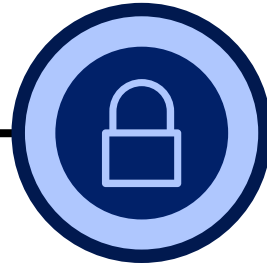
Governments are turning to Smart City initiatives to address a convergence of increasing pressures around socio-economic, resiliency, and citizen-engagement issues



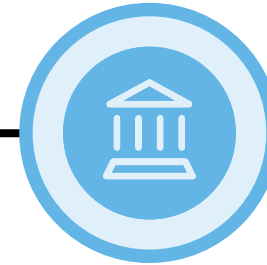
Unprecedented  
Urbanization



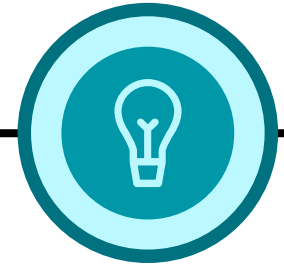
Trending  
Green



Safety and  
Security



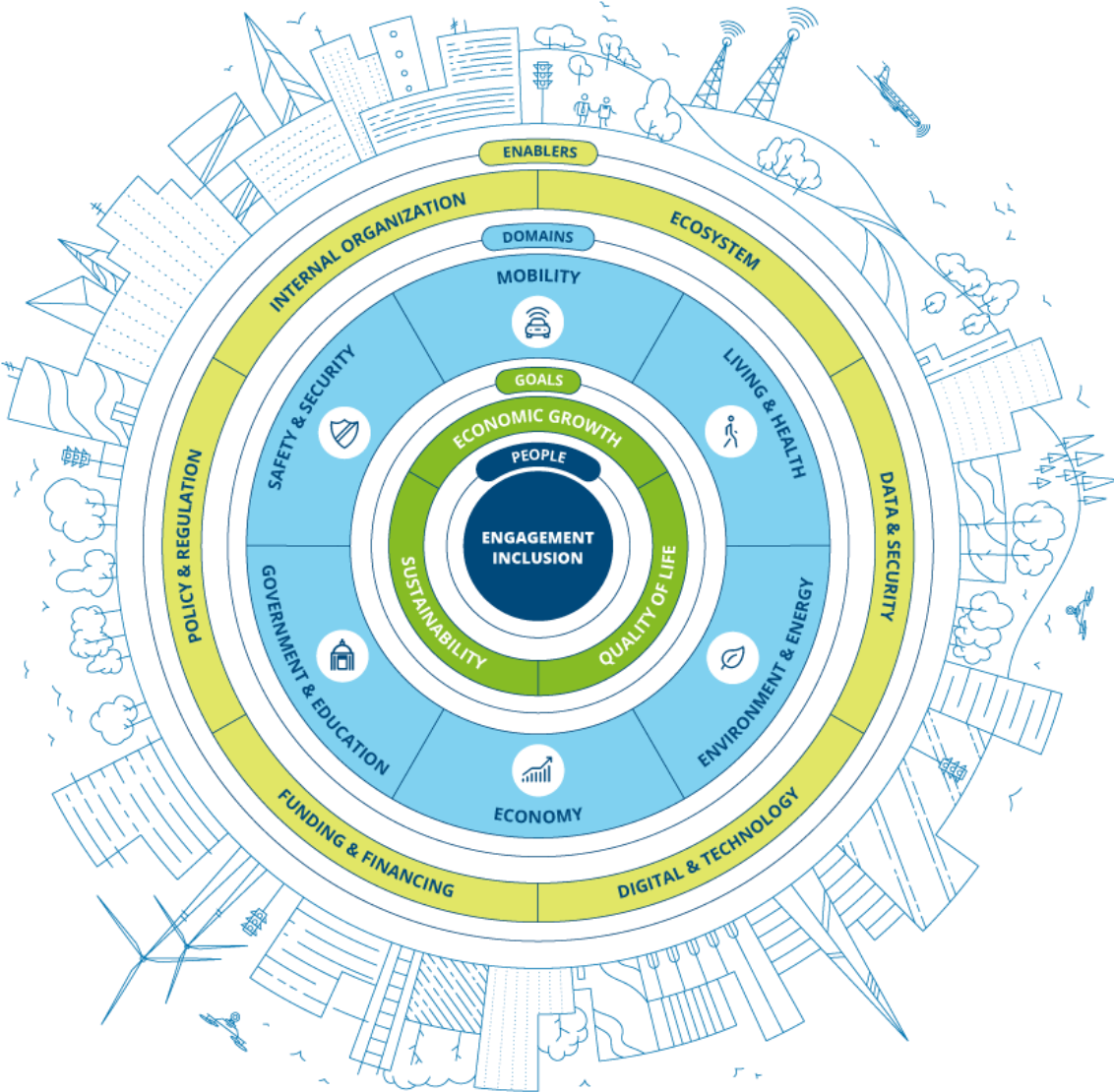
Civic  
Engagement



Disruptive  
Technology



# Smart City | Deloitte 360° Smart City Framework



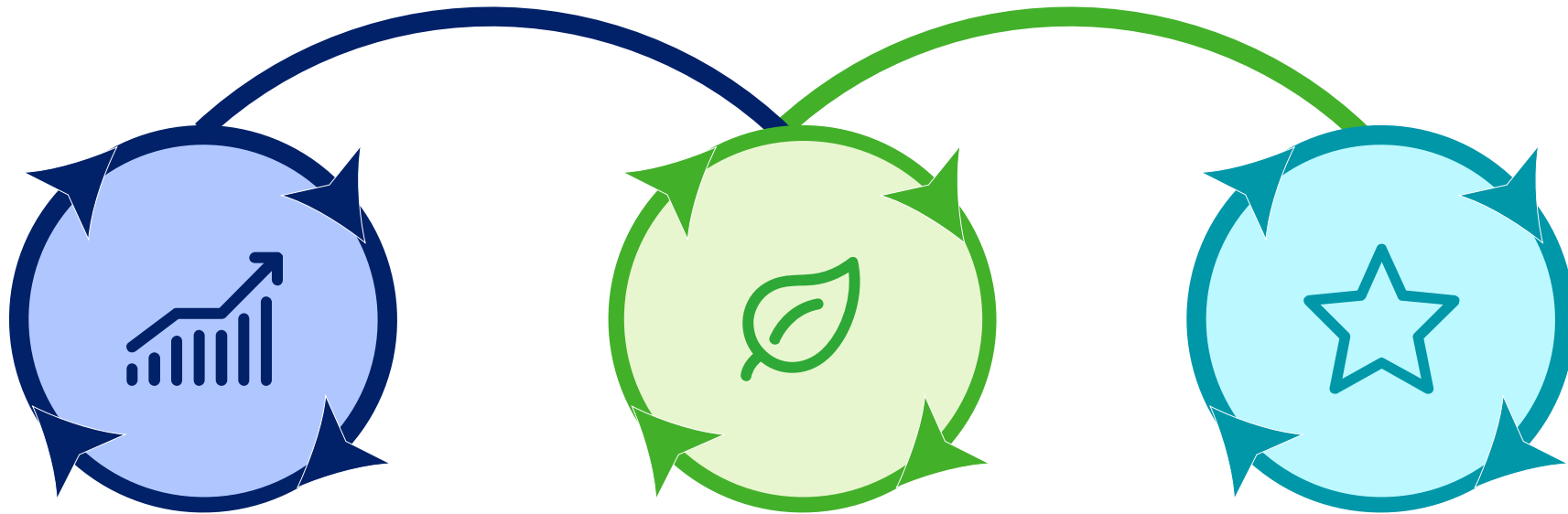
A comprehensive view is needed to support the inter-related nature of living, working, learning, and providing services to citizens in an urban environment.

Deloitte developed a 360° Smart City Framework, which looks across a city's operations to use technology to improve outcomes.



## Smart City | **Goals**

A city is smart when investments in human and social capital, traditional infrastructure, and enabling and disruptive technology fuel sustainable economic growth and a high quality of life



### Economic Growth

- Implement policies that promote sustainable economic growth, while creating jobs in the digital, circular economy
- Attract and retain companies and prepare the workforce for the future
- Encourage entrepreneurship and innovation

### Sustainability

- Manage energy and natural resources wisely
- Recycle and reuse assets
- Reduce carbon footprint
- Drive toward having cleaner air and less noise

### Quality of Life

- Foster diversity and inclusivity
- Improve public education, health, and safety
- Enable constituent engagement

# Smart City | Domains of Interest

A successful business architecture is enabled by innovation within and across domains



## Economy

Digitization and disruptive technologies are affecting many current jobs. Cities must have a strategy to address jobs of the future, including what is considered industry 4.0: financial technology, the future of food, the future of retail, and the future of tourism and leisure.



## Environment & Energy

Cities must push toward a wiser use of resources, from implementing sensors that detect leakage to preserve natural resources to using behavioral economics and gamification to encourage citizens to make thoughtful decisions on resource use.



## Government & Education

Data analytics help cities develop insight-driven policy making, track performance and outcomes, enable constituent engagement, and help government efficiency. Virtual learning, digitization, and augmented reality lead to unbundled, personalized, and blended education.



## Living & Health

Cities encourage connected communities through constructing smart buildings, innovating in the healthcare sector, and using data to monitor and enhance social programs. This connection contributes to an improved quality of life and sustainability. Through nudging, cities promote healthier lifestyles.



## Safety & Security

Drones, wearable computing, facial recognition, and predictive video help fight crime and protect public safety. Agencies preempt crime by tapping into data, including social media and crowdsourced data. Secure platforms, clear governance, and smart access help ensure that privacy protocols are maintained, and data is safeguarded against cyber threats.



## Mobility

Shared mobility, autonomous vehicles, dynamic pricing, the internet of things (IoT), and advanced analytics enable more people and goods to move faster, safer, cheaper, and cleaner. More people using bikes or walking helps to encourage healthier lifestyles.

## Smart City | **Creating Value across Levels**

A successful Smart City works on solutions with the ecosystem that create value at multiple levels for different stakeholders



### **Societal**

The city actively tries to solve societal issues together with the ecosystem of citizens, start-&scale-ups, research institutes, private sector, and others

### **Business**

Solutions that work and are developed with businesses will be scaleable to other cities

### **Economic**

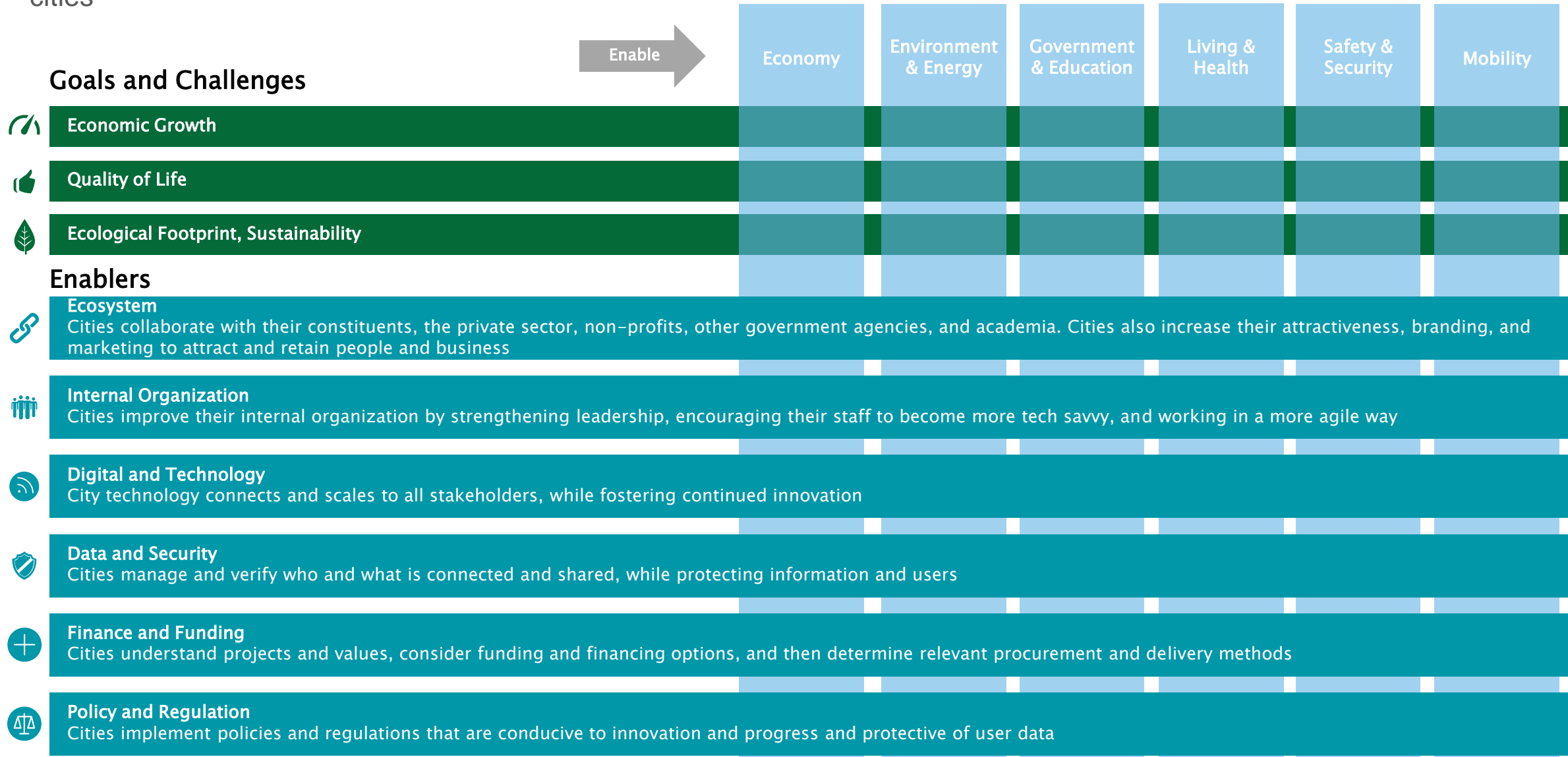
By working on societal issues with the ecosystem, scalable solutions not only help create new business. These will help address the the needs of the digital economy, creating new jobs and employment and thus economic value to the city and region

### **Research**

All new solutions and interventions create new data and insights that drive new research and development by academia and R&D labs of business, thus fueling new innovations

# Smart City | Enablers

An integrated, thoughtful approach to solutions across all sectors of society enables smarter cities



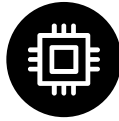
# Smart City | **Multiple Stakeholders**

Unprecedented technology development creates a perfect storm. This storm can be perceived as a tsunami, but also a window of opportunity to help solve wicked problems

