



# Smart Cities

An opportunity to transform Indian cities into global destinations



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**Urban Scenario in India**  
Globalisation and the conscious shift towards a knowledge- and information-based economy is resulting in a large number of Indian cities promoting themselves as smart and intelligent cities. These cities are competing to attract knowledge workers and investments, especially in sectors such as IT/ITeS, and manufacturing, which propel employment and physical infrastructure such as metro rail, ring roads, international airports, etc.

### Investment Destinations

A few cities are labelling themselves as investment destinations by offering state-of-the-art infrastructure and attractive lifestyles.



**While India's urban population is currently around 31% of the total population, it contributes over 60% of India's GDP. It is projected that urban India will contribute nearly 75% of the national GDP by 2030.**

- As India's population continues to grow, more citizens will move to cities.
- About 25-30 persons from rural areas will migrate every minute to major Indian cities in search of a better livelihood and lifestyle.
- It is estimated that by 2050, the number of people living in Indian cities will touch 843 million.
- Smarter ways to manage complexities, reduce expenses, increase efficiency and improve the quality of life are required to accommodate this rapid urbanisation, and make cities smart.

Cities are the 'engines of economic growth' and ensuring that they function efficiently is critical to our economic development.

Large scale urbanisation poses several challenges which will accelerate in the near future.

### Challenges in cities

Today's cities face significant challenges such as increasing population, lack of physical and social infrastructure, environmental and regulatory requirements, declining tax bases and budgets, and increased costs. They have to learn to identify new and smart ways to manage the complexity of urban living, and problems ranging from pollution, overcrowding and urban sprawl to inadequate housing, high unemployment, resource management, environmental protection, and rising crime rates.

Long standing urban challenges include housing, especially for low-income populations, infrastructure provision, and the delivery of a variety of services including water, sanitation, education and health.

With a view to modernising India and accelerating the process of urbanisation, Narendra Modi, Prime Minister of India, has envisioned the creation of 100 'smart cities' in the next five years. The idea is to develop satellite towns of larger cities and modernise existing mid-sized cities.

### What is a smart city

According to the Smart Cities Council, a smart city is one that uses information and communications technology (ICT) to enhance its liveability, workability and sustainability.

#### A SMART CITY USES THREE SIMPLE PROCESSES

- 1 It collects information about itself through sensors, other devices and existing systems
- 2 It communicates that data using wired or wireless networks
- 3 It analyses that data to understand what's happening now and what's likely to happen next

The conceptualisation of Smart City, therefore, varies from city to city and country to country, depending on the level of development, willingness to change and reform, resources and aspirations of the city residents. In developed countries, a smart city is one where existing infrastructure is augmented through application of IT, and includes sustainable development. However, the approach is different in the Indian context. Since many cities lack basic infrastructure, institutional framework and proper governance, smart city initiatives will have to focus on providing basic needs through IT enabled solutions.

