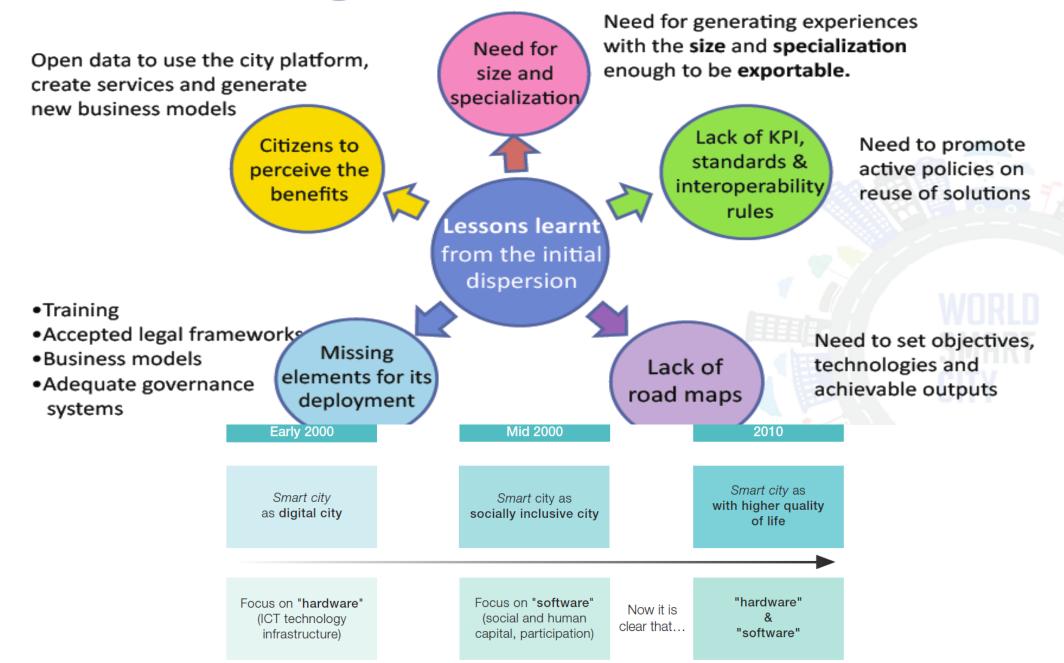
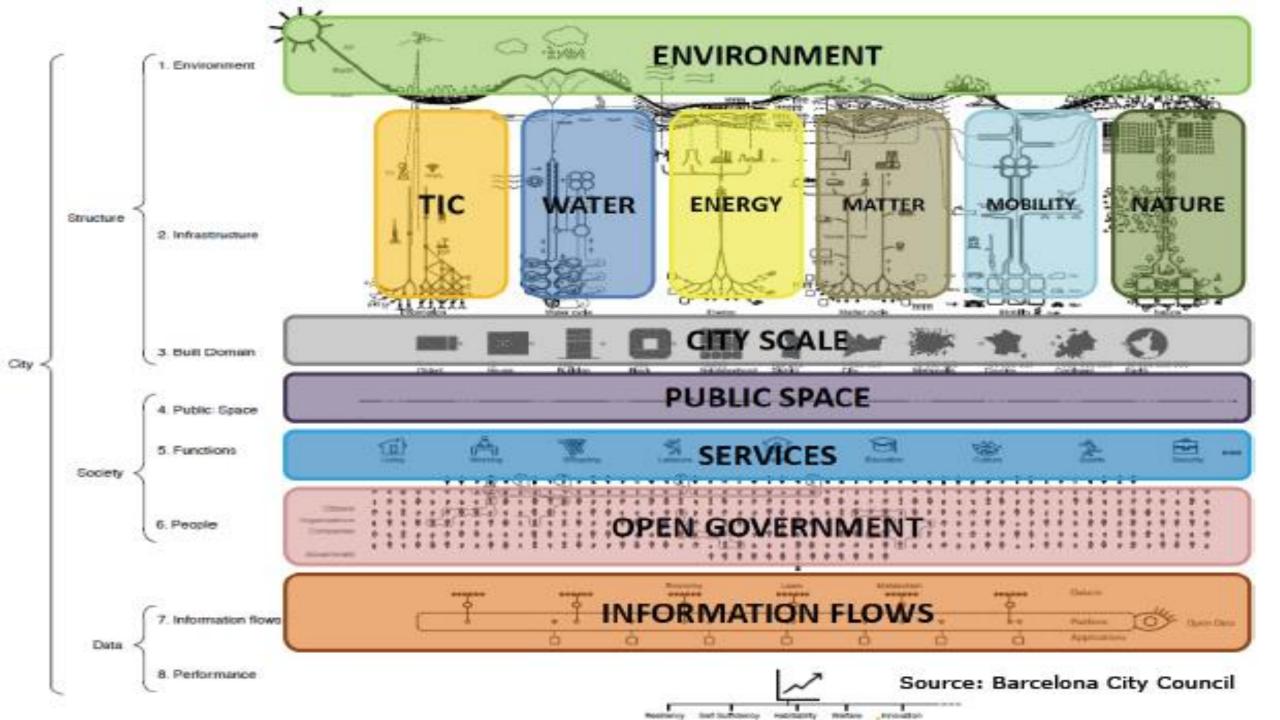


