
SMART
CITY

Concept Note on
SMART CITY

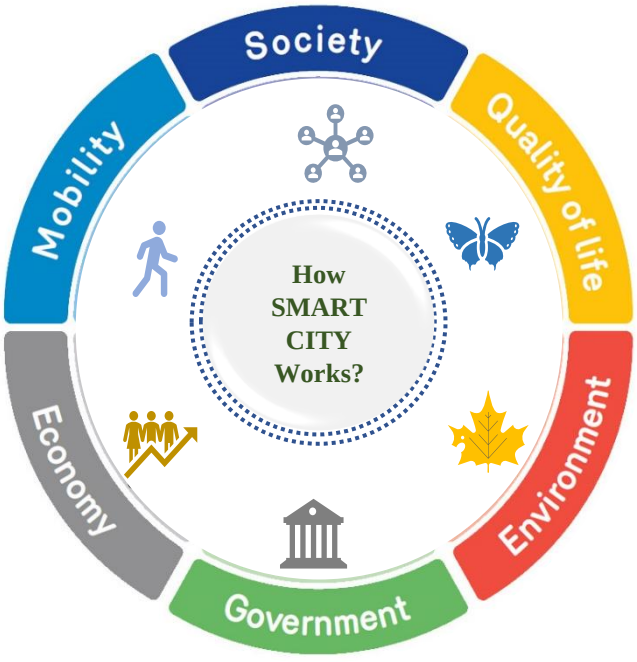
The quality of life was significantly improved in the last century mainly as regards the access to services. However, the heavy industrialization and the increasing population in the urban areas has been a big challenge for administrators, architects and urban planners. This paper provides a brief presentation of the evolution of the "smart city" term and the most representative characteristics of it. Furthermore, various alternative terms that were proposed to describe the multiple characteristics of the future cities are analyzed. A connection between smart city and smart grid is also presented.

Smart cities allow citizens and local government authorities to work together to launch initiatives and use smart technologies to manage assets and resources in the growing urban environment. 54% of the world's population live in cities and this is expected to rise to 66% by 2050, adding a further 2.5 billion people to the urban population over the next three decades. With this expected population growth there comes a need to manage environmental, social and economic sustainability of resources. In the case of Bangladesh, Digital Bangladesh 3rd task force meeting HPM declared of establishing Smart Bangladesh by 2041. Therefore, all the government agency are working for building Smart Bangladesh within 2041. A2i is also working for the value-added services to the citizens which will lead to promote Smart Bangladesh.

IBM Defines Smart City as:
"One that makes optimal use of all the interconnected information available to better understand & control its operations and optimize use of limited resources."

Objectives of SMART City:

1. **Efficiency of Services:** to optimize the use of public resources and provide a high level of citizen service.
2. **Mobility:** to make it easy for citizens, workers and visitors to move around in the city, whether by foot, bike, car, public transport etc. (regardless of transportation means).
3. **Economic Growth:** to attract businesses, investors, citizens and visitors.
4. **Sustainability:** to grow & develop the city with strong consideration to environmental impact.
5. **Safety and Security:** to improve public safety & security in every-day life and at special events, as well as being best possibly prepared for emergencies and disasters.



6. **City Reputation:** to constantly improve the city's image & reputation.

