E-Seva in Hyderabad, India: Implications for data sharing amongst planning agencies

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Abstract

In 1996, the first author surveyed the use of the web as a dissemination tool by Indian government agencies and found that there was little web-based participation by either government or non-government agencies. By 2002, there was at least one Indian city that offered citizens the opportunity to pay property taxes on the web (www.esevaonline.com/). Clearly, even in a developing country like India, e-Government has come a long way in a very short time. In this paper, we survey the use of this facility in Hyderabad, a rapidly growing city in India. We look in particular, at the implications of e-Seva for local planning agencies. We also suggest a framework whereby virtual agencies could create data 'portals' that allow for inter-agency data sharing. The study relies on interviews with the users of e-Seva and other government officials who are interested in its use for planning at the metropolitan and regional level. While the study focuses on Hyderabad, India as its case study, the implications to planning in other cities in India is also an important aspect of the research.

Introduction

In 1996 web search of pages related to India revealed that the majority were about Educational Institutions, tourism and businesses with a focus on attracting investors in the US (such as software or real estate investments. The most popular match for India in 1996 was: "*Regional: U.S. States: California: Cities: Anaheim: Entertainment: Disneyland: Indiana Jones and the Temple of the Forbidden Eye*". On the other hand, in 2003, a search for "India" had over 8 million potential results and over 100,000 websites that concerned the Government of India alone. As Figure 1 indicates all the categories (and sub-categories) have seen enormous growth since 1996 in term of the information disseminated on the web. This tremendous growth is reflected also in the proliferation of e-Government websites like e-Seva (translated best as e-Service). E-Seva was launched by the Municipal Corporation of Hyderabad (MCH) to initiate e-Government in civic services. E-Government has been defined as "implementing cost-effective models for

citizens, industry employees and other stakeholders to conduct business transactions online. This concept integrates strategy, process, organization and technology" (Whiston and Davis, 2001). E-Seva's website notes that "we offer a wide spectrum of citizen-friendly services that will save citizens the bother of running around various departments". This includes the payment of utility bills, registration of birth and death certificates, issue of permits and licenses, reservations for buses, passport applications, etc. The MCH describes e-Seva's use of Information Technology (IT) as follows:

> "We chose IT as a medium for reaching the doorsteps of citizens in helping them provide the best civic services. Taking advantage of technology, we took many innovative steps like online payments citizen service centers, Collection through banks using wireless technology, and intranet building for information sharing. IT has been used in the project for easy accessibility of the information to the citizens. The information flow is two-way, online, automated using databases on 24/7 basis anywhere anytime. The MCH has adopted professional network security policy to provide secured transactions on web and on intranet."

Categories of websites	Number of sub-categories	
	1996	2003
Business	35	7391
Cities, States, and Regions	79	Cities and Towns (251) Districts (196) States and Union Territories (18147)
Education	57	286
Entertainment	45	996
Environment and Nature	2	79
Events	1	18
Government	Embassies and Consulate information (5)	428*
Internet Services	4	35
News and Media	25	329
Organizations	20	182
Politics	24	57
Real Estate	2	Cities (27) States and Union Territories (229) Complete List (222)
Society and Culture	55	1572

*Includes:
Agencies (18), Budget (10), Civic Participation (4), Courts (1), Departments (7), Embassies and Consulates (56), Ethics (2), Government Officials (19), Intelligence (1), International Organizations (12), Law (34), Military (41), Ministries (127), National Symbols and Songs (3), News and Media (3), Parliament (4), Politics (60), Public and Civil Service (1), Research Labs (13), Statistics (2), Taxes (6)

FIGURE 1 Results of category based web-searches for "India" on the Web 1996 vs. 2003 (Using the search engine Yahoo)

The city of Hyderabad (also referred to popularly as the twin cities in conjunction with Secunderabad) is India's sixth largest urban agglomeration with a population of about 5.5 millions (Census of India, 2001). At its current rate of population growth it is expected that the population of Hyderabad will exceed 10 million by 2020 (UNFPA, 1996). One might question the need for IT based governance initiatives in a city where an estimated 17% of the population lives in locations defined as "slums" or shanty-towns (Census 2001). However, as Wolpert (1996) notes, IT is not just hardware innovation but also a fundamental cultural shift analogous to the introduction of automobiles. The question one needs to ask is, what values need to be institutionalized so that the virtual communities of government organizations and citizens flourish?

