



Defining the Smart in a Smart City

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As cities grow, they struggle to meet increased resource demand and capacity constraints. The smart city initiative is an attempt to leverage advances in transportation, energy and information technology to enhance a city's livability, productivity, sustainability and resilience. At the heart of the smart city concept is energy technology, which is key to its implementation.

What is the definition of a Smart City??

A smart city uses information and communications technology (ICT) to enhance its livability, workability and sustainability. In simplest terms, there are three parts to that job: collecting, communicating and "crunching."

1. First, a smart city collects information about itself through sensors, other devices and existing systems.
2. Next, it communicates that data using wired or wireless networks.
3. Third, it "crunches" (analyzes) that data to understand what's happening now and what's likely to happen next.



Why are Cities our Greatest Challenge?

- 54% of world population already lives in cities

- 5 million people move to cities every month

- 70% of carbon emissions

- Growing pollution

- Increasing congestion

- New York loses \$13 billion per year to traffic congestion

- Aging infrastructure

- Falling budgets

- Vulnerable to climate change

- Energy & water shortages

How are Cities our Greatest Opportunity?

- 75% of GDP

- Access to jobs

- Innovation hubs

- Tokyo world's 15th largest economy, ahead of India and Mexico

- Mobility and mass transit

- International travel hubs

- Industrial and commercial hubs

- Culture and entertainment

- "The most significant shift in the earth's economic center of gravity in history." McKinsey & Company

Traditional Cities vs. Smart Cities (1/2)

	Traditional City	Smart City
Planning	<ul style="list-style-type: none"> ▪ Ad hoc and siloed ▪ Cost savings aren't realized ▪ Limited potential for investment scalability 	<ul style="list-style-type: none"> ▪ Coordinated and holistic ▪ Resources are shared ▪ Cost savings are fully realized ▪ Investments are scalable ▪ Improved city planning and forecasting
Infrastructure	<ul style="list-style-type: none"> ▪ Runs inefficiently ▪ Costs more money and resources to run 	<ul style="list-style-type: none"> ▪ Optimized with cutting-edge technology ▪ Saves money and resources ▪ Improved service-level agreements
System operators	<ul style="list-style-type: none"> ▪ Guess at infrastructure conditions ▪ React to problems ▪ Can't deploy resources efficiently to address problems 	<ul style="list-style-type: none"> ▪ Enjoy real-time reporting on infrastructure conditions ▪ Predict and prevent problems ▪ Deploy resources more efficiently ▪ Automate maintenance ▪ Save money

Traditional Cities vs. Smart Cities (2/2)

	Traditional City	Smart City
ICT investments	<ul style="list-style-type: none"> ▪ Piecemeal and siloed ▪ Deliver suboptimal benefit ▪ Don't realize economies of scale 	<ul style="list-style-type: none"> ▪ Centrally planned ▪ Deployed across city departments and projects ▪ Deliver optimal benefit ▪ Provide maximum value and savings
Citizen engagement	<ul style="list-style-type: none"> ▪ Limited, scattered online connection to citizens ▪ Citizens can't make optimal use of city services (or easily find them) 	<ul style="list-style-type: none"> ▪ Complete and singular online presence ▪ Citizens can easily find and use services ▪ Citizens can participate in smart city initiatives ▪ Two-way communications between government and people ▪ Specialized services focused on the individual citizen ▪ Citizens can both contribute to and access real-time intelligent city data
Sharing data	<ul style="list-style-type: none"> ▪ Departments and functions are siloed ▪ Departments rarely share data and collaborate on initiatives 	<ul style="list-style-type: none"> ▪ Departments and functions are integrated and/or shared ▪ Data is shared between departments and better correlated with other data services ▪ Results are improved ▪ Costs are cut

What are the Key Drivers for Smart City?

Increasing Population

Need to manage space, infrastructure, services more efficiently and intelligently
E.g. Global urban population expected at 6.3 billion by 2050

Increasing Energy Consumption

Need for new sources of energy
E.g. 70% of global energy consumption is from cities

Increasing Pollution

Need to reduce GHG emissions
E.g. 70% of global GHG emissions from cities

Smart Cities

Aging infrastructure: electric grid, roads, buildings, etc.