> 10 years

Emerging

Maturing



Quantum Computing



Virtual Reality and Augmented Reality



Blockchain and Smart Contracts



Commercial Drones



Sensors and IoT



Three-Dimensional Printing and Additive Manufacturing



Cloud Computing



Social media and Digital Platforms



Enterprise Systems



Human Augmentation  
Brain-Computer  
Interfaces



Social Robotics



Conversational  
Computing and Virtual  
Assistance



Artificial Intelligence and  
Cognitive Computing



Driverless Vehicles and  
Autonomous Things



Algorithmic Automation



Big Data Analytics



Mobile Endpoint Devices  
and Apps



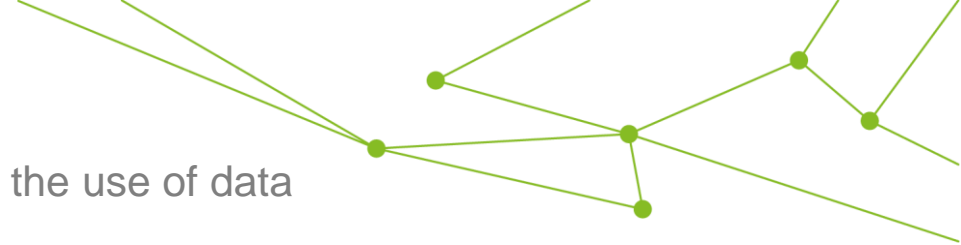
Internet





# Smart City | **Smart City Development**

The key to developing Smart Cities is combining changing human behavior with the use of data and innovative technology



**Meaningful**  
Smart solutions address the real needs of city users and are perceived as meaningful

**Durable**  
The combination of easy-to-use and meaningful solutions results in lasting changes of behavior

**Easy to Use**  
Smart solutions are simple and intuitive. They are designed to be adopted naturally, even to the extent that people are no longer aware of them

-----  
**Technology**

-----  
**Data**

-----  
**Constituent Experience**  
-----

**Inviting**  
Provide people with the incentive to change behavior voluntarily, because they are perceived as beneficial

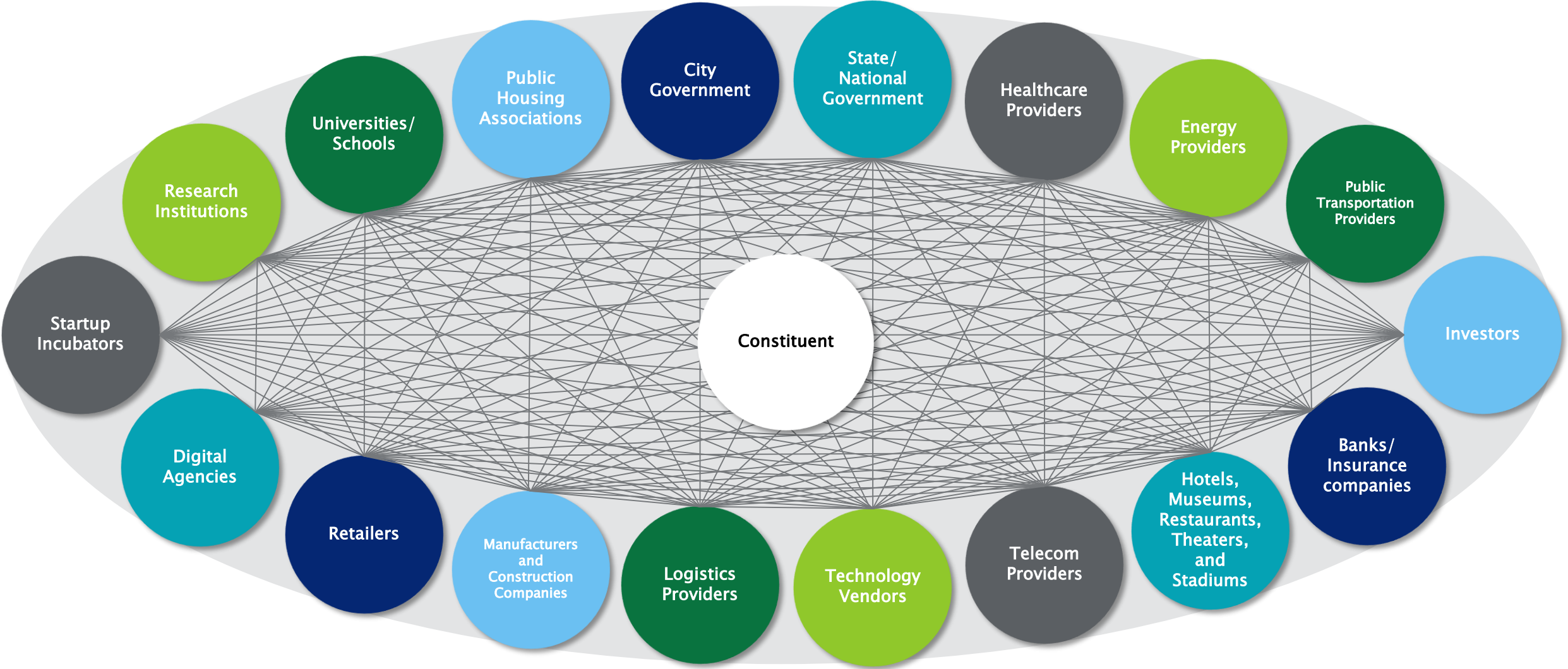
**Consistent**  
Smart solutions are resilient and always available. People do not have to be concerned about them

**Scalable**  
Smart solutions can be scaled from small pilot to full scale easily



# Smart City | Multiple Stakeholders

A Smart City is composed of many stakeholders working together. The constituent is at the center, indicating that successful Smart Cities are always constituent-centric



# Smart City | **The Six Roles of City Government**

Smart Cities require a government that is able to combine six roles and make deliberate choices on the mix of roles through which it engages challenges

## **Strategist and Advocate**

The government as strategist and advocate sets out a clear direction for the city. What is our vision as a Smart City and how do we want to realize it? It is an active advocate of the city as an innovative hub for new

## **Solution Enabler**

The government as solution enabler builds ecosystems by gathering parties that normally do not work together to deliver creative new solutions that neither of the parties could have realized on its own.

## **Steward**

The government as steward creates an environment in which new businesses and smart solutions can emerge and grow, for example, by providing open data and by facilitating startups.



## **Innovator and Investor**

The government as innovator and investor applies the principles of innovation in the internal organization and processes. It stimulates innovative solutions by acting as a customer.

## **Regulator**

The government as regulator creates or changes laws and regulations to allow new business models and disruptive entries, simultaneously protecting the interests of constituents and users of the city.

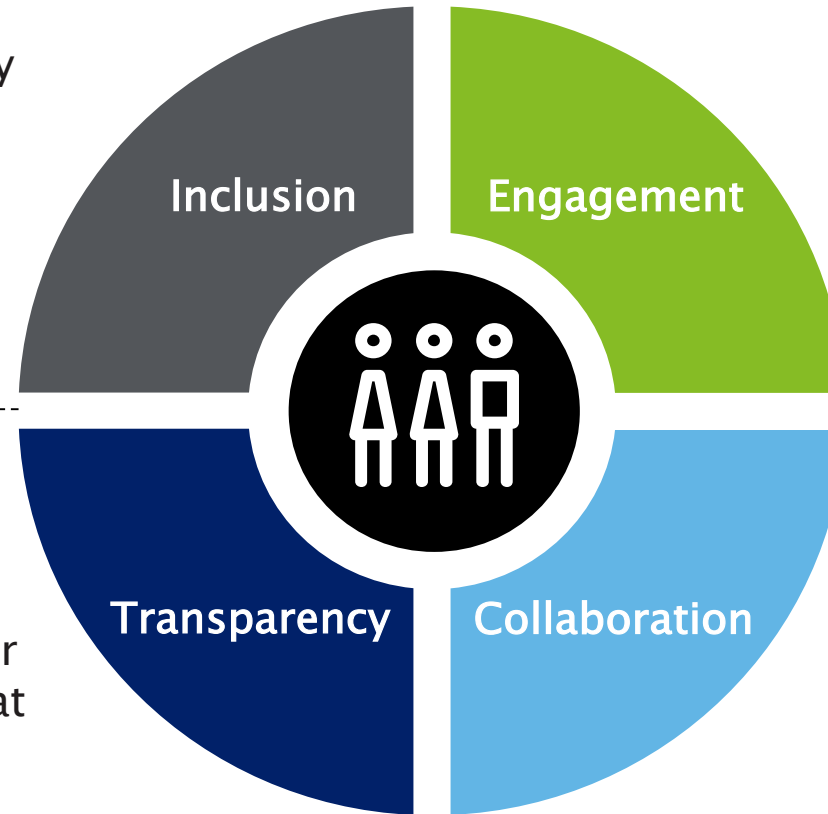
## **Connector and Protector**

The government as connector and protector secures modern transportation infrastructures, energy grids, and digital networks. It sets standards and takes measures to make these vital infrastructures resilient and safe.

## Smart City | **Constituents**

Smart-City initiatives should be focused on the constituents, as their active engagement and collaboration throughout the Smart City journey leads to effective, constituent-centric solutions

**Benefit all constituents** from every neighborhood and include those who might not traditionally be heard in the decision making process



**Encourage constituents to actively engage and contribute** in their communities and local government.

**Improve operations and transparency for constituents**, supporting new ways for them to connect with and understand their government and the decisions that it makes

**Empower constituents with right data and tools** so that constituents can become more collaborative and participative

**Streamline back-office operations and constituent services**, avoiding duplication and promoting integration, while ensuring data security and compliance

# Smart City | Thinking about Smart City Initiatives

Smart City initiatives have faced many challenges, in part because of an over-emphasis on left brain, product-centric thinking and individual point solutions

- **Designs and plans initiatives** based on Smart City objectives
- **Allocates and organizes** Smart City initiatives across relevant stakeholders
- Takes into account broader **long-term planning** considerations and the needs of the city

Practical Processes Planning

Analytical Logical Fact Based Quantitative

- Uses **statistics and data** to analyze the city's problems and identify solutions
- **Collects information to monitor and assess city performance** and progress in achieving goals



- Focuses on **connecting with customers**, like constituents and tourists, and listening to them in order to understand their emotions and needs
- **Senses and responds** to peoples' emotions and opinions

Relational Emotional Interpersonal

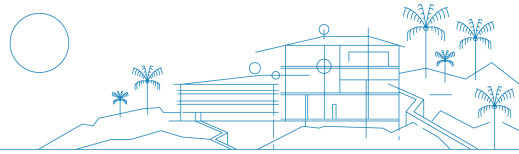
Holistic Experimental Intuitive Integrating

- Takes into consideration the **bigger picture**, and the **integration** of 'smart' components across the city
- Involves **experimental thinking** and the use of **creativity** to explore solutions and solve problems

## Smart City | Making a Difference in a Smart Way

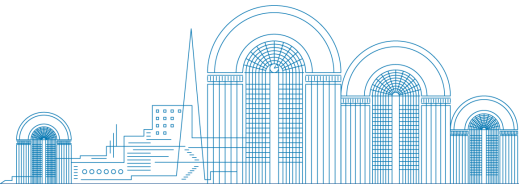
A Smart City can enhance the quality of life for citizens and provide an efficient and sustainable urban living

### Orange County United States



The city implemented the myOC web and mobile-enabled portal. It also streamlined the service request process for residents and modernized the way the public works department manages requests and resources. **The department is now able to add quantitative analysis to support executive-level decisions regarding key partnerships, resourcing, and organizational structure to efficiently deliver high-quality customer service.**

### Buenos Aires Argentina



The city implemented an IT solution to streamline information flow. The omni-channel platform was launched for citizens to register citizen complaints directly or via connected social media. **The average time to resolve a complaint plunged 93% without additional budget, allowing the city to fix more problems in less time.**

### Cascais Portugal



The municipality integrated multiple domains into a city-wide managed services command center. The City Command Center serves as an innovative hub for city operations. **Anticipated savings across domains include: for mobility, 10% to 27% impact on citizens rates; for waste management; 10% to 20% energy savings and 20 to 40% operational savings; and for power management, 20 to 30% energy savings and 25 to 35% operational savings.**

### London United Kingdom



The city got economists and a public-sector team together to investigate Transport for London's open-data policy. **The researchers found a range of benefits, from simply saving passengers time to improving safety. The research also showed the potential economic benefits to be worth £130 million every year to the London economy.**

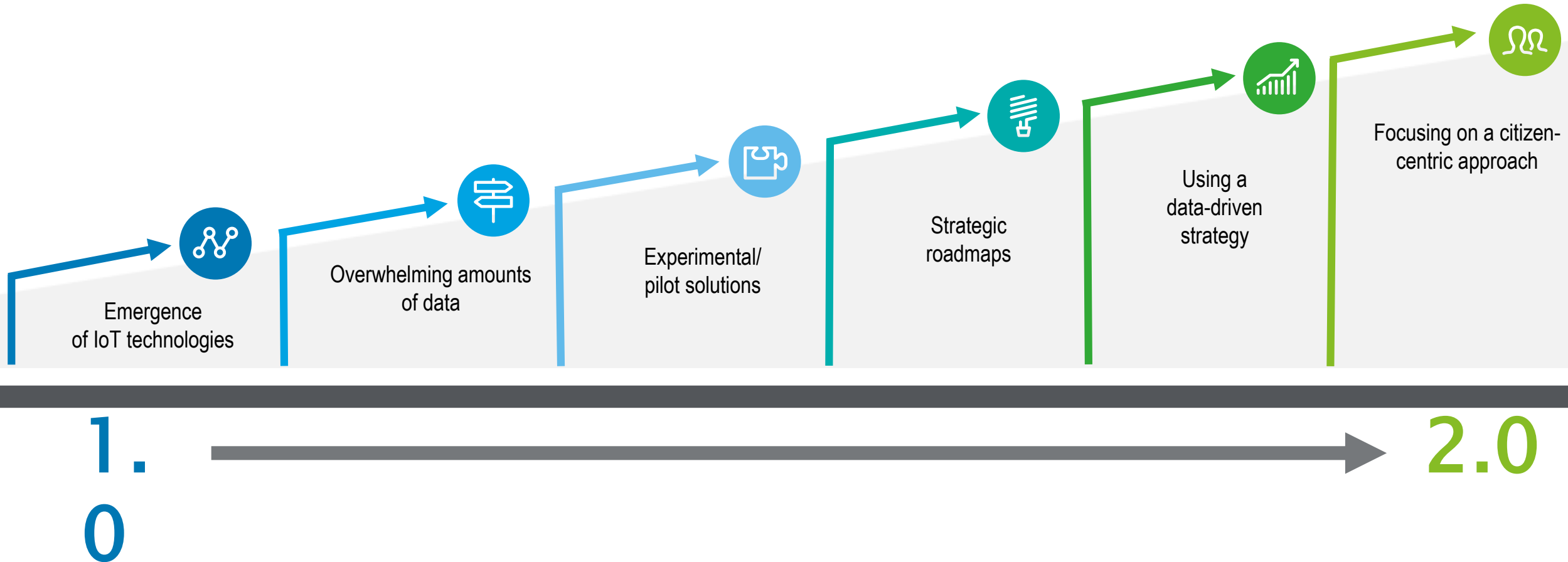


# Smart City | Smart Nation

## Smart City 2.0 and Success Factors

# Smart City | **The Evolution**

The transition from Smart City 1.0 to 2.0 is a journey towards citizen-centricity





# Smart City | **Rapid Transformations**

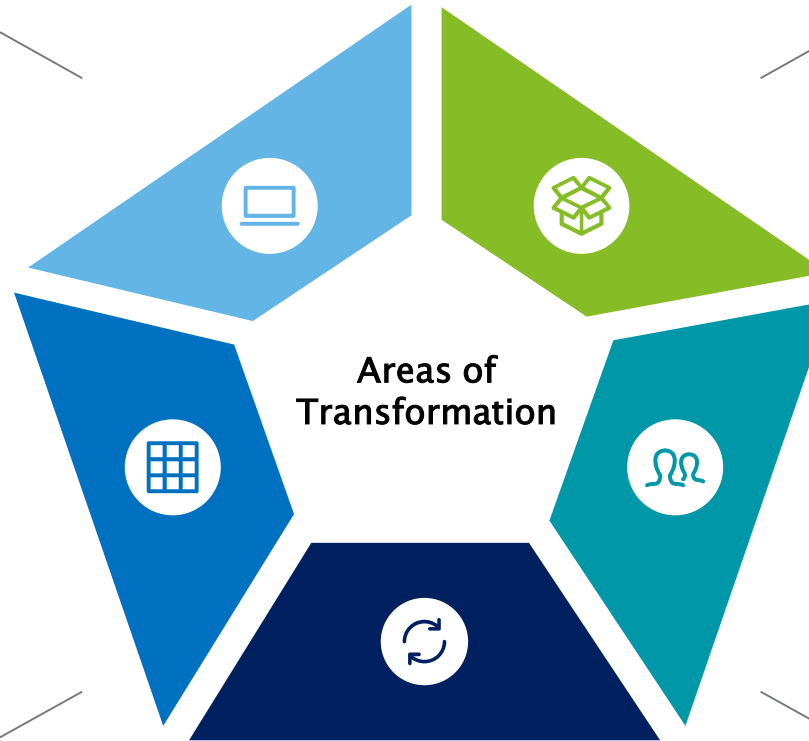
Expectations and behaviors are changing rapidly

## Hardware to software

The emphasis is shifting from pure physical infrastructure to the software that enables improved services and analysis of valuable data streams.

