

City of Superlatives

“The most exciting city on the planet” and “The world’s most promising place for companies.” That’s how headlines in *The Washington Post* and *Forbes* have described Shanghai. Indeed, no other place on earth is pushing forward as quickly and forcefully. And in the midst of it all, Siemens is providing solutions for everything from transportation system and power plants to hospitals and waste-water treatment facilities.



The model is one of the world’s biggest, like so much in this city of superlatives. Thousands of high-rise buildings built to a scale of 1:500 spread over more than 600 square meters in Shanghai’s exhibition and planning center. The buildings that have already been built are rendered in detail, while those still being planned are only plain white blocks. Strings of lights representing streets snake through a forest of towers on the drawing board. There is activity almost everywhere. Dilapidated buildings are making way for spacious parks, while entire city districts

are beginning to take shape. Qiu Xing Ao, director of the exhibition center, says officials recently added an area on the banks of the Huangpu River to the model. The site will accommodate Expo 2010, which Shanghai’s city leaders expect to attract 70 million visitors. And Qiu’s staff will soon have to make further alterations, because the National People’s Congress discussed city development plans in January.

By 2020, Shanghai plans to have about 16 subway lines that will include 540 kilometers of tracks. They will help to handle the

city’s rapidly growing transportation needs. Today, by contrast, Shanghai has only one light rail and two subway lines — hardly sufficient for a city with a population that’s expected to reach 20 million by the end of the next decade. That’s about five to six million more than today.

The numbers create a predicament for officials. Although the city wants to attract talented young people and foreign companies, there are concerns about a potential collapse caused by excessive immigration. By 2020, traffic planners expect the number of vehicles in Shanghai to at least double to about 2.5 million. In the face of such growth, the city’s planned rail transit network will be expected to handle nearly one-fourth of public transportation. The alternative would be virtually endless traffic jams. Even today, the average speed of vehicles is only 12 kilometers per hour — in spite of multilevel freeways and a 40 percent expansion of the street network since the 1990s.

World’s Tallest Hotel. “Anybody who saw Shanghai 20 years ago wouldn’t recognize it today,” says Qiu Xing Ao. Back then, hardly any of the city’s buildings were taller than 18 stories. Today there are 5,000 such buildings. Many are located in the section of the city called Pudong, a site that was covered by swampy fields and farmhouses before being declared an economic-development area in 1990. Today, the area’s skyline is dominated by sites such as the Jin Mao Building, which has the world’s tallest hotel — the Grand Hyatt, with its front desk on the 54th floor and a bar on the 87th. Right next door, work is nearing completion on the 500-meter-high Mori Tower, the World Financial Center.



diameter of 2.5 kilometers has already been built in the middle of what will be Luchao Harbor city. The lake will serve as the focal point for an assortment of residential and business areas for about 500,000 people as well as leisure-time centers, museums and parks.

On the other side of Shanghai, a similar-sized urban center that will be known as the "Automobile City" is being built around VW's Anting plant. The city was planned by Albert Speer & Partners, an architectural firm based

other. At Pudong Airport, for example, with building-automation and alarm equipment, information systems, control systems for baggage transfer and energy-supply facilities. In skyscrapers like the Jin Mao Building, where Siemens installed state-of-the-art security systems. And in medical facilities like Huadong Hospital, one of the leading clinics in Shanghai with 800 beds and many VIP patients. Its director, Prof. Wang Chuan-Fu, says the hospital has had excellent relations with

The largest satellite cities, the biggest container harbor, the largest airport hub, the biggest coal-fired power plant ...

But there is something that is even more impressive than the construction sites that dot the city's model. On the outskirts, but still within the city's 6,340-square-kilometer metropolitan area, officials are planning to build not only the world's biggest deep-sea container harbor and a 31-kilometer bridge that will connect it to the mainland, but also a series of 11 satellite cities.