Castells suggests that "globalization" is now possible due to the IT infrastructure. Therefore, a well-educated and computer literate resident of Hyderabad could be more connected to other countries than to low-income slum dweller in Hyderabad. This is the other side of the coin of the "City of Bits" metaphor especially in India where many cities are as far from the metaphor as pre-industrial Europe was far from the age of IT. Marx (1996) counters that we find explicit symptoms of the anti-political drift of technology everywhere. He suggests that politics is seen as a crude, emotional, combative, primitive mode of solving problems while technology is rational, amoral, and clean. Amsden elaborates further by noting that there

needs to be a more textured view of technology, and in particular about IT. She puts forth three propositions about IT. First, it diffuses to different segments or strata in society unevenly. Second, the effects of the technology are invariably both negative and positive on people's lives and on institutions generally. Third, new technology diffuses to the poor and to the disadvantaged in society more slowly. Further she suggests that in order to understand how and why the poor will be left out we should try and think at the organizational level. To quote her "it seems to me if one is to understand the uneven diffusion of technology one has to understand organizations and one has to understand how organization themselves are transformed by the technology in question". In this context we examine a specific e-Government initiative with respect to the users that it provides services to, as well as its relevance to future planning initiatives within the city.

The Case Study: E-Seva

Devadoss et al (2002) note that there are three layers to e-government transformational frameworks:

1. Structure (the existence of government support, standards, guidelines for data exchange);

2. Developer knowledge (interconnection of systems, procedural constraints, commitment to development, outsourced development integration);

3. User participation (education on objectives, training on new systems and diagnostic tools to assist users).

In the case of e-Seva, the structure of the framework was well defined (Government of Andhra Pradesh, 2000; 2001) as was the developer knowledge (Government of Andhra Pradesh, 2003). The highly centralized system of civic government in the State allowed for relatively smooth transformation to e-Government with respect to the first two layers. However, the third layer is much more complex to "transform". The third layer includes both the officers of the MCH as well as the citizens who need their services. The Municipal Corporation officials interviewed seemed open to this new form of governance. A module of the web portal known as "*Parishkruthi*" ("to clean up") acts as a central database of citizen complaints to the MCH. The portal also provides for citizen participation in the form of discussion forums, voting on civic services rendered, information on roads and sanitation works, and citizen "chat". The MCH has built an Intranet that integrates the complaint system and allows direct communications with officers. This provides interaction between the complainant and the dealing officer without middlemen (commonly used in other forms of interaction). The MCH officers hope that sharing planning information, the vision documents and the achievements of the various municipal departments (in both English and the local language Telugu) will ensure public participation. The nature of their clientele is however, very heterogeneous. To understand the nature of the clients that were able to use e-Seva we conducted a small survey (36 users) at a center in Hyderabad. The center was located in Khairatabad – a relatively affluent and accessible part of the city close to MCH offices.

The survey results indicate that over 50% of the users at the center were employees of privately owned companies. The next largest group was government employees (17%) and senior citizens (14%). Most were acting on their own behalf (78%) as opposed to their employers. Those using the facility on behalf of employers tended to be less educated (62% had no undergraduate degree). Nearly 60% of the users were below the age of 35 and 67% had at least an undergraduate degree. About 11% of the users had a graduate or professional education and 89% of them were males. All the female users were middle or high income and were well educated (all had undergraduate degrees). Only 8% of the users had an income below Rs. 5000 per month (about $100). More than half the users had access to a computer at work or home and 78% of the users had access to telephones at home. Nearly 40% of the users came to the center in a two-wheeler, 33% took a bus to the facility and about 20% walked to the center. The majority of the users (over 50%) had found out about the services through newspapers and other print media and had visited the facility at least one other time in the past month. Clearly, the average user of e-Seva is a well-educated, middle-income male, with access to computers and telephones. Keniston (2001) notes that telephone connectivity is about 3% in India. The Census (2001) indicates that 53% of the city of Hyderabad is not literate. Based on our survey, therefore, the average user of e-Seva is already an "informationally empowered" citizen (Banerjee, 2001).