## Point solutions to platforms

Platforms provide effective, smooth interoperability and flexibility to scale and extend solutions across the Smart-City ecosystem.



Lack of product differentiation, rising consumer expectations, and competitive pressure calls for a shift toward a service-driven approach.

Cities require not just solution providers, but trusted advisors that can enable a holistic, integrated approach across city domains.

## Products to services

## Providers to trusted advisors

Standby consumer to  
empowered constituent

The relationship between government and society is changing. Constituents are moving from consumer to prosumer, co-creation is becoming more of the norm, and participatory government is taking hold.

## Smart City | 2.0 3Ds

Smart City 2.0 focuses on enhancing the constituent experience by operating at the intersection of the 3Ds: data, digital, and human-centered design





# Smart City | Smart Nation

## Funding and Financing

# Smart City | Macro Drivers of City Development

There are four main drivers of urbanization

1.5 million people per week moving to cities

65%+ of world population living in cities by 2050

Paris Agreement—global emissions reductions

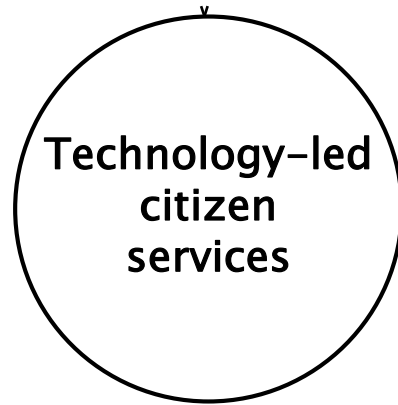
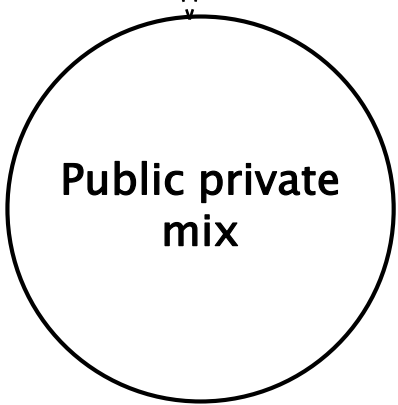
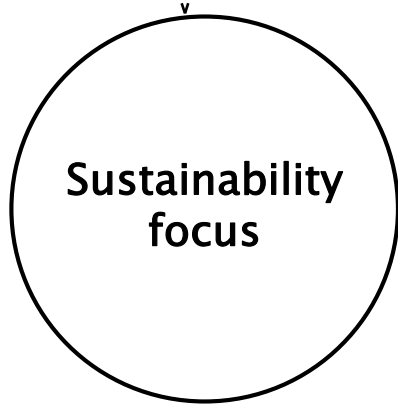
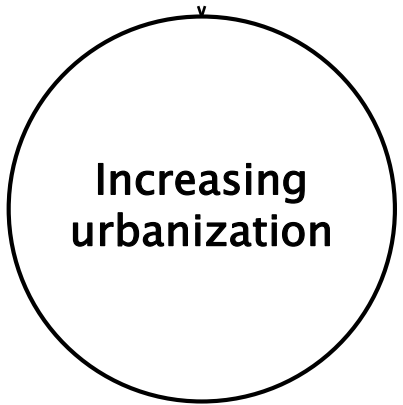
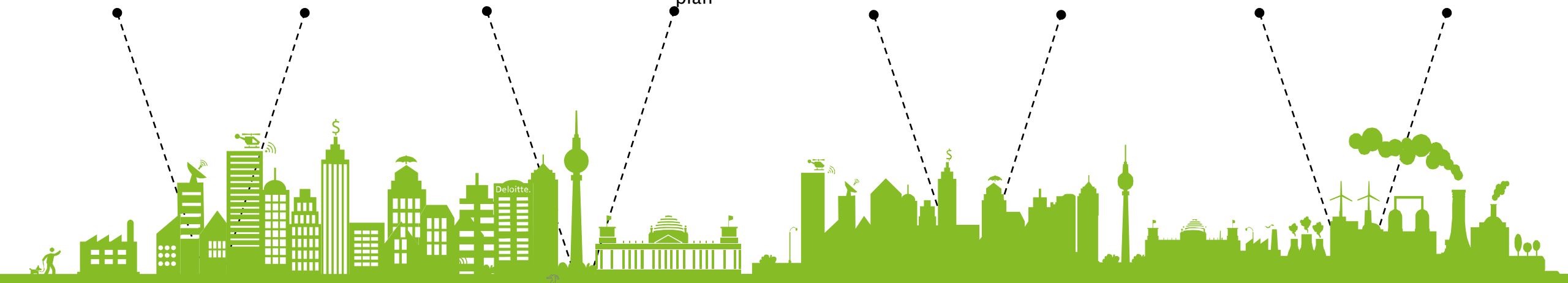
United Nations (UN) Sustainable Development Goals (SDG)—clear, implementable plan

Public funding gap

UN SDG 17—private sector participation

Citizens increasing use of technology

Mix of technology and traditional infrastructure



# Smart City | Financing Challenge



## Public infrastructure financing challenge

- Revenue models—beyond exchequer funding
- Value capture—joined-up thinking
- Financing structures
- Procurement structures
- Value for money



## Smart city financing challenge

- Increased technology component—shorter-term infrastructure
- Varying attractiveness to lenders and investors
- Revenue models not clear
- Evolution from pilot to full rollout—different players required
- Determine value of data/IP asset created
- Blending private finance types together

# Smart City | Model for Delivering a Successful Sustainable Infrastructure Project

1

2

3

## Understand project and value

Understand business model	Understand value generated
Does funding gap exist?	Direct value capture
Risk transfer potential	Indirect value capture
Return available	Asset recycling to fund investment



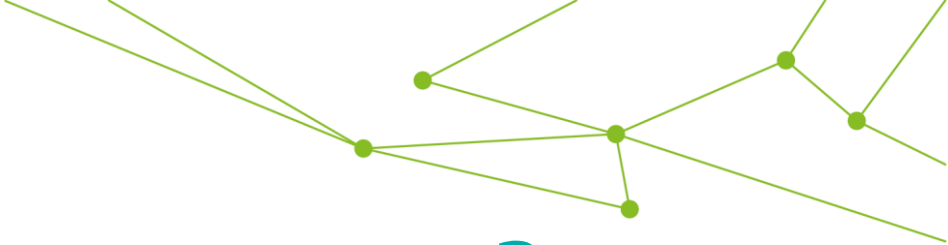
## Consider funding & finance options

Public funding
Private financing
Monetize value



## Determine relevant procurement & delivery method

Public provision
Operating contracts
Joint venture
Long-term lease
Public-private partnership
Franchising
Privatization



# Smart City | **Determining the Revenue Model**

A clear revenue stream is critical if private financing is pursued

## Who pays...

### Government/public

- Often the first choice historically
  - Payment for service and/or share of savings from efficiencies achieved
  - REFIT/RESS

### End users

- Will users pay for the service?
  - Direct payment or indirect payment for service (e.g., utility model)

### Third parties

- Money the project earns indirectly through another source
  - Ancillary income, new innovation rollout to new markets
  - Revenues not linked to service (e.g., advertising space)

### Partial/indirect government support

- Revenue guarantees (minimum levels)
- Pricing support
- Gain sharing (e.g., financing savings, efficiency gains, carbon reduction)



## Smart City | **Value Capture**

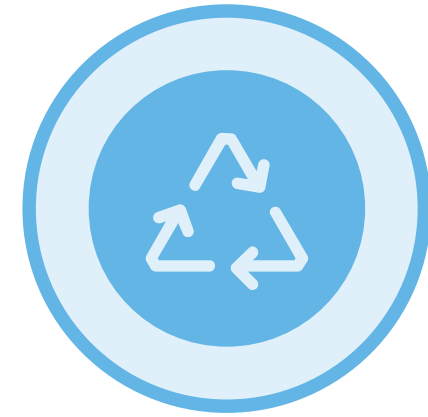
Value capture includes capturing the value of gains from an infrastructure investment and directing those funds to infrastructure investment



**Direct value  
capture**



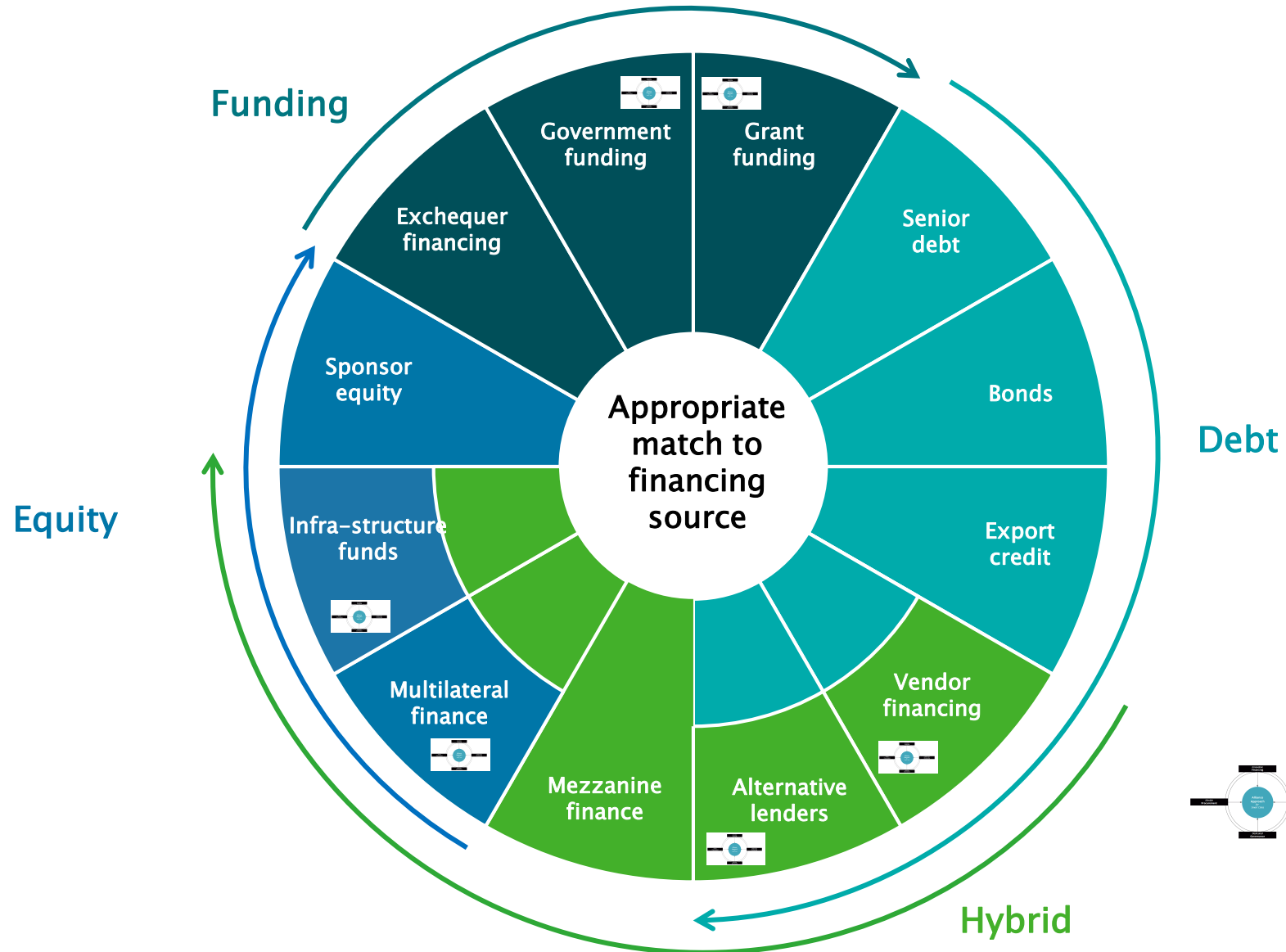
**Indirect value  
capture**



**Asset  
recycling**

# Smart City | Supply of Infrastructure Finance

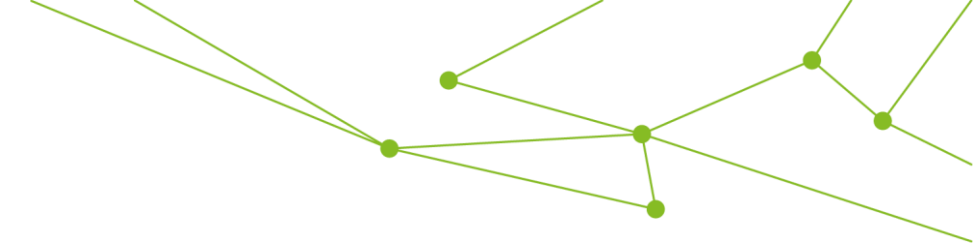
There are multiple sources and types of finance available



