E-Government In China

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China, like other countries, has found generating commercial benefits from its early National Information Infrastructure (NII) drive more difficult than anticipated. It is not just a matter of building infrastructure; tangible broad policy guidance and active government intervention is also necessary, but in China this urge to develop an online presence has been both tempered by and driven by the government's contradictory relationship with its citizenry. *Tempered* because of its ongoing wariness of what a medium such as the Internet may introduce and because the Internet may prove to be beyond the control of the government; *driven* because the Internet may very well prove to be a tool for further government (and Party) consolidation and, perhaps more importantly, *the* significant tool for sustaining economic growth.

As a result, China's leaders have launched a series of online programs to accelerate the government's pace of implementing *and using* the information economy by improving China's current government information management systems and to help promote the country's economic development. The government has a history of doing this, even as it has continued to open the economy to outside involvement and less-centralized planning. The telecommunications industry provides perhaps the most successful contemporary example of China's interventionist economic strategy, and this means that (a) informatizing (as it is know in China – *xinxihua*) the government as a driver is extremely important; and (b) such intervention is unlikely to disappear even after the country formally accedes to the WTO.

Therefore, to find proof of the government's *support* for Internet development in China, one simply has to look to the aptly named Government Online Project (GOP). To find proof of the government's *commitment* to building a strong online presence, one needs to put such developments in context. In this short paper we take each of these in turn.

GOVERNMENT ONLINE

The Government Online Project is a three-stage initiative: Stage One focused upon connecting 800-1,000 government offices and agencies to the Internet; Stage Two focuses on having government offices and agencies move their information systems into compatible electronic form; and Stage Three – planned to occur sometime late in the decade – will see government offices and agencies becoming paperless. The purpose of the GOP is to create a centrally accessible administrative system that collects and transports data to and from users; *users* being the public and the enterprise system, as well as government departments.

On January 22, 1999, the Government Online Project was formally launched by China Telecom and the State Economic and Trade Commission's (SETCs) Economic Information Center along with the Information Offices of more than 40 central government departments. The project interconnects government offices of *every* province, autonomous region and municipality. The network will promote the establishment of formal government websites to provide information and services and then (in theory) also facilitate collaboration between the government and the nation's growing number of IT enterprises (ISPs, ICPs, software and hardware manufacturers). By developing the basic infrastructure and

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encouraging government agencies at all levels to incorporate Internet technologies, the government hopes to set the tone for online development and, ultimately, e-commerce.

In other words, the government's strategy for driving the 'information economy' is to first launch the Government Online Project by setting up formal government websites so that the public can acquire information and procure specific government services via the Internet. The focus then shifts to promoting office automation via government websites in order to cut down on excessive bureaucracy, and hence expenses. The government is then implementing what are known as the Enterprise Online (already launched) and Family Online Projects (yet to be properly launched) to further drive the uptake of online use and services.

Official expectations for the project are as follows:

- Provide more effective coordination between and across government organizations, both horizontally (between ministries), and vertically (from Center to locality)

- Build up national and worldwide confidence of the Chinese central and local governments' presence on, and commitment to, the Internet.

- Make available to the public government information, while also reducing government expenses by increasing administrative efficiency.

- Lay a base for the establishment and growth of China's 'electronic government';

- Encourage electronic procurement;

- Begin to accelerate the acceptance and use of the information economy in China.

The implementation of the GOP is scheduled to take place in three phases.

Phase One – Enabling Technologies

Phase Two **–** Information Sharing

Phase Three **–** Paperless Government

The first and second phases have been slated to take one to two years to complete (although there is some inherent ambiguity in the dates, and their likelihood of completion – as tends to be the case in all such major infrastructural undertakings), with the third stage requiring a much longer-term effort. By 2001, the project could be seen to have been reasonably successful *if* assessed against the government's rather modestly stated initial ambitions of promoting an online presence and driving some early procurement activity (*rather* than assessing against the government's hoped for aims of pushing information sharing, government oversight and enterprise uptake). According to the Government On-line Project Service Center (GOPSC), within one year of initiation 68 state-level government departments had put their names on-line and 60 percent of State-level departments had established sites via China's main Internet service provider: 163/169.net. By the end of 2000, 80 percent of all government agencies, both local and national, had established websites (Table 1).