Need to optimize and extend life of existing infrastructure
E.g. Electric grid is 100 years old

Scarcity of Water Supply

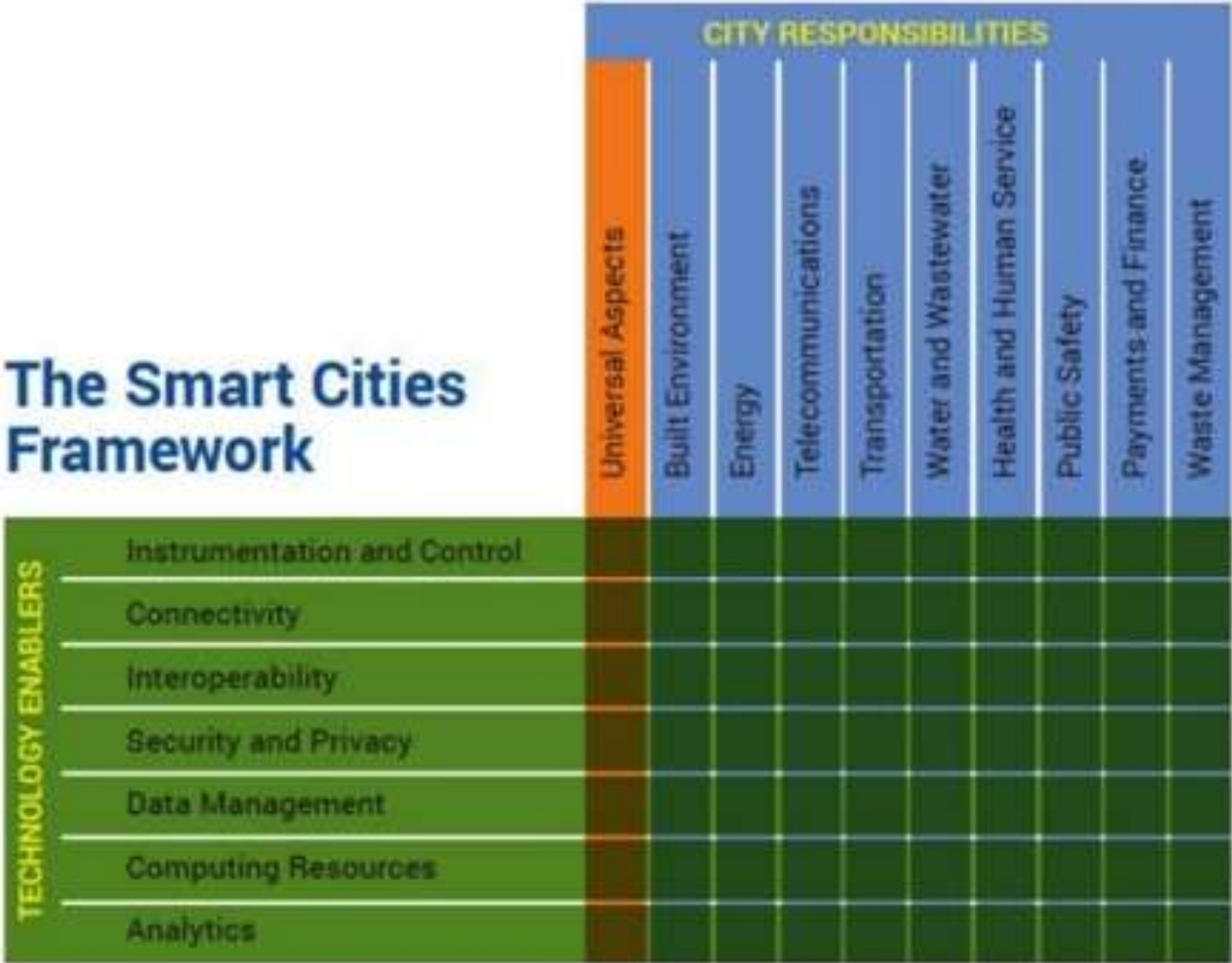
Need for better water management
E.g. One fifth of world population lives in areas of water scarcity

City Budget Deficits

Efficient use of existing resources, integrated city wide services
E.g. 8 U.S. cities and towns filed for bankruptcy since 2010

