

The Asian Megalopolis: Opportunities for Information Technology Growth (Part II)

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China is a vast country with abundant human resources. Today, China is undergoing a rapid amount of change as its people build a modern, high performance economy. Given continued rapid economic growth along with population concentration, China is moving into an age unprecedented in human history, the age of the Megalopolis.

In August, I made a trip to China, traveling from Shanghai to Suzhou, and finally to Nanjing. The purpose of the trip was to study various aspects of urban development along with some other areas of related research. Along with two public hearings, one in Suzhou and another in Nanjing, the trip included visits to industrial developments zones, new communities for displaced agricultural



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workers, residential development projects, and manufacturing plants operated by Hitachi (production of inverters) and Ford-Mazda (engine plant).

Besides Chinese participation by Provincial and National leaders of the *Development and Reform Commission (NRDC)*, there was also a contingent of experts from Japan who offered their analysis of Chinese megalopolis formation. All are senior researchers in various aspects relating to the city.

The focus of the trip was Nanjing. The Chinese consider this city important as a gateway to the interior and a candidate for formation into a megalopolis through the consolidation of eight existing cities. Nanjing is about 185 miles West of Shanghai. In time, the entire area along the Yangtze River between Nanjing and Shanghai might become a megalopolis. Besides a mixture of industries ranging from basic manufacturing to light assembly, the area is also an agricultural center for China.

To gain perspective regarding Chinese advances, the following image is a high-level view of the Suzhou industrial zone that focuses on technology. This area is under development; however, the scale of the effort is evident in the image. The idea is to combine high-density residential development with technology



industries such as software. I took this photograph from the highest building in the area.



On August 22, I gave a speech titled *Global Supply Chain Management and the Chinese Megalopolis*. The speech dealt with the application of supply chain and computer science technologies as a means of improving efficiency. The supposition is that improved efficiency will lead to reduced pollution and energy usage, improved flow of consumer goods, and an effective means of dealing with global warming.

For the entire time of my stay, I was treated very well by both the Chinese and Japanese delegations. Because few spoke English, I had three different

interpreters with me at various times. Two of the three were professors of English at Nanjing University.

What follows are my impressions of China and insights regarding the opportunities for information technology there. I must caution that these are anecdotal observations and may not reflect the overall situation in China.

1. Social Engineering

The basic assumption by all levels of Chinese government is that the country requires authoritarian approaches to accomplish the basic needs of the people. The enormity of China and its history of upheavals mean that reforms will probably be slow and selective.

The Central government believes that Nanjing is an important element for development into the interior of China along the Yangtze River. A historical center of government, Nanjing has symbolic meaning and is currently a financial center. With a population of 8 million people, Nanjing is a city equal in size to New York. The development of East China along the Yangtze River probably represents the next step in economic growth for the country.



2. Ecological Issues

Because of China's desire to become the manufacturing leader of the world, the environment has become a casualty. During the trip, I heard accounts of drastic environmental changes such as a fresh water lake that "died" virtually overnight from an outbreak of "blue algae." It is possible that chemical pollution caused this problem by reducing available oxygen in the water. The people were frightened by this development. Further, rivers and fish farms appeared to be dirty, and agricultural run-off is a huge problem.

3. Social Issues

Beyond pollution, there is a tremendous amount of human movement within the country. Currently there are 800 million peasant farmers, who live on about 1 acre of farmland and often do not earn enough money to support their families. Making the problem more complex, the peasant farmers do not have the same rights as urban citizens. A system called "household registration" limits opportunities for those in rural areas and is a focus of reform. The Chinese government is purchasing many marginal farms. This forces farmers to move into industrial development zones where they become factory workers.



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In a way, this is similar to collectivization of farms that occurred in the 1950s. However, the farmer's land is being re-cycled into industrial development zones thus taking away agricultural capacity. For my entire trip, there was little mention of agriculture and it appears the strategy is to 1) move peasant farmers into industrial zones, 2) redevelop small farms into still more industrial zones, and 3) initiate programs to mechanize farms in other areas to increase productivity.

4. Bubble Economy

China has expanded too quickly, setting up a significant risk of future collapse. The Japanese delegation was especially concerned about the bubble economy in China.

By one account, there are over 6,000 industrial zones in China. There are not enough manufacturing companies in the world to fill all of these areas with factories. Japan, a fully industrialized economy, has about 1,000 square kilometers devoted to industrial zones as compared to China where industrial zones consume 9,000 square kilometers. Further, the needs of companies

locating in industrial zones are not met by the Chinese higher educational system.

Besides outsourced manufacturing, China has not developed a technological base or significant number of start-up companies that have become world leaders. This was also of great concern to the Japanese delegation.

Essentially, China is a place where international companies take advantage of low-cost labor and export pollution.

5. Limits to Expansion

With the enormous population, rapid growth, and significant social issues, Chinese officials are concerned about their ability to identify the fundamental constraint that will limit future economic growth. In a planned economy, this lack of knowledge could result in reduced economic growth sometime in the future.

All of these factors add up to major opportunities for developing improved information technology infrastructure in China. Software technologies relating



to supply chain management might take on great importance as China strives for greater efficiency, reduced energy consumption, less pollution, and a mature consumer economy.

In my next article, I will make an additional in-depth examination of data and infrastructure needs in China.



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