Table 1: A Selection of the Government Agencies online

State Economic and Trade Commission	State Administration of Internal Trade
State Admin of Petroleum and Chemical Industries	State Administration of Press and Publications
State Bureau of Building Materials Industry	State Bureau of Light Industry

State Bureau of Nonferrous Metals Industrial	State Bureau of Quality Inspection
State Bureau of Seismology	State Bureau of Surveying and Mapping
State Bureau of Textile Industry	State Drug Administration
State Family Planning Commission	State General Bureau of Environment Protection
State General Tax Bureau	State Grain Reserve Administration
State Statistics Bureau	State Tobacco Monopoly Bureau
State Weather Bureau	Taiwan Affairs Office of the State Council
Central Committee of the League	Commission of Science, Tech & Industry for National Defense
State Ethnic Affairs Commission	General Office of NPC of General Office of the State Council
State Administration of Foreign Exchange Control	General Office of CPPCC
Supreme People's Court	Supreme People's Procurator
People's Bank of China	Research and Development Center of the State Council
Ministry of Agriculture	Ministry of Civil Affairs
Ministry of Communications	Ministry of Construction
Ministry of Culture	Ministry of Education
Ministry of Foreign Affairs	Ministry of Foreign Trade and Economic Cooperation
Ministry of Information Industry	Ministry of Justice
Ministry of Labor and Social Security	Ministry of Land and Natural Resources
Ministry of Public Security	Ministry of Railways
Ministry of Science and Technology	Ministry of Water Resources
National Admin for Industry and Commerce	National Bureau of Forestry
National Bureau of Oceanography	National Intellectual Property Right Office
National International Atomic Energy Agency	National Sports Bureau
China Council for Promotion of International Trade	China National Space Administration
China Telecom	Chinese Supply and Marketing Cooperatives
CNNIC	General Administration of Civil Aviation of China
General Administration of Customs	

*Source: Ministry of Information Industry (MII)*http://www.mii.gov.cn/mii/index.html

Somewhat more empirically, in July 2001, the State Information Construction Promotion Office issued the first 'Report on China's Internet Resources' (SICPO 2001). Beginning in March, the Information Office had conducted a survey of relevant mainland websites employing the domain names '.cn, .com, .net, .org, .gov'. According to the report, as of April 30 there were 692,490 mainland Internet domain names, 238,249 websites[2], over 159 million web pages and 45,598 online databases. Website portals ending in '.com' and 'com.cn' accounted for some 80.7 percent of the total, followed by portals ending in '.net' and '.net.cn', accounting for 12.7 percent.[3] Tellingly, government portals, which ranked second in the number of portals available, provided just 7.6 percent of browsing volume by traffic, ranking below even individual websites in apparent attractiveness.[4] Corporate websites, by contrast, accounted for 77.8 percent of total websites, and generated 43 percent of the traffic, while commercial websites accounted for just 5.4 percent of the total number of sites, but nevertheless achieved 29 percent of the total browsing volume.

The survey further revealed that fully one-third of websites are maintained by merely one or two persons, and only a fraction of websites are updated regularly. This startled the government enough that the emphasis shifted from simply building an online government presence to building and promoting online services. Moreover, beginning in August 2001, the Beijing Informatization Office began checking Beijing government websites to ensure that they were 'maintained properly and updated in time'.[5]

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[2] 161 times the number in existence four years earlier.
[3] Around 11 percent of website portals charge for online databases, 60 percent of which are product databases.
[4] On average, the daily browsing volume of each commercial website portal was 5,342 times, ten times the amount viewed on corporate websites and six times the amount viewed on government websites (SICPO 2001).
[5] Xinhua News Agency, 9 July, 2001.

Chinese government websites offer the standard range of information, from official introductions of departmental functions and responsibilities, to details about tax payments and project bids, and information about State and local laws and regulations. Slowly, some of these sites are also beginning to establish online administration systems and, in some more ambitious cases, online trade markets in addition to the already proffered government information.

China's first B2G (business to government) website was established in mid-1998 in Xiamen (prior to the national online Government drive), whereby government purchases began to be processed online. By 2001 the total purchase amount of the Xiamen government site had reached RMB382 million.[6] The site works as a reverse auction house – the government puts what they are looking to buy online, and companies then bid to become the supplier. With the early Xiamen B2G website seen to be improving the efficiency with which the government could locate sellers and expedite its buying/selling processes, the GOP campaign began to be pushed forward.[7]

At the end of 1999, the Exit and Entry Administration of Hangzhou's Public Security Bureau launched a website enabling overseas people to apply for a Chinese visa via the Internet. This was the first website built for visa applications. The website (crj.zj.cninfo.net) also began to provide information on rules and regulations concerning exit and entry procedures and the certificates needed for visa applications. Applicants could also use the Internet to fill out the necessary forms and make appointments to obtain their visa.

Other examples of the GOPs emphasis are as follows:

- Beijing Municipal's Public Security Bureau (PSB) launched online ID (*shen fen zheng*) applications for Beijing citizens.[8] According to the PSB, in the future the website will be used to handle administrative processes, filing, and further types of registration. By late 2001, the website had also established a link to directly access the Deputy to the National People's Congress and members of the Chinese People's Political Consultative Conference.

