

THE SUSTAINABLE SMART CITY FROM A TECHNICAL AND ADMINISTRATIVE PERSPECTIVE

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ABSTRACT

This research paper tries to underline the evolution of the smart city from a perspective based on sustainability that is sustained by using the latest technology, the best approach in public administration and by targeting better infrastructure development.

KEYWORDS: *smart city, sustainability, infrastructure development*

1. INTRODUCTION

Good leadership requires competent administration. Because of the Internet and other digital technologies, government and the public are better able to work together, which is beneficial to both sectors of government and the whole of society. The goals of e-government include making government more open and accessible, streamlining administrative processes, and keeping citizens informed and involved. Access to real-time data, optimal information interchange, and the implementation of new welfare and development projects all need the use of sophisticated systems and tools by public administrations. A study on this topic was just published (Androniceanu & Burlacu, 2017). As more cities embrace smart city strategies, public institutions are turning to e-government technologies to fortify democracy, inspire citizen engagement, and safeguard the well-being of locals. Internet user complaints, recommendations, and compliments may be sent to authorities in a two-way conversation made possible by web portals, online forums, mobile apps, and their integrated services. It is also possible to provide platforms for citizens to report instances of corruption and offer policy suggestions to their government.

2. THE DEFINITORY LINE BETWEEN SMART AND SUSTAINABLE ENVIRONMENT

Intensifying environmental changes have an increasing influence on urban areas and their inhabitants. Because of this, city planners now face additional issues, such as ensuring that city residents can breathe clean air and drink safe water and that they may relax in a peaceful setting without being bothered by excessive noise (Profiroiu, et al., 2020b). Further, a city's response to extreme weather events, such as typhoon floods or heavy snowfall, must be well-coordinated to minimize damage to its citizens and economy. There is a lot of untapped potential in smart city technology to improve people's lives (Bran et al., 2018). Smart cities aim to utilize data and technology to improve decision-making and living conditions. Significant environmental gains are possible in addition to the benefits in safety, time, health, connection, employment, and cost of living (Sarbu et al, 2021). Greenhouse gas emissions can be cut by 10–15 percent, waste solids by 30–130 kilograms per person, and daily water consumption by 25–80 liters with the help of smart environment solutions in smart cities such as air quality monitoring, energy and electricity consumption optimization, water and waste tracking,

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and so on. The green advantages of smart city infrastructure Intelligent solutions have great promise for improving many elements of city life (Alpopi et al, 2018). For such benefits to materialize, a city needs three tiers of intelligence above and above what is provided by the standard physical and social framework. Networks of devices and sensors, such as smartphones linked through high-speed communications networks, provide the basis of the enabling technology. The raw data is transformed into alerts, information, and actions by use of clever applications and data analytics. Finally, effective data management and the broad acceptance and use of applications by cities, businesses, and the general public leads to better options and changes in behavior (Radulescu et al., 2020).

Some examples of smart applications that are good for the environment include mobility, water, energy, and trash (Negescu Oancea et al, 2020). GHG emissions might be lowered, for example, by using real-time public transportation data and building automation systems; better air quality is a byproduct of many energy-saving and mobility applications; and detection and control can help lower emissions. In the same way that leaks may help save water, computerized monitoring and charging for trash pickup might help cut down on waste (Burlacu et al., 2020).

A new research on smart cities has been released by the McKinsey Global Institute, which looks at the ways in which technology may improve people's lives and the smart applications that will be essential to cities by the year 2025. Once adopted, smart technology may improve key performance indicators by 10% to 30%, and the current generation of smart city applications may aid cities in making substantial or moderate progress toward meeting 70% of the Sustainable Development Goals:

1. Attractiveness of natural conditions
2. Waste management
3. CO2 emissions
4. Sustainable resource management
5. Pollution avoidance through smart environment

The United Nations projects that by 2030, 60 percent of the global population will be living in urban areas, up from the current 54.5 percent. In addition, one out of every three people will call a city of 500,000+ people their home.

To accommodate this expansion, modern cities are using a wide range of technological advancements to transform into "smart cities" and provide enough public services and security for their residents. According to the projections of the International Data Corporation, total worldwide investment in smart city projects would amount to around \$124 billion by 2020. This year, it is anticipated to exceed \$135 billion. Nonetheless, why are we spending so much cash? Maintaining a foothold in an ever-changing technical landscape may be challenging. So, in this article, I will provide a comprehensive review of the technical developments that make smart cities possible.

2.1 Defining a smart city

What exactly does it imply when we talk about a city being "smart?" To improve its "livability," "workability," and "sustainability," a smart city employs information and communications technology (ICT), as defined by the Smart Cities Council. Data is gathered, shared, and analyzed so that consumers may make better decisions.