The facilities provided at this center included:

1. Payment of utilities bills (water, electricity, telephone)

2. Tax bills (property, sales)

3. Certificates (birth/death registration or issue)

4. Trade permits and licenses (issues or renewals)

5. Transport department services (transfer of ownership, learners' license, issue/ renewal of driving license, registration of vehicles)

6. Reservations (inter-city bus tickets)

7. Passport applications

8. Internet services (downloading government forms and orders, Internet applications)

9. Income tax returns

10. Parking cards

Of these facilities the most popular was the payment of utility bills – 86% of the users availed of this facility. Specifically, 38% of the users paid their electricity bill, 15% paid water bills and 33% paid their telephone bill. About 7% of the users paid property taxes and only a small percentage (2%) used it get parking cards and forms or to reserve bus tickets (2%). All the users gave the facilities in this center a very high rating. Except for one moderate rating, all the other users rated the services as good or excellent. Over 50% of the users availed of more than one facility offered by the portal. All the users expect to use the facility again. They all agree that the portal has helped make civic services easily accessible to them. The majority also believes that they saved time and that the ambience of the center was much better than most government offices. Two users noted that their waiting times at peak hours (after office and during lunch) were getting longer than they used to be in the past. Another noted that the staff needs more training in the use of the facilities for filing income taxes and should be more "customer -centric". At least two others suggested more services such as flight bookings (which is already available on other websites).

To the average e-Seva user the portal is a stress-free way of conducing e-business. E-Seva, as it functions now, is devoted to satisfying the "customer" as a process and as a tool (Finger and Pecoud, 2003). It has yet to redefine governance in any significant manner. The MCH officials have not noticed significant changes in their interactions with their "customers" or with each other. Indeed, the process of planning has not changed significantly due to the ability of the citizens or the officials to access the websites disseminating information about the MCH. Devadoss et al (2002) suggest that e-government initiatives tend to follow five perspectives – e-business, citizen, knowledge, process and tele-cooperation. Their study of Singapore's successful GeBiz website suggests that the tele-cooperation is the most effective means of studying the initial stages of e-government transformation. This is because the complex interactions between the players that constitute the user participation layer are necessary for planning and managing the city's infrastructure. In the next section we explore a framework for a portal that can assist in such planning and management efforts.

E-Seva and the MCH: A Framework for e-Planning

Wescott et al (2001) note that the six stages of e-government include: 1) setting up email 2) enabling inter organizational and public access to information 3) allowing two-way communication 4) allowing exchange of value 5) digital democracy and 6) "joined-up" government. The last includes the development of web portals that enable various government departments and citizens to conduct two-way communication and ultimately lead to e-democracy (Finger and Pecoud, 2003). Realistically, e-Seva is currently at the fourth stage of e-government. (Even though the portal offers the ability to communicate grievances and brings together several departments of the MCH most citizens in Hyderabad are not trained to avail of these services. Further, the various departments that manage infrastructure (transport, water, sewers, etc) for the region do not have access to the kind of data they need to make forecasts through e-Seva. To reach the sixth stage of "joined-up" government MCH needs to first understand the nature of its interactions with other departments within itself, at the regional and national level.

In recent years, the issue of urban sprawl has become part of a popular debate in the US and Europe with several references to "smart growth" in the media. Even in India, Srinivasan and Rogers (2001) find that in Delhi, land use changes are causing rapid decentralization and homogenization of land uses. Hyderabad is also rapidly growing beyond the extents of earlier urban development (Chari and Reddy, 2002).

