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Smart public spaces - A new era in communication technologies

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Abstract*:* In the recent past technology has rapidly intertwined with everything we do. The ways we get around, connect with our friends, meet new people and do business have been revolutionized. Even the infrastructures of our cities and the buildings we live in have been transformed. The need to design, build and fully manage both public and private data networks offers towns, cities and educational establishments, the opportunity to create a Smart Place that will offer many benefits both operationally and commercially. Smart Places use digital communication technologies to make efficient use of infrastructure to enhance the overall quality and performance of existing services and to support the development and introduction of new services. In a smart public space in a city, residents, devices, and objects are all connected and all exchange information (Internet of Things). Whether it uses big data or smart data, specifically selected data helps to create the best possible public spaces and deliver the best possible service to citizens. These smart public places support to make smart use of the opportunities and possibilities that technological innovations offer for management of things such as lighting, energy, heating, safety, and waste in public spaces.
Keywords: Internet of things, technology, growth and development, smart cities and spaces

Introduction

As per United Nations (UN),majority of the earth's population(more than half) live in urban areas (UN records 2012).Due to this reason modern cities face many challenges and opportunities which range from ensuring socio-economic development to a good quality of life to their citizens year by year. Therefore concept of making the cities "smart" has grown as a need for the cities to meet such challenges and opportunities. The advancement in ICT has driven the demand for access to services, data and applications from anywhere at any time. The need for designing and building public & private data networks and to manage them offers educational establishments, cities and towns an opportunity to create a Smart Place which can offer benefits both commercially and operationally. The concept of "smart public spaces" has attracted considerable attention in this context.

Objectives

1. To understand the concept of "Smart public spaces"
2. To examine the nature and dimensions of smart public spaces
3. To determine the trends in "Smart public spaces"

Methodology

The aim of the present study is to have an understanding of smart public spaces as a concept and the possibilities to create public spaces. The scope of the study also includes identifying the possibilities of smart public spaces as measures and indicators of socio-economic development. The present study is based on secondary data which includes articles, research papers and the websites in the internet.

Public urban spaces are experiencing a change in its meaning in the present age of technological interconnectedness. Aggressive developments in network and intelligent technologies & services, new opportunities become available for urban population. Smart public spaces play an important role in this context and thus become a central topic within urban planning circles along with smart cities.

The purpose of the smart digital networking of public spaces is not only to improve the accessibility, utilization or aesthetics of public spaces, but also to help a better understanding the behavior of the urban population who are enabled by the collection of dynamic data (pedestrians, mobility behavior, environmental data, etc.). A continuous evaluation can serve as a basis for further development of the smart networking of public spaces to meet their needs and to increase the attractiveness of public spaces.

Literature review

Public spaces are integral to the functioning of modern societies. They are places for broad communities to interact, providing a sense of identity and belonging for regular inhabitants. Through forms of commerce, individual expression, social interactions, public art, street performances and local events, they are key sites for the production of culture (Carr, Francis, Rivlin, & Stone, 1992). In busy cities public spaces lubricate urban flows by providing shelter, relaxation and places to socialize (Whyte, 1980).

Public spaces are crucial for democracy and social change, affording visible political expression through protest and activism (Mitchell, 2003, Low and Smith 2006). Often public spaces are also the product of inequitable power relations, which they serve to reproduce by enabling forms of social stratification (Tonkiss, 2005). Therefore, socially diverse and respectful public spaces are a virtuous goal (Low, Taplin, & Scheld, 2005).Following Lefebvre (1991),

recent scholarship has emphasized the active 'construction' of public space through social interactions. As people increasingly use ICT networks out of the home, digital media increasingly co-constitutes public spaces (McQuire 2008). People talk in public on mobile phones, send text messages, surf the internet on smart devices, connect on the move through social network services, and signal their public location using locative social applications. Media are also integrated into urban infrastructure through artworks, sensor networks, and surveillance mechanisms such as CCTV cameras. Wired broadband backhaul networks existing through and around public spaces support much of this wireless communicative activity.

Public institutions are beginning to discover a variety benefits in offering Wi-Fi. These include: enriching community life; enhancing public safety; providing marketing and communications portals; servicing city employees and sensors; and, most prominently, enhancing local economies by attracting more visitors. It is important to look at how institutions which control public spaces are seeking to meet these expectations.

