The Digital  NavigatorEG

Smart Cities: Briefing Paper

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Smart Cities

Smart cities are communities that utilize communication and IT for the purpose of managing people and resources in highly efficient and sustainable ways. Today, more than half of the world's population now lives in urban areas. There is a major shift underway, whereby, an ever increasing number of working professionals are consciously choosing to live in the downtown urban canters of major cities. This shift from primarily rural areas to cities or megacities is projected to continue for decades to come, increasing the need for urban reform. By the year 2025, China alone will create an additional 81 cities due to population growth and migration.[3] As more and more people continue to cluster into larger urban centers, city planners will be faced with a number of emerging problems, including resource management, business development, education, telecommunications and IT support, public safety, and so forth. Additional and less obvious are the unique challenges associated with city planning and environmental sustainability.

The goal of smart city technology is to leverage the collective intelligence of the city and its major constituents by coordinating community resources and skill sets.[4] A smart city

is comprised of various stakeholders, including but not limited to government, business, education, public safety, health care, energy and utilities, religious centers, transportation, as well as parks and recreation. The word *smart* refers to a new generation of integrated hardware, software, and advanced analytics that provide real-time information that helps decision makers involved with strategic and operational planning activities.[5]

Geographic Information Systems

One such technology is GIS, which involves electronic mapping and database management. GIS can be used to identify underground utility lines (gas, water, and electric) as well as constructing residential and commercial survey maps. The ability to capture, manage, and display various kinds of geographical (and spatial) data provides obvious benefits when it comes to land use planning, conducting an environmental impact study, or contemplating disaster evacuation scenarios. The use of GIS technology reduces the amount of time necessary for planning improvements while helping to avoid costly mistakes. The demand for accurate geographical information is especially important during a crisis situation. GIS allows for database modelling in which different emergency scenarios are considered in planning for natural and man-made disasters before they occur. Database modelling, for example, can prove highly useful for those communities vulnerable to flooding. City planners can use that information to predict where a river is most likely to crest while recognizing the preparations needed to minimize its impact.

Historic Preservation and Smart Cities

Creating an environment for industrial development is pivotal to a smart and sustainable city life. The potential economic benefits include enhancing the city's historic look and natural landscape, workforce development, cleaner environments, and improvements in organizational productivity.[6] The obvious challenge is how to advance city development while decreasing the carbon footprint of that community. Further complicating the problem are the legacy costs associated with buildings that were developed decades ago and represent the city's past. While these buildings may have historic significance, they were not built efficiently by today's standards. By the year 2050, 60 percent of the buildings currently in use will still be in operation.[7] This begs the question: how do we make such buildings of the past smarter and more efficient going forward? Constructing new buildings and remodeling old ones that are sustainable are major environmental challenges of the 21st century. The use of broadband delivery and well-designed energy management systems are essential to making such buildings cost-effective. Developing the right approach to historic preservation has a role to play in helping to advance the smart city concept.

While everyone has their own idea of what the city of the future should include, it's important to point out that not all systems have to be high-end technical solutions. Even strategies as basic as a well-designed community Web site or a 211 directory that provides contact information for vital, citywide services (i.e., food, housing, and health care) are in keeping with the smart city concept. Whether it's GIS or an Internet web directory, the goal of smart city thinking is to centralize key information elements for the purpose of promoting positive economic development and social growth opportunities.

Broadband Delivery and Smart Cities

The term *broadband* refers to high-speed Internet access using the power of intelligent networking. Broadband is the great infrastructure challenge of the early 21st century. It has sometimes been compared to developing the U.S. interstate highway system in the 1950s. Like electricity a century ago, broadband is a foundation for economic growth, job creation, global competitiveness, and a better way of life. It is enabling entire new industries and unlocking vast new possibilities for existing ones.[8] It is changing how we educate children, deliver health care, manage energy, ensure public safety, engage government, and access, organize, and disseminate knowledge. In February 2009, as part of the American Recovery and Reinvestment Act, the U.S. Congress directed the Federal Communications Commission (FCC) to develop a plan to ensure that U.S. citizens have clear and equitable access to broadband capability.

Broadband Delivery and Community Development

Designing a high-speed broadband delivery network is at the heart of community development and economic planning. It is central to the principle of smart cities of the future. The future design and development of a broadband community network has to be understood in the larger context that it is providing an electronic gateway for a whole host of entertainment, utility, and value-added services. Both cable television system operators and telephone carriers are the new architects of tomorrow's smart city grids. The proposed solutions will have a long-term effect on all aspects of telecommunication services for business and residential users alike, including 1) education, 2) geographic information

services, 3) smart grids and energy management, 4) emergency communication and medical services, and 5) business communication. The business community, for its part, needs broadband to compete on a global level. More and more, they seek out forward-thinking *smart cities* when choosing to grow their business.[9]

Sources:

Gershon R.A. (2017). *Digital Media and Innovation: Management and Design Strategies in Communication*. Thousand Oaks, CA: Sage. pp. 176-193.

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