- The Beijing Municipal Public Security Comprehensive Digital Broadband Network Project. A joint project between the Beijing Public Security Bureau and Tsinghua Tongfang Holding Co., it will cost some RMB80 million, and is one of the basic undertakings of the Golden Shield Project (and the Tenth Five-Year Plan). The focus of the project is to upgrade the Beijing Public Security Bureau's network system and to integrate the voice, data, video frequency (VF) and supervision systems.

- The Shanghai government's 'China Shanghai' site, launched late-September 2001 (www.shanghai.gov.cn). The website offers information on public government affairs, news events, policy and regulations, Shanghai's daily life, and investment as well as offering online services and consulting. Complete operations started during the APEC Conference in Shanghai at the end of September; by the end of 2002 all of Shanghai's government bodies are to be connected to the site; and by the end of the Tenth Five-Year Plan in 2005 all social administration and service departments are to have offices online.

- Initiation of the Guangdong provincial social security information system. Once available, citizens will be able to enjoy various networked social security services including social welfare and medical insurance. Citizens can place inquiries as to the status of their application online and receive a response via email. Construction of the system is expected to be completed by 2005 and has been costed at RMB800 million.

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[6] In 2000 alone the purchase amount was RMB271 million.
[7] Xinhua, 18 January, 2001.
[8] The PSB's website also offers four major services: information, online consulting, administrative services and information about the Bureau.

This last example is part of Stage Two of the Government Online Project where information is shared between government departments and with the public via the Internet. With fully 3.9 percent of China's Internet users aged 50 or above the government is hoping that these initiatives will begin to catch on quickly. Again, many of the most focused initiatives are in areas where the government feels some degree of economic (and hence political) legitimacy to be apparent.

AN ONGOING STRATEGY OF INTERVENTION

What should be recognized is that there is little conceptually new in this top-down push from the government. By mid-2001, China's public switching capacity was approaching 300 million circuits – making it the world's largest. This was largely the result of a supply-driven program of network rollout by the government, with the growth rate of the PSTN having remained in the double digits through the 1990s.

By the late-1990s, digital switching in the local loop had become standard for all new installations for cities above the county level and in almost all the urban and rural areas of China. But even more significant was that more than 80 percent of all subscribers were by this time residential (in 1990 this figure was less than 30 percent), and nine out of ten new subscribers were residential. Household penetration of telephone lines and the rapid commodization of mobile telephony had already had a dramatic impact on both social interaction and economic development. Moreover, household penetration was seen to be important for both future network development (broadband services, etc) and for the government's communication platform.

One feature of this extraordinary network rollout which is rarely given the emphasis that it deserves is the government's commitment to extending network access across the country, including to rural and remote areas. This will continue to have important implications for development over the medium- to long-term.

Moreover the impact of this rollout agenda appeared to dovetail neatly with the government's perception that the rise and development of the Internet and of e-commerce in the US had huge and significant sponsorship from the government through the military, education, and government procurement policies. A similar dynamic has been taking shape in China and will continue to drive forward development. This drive began in the early 1990s with what are known as the Golden Projects.

THE GOLDEN PROJECTS

The Chinese central government and the former Ministry of Electronics Industry (now part of the Ministry of Information Industry, MII) launched the "Golden Projects" in 1993 as a series of separate information infrastructure initiatives aimed at developing an information economy and building administrative capabilities (Lovelock et al 1996). The projects had three overall objectives:

- To build a national information highway as a path to modernization and economic development.

- To drive development of information technology in China.

- To unify the country by tying the center to the provinces and by allowing the government to act across ministerial and industrial demarcation lines.

Initially, the Golden Projects comprised three elements known as Golden Bridge, Golden Card and Golden Customs. Other 'Golden' networks were subsequently announced (Table 2), but the first three have remained the most high-profile and the most important for network development (and e-commerce development) in China.

Golden Bridge

Golden Bridge is the infrastructure for 'informatizing' the national economy. At its core is a project to build the infrastructure backbone over which other information services will run. Golden Bridge was originally intended to provide Internet and e-mail access, EDI, database services, online information services, and application service systems. The network backbone was to use fiber-optic and satellite-based systems. The Golden Bridge project prompted the construction of ChinaGBN, which has become a major interconnection network and ISP.

Golden Card

The implementation the Golden Card Project has spanned a period of 10 years, divided into three stages: the pilot stage (three years), the dissemination stage (three years), and the popularization stage (four years).

- Pilot stage (1994 – 1996): Ten provinces were chosen where the communication network facilities were comparatively well developed and the local government leadership was strong. 30 million residents were issued a total of 30 million cards.

- Dissemination stage (1997 – 1999): 30 to 50 more cities were chosen. 60 million more cards were issued.

- Popularization stage (2000 – 2003): In 400 cities around China, covering some 300 million people, 200 million cards were to have been issued.

