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Evaluation of Ubiquitous City: A case study of "Songdo", South Korea

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ABSTRACT

The smart city emerges as the new research area interesting public networks studies. The smart city policies have attracted relevant attention and funding over the last few years. In this paper we look at the definition and relation of sustainability. The paper will show the overview of the smart city and ubiquitous city in context to sustainability. The other thing we will discuss about the first smart city of world Songdo IBD. We will discuss about the history, master plan, sustainability of the city. The paper will show the problem occurring in the Songdo IBD.

KEYWORDS- *Smart City,Smart CityFeatures,Sustainability, Ubiquitous City, Performance of city*

1. Introduction

The smart city is a region which utilizes information and communication technologies to increment operational effectiveness, share data with general society and create both the nature of taxpayer driven organizations and resident welfare[1].

While the correct definition shifts relying upon whom you converse with, the larger mission of a keen city is to upgrade city capacities and driveeconomic growth while improving quality of life for its citizens using smart technology and data analysis.

1.1 Features of a smart city:

Rising patterns, for example, mechanization, machine learning and the internet of things (IoT) are driving smart city selection.Hypothetically, any territory of city administration can be consolidated into a smart city activity. An exemplary model is the smart parking meter that utilizes an application to enable drivers to discover accessible parking spots without delayed hovering of smart city area.

Energy conservation and efficiency are major focal points of smart urban areas. Utilizing smart sensors, keen streetlights diminish when there aren't autos or people on foot on the roadways. Smart grid innovation can be utilized to enhance tasks, support and arranging, and to supply control on interest and screen energy outages.

Smart city activities likewise intend to screen and address natural concerns, for example, environmental change and air contamination. Sanitation can likewise be enhanced with smart innovation, be it utilizing web associated junk jars and IoT-empowered fleet management systems for waste collection and removal, or using sensors to measure

water parameters and guarantee the quality of drinking water at the front end of the system, with proper wastewater removal and drainage at the back end[2].Smart city innovation is progressively being utilized to enhance open wellbeing, from observing regions of high crime to enhancing crisis readiness with sensors. For instance, brilliant sensors can be basic segments of an early cautioning framework before dry spells, surges, avalanches or sea tempests.

Smart structures are likewise regularly part of a smart city venture. Inheritance framework can be retrofitted and new structures developed with sensors to not just give continuous space administration and guarantee open security, yet in addition to screen the auxiliary strength of structures. Connecting sensors to structures and different structures can identify wear and tear and advise authorities when fixes are required. Citizens can help in this issue, telling authorities through a keen city application when fixes are required in structures and open foundation, for example, potholes. Sensors can likewise be utilized to distinguish spills in water mains and other pipe frameworks, diminishing expenses and enhance productivity of public workers.

Smart city innovations likewise bring efficiencies to urban assembling and urban cultivating, including work creation, vitality productivity, space administration and fresher merchandise for purchasers.

1.2 Smart cities promote sustainability

Sustainability is another significant feature of smart urban areas. Urbanization is relied upon to increment much more in the coming years - today, 80% of the U.S. population lives in metropolitan zones versus 60% only 50 years prior. Smart innovation will enable urban communities to continue development and enhance proficiency for resident welfare and government effectiveness in urban zones in the years to come [3].

2. From Smart City to Ubiquitous City

Over the most recent five years, Asia has turned into a blend of new thoughts in urban living. A standout amongst the best ideas is the Ubiquitous City. This thought was conceived in South Korea, and needs to be another model of practical economy dependent on a more effective idea of correspondence, transport and characteristic assets. This sort of city oversees ubiquitous data innovation. All data frameworks working in the city are connected, and practically everything is associated with a data framework through advances, for example, remote systems administration [4].

The idea of Ubiquitous City has been created into a colossal global thought, otherwise called Smart City in different nations. This smart urban areas are a model of city where data frameworks are sharing information, similar to the distributed computing. The primary level of this new urban living is houses, lanes, workplaces or transports conversing with one another and being available from anyplace. There are a great deals of favorable circumstances in this new framework: energy is spent more efficient and synchronizing the tasks is easier.

This new 'ubiquitous urban infrastructure' (U-infrastructure) gives everybody a chance to access to urban administrations utilizing any data innovation gadgets, paying little heed to time and area in the urban setting.

U-infrastructure is a key segment of 'ubiquitous' city advancement and significantly affects the rise of another worldview for an urban framework arranging and improvement that is biologically economical and open and useful in nature both to Fiscal and mechanical concerns. Ubiquitous cities, or U-urban areas (Smart Cities), are characterized as spots where open and private administrations can be conveyed and gotten anyplace and whenever. Development of these innovative urban areas has quite recently started genuine usage broadly around the globe by arrangement producers and urban organizers [5].

3. Case study of Songdo Ubiquitous city in South Korea

The present metropolis city is the consequence of a one of a kind and long haul public private partnership. Since 2001, that association has attempted the improvement of Songdo IBD—from the initial master planning and implementation of advanced infrastructure, to the design and development in consequent stages, lastly to the vitalization of the city.

Gale International, holds a larger part stake of 61%, Posco 30%, and the rest of the 9% is possessed by Morgan Stanley Real Estate.The plan was planned by the New York office of Kohn Pedersen Fox (KPF). Framework improvement, work, and financing are additionally being given by the city of Incheon.

3.1Location and Master Plan

Songdo International Business District (Songdo IBD) is another smart city or "ubiquitous city" worked starting with no outside help on 600 hectares (1,500 acres) of recovered land along Incheon's waterfront, 65 kilometers (40 mi) southwest of Seoul, South Korea and associated with Incheon International Airport by a 12.3-kilometer (7.6 mi) fortified a solid parkway connect, and called Incheon Bridge. Alongside Yeongjong and Cheongna, it is a piece of the Incheon Free Economic Zone (6).