Agencies planning for such rapid urbanization need decision support systems that help model all aspects of infrastructure development. For example for modeling air quality, transportation and land use planners need integrated data. Planning agencies in developed countries have used integrated modeling tools (EPA, 2000; Waddell, 2002). Developing countries are hampered by the lack of data for calibration of such large-scale models. Therefore, the need to collate the relatively few data sources is urgent for urban managers. The use of remote sensing data for generating base maps of land use and transportation is also an important element of creating planning tools for these cities (Stefanov, 2001).

For the MCH, a major task is to enable organizational mechanisms whereby the data to build comprehensive urban decision support systems are made available. In Hyderabad, there are no GIS in place that archive spatial and non-spatial data though past land use and transportation plans for Hyderabad have already generated some data (Chari and Reddy, 2002). Thus, a framework that can serve as a data integration tool needs to be put in place. The portal is thus a combination of IT tools like SAND (Samet et al, 2002) as well as a data integration framework. The data portal shown in Figure 2 connects the planner using a decision support system for urban management in Hyderabad with a data sharing mechanism. MCH can thus use an integrated data-sharing framework to generate data that will be used to model travel behavior, land use change, transportation demand, air quality dispersion, and employment growth using various models in the decision support system. Further, this integrated decision support system will also generate data, which may be in turn be re-used by other models within the decision support system.
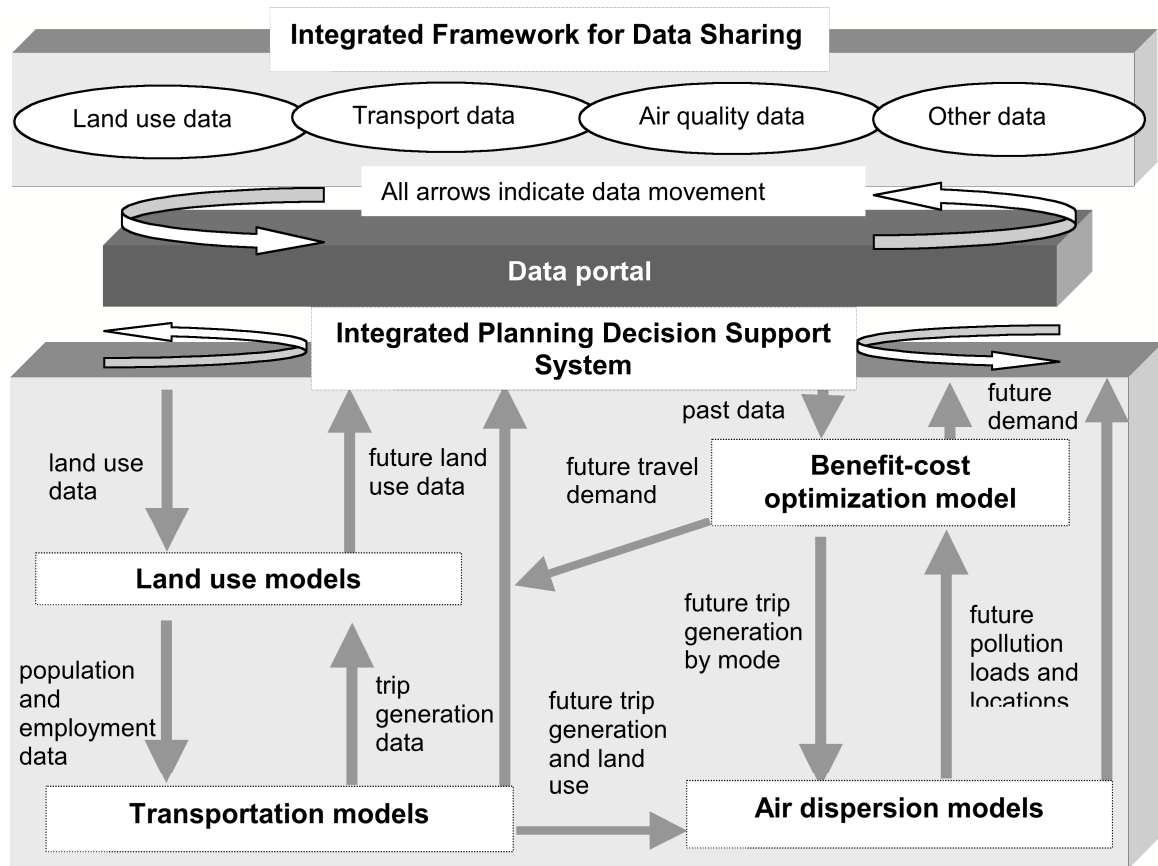
Figure 2: Interrelationships within the planning decision support system, the data sharing framework and the data portal