Golden Card was initiated in 1995 with the intention of creating a unified payment clearance system to allow the widespread use of credit and debit cards across China. The project can trace its origins to a speech by President Jiang Zemin in 1993 calling for the creation of a nationwide credit card system, which could be used by people throughout China. China's fragmented banking system has traditionally made it extremely difficult to clear transactions, and this has been recognized as a major barrier to commerce. The Golden Card project is still being developed, but is nearing completion. Work began in 1995 and 1996 on Golden Card pilot projects in 12 trial areas, including most of China's major cities and other more developed provinces.

Each pilot project was carried out independently with varying degrees of success. The projects have linked local banks and allowed the development of effective automated teller machine (ATM) networks and point-of-sale (POS) terminal networks. Cardholders at banks in cities with pilot programs can now withdraw money from most ATMs within their city, and can use cards to make payments at almost any store with a POS terminal.

By mid-2000, there were 200 million credit cards in use, distributed by 14 banks, with transactions totaling RMB240 billion. At the same point in time there were 27,000 ATMs and 240,000 POS systems installed throughout China. Average interbank transmissions were more than RMB4.3 million per month, with a clearing value of RMB6.7 billion. The existence of a truly national network is essential for the successful development of e-commerce, particularly in the business-to-consumer sector. The essence of Internet shopping that allows remote orders and payments, means that customers in one city will regularly order goods from merchants in other cities, and this can only happen with the development of an integrated national financial network.

Golden Customs

Vice Premier Li Lanqing first proposed the Golden Customs project in June 1993. The Golden Customs project was intended to create an integrated data communications system connecting foreign trade companies, banks, and the customs and tax authorities. The system was to speed up customs clearance and strengthen authorities' ability to collect tax and duty payments. The Golden Customs project allows companies to submit import and export declarations to the customs authorities, calculate duty payments, and check import and export statistics.

This electronic data tracking system already allows customs departments to verify a range of data through networks to facilitate customs management and prevent illegal activities – one of the initial major conceptual attractions of the project. In 1999, China Customs solved criminal and smuggling cases valued at approximately RMB80 billion. This system also allowed tariff payments that year to increase RMB71 billion (over 1998).

Other Golden Projects

The success of the original projects subsequently paved the way for a range of other Golden Projects across a whole range of areas including intra-government communications, education, health care and medical research, and agriculture (Table 2).

Table 2: The Golden Projects

NAME	MAIN PARTICIPANTS	PURPOSE
Golden Bridge (Jin Qiao)	MII; MEI; State Information Center; JiTong	To build a public network backbone and international network interface capable of transmitting data, voice, image and multimedia information.
Golden Card (Jin Ka)	PBoC; MII; Ministry of Internal Trade; Great Wall Computer Co	To establish an electronic-based financial transaction system and information service; to have 200 million credit cards in use across 400 cities by 2000-2003.
Golden Customs (Jin Guan)	MOFTEC; Customs Dept; JiTong	To establish networks capable of handling foreign –trade taxes, foreign currency settlements, domestic returns, quota management systems, an electronic data interchange (EDI) and an import-export statistical database.
Golden Sea (Jin Hai)	State Statistical Bureau; PBoC; State Information Center	To build a data network linking top government leaders with other institutions, organizations and offices under the direct jurisdiction of the communist Party Central

		committee.
Golden Macro (Jin Hong)	China Im-Ex Bank; Ministry of Finance; State Information Center	To develop a state economic and policy support system by setting up databases unifying industrials, taxation, prices, investments, resources, capital energy, transportation and information exchange.
Golden Tax (Jin Shui)	Ministry of Finance; MII; State Taxation Bureau; Great Wall Computer Co	To make use of computerized work unit tax receipts and direct bank connections to aid the flow and use of funds across China.
Golden Intelligence (Jin Zhi)	State Education Commission	To enable teachers and research professionals to have timely and precise information and to enable international and local communication and cooperation.
Golden Enterprise (Jin Qi)	State Economic and Trade Commission	To design and build an integrated enterprise target (quota) and distribution system; to build a country-wide enterprise and product database.
Golden Agriculture (Jin Nong)	Ministry of Agriculture	To develop and monitor agricultural supervisory committees, and the calculation and forecasting system.
Golden Health (Jin Wei)	Ministry of Health	To develop and apply computer technology, communications technology and scientific information distribution to the medical sector.
Golde Info (Jin Xin)	State Statistical Bureau	To develop real-time information flows.
Golden Housing (Jin Jia)		To create a property information network.
Golden Switch (Jin Kai)	MII	To build China's domestic digital switch manufacturing industry.
Golden Cellular (Jin Feng)	MII	To provide the basis for a coordinated mobile communications strategy, and to develop national roaming standards and systems.

The various Golden Projects are meant to establish the operational backbone for propelling China into the new information economy. Once these infrastructural foundations had been successfully initiated and gained momentum, the central government announced a new – albeit similar – game plan, founded upon three specific projects: Government Online, Enterprise Online and Family Online.