#### THE CORE INFRASTRUCTURE ELEMENTS IN A SMART CITY WOULD INCLUDE



Adequate water supply



Assured electricity supply



Sanitation, including solid waste management



Efficient urban mobility and public transport



Affordable housing, especially for the poor



Robust IT connectivity and digitalization



Good governance, especially e-Governance and citizen participation



Sustainable environment



Safety and security of citizens, Particularly women, children & the elderly

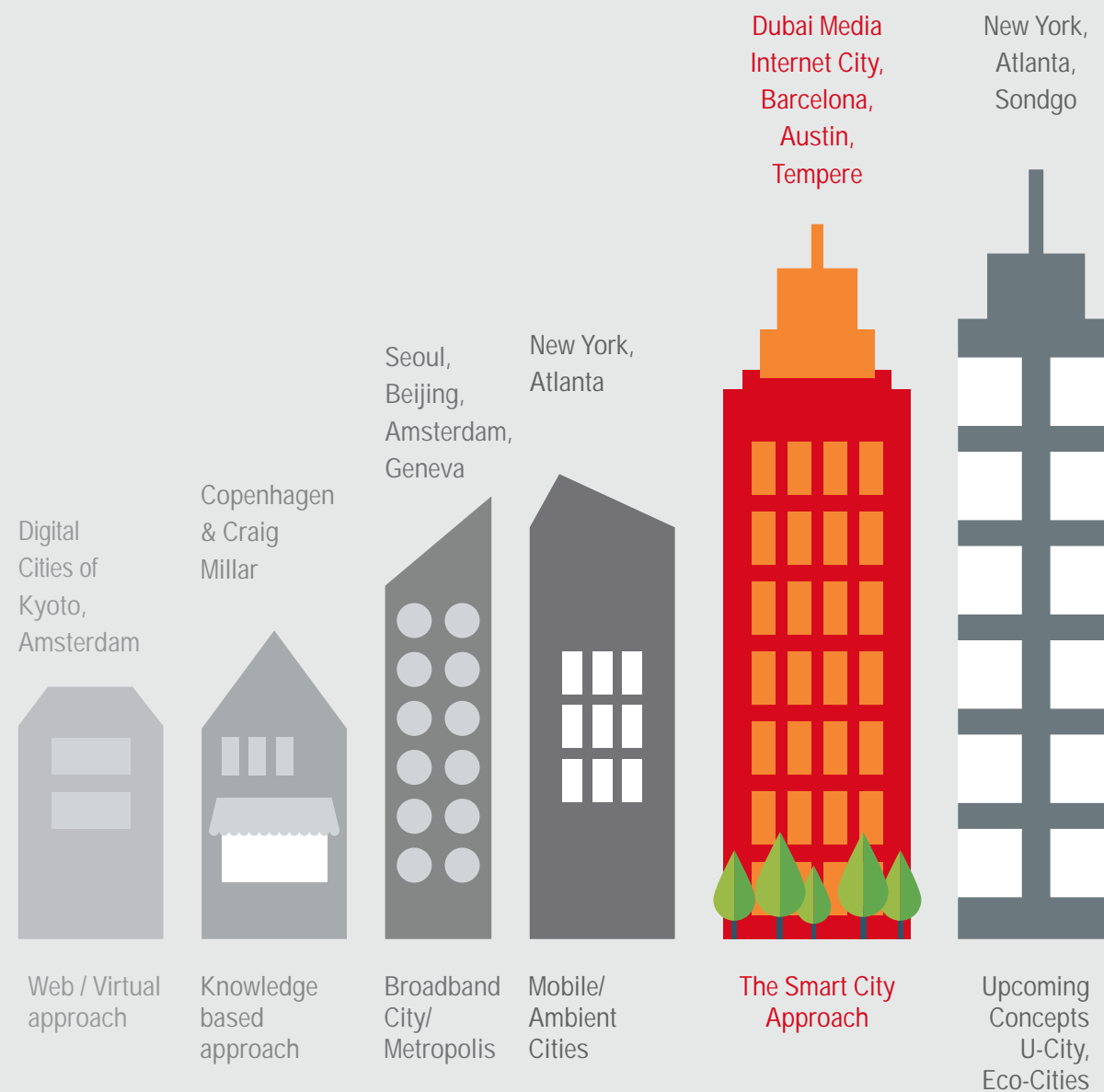


Health and education.

# The Evolution of SMART CITIES

Various forms of smart cities have been developed and evolved since the early '90s, which have faced different challenges and have followed alternative approaches.

## Example of Cities



## Traditional cities vs. Smart cities

Planning	
<ul style="list-style-type: none"> <li>• Most of the cities are ancient and unplanned in nature</li> <li>• Planning is disorganised and chaotic                             <ul style="list-style-type: none"> <li>• Less scope for urban planning</li> <li>• Less scope for future urbanisation</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Concept of satellite city, sustainable planning, decentralisation of existing cities are the major solutions</li> <li>• Planning is more coordinated and holistic</li> <li>• Lot of scope for better planning</li> <li>• Scope for future urbanisation is planned</li> </ul>
Infrastructure	
<ul style="list-style-type: none"> <li>• Incompetent existing infrastructure</li> <li>• Inefficiently designed leading to increased costs and resources                             <ul style="list-style-type: none"> <li>• Requires constant maintenance</li> </ul> </li> <li>• Inadequate infrastructure facilities in remote locations</li> </ul>	<ul style="list-style-type: none"> <li>• Highly systematic infrastructure facilities</li> <li>• Cost-effective technologies leading to optimization of costs and resources</li> <li>• Easy maintenance with automated systems</li> </ul>
System Operators	
<ul style="list-style-type: none"> <li>• Indeterminate about the infrastructure conditions                             <ul style="list-style-type: none"> <li>• Inactive in predicting problems</li> </ul> </li> <li>• Can't deploy resources efficiently to address problems                             <ul style="list-style-type: none"> <li>• Cost savings not realised</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Proactive reporting on infrastructure conditions</li> <li>• Problems are predicted with accuracy</li> <li>• Deploys resources more efficiently</li> <li>• Automated maintenance, thereby saving money</li> </ul>
ICT Investments	
<ul style="list-style-type: none"> <li>• Unsystematic fragmented method and solutions are isolated                             <ul style="list-style-type: none"> <li>• Deliver unsatisfactory suboptimal benefit</li> </ul> </li> <li>• Scalability of investment couldn't be measured</li> </ul>	<ul style="list-style-type: none"> <li>• Centrally planned</li> <li>• Deployed across city departments and projects</li> <li>• Deliver satisfactory optimal benefit</li> <li>• Scalability of investment is known, hence, maximum value and savings could be estimated</li> </ul>
Citizen Participation	
<ul style="list-style-type: none"> <li>• Citizen participation is limited, and no effective communication to citizens                             <ul style="list-style-type: none"> <li>• No optimal use of city services</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Citizens can effectively participate in smart city initiatives</li> <li>• Two-way communications between government and people with specialized services focused on the individual citizen</li> <li>• Optimal use of city services</li> </ul>
Governance	
<ul style="list-style-type: none"> <li>• No proper channelling between departments, hence functions are dis-connected without integration of data                             <ul style="list-style-type: none"> <li>• Rarely share data among themselves and collaborate on initiatives</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Departments and functions are integrated and/or shared</li> <li>• Data is communicated and shared between departments and better correlated with other data services results in reduced expenditures</li> </ul>





## The drivers of smart cities

The changing physical, economic, and technological environment across the globe necessitates smart cities, which help to enhance liveability, workability, and sustainability. These powerful drivers are converging to make smart cities a growing trend all over the world.