Alliance Approach - Key finance considerations

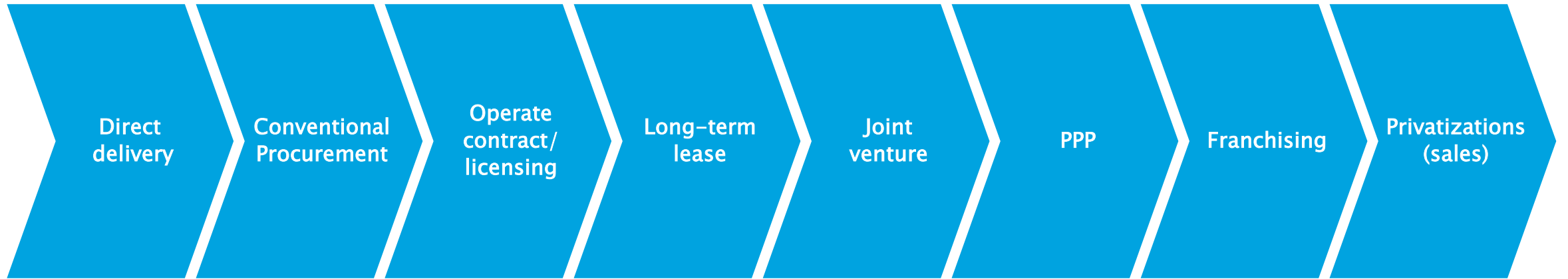
# Smart City | Varied Procurement Solutions

There are different levels of private sector participation



Public

Private



Risk transfer











Innovation



## Smart City | Leveraging Public Capital

There is a difference between a program and project perspective

-  Scaled investment in project preparation and pipeline development  
Project-preparation facilities and technical assistance increase the “bankability” of projects
-  Partial revenue support
-  Financed incremental cost support
-  Increased grants—emerging technologies, non-public retrofit
-  Use of guarantees—revenue, loans
-  Secondary market for sustainable infrastructure projects—anchor syndicated loans
-  Public policy insurance
-  Public equity/subordinated equity fund

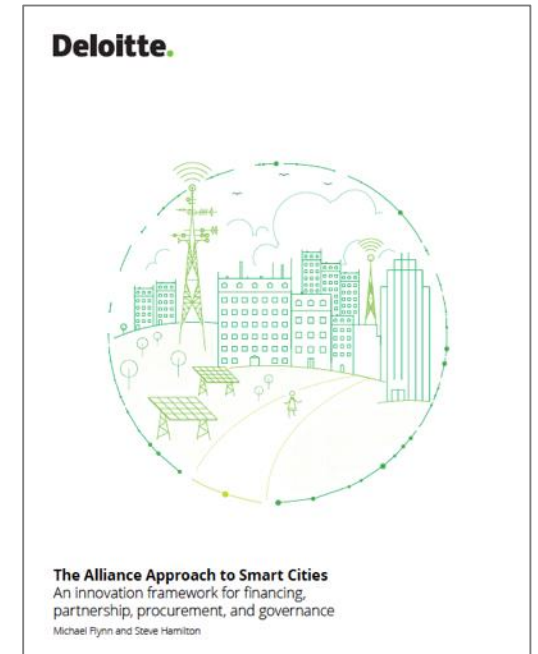
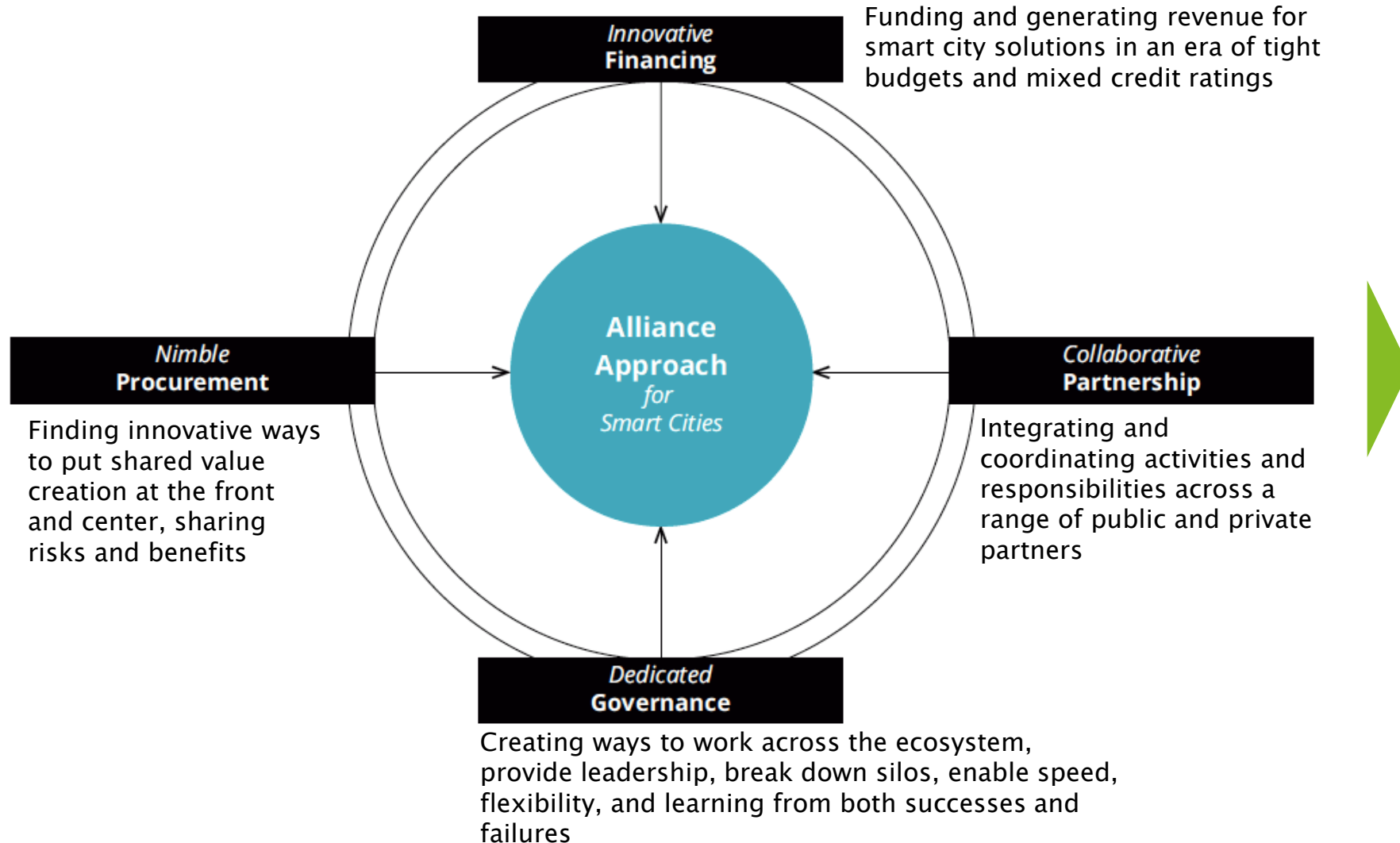


# Smart City | Smart Nation

## The Alliance Approach

# Smart City | **The Alliance Approach**

A more collaborative approach for urban financing, partnerships, procurement, and governance



# Smart City | **The Alliance Approach**

How do we get started?

## Innovative Financing

- Although traditional models will remain central to Smart City programs, new models of innovative financing expand resourcing opportunities.
- These models include: vendor finance, innovation funds, mini-bonds, public-private partnerships (PPP), land-value capture, tax increment financing, and guarantees.

## Collaborative Partnership

- Participation from multiple vendors and government agencies is the new normal, including new business models, gain-sharing agreements, and performance-based contracting.
- Partners should be fully involved, from the start, in planning and designing the project. And regulators, while assuring public safety, should seek to enable partnership and

## Dedicated Governance

- A person or entity should be designated as Smart City program lead, with designated authority.
- This person or entity will work directly with leadership across the organization, breaking down siloes to develop a shared vision for planning, creating value, and developing partnerships.

## Nimble Procurement

- Requests for information (RFI) should include an outline for partnership memoranda of understanding (MOU) and commitments.
- RFIs should encourage partnership, require technology and solution interoperability, and promote business models that focus on shared value creation with the public sector.






# Smart City | Smart Nation




## Maturity Assessment and Benchmarking Process














# Smart City | Capability Framework (1/5)

Successfully building a Smart City requires a clear strategy and maturity in seven capability dimensions

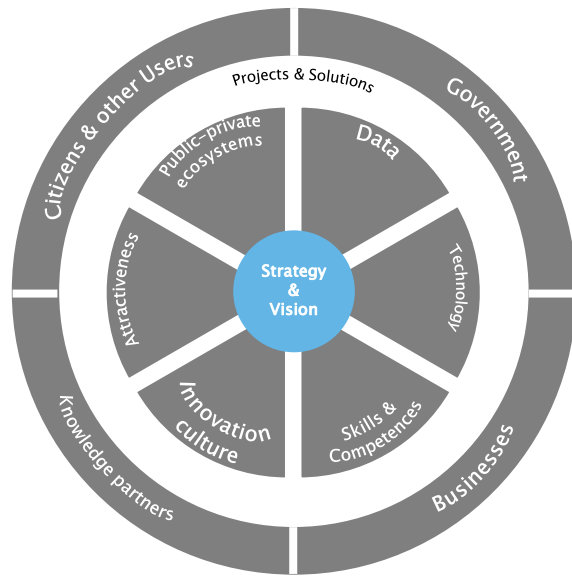
- Goals**
-  Economic growth
  -  Quality of life, a good city to live in
  -  Ecological footprint, sustainability

- Challenges**
-  Social cohesion, inclusiveness
  -  Secure digital environment, privacy
  -  Resilience



-  Smart Mobility
-  Smart Safety
-  Smart Energy, Water & Waste
-  Smart Buildings & Living
-  Smart Health
-  Smart Education
-  Smart Finance
-  Smart Tourism & Leisure
-  Smart Retail & Logistics
-  Smart Manufacturing
-  Smart Government

# Smart City | Capability Framework (2/5)



“Smart cities have a clear vision of what they want to be and a strategy to realize this ambition. A clear vision is required as effective counterweight to technology push.”

Source: Smart Cities – A Deloitte Point of View, Version 1.0

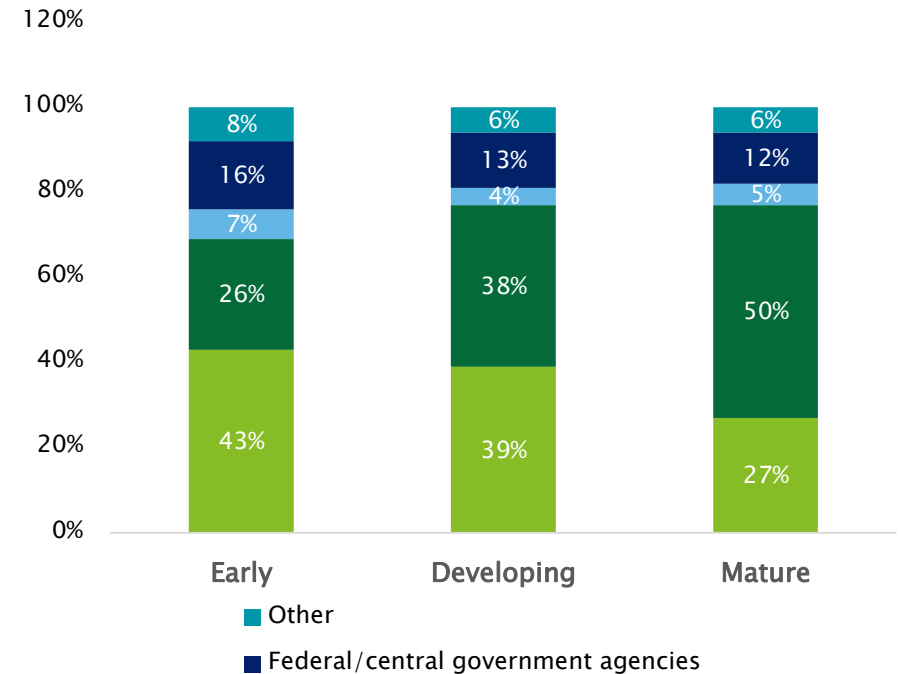
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**Strategy & Vision** – Smart Cities have a clear vision of what they want to be and a strategy to realize this ambition. Each city has its own strengths, challenges, and opportunities. No two cities are alike. A Smart City harnesses the power of technology and social innovations to increase existing strengths, to solve persistent challenges, and to create new successes by leveraging opportunities. Having a clear economic and social vision allows a city to focus its energy and resources on what brings value to the city most, not only in the short term but also in the long term. A clear vision is the only effective counterweight to the technology push of vendors. Cities that lack such a vision are likely to become a living laboratory for vendor solutions with piecemeal successes.

One of the exiting aspects of disruptive technologies is that no one can predict what the impact of a new technology will be and when it will happen. Although there is a common feeling that something is going to happen, real transformations often have many unexpected elements. For that reason, Smart Cities need thinkers who dare to ask the out-of-the-box “what if” questions. What if health care breakthroughs cause people to reach an average age of 120? What if the technology to store electricity becomes 100 times more efficient and cheaper? What if the self-driving car really takes off? What if no one has a car of his or her own?

## Digitally maturing organizations have greater user focus

Drivers of digital transformation by maturity



Source: The journey to government's digital transformation, Deloitte University Press

## Smart City | Capability Framework (3/5)



**Data** – If there is one ingredient that makes a city smart, it is data. The combination of various sources of fine-grain data allows a city to develop real insight into societal challenges like sustainability, mobility, health, and security. This insight can be used to make better and smarter data-based decisions. The ability to extract data from a wide array of sensors, in public spaces, in transportation systems, in energy grids, and in all kinds of consumer devices, provides real-time insight into transportation flows, energy flows, pollution, and human behavior. It is not sufficient to use these data sources in isolation of each other to create islands of smartness. A real smart city emerges when data is combined from multiple sources that have traditionally not been used in combination.

**“If there is one ingredient that makes a city smart, it is data.”**

**Technology** – Availability of state-of-the-art and open networks for energy and digital connectivity are the foundational infrastructure of Smart Cities. Energy grids need to be bidirectional, facilitating distributed electricity generation by many small-scale units close to consumers. Networks for digital connectivity are required in three different forms:

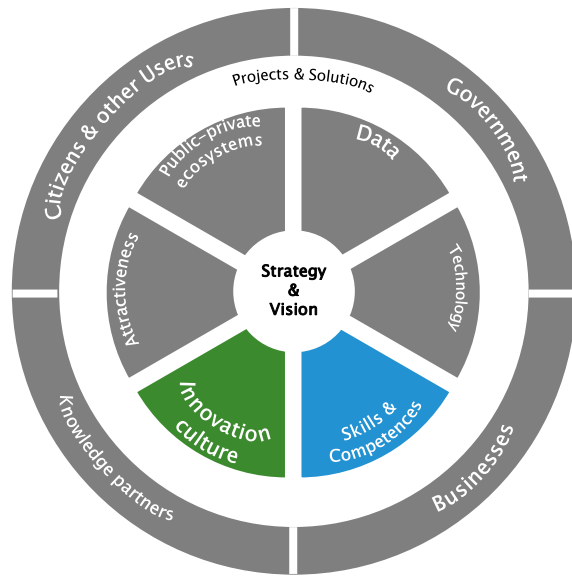
1. Fixed broadband networks, facilitating gigabit connections
2. Mobile broadband networks, 4G and 5G networks providing ubiquitous internet access to people using mobile devices
3. IoT networks, characterized by long range (several kilometers), low bandwidth, and very low energy usage

In addition to networks, Smart Cities require the massive use of sensors. Increasingly, vendors of objects that are used in public spaces will equip their products with multipurpose sensors. The challenge for the city is to manage standards and protocols to establish a homogeneous and well-built environment.