- *Government Online* – a broad effort encouraging government agencies to utilize information technologies, to interconnect, and to disseminate information across the populace.

- *Enterprise Online* – to encourage industries to aggressively adopt the full use of available Internet technologies, and to provide a greater degree of transparency.

- *Family Online* – to encourage increased use of network resources by families across China, including those in rural areas, and to bring the populace at large onto the government's new communications platform.

As noted above, the Government Online Project was initiated in very early 1999. Enterprise Online, which is meant to build on the momentum of the GOP was launched a little less than 18 months later. As of mid-October 2001, the Family Online Project had yet to be fully launched – although the promotion of

household dissemination was well under way.[9] Below we cover the agenda of the Enterprise Online Project.

ENTERPRISE ONLINE

The Government Online Project was the first of the three projects to be initiated. On June 19, 2000, the Enterprise Online Project (EOP) was launched, co-sponsored by China Telecom's Data Communication Bureau and the State Economic and Trade Commission's Economic Information Center. The goal of the Enterprise Online Project is to encourage small- and medium-sized enterprises (SMEs), as well as large state owned enterprises (SOEs) to build websites for the exchange of information, both between enterprises (business-to-business), and with their customer base (business-to-consumer). The government's oversight role in the project is intended to help facilitate enterprise management restructuring so that the enterprises can take advantage of the new medium.

As has become a fairly standard practice for China, specific target numbers were set: within one year the EOP's goal was to register one million small-sized, 10,000 medium-sized and 100 large-sized enterprises online. [10] 'Getting online' has been defined as:

- Establishing websites and the daily use of email,

- Participating in online trade shows and the online exchange of information, and

- Conducting e-commerce and internal management using Internet technologies.

By the end of 2000 the government expects all enterprises to achieve the first goal, 60 percent to achieve the second goal, and 10 percent to achieve the third goal. Table 3 summarizes the overall scope of the EOP.

Table 3: Scope of the Enterprise Online Project

Guidance and Implementation	
Overall guidance and implementation	MII, SETC, Secretariat of Enterprise Online Project, China Council for the Promotion of International Trade (CCPIT).
Organizations providing policy guidance	MII, CCPIT, SETC, Ministry of Science
Core bodies responsible for implementing the Project	China Telecom, Information agencies of each ministry, local PTA's.
Users	
Intended End Users	Raw materials suppliers, production manufacturers, agents, distributors, retailers, consumers.
Required Ancillary Services	
Types of providers to offer value-added services	Financial institutions (banks, insurance companies), transportation companies (postal express delivery, logistic companies).
Intended sources of information to support the Enterprise Online Project	Local information portals, the information center of each ministry, association of the trade, vertical portals, media,

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[9] In China these sorts of projects – or government initiatives – *need* to have a championing ministry, departmental office or, in some cases, senior leader if they are to be successful. It is only when an agency has responsibility for these activities do they begin to be promoted. Hence, while FOP is already on the agenda, it won't really be launched until it has been 'given' to someone (Bachman 1991).

[10] The GOP website has been named the Sino (China) Enterprise Online and is located at www.sinoel.com.

	consulting companies.
Technical services required	IPP (Internet Platform Provider), IAP (Internet Access Provider), IEP (Internet Equipment Provider), ASP (Application Service Provider), TSP (Technique Service Provider), CSP (Customer Service Provider)

The theory is that by transferring important business practices and related material onto the Internet, enterprises will be able to exchange information with clients and other enterprises, and begin to take advantage of the operational, transaction and management efficiencies which such practices allow.

However, while it is true that due to government effort, more than 10 percent of all enterprises are now online, going online has not widely translated into online transaction capability. By the end of 2000, one government consultancy reported that while 56 percent of enterprises had their own websites, only 13.8 percent participated in online procurement; and while 87.7 percent released information on the web, and 79.1 percent collected clients' information, only 27 percent received online orders.

The major state enterprises, most of which are not market driven and have entrenched purchasing relationships, today are still particularly averse to investing in e-business. A survey of several hundred such enterprises by the State Economic and Trade Commission (SETC) found that 70 percent have Internet access but that most use neither Internet resources nor carry out e-business; a majority have a home page, but these are usually empty shells and information is long out of date; investment in B2B websites has happened either because the government wanted them to do so, or because company management thought it fashionable to do so at the time.