The most architecturally interesting one, Luchao Harbor City, was designed by von Gerkan, Marg & Partners of Hamburg. It is located in the Nanhui District across from the deep-sea harbor. The flowery Chinese description says it is designed "like a drop that falls into the water and spreads out in concentric circles." An artificial round lake with a

in Frankfurt. In a record time of only 18 months a number of facilities were built, including a Formula 1 race track where Michael Schumacher and others will compete for world championship points in September 2004. Given the qualities of such satellite communities, Shanghai's city planners bring up other superlatives almost in passing. The Pudong Airport, for instance, is to become the biggest hub for passengers and freight in China by 2010. Officials are also planning a huge "Medical Zone," where the best hospitals, as well as research and production facilities, will be located.

Siemens Inside. Siemens is involved in nearly all of these projects in one way or an-

Siemens since 1972. "Nearly all of the high-tech equipment, including the computer and magnetic-resonance tomographs and the accelerators for nuclear medicine, came from Siemens," he said.

Similar praise is expressed by Feng Weizhong, the head of technology at the new coal-fired power plant in Waigaoqiao. "We were looking for the world's best turbines and generators, and selected Siemens," he explained. Two 900-megawatt units will go online this year at the plant, which is located on the Yangtse River. An additional 900-megawatt unit will follow in three to four years. "These will be China's biggest coal-fired plants, and their efficiency level of 42 percent, and perhaps even 45 percent in



An innovative Harbor City (left and center) will be home to several hundred thousand inhabitants. Nearby, the world's largest deep-sea container harbor (right) will be connected to the mainland by a 31-kilometer bridge.

the future, makes them the most efficient plants of their kind," he says. Given the enormous demand for electricity in Shanghai, a new plant was desperately needed — during the hot summer months, companies have faced electricity rationing. After much discus-

sion, Shanghai decided to build a plant that uses Chinese coal. At the same time, it made a commitment to technology that would limit emissions of nitrogen oxides and sulfur dioxide. "You won't see any particulate clouds billowing from our smoke-stacks," Feng says.

Right next to the power plant, one of China's biggest waste-water treatment facilities is being built with control technology from Siemens. "It will be able to treat 1.7 million tons of waste water daily," says Dr. Zhigang Jin, head of the operating company.



Prof. Zhang Ao, 60, is Vice Chairman of Shanghai's Science & Technology Commission and is responsible for drawing up extensive studies of the city's future development.

Developing Shanghai's Picture of the Future

What's your vision of Shanghai in the year 2020? Where do you see the city's biggest developmental challenges?

Zhang Ao: Our biggest challenge is definitely a growth rate that won't let you catch your breath. But the goals set by the city Government are clear. We want to use advanced technologies to achieve harmonious and sustainable development. We want to create a city where people like to live and work. It's just as our slogan for Expo 2010 says: "Better city, better life."

How do you put together your studies of the future?

Zhang Ao: The process is much like the one used at Siemens for Pictures of the Future, which we got to know during a visit to Munich. Many specialists from government agencies, universities, research institutes and industrial companies are working on our Picture of the Future for Shanghai. We have formed several working groups that focus on such areas as information and communications, new materials, medical technology and health care, and smart transportation systems. We also have a team that is comparing technological developments with social needs.

Which questions interest you the most in this work?

Zhang Ao: One of the key questions is: How can technical advances improve the quality of life in Shanghai? In the area of energy, we want to determine how we can supply Shanghai with power in a way that is reliable and will conserve resources 20 years from now. In the area of environmental protection, the focus is on the city's green areas, waste-water treatment and waste processing. In the area of transportation, we are trying to maintain mobility even as the numbers of people and vehicles rise. Overall, we want to create a comprehensive form of city management by employing the concept of the digital city.

What, in your opinion, does "digital city" mean?

Zhang Ao: It involves information and communications technologies that will make living and working in the city as pleasant as possible — from e-government to smart transportation systems and medical care at home. The last point is particularly important because the number of people older than 60 is rising rapidly in Shanghai. Today, they already account for ten percent of the

population, and this number is set to double in about fifteen years. Considering this, a particularly important question is how to use new technologies to improve care for the elderly. This includes medical treatment as well as things like automated household appliances that are easy to operate for seniors. We are also thinking about young people. We want to ensure that they not only get a good education and pass their tests, but also tap their innovative potential in a better way, develop new ideas and further their practical skills.

How can companies like Siemens help Shanghai in all of these areas?