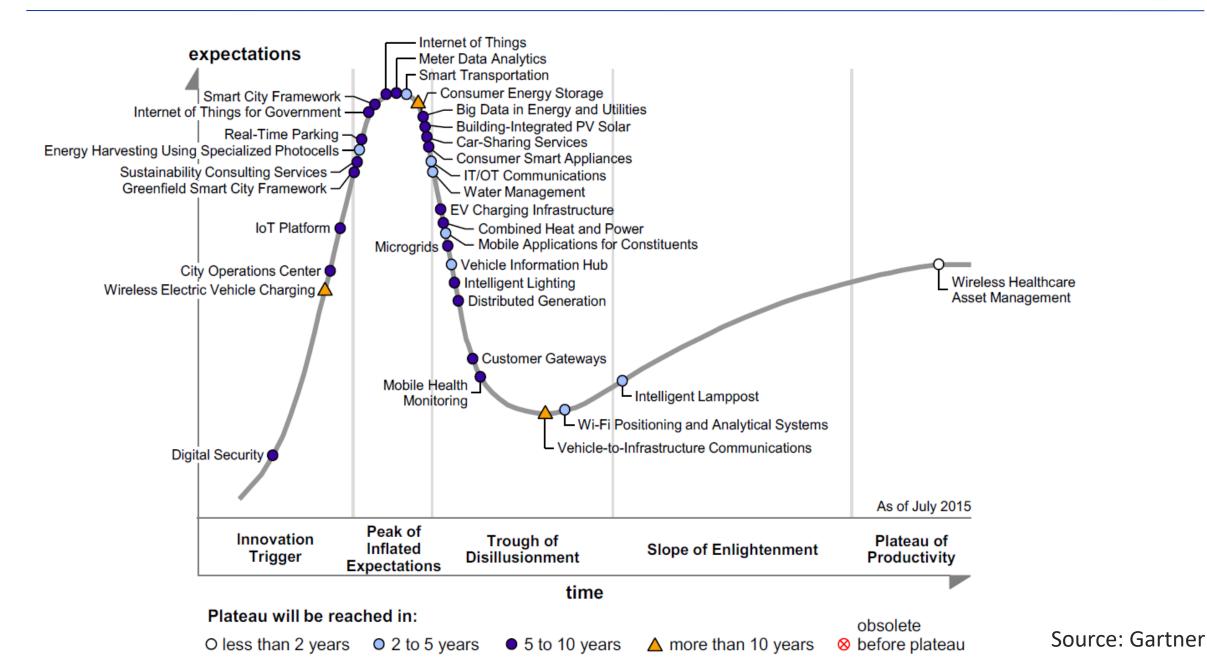
From Digital Cities to Smart Cities





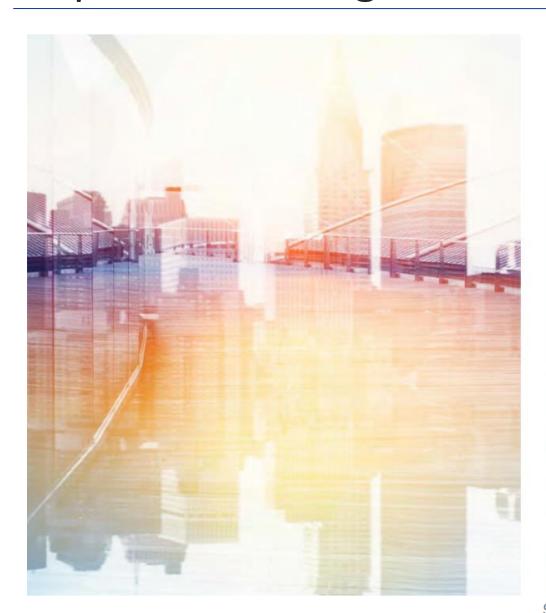
Hype Cycle for Smart City Technologies and Solutions, 2015