But this is not the point. When the Golden Projects were launched most who saw the grandiose nature of the plans questioned their feasibility as well. But the Projects *were* built, and although they may not look exactly the way the government envisioned them, they do fulfil the government's objective of creating the possibility of more efficient networking, of information and resource exchange, and a major part of the infrastructure and an environment conducive to e-commerce. Among governments it is common to hear the terms 'promote' and 'facilitate' and that applies in China's case. With the new Online Projects this is also what the government is doing. It is seeding the environment for companies who want to get involved and to act where the government cannot. It is providing budgets and incentives and, most importantly, a way around the transactions and security limitations still inherent in the infrastructure.[11]

By mid-2000, e-commerce portals in China could be divided broadly into two categories: so-called 'pure' plays and enterprise plays. For most of the pure e-commerce plays, it is tempting to believe their promises of providing 'one-stop shops' and total solutions'. But B2B companies are up against the same realities of doing business in China as the firms they are trying to help. They must operate in a land of insufficient transport and communication networks, deal with banks that cannot process transactions from one branch to another, and of restrictions on services such as insurance and distribution.

E-commerce enterprises have the additional challenge of working in a sector that is under constant government scrutiny and subject to sudden and arbitrary restrictions in addition to spending much of their time educating would-be clients. Many potential consumers in China lack even a computer (let alone a network) and few appreciate what an Internet-based accounting system can do for them. Moreover, the *Renminbi* is still not a fully convertible currency, and the purchase and sale of foreign currencies is

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[11] A good example are companies like Haier and Legend, and others following in their footsteps, who are offering to service various government departments in their efforts to get online and providing similar services outside the state sector.

heavily regulated, thus restricting individuals from remitting foreign exchange abroad. For e-commerce to be viable in any jurisdiction, payment mechanisms must be secure, convenient and reliable. Consumers must also have confidence in the confidentiality of information transmitted online, such as credit card and other financial or personal information. Consumers and business people need to be confident about the identity of the person they deal with and that the messages they send are not tampered with. While encryption technology is available to ensure the confidentiality of such information, users must have confidence in the companies using encryption technologies or providing encryption services. There is also a need to ensure the legal recognition and enforcement of electronic contacts and electronic signatures.

So, until nationwide services become more prevalent, e-business in China will either have to depend on services provided locally by individual banks or payment solutions of their own. So much for e-commerce? Take a look at what B2B e-commerce promises:

1. Reducing procurement costs;

2. Allowing better supply-chain management.

3. Tightening inventory control.

Putting this into the context of China's State Owned Enterprise (SOE) reform agenda it adds up to a massive potential. Add in enterprise enabling tools (and new flavor of the month developments, such as Wireless LAN networks), and *remove the necessity for transaction platforms and security*. Why? Because this is largely intra-government exchange, much of which is still conducted on barter, or accounting, principles, rather than monetary exchange. Throw in the government's drive against corruption for good measure, and in China the conditions are ripe for enormous growth of online economic activity.

E-COMMERCE

In July 2000, a spokesman for the Ministry of Information Industries (MII) estimated e-commerce in China would reach RMB800 million (US$96 million) by the end of year, and to top RMB10 billion (US$1.2 billion) by 2002. (*China Daily Business Weekly*, 14-22 July 2000, p.5) In the same report, the MII estimated that China had 20 million computers and, of the more than 34,000 Chinese companies that had registered domain names, more than 1,000 ran e-commerce sites. These figures compare with two earlier MII surveys that reported e-commerce at RMB55 million (US$6.6 million) and 800 e-commerce websites at the end of 1999 (Associated Press, *South China Morning Post: Business Post,* 28 April 2000, B4). These data refer mainly to business-to-business (B2B) capabilities. Making estimates of commercial business-to-consumer (B2C) websites is conceptually more difficult in China, because individual enthusiasts often post their own web materials on a range of subjects, the content being free, yet surfers may use commercial websites to access them. In many cases the commercial websites will actually buy these free websites in order to aggregate the content, with the ultimate goal of listing the aggregated site on a stock exchange. In 1999, the MII forbade the inclusion of China content on overseas bourses precisely to stop non-China entities from gaining control of this market. An estimate by China Venture News, made shortly before the dot.com bubble burst, suggested there were more than 9,000 commercial sites. (*China Daily*, Hong Kong Edition, 14 July 2000, p.9).

Supporting the development of e-commerce is a telecommunications infrastructure that is already vast and substantial. Nationally, China Telecom has constructed a network matrix of eight long distance optical fibre transmission cables and, since 2000, new entrants into the basic telecommunications market

have included the Ministry of Railways (Railcom), China Netcom (which enjoys the involvement of the Shanghai Municipal Government) and China CNet. Additionally, CITIC Pacific has, through a proxy licensing arrangement with China Satellite, begun to provide a telecommunications services, having bought up and agglomerated a massive amount of fiber cable across the country, proving that domestic competition is now well and truly established. China's national telecommunications infrastructure is now the world's largest, but in a population of 1.2 billion people the teledensity, or number of telephone lines per 100 people, remains critically low outside the major cities and towns. Overall teledensity was lower than 15 by the end of 2001. Clearly though, it makes better sense to measure China's e-commerce potential by its major cities than by a national yardstick. This is where China's Internet users are concentrated.