### Growing Urbanisation

Cities deliver many benefits – greater employment opportunities, easier access to healthcare, education, entertainment, culture and the arts. As a result, people are moving to cities at an unprecedented rate. In India, over 200 million people will be added to urban populations over the next 15 years.

### Rising Stress

The challenges and competitions from increasing population, increased costs, increase in travel distances, unemployment, non-availability of quality time with family, increase in crime rates have led to many physical and psychological problems. Hence, the city should have good transportation, public amenities and leisure facilities, public security, smart technologies etc. to mitigate the growing stress.

### Inadequate Infrastructure

Urbanisation is putting a significant strain on city infrastructure that was, in most cases, built for populations a fraction of their current size. Currently, most cities, towns, districts, and states in India lack adequate base infrastructure such as roads, power, water supply, sewerage, and sanitation. The need for base infrastructure to be addressed to prepare the foundation for 'Make in India' a major new national program, designed to facilitate investment, foster innovation, enhanced skill development. Protect intellectual property. And build best-in-class manufacturing infrastructure. There's never been a better time to make in India.

### Increasing Economic Competition

Cities across the world are competing to secure investments, jobs, businesses and talent. This may lead to a transition in the workforce and migration of people from one city to another. Cities will increasingly need to focus more on physical infrastructure and social infrastructure to meet the needs of a growing population.

### Rapidly Improving Technology

Improvement in technology has made things much easier than before, and will go a long way in making cities smart. In many developed countries, the installation of millions of smart meters and smart sensors will produce data of value to a smart city. The adoption of smart thermostats and building management systems in many cities is resulting in smart buildings. Other smart technologies such as intelligent transportation management software, roadway sensors, smart parking apps, navigation apps and equipment displaying real-time traffic are effectively planning and managing traffic. The use of electric vehicles helps reduce pollution levels. High-bandwidth networks worldwide connect one billion computers and four billion cell phones.

### Growing Environmental Challenges

Cities house half of the world's population but use two-thirds of the world's energy and generate three-fourths of the world's CO2 emissions. Every city has to learn to proactively mitigate the effects of such environmental concerns and other climate changes. Smart technologies can help to do this, and to spread awareness.

### Rising Expectations

Accustomed to instant, anywhere, anytime, personalised access to information and services via mobile devices and computers, citizens are now expecting the same kind of access to city services. In developed countries, ICT plays an important role in all type of city services, from governance to smart management of buildings. This helps increase transparency between the government and citizens. Easy access to all city services causes citizens to interact more and participate in the long term development and maintenance of their city.



## Smart City Mission in India

On 30 April 2015, the Cabinet approved two flagship schemes in a bid to make urban areas more liveable: 100 Smart Cities Mission and Urban Rejuvenation Programme for 500 towns and cities.

The aim of these schemes is to promote smart solutions for the efficient use of available assets, offer economic activities, investment and employment opportunities, and improve the quality of life of a wide range of residents.

Enhanced Livability means a better quality of life for city residents. In the smart city, people have access to a comfortable, clean, engaged, healthy, safe lifestyle and opportunities for participation in governance. Some of the most highly valued aspects include better infrastructures in terms of inexpensive energy, convenient mass transit, good schools, faster emergency responses, clean water and air, low crime and access to diverse entertainment and cultural options.

Enhanced Workability means accelerated economic development. In other means, creation of more job opportunities, attract investments, which will increase local GDP as well as national GDP. In the smart city, people have access to the foundations of prosperity – the fundamental infrastructure services that let them compete in the world economy. Those services include broadband connectivity; clean, reliable, inexpensive energy; educational opportunities; affordable housing and commercial space; and efficient transportation

Enhanced Sustainability means giving people access to the resources; they need without compromising the ability of future generations to meet their own needs. Sustainability includes social sustainability, environmental sustainability and financial sustainability. Smart cities enable the efficient use of natural, human and economic resources and promote cost saving in times of austerity. It isn't about investing huge sums of money into new infrastructure, it's about making infrastructure do more and last longer for less

Competitiveness determines the ability of a city in terms of the degree of livability i.e. quality of life, workability i.e. employment and investment opportunities, and sustainability i.e. minimal use of natural resources and smart use of technologies. This will rank the cities to be nominated for creation of Smart City.

## ★ ★ ★ ★ ★ Project Advantages ★ ★ ★ ★ ★

- ★ Development of infrastructure, human resources, industry, technology, education, health and medicine, banking and finance, retail, tourism and heritage structures, art and culture, and natural resources utilisation.
- ★ Increased opportunity for domestic investors, foreign investors, developers, buyers, industrialists, employers, etc.
- ★ Huge FDI as a result of investor friendly policies.
- ★ Higher GDP contribution from smart cities due to increase in investment, tourism, and employment, and expansion of industries/ corporates
- ★ Cost reduction due to adoption of smarter initiatives in sectors such as transportation, energy, water, security, etc.
- ★ Creation of crores of jobs
- ★ Annual revenue generation for state and central government



*The success of a smart city will depend on the efficiency of the following four components or pillars*



## Strategy for Smart City Development

The strategic components of Area-based development in the Smart Cities Mission are city improvement (retrofitting), city renewal (redevelopment) and city extension (greenfield development) plus a Pan-city initiative in which Smart Solutions are applied covering larger parts of the city.