Sensors alone are not sufficient though, a city needs a mature software IoT platform to manage the sensors, to receive and process data, and to make this data available to smart solutions through application program interfaces.

Refer to chapter 6 for detailed information about the foundational infrastructure and technology on which Smart Cities are built.

# Smart City | Capability Framework (4/5)



**Skills and competences** – The use of disruptive technologies for innovation requires new skills and competences in the city, in particular, related to data. The new job of data scientist has been named as the job of the 21<sup>st</sup> century and Smart Cities need a lot of them. Furthermore, as smart solutions aim at changing the behavior of people, cities need experts who understand the mechanisms of human behavior and changing human behavior (e.g., by using concepts like gamification).

“As smart solutions aim at changing the behavior of people, cities need experts who understand the mechanisms of human behavior.”

According to Deloitte Research:

- 90% of public sector leaders say that workforce issues are a challenging area to manage in their agency’s digital transformation.
- Only 34% say their organization has sufficient skills to execute its digital strategy.

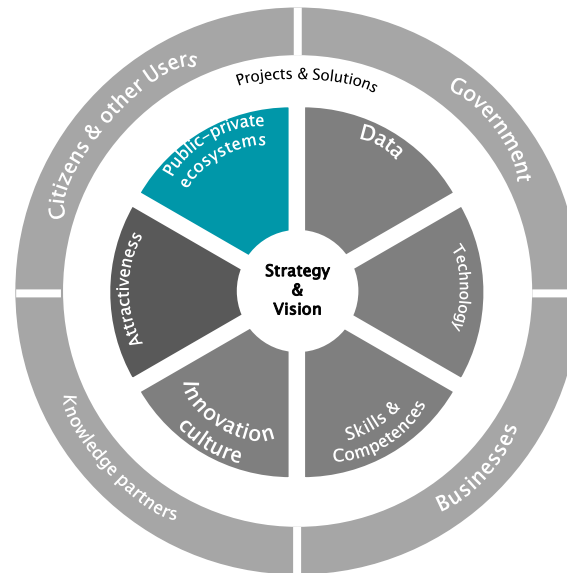
Source: The journey to government’s digital transformation, Deloitte University Press

**Openness for innovation and new ideas** – Realizing a Smart City requires openness for new creative ideas, the willingness to experiment, and to take calculated risks. It requires trying new types of collaboration between different departments in the government and with stakeholders outside of the government. Only by taking these calculated risks can cities build a deep understanding what really works. In the development phase that Smart Cities are in (beyond the hype, but far from mature), failures are necessary to develop insight and to learn.

## Smart City | Capability Framework (5/5)

**Attractiveness for businesses and talent** – Powerful ecosystems can only emerge if the right partners are present in the city. Creativity, deep technological expertise and the ability to execute are vital components. Smart Cities need to focus on attracting the right talent and the right companies. Richard Florida calls this the “war on talent” between the megacities of this world. However, cities should be focused and pick their battles. They should focus on the type of talent that fits the long term vision of the city. Talent likes to be around other talent, so the objective must be to make the city a talent hotspot.

Due to automation and robotics, existing jobs will vanish. The transition of the labor market requires new jobs and new businesses to appear. Cities must have an active policy to attract those investments and existing businesses that fit the vision of the city. Furthermore, cities must create a climate in which startups can flourish. This requires getting rid of unnecessary and counterproductive regulations to pave the way for new and smart solutions. Startups can be facilitated by providing office space and facilities, by contributing financially, or by making available “open data” as foundation for new smart solutions.



“The ecosystem has the power to deliver creative new solutions that neither of the parties could have realized on its own.”

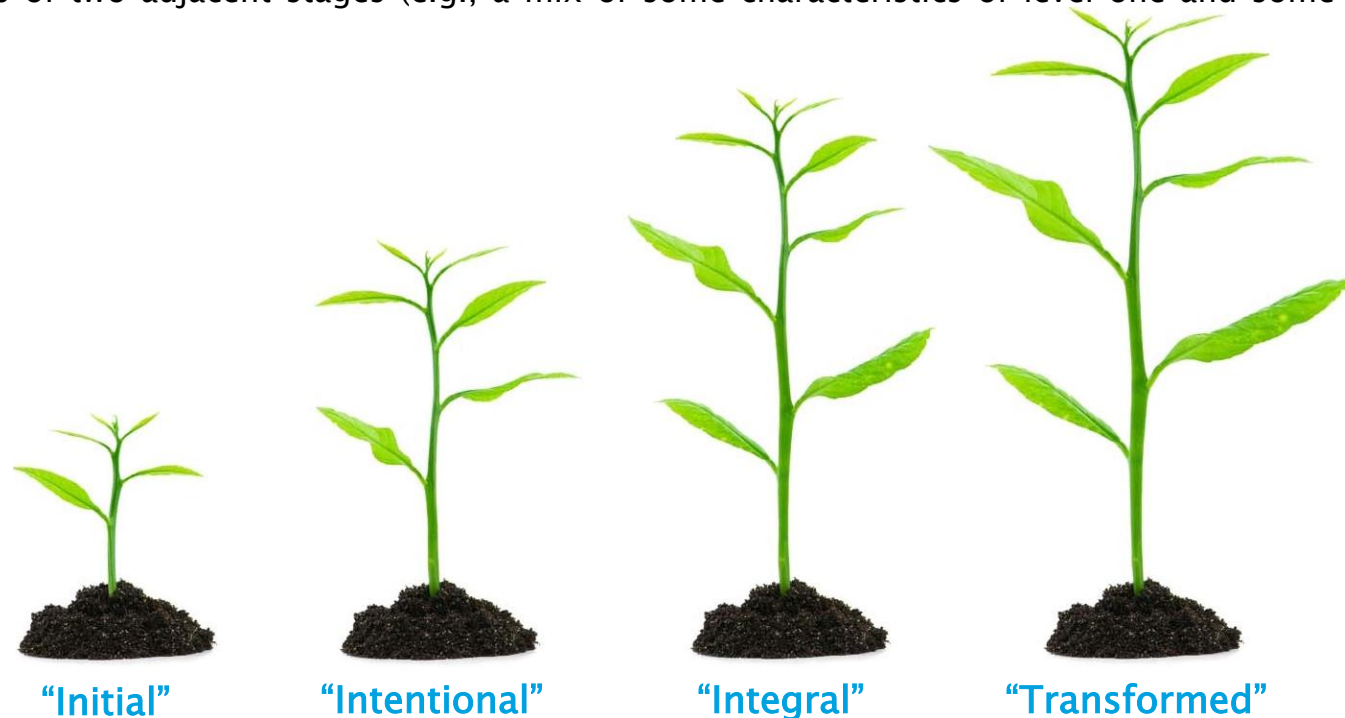
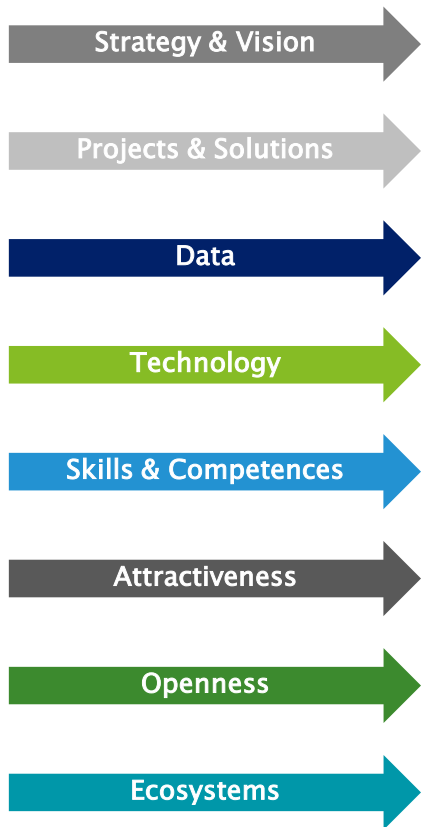
**Private-public ecosystems** – Smart cities require ecosystems of public and private parties to co-create smart solutions that are really new and creative and differ from traditional solutions. In such an ecosystem, neither of the participants has top-down control. Instead, parties are working together to create a result that has value for them all. The ecosystem has the power to deliver creative new solutions that neither of the parties could have realized on its own. In these ecosystems, the role of the government is to identify the areas that have potential but lack sufficient new initiatives and to play an active role to gather parties that normally do not work together in a new creative ecosystem.

**Projects & Solutions** – Cities should invest both in new disruptive technologies and in human and social capital. A Smart City requires smart infrastructure used by smart people. Technological innovations must be combined with social innovations to create sustainable solutions. Examples of such social innovations are: new collectives, self organization, co-creation, and the sharing economy. Smart-City initiatives typically start as sectoral, small scale and, experimental. This phase is necessary to learn, to deepen insight, and to iteratively improve the solutions. However, each small-scale initiative must be based on a scalable business model that allows piecemeal success to be broadened to city scale quickly and efficiently and without having to change the solution. Initiatives that are not based on a scalable business model will most likely never get out of the pilot phase.

## Smart City | Development Stages (1/4)

Smart Cities do not emerge overnight but develop over the years. During this development process, cities grow from early maturity phases to fully-developed maturity stages. The maturity model is used to assess the current maturity and to set goals for the aspired maturity.

The maturity model on the next pages distinguishes four development stages of Smart Cities: “initial,” “intentional,” “integral,” and “transformed”. For each of the eight domains in the capability model, the maturity model defines typical characteristics for these four stages. In general, the maturity of a Smart City cannot be expressed as one specific stage for all domains. First, the eight domains are often not developed to the same level of maturity. In most cases, some domains are further developed while others may be lagging behind. Second, the maturity can have characteristics of two adjacent stages (e.g., a mix of some characteristics of level one and some characteristics of level two).





# Smart City | Development Stages (2/4)

## Strategy & Vision

- Unconnected fragments of a Smart-City vision are found in some departments
- Strategy fragments have an operational focus, such as increasing efficiency
- Strategy development is an internal activity of city government
- There is no clear image of what the city wants to be in the long term; it is highly driven by a technology push and acting as a living laboratory
- Consequences of innovations like Airbnb or Uber overtake city government

## Projects & Solutions

- Ad hoc, department-based projects driven by technology push and random initiatives
- In general, experimental by nature
- Mainly small-scale pilot projects and proof of concepts to prove the business case for further investment
- Project execution and monitoring is subject to classic project bureaucracy

- Cross-departmental vision and strategy emerges with key stakeholders aligned around it
- Strategy focus shifts from internal efficiency to user-centricity; user demands are driving the digital transformation
- There is increasing awareness of the need to involve users in strategy development
- There is a fragmented image of what the city wants to become; the counterweight to technology push is growing but not yet mature
- There is a partial response by the city to innovations like Airbnb and Uber

- Cross-departmental projects emerge, but still in an opportunistic way
- First projects go beyond the pilot phase and scale up to city-wide use
- The first attempts to execute innovation projects in an agile way develop

- Integral city-wide vision and strategy based on a thorough assessment of strengths, opportunities, and challenges of the city
- User-centric strategy becomes increasingly focused on transforming business models
- Users and stakeholders are consulted to provide input for strategy development
- There is a clear vision of the city's long term future.; city priorities are driving the investment portfolio
- There is a balanced and effective response by the city to innovations like Airbnb and Uber

- A cohesive city-wide portfolio of cross-departmental projects delivers recurring success
- City-wide foundational technology, processes, and standards emerge
- Benefits tracking is in place

- Vision and strategy are subject to continuous optimization in an agile environment, based on the measurement of realized benefits
- Successful realization of the user-centric strategy to transform business models
- Users and stakeholders are actively involved in strategy development through co-creation
- Strategic investments have clear impact and realize the long term vision
- City is able to act proactively, quickly, and effectively with regards to innovations that impact the city

- Initiatives are characterized by agility and focused on innovation
- Continuous improvement of service delivery brings competitive advantage
- Superior outcomes deliver differentiation

1

“Initial”

2

“Intentional”

3

“Integral”

4

“Transformed”

# Smart City | Development Stages (3/4)

## Data

- Data is collected in the context of traditional city processes/responsibilities only
- Data is used for the delivery of a particular service and not reused for other purposes
- Basic analysis of data takes place in the form of simple reporting on isolated data sets
- Data is stored in disparate systems and is difficult to access and combine
- Some data sets are open to the public, but only historic data (no real-time data)
- Data quality of open data is not guaranteed and there are no mature data management processes
- Policies for data sharing, privacy, anonymization, authorization, charging, and monetization are not in place

## Technology

- Fixed and mobile internet broadband networks are in place
- Technology architecture is characterized by point solutions for line of business applications
- Limited investments in sensors and M2M networks

- Small scale pilots to collect IoT data specific for smart solutions are in place
- Small scale reuse of data fuels smart solutions and data analytics
- Pilots with advanced data analytics on city data emerge
- Technical solutions to combine and reuse data emerge (data platform)
- Pilots with providing real-time IoT data are being set up
- Initiatives to define data management standards and processes are in place
- Partners (city and external parties) have identified the need for such policies and initiatives are in place to define them

- Shared architectures are deployed on a limited set of services
- Stakeholders are intentionally investing in sensor technologies
- Dedicated M2M/IoT networks (low bandwidth and high range) are in place

- First city-wide collection of (IoT) data specific for smart solutions is operational
- Data is combined from multiple sources in new creative ways
- Data analytics is applied on combined data sets to provide new insights
- Government services and external partners use the data platform for their open data
- First city-wide examples of real-time IoT data are operational
- Data-management standards and processes are being implemented
- Partners have agreed on a first version of data policies and started using them in practice

- City-wide implementation of an IoT platform unifies management of all kinds of sensors
- Joint investments plan for city-wide deployment of connected assets with multipurpose sensors
- Standards and policies are in place to create integral architectures

- Data fueling the full spectrum of smart solutions is collected
- Data from various sources is used to create a complete visual overlay of the city
- City-wide use of mature and advanced data analytics (real-time, big data, predictive)
- All data is available through a single “data hub” and via open standards
- Open data encompasses full real-time IoT data to be used by smart solutions
- Operational data management standards and processes and data quality are guaranteed
- Data use by parties in the ecosystem is governed by agreed-on data policies

- Cross-organizational technology architectures are in place
- Continuous learning and improvement of the joint architecture to support innovation and transformation is in place
- City-wide deployment of connectivity infrastructure and sensors network for all major smart solutions

1

“Initial”

2

“Intentional”

3

“Integral”

4

“Transformed”