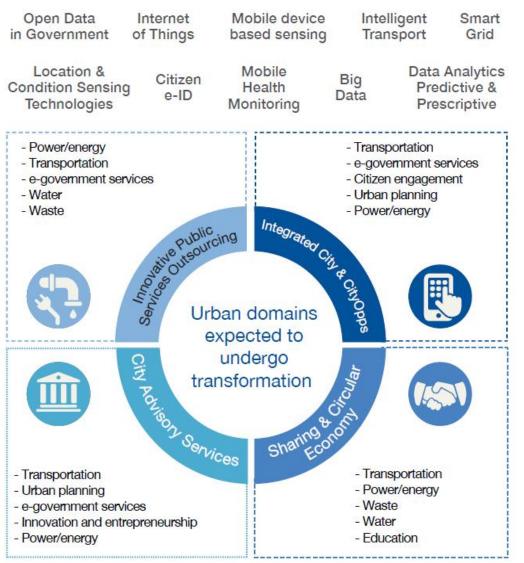




Top 10 Technologies Driving Urban Transformation



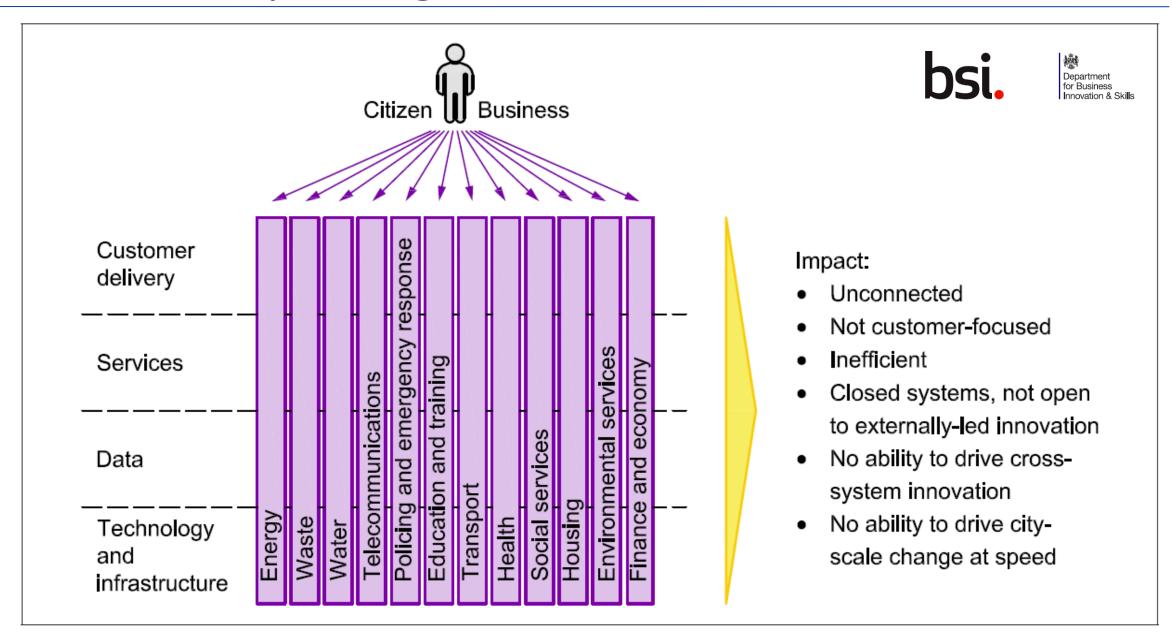




Source: World Economic Forum, Shaping the Future of Urban Development & Services Initiative, Global Survey on Urban Services (Oct.-Dec. 2015)

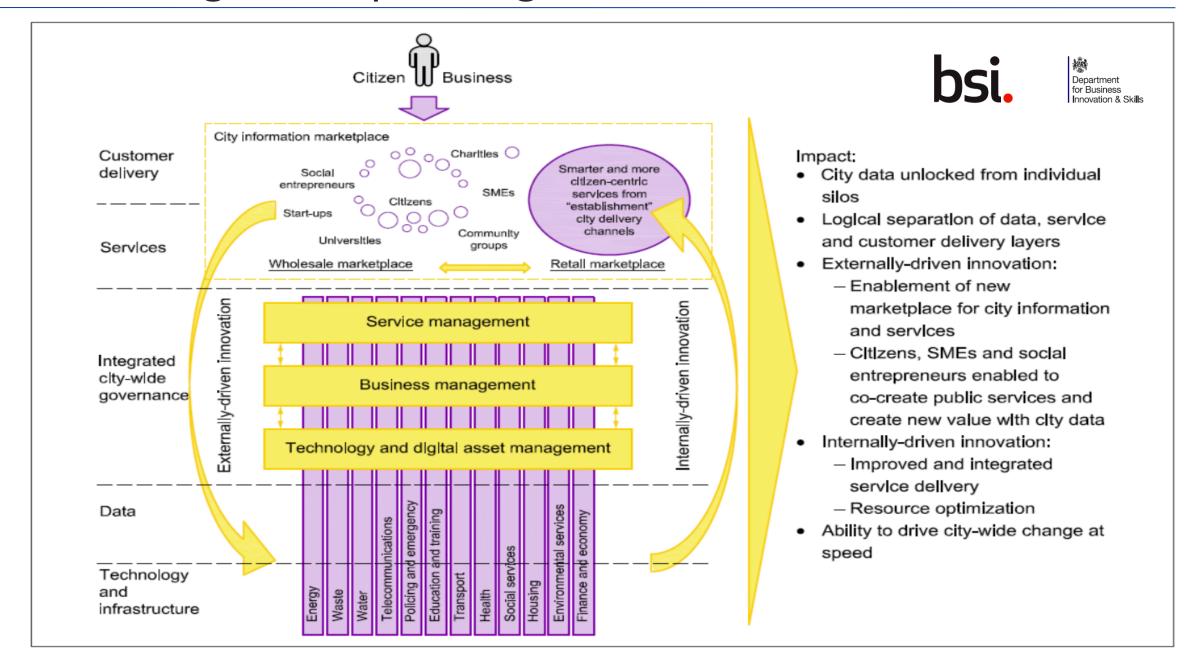
