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### The e-transformation of Western China

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## The E-Transformation of Western China

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Western China is a vast area of just over 4 million km<sup>2</sup> traditionally associated with the historical Silk Road connecting traders, manufacturers and consumers in Europe and Asia. But for the past few hundred years, the Silk Road was largely forgotten. However, China's recent opening to the outside world and general trend toward technological modernization is starting to be felt in these far-western reaches. The emergence of e-commerce in coastal China has been well-documented (Martinsons, 2002). Here we report on the technological changes that are taking place thousands of kilometres to the west in Western China, assessing the prospects for economic and social change that lie ahead. We focus on what we term the e-transformation of the Tibetan (Xizang), Xinjiang Uygur and Ningxia Hui Autonomous Regions, and Qinghai and Gansu Provinces (see Figure 1). These five areas cover 43% of the land mass of China, yet include only 4% of China's overall population of 1.4 billion.

Figure 1: The Provinces of China (<http://chinapag.nexcess.net/map/province-english.jpg>)



E-transformation is a remarkable phenomenon characterized by the application of information and communication technologies, including the Internet, to traditional business and communication processes, with the intention of bringing about significant improvements in their efficiency and effectiveness. E-transformation has proved viable in many countries, notably in the developing world, for example Bangladesh and Malaysia, that often lag behind other parts of the world in terms of technological

development. In Bangladesh, for instance, Grameen Bank provides support for the development of mobile phone kiosks in villages that historically lacked any telecommunications service. In this way, entire communities were able to leapfrog into the information age, by-passing several generations of technology (cf. Davison et al., 1999). Similarly, in Bario, Malaysia, local Kelabit people are using the Internet to market and sell local products globally via a village telecentre operated with solar-powered technology. These efforts are coordinated with tribal elders so as to ensure preservation of cultural and community values (Harris, 2001).

Similar developments are taking place in Western China with technology enabling the leapfrogging process with the potential to rejuvenate the historic Silk Road as a conduit for

global trade. Traditional practices, values and markets could be complemented by transformed practices involving Internet-based communication. Websites would offer many of the same products as traditional markets (e.g. silk carpets, musical instruments, camel-hair blankets, mittens and slippers, ox skulls, sheep tails) and more (cf. [www.trademile.com/tmnet](http://www.trademile.com/tmnet); [elvisablimit.jozan.net](http://elvisablimit.jozan.net); [www.tibetweb.net](http://www.tibetweb.net); [www.potalacarpets.com](http://www.potalacarpets.com)).

A nation's technological development is often measured by its teledensity, or the number of people with access to telephones. Fixed line teledensity in Western China ranges from approximately 12% in Tibet to 32% in Xinjiang, compared to a national average of 33% (see Table 1 for more detailed comparisons across China). This recent surge in teledensity represents a dramatic improvement over the 1986 statistics when national teledensity was only 0.66% (Ding & Haynes, 2004). Wireless services are particularly important in Western China given the low population densities. China-wide, there are now more mobile subscribers (334 million) than fixed line subscribers (316 million) ([www.telegeography.com/cu/article.php?article\\_id=5696](http://www.telegeography.com/cu/article.php?article_id=5696)). Regional figures are difficult to come by, but it is worthy of note that in Tibet, CDMA450-D technology is being rolled out by Tibet Telecom, with 90,000 new customers in less than a year of operations, the vast majority in the sparsely inhabited rural areas. Meanwhile China Mobile operates a GSM service in Tibet, with 320,000 customers (Clark, 2004).

Table 1: Area, Population and Teledensity of Selected Chinese Cities/Provinces (Ding and Haynes, 2004); <http://www.unescap.org/esid/psis/population/database/chinadata/intro.htm>.