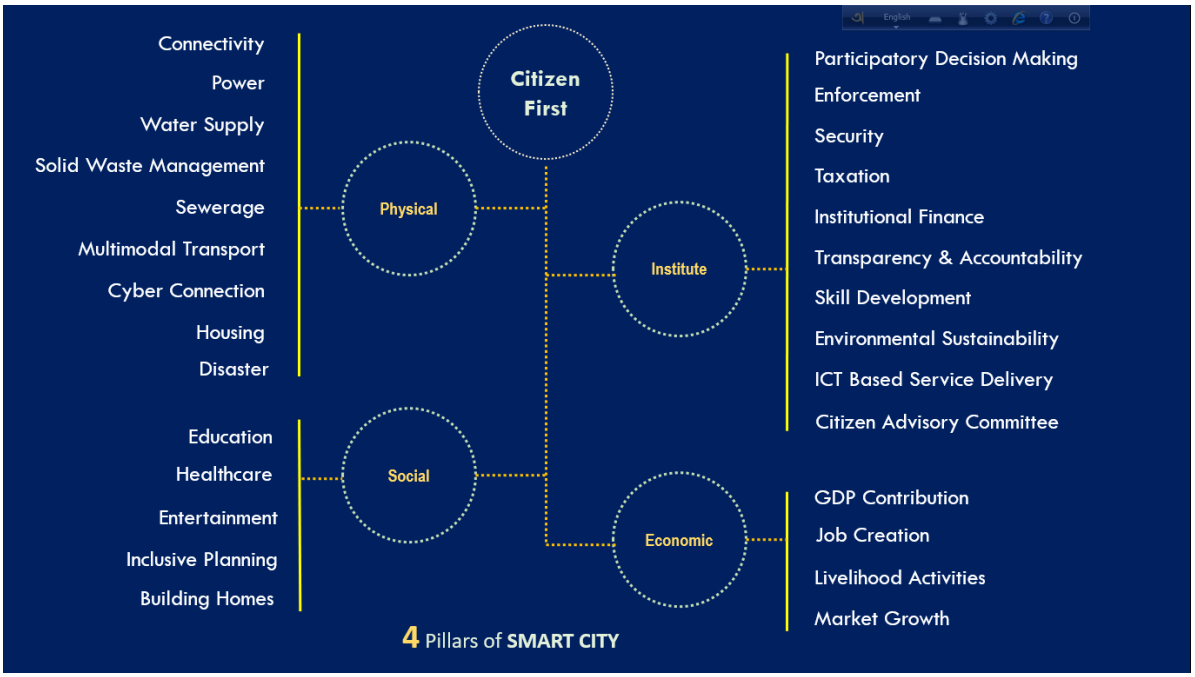
Features of SMART CITY:

1. Telecom Network
2. Smart Platform application both Urban and Rural
3. Smart Data
4. Energy Self-sufficiency
5. Smart Education
6. Smart Health
7. Smart Water
8. Smart Mobility
9. Smart Light
10. Renaturation
11. Urban Transformation
12. Smart Furnishing
13. Urban Resilience
14. Smart Citizenship
15. Open Government
16. Smart Waste Management
17. Smart Regulation
18. Smart innovation
19. Infrastructure and Logistics
20. Smart Leisure and Tourism

4 Pillars of Smart City:

1. **Physical Pillar:** Physical Pillars of Smart City consist of Connectivity as a whole, Power, Water Supply, Solid Waste Management, Sewerage, Multimodal Transport, Cyber Connection, Housing and Disaster management.
2. **Social Pillar:** Social Pillars of Smart City consist of Education, Healthcare, Entertainment, Inclusive Planning and Building Homes.
3. **Institutional Pillar:** Institutional Pillars of Smart City consists of Participatory Decision Making, Enforcement, Security, Taxation, Institutional Finance, Transparency & Accountability, Skill development, Environmental Sustainability, ICT based Service delivery and Citizen Advisory Committee.
4. **Economic Pillar:** Economic Pillars of Smart City consist of GDP Contribution, Job Creation, Livelihood Activities and Market Growth.

FGD on SMART City for SMART and Developed Bangladesh involved all the agencies of ICT Division. Participants engaged in group and individual discussion on features and implementation plan for SMART City in Bangladesh



Agencies participated in FGD:

1. ICT Division
2. Directorate of ICT
3. Bangladesh Computer Council (BCC)
4. Bangladesh Data Center Company Limited
5. High-Tech Park Authority
6. Digital Security Agency
7. Controller of Certified Authority (CCA)

During FGD that participants were divided into groups and engaged in group work. Participants continued with a set of questions in hand which are:

Questions of FGD:

1. What is your notion about Smart City?
2. Do you aspire to become a citizen of a Smart City?
3. Which features do you deem necessary in a Smart City?
4. What benefits do you expect to get from these features?
5. What infrastructures are required to create these features?
6. What types of definite system/integration do you deem to create desired features?
7. What types of services do you want as a dweller of Smart City?
8. What types of benefits do you deem from desired services?
9. What types /definite infrastructures do you deem to crate these services?
10. What types of definite system/integration do you deem to create desired features?

Participants of FGD later contributed in answering following table. Through discussion participants identified the focus area for SMART City, the features and services expected therefrom, the proposal for solution and required infrastructure. This comprehensive approach jotted down the ideas for SMART City.