*Below are given the descriptions of the three models of Area-based Smart City Development*

<i>Process</i>	<i>Retrofitting</i>	<i>Redevelopment</i>	<i>Green-Field Townships</i>
<i>Type of Development</i>	Existing developed area	Existing urban sprawl (including railway, bus stations, etc.)	Vacant land
<i>Land Extent Required</i>	Minimum 500 acres in size	Minimum 50 acres in size	Minimum 250 acres for each township
<i>Focus for Development</i>	<ul style="list-style-type: none"><li>• Zero emission initiatives - solid and liquid discharge</li><li>• High-speed, high-bandwidth connectivity</li><li>• CCTV surveillance in all public areas</li></ul>	<p>In addition to all retrofitting components, the following to be deliberated:</p> <ul style="list-style-type: none"><li>• Redevelopments with higher FAR and lower ground coverage to provide more green footprints within the city</li><li>• Smart measures to make the buildings green and energy-efficient</li></ul>	<ul style="list-style-type: none"><li>• In addition to all redevelopment components, the following to be deliberated:</li><li>• Trade facilitation, incubation, skill development centres</li></ul>
<i>Infrastructure Development</i>	<ul style="list-style-type: none"><li>• Quality electricity and water supply through smart metering</li><li>• Installation of LED lighting, use of intelligent traffic and parking management systems in required areas</li><li>• Development of pavements, cycle tracks, roads</li></ul>	<ul style="list-style-type: none"><li>• Road widening, allocation of recreational and open spaces</li></ul>	<ul style="list-style-type: none"><li>• Development of base physical infrastructures such as roads, power, water supply, sewerage, waste management, etc.</li><li>• Quality infrastructure for education, health and recreation</li><li>• Provision and integration of multi modal transport systems</li></ul>
<i>Implementation (No. of Years)</i>	<ul style="list-style-type: none"><li>• Implementation in 5 years</li></ul>	<ul style="list-style-type: none"><li>• Implementation in 5 years</li></ul>	<ul style="list-style-type: none"><li>• Implementation in 5 years</li></ul>
<i>Implementation (through)</i>	<ul style="list-style-type: none"><li>• SPV (ULB, State, Centre)</li></ul>	<ul style="list-style-type: none"><li>• SPV (Public/Private Developer)</li><li>• Equity Participation by GoI, States, ULBs</li></ul>	<ul style="list-style-type: none"><li>• SPV (Public/Private developer)</li><li>• Equity Participation by GoI, States, ULBs</li></ul>
<i>Selection Process</i>	<ul style="list-style-type: none"><li>• Selection through 'City Challenge Competition'</li></ul>	<ul style="list-style-type: none"><li>• Selection through 'City Challenge Competition'</li></ul>	<ul style="list-style-type: none"><li>• Selection through 'City Challenge Competition'</li></ul>
<i>Planning Principles</i>	Planning in an existing built-up area of a municipal ward, preparing plan with citizen participation	Replacement of existing built-up area and preparing a new layout plan with enhanced infrastructure by way of mixed land use	Introduction of smart solutions in a vacant area using innovative planning
<i>Case Examples</i>	Connaught Place in Delhi, Bhendi Bazar in Mumbai	Kidwai Nagar in Delhi	Land pooling/land reconstitution in Outer Delhi, GIFT city in Gujarat

Pan-city development envisages application of selected Smart Solutions to the existing city-wide infrastructure. Application of Smart Solutions will involve the use of technology, information and data to make infrastructure and services better. For example, applying Smart Solutions in the transport sector (intelligent traffic management system) and reducing average commute time or cost to citizens will have positive effects on productivity and quality of life of citizens. Another example can be waste water recycling and smart metering which can make a substantial contribution to better water management in the city.





Selection, Implementation and Funding of Smart Cities



The total number of 100 Smart Cities have been distributed among the States and UTs on the basis of an equitable criteria. The formula gives equal weightage (50:50) to urban population of the State/UT and the number of statutory towns in the State/UT. Based on this formula, each State/UT will, therefore, have a certain number of potential Smart Cities, with each State/UT having at least one.

Selection and Implementation of Smart Cities

Smart city aspirants will be selected through a 'City Challenge Competition' intended to link financing with the ability of the cities to achieve the Mission objectives. Each state will shortlist a certain number of smart city aspirants as per the norms to be indicated, and they will prepare smart city proposals for further evaluation for Central support. States have the flexibility of designing schemes based on the needs of identified smart cities, and in their execution and monitoring. A Special Purpose Vehicle will be created for each city to implement the Smart City Action Plan. States will submit State Annual Action Plans to the Centre for broad concurrence based on which funds will be released. A Public-Private Partnership model is to be used by States and urban local bodies to mobilise private investments.