Province/City	Area in ,000 km <sup>2</sup> (% of total area)	Pop. in millions (% of total population) in 2000	Teledensity (%) in 1986	Teledensity (%) in 2002
China	9326	1261	0.66	32.78
Beijing	17 (<1)	13.82 (1)	4.63	105.77
Shanghai	6 (<1)	16.74 (1.3)	2.99	97.57
Zhejiang	100 (1)	46.77 (3.7)	0.85	61.17
Fujian	121 (1)	34.71 (2.7)	0.52	49.89
Guangdong	178 (2)	86.42 (6.8)	0.82	66.31
Sichuan	480 (5)	42.88 (3.4)	0.24	20.16
Shaanxi	205 (2)	36.05 (2.9)	0.75	27.38
Gansu	390 (4)	25.62 (2)	0.22	20.40
Qinghai	720 (8)	5.18 (<1)	0.94	25.52
Ningxia	66 (<1)	5.62 (<1)	0.79	27.62
Xinjiang	1660 (18)	19.25 (1.5)	0.31	32.27

Many government initiatives also promote e-commerce development in Western China. For example, SparkIce ([www.sparkice.com](http://www.sparkice.com)), which describes itself as the Chinese e-Hub for Global Commerce, is leveraging the conduct of online business and information traffic. It has forged a strategic partnership with Metro, one of Europe's largest retailers, to become an interactive marketplace for global e-commerce. SparkIce has also set up a subsidiary dedicated to facilitating trade in Western China ([www.21cwn.com](http://www.21cwn.com)). Chinese manufacturers and suppliers can use the same platform to sell their goods on the Internet. Spurred by recent government investment, newly built (and rebuilt) roads and rail networks extending via Kashi/Kashgar to Bishkek in Kyrgyzstan, and via Urumqi to Almaty in Kazakhstan, are now in place (cf. Savadove, 2004). Meanwhile airports and airlines in Western China provide international standards of service.

E-transformation extends beyond simple e-commerce to embrace the social and political fabric of Western China. While fibre optic connections are prevalent in urban areas

(and elsewhere in China), wireless technology is particularly valuable in rural areas that lack any kind of historical telecom infrastructure. Connectivity for traditional business, education and general communication extends across the country, including high mountain valleys where nomadic groups still reside in yurts (circular felt tents) during the brief summer season. These people are now promoting community-based tourism (CBT), whereby clients (tourists) engage with their host communities, living and even working with them, encountering and appreciating their lifestyles at close quarters (cf. [www.wildchina.com](http://www.wildchina.com); [www.cbtkyrgyzstan.kg](http://www.cbtkyrgyzstan.kg)). Conserving the community's natural environment and indigenous cultural heritage is a critical success factor for CBT. Nomads and tourists alike benefit from the e-infrastructure. Nomads communicate with one another, sell local goods/services and search for information on market prices. Tourists stay in touch with the outside world. A particularly important aspect of CBT is the preservation of local control (and local receipt of profits) while sustaining traditional cultural values. Local empowerment and control are important for sustaining value-added economic growth and viability (Go et al., 2003).

Although e-transformation has got off to a positive start, it is by no means a silver bullet for all economic and social problems (see Table 2). E-transformation depends not only on technological requirements but also on social and political success factors. With respect to technology, the cost of utilisation remains a significant barrier to widespread adoption and use. Furthermore, e-transformation requires a financial infrastructure, including payment and banking systems that are only slowly being rolled out by banks. In this respect, serious gaps in the financial sector persist throughout Western China, where cash has traditionally been the dominant form of exchange and savings and there is little in the way of credit card use. Cards are generally used only in high-end department stores, luxury hotels and restaurants, and on a few select Web sites. The result is that most users are not locals but overseas tourists and businesspeople. The local people may order goods online but usually end up paying in cash over the counter in the local post-office, where they will later return to collect the goods.

**Table 2: Key Barriers to E-transformation in Western China**

<b>Technological/Financial</b>	<b>Social/Political/Logistical</b>
Payment & banking systems are lacking	Cash is the preferred currency
Internet access is costly	Few end-to-end delivery services
Credit cards are rare	Military and separatist tensions
Cross-border standards vary	Bureaucracy can be stifling

