REVIEW PAPER FOR SMART CITY

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Abstract: *smart city is an emerging concept. This concept is being used all over the world with different nomenclatures context & meanings. A smart city is a city that is well planned, and it provides the cost efficient services, environmental efficiency, and technological sound services for the welfare of the citizens. Smart solutions can be helpful in controlling the ever increasing population in the cities.*

Keywords: **smart building, smart city, smart economy, smart energy, smart environment, smart governance, smart living, smart mobility, smart people, smart public services, smart solutions.**

INTRODUCTION

Smart City is a booming international phenomenon. Smart city word originated back in 1998, but the first funding for smart city came in the year 2000.The six dimensions of a smart city are Smart Economy, Smart Mobility, Smart Environment, Smart People, Smart Living and Smart Governance. Every city can become smarter by focusing on any of the above dimensions. A smart city is a community that is efficient, sustainable & liveable. The term smart city has become more and more popular in the field of urban planning. Smart cities can work as a tool for controlling the rapid urbanization and various problems caused by the ever increasing urban population. The implementations of the smart technologies can increase the value of the city. Smart city concept introduces new practices and services that highly impacts policy making & planning.

Various Definitions of Smart City are:

1. The UK Department of Business, Innovation and Skills considers smart cities a process rather than as a static outcome, in which increased citizen engagement, hard infrastructure, social capital and digital technologies make cities more liveable, resilient and better able to respond to challenges.

2. The British Standards Institute defines it as "the effective integration of physical, digital and human systems in the built environment to deliver sustainable, prosperous and inclusive future of its citizens".

3. IBM defines a smart city as "one that makes optimal use of all the interconnected information available today to better understand and control its operations and optimize the use of limited resources".

4. CISCO defines smart cities as those who adopt scalable solutions that take advantage of information and communications technology (ICT) it increases efficiencies, reduce costs and enhance the quality of life".

6. Accenture defines it as "A Smart City delivers public and civic services to citizen& businesses in an integrated and resource efficient may while enabling innovative collaborations to improve quality of life and grow the local and national economy."

7. Giffinger, et.al defines smart city as "A Smart City is a well performing city built on the 'smart' combination of endowments and activities of self-decisive, independent and aware citizens."

Thus, there are many types of smart city definitions existing in the world. The definitions can vary from person to person & even country to country.

REVIEW OF SMART CITY PAPERS

A. GIS Steering Smart Future for Smart Indian Cities by Anuj Tiwari & Dr. Kamal Jain (2014)

The concept of a smart city is a new one. This paper describes the smart city projects in India namely LAVASA: SMART HILL CITY & GIFT: GUJARAT INTERNATIONAL FINANCE TEC-CITY. By 2050, the urbanization in India is expected to raise upto 70 percent compared to only 30 percent in 2011. According to the McKinsey Global Institute Analysis Report, India will have 68 cities with 1 million or even more than 1 million Populations, 13 cities with more than 4 million population & 6 megacities with population of 10 million or more by year 2030. A Smart City is the integration of technology into a strategic approach to sustainability. Smart city is a booming international phenomenon. According to the statics over 2000 smart city projects have been started or going on in Asia, Europe America & Africa.

The three pillar basic smart city model is used in this research paper. The Three main dimensions of this model are Economy, Environment & Society. GIS solutions can help the policy makers & planners for decision making purposes. Ultimately this paper helps to understand the use of GIS & its integration with various approaches to formulate, stimulate, interpret and validate the sustainable development of urban areas, steering a smart and sustainable future for smart cities.

B. Smart Cities in context to Urban Development by Sejal S Bhagat, Palak S Shah & Manoj L Patel (2014)

Infrastructure plays a major role in the urban development. Some cities have fully grasped the possibility of becoming "Smart City". Smart Cities can be identified and ranked along the six main axes or dimensions.

1. Smart Economy
2. Smart Mobility
3. Smart Environment
4. Smart People
5. Smart Living
6. Smart Governance

Smart city is an integrated urban system. The Smart City vision involves the use of infrastructures like smart grids alongside various forms of renewable energy generations & building new systems of mobility based on the distributed network. A Smart city will be a city whose community has learned to adapt & innovate. The framing of the smart city is done by the planners, policymakers, executives, city departments, developers and industry.

The various steps taken by the leaders to make any city smart are:

- Decide what your City Should be – Determine its Brand
- Adopt Policies Conducive to Skills, Creativity, and Knowledge Driven Growth
- Optimize Around the Citizen
- Development and Application of Information Technologies to Improve Core City Systems
- Recognizing Talent: Skills, Knowledge, Creativity and Innovation Ability.