Different steps in the selection of Smart Cities are given below

City Challenge Process

The 'City Challenge' is a positive approach towards bringing objectivity in selecting cities and thus increasing the chances of being successful in the pilot projects. The pilot cities can serve a larger development agenda by addressing larger regional development goals; and vulnerability concerns. The process of selection requires a bottom-up as well as a top-down approach. While the bottom-up approach will give a platform for cities to show proactiveness, the top-down approach will ensure that the larger goals of urban development are not pushed out of focus.

The city challenge approach will be as follows

Step 1: Develop indices for cities - Indicators that address the four objectives: probability of success, replicability and scalability, attaining larger development goals, and reducing vulnerability.

For example, the probability of success can be represented by parameters such as economic growth potential, infrastructure preparedness, educated and aware citizenry, proactive city government, etc. The indicators for infrastructure preparedness may include the status of physical infrastructure and facilities such as roads, water, sanitation, drainage, solid waste management, etc. Weightage for indicators can be decided based on a scientific method decided by consensus. Indices can be developed using

nationally and internationally accepted methodologies.

Step 2: Call for proposals from cities

This step will entail a bottom-up approach. Proposals can contribute towards two major aspects of the city selection process: the city-level data required to measure the indicators, and the city's vision towards its future development, which is necessary for any programme's success.

The responsiveness of a city in participating in a competitive proposal bid can be indicative of the proactiveness of its government. This is a critical factor for the success of the programme.



Step 3: Evaluation of proposals

This step would involve the evaluation of the proposals submitted based on the methodology decided during Steps 1 and 2. An expert committee can be constituted in each State, with representation from academia, research, think tanks and independent experts. This committee can help State governments develop the framework for evaluation, be part of the evaluation process, and support cities in preparing proposals.

The results may not be conclusive however, and further deliberation may be required to reach a consensus on the shortlisted cities for the first phase of the Smart Cities programme. Transparency, participation, consensus building, responsiveness, equity, inclusiveness and good governance will result from this.

“Implementation by PPP”

*A Special Purpose Vehicle (SPV) created for the purpose will execute the implementation of the Mission at the City level. For smart cities, the government will appoint CEOs, who will drive the concept and execution rather than leave these tasks to municipal bodies alone.*

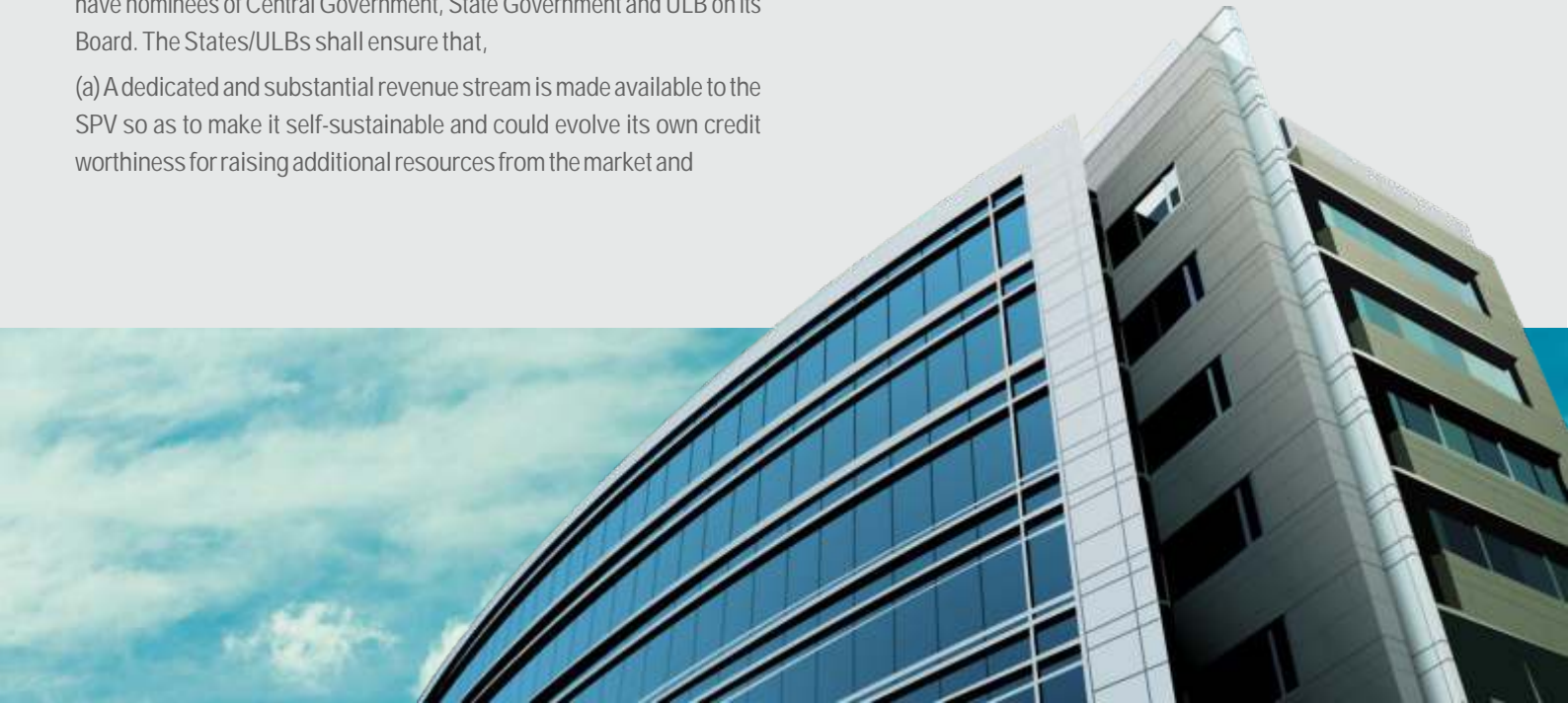
The SPV will be a limited company incorporated under the Companies Act, 2013 at the city-level, in which the State/UT and the ULB will be the promoters having 50:50 equity shareholdings. The private sector or financial institutions could be considered for taking equity stake in the SPV, provided the shareholding pattern of 50:50 of the State/UT and the ULB is maintained and the State/UT and the ULB together have majority shareholding and control of the SPV.