That said, the China Internet Network Information Centre (www.cnnic.net.cn) reported in 2000 that around 16 percent of Internet users in China had already experienced some form of online shopping. (See also *Asian Wall Street Journal*, 28-30 July 2000, p.2) CNNIC's data has been shown to be suspect[12], but another source, AC Nielsen's *Netwatch 1999* (at http://www.acnielsen.com) estimated for the years 1997, 1998 and 1999, six percent, seven percent and seven percent of Internet users aged 15 years and above, had shopped online in China's top three cities, Beijing, Guangdong and Shanghai. The MII's nationwide estimates were no more than two percent. (*South China Morning Post: Business Post*, 17 October 2000, B.14). Perhaps more importantly, a recent report suggests that in one area China is catching up fast on its Asian neighbours, namely online stock trading. The website of the China Securities Regulatory Commission concludes that over five percent of stocks were traded online by second quarter 2001, overtaking Hong Kong, and up from around two percent the previous year. (*South China Morning Post: Business Post* 11 October 2001, B.4) Finally, one sector that has begun to take off rapidly, and could prove to have a profound impact on both adoption rates and, more broadly, on civil society, is e-learning (and e-training) (Huang and Luo 2001).

E-CITIZENRY

E-Democracy has many informal levels and two formal levels in democratic societies. Informal levels of communication through chat rooms and web sites are spawning across China and, at the margins, these can be, and have been, highly political and critical. The formal levels in democracies are inter-action with Government and the civil service, and inter-action with representative bodies, such as parliament, congress, the national assembly and equivalent regional and local bodies. In the case of China a cautious opening of new media channels to Government and even to the Communist Party is underway. The People's Daily Online, a portal of the Party, reportedly hosted as many as 25,000 'Netizens' during the 11 September terrorist attacks on America, according to the *Far Eastern Economic Review*, 27 September 2001.[13]

The idea that media, new or old, can by itself undermine authoritarianism is clearly fanciful, but what made the potential of the Internet appear more powerfully subversive of authority of all kinds was its interactive and proactive potential compared with much more passive mass media such as broadcast television. As Kalathil and Boas (2001) point out 'President Bush has asserted that the Internet will bring

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[12] Lovelock and Cartledge 1999.
[13] Nevertheless, the same incident also spurred the government to remove blocks on a variety of international publications, including those belonging to the Washington Post, Los Angeles Times, San Francisco Chronicle and Boston Globe (blocking of the New York Times stopped in August). CNN, Voice of America, Time, and the Atlanta Journal-Constitution, among others, remain on the list of blocked sites.

freedom to China, while Secretary of State Colin Powell recently stated that "the rise of democracy and the power of the information revolution combine to leverage each other." (p.1) A dual policy of filtering out undesirable material and promoting self-censorship has so far been quite successful, but it has also been reinforced by an Internet café licensing regime to police the self-censorship rules. Alarmist accounts of these measures tend to see them in a mainly political light, but a much wider range of social and moral concerns influence the Chinese government, as they do many Asian governments, including concerns that cybercafes and Internet arcades will become centres of social degradation for youth. On a more positive note, the use of the Internet and websites inside China to exposure stories of corruption and man-made disasters when the official media will not touch the stories has occurred with increasing frequency. Kalathil and Boas rightly cite the example of the schoolhouse blast incident in March 2001 in which chat rooms were used to spread the story and then to expose, against strenuous government denials, the unauthorized use of the school premises for the manufacture if illegal fireworks.

The Chinese government, like all governments, is stricken with turf battles between ministries, commissions and other organs which all view the Internet as touching on their domain of authority or interest. They each come at it from different angles. For example, MOFTEC, the Ministry of Foreign Trade and Economic Cooperation was the first to set up an e-commerce site after the MII, based on the old Ministry of Post and Telecommunications, absorbed its chief rival the Ministry of Electronics Industry (MEI) in 1998. For details, see Ure and Liang (2000). Just as numerous state entities have now moved into the telecommunications market, so many are moving into different aspects of the Internet market. The Xinhua news agency and the China International Travel Services (CITS) agency have obvious interests, the former in exercising control over informational content from which it has tried to secure a revenue from IS providers such as Reuters, and the latter as a portal operator in its own right. The State Administrative of Radio, Film and Television (SARFT) has interests to develop broadband cable Internet services in direct competition with China Telecoms' Internet services, and so on. The notable 'Chinese characteristics' of this process concern the fact that these are organs of the state and behind the state lies the control of the Communist Party. The natural progression, Western-style, is to separate policy making and regulating bodies from corporate enterprise bodies within these state organs, allowing the latter to spin-off into the marketplace, the so-called socialist market economy model. Presumably the role of the Party would remain paramount in the former rather than the latter, unless the Party decides to go into business.[14]