Zhang Ao: We are particularly interested in learning from Siemens' broad and global experience. That includes discussions with experts and a possible partnership on the creation of a Picture of the Future for Shanghai. With just a few special exceptions, Siemens offers such a variety of services that we can cover all of the important areas for Shanghai in a collaborative arrangement. I'm convinced that both Siemens and Shanghai will profit tremendously from a long-term and fruitful partnership.

■ Interview conducted by Ulrich Eberl



Peter Borger, 62, is Executive Vice President of Siemens Ltd. China, and is responsible for eastern China and the establishment of the “One Siemens” program throughout the country. In addition to having worked on the installation of communication networks in a number of countries, including Argentina, Brazil, Greece, Nigeria and Indonesia, he has also held executive positions at Siemens companies in the Philippines and India. From 1998 to 2003, he headed Siemens Shanghai Mobile Communications Ltd. (SSMC). In recognition of his contributions to Shanghai’s economic development, Borger has received the city’s prestigious Magnolia Prize and was named an Honorable Citizen in 2002 — one of the highest honors the city bestows.

Building a 21st Century City

Will the 21st century become the oft-predicted “Chinese century”?

Borger: It already is, at least in terms of growth. During my career, I have worked in 11 countries on four continents, and I’m convinced that China’s development will leave its mark on this century. The megacity of the 21st century will be Shanghai, just as New York was the city of the 20th century. I’m saying that not just because I’ve lived and worked here for the past six years. I see it happening every day. China has mobilized all of its resources in its drive forward, and Shanghai is China’s most ambitious city.

How does this make itself felt?

Borger: What other place is creating several satellite cities within a metropolitan area out of thin air — with hundreds of thousands of residents? Or has planted 20 million trees within three years and built thousands of high-rises in only a few years? Even if this drive to be the tallest, biggest and best may not always make sense, the progress made is breathtaking. Decision-making processes are short, and the salaries are the highest in China, which attracts lots of young talent.

Which is surely one reason for Shanghai’s excitement about the future?

Borger: Exactly. Here’s just one example. The average age of the 3,000 employees at SSMC is 28, and 70 percent of them have

been to universities. Their commitment to learning and improving themselves is unbelievable: Almost everybody is trying to earn an MBA as a second degree in weekend and evening courses. For the first time, the Chinese have the opportunity to become entrepreneurs in their own country. And a lot of them want to use this opportunity. Earning and spending money has become a very high priority. And because life has gotten noticeably better for most people, they want to remain on this path — particularly because children who grow up to be well-paid adults are the best social support for their parents.

Does anything stand in the way of attaining these goals?

Borger: In Shanghai, the biggest problem is public transportation, which hasn’t kept up with the city’s growth. At least 150,000 new vehicles are added to the city’s streets each year. Two metro lines are not enough to provide relief. And buses and taxis jam up the streets even more. To help ease the situation, 11 new metro lines with 430 kilometers of track will be built over the next five years. Another key goal is to relieve the pressure downtown. The satellite cities where people can both work and live are the right approach. Shanghai is also doing a lot to help the environment and provide a reliable power supply. And the telecommunications infrastructure is one of the most modern in the world. Ten

million people in Shanghai already have cell phones.

Could the Shanghai hype burst the way that the Internet bubble did?

Borger: The city’s planning is well-conceived, and city officials generally implement the things they plan. One threat to China as a whole is the problematic state of the financial sector. It’s burdened by bad loans — to state-owned enterprises, for instance. But officials are well aware of these problems. They are frequently discussed, and solutions are worked out — like safety-net organizations and the sale of shares to private investors. China is still attracting 70 to 80 percent of all foreign investment in Asia. Last year, this amounted to more than \$53 billion. So I’m very optimistic about the future. Incidentally, we also offer financing packages through Siemens Financial Services for our projects.

How important is Shanghai for Siemens?