Implementing a Smart Place

Smart Places also include external large public areas like universities, colleges or hospital campuses and large town/city centers. They typically have a high public footfall where people regularly congregate on a business, educational or social basis. They use digital communication technologies to make efficient use of infrastructure to enhance the overall quality and performance of existing services and to support the development and introduction of new services. Smart Places provide robust IT connectivity via fully integrated fiber, wireless and mobile networks, delivering flexible, scalable and secure support for a wide range of systems, services and applications.

A typical Smart Place will support one or more of the following:

- Public WiFi
- Internet of Things
- Support for web and mobile-based apps
- IP based intelligent CCTV
- Multi-purpose, IP based digital signage.
- Intelligent traffic management system
- Electronic service delivery. e.g. e-governance, public participation and engagement

With the relevant infrastructure and systems in location, Smart Places can provide and respond to live status updates, enabling individuals to transact and access information and services in real time. This leads to an improvement in the value and range of services offered and the overall quality of life for people working, living and socializing in that environment.

Smart Place designing is now a reality with the availability of low cost internet, Wi-Fi enabled devices, the Internet of Things. The IP enables legacy systems like CCTVs, traffic management, digital signage and the deployment of Public Wi-Fi and location-based services.

The most critical element while designing a smart place is to have a flexible and scalable network infrastructure that delivers ubiquitous connectivity. The network infrastructure should be built on a resilient core fiber network, delivering high bandwidth IP connectivity. The core fiber network will then support the deployment of wireless and mobile overlay networks; ensuring connectivity is available across the Smart Place.

Challenges in implementing a smart public place

The rewards from investing and implementing are immediate, whilst also guaranteeing future benefits, in ways not currently envisaged. Unfortunately, these rewards do not come without their challenges, and although not insurmountable they are worth understanding.

Secure the required funding: It is important that the total-life cost for a smart public place projects will be for over a period 25 years and therefore must be considered as a long-term initiative and investment. The core fiber network will be the largest investment element of any smart public places or campus solution.

Protect the investment/implementing a future proof design: The core fiber network, as the infrastructure backbone, needs to be believable along with meeting both initial requirements and future demands with no big increase in costs.

Deliver ubiquitous coverage: IP connectivity should be delivered and made available throughout the City or Campus supporting both fixed and mobile devices.

Comply with network security requirements: The network infrastructure should provide the requisite level of segregation and security to support disparate systems.

Conclusion

The benefits of creating a Smart Place are compelling. From enhancing the overall quality and performance of existing services to supporting the development and introduction of new services, it can lead to a reduction in costs and provide the means to engage more effectively with the public.But, implementing a Smart Place can be a complicated and costly exercise if not approached in the right way. The technologies required are proven and mature and, if implemented professionally by a trusted partner, will deliver the expected benefits, on time and in budget.

Activities related to Internet use has become an everyday activity in public spaces and is no longer limited to private spaces in the home, workplace or library. Tourists, local workers and residents use the public realm to experience the social diversity that urban spaces offer. They are also increasingly flocking to urban spaces seeking free Wi-Fi hotspots for their smart devices. (e.g. Federation Square in Melbourne, Sugar Beach in Toronto and Bryant Park in New York City). These are made possible through the

proliferation of broadband wireless Internet provided by municipal and community Wi-Fi offerings, free hotspots in cafes and restaurants and through 2G, 3G and 4G LTE wireless communications provided by advance mobile networks.

Designers of public spaces can have new tools to communicate their ideas to the public and ability to gain data insights via., Internet of Things (IoT) among devices through M2M (machine to machine) as well as strategically between people and devices. Public lighting, benches, trash cans and sensors imbedded in concrete, flower beds and buildings also may communicate in ways that we have yet to imagine. Today's 15 Billion IoT connections are expected to expand to over 50 Billion IoT connections by 2020. As a result, our public spaces will become very different places in both senses -good and bad. As security concerns in the use of personal data devices in public areas offering free WiFi is on the rise, identity theft and data hacking are key reasons for not allowing your personal data devices to access free wireless offerings in public spaces.

On the positive side, broadband wireless is also seen to be revitalizing and repopulating public spaces by providing increased amenities, improving the safety of public spaces and increasing opportunities for social equality and diversity. Communication among park users engaged in social media using tools such as laptops, tablets, cellular–based cameras, combined with security, information and entertainment-based elements, hardwired into the public spaces, may actually help to provide added security in the space. These could also be used to increase opportunities for raising public awareness, improved social cohesion, increased tolerance, and exposure to diverse experiences.

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