

## A Disaster Resilience Approach Applying In a Smart City Concept

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### **Abstract:**

*The development of smart cities aims to modernize traditional cities, combining the expertise of all sectors initiative under the supervision of public services, enriching them with the results of the scientific community. Initially, in this paper, the definitions and the characteristics of smart cities will be analyzed and formulated according to numerous formulated surveys. After that we will refer to the natural and man-made disasters that affect a city, and how we can minimize the vulnerabilities of a city in order to be resilient and safe. Moreover, we will try to delineate some of the key resilience strategies and actions that need to be implemented so that a city can adapt and evolve to smart. The smart cities 'verticals' are diverse, including water, waste, energy, transportation, finance, and payments, health, safety, and security, agriculture and more. Finally, these critical factors must in service regardless of the pressures and emergency situations that may arise.*

**Keywords:** Smart City, Disasters, Vulnerability, Urban Resilience.

### **1. Introduction**

Smart city is one the one that uses Technology, data and intelligent design to enhance the City's livability, workability, resilience and sustainability. Cities are engines of growth for the economy of every nation. A serious proportion of the Greece current population lives in urban areas and contributes a huge amount of regional GDP. [1].

Urbanization accompanies economic development. As countries move from being primarily agrarian economies to industrial and service sectors, they also urbanize. This is because urban areas provide the agglomerations that the industrial and service sectors need.

Enhance livability means a better quality of life for all. In the smart city, people have access to comfortable, clean, engaged, healthy and safe lifestyle. Some of the most highly valued aspects include sustainable energy, convenient mass transit. Good schools, faster emergency responses, clean water and air, reduced crime, enhanced security and access to diverse urban amenities ranging from entertainment and cultural options to recreation, healthcare and community facilities.[2]

Enhance Sustainability means giving people access to the resources they need without compromising the ability of future generations to meet their own needs. Smart cities enable the efficient use of natural, human and economic resources and promote cost savings. [3]

It isn't necessarily about investing large sums of money into new infrastructure, but at times more about making infrastructure do more and last longer less, whilst aiming to reduce waste and negative environmental impacts.

Moreover, enhance workability means more and better jobs and increased local GDP. In the smart city, people have access to the foundations of prosperity-the fundamental infrastructure services that let them complete in the world economy. This paper highlights for smart cities the factors concepts of them, the core function and the reference document of the code for smart communities. And we conclude with the key steps forward. [4]

### **2. Smart Cities Concepts**

Smart cities concepts include several factors/parameters/ aspects as follows [4]:

- Measuring the impact on the natural environment and increasing capacity to reduce the impact,
- Increasing the effectiveness and reducing costs of providing city services and other government operations,
- Establish strong connections through networks that support learning and collaboration on regional, national and global scale,

- Improving two-way communication with the public and empowering residents to inform the city's future,
- Attaching and retaining talented and creative individuals by improving quality of life and developing a reputation for open innovation,
- Resolving local problems through collective action, open data and other means of collaboration by building new forms connection, discovering shared values, framing and understanding challenges and strengthening a sense of responsibility,
- Addressing issues of social inclusion by empowering and connecting groups inside and outside government, especially marginalized groups,
- Increasing the city's capacity to recover from economic disruption.

### 2.1 Core function of smart cities

The core function for smart cities are as follows[2,3, 4]:

Collecting data. Smart devices are located throughout the city to measure and monitor conditions. For instance, smart meters can measure electricity, gas and water usage with great accuracy. Smart traffic sensors can report on road conditions and congestion. Smart GPS gear can pinpoint the exact locations of vehicles or whereabouts of emergency crews. Automated weather stations can report conditions, and mobile devices can collect the position and speed of people, where they cluster at different times of the day and the environmental conditions around them.

- (a) Communication data. Once you've collected the data, you need to send it along. Smart cities typically mix and match a variety of wired and wireless communications pathways, from fibre-optic to cellular to cable.
- (b) Crunching data. After collecting and communicating the data, you analyze it for one three purposes: (i) presenting, (ii) perfecting or (iii) predicting.

Importantly, analyzing data turns information into intelligence that helps people and machines to act and make better decisions. This begins a virtual cycle wherein data is made useful, people make use of that data to improve decisions and behavior, which in turn means more and better data is collected, further improving decisions, behavior and project performance.

### 2.2 Smart cities code

The code for smart communities is a reference document for local government and urban development industry, first and foremost. It is also a resource for those who have significant influence over the outcomes of how we develop our communities, and what we develop. This includes state government planners, designers and policy makers, developers of all sectors (public, private and non-profit), and the deep value chain of product and service providers that are engaged in urban development.

This ecosystem of stakeholders shapes the investments we make in vertical and horizontal infrastructure, and the places and spaces in between. They are responsible for service and program delivery, and asset management. They help create the conditions for human development. Ultimately, and most importantly, citizens will be the beneficiary of the code. And having a common language for smart communities is therefore important if we are to shape the best possible communities for our citizens, both now and next. Documents of this kind often provide an overall framework for the subject matter, along with a more detailed level of definition. The code will provide this for the concept of a smart community. The main Code components are (i) Urban Management, (ii) e-Governance, (iii) Transportation and e-Mobility, (iv) ICT, (v) Portable and waste water, (vi) Energy, (vii) Solid waste Collection and Disposal, and (viii) Economy.

### 3. Conclusions

The key steps forward are:

- (a) Identify need first, technology second. Take the time to define the problem you're trying to solve. Only with this understanding in place can the right approach to technology be selected.
- (b) Design for inclusion. Pay special consideration to communities who might get left behind when you adopt new technologies.
- (c) Let community in. Provide tangible support to unlock the full potential of local residents, and then tap into it.
- (d) Look outside for new solutions. Harness the combined power of public service champions, community-driven networks, and private sector innovations.
- (e) Think beyond city boundaries. Collaborate and share learned with other cities.

- (f) Enable and empower public servants. Identify city staff and community members who are pushing an innovative agenda, celebrate them, and provide support in scaling up their work.
- (g) Invest in the fundamentals. Focus on fundamental service delivery and capacity building through small-scale projects before taking on ambitious technology projects.
- (h) Integrate to implement. Integrate technology and data into your planning processes and resource-based decision making to ensure projects move forward.
- (i) Brand to build buy-in invest in the image and communications of the city as a vibrant place for technology-related opportunities with a high quality of living.

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