The SPV will plan, appraise, approve, release funds, implement, manage, operate, monitor and evaluate the Smart City development projects. Each Smart City will have a SPV which will be headed by a full time CEO and have nominees of Central Government, State Government and ULB on its Board. The States/ULBs shall ensure that,

(a) A dedicated and substantial revenue stream is made available to the SPV so as to make it self-sustainable and could evolve its own credit worthiness for raising additional resources from the market and

(b) Government contribution for Smart City is used only to create infrastructure that has public benefit outcomes. The execution of projects may be done through joint ventures, subsidiaries, public-private partnership (PPP), turnkey contracts, etc. suitably dovetailed with revenue streams.

Funds provided by the Government of India in the Smart Cities Mission to the SPV will be in the form of tied grant and kept in a separate Grant Fund. These funds will be utilized only for the purposes for which the grants have been given and subject to the conditions laid down by the MoUD.







*Funding of Smart Cities*

The Centre has approved an outlay of INR 98,000 crore to make cities more liveable through two schemes in the next five years: Smart Cities Mission, and Atal Mission for Rejuvenation and Urban Transformation (AMRUT) Scheme with a break-up of INR 48,000 crore for 100 Smart Cities Mission (INR 100 crore per city per year for five years) and INR 50,000 crore for the AMRUT scheme. Central assistance will be to the extent of 50% of project cost for cities and towns with population of up to 10 lakh, and one-third of the project cost for those with a population above 10 lakh.

Central assistance will be released in three instalments in the ratio of 20:40:40 based on achievement of milestones indicated in State Annual Action Plans. The rest of the funds will be raised from the State governments, municipal debt, real estate investment trusts, infrastructure debt funds, and the PPP vehicle.

The distribution of funds under the Scheme will be as follows:

- 93% project funds.
- 5% Administrative and Office Expenses (A&OE) funds for state/ULB (towards preparation of SCPs and for PMCs, Pilot studies connected to area-based developments and deployment and generation of Smart Solutions, capacity building as approved in the Challenge and online services).
- 2% A&OE funds for MoUD (Mission Directorate and connected activities/structures, Research, Pilot studies, Capacity Building, and concurrent evaluation)

The guidelines are released by government recently on June, 2015 for rolling out the scheme to develop 100 smart cities.

Please follow the link to access the guidelines  
<http://smartcities.gov.in/>



*Various Smart City Initiatives  
by Government/Local Bodies/Private Investors*

City	Funding and External Partners	Reported Initiative
Executed Initiatives		
GIFT City	Government of Gujarat and ILFS	Global 'smart city' and commercial hub for financial and IT services
Kochi Smart City	Kerala Govt. and TECOM	Developing an IT economic zone
Gwalior, Ujjain, Sagar, Jabalpur and Dewas	Madhya Pradesh Government, Essel Group	Nurture integrated smarter communities by investing in power, gas, water, solid waste and sewage treatment, city drainage; city Wi-Fi and broadband, intelligent traffic management
Jabalpur	Essel Group, Hitachi Zosen	State-of-the-art waste to energy plant for municipal solid waste
Dholera and Shendra Bidkin (Phase I); Vikram Udyogpuri, Greater Noida Industrial Township and Gurgaon Global City	DMIC, Cisco, Government of Japan and others	Master ICT plan created for unbuilt cities to ensure cost effective investment in sensing technology, telecom and ICT infrastructure; seven cities originally announced along Delhi-Mumbai Industrial Corridor (DMIC)
Surat	Verint, working with State Civil Authorities and Police	'Safe City' programme - intelligent surveillance systems, with 650 surveillance cameras installed along with 100 monitoring junctions







*Number of cities allocated to States based on urban population and number of statutory towns*