# Smart City | Development Stages (4/4)

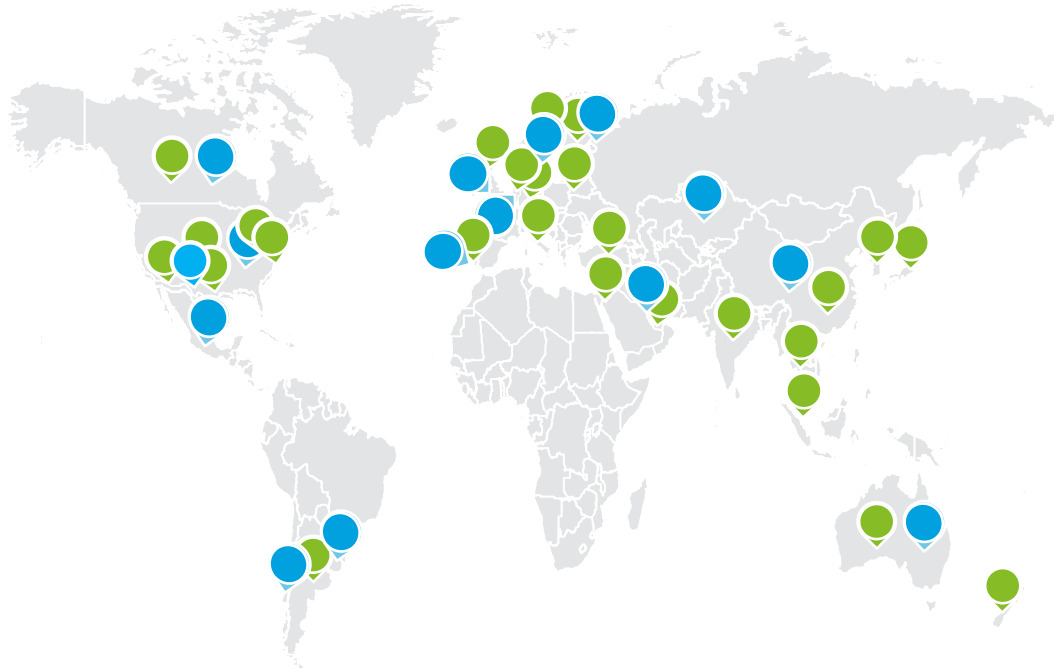




# Smart City | Smart Nation

## Highlights of Deloitte's Experience

## Smart City | Recent Deloitte projects and efforts



- **Recent projects:** US, UK, Canada, Mexico, Italy, Israel, Netherlands, Belgium, Portugal, Finland, Middle East, China, Thailand, Korea, Australia, New Zealand, Japan, Argentina, Turkey, Poland, Sweden, SEA (Singapore)
- **Recent discussion:** US, UK, Canada, Netherlands, Mexico, China, Australia, Chile, Czech Republic, Kazakhstan, Middle East, Portugal, Poland, Uruguay

We provide thought leadership to help clients evaluate complex issues, develop fresh approaches to problems and implement collaborative solutions. We also bring a dynamic range of professional services and partnerships to assist our clients with business and IT transformation to run public service functions in the city of tomorrow and improve the life of residents and visitors.

Deloitte teams with Consumer Technology Association (CTA) to develop dedicated exhibit area and a multi-day conference program at Consumer Electronic Show (CES) in 2018 and held multiple sessions in 2019

[Jan 2018](#) and [Jan 2019](#)

Working with the Smart City Council in 2016, Deloitte became a Global Lead Partner in 2017 and has shaped conference programming and readiness workshops in US, India, and Australia

[Jan 2017](#)

**SmartCitiesCouncil**  
LIVABILITY | WORKABILITY | SUSTAINABILITY

The [Deloitte City Mobility Index](#) is shortlisted for the [PRWeek Global Awards 2019](#)

Deloitte-led project for the City of San Diego is nominated for a Smart City award at the upcoming [Smart Cities New York conference](#)

# Amsterdam | Innovation Center Accelerator

Developed ideas around highly innovative areas using new technologies and societal trends



Netherlands  
Amsterdam

## ! Ambition

Amsterdam, the capital of the Netherlands, wanted to become more innovative. But, like many cities, it faced a challenge: how to drive innovation when most city department heads were focused on day-to-day operations. The City of Amsterdam sought to establish a coherent vision and strategy for identifying, developing, and successfully implementing innovative Smart-City initiatives focused on poverty reduction and smart mobility, to start.

## 💡 Action

Deloitte introduced City administrators to an ecosystem model, bringing together various stakeholders to build Smart City solutions. To make this ecosystem model effective, the City's ideation and innovation processes were removed from operations and centralized within a new workshop environment. The focus was on developing ideas through co-creation with experts and a broad ecosystem of stakeholders including city agencies, businesses, academia, research organizations, and citizens.

## 🏆 Achievement

New and innovative solutions were applied to the City's stickiest problems. Civil servants worked alongside technology experts, corporate entities, social entrepreneurs, and startups, embracing the rapid prototyping of ideas. The city was able to develop seven ideas initially, which were then filtered down to the two most critical areas: mobility and poverty reduction. Sample projects that emerged were cycling focus, budgeting app, and smart citizens' lab.



# Buenos Aires | Responsive City Solution

Buenos Aires uses technology for more responsive service delivery



**Argentina**  
Buenos Aires

## ! Ambition

The City of Buenos Aires engaged Deloitte to overhaul its infrastructure and maintenance management information-technology platform, so it could streamline back-office tasks and information flow and improve coordination among city departments. Knowing it would take time to address the City's broad array of issues, Deloitte developed a project roadmap that included a multiyear, phased implementation approach.

## 💡 Action

Starting in 2009, Deloitte worked with the city to deploy numerous solutions, including customized SAP software to centralize and integrate data across multiple city departments and a geographic information system (GIS)-enabled mobile app that citizens use to submit complaints in real time, bringing them into the City's maintenance process. Additionally, integrating IoT technologies, such as sensors, enabled the City to predict and proactively respond to events in precise locations.

## 🏆 Achievement

To date, the City is resolving significantly more complaints in less time with no additional budget. Citizen satisfaction with city services is at an all-time high, and third-party vendors and suppliers are paid faster due to the enhanced planning and accountability features present in the new platform. Deloitte continues to add services and functionality to enable faster response time and better long-range preventive planning.



# Amman | CityPerform

Data-driven approach to waste management in Amman



Jordan  
Amman

## ! Ambition

Between 2004 and 2015, Amman's population more than doubled, in addition to absorbing one million new residents driven largely by the Syrian refugee crisis. One of the biggest challenges facing Amman is effectively managing solid waste in light of this rapid growth. Waste management operations were inefficient among unique spatial, infrastructure, human, and financial resource constraints. There was little oversight of service provision and a lack of a rigorous information system using data to identify problem areas and adjust service.

## 💡 Action

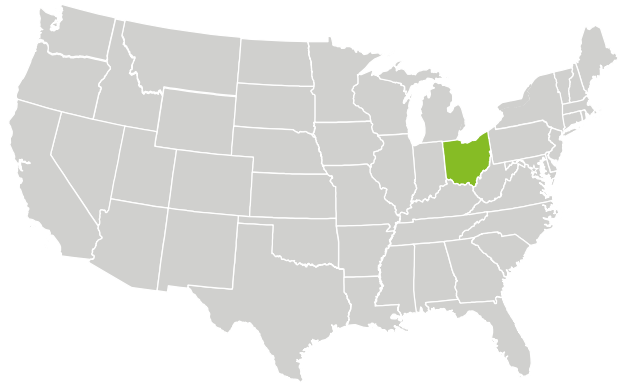
Deloitte worked directly with the Mayor's Office to launch CityPerform. CityPerform gathers data on an array of performance indicators, including response times and the existence of problems. Collected data can be analyzed with the assistance of computerized databases and geographic mapping, targeting areas of underperformance. Executive dashboards using visual graphics help in tracking areas such as route optimization, wait time, customer feedback, collection efficiency, and staff utilization on a real-time basis.

## 🏆 Achievement

The CityPerform pilot resulted in a practical, adaptable, and locally sustainable process that made best use of available data in improving efficiency in solid waste services. A new fleet tracking system and updated maps helped to meet operational needs more efficiently. The daily field reporting of tonnage collected helped to identify collection issues before they became critical. The mayor was able to meet with departments and discuss progress against indicators, promoting internal accountability to improve underperforming areas.

# Columbus | Integrated Roadmap Development

A roadmap to drive Smart City progress in Columbus, Ohio



United States  
Columbus

## ! Ambition

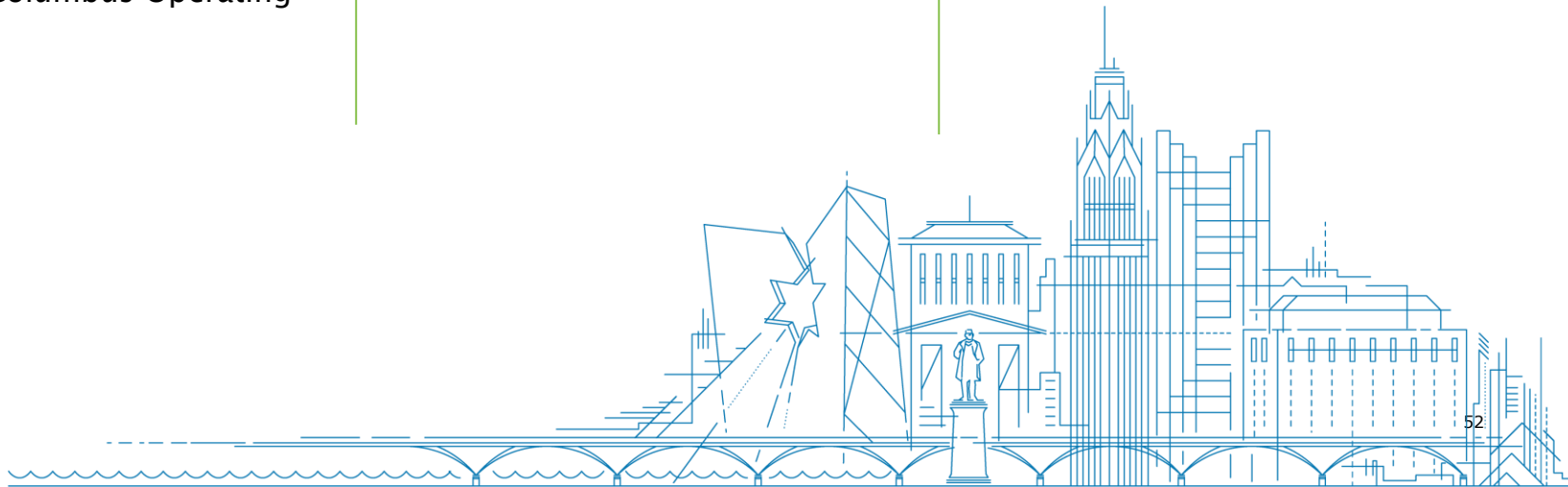
Columbus's Smart-City vision is to be a model for connected cities of the future that drive economic growth, improve quality of life, foster sustainability, and improve safety. The City was able to grow its initial funding of \$50 million to nearly \$500 million through the end of 2017. The underlying foundation of Smart Columbus would be a digital platform called the "Smart Columbus Operating System."

## 💡 Action

Working with Columbus Partnership, the City, and other stakeholders, Deloitte developed a strategic road map to help coordinate the execution of multiple mobility, energy, and other projects involving Columbus' complex ecosystem participants. Deloitte also developed three workstream charters to address essential aspects of implementation.

## 🏆 Achievement

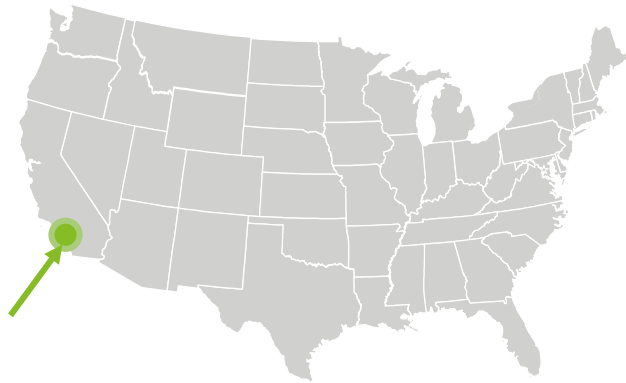
Over an eight-week period, Deloitte created a comprehensive view of Smart Columbus' portfolio of projects, to enable the Smart Columbus team to effectively execute against the road map, identify interdependencies, and track progress of the overall initiative.





# Orange County | myOC eServices

Improving “on-time” public works services in Orange County



United States  
Orange County

## ! Ambition

In the face of inefficient legacy systems, Orange County Public Works wanted to transform the way it provided services to and interacted with constituents. In addition, the county wanted to modernize the way citizen service requests were processed to speed resolution and efficiently deploy its limited resources over a large geographic area.

## 💡 Action

Deloitte launched myOC eServices, a cloud-based Salesforce platform. The GIS web and mobile-enabled portal streamlines the service-request process and modernizes the way the public works department addressed and managed service requests.

Visualization capabilities allow managers to identify bottlenecks and organize resources to address areas of high activity, enabling data-based decisions.

## 🏆 Achievement

Within four months of launching myOC eServices, the department’s average resolution time was down to four days from 15 to 20 days and its on-time completion rate had risen to 72% from 57%.

The department is now able to add quantitative analysis to support executive-level decisions regarding key partnerships, resourcing, and organizational structure to efficiently deliver high-quality customer service.



# Barcelona | Strategic Plan and Impact Analysis

Developed a framework to assess Smart City programs based on key metrics and impact areas



**Spain**  
Barcelona

## ! Ambition

The Barcelona City Council sought to establish a strategic framework and plan for the development of Barcelona as a Smart City. After the strategy was developed and 24 programs containing more than 180 different project and pilots were underway, the City Council sought to develop a model for governing this work and providing end-to-end management and to measure the socioeconomic impact of these projects on the City.

## 💡 Action

For the development of the strategic plan, Deloitte conducted research and analysis on secondary sources of information and conducted meetings and workshops with key stakeholders. The impact-analysis work entailed a study of economic benefits, economic growth, social benefits and impact, environmental benefits and impacts, and the development of a model through which ongoing impact analysis can be conducted.

## 🏆 Achievement

Final outcomes included an action-oriented strategic plan for the City, an assessment of Smart City work to date in Barcelona, and a common framework and taxonomy for ongoing use. This framework enabled the city to estimate the economic and social impacts of programs and prioritize projects based on impact defined by a multitude of metrics including cost savings, economic capital, social capital, and environmental impact. The work was an initial step in integrating data from diverse sources and developing dashboards that integrate real-time information.



# India | 100 Smart City Mission

Project management for the 100 Smart City mission



India

## **Ambition**

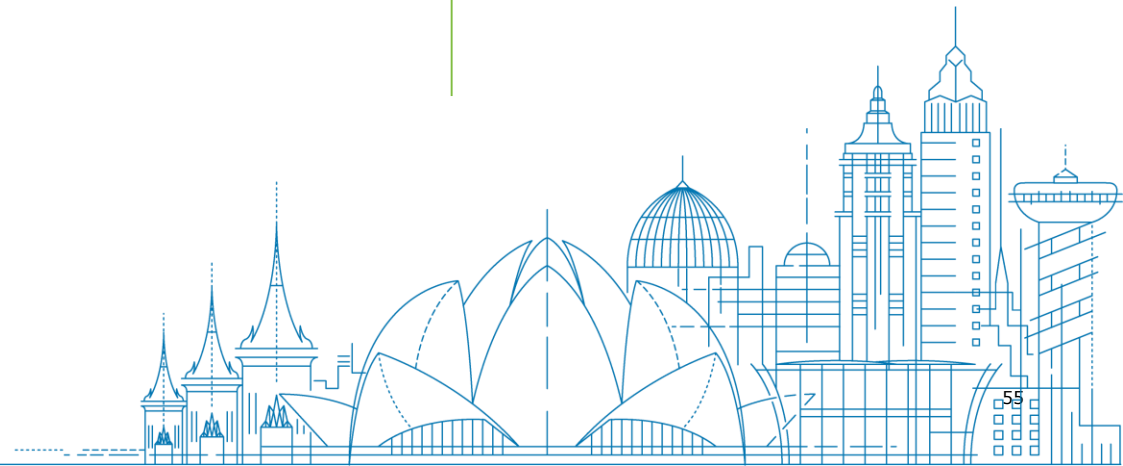
Rapid urbanization is creating challenges and opportunities at unprecedented scale across India. The ultimate ambition is to develop 100 smart cities by 2022 through the provision of essential infrastructure, a decent standard of living, and a clean and sustainable environment through the application of cloud and other technology-based smart solutions.