To survive in the socialist market economy the corporate spin-offs have to undergo state enterprise reform to compete with the growing number of small and medium-sized enterprises. These SMEs are frequently started up by entrepreneurial Chinese graduate students, some returning from overseas with a good knowledge of Western markets, technologies and business skills. And, from 2002, China's entry into the WTO poses a new set of challenges to state enterprises, not least in the field of telecommunications, information technology and new media. Becoming customer-centric will be part of this process, and e-citizens will find themselves being courted as e-customers. Putting the 'soft infrastructure' in place to support this development will take time, as will confidence in the security of buying and selling and paying for things on the web. Although it is designed to serve B2B customers initially, China Telecom signed in September 2001 a cooperative agreement with the China Electronic Port Data Center jointly construct the China E-Business Certification Administration System (CECA) on China Telecom's public network to provide a certification authority for the issuing of digital certificates. The next logical step would be for China Telecom to connect this port with its 179 e-commerce system that connects the existing public telephone and data network with the 179 platform to provide users with a safe EC

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[14] By opening its doors to entrepeneurs it seems that business may go into the Party.

platform to find banks and other financial institutions to process online payments. China Telecom is driven by the desire to be China's e-commerce carrier.

In Guangdong Province the *Regulations on Administration of E-commerce* require websites and dot.coms providing online shops to be certified. The law introduces standards for electronic records and electronic signatures and electronic contracts, and sets criterion to protect the rights and interests of online consumer, such as outlining where customers can forward their complaints for defect purchases bought online. (*Yangcheng Evening Post*, 25 September 2001). The drive to encourage e-commerce and place the citizen online is being led by Government departments. For example, from October 2001 the city government of Xian began offering online tax reporting services to its citizens. Taxpayers can fill out the various application forms and accounting statements and complete tax return statements online. All the citizen needs is the free tax declaration software provided by Xian's local taxation bureaus. After the software is installed, the citizen can then connect to the local tax bureaus' server via the Internet. The tax department can directly deduct the tax from the taxpayers' bank accounts according to their declaration. While the idea of citizens being eager to give government officials details of their bank accounts may still be new in China, this type of service is exactly what the Government Online Project is aiming at, efficiency and easier communication between the government and its citizens.

Another example to illustrate the point is the Residence Certificate Center of the Public Security Bureau in Haishu District, Ningbo which launched an online approval system for permanent residence registration. Via the online Residence Certificate Center, residents can access information about how to apply and terms of registration, send inquiry by email and are guaranteed to receive a reply within 24 hours. In addition, the Center developed its own automated system of online approval for permanent residence registration. According to the Xinhua news agency, the new system cuts the registration time from 40 days to 15.

Despite particular 'Chinese characteristics' the state's bid to go online with its citizens is following the well-observed pattern of other jurisdictions, described by McKinsey consultants Al-Kibisi, et al. (2001) as putting citizens 'online' rather than 'in line'. This involves a three-stage progression. The first stage sees individual government departments develop their own web-sites, and often involves outsourcing the process, for example to companies like Haier and Legend in China's case. Stage two sees the development of inter-departmental co-operation, which in turn requires a coordinating authority. The third stage, not yet achieved in China, is the exploitation of the full commercial potential of Government online through a single Government portal.

CONCLUSION

E-Government in China is following the logic found everywhere the State recognizes the potential of the Internet and of web-based activities to assist the development of the economy and society. E-Government with 'Chinese characteristics' means a much more prominent role for the State in the diffusion of Internet access and commercial usage. Internet access has been driven by State-sponsored investment in the telecommunications network and in the Golden Projects, China's information infrastructure, and now by the Government Online Project, and the Enterprise and Family Online Projects. In the early stage of these projects the focus is inevitably on the Government Online Project, which stretches from backend procurement to front-end e-citizenry. Ultimately, effective government is seen largely to depend upon the ability of the State to access accurate and up-to-date information, and to include citizens in the information process. Legitimacy depends upon it.

E-business and e-commerce are seen, as in all States, as strategically vital to the long term development of the national economy. At first sight China may not seem well positioned, without a developed modern

legal system and without clear competitive ground rules for a 'socialist' market economy. As elsewhere, the grandiose promises offered by B2B e-commerce may have – in the majority of cases – remained largely that: promises. However, in getting what we refer to in the West as B2B e-commerce out the door, China has kept its secret weapon quietly to itself: *the government*. In China, the drivers to the adoption of online exchanges, supply chain management, centralized procurement and paperless trade aren't the private sector, they are the bleeding state enterprise sector and the government's determination to kick the next stage of economic development into gear. In China, it won't – for the moment – be B2C or B2B, it will be B2G and G2B – in fact, B2G2B *if* the government gets it right.

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