Traditional operating model





New integrated operating model





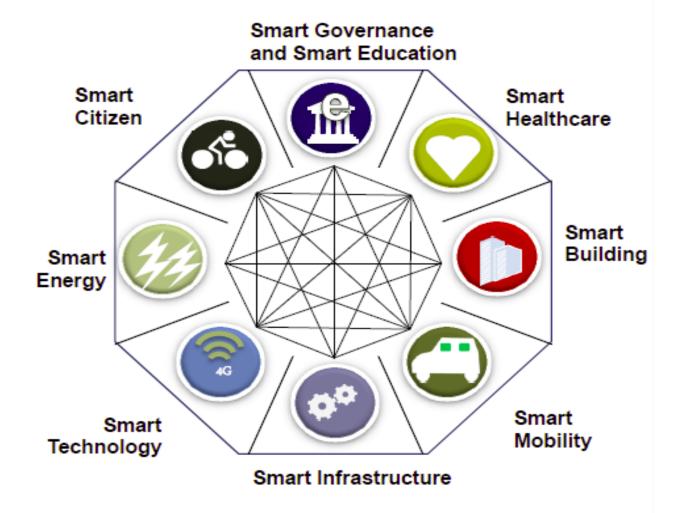
Definition of Smart Cities



Smart cities are cities built on smart and intelligent solutions and technology that will lead to the adoption of at least 5 of the 8 following smart parameters:

- smart energy
- smart building
- smart mobility
- smart healthcare
- smart infrastructure
- smart technology
- smart governance and smart education
- smart citizen

Smart City Concepts



City as a Customer, Global, 2011-2025



- Around 58% of total population (4.60 billion) will live in urban areas in 2025. With every 5% increase in country's urban population, there is a 10% gain in per capita economic activity.
- Developing economies will contribute for around 65%-70% of global growth in next 10 years. The 40 largest urban mega-regions will account 66% of global economic activity and about 85% of global technological and scientific innovation.
- Companies to internally revamp their in-house competencies and products/services portfolio to target cities as customers. The city infrastructure market to provide €1.7 trillion (\$2.2 trillion) opportunity in 2025.
- The three possible revenue models for urbanization projects, "space on rent", "services on payment", "replication of unique city solutions". These revenue models could lead to 40% to 50% reimbursement of initial investments and spending on urban city projects.
- City planners will provide city services utilizing "partner" model of 4 main types: Private "partner" model, exclusive "partner" model, managed "partner" model and open "partner" model.

City as a Customer, Global, 2011-2025



- Over the next 5 years global demand for infrastructure projects will reach \$10 trillion. The smart city market will be valued at \$3.30 billion in 2020-2025. Out of this share 25.10% of projects will be in the smart energy sector.
- Urbanization will compel retailers to make their stores more urban centric, smaller and digitally connected for the urban consumer. Stores of the future will be 20% smaller and more closer to the city centers than today.
- Urban logistics spending to reach \$59 trillion by 2020. Logistics services providers to innovate their products and services and introduce business models and solutions particularly tailored to urban areas like hybrid fleets, consolidation centers and innovative micro distribution models subject to spatial pattern and modal infrastructure within each city.
- Mega Corridors combined with the demand for integrated and multi-modal transport will lead to a new breed of market participants called "Mobility Integrators".

Source: Frost & Sullivan analysis.

Macro-to-micro Implications of Urbanization



Energy

- Smart Grids: Demand-response, energy-management systems
- Smart Meters
- Smart Home Appliances
- Flow and regenerative technologies
- Renewable integration

Logistics

- · Warehousing: Consolidation centers
- Transportation: Shared fleets, hybrid vehicles, polarizing fleet
- Last mile: Night and early morning deliveries
- Supply-chain management: LBS-based tracking

Impact of Urbanization Urbanization will lead to many cross-sector implications and opportunities, and will create cities as customers that demand infrastructure solutions.

Healthcare

- · Hub-and-spoke healthcare-delivery model
- e-Healthcare
- Medi Cities
- Healthcare data exchanges

Retail

- Bricks and clicks
- Change from big box to small box
- Single channel to omnichannel
- Social media marketing
- Zero design to shelf
- Virtual stores
- Retail parks

Mobility

- Park-and-ride systems
- Car- and bike-sharing
- Micro Mobility
- Low-emission mobility (e.g., electric cars)
- Multimodal Mobility

Smart Products

- Smart Bandage
- Smart Door
- Smart Cities Solutions
- Smart Buildings
- Smart Materials