These tasks will require coordination between the departments in MCH, the Traffic Police Commissioner's office; the public transport agencies; institutions like the National Remote Sensing Agency in Hyderabad which collates remote sensing data; academic institutions; quasi-government research institutes like the Road Research Institute (in Delhi) that analyze data for transportation and air quality management in India and international organizations like the World Bank and ADB that are concerned with infrastructure

planning in cities like Hyderabad and generate their own data. The support of the World Bank (and the UNDP) should not be an issue since they have increasingly embraced IT based portals as a means to improving institutional performance (Odendaal, 2003). In creating a data portal, therefore, there will be a need to introduce mechanisms not only to share and collate data but also to implement planning methodologies that incorporate the use of such data and models across agencies.

Conclusions: E-Seva as a model for integrated Planning

Oluwu (2003) argues that, of the three most prominent issues in governance discourse – horizontal coordination of markets, government hierarchies and networks, and multilevel governance, the last is the most challenging for developing countries. He suggests the use of GIS to generate municipal finances by taxation, the creation of electronic land records and titles, and the creation of a wide range of data for decision making at all levels of government. Carver (2003) also suggests that GIS could be a facilitator as a decision tool with an intelligent interface. Thus the use of spatial data integration is a valid goal for the data portal. The challenge to urban management in India is the need to integrate spatio-temporal data at various resolutions (local, regional, national and international level) and scales. The need for integration is especially urgent in that these cities face enormous problems with respect to managing their infrastructure while dealing with unrelenting growth in terms of population. Developing the organizational structure to provide long-term support for data sharing and development for a global clientele of researchers, policy makers and citizens should be the ultimate goal of such web portals.

Most analyses of portals for e-government emphasize design principles like decentralization of governance (Bhatnagar, 2000). However a rational information system, according to Banerjee (2001) allows all participating agents to pursue goals and fulfill interests. Therefore, sharing information as a resource is a way to transform e-Seva to a data integration portal. Montalvo (2003) notes that to create a culture of data sharing, the management needs to be targeted through spatial data infrastructure initiatives. India already has a National Spatial Data Infrastructure (NSDI) strategy (Rao et al, 2002) awaiting implementation. Thus a climate for creating data integration portals in a GIS environment already exists in terms of available standards and technology. However, the question of user participation (in terms of government departments as well as citizens) still is key. The question is if the will to transform governance exists regardless of the existence of the technology to implement it.

Odendaal (2003) argues that the use of IT tools in governance has helped overcome fragmentation by integrating planning and budgeting and creating more transparent local government. Keniston (2001) however, cautions against the urge to put a (web accessible) computer in every village and notes that e-government is costly to implement considering the extent of its audience in a country like India. Fountain (2001) suggests that IT and organizational/ institutional arrangements are connected reciprocally and function as dependent and independent variables. She cautions therefore that outcomes could be both unpredictable and variable. Carver (2003) also notes that the nature of national and local governments and their context (both geographic and historic) affect user participation. Clearly therefore the lessons of one e-government initiative do not necessarily transplant well to all contexts. However, the lessons of e-Seva to the MCH are plentiful. Furthermore, the rewards to carrying it to its full potential as "joined-up" government may lead to a more sustainable future for the city and its environs.

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