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IoT & ICTs Technologies in Smart Cities for Creating Sustainable Development

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Abstract: ***Governments and municipalities can use ICTs and other technologies to build smarter and more sustainable cities for their citizens. Sustainable Smart City is an innovative city that uses ICTs to improve quality of life, efficiency of operations and urban services, and competitiveness, while meeting the needs of current and future generations in terms of economic, social, environmental and cultural aspects.More than half of the world's population lives today in cities. By 2050, about seven in 10 people will live in cities. Cities account for more than 70 per cent of global carbon emissions and 60 to 80 per cent of energy consumption. Rapid urbanization has led to additional challenges such as social inequalities, traffic congestion, water pollution and associated health issues.***

Keywords: Government, technologies, Quality, Services, Economic, Inequalities, Pollution

1. Introduction

Inspite of cities that are connected to all urban systems and services do not yet exist, many cities are on the way to becoming sustainable and smart cities. It relies on information and communication technologies, for example, to enhance energy efficiency and waste management, improve housing and health care, improve traffic flow and safety, detect air quality, alert police to street crime and improve water and sanitation systems.

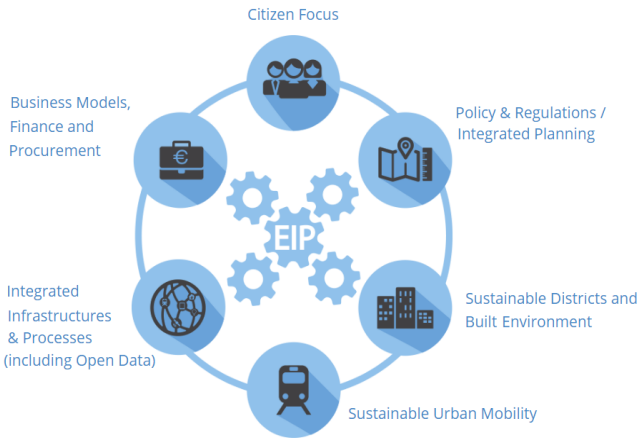
ICT has the potential to accelerate the achievement of all 17 United Nations goals for sustainable development, including the eleventh goal of achieving sustainable cities and societies.Sustainable Smart Cities need a stable, secure, reliable and interoperable communications infrastructure to support a huge volume of ICT-based applications and services.Bartoli, et al, (2011)

Recent developments in the Internet of things (IoT), Artificial Intelligence (AI), Intelligent Networks and Smart Meters all drive and support the development of sustainable smart cities worldwide.

Artificial intelligence allows for the analysis of very large sets of data in order to detect patterns that are used to enrich and enhance municipal decision-making.

Smart networks - in reference to electricity supply networks that use digital communication technology to detect and interact with local changes in use - help to optimize energy use in cities. Smart meters and smart sensors with IP addresses can transmit information about energy use by end-users to the power supply, allowing end-users to control their consumption. FHWA-JPO, (2012)

While the 3G and 4G networks used by mobile phones today pose a number of problems in supporting a range of services required for sustainable smart city applications, the development of fifth generation technology, referring to the fifth generation mobile communications technologies, provides reliable connectivity Internet and other devices, transfer data more quickly, and handle a huge amount of data with minimal delay.Symantec, (2014)



2. Objectives of the Study

The European Innovation Partnership on Smart Cities and Communities (EIP-SCC) brings together cities, industry and citizens to improve urban life through more sustainable integrated solutions, including applied innovation, better planning, a more participatory approach, higher energy efficiency, better transport solutions, intelligent use of Information and Communication Technologies (ICT). IRIS project is strongly committed to actively participate in the 6 'Action Clusters' set by the EIP-SCC's, therefore all of the Action Cluster's objectives are targeted in the project, and the IRIS Lighthouse cities are all active participants in the Action Clusters.Arup, (2010)

To achieve this, a number of specific objectives have been formulated, as outlined below:

1) Demonstrate solutions at district scale integrating smart homes and buildings, smart renewables and closed-loop energy positive districts.
2) Demonstrate smart energy management and storage solutions targeting Grid flexibility
3) Demonstrate integrated urban mobility solutions increasing the use of environmentally-friendly alternative

fuels, creating new opportunities for collective mobility and lead to a decreased environmental impact.
4) Demonstrate the integration of the latest generation ICT solutions with existing city platforms over open and standardized interfaces enabling the exchange of data for the development of new innovative services.
5) Demonstrate active citizen engagement solutions providing an enabling environment for citizens to participate in co-creation, decision making, planning and problem solving with the Smart Cities.
6) Strengthening the links and active cooperation between cities in a large number of Member States with a large coverage of cities with different size, geography, climate zones and economical situations

Core of Security in Smart Cities

The violence level is increasing all around the world, and new technology based on Artificial Intelligence is the only power to subdue and defeat violence, crime, and other illegal activities. The security of a city should be relevant and effective with enough potential and the capacity to reduce or even to end the crimes on public roads and in the cities. In this context, technology is a great ally of the security server. It helps to take the delinquent out of the shadows and assists in crime prevention. Yes, it is already proven that both, public lighting and monitoring cameras are indispensable allies in the fight against crime and the poles is an ideal platform available in thousands spread in all streets. Henceforth, a technology that unites virtual reality cameras, artificial intelligence and lighting in the same equipment should be the core of security and citizen engagement in every smart city.NIST Cyber security Working Group (2014)

3. Findings

With IoT, the network security market is growing at an impressive rate

IoT along with other trends such as cloud, virtualization, machine learning and software defined networking are driving the growth of network security market. Security technologies are increasingly delivered as virtualized products or through the cloud as a hosted service. There is enhanced focus on automated breach prevention for ease of use, single pane of glass management across deployed solutions that share intelligence and provide relevant analytics for actionable insights.

