

Chapter 1

Smart and Connected Cities Through Technologies

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ABSTRACT

The world is growing and energy conservation is a very important challenge for the engineering domain. The emergence of smart cities is one possible solution for the same, as it claims that energy and resources are saved in the smart city infrastructure. This chapter is divided into five sections. Section 1 gives the past, present, and future of the living style. It gives the representation from rural, urban, to smart city. Section 2 gives the explanations of four pillars of big data, and through grid, a big data analysis is presented in the chapter. Section 3 started with the case study on smart grid. It comprises traffic congestion and their prospective solution through big data analytics. Section 4 starts from the mobile crowd sensing. It discusses a good elaboration on crowd sensing whereas Section 5 discusses the smart city approach. Important issues like lighting, parking, and traffic were taken into consideration.

DOI: 10.4018/978-1-5225-6207-8.ch001

INTRODUCTION: PAST, PRESENT AND FUTURE LIVING STYLE

The Needs of Remembering the Past (Preservation and Revitalization)

The history of human civilization can be traced back to the Indus valley and Mesopotamia settlements. With the civilization the concept of towns, cities and villages evolved. Whether in prehistoric or historic times, human settlements were always found near the sources of water. Cities are developed on the river banks around 3000 BC, when some of the first settlements happened in Mesopotamia, the Indus valley civilization, the Egypt's Nile river civilization and along rivers in china. As the settlements developed growing food and storing it for all seasons became a practice. This gave rise to an organized agriculture system using labor. Labor divisions led to the rise of an upper class and also the development of cities, which provided the foundation for civilization (Sun et al, 2016).

A major technological and cultural transition to technical or machine age began approximately in the 1500 century in Western Europe, and from this beginning new approaches to science and technology spread rapidly around the world, which also included earlier cultures into the industrial and technological age in to the present times.

In the later times due to industrialization a lot of rural population shifted to the urban areas or cities. Considering the current situation 50% or more population is dwelling in the city area. With reference to the various calculations by the United Nations, by 2030 the probability is that 70 percent of the population might live in the cities which expectedly is going to bring a lot of challenges regarding the energy usage and sustainability which would also disturb the social and economic balance in the communities. Hence appropriate use of the technological resources like integrated networking systems, advanced sensing & communication devices, data sources are being put in to use for proper traffic management, delivery systems, crime tracking, reducing pollution and help local authorities to govern the cities in an efficient manner. This concept constitutes the Smart and Connected Cities (SCC) which should also implement the actual motives of the wordplay Smart and Connected "Communities".

SCC believes in the concept of our need of recalling the past(preservation and revitalization),the importance and inevitability of living in the present-day(livability), and the requirements of forecasting for our future needs (sustainability).The goals of SCC are to live in present, plan for the future and remember the past.

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