The Role of Urban Planning and Local SDI Development in a Spatially Enabled Government

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1 Introduction

A continuous increase in world population combined with limited resources has lead to the concept of sustainable development: the development and use of resources in an environmental, economic, and socially sustainable manner. Spatially enabled government is a new and useful mechanism, helping us achieve the boarder goal of sustainable development. For this purpose, we need first to understand what spatially enabled government (SEG) means. A spatially enabled government is one that has ready access to all the spatial, geographic or location-based information and associated technologies that it requires and is applying these productively to all areas of government endeavour. Undoubtedly, the greater the use to which the information is put, the greater the benefits will be, even though they may be difficult to quantify. While some information may be rarely used, it none the less may be worth holding within the system so that it is available at short notice when required (Dale and McLaughlin 1988).

In line with the above definition, Spatial Data Infrastructures (SDIs) is a mechanism which can facilitate spatial data management, including sharing data and related applications in various levels of government. It is based on a dynamic, hierarchical and multi-disciplinary concept that includes people, data, access networks, institutional policy, technical standards, and human resources dimensions, and which aims to facilitate and coordinate the exchange and sharing of spatial data between stakeholders in the spatial data community (Rajabifard, Binns et al. 2006). The concept of a National level Spatial Data Infrastructure (NSDI) initially flourished and efforts to develop NSDI commenced in the 1980s. It was then realised that SDIs needed to be developed at other jurisdictional levels including local, state and regional. This is especially the case for SDIs at the lower end of the hierarchy, as it is these levels (local and state) that create, monitor and update large scale people relevant data such as the cadastre, which are valuable base levels of information within SDIs.

2 Local government SDI development

Local governments are responsible for various obligatory as well as non-obligatory functions in order to provide a better living environment to the public. They can be in charge of engineering, recreational, health, community services, building, planning &
development, administration and utilities works etc. One of the key sectors at the local level is the office dealing with urban planning and development; commonly known as urban planning department. The planning system has a profound impact on quality of life. Its outcomes influence the quality of the urban environment, the price and size of homes, the employment opportunities available to all, the price of goods in shops and the amount of open space in towns and the countryside. Planning can also play a key role in managing climate change. For example, planning policy can, and should, ensure appropriate regulation against building on floodplains and protecting green space in cities (Barker 2006). Similarly, the impact of sea level rise can be better anticipated if it can be conceived early and necessary arrangements put in place.

Urban planning is conceived as a series of activities purposefully organised to bring about a built environment that corresponds as closely as possible to the wants and needs of citizens (Chapin and Kaiser 1979). A master/structure plan is the main tool prepared by urban planners to manage urban areas. These are mainly policy documents, elaborating future plans and policies for the growth and development of cities. Urban planning programs are process based and at every stage provide useful information to other stakeholders in decision making. Better means of information sharing means informed decision made by other stakeholders. For example, future development growth patterns can guide utility services departments about their future investments patterns. Urban planning departments also produce other useful information based on their day to day activities, including information such as changes in land use patterns. The development of high rise buildings in place of single storey buildings or a transition to commercial use areas mean more traffic, more noise, security issues and greater demand for water supplies, electricity and other services. Easy accessibility of this information can help local residents and other departments to convey their concerns/objections to planning departments, facilitating public participation in decision making. Similarly people can make good decision about their own land if information about zonings and other building regulations is available. Figure 1 clearly shows how the urban planning process requires and generates valuable information and services for community decision making at different stages.

To achieve some of the above mentioned and other broader goals, urban planners require up to date and easily accessible diverse
information types about population, economy, land use, environment, transportation, utility services etc. However, in many countries (especially developing countries), much of the information is not available or is in such a format that it can not be easily accessed and is hence ultimately of little application. Most of the spatial information is in the form of unscaled sketches and sometime even that is classified (Bishop, Escobar et al. 2000).

For example, the master plan for greater Lahore-Pakistan took almost 10 years to complete. The master plan tried to gather together the latest available information, however, as different sources held different sets of information which were not interoperable there were long delays in time and an increase in associated costs. Once the plan was prepared, it was difficult to implement it on the ground as the reality of the situation had changed over the ten year time period it took to create the plan; consequently, its application was of little use to urban planners (Hameed and Nadeem 2007).

Figure 1 - Primary Technical Elements of a Land Use Planning Program.
Source: (Chapin and Kaiser 1979)

At the local level, the urban planning and development control function is usually affected by the policies and actions of other local
governmental departments and agencies, such as public works, parks and creation, education, public transit, and roads and vice versa (Leung 1989). However, there is generally a lack of cooperation between these departments and agencies and data is not shared. A base map is one of the prerequisites for effective urban planning; however, quite often each department prepares its own base maps at different scales with varying accuracy and limited resources. This results in an unnecessary duplication of effort and often creates inferior data to that produced if all departments cooperate to create a single base map. Information about the location of underground utilities and facilities is often worse than the maps showing above ground features (Bishop, Escobar et al. 2000). Explosions and electrocution has occurred when digging machines have struck underground utilities services. Many holes are dug in the ground to locate utilities, only to reveal nothing at the bottom. This is not only a safety issue, but also an economic one: as demonstrated in the UK alone, such activities cost many millions of pounds each year (Dale and McLaughlin 1988).

3 Conclusion
The absence of reliable data and the reduced capacity to use that data means that planning decisions are being made in the dark (UN 2006). Urban planning is one such department which is utilizing diverse types of spatial information. Others departments are also benefiting from the output information of planning departments and as such the planning department acquires a central role in information distribution. A coordinated data sharing mechanism from an urban planning perspective will not only facilitate urban planners, but also assist other local departments in making informed decision. Local SDI developed to facilitate urban planning systems are very beneficial and a necessary part of any governments attempt to achieve the broader goal of a spatially enabled government.

4 References


Biographical notes

Mr. Faisal Masood Qureshi is doing PhD in Department of Geomatics, University of Melbourne, Australia. His research area involves integrated urban planning system using Spatial Data Infrastructure. Mr. Faisal has his professional master in City and Regional Planning from Pakistan. During practical experience of serving as town planner at local level, accessibility of latest spatial information was one of the main problems faced by him and other professional colleagues. Later on, he joined Pakistan National Space agency SUPARCO to explore the application of Satellite remote sensing and GIS. With the professional background of urban planning and practical experience of planning and GIS, he is exploring the role of Spatial Data Infrastructure to facilitate the accessibility of spatial information at local level particularly for urban planners in developing countries.

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