

PRESERVING WELL-BEING AND ECONOMIC GROWTH IN INDIA

Leapfrogging Urban Problems with Smart Cities



The upsurge in urban population in Indian cities will intensify societal challenges on every conceivable level. To improve the quality of life and attract investment in cities, proactive measures are now essential for government agencies. They will inevitably become increasingly dependent on geo-ICT in order to develop and manage their assets and infrastructures more efficiently and

effectively. This facilitates – and also demands – elimination of ‘silos’ within city authorities. In 2016, India’s government will select 100 municipalities to turn substantial parts of their urbanisations into ‘smart cities’.

The pace of urbanisation is so high that in 15 years’ time more than 600 million Indian citizens will be living in cities (compared with 350 million today). As studies of urban population growth by The World Bank and other agencies show, demand will increase in fundamental humanitarian areas: water, food, energy, infrastructure, sanitation, transport, education, employment and housing. The urban space must be kept liveable and economically sustainable and must therefore undergo a dramatic upgrade in all segments, not least to sustain the growth of the Indian economy. Cities are the powerhouses of economic growth of every nation, and India is no different.

Nearly 31% of India’s current population live in urban areas and generate 63% of India’s GDP (source: Census 2011). In view of increasing urbanisation, urban areas are expected to house 40% of India’s population and generate 75% of India’s GDP by 2030. This requires comprehensive development of the physical, institutional, social and economic infrastructure. Working towards smart cities is a step in the right direction.

Spatial information is the foundation of all planned activities and informed decision-making in knowledge-based and policy-driven smart cities – from a city-planning perspective to services offered to the citizens. Therefore, a spatial data infrastructure (SDI) must be the platform for spatial data creation, exchange and use.

National Competition

In 2016, the Indian central government’s Smart City Mission will support 100 cities in their transformation into smart cities, with a focus on the existing ‘brownfield’ cities. (The term ‘brownfield’ describes land previously used for industrial purposes that have become contaminated with hazardous waste or pollution. Once cleaned up, such an area can become a site for urban or commercial development.) The Indian prime minister launched an intra-state competition aimed at compiling a shortlist of candidate smart cities. Those on the shortlist will be required to prepare their proposals for participation in the ‘City Challenge’. Each proposal will be expected to have details of the proposed retrofitting (city improvement – 500 acres), redevelopment (city renewal – 50 acres), greenfield development (250 acres, in a previously vacant area) or a mix thereof. Additionally, there must be a pan-city dimension with ‘smart solutions’, such as an intelligent traffic management system to reduce commuting times, or a wastewater recycling and smart metering system for better water management in the city.

The Smart City Mission provides about US\$75 million per city over five years in grants, with a matching contribution from the respective states in India. Hence the total funding available per city is US\$150 million over five years. However, this is clearly not sufficient to transform a whole city. Therefore, the smart city projects must be developed as ‘lighthouse’ projects, i.e. as inspiring examples for the whole city. Furthermore, cities must take a ‘smart’ approach to their project budget and couple the funding with other schemes such as financing, multilateral funding or user fees.

A Step or Two Ahead

Prime Minister Narendra Modi defines his own vision of urban development as one “which is a step or two ahead of people’s aspirations”.

Of course, in view of India's problems – insufficient electricity and water supply, limited affordable housing, high traffic congestion and a high crime rate – one could wonder whether it would not be better to focus first on the basic infrastructure before aspiring towards developing smart cities. But there is also respect for the fact that, instead of setting his mind on providing these basic amenities, the prime minister is striving to achieve a greater goal. He is trying to follow the best practices from across the world and implement them in his country. He is convinced that designing smart cities will also result in the basic amenities for citizens, aided by facilities such as supervisory control and data acquisition (SCADA) systems, GIS mapped infrastructure, water and electricity leakage detection systems, smart parking and traffic management systems, solid waste management systems and wastewater management systems. Other elements mentioned by the prime minister included walk-to-work and cycling schemes. His smart city is sustainable, with equal importance placed on the preservation of the environment and reduction of greenhouse gas emissions.

Limited Spatial Framework

This government programme is good news for the Indian IT industry in general and it especially offers many opportunities in the geo-ICT sector. India does not yet have an authoritative spatial foundation framework. All the government authorities need to organise their infrastructural assets in such a manner that they are 'GIS ready'. It will be challenging to create a single GIS data warehouse of countless sets of available survey data, maps, images, tabular geotagged development data, cadastral data, etc. For instance, although most of the private utility companies operating in cities have their own GIS data warehouse, the same cannot be said for the city-owned utilities.

Furthermore, the cities have not been surveyed and mapped accurately. While many of them have initiated a city survey for purposes such as property tax, utilities mapping and suchlike, this is usually neither comprehensive nor consolidated. Another important component involves periodically updating the information at predefined intervals.

Every department within the city has so far done its own mapping, so there is now a strong need for single-source location data that can be cross-leveraged by multiple departments. There are already some good examples. In New Delhi, for example, SDI has been used effectively for sustainable development and it has received legal support from the Delhi government in the form of the SDI Act. A few cities, like Bangalore, Hyderabad, Delhi and Kanpur, have a very strong property tax management component built on top of a robust GIS database. They have been using this effectively for years now and other cities are now in the process of setting up a similar system. However, the problem is that the GIS applications and data are maintained for a specific problem/service and are not available holistically for the entire city.

The biggest challenge each Indian city faces is the lack of the technical capacity to plan, implement and monitor IT-driven or embedded projects. In the creation of this capacity, it is extremely important to understand the lifecycle value of the projects. They should be designed in such a way that they can be evaluated on functional outcomes and not just on cost. The workflow analysis should ensure that there is no duplication of effort and that the evaluations are a shared resource for all the departments involved.

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