FDG Template for SMART CITY DESIGN

Sl	Focus Area	Expected Features	Expected Service	Expected Benefits	Required Infrastructure	Proposed Solution	Remarks

Proposed FGD Solution of Group-1: Bottom-Up Approach

Sl	Focus Area	Expected Features	Expected Service	Expected Benefits	Required Infrastructure	Proposed Solution
1.	Pillar- Physical Housing	Masterplan based housing to protect agri-land across areas	Area blueprint to segregate cultivable and other activity-based areas	Protection & Preservation of agricultural land	(LGI) & centralized monitoring system	Area based digital mapping to segregate cultivable land and other activity-based areas
2.	Connectivity- G-pon based ward level connectivity	Network expansion towards ward level	High speed data transmission	More connected village eco-system	G-pon & fiber layout	Ward based service provider and required connectivity
3.	Power- Sustainable and renewable energy	More sustainability and creating greener eco-system	Bio Gas production, solar energy production and contribution to the national grid & organic fertilizer production	Creating mesh solar eco-system, less dependency on imported LPG gas	Solar system & Bio gas production	Area based centralized bio gas and solar energy production and supply the access amount to the national grid
4.	Disaster Management	Disaster Response office in the ward level	Any kind of disaster response	Alignment with the govt & non govt body to serve the citizen in need	Proper training and ward-based support center connected with the central system, warning generation via	Disaster response eco-system connected via SMS & IVR

					connected platform	
5.	Ward Dash board	Power, Data, light & other amenities should be connected to monitor	Instant citizen service	TCV reduction	Connected dashboard with every service provider	Connected Dash board with every service component to check the health status
6.	Institute: UDC expansion	Ward based UDC expansion and service expansion	All sort of UDC service expanded to ward level	TCV reduction	Ward based center	One stop ward based citizen services
7.	Skill development	Free-lance-based training like computer graphics and related IT based language	Local BPO creation to support the local free lancers	More dollar earners and contribution to the GDP	Training expansion towards ward level	NISE connected training eco-system
8.	Agri business hub creation	Connected e-commerce	Ward based product depository	Fair pricing to the last mile producers	E-comm support and transportation facilities	E-commerce platform, physical hub, Transportation support
9.	Finance	Entrepreneur listing and loan support services	Finance to grow	More business growth	Financing module for wards incorporating all the available financing parties	Ward based web platform with loan exposure calculation
10.	Social: Inclusive Planning	Model village with a planning like govt budget planning for a year	Co-ordinated development approach	E-governance establishment	Local govt framework intervention	Local dashboard
11.	Education	Re-use of school and other institutions	Training and tuition activities supported by the technology	Efficiency and contributory society	e-education supported technology	Connected technology-based infrastructure to provide best alternative education

12.	Entertainment	Content creation, educational training, playground and other activities	More value to the society	Healthy society	Proper resource creation and allocation	
13.	Health	E-health for the marginal community	Accurate health services	TCV reduction and ensuring proper health services	Data base creation, ward-based health worker connected with national e-health platform	
14.	Economic: GDP contribution	Creating more alternative income generation from the ward level	Area wise formal and non-formal profession-based training and job placement	More contribution to the local economy and nation	Expansion of govt and non-govt training initiatives	Incorporation of NISE platform as per the ward level

Proposed FGD Solution of Group-2: Top-Down Approach

SL	Focus Area	Expected Features	Expected Service	Expected Benefits	Required Infrastructure	Proposed Solution
1.	Smart Residence	Smart Office Smart Home Water Quality Monitoring Water Distribution Control City Lighting Renewable Energy	Work from anywhere. Home Management	Time cost Power Savings & Security	IoT Devices	Virtual office setup. Smart Home Application Smart Sensors
2.	Transportation	Smart Parking System Traffic plan (odd/ even) City/ Public Bus / Water vehicle/ Train Goods Train	Easy parking access Concise vehicle movement Frequent access to the public vehicle Smooth transportation for food / products items	Energy and time saving Easy traffic Easy transportation Well maintained food /products supply chain	IoT Devices Data Analytics AI Robotics	App based Traffic control Increase modern vehicles Dedicated management applications (Cold Storage,

						Product Supply Chain Management, Food processing unit)
3.	Waste Management	Incineration of medical Waste Waste Recycling	Prompt incineration of medical waste Reuse, Zero use of plastic Use of natural fiber for packaging	Clean and Safe environment	IoT Sensors Robotics	Recycling system
4.	Population Management	Decentralization Citizen Central Database Social Safety-Net Program Employment Creation Program Multipurpose Card	Frequent Citizen services	Easy access to services	Database Data Analytics Embedded System	Synchronization of all national database & monitoring system
5.	Environment	Air Quality Monitoring Carbon Reduction	Less pollution	Healthy & Quality life	Smart Sensors IOT	Eco friendly products and embedded system
6.						

