

# Virtual Government in Singapore

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## INTRODUCTION

Governments are a strategic necessity, as they provide the overarching administrative machinery to ensure that national (and citizens') needs are taken care of. The need for the civil service to be more cognizant of citizens' concerns has been reiterated in several recent studies (e.g., Tarabanis, Peristeras, & Koumpic, 2000; Janssen, Wagener, & Beerens, 2003). People interact with the government for a variety of needs, for example, payment of bills for utilities, seeking approvals for licenses, and so on. While this has served citizens well, there is a general perception that governments are generally lackadaisical in terms of response times. Citizens and businesses in today's society have high expectations and demand that their governments be more responsive to their needs. Though upping of civil service head count and decentralizing of official machinery have met with a good degree of success, it has been at the expense of a cost factor which may not be that easy to justify or sustain in the future, especially when there are so many pressing sectors of the economy needing fiscal injections. Any productivity increments achieved in maximizing use of government manpower and resources through various enabling tools means that the savings realized can be deployed back into the economy. The emergence of the Internet has given governments an opportunity to act in this regard. This has given rise to what is known as e-government.

## BACKGROUND

The term e-government refers to the use of the Internet to improve work processes in the public sector. It started in the United States in 1995 (Heeks, 2000; Prins, 2001; Ronagan, 2002; Jakob, 2003; Holden, Norris, & Fletcher, 2003).

An e-government allows people to be connected to the bureaucracy at all times. Owing to various factors—basic telecommunications infrastructure is not yet pervasive, presence of vested interests, best practices in e-government are still evolving, and so on—the “off-line”

public sector is still firmly entrenched, especially in many developing countries.

In Singapore, a developing country, the e-government has matured tremendously over the past few years (Tan & Subramaniam, 2005). This article describes the infrastructure and standards supporting the e-government in Singapore, provides information on some of the key services that have been “virtualized”, and offers a commentary on the efforts of putting in place an e-government. As Singapore was among the pioneers of the e-government movement, its experience would be of relevance to other countries. The Singapore e-government Web site is located at <http://www.egov.gov.sg>.

## INFRASTRUCTURE FOR E-GOVERNMENT

### Modern Telecommunications Network

A modern telecommunications network is a must for the smooth transition to e-government. An e-government by itself has little effectiveness if efforts are not translated into promoting connectivity for the citizenry. A technology-neutral approach was taken to deploy a modern telecommunications network in the 1990s. Major telcos were encouraged to roll out different platforms for access. To ensure a level playing field for all operators and to promote the spirit of competition, an independent regulator was appointed.

Five principal telecommunication platforms are now in place:

- Public Switched Telecommunications Network (PSTN)
- Asymmetric Digital Subscriber Line (ADSL): For broadband access
- Hybrid Fiber Coaxial (HFC) Cable Modem service: For broadband access
- Asynchronous Transfer Mode (ATM): For broadband access as well as for linking ADSL and HFC

- cable modem service to the ordinary telecommunications network
- Wireless access

These have been addressed in detail by Tan and Subramaniam (2000, 2001, 2003).

With the telecommunications network operating on a plurality of platforms which are interoperable, a competitive landscape has emerged for the cost-effective delivery of services. Table 1 shows the maturation of the telecommunications market in Singapore over the years.

## Public Services Infrastructure

The Public Services Infrastructure (PSI) constitutes a core feature of the e-government architecture in Singapore, and comprises a three-tier framework ([http://www.sun.com/br/government/feature\\_psi.html](http://www.sun.com/br/government/feature_psi.html)):

- an infrastructural ICT framework;
- a middle layer, which inter-links all government agencies and allows them to host their data in a central data storage facility, as well as integrates all the database software of these agencies; and
- an applications layer, which has security features for safe financial transactions.

Before the installation of the PSI, there was recognition that if the existing ICT systems of the various agencies are to be integrated, the complexity of the various systems and the plurality of the user interfaces would present technical difficulties in migrating these services onto a central portal. The legacies of these systems would also come in the way of restructuring work processes with those of other agencies in an effective manner. All this would come in the way of promoting effective delivery of a citizen-centric range of services.

The PSI enables the various agencies to realize operational synergies and cost savings by riding on the same platform ([http://www.sun.com/br/government/feature\\_psi.html](http://www.sun.com/br/government/feature_psi.html)).

For example, e-payment channels, electronic data exchange, and security features of the framework can be

used by all government agencies. The cost of introducing new services to the public is also dramatically decreased. This means that economies of scale in the operations allow for significant overall cost savings to be realized by the government.

A tool called the eService Generator allows government agencies or their appointed vendors to introduce new services and applications rapidly and securely on the PSI without the need to worry about source codes. When the New Singapore Shares scheme was introduced in 2001 by the government to reward citizens for their contributions to the economy, the amount of shares allotted to each citizen was determined by factors such as age, income level, and type of housing. An e-portal which allowed Singaporeans to check on their share allotment was conceptualized and rolled out in three weeks on the PSI—compared to six months if it were to be launched on any other platform.

## ISSUES IN RELATION TO IMPLEMENTATION

The transition to e-government must proceed in a phased manner. There was little guidance on best practices that Singapore could follow when it started to e-enable its civil service—after all, it was among the forerunners of the e-government movement when it started in 1995 with a Web site offering the public a range of information for their needs. A phased evolution allowed adequate time to sort out bottlenecks and bugs in the system, set the standards, fine-tune the workflow processes of the various government agencies for riding on the Internet, learn from other e-governments, and allow for policy issues to be better understood for proper implementation.

As the civil service started its computerization in the 1980s, it was well positioned to ride on the Internet platform. Workflow processes in the various agencies were streamlined internally before up-linking these to the Internet platform.

As part of the ongoing support for the e-government, an investment of S\$1.5 billion was made in June 2000 with the specific aim of reaching out to three segments of the

*Table 1. Timeline showing growth of fixed-line telephony, mobile phone, and Internet market in Singapore (Source: <http://www.ida.gov.sg>)*

Sector	1997	1998	1999	2000	2001	2002
Fixed Line	-	1,751,500	1,850,700	1,935,900	1,948,900	1,993,700
Mobile Phone	743,000	1,020,000	1,471,300	2,442,100	2,858,800	3,244,800
Internet Dial-Up	267,400	393,600	582,600	1,940,300	1,917,900	2,000,700

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