## **Action**

Deloitte is providing overall program management and technical support for the Smart Cities Mission, including its policy development, innovative financing, technical assistance, and progress monitoring and evaluation.

## **Achievement**

Over the last one-and-a-half years, the mission management unit has been closely tracking progress against the goals set by each city, and based on their tracking and monitoring, suggesting course correction wherever required. These solutions intend to provide essential infrastructure, a decent standard of living for its citizens, and a clean and sustainable environment through the application of smart solutions.



# Santander | Strategic Plan and Platform Implementation

Developed a roadmap to guide Santander through a city-wide transformation



**Spain**  
Santander

## ! **Ambition**

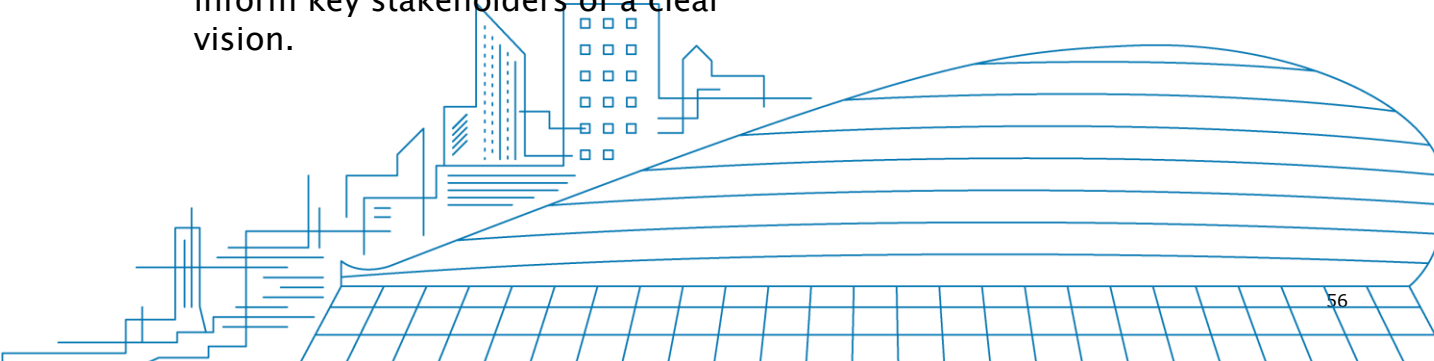
The City of Santander sought to improve the public-service delivery and transform the city. In order to achieve this transformation, the City sought to develop a roadmap and develop technology, and was looking for a partner to map recommendations and begin platform development.

## 💡 **Action**

Deloitte approached this roadmap by conducting a maturity analysis and diagnosis of the current situation of the different areas and services within the scope of responsibilities of the City. This included a structural analysis of the management, legal, and financial situation of each service; an examination of the infrastructure architecture in each service; and the identification of current smart initiatives and future projects. Once completed, Deloitte published the analysis to inform key stakeholders of a clear vision.

## 🏆 **Achievement**

The roadmap informed the City of Santander of the three priority tasks. These tasks included the recruitment of a smart platform that captures data to make strategic decisions, the constitution of the Strategic Office, and follow-up of the city's transformation process.



# Cascais | Digital Command Center/CitySynergy

Command-center approach to driving efficiencies in Cascais



Portugal  
Cascais

## ! Ambition

Cascais' mission is to “test innovative solutions capable of being scaled.” The City has implemented a large portfolio of technology-based improvements ranging from energy-efficient buildings to remote parking payments. The City has made significant advancements impacting mobility-related issues specifically. However, as the City continues to evolve its ecosystem of players and implement more initiatives, a lack of a unified vision across all domains has slowed progress on the ground. To address this issue, Cascais is developing a managed services command center.

## 💡 Action

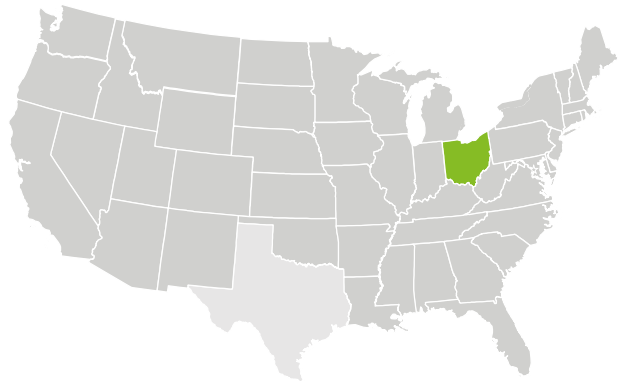
Deloitte helped Cascais establish a collaborative and Smart-City ecosystem with more than 30 city partners. Cascais is working to integrate a dozen different domains into a city-wide managed services command center. Deloitte is leading the technological effort to develop the Digital Command Centre (DCC), which is the “brain” of the control center. Complementing DCC, Deloitte is also implementing CitySynergy, the “nervous system” of the control center that integrates inputs from citizens and the vertical domains. The solution provides a correlated vision of city-service operations.

## 🏆 Achievement

The command center is the operating system that enables the city to plan, design, deliver, operate, and control the services offered to residents. As an example, Cascais is able to integrate and juxtapose waste management data with mobility and public infrastructure data, like road construction and repairs. Using this real-time traffic and road conditions data, the City can identify the optimal routes for collection trucks and the best time for garbage collection which aims to reduce operational costs by up to 40% with an expected savings of €900,000. Cascais is planning to integrate city information in subsequent phases.

# Columbus| Smart Columbus Governance and Sustainability

A solution to develop a governance structure, implementation approach, and sustainable business model for Smart Columbus



United States  
Columbus

## ! Challenge

Upon winning the DOT Smart City Challenge in 2016, the City of Columbus embarked on an ambitious goal to “be the model for connected cities of the future.” To accomplish this goal, Smart Columbus is looking to engage and work across public, private, and academic sectors in order to implement cross-cutting, innovative solutions within their city ecosystem. As the DOT grant approach its end, Smart Columbus must also prepare a resilient governance and sustainability plan for the future success of Smart Columbus.

## 💡 Solution

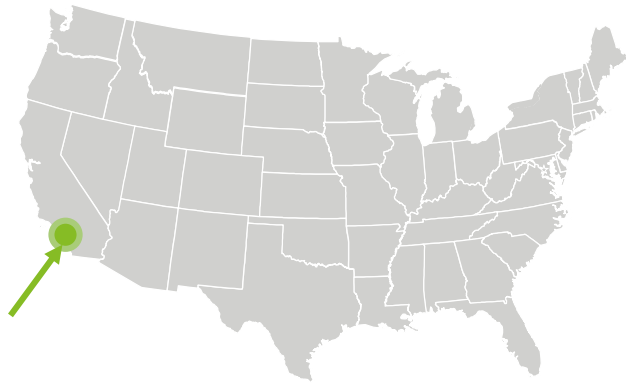
Over an 8 week period, the Deloitte team worked with Smart Columbus to 1) develop a governance and collaboration approach for the Smart Columbus ecosystem and 2) create a strategy for developing financially sustainable business models for DOT funded projects and for the Smart Columbus initiative as a whole.

## 🏆 Results

At the completion of the 8 week period, the team provided a set of core recommendations presented to the Smart Columbus Executive Committee which encompassed three key themes: how to 1) establish an alignment vehicle (whether a strategic network or standalone entity) to coordinate Smart Columbus efforts, 2) identify Business Champions to sustain projects past the DOT grant and 3) implement common practices to identify and collaborate on projects. Smart Columbus leadership is planning to implement the team’s recommendations as they move forward with the initiative.

# San Diego | Get It Done-Digital 311

Building the brain of a Smart City in San Diego



United States

San Diego

## ! Ambition

The City of San Diego's vision is to provide residents, visitors, and City staff with an easy-to-use, one-stop shop solution for all City-related questions and concerns, by enabling access to City services and information anywhere, anytime, and on any device. The 311 Customer Experience - Get It Done expansion project is an investment in technology and citywide customer experience.

## 💡 Action

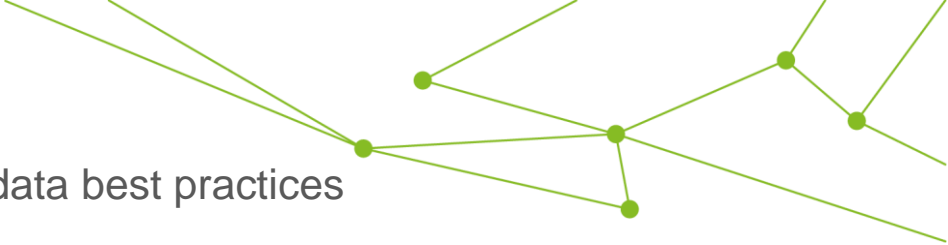
Deloitte launched Get It Done-Digital 311, a cloud-based Salesforce platform. The solution offers key capabilities needed to support the City's departments and its residents including inter-departmental case management with automated case routing, real time status updates, external notifications and reminders, document generation, and key code enforcement related inspections features.

## 🏆 Achievement

Digital 311 solution enables San Diego residents and visitors to report and track city-related issues through a self-service mobile app and web portal. This Salesforce-based application not only improves the City's ability to interact with its residents, it also supports greater inter-departmental coordination and communication. The solution empowers residents through omni-channel reporting and real time communication.

# Detroit | City of Detroit Mobility Data Strategy

Mobility data practices assessment and development of recommended mobility data best practices



**Detroit, MI**  
USA

## ! **Ambition**

The City of Detroit’s current mobility data practices limit the City’s ability to generate meaningful insights and build long-term solutions that deliver value to its citizens. Organizational and traditional siloes, dated infrastructure, and inconsistent management practices inhibit the City’s ability to deliver integrated mobility services. However, there is a strong appetite for increased sharing and lateral communication. In addition to improved processes, quality and comprehensive data is essential to generate insights and inform solutions to improve the citizen experience.

## 💡 **Action**

Deloitte assessed key challenges, gaps, and opportunities surrounding mobility data practices and developed a set of recommended best practices organized into an actionable roadmap. Deloitte’s perspective was informed by internal and external stakeholder interviews, a data inventory gap analysis, a survey to gauge priorities, and by leveraging our partnership with VDC to identify leading combinations of commercial, open, and third-party data sources to augment mobility solutions. It became clear that while the data-assets are valuable, the operational gaps are most critical to address in order to position the city for success in the long-term.

## 🏆 **Achievement**

Deloitte delivered a roadmap which prioritized the development of a cross-functional data working group which would work to establish best practices around centralized mobility data and create a culture of cooperation, with the long-term goal of leveraging enhanced, integrated data to operationalize prioritized use cases and deliver an improved citizen-experience.



# Israel | Digital Services Index

## Digital Services Index for local municipalities / Smart Cities



Israel

### **Ambition**

The penetration of digital technologies has revolutionized government services in cities, states, and nations across the world. Israel, also known for being an attractive destination for technology start-ups, identified a need to develop a comprehensive national digital policy.

One of the key initiatives under the National Digital Program was to build the foundational architecture for a national index of digitization. However, the national index measures the efficacy of federal or national digital services. The nation still lacked an index that could measure digital services available locally.

### **Action**

Starting in 2016, Deloitte established “Digilocally”, the pioneer digital services index for local municipalities / Smart Cities. The index is based on 6,600 data points from 254 Israeli local authorities and it is yearly updated.

### **Achievement**

To date, many municipalities used the index in order to improve their digital offering to their citizens and businesses.

Further more, this index position us as experienced in the digital field and attracts municipalities to work with us and use our consultation services.



# Toronto| Integrated Service Delivery Model & Digital Architecture

Review current service delivery model and propose recommendations for a customer-centric, integrated future state vision and enabling digital architecture



Canada  
Toronto

## ! Ambition

The City of Toronto has a goal of becoming more customer-centric across the organization. For many years, the City of Toronto has operated a legacy system for its various licensing and permitting businesses. When it was determined that the system was reaching the end of its useful life, the City wanted to assess its service delivery model across three divisions, and develop a future state service delivery vision and enabling digital architecture, in order to make decisions about the legacy system from a customer-centric point of view.

## 💡 Action

Deloitte was engaged to conduct a review of the current service delivery model and propose recommendations for a customer-centric, integrated future state vision and enabling digital architecture. This included a robust consultation phase that utilized a variety of insights-gathering approaches and user-centered design methods (e.g., in-depth customer and employee interviews, journey mapping, co-creation workshops, etc.)

## 🏆 Achievement



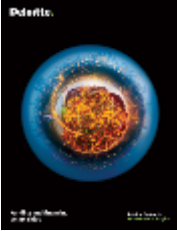

This engagement resulted in the development of a comprehensive current state assessment for three divisions, a customer-centric future state vision and enabling digital architecture, and an implementation roadmap. The methods and tools Deloitte leveraged through the process (e.g., customer interview videos) encouraged City executives and divisional representatives to approach service delivery and technology systems with view to customer-centricity.