The Songdo International Business District will include the Northeast Asia Trade Tower and the Incheon Tower. Schools, healing facilities, lofts, places of business and social amenities are to be worked in the locale. Reproductions of building trademarks, including New York City's Central Park and Venice's conduits, will likewise be found. This 10-year improvement venture is assessed to cost in abundance of $40 billion, making it a standout amongst the most costly advancement extends ever attempted.

With 106 structures and 22 million sq ft. of LEED-affirmed space, the green building certification by the United States Green Building Council, Songdo IBD makes up about 40% of all LEED-certified space in South Korea.

3.2Ubiquitous City(Smart City)

The Ubiquitous City (U-City), can be characterized as a city that applies a substructure of "pervasive registering" to the usefulness of its urban frameworks, and can be contextualized as the incorporation of data

frameworks with social frameworks: each gadget, segment, and administration inside the city is connected to a data organize, to a great extent through remote systems administration channels.

Songdo IBD was planned and made to be an "ubiquitous city", or a smart city. What is "ubiquitous", is the innovation, i.e. PCs are incorporated with the structures and avenues. For instance, Songdo IBD occupants can video-meeting with their neighbors, or even go to classes remotely. They can control lighting, warming, cooling and the sky is the limit from there, all with the push of a button on a control panel sensors assemble data on things like activity stream and energy utilize. This sort of data can be changed over into cautions that tell residents when a transport will arrive, or advise the experts when a wrongdoing is taking place. The water channels are intended to keep drinkable water from being waste in showers and toilets [7].

3.3Sustainability

Even though the city isn't yet complete, Songdo IBD is home to 106 LEED guaranteed structures that fall under 12 ventures, or 22 million sq. ft of LEED-certified space. This number incorporates a few 'firsts' for LEED in Korea and Asia, including the primary LEED-certified hotel in Korea (the Sheraton Incheon), the main affirmed certified residential tower in Korea (Central Park 1), and the first certified convention hall in Asia (Convensia).The 50,000 sq. ft. clubhouse for the Jack Nicklaus Golf Club Korea which facilitated the Presidents Cup in 2015 is additionally guaranteed. Songdo IBD alone speaks to 40% of all LEED-affirmed space in South Korea(6).

Also, Songdo IBD uses a pneumatic waste disposal system. This implies no trash jars on road corners, and no dump trucks. Rather, rubbish is tossed into channels that will suck the junk underground, discarding waste, and reusing what can be reused.There are also 25 km of bike paths and charging stations for electric vehicles throughout the city.

4. Problem with the Ubiquitous “Songdo” city

For over a decade, urban organizers have been considering the development of Songdo, South Korea, the world's first Smart City. Worked inside 25 miles of Seoul, it was to be the absolute opposite of the stifling, overpopulated capital. Another state of mind for in excess of 300,000 inhabitants, spread out more than 600 hectares of recovered land from the Yellow Sea.

The brainchild of designers and the administration, the vision was to build a car free world, with 40 percent green space and many kilometers of cycling courses.

Living here ought to be heaven. Innovation is ubiquitous. There are no waste trucks; junk is pneumatically "sucked out" of houses, reused to produce power.

Digitally advanced apartments, with PCs incorporated with the roads and apartment suites to control activity stream and given neighbors a chance to hold video talks with one another. Everything should be possible remotely, from opening the front way to going to school classes.

4.1 Population

The fact of the matter is to some degree extraordinary. Over decade on from its beginning and the city is not exactly a quarter full, with only 90,000 occupants (as per 2018)[6]. It's an odd blend of badlands mixed with arbitrary extensive scale improvement. Individuals aren't coming nor are organizations – less than 50 major brands have bothered – and open transport is pain. It's a difficult two-hour association with downtown Seoul.

The streets, trails and cycle paths and racks are abnormally vacant for such a vast city, there's no nearness of culture – no historical centers, theaters and only one film theatre. On ends of the week, the cycle racks are unfilled and the zone is devastated.

Initially slated for finish in 2015, Songdo remains a work in advancement. Expense motivating forces and different advantages should draw in a flourishing network of remote organizations and specialists, however over the most recent 15 years, just a bunch of organizations, non-profits, and colleges have opened workplaces in Songdo.

The city was developed for the population of the 3,00,000 but as per the record the population had just reached up to one third of its designed population 90,000. A large number of the individuals who work here live in different parts of Incheon, where lodging is less expensive. Some even live in Seoul, exploiting the intercity express transports. The most famous "Songdo city" cannot attract the people to live there.

4.2 Transportation

On paper, Songdo flaunts a noteworthy open transportation framework, built in anticipation of that car-free free future.In practice, though, cars are still a common sight in Songdo.

Songdo IBD has atypically wide roads and has a higher number of bicycle paths and walkways. The district is served by buses and by Incheon Metro Line 1, with eight stations, some with elegant interiors and interior sky-lit vistas.

Despite the fact that movement to Incheon International Airport is fast with the 12.3 km Incheon Bridge, transportation through tram to Seoul is less immediate and requires various exchanges however two Red class passenger transports offer direct courses to the capital city.

5. Conclusion

The Ubiquitous city Or U-city is a new idea for urban planning of the urban area. This concept of smart city is utilized in the different city of different countries. The concept uses Information and Communication Technology (ICT) for efficient and effective development of the city. Smart city concept give approach to sustainability of city. Here, the case study of Songdo IBD is taken and the problem are find out. The main problem of in this city is that it cannot attract the people to live. As per the recent search the population is very less as per the designed population and to overcome this, the facilities need to be reach at world level to attract people. Another problem is that people prefers to go via car which does not help in achieving the car-free free future. For further modification,the road pattern and accessibility needs to be improve.

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