Security

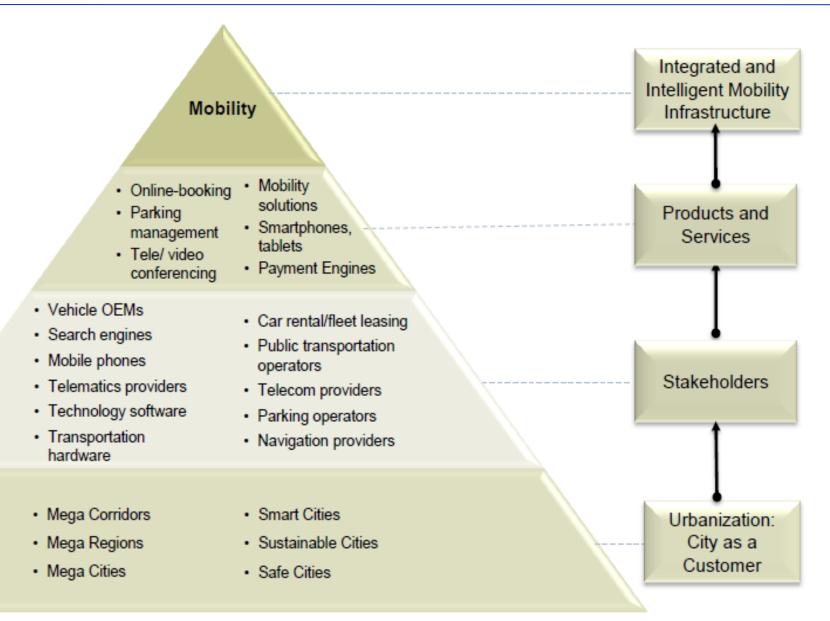
- Safe Cities
- Intelligent security systems
- Biometric and neural identity
- Integrated sensors
- Reactive disaster management solution

Image Source: Dreamstime. Source: Frost & Sullivan analysis.



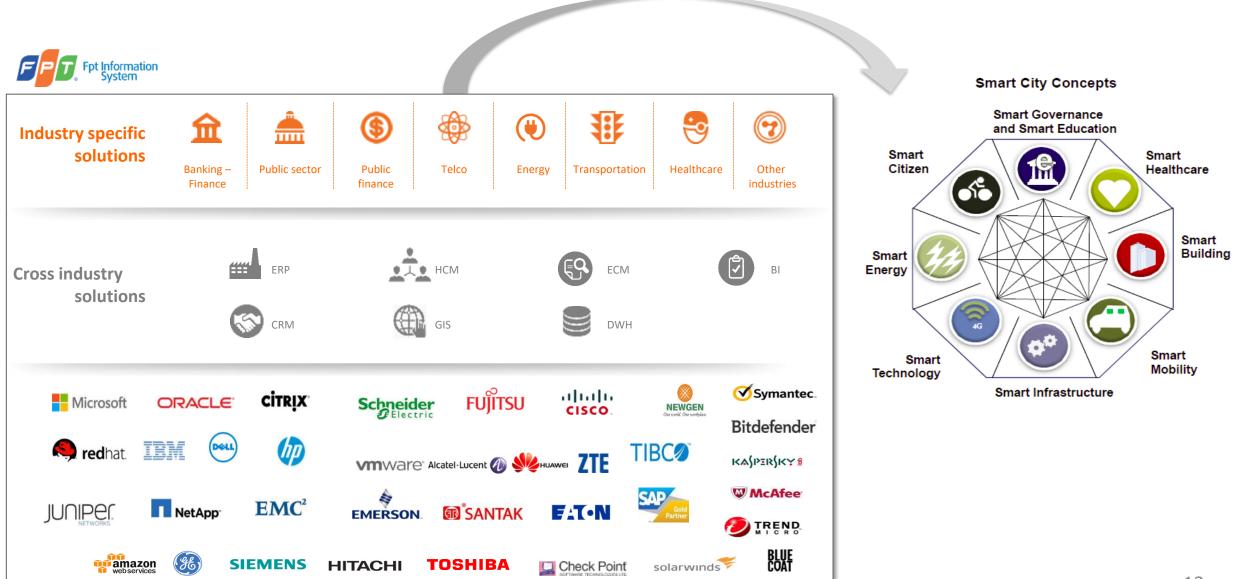
Integrated Mobility Value Chain





FPT IS and VN's cities digital transformation journey





FPT: 29 years as a VN's trusted partner in DX