In the social and political sphere, many pressing concerns are especially prevalent. At an August 2004 meeting of the Shanghai Cooperation Organization (China, Russia, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan) in Beijing, the six member states agreed to work toward economic integration within 20 years. Chinese interest in such cross-border cooperation stems from three strategic issues: trade, security and natural resources (Bayron, 2004). Since China started to open itself up to the outside world in the early 1980s, much of the domestic and international attention has been focused on Eastern China, particularly along the coastal strip from Dalian in the north through Qingdao and Shanghai to Xiamen and Hong Kong in the south, as well as selected inland cities such as Chongqing and Nanjing (Martinsons, 1999). Western China has, to a large extent, been ignored. This is due not only to its physical remoteness and limited transportation infrastructure, but also the potential for social unrest in the region. Separatist groups fighting for an independent East Turkestan in Xinjiang have on occasion attacked prominent government targets, charging that their culture, language and religion are being marginalised (cf. Bayron, 2004). Investor enthusiasm for the region has been further dampened by a highly bureaucratic system. In the late 1990s, Xinjiang was touted by central government, as well as private investors in Hong Kong, as a

high growth region with 110 Hong Kong firms investing in excess of US\$160M. Oil exploitation, petrochemicals, textiles, grain production, chemicals, machinery, electricity, and forest products were viewed as key industries. However, the search for quick profits has not been successful. There has been a consequent cooling of foreign direct investment, notably from Hong Kong, as business interests have been frustrated.

The successful e-transformation of Western China depends on cooperation with regions beyond China, raising fresh challenges and opportunities. Military tensions and disruptions in the neighbourhood (such as the conflict in nearby Afghanistan and separatist activities more generally), have a chilling effect on e-transformation. Nevertheless, there are regional success stories: Kazakhstan and Kyrgyzstan have relatively successfully emerged from the former Soviet Union, with burgeoning ties westward with Europe and technological competence and global recognition as a potential business hub. Each shares a border with Xinjiang. Notwithstanding their connections to European markets, cross-border transport difficulties are legion, due to incompatible railway gauges and local bureaucracy. The vast majority of goods headed west from Western China begin their journey by heading east for thousands of miles to ports such as Dalian, Tianjin and Qingdao for trans-shipment. Nevertheless, circumstances are changing and solutions are beginning to emerge that illustrate the potential for e-transformation with technology as a catalyst for change. For example, progress is being made in the Customs & Excise domain with increasing reliance on technology. The European Union serves as a model for cooperation at many levels both within and between China and neighbouring countries. Current cross-border discussions within the Shanghai Cooperation Organisation are focusing on the development of shared protocols that are intended to facilitate trust and enable effective and efficient ways of conducting cross-border commerce. Young technology-savvy employees are eager to change systems that are no longer capable of dealing with contemporary demands, such as heightened customer service expectations associated with information that is accurate and comprehensive. Satellites are in place to handle information transfer in regions not otherwise connected through landlines. As governments increasingly embrace technology to help provide services, such as the means to collect taxes/tariffs and information regarding the expedited transit of goods, we can expect increased cooperation and integration of cross-border customs information. Tariffs can (and will) be dealt with electronically and funds routed appropriately throughout Western China. Kazakhstan is applying active policies to open borders for transit facilitation following admittance into the financial committee of the World Customs Organization (<http://www.kazakhembus.com/070501.html>). Driven by private venture initiatives, steady progress is being made in e-logistics (such as Radio Frequency Identification), increasingly common in China's Pearl River Delta, Hong Kong and Shanghai regions, will help further the national goal of creating an integrated environment leveraging the Internet that embraces Western China, as well as the rest of the country. Cross-border warehouses and low-cost RFID readers are currently being developed by private ventures, notably in the manufacturing sector as a model for leveraging the Hong Kong and Pearl River Delta experience into Western China. Information systems and communication protocols are being developed to deal with the terabytes of data associated with large-scale collection and management of an extended RFID network. As Wal-Mart, the US government and other global companies and governments are mandating RFID use, Western China can expect both to be part of and to benefit from the scaled-up domain in which e-logistics plays a leading role.

In conclusion, the e-transformation of Western China is a complex social, technological and political undertaking that cannot afford to be exclusively focused on the technology; technological and social solutions must be interwoven to ensure that cultural values and traditions are preserved, even as new ways of communicating and doing business

are enabled. No single issue dominates, but Internet connectivity (whether landlines, wireless or satellite) and knowledge about how to leverage the technology are critical.

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