The Smart Cities Framework

The Smart Cities Framework



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Smart City Responsibilities



Built Environment



Energy



Telecommunications



Transportation



Water and Wastewater



Health and Human Services



Public Safety

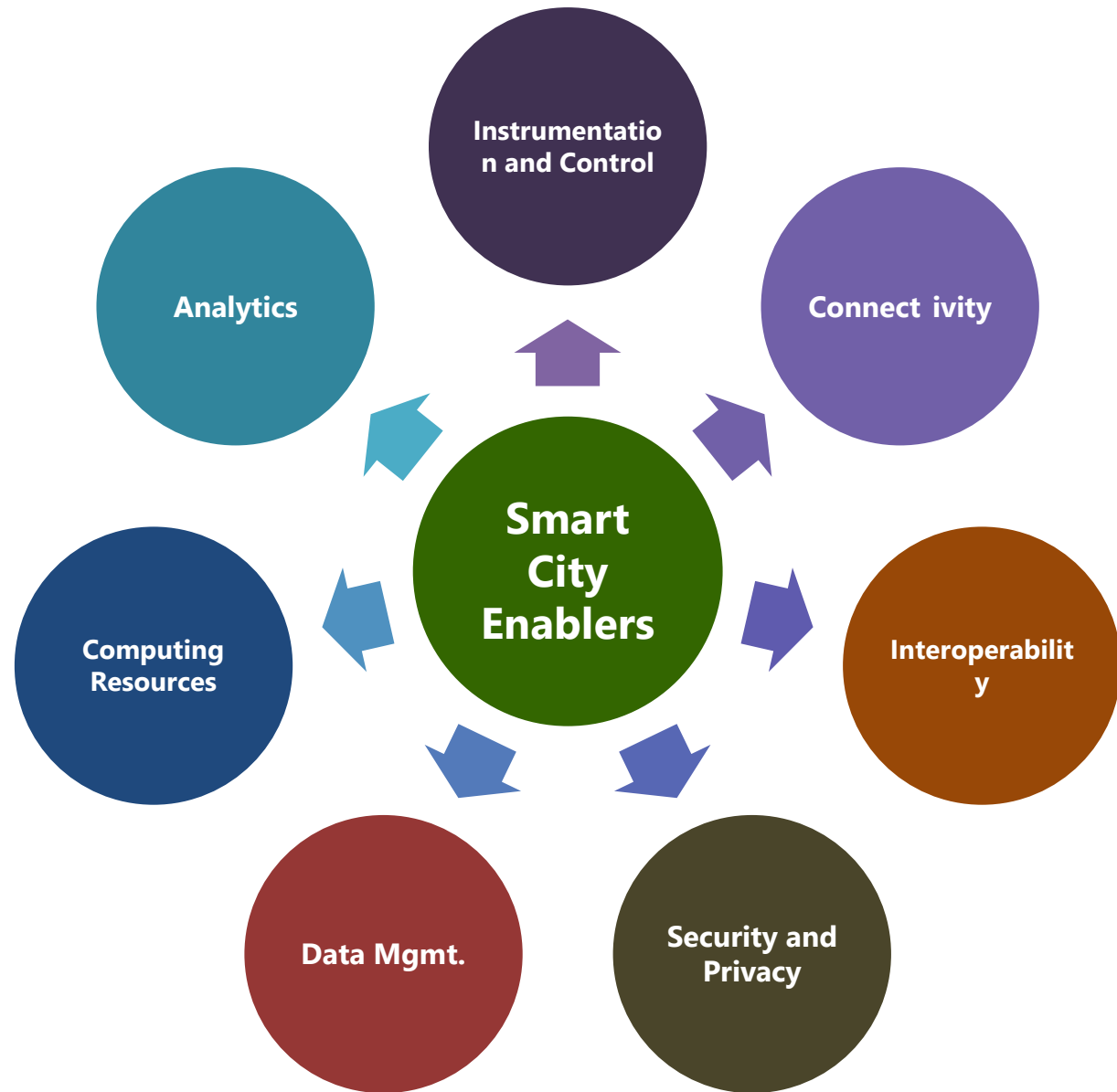


Payments and Finance



Waste Management

Smart City Enablers



What are the Barriers to Smart Cities?