For instance, in smart cities, officials are able to keep a close eye on the development of their city by combining sensor data with business data, domain expertise, and processes to create an intelligent information ecosystem.

2.2 IoT, new technologies and smart cities

Internet of Things (IoT) applications are a driving force behind smart city programs throughout the world because of the need of data collecting in smart cities, especially in real time.

City officials, municipal agencies, and other interested parties may remotely monitor, manage, and control equipment with the help of these programs. However, in order to improve inhabitants' security and well-being, smart cities must be able to transform this information into timely situational awareness.

Cities may generate fresh insights and actionable information by integrating historical data with real-time inputs from IoT sensors and apps. Today's smart cities are able to provide improved citizen services because they run on secure, connected, digital-first ecosystems made possible by the Internet of Things (IoT)-driven sensors that are linked to real-time, dynamic information systems.

The key to achieving these results is knowing "where?" Which source is responsible for the information? Exactly where do city problems tend to crop up? Where do you recommend a city put its money?

Municipal leaders may find geospatial technology useful in achieving their smart city objectives because of its ability to transform location-based data into location intelligence and enable civic actions that improve citizens' quality of life and keep them safe. For public utilities, smart monitoring of electricity and water systems might lead to earlier outage discovery and faster service restoration, ultimately resulting in more effective infrastructure operations and management.

Advantages are gained by local governments, service providers, and citizens in a smart city by making available geospatial data, processes, and analytics on any device. By integrating this technology into various projects, local officials will be able to keep an eye on the environment and be ready for whatever comes next.

3. INFRASTRUCTURE DEVELOPMENT AND APPLICATIONS FOR BUILDING SMART CITIES

The infrastructure of a city is a key component of a smart city. The ambitious spending proposal proposed by Vice President Biden of the United States would fund improvements to the nation's infrastructure to the tune of \$2.3 trillion.

Increased funding is also on the table for the Highway Safety Improvement Program, which will look into things like "smart" pavement, vehicle-to-infrastructure communication, linked junctions, and more.

There's a chance this might pave the way for the United States to spend more heavily in and prioritize the development of smart city infrastructure. Examples of this in action may be seen in major cities throughout Europe and Asia.

It is projected that the Asia-Pacific (APAC) region would spend \$800 billion on smart city initiatives by the year 2025. The Asia-Pacific region, which has half the world's population and sixty percent of its megacities, has an especially pressing need to prioritize effectiveness and sustainability. For instance, the Chinese government has committed \$74.3 billion to a nationwide smart city initiative. Meanwhile, South Korea is investing \$350 million into building up a nationwide IoT network.

Quite a few urban areas in Europe are devoted to enhancing the lives of their citizens via the use of technology. In 2019, the City of London Corporation began its Smart IoT effort, and in Helsinki, smart innovation zones were set up to test and compare new ideas.

3.1 Smart city case studies

The services available to citizens in many cities throughout the world have improved thanks to the widespread use of such technologies and methods. Let me give you some examples of what I mean.

Munich - city in Germany.

To better manage and analyse the city's implications for shared transportation, Munich set up a thorough monitoring system. The SaaS offering allows for the tracking, viewing, and analysis of Internet of Things data from a wide range of mobility service providers. First of its type in Germany, this system will keep tabs on all kinds of rideshare vehicles, from e-scooters and bicycles to automobiles and vans.

Milan - city in Italy.

Italy's Milan is one of the world's most fashionable urban centers. Finding and repairing leaks in subterranean pipes is an essential but expensive task. Satellite radar technology may provide a highly precise indication of probable leak sites by monitoring the slant of the ground surrounding a pipeline. The technology might be used by city authorities to identify trouble spots and do preventative maintenance before a catastrophic incident occurs. Time, money, and lives may be saved by emergency services if they are aware of potential areas of ground instability before a flood or landslide occurs.

Baton Rouge - city in Louisiana.

Baton Rouge, Louisiana, has developed M.App Enterprise applications to monitor and analyze the city's most critical issues. The finance department may take use of location by getting precise responses to questions about tax-exempt income loss by area, and the mayor's office and district attorney's office can analyze and visualize data on abandoned properties. Using the solution's cross-filtering features, administrators may compare data from many graphs at once. The city intends to expand its use to other departments so that additional inquiries and issues related to location, such crime and traffic accidents, may be answered and dealt with more efficiently.

3. CONCLUSIONS

In light of rapid technical advancements and rising public demand, modern smart city solutions must be flexible and affordable.

This necessitates making all municipal operations and services more efficient in preparation for the needs of future generations. Therefore, it is important that any smart city technologies be future-proof and simple to replicate as a city expands.

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