*“Countries Shown Interest in Development of Smart Cities in India”*

 <p><i>Israel</i></p> <p>Mumbai</p> <p>Co-operation in community outreach and participation,online municipal services, traffic and parking management through IT</p>	 <p><i>Spain</i></p> <p>New Delhi</p> <p>Privatise the management of basic utilities such as power, water, and sewage treatment</p>	 <p><i>Japan</i></p> <p>Delhi - Mumbai Industrial Corridor</p> <p>Master ICT plan created for unbuilt cities to ensure cost effective investment in sensing technology, telecom and ICT infrastructure; seven cities originally announced along DMIC</p>
 <p><i>USA</i></p> <p>Allahabad, Ajmer and Visakhapatnam</p> <p>Clean water and municipal solid waste - part of smart city initiative</p>	 <p><i>Japan</i></p> <p>Varanasi</p> <p>MOU between India and Japan to develop Varanasi as a smart heritage city based on the Kyoto model; Google may provide data services to aid execution</p>	 <p><i>Germany</i></p> <p>Three Smart Cities Germany</p> <p>Entered into an agreement with India to develop three smart cities, which are yet to be identified</p>
 <p><i>France</i></p> <p>Nagpur, Puducherry &amp; Chandigarh</p> <p>France is keen to invest in creation of smart cities to enable all-round development and to preserve the cultural heritage of each city</p>	 <p><i>Sweden</i></p> <p>Karnataka, Maharashtra, Telangana and Uttar Pradesh</p> <p>Sweden is keen on partnering with Indian companies to build 'smart cities' through the public private partnership (PPP) mode</p>	 <p><i>Singapore</i></p> <p>Vijayawada-Guntur Region</p> <p>Smart city budget to build Andhra Pradesh's new capital (Amaravati) over five years</p>



## Smart City Opportunities

Smart City Opportunities - The concept of smart cities has many challenges in implementation, especially in India. Hence, the Smart Cities Mission requires assistance of experts in various fields such as consultation, development, operation, financing and management. Govt. is encouraging PPP model for effective implementation of smart cities. Many private sectors have shown interests and assistances in the form of investors, developers, designers, service providers, academia and consulting firms etc. Hence, there is a vast opportunity private players in every sectors to make the mission possible. They will also help to explore new, collaborative ways of working and alternative business models necessary to unlock further investment and innovation.



## Real Estate Development

Smart city initiatives will create huge opportunities for real estate sectors such as residential, commercial, industrial, retail, hospitailty, health care, etc. Based on this demand forecast, city development plans will have to be formulated which will build up the foundation for a desirable smart city; this will require the participation of experts such as town planners, city planners, developers, architects, real estate consultants, mep consultants, structural engineers, contractors, etc.

### ICT

- As per NASSCOM, smart cities can create a \$30-40 bn business opportunity for the IT sector over the next five-ten years; this is on the assumption that about 10-15% of the outlays on smart cities will be for the ICT component
- NASSCOM has built a framework to highlight the role of ICT in developing smart cities, and categorise ways and means to make relevant ICT interventions that will enable management of future smart cities in a sustainable and transparent manner
- NASSCOM also suggests the role of ICT in creation of smart city and enable State governments and urban local bodies to integrate ICT into their future city master plans. Its ICT framework will address the unique challenges faced by Indian cities and provide an integrated perspective across the key pillars of physical infrastructure, social infrastructure, environmental and institutional (governance).
- The framework further defines and assesses the core of each sub system of a potential smart city, identifies ICT governance interventions, organisational requirements, and capability development needs at city levels.
- This will enhance the use of advanced technologies such as Geo Informatics Systems, digital terrain modelling, GIS substations, 3D analysis, integrated utility planning using 3D technologies, smart city ICT components, etc.
- Technology vendors partnering with the government in various smart city initiatives include Integrators who provide unified integration of multiple components (such as IBM, Oracle, Accenture); Network Service Providers who offer collaborative networks and data analysis (such as Cisco, Verizon); Product Vendors who provide products that operate as main nodes of connectivity (such as Honeywell, Schenider Electric, Siemens); and Managed Service Providers who provide monitoring, management and consulting (such as IBM, Infosys).

### Infrastructure

- The focus will be on developing and improving the basic infrastructure necessary for a modern city, such as roads, water supply and sewage systems, energy, telecommunications, etc.
- This will lead to development of waterworks, communication network, and expressways, with the involvement of infrastructure consultants and developers through the Public Private Partnership mode.
- The government will engage bodies such as Special Purpose Vehicles, local municipal corporations, etc. to manage the implementation of smart city projects.
- This has opened up a plethora of business opportunities for various foreign countries who can now partner with India through the PPP model to develop industrial corridors, and explore investments in the power and mining sectors.

### Banking and Financial

- The High Power Expert Committee (HPEC) on Investment Estimates in Urban Infrastructure has assessed a Per Capita Investment Cost (PCIC) of INR 43,386 for a 20-year period. The total estimate of investment requirements for the services covered by HPEC amounts to INR 7.0 lakh crore over 20 years (with an annual escalation of 10% from 2009-10 to 2014-15). This translates into an annual requirement of INR 35,000 crore. Therefore, a large part of the financing for smart cities will have to come from the private sector with the States/cities and Central Government only supplementing that effort
- Apart from the JICA ( Japanese International Cooperation Agency) and the World Bank, 14 countries have shown an interest in partnering India in funding the Smart Cities Mission.