Complexity

- Multiple departments, stakeholders, processes

Leadership

- Elected official/business leader needed to champion smart city vision

Finance

- Shrinking tax revenues, budget cuts, austerity measures

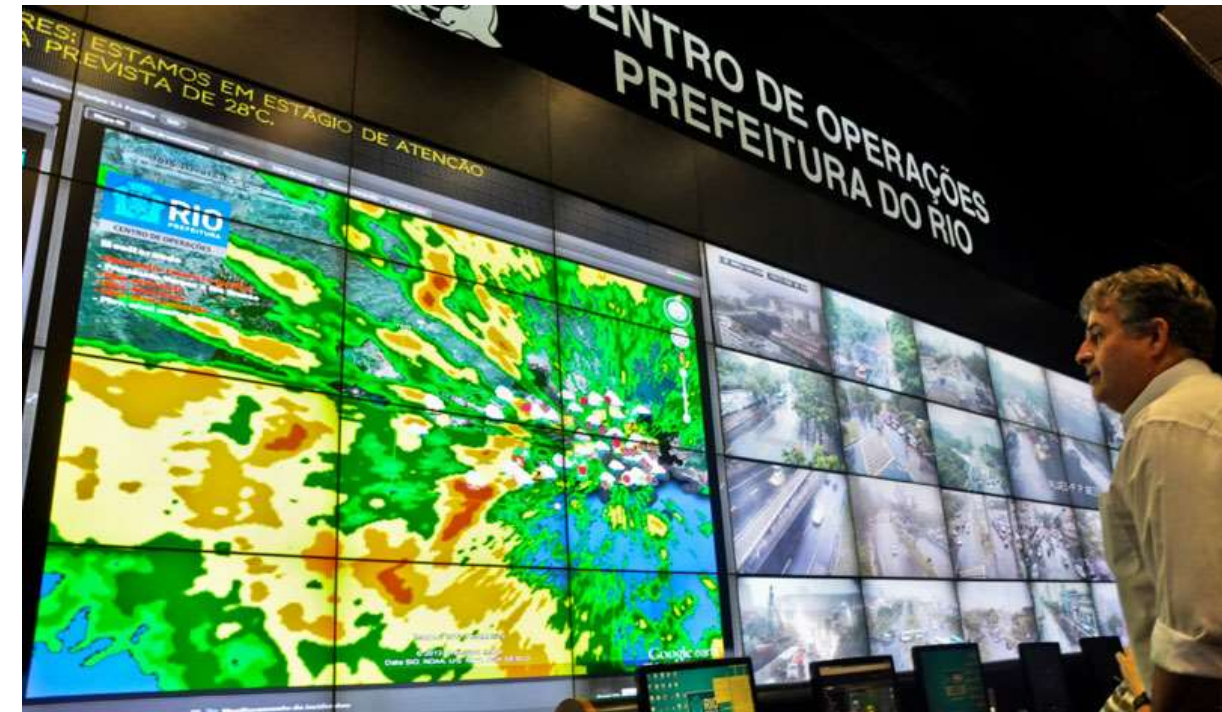
Business

- Integrated services across departments, single citizen portal

Technology

- Public-private partnerships in infusing ICT

Smart City Global Case Study: Rio de Janeiro, Brazil



- ❑ Established 'center of operations' to better anticipate and respond to incidents
- ❑ Center integrates and houses officials from 30 city agencies
- ❑ Setup weather forecasting and hydrological modeling system for 48-hr advance rain prediction

- ❑ Citizen's Portal-Citizens play an active role in operations via Facebook, Twitter, Instagram, and YouTube
- ❑ Better traffic management, emergency response
- ❑ Data analytics and citizen-city collaboration

Key Takeaways

- Cities face many challenges: Increasing population, greater energy demand, aging infrastructure, etc. Turn these challenges into opportunities
- Collect, communicate, crunch data from various sources to facilitate intelligent operations
- Energy is a foundational Smart City sector along with Telecommunications and Transportation. Energy, mainly due to the progress under the Smart Grid efforts tends to ahead of other sectors in the implementation of technology.
- The key to a Smart City is not about putting a whole bunch of new technology into each sector and making it smart – The key is about leveraging technology implemented in one sector and using it to make other sectors smart. Examples of where investments in one sector can be used to make other sectors smart include:
 - Common Telecom
 - Common GIS and Mapping
 - Common Customer Information System
 - And others
- Leverage lessons learnt from Smart City initiatives worldwide to continually improve and grow



Thank You !!!!



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