Borger: Our market share is higher here than in any other city in China. We have 16 joint ventures in and around Shanghai, and a total of 12,000 employees — more than half of our entire workforce in China. Our biggest and most modern cell-phone factory outside of Germany is SSMC in Shanghai. We’re involved in city projects, from the subways to the hospitals, from waste-water treatment plants to skyscrapers and power

plants. Our president and CEO, Dr. v. Pierer, is a member of the advisory council for the mayor of Shanghai. In short, Shanghai is — besides Beijing — one of the centers of our activities in China.

Siemens is taking similar approaches in China and the U.S., where “One Siemens” packages the Groups’ offerings into comprehensive solutions. Which areas do you see as markets?

Borger: We’ve identified six clusters: harbors, airports, medical centers, high-rise buildings, petrochemical and automobile industry infrastructure. You can find just about all of them in Shanghai, where we’ve demonstrated in pilot projects just how well Siemens can perform. For example, 22 new hospitals will be built in China this year, four of them in Shanghai. Siemens offers strategic partnerships in every one of these areas.

How does a customer benefit when the buyer-supplier relationship is transformed into a strategic partnership?

Borger: We understand customers’ business processes — like how a hospital or airport is operated — so we can offer comprehensive solutions. Normal suppliers can offer only products that are already available. But if Siemens is your partner, you can take advantage of technologies that are being tried out in pilot projects. So something that has to run for 20 or 30 years is not out of date from the start, but outfitted with the very latest technologies. Of course, this requires mutual trust. Thanks to our years of commitment to Shanghai, we’ve won this trust. That’s a major competitive advantage for us.

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State of the art in Shanghai. Cell-phone production at SSMC (left) and the Waigaoqiao coal-fired power plant (right) — China’s most efficient, thanks to Siemens

The new facility will be about 40 times more effective than any of the 30 waste-water treatment facilities currently scattered around the city. “Shanghai produces 5.8 million tons of waste water every day,” says Jin. “That’s more than the current plants can handle.” But that isn’t even the main problem. “Many of our pipes are old and leak, which meant until quite recently that huge amounts of untreated waste flowed into the city’s canals.” But now, thanks to the construction of several sewage treatment plants on the Yangtze, Suzhou Creek, one of the most famous Huangpu branches, no longer sends foul-smelling sewage rushing into the Huangpu. “Our biggest challenge at the moment is to direct as much of the city’s waste water as possible to the new treatment plants,” says Jin. The government expects that by 2005, about 90 percent of sewage will be treated.

High-Speed Shanghai. Siemens is also playing an important role in Shanghai’s transportation picture. The company is supplying 28 subway trains for the newest metro line and is a consortium partner for the Transrapid, the magnetic levitation train that can travel up to 430 kilometers per hour and cover the 33-kilometer stretch from Pudong Airport to Longyang Station in less than eight minutes (see *Pictures of the Future*, Spring 2003, p. 56). Although full commercial operations are only just about to begin, almost four-hundred thousand passengers have already enjoyed the sensation of “flying at zero altitude” on the train. “I’m certain that in the

course of the next few months a decision will be made to extend Transrapid service to the Expo site and possibly to other large neighboring cities like Hangzhou,” says Gerhard Wahl, who oversees all Transrapid projects as the representative of Group Executive Management at Siemens Transportation Systems. “These long stretches would bring out the Transrapid’s real usefulness — and show how competitive its costs can be.”

Besides the Transrapid, Siemens is also at the forefront of many other projects, including the TD-SCDMA cell-phone standard. This standard, worked out in cooperation with the China Academy of Telecommunications Technology, enables the frequency spectrum to be used in a particularly efficient way. One of China’s cell-phone operators will most likely use the standard in future multimedia cell phones as well as the W-CDMA standard (or UMTS), for which Siemens is conducting test operations in Shanghai at the moment.

Pioneering work in this city is nothing new for Siemens. Back in 1879, the company provided the Shanghai harbor with its first electric lighting, which, in fact, involved the installation of the first electrical generator in the country. In 1904, Siemens opened its first office in Shanghai. Today, the company has 12,000 employees in the “city above the sea” — the literal translation of “Shanghai.” “These are 100 years that prove both our commitment to this fascinating city and our readiness for a long, productive partnership,” says Peter Borger, head of Siemens in Shanghai, looking back over Siemens’ relationship with China. ■ Ulrich Eberl