Digital infrastructure can enable a smart city ecosystem

Digital infrastructure is critical in transforming a city and creating a sustainable smart ecosystem. In today's day and age, it is in the best interest for the stakeholders to implement integrated technology solutions to enhance public services (electricity, mass transit etc.), reduce costs and improve the quality of life for its residents. This has a big impact on the economy as smart cities drive innovation and, attract investors and businesses. In addition, the digital infrastructure will also play a vital role in public safety and cyber security.LUO, JUN (2004)

Provide safe internet solutions in the age of cyber crimes

Growth of connected devices means a larger attack surface for cyber criminals. As smart phone penetration grows and internet becomes increasingly accessible, providing safe internet becomes critical. Internet literacy rates vary with demographics of age, level of education and to some extent geographical location. Cyber criminals bank on unsuspecting victims to click on malicious links or provide confidential information. So it is crucial to provide safe and secure internet solutions are you enable the masses with smart technologies.

Provide new age technology solutions for building a smart city

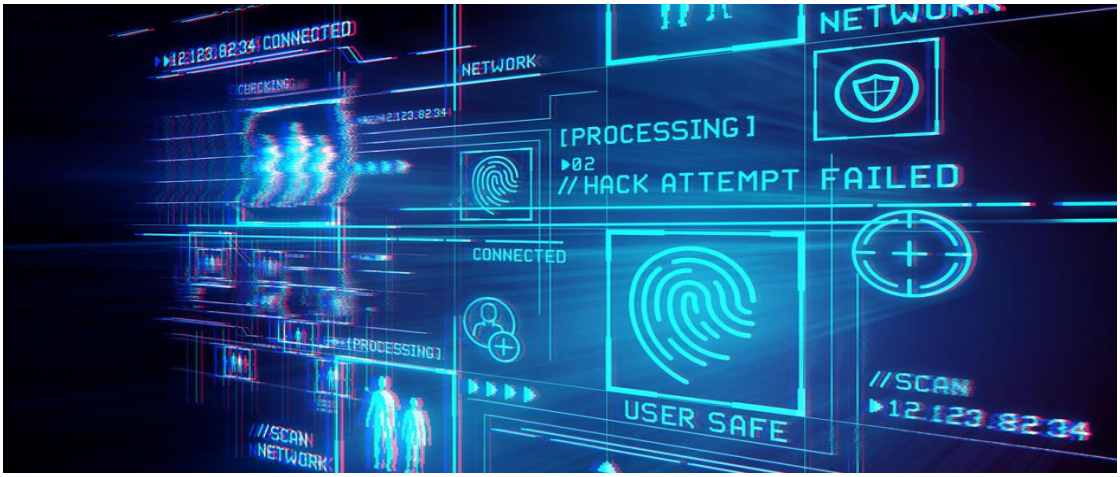
Technology evolves at a rapid pace. Governing bodies and stakeholders must be able to leverage emerging technology platforms in an integrated manner to deliver better service and quality of life. A smart city should be built in a smart way, and equipped with leading new age solutions to keep pace with technology and stay competitive.

Sonic Wall participation in managing the digital safety worldwide

We live an increasingly complex, global and digitally connected world. Technology is both an enabler and an inhibitor as businesses, governments and citizens adapt to this rapidly changing environment. As the cyber arms race reaches new heights, the threat landscape will quickly follow suit. The number of threat vectors and insecurities within a typical organization or user are only growing and becoming more entrenched. This fact is compounded as hyper-connected cities are home to individuals with multiple devices and end-points. And each must be considered and protected.

This is where automated real-time breach detection and prevention is key. As hackers turn to new and more

sophisticated weapons, new cyber defenses must be added to the cyber security arsenal. SonicWall's breach detection and prevention platform provides real-time cyber defense tuned to the specific needs of an organization. This next-generation approach is built on a cloud-based, multi-engine sandbox that captures malware in near real-time. It can be deployed for business data, mobile networks, email and secure communications (TLS/SSL).Bartoli, A.et al, (2010)



MSSP program to build partners' security offerings

4. Conclusion

The concept of a Smart City is a combination of maximum awareness, efficient operation, and above all, the satisfaction of citizens. Security is indeed the foremost eligibility criterion of a smart city, and without it, rest of the other amenities and provisions are neither useful nor viable. Be it a residential complex, market, school, hospital, district centre, or public transport, the sustenance of any urban setup is impossible without robust security measures. But, with the advent of Artificial Intelligence (AI), the concept of smart cities is viable as well as feasible. AI has empowered the security to automatically learn and detect crimes, such as armed robbery, drug trafficking, bodily injury, graffiti, vandalism, parking in a prohibited place, theft of vehicles and many others. Implementation is the key to good governance. To get optimum results from technology, its optimum implementation is of course must. AI is useless without human sincerity because the technology just provides right direction, but whether the destination chosen is right or not depends on human intelligence and its sensibility. There is an urgent need to replace road lights and monitoring cameras with a modern device that facilitates not only the police work to identify and arrest the criminals, but, also prevents the crime effectively and help the city become really smart with big data generated by multiple sensors. But, the cost is the biggest challenge nowadays for public safety and smart cities. Moreover, it's not just the price of equipment that it cuts the budget; the system needs a lean command and control center, with less maintenance and less humans in operation.

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