Consultants will have the opportunity to prepare the following:

- Prefeasibility and feasibility studies on transforming existing cities into smart townships.
- Assisting city authorities to prepare the City Challenge Proposal for Central Government funds.
- Feasibility studies and integrated solutions to make smart cities self-sustaining.
- Preparation of master plan ranging from 50 to 5,000 acres and more, includes both Greenfield and Brownfield smart city planning and management.
- Cost-effective technologies to optimisie natural resources and protecting the ecology.

- Project management services throughout the plan implementation lifecycle.
- Preparation of strategy to bring various stakeholders such as local governments, State Government, Central Government, administrative bodies, global funding agencies, etc. to work together for effective implementation.
- Preparation of detailed project report for various smart city components such as water management, waste management, smart grids/electrical infrastructure, social infrastructure, urban transportation planning, environment and ecology, energy and sustainability, GIS and Remote SensingAnalysis, etc.

### Conclusion

Smart city mission is one of the biggest initiatives by the Govt. for citizens so far which is active not only in India but across the globe. It is designed to inspire greater creativity from Govt., more involvement and inspiration from citizens, and the development of proposals that will produce concrete benefits in people's lives.

States and ULBs will play a key supportive role in the development of Smart Cities by providing smart leadership and vision in this level and ability to act decisively. Private players will participate in required sectors for effective implementation of project. Citizen participation in deploying smart solutions, implementing reforms, doing more with less

and oversight during implementing and designing post-project structures will help in sustainable development. Thus, the mission requires active participation of Govt. bodies, private players and citizens for holistic movement.

As much as the vision of smart cities is incredible and rational, its implementation on India at the given socio-economic condition might be a tad bit difficult. However, as a fast developing economy, the country needs to keep up with the global standards. Hence, the execution of this plan could make India take a major leap in the race of development.





## Global Case Studies

- As per NASSCOM, smart cities can create a \$30-40 bn business opportunity for the IT sector over the next five-ten years; this is on the assumption that about 10-15% of the outlays on smart cities will be for the ICT component
- NASSCOM has built a framework to highlight the role of ICT in developing smart cities, and categorise ways and means to make relevant ICT interventions that will enable management of future smart cities in a sustainable and transparent manner
- NASSCOM also suggests the role of ICT in creation of smart city and enable State governments and urban local bodies to integrate ICT into their future city master plans. Its ICT framework will address the unique challenges faced by



## Global Case Studies

### Gujarat International Finance Tec-City (GIFT), Ahmedabad, Gujarat •



**Smart Initiative**  
Smart City –  
Global Financial Hub



**Year of Initiative**  
2011

#### PROJECT FEATURES

Total estimated investment amount is INR 703 billion (USD 15.6 billion).

Core infrastructure to be developed by GIFTCL.  
User Pay facilities to be developed by SPVs on PPP.  
Real estate to be developed, opening up opportunities for real estate developers, investors and contractors.

### Smart Kochi City (SKC), Kerala •



**Smart Initiative**  
Smart City - large network of  
knowledge-based townships



**Year of Initiative**  
2011

#### PROJECT FEATURES

Designed to offer smart and automated homes for knowledge workers. Star hotels (4- and 5-star), serviced apartments and business facilities with integrated facilities management.





## Global Case Studies

### Smart Bandra Kurla Complex (BKC), Mumbai



#### Smart Initiative

Smart City – First Brownfield Smart City and Globally benchmarked Intelligent International Finance Centre



#### Year of Initiative

XXXX

#### PROJECT FEATURES

Five smart initiatives to make the region smart and intelligent: Public wi-fi, smart parking, smart street lighting & grid, video analytics, Citizen Apps.

### Masdar City, Abu Dhabi



#### Smart Initiative

Sustainable city, with zero carbon emissions and zero waste



#### Year of Initiative

2008 (Expected Completion -2025)

#### PROJECT FEATURES

To promote renewable energies and develop sustainable and renewable alternatives to fossil fuels and to reduce the country's dependence on fossil fuels. It is a mix of educational and recreational spaces, along with housing, retail, manufacturing and office spaces, with the use of energy efficient technologies and smart design in buildings.

Pioneering public transportation systems, architectural innovations and striving towards a zero waste objective.

### Barcelona, Spain



#### Smart Initiative

Innovative city governance with cloud, devices and apps – smart technology



#### Year of Initiative

2011

#### PROJECT FEATURES

Barcelona has utilized the power of the Microsoft Windows Azure cloud – based platform to help businesses by providing many smart city apps in transit planning, Crime reporting, Street monitoring, mapping of location which helped making the city and its citizens productive, by reducing costs and time thereby drawing more visitors to the city.

### Seoul Special City



#### Smart Initiative

Smart Technology



#### Year of Initiative

2011

#### PROJECT FEATURES

Smart Seoul 2015' - a people-oriented & human-centric project led by the Seoul's Metropolitan Government which aims to utilize the huge potential of Smart technologies for urban development through the three pillars of ICT infrastructure, Integrated City Management Framework and Smart Users.

Seoul's Smart Metering Project aims to reduce city's total energy use by 10 per cent. Seoul Safety Service utilizing state-of-the-art Location Based Services & CCTV technologies to notify authorities & family members of emergencies, when a registered mobile holder leaves a designated safe zone or pushes its emergency button.





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