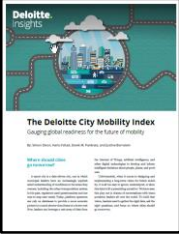


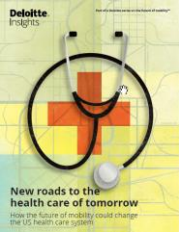


# Smart City | Smart Nation




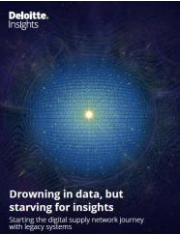
## Recent Publications and Videos

# Smart City | Recent Publications

Title	Summary	Link
<p><b>Smart city 2.0: Building the smart city with data, digital and design</b></p> 	<p>The term “smart city” doesn’t describe a sci-fi utopia. A smart city is simply one that uses technology to improve outcomes across every aspect of city operations and enhance the services it offers to its residents. It collects and uses data to drive its decision-making, and creates networks of partners.</p>	<p><a href="https://www2.deloitte.com/content/dam/Deloitte/us/Documents/public-sector/us-fed-building-the-smart-city.pdf">https://www2.deloitte.com/content/dam/Deloitte/us/Documents/public-sector/us-fed-building-the-smart-city.pdf</a></p>
<p><b>Forces of change: Smart cities</b></p> 	<p>While smart cities earlier focused on connecting infrastructure for better insights, the spotlight is slowly shifting to better engaging governments, citizens, and businesses with the goal of providing improved city services and a higher quality of life. What exactly is Smart City 2.0?</p>	<p><a href="https://www2.deloitte.com/content/dam/insights/us/articles/4421_Forces-of-change-Smart-cities/DI_Forces-of-change-Smart-cities.pdf">https://www2.deloitte.com/content/dam/insights/us/articles/4421_Forces-of-change-Smart-cities/DI_Forces-of-change-Smart-cities.pdf</a></p>
<p><b>Funding and financing smart cities</b></p> 	<p>By embracing new smart city models, we can make our cities more secure, safe, resilient, and globally competitive. Government financial officers can play a key role in enabling this transformation using fiscal policy, Public Private Partnership, and performance-based revenue models.</p>	<p><a href="https://www2.deloitte.com/content/dam/Deloitte/us/Documents/public-sector/us-ps-funding-and-financing-smart-cities.pdf">https://www2.deloitte.com/content/dam/Deloitte/us/Documents/public-sector/us-ps-funding-and-financing-smart-cities.pdf</a></p>
<p><b>Delivering the digital city: Building a best-in-class customer experience in smart cities</b></p> 	<p>Consumers today enjoy the convenience of digital service delivery that many private sector companies now put at their fingertips. So, most people want—and expect—the same level of service from government that they receive from online retailers. Failing to meet that expectation can increase the perception of poor government service.</p>	<p><a href="https://www2.deloitte.com/content/dam/Deloitte/us/Documents/public-sector/us-ps-dcgi-delivering-the-digital-city.pdf">https://www2.deloitte.com/content/dam/Deloitte/us/Documents/public-sector/us-ps-dcgi-delivering-the-digital-city.pdf</a></p>

Title	Summary	Link
<p><b>The Deloitte City Mobility Index (DCMI)</b></p> 	<p>The DCMI is an in-depth exploration into the rapid changes occurring in the way people and goods move about, with intermodal journeys, active transportation options, such as sidewalks and bicycle lanes, and public transit playing prominent roles.</p>	<p><a href="https://www2.deloitte.com/content/dam/insights/us/articles/4331_Deloitte-City-Mobility-Index/4331_city-mobility-index_OVERVIEW.pdf">https://www2.deloitte.com/content/dam/insights/us/articles/4331_Deloitte-City-Mobility-Index/4331_city-mobility-index_OVERVIEW.pdf</a></p> <p><a href="https://www2.deloitte.com/cn/zh/pages/consumer-business/articles/city-mobility-index-2018.html">https://www2.deloitte.com/cn/zh/pages/consumer-business/articles/city-mobility-index-2018.html</a> (Chinese)</p>
<p><b>Smart cities funding and financing in developing economies</b></p> 	<p>For private sector and institutional investors, developing economies present significant challenges, including political, regulatory, macroeconomic, business, and technical risks. International development organizations (IDOs)—multilateral development banks, development finance institutions, bilateral donors—can offer developing economies critical support and risk mitigation.</p>	<p><a href="https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Public-Sector/gx-smart-cities-economies.pdf">https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Public-Sector/gx-smart-cities-economies.pdf</a></p>
<p><b>Harnessing the future of mobility</b></p> 	<p>For transportation agencies, the future of mobility offers the promise of fixing a range of challenges, from congestion and inequitable access to public safety and sustainability. But creating and maintaining a new mobility ecosystem will require rethinking traditional ways of doing business.</p>	<p><a href="https://www2.deloitte.com/content/dam/insights/us/articles/4513_FoM-Government/DI_FoM-Government.pdf">https://www2.deloitte.com/content/dam/insights/us/articles/4513_FoM-Government/DI_FoM-Government.pdf</a></p>
<p><b>New roads to the health care of tomorrow</b></p> 	<p>The new mobility ecosystem could expand patient access to care—but accident-avoiding self-driving cars might mean empty emergency rooms. The future of mobility will bring dramatic change to the health care sector; how should providers, insurers, and others adapt?</p>	<p><a href="https://www2.deloitte.com/content/dam/insights/us/articles/4094_FoM-and-health-care/DI_FoM-&amp;-health-care.pdf">https://www2.deloitte.com/content/dam/insights/us/articles/4094_FoM-and-health-care/DI_FoM-&amp;-health-care.pdf</a></p>

# Smart City | Recent Publications

Title	Summary	Link
<p><b>The carbon-neutral utility</b></p> 	<p>The push toward sustainable energy has gained substantial momentum in recent years. How can various technologies being used in sustainable energy generation help power utilities navigate the potentially difficult choices involved in "greening" their output?</p>	<p><a href="https://www2.deloitte.com/content/dam/insights/us/articles/3843_Carbon-neutral-utility/DUP_carbon-neutral-utility.pdf">https://www2.deloitte.com/content/dam/insights/us/articles/3843_Carbon-neutral-utility/DUP_carbon-neutral-utility.pdf</a></p>
<p><b>100 Smart Cities in India</b></p> 	<p>With half the world's population living in cities, increasing the strain on energy, transportation, water, building and public spaces, there is an increasing need for "smart" city solutions which are both efficient and sustainable on one hand and can generate economic prosperity and social wellbeing on the other.</p>	<p><a href="https://www2.deloitte.com/content/dam/Deloitte/in/Documents/IMO/in-imo-smart-cities-in-india-noexp.pdf">https://www2.deloitte.com/content/dam/Deloitte/in/Documents/IMO/in-imo-smart-cities-in-india-noexp.pdf</a></p>
<p><b>The Urban Optimist</b></p> 	<p>Cities today face a myriad of challenges, from crises of inequality to inadequate funds and services. But that doesn't faze Sidewalk Labs CEO Daniel Doctoroff. His aim: To transform urban environments through technologies that can drive efficiency, raise accountability, and foster a deeper sense of community.</p>	<p><a href="https://www2.deloitte.com/content/dam/insights/us/articles/3610_Urban-optimist/DR20_The%20urban%20optimist_reprint.pdf">https://www2.deloitte.com/content/dam/insights/us/articles/3610_Urban-optimist/DR20_The%20urban%20optimist_reprint.pdf</a></p>
<p><b>Drowning in data, but starving for insights</b></p> 	<p>Implementing a digital supply network (DSN) doesn't always mean that companies have to rip out and replace legacy systems. Instead, they can bring together and organize the data already existing in these systems to generate valuable insights that drive the DSN.</p>	<p><a href="https://www2.deloitte.com/content/dam/insights/us/articles/4404_Drowning-in-data-but-starving-for-insights/DI_Drowning-in-data.pdf">https://www2.deloitte.com/content/dam/insights/us/articles/4404_Drowning-in-data-but-starving-for-insights/DI_Drowning-in-data.pdf</a></p>

# Smart City | Videos

Title	Summary	Link
<b>Deloitte Smart City video</b> 	Did you know that by 2050, 68% of the world's population will reside in urban areas? New technologies and new ideas are making cities more innovative, efficient, economically competitive, environmentally responsible, inclusive and more livable.	<a href="http://smartcity.deloitte.com/publications/new-technologies-new-ideas-making-cities-innovative-video/">http://smartcity.deloitte.com/publications/new-technologies-new-ideas-making-cities-innovative-video/</a>
<b>The future of mobility: Ben's Journey (Deloitte Video)</b> 	Frictionless, automated, personalized travel on demand—that's the dream of the future of mobility. And the extended auto ecosystem's various elements are coalescing to realize that dream sooner than expected, which means that incumbents and disruptors need to move at top speed to get on board.	<a href="http://smartcity.deloitte.com/publications/future-mobility-bens-journey/">http://smartcity.deloitte.com/publications/future-mobility-bens-journey/</a>
<b>CitySynergy</b> 	CitySynergy™ provides an integrated and holistic view into the heart of a city. Through optimization of operational efficiency, the coordination and support of city managers and stakeholders, and real time engagement with citizens, response efforts are improved greatly.	<a href="https://www.youtube.com/watch?v=05ePq_nSEf6g">https://www.youtube.com/watch?v=05ePq_nSEf6g</a>
<b>Government 2020</b> 	Explore the Future of Government in 2020: At the heart of Gov2020 are two simple components—Drivers and Trends, each one written from the perspective of the year 2020. Drivers are the factors that change the context in which government operates and serves citizens. There are 39 drivers of change, categorized into six areas and there are 194 trends spread across eight government domains.	<a href="http://government-2020.dupress.com/">http://government-2020.dupress.com/</a>



# Smart City | Smart Nation

## Sample Services



# Smart City | Deloitte's Spectrum of Services

## Advise

- Strategy and Vision Cocreation
- City Marketing
- Digital Adoption Strategy
- Risk, Resilience, and Compliance Strategy Development
- Funding, Financing, and Revenue Generation
- Taxation and Incentivization
- Sourcing Strategy
- Data Strategy and Governance
- Technical Architecture
- Ethics Framework

## Implement

- Human-Centered and Behavioral Design
- Business Model Transformation
- Service and Product Cocreation
- Digital Adoption
- Risk, Resilience, and Compliance Strategy Implementation
- Asset, Financial, and Transaction Management
- Procurement
- Analytics and Insight-Driven Organizations
- Smart City Operating System Development and Implementation
- Ecosystem Orchestration
- Project and Results Management
- City Service Catalogue and City SLA's & KPI's Catalogue
- 3th Parties domains deployment and integration

## Operate

- Managed Services
- Research and Development Management
- Risk, Resilience, and Compliance Strategy Management
- Insight-Driven Operations
- Constituent Relationship Management
- Smart City Operating System Management
- Ecosystem Integration
- Cybersecurity Management
- Program Management and Quality Assurance
- Continuous Improvement



# Smart City | Deloitte's Advise Spectrum of Services

Strategy and Vision Cocreation

» *A collaborative process to develop city innovation strategies and implementation roadmaps*

City Marketing

» *Marketing strategies to attract talent and business for long-term growth*

Digital Adoption Strategy

» *Constituent and ecosystem sensing to enable digitally transformed city operations*

Risk, Resilience, and Compliance  
Strategy Development

» *Strategies to prevent and minimize the impact of cyber threats and attacks, power cuts, natural disasters, and the like*

Funding, Financing, and Revenue  
Generation

» *Funding/financing methods to upgrade infrastructure and implement smart solutions*

Taxation and Incentivization

» *Taxation and incentivization strategies to influence behavior change*

Sourcing Strategy

» *Analysis of what city solutions can be directly procured vs. need customized development*

Data Strategy and Governance

» *Data strategy and governance to secure the right, curated, and high-quality city data*

Technical Architecture

» *A comprehensive technical enterprise architecture to enable data-driven city solutions*

Ethics Framework

» *An ethical framework to align smart solutions to the public interest (e.g., privacy*

# Smart City | Deloitte's Implement Spectrum of Services

Human-Centered and Behavioral Design	» <i>A people-centered approach to create desirable, feasible, and viable city solutions</i>
Business Model Transformation	» <i>A people-centered approach to create desirable, feasible, and viable city solutions</i>
Service and Product Cocreation	» <i>A collaborative process to design/implement new city services and products</i>
Digital Adoption	» <i>User adoption programs to launch and scale new smart technologies and solutions</i>
Risk, Resilience, and Compliance Strategy Implementation	» <i>The operationalization of risk, resilience, and compliance strategies, including engagement of ecosystem partners</i>
Asset, Financial, and Transaction Management	» <i>Funding approaches accounting for revenue collection, asset usage, and behavior impacts</i>
Procurement	» <i>Implementation of agile city procurement methods, while still protecting public interests</i>
Analytics and Insight-Driven Organizations	» <i>Data integration and analytics to improve city decision-making processes</i>
Smart City Operating System Development and Implementation	» <i>An integrated data solution (including deep analytics, data visualization, and process automation) across operational domains to more effectively deliver city services</i>
Ecosystem Orchestration	» <i>Integration of users, the private sector, the public sector, and knowledge institutions</i>
Project and Results Management	» <i>An adaptable project management methodology to track and monitor progress</i>
City Service Catalogue and City SLA's & KPI's Catalogue	» <i>Organize cities' services, SLA's, and KPIs to improve services and defined targets</i>
3th Parties domains deployment and integration	» <i>Facilitate partnerships across city domains to create stronger and beneficial connections</i>

# Smart City | Deloitte's Operate Spectrum of Services



Managed Services	» <i>Service/product delivery to manage complex activities across departments and agencies</i>
Research and Development Management	» <i>Analysis of new best practice and trends to help cities adapt to an ever-changing landscape</i>
Risk, Resilience, and Compliance Strategy Management	» <i>Maintenance of strategies to keep cities prepared for expected and unexpected disruptions</i>
Insight-Driven Operations	» <i>Ongoing reporting and analytics capabilities to support operations at enterprise scale</i>
Constituent Relationship Management	» <i>Insight-driven constituent engagement through design, creative research, and analytics</i>
Smart City Operating System Management	» <i>Maintenance and enhancement of a robust smart city operating system</i>
Ecosystem Integration	» <i>Creation of an ecosystem platform to coordinate work, escalate risks, and share knowledge</i>
Cybersecurity Management	» <i>Cybersecurity monitoring and management through managed security services and training</i>
Program Management and Quality Assurance	» <i>Measurement of program effectiveness to achieve results-driven improvements</i>
Continuous Improvement	» <i>Ongoing refinement on smart city solutions, products, and services</i>



# Smart City | Smart Nation

## More Information

# Smart City | **Sample Lab Agenda**

Module	Description	Expected output
<b>ACT I. Explore</b>		
<b>Introduction</b>	Introduce participants to the lab concept and review objectives for the session	Session objectives
<b>Art of the Possible</b>	Explore what each participant brings to the table, showcasing their unique “sweet spot”	Shared understanding of what each participant would like to accomplish
<b>Vision</b>	Engage in an exercise tailored to the objectives of the session (e.g., write magazine headlines depicting desired impact Smart Cities projects will have on the city and surrounding areas)	A collective vision of what participants would like to accomplish within a specified timeframe
<b>ACT II. Align</b>		
<b>Prototype</b>	Test existing project ideas for viability and alignment, asking “Does it advance our Smart Cities mission and stated goals?”	Opportunities for risks for each project
<b>Prioritize</b>	Vote to gain consensus on prioritized list of projects to be included in strategic plan within the specified timeframe	A list of prioritized projects
<b>ACT III. Create</b>		
<b>Mobilize</b>	Agree to the resources required to implement prioritized projects, assigning next steps, owners, and timing and leveraging previously identified partner/member strengths	A high-level, draft approach to operationalize and fund projects
<b>Collaborate</b>	Look for opportunities to create a multiplier effect via existing city-wide efforts and collaboration with likeminded organizations and potential partners	A list of possible project collaborators
<b>Message</b>	Develop a succinct message to deliver to key stakeholders about the lab results	A summary of the day’s events
<b>Reflection</b>	Reflect on the day’s work and toast to future success	A recap of the day’s accomplishments

# Smart City | Website and Contact

Deloitte has multiple ways to gain more information about city domains, client innovations in action, recent resources from DU Press, and more

## Website

Deloitte's Smart City website can be found at the following link:

[Smart City homepage on D.com](#)

The website is a resource for more information about city domains, client innovations in action, recent resources from Deloitte University Press, and more!



## Contact

Start a conversation with our Smart City | Smart Nation leaders:

The team is ready to answer your questions and help with any of your Smart City needs.



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