Findings from FGD:

Sl	**Findings**	**Needs**	**Technology**	**Resource Mobilization**	**Implementation Plan**	**Coordination**
1	Smart Residence will be new demand for coming days	Smart Office, Smart Home, Water Quality Monitoring, Water Distribution Control, City Lighting, Renewable Energy	**IoT**	GoB & Partner Organization	Long term	Inter-ministerial meetings of relevant ministry
2	Smart Transportation will be considered as inevitable rights for the	Smart Parking System Traffic plan (odd/ even) City/ Public Bus / Water vehicle/ Train	IoT Devices Data Analytics AI Robotics	GoB & Partner Organization	Long Term	Inter-ministerial Meetings of relevant Ministry

	citizens of future.	Goods Train				
3	Smart Waste Management	Incineration of medical Waste Waste Recycling	IoT Sensors Robotics	GoB & Partner Organization	Long Term	Inter-ministerial Meetings of Relevant Ministry
4	Population Management	Decentralization Citizen Central Database Social Safety-Net Program Employment Creation Program Multipurpose Card	Database Data Analytics Embedded System	GoB & Organization	Long Term	Inter-ministerial Meetings of relevant Ministry
5	Smart Environment Management	Air Quality Monitoring Carbon Reduction	Smart Sensors IOT	GoB & Partner Organization	Long Term	Inter-ministerial Meetings of relevant Ministry
6	Smart health Management	Data base creation, ward-based health worker connected with national e-health platform	Smart Sensors IOT AI, Robotics and Blockchain	GoB & Partner Organization	Long term	Inter-ministerial Meetings of relevant Ministry
7	Disaster Management	Any kind of disaster response	Disaster response eco-system connected via SMS & IVR	GoB & Partner Organization	Long term	Inter-ministerial Meetings of relevant Ministry
8	Education	e-education supported technology	Connected technology-based infrastructure to provide best alternative education	GoB & Partner Organization	Long term	Inter-ministerial Meetings of relevant Ministry
9	Agri business hub creation	E-commerce platform, physical hub, Transportation support	E-comm support and transportation facilities	GoB & Partner Organization	Long term	Inter-ministerial Meetings of relevant Ministry

Case Study: India Smart City Project

The Smart Cities Mission (SCM) is a holistic city programme to build 100 cities in India. It was launched on June 25, 2015 by the Prime Minister Narendra Modi.

Smart Cities Mission

The objective of the Smart Cities Mission is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions.

Progress of the Smart City Project:

1. Total city Covered: 100
2. Total Urban Population Impacted: 99,630,069
3. Total Cost of Project (Including Other Cost - O&M, Contingency, etc.): Rs. 203172cr
4. Total Development Cost Rs. 164,204 cr
5. Total Pan City Solution Cost Rs. 38,914 cr.

Core facilities in a Smart City Includes:

1. Assured electricity supply 2. Adequate water supply
3. Sanitation facilities, including Solid Waste Management, 4. Sustainable environment
5. Good health and education, 6. Efficient urban mobility and public transport
7. Affordable housing, especially for the poor, 8. Good governance, especially e-Governance and citizen participation
9. Robust IT connectivity and digitalization, 10. Safety and security of citizens, particularly women, children and the elderly

So the launch of the Smart City Project by the Central Government is a concrete step in the way of providing better life style and amenities to the general public of this country. The most attractive feature of this project is that it is promoting holistic development of the country and hope that very soon the positive results of this scheme will be visible in the life of the common men.

Conclusion:

Creating smart connected systems for our urban areas provides a great many benefits for citizens around the world, not only to improve quality of life, but also to ensure sustainability and the best possible use of resources. We need to organize inter-ministerial workshop to identify the opportunities and threat for implementation of Smart City concept. Finally, from the above FGD we see that to build Smart City we have to uses information and communication technology (ICT) to improve operational efficiency, share information with the public and provide a better quality of government service and citizen welfare.