C. The Smart City Cornerstone: Urban Efficiency by Charbel Aoun (2013)

This paper presents a five steps approach for converting our urban centers into more efficient and sustainable places to live.

1. Setting the vision
2. Bringing in the technology
3. Working on the integration
4. Adding innovation
5. Driving collaboration

Every city can become smarter. A smart city is a community that is efficient, liveable & sustainable. The aim of the smart city should be to reduce the energy wastage & give a better quality of life to its residents. Each and every city can be converted into a smart city by simply working on the backward sectors. By the end of 2020, analysts from Pike Research anticipate that annual spending on smart city infrastructure will reach $ 16 billion.

D. Smart cities: Researches Projects and good practices for the cities by Rocco Papa, Carmela Gargiulo, & Adriana Galderisi (2013)

The concept of smart city is providing the solution for making the cities more efficient & sustainable. It is quiet popular in the policy field in the recent years. During the 1990's the development of the information technologies was at the peak level & people thought that new technologies can produce new forms of productions, markets, society organisation, industries, business districts, residential districts & so on. The term smart city has become more and more widespread in the field of urban planning. Urban planners could provide the necessary guidance for making cities smart by using smart devices and smart concepts.

E. Understanding Smart Cities: An Integrative Framework by Hafedh Chourabi, Taewoo Nam, Shawn Walker, J. Ramon Gil Garcia, Sehl Mellouli, Karine Nahon, Theresa A. Pardo& Hans Jochen Scholl (2012)

Smart cities can work as a tool for controlling the rapid urbanization & various problems caused by the ever increasing urban population. The academic research in smart city concept is very less. According to this paper, there are eight critical factors of the smart city initiatives:

1. Management & organization
2. Technology
3. Governance

4. Policy context
5. People and communities
6. Economy
7. Built infrastructure
8. Natural environment

These factors are the basis of an integrative framework that can be used to examine how the local governments are envisioning the smart city initiatives. The framework suggests the directions for smart city research & outlines the practical implications for the government professionals.

F. Exploring the Relationship between Smart City Policy and Implementation by Ellie Cosgrave &Theo Tryfonas (2012)

The implementations of smart technologies increase the value of the city. The government professionals and the stakeholders are facing various problems in achieving ambitious targets with limited resources. This paper finds the core themes within the field of smart cities & future city policies. The grounded model of smart city is used in this paper. The model has two core influencing features "challenges & opportunities" and "public value".

G. Smart City and the Applications by Kehua Su, Jie Li, Hongbo Fu (2011)

This paper mainly focuses on the recent research on concept of smart city. The relationships between the smart city and digital city are also described in this paper. The various application systems for a smart city are:

1. Construction of a Wireless City
2. Construction of Smart Home
3. Construction of Smart Transportation
4. Smart Public Service and Construction of Social Management
5. Construction of Smart Urban Management
6. Construction of Smart Medical Treatment
7. Construction of Green City
8. Construction of Smart Tourism

H. Urban Planning and Smart Cities: Interrelations and Reciprocities by Leonidas G. Anthopoulos and Athena Vakali (2011).

Smart cities are the emerging concept as they introduce new practices and services that highly impacts policy making & planning. Thus, now it is a necessity to understand the smart city's contribution in the overall urban planning.

This paper highlights the interrelationship between smart city and urban planning. The dimensions of the urban planning are:

1. Environmental protection (Quality)
2. Sustainable residential development (Viability Timeline)
3. Resources capitalization (Capacity)
4. Coherent regional growth support (History & Landscape)

I. Conceptualizing Smart City with Dimensions of Technology, People, and Institutions by Taewoo Nam & Theresa A. Pardo. (2011)

This paper discusses how we can consider any city as a smart city based on the recent practices of making the city smart.

This paper focuses on the three main dimensions:

1. Technology
2. People
3. Institutions

The elaborated conceptualization of smart city in this paper will contribute to the future studies. This concept is an organic connection among technological human & institutional components. Now a day, "smart" means innovative & transformative changes driven by new technologies. However, the social factors are also important in a smart city.

J. The Vision of A Smart City by Robert E. Hall (2000)

The vision of the smart city is the urban centre of the future. The systems and structure will monitor their own conditions and carry out self-repair. The smart materials and structures are also known as the intelligent or adaptive materials. The smart city concept was in a planning stage since late 1998, but it received its first funding in January 2000. The future will require rethinking of the relationships between government, city managers, business, academia and the research community.

CONCLUSION

- Smart city concept can be used for transforming any city into a smart city.
- Smart city have various overwhelming benefits & it a win – win situation for both, government & the citizens.

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