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 It's the People, Stupid

China starting to lure back its best brains

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When Joseph Xie left Shanghai in 1983 and headed to the United States to pursue graduate studies, he had every intention of returning to mainland China to work after several years. But the opportunity never presented itself until recently.

"I expected to stay for four or five years to get my PhD, and then four or five years to gain some experience, and then I'd move back," said the 41-year-old native of Shanghai. But after finishing his doctorate, Xie joined a microprocessor development group at Intel Corp. After seven years he went briefly to Advanced Micro Devices Inc. then on to Chartered Semiconductor Manufacturing in Singapore.

All the while, he waited for an opportunity that would take back to China. The hype about China's developing semiconductor industry seemed just that, but suddenly things started to click, Xie said. "I had been waiting too long for the China semiconductor industry to change," he said. "Then suddenly last year there were so many announcements about new fabs."

Soon thereafter, Xie got what he was looking for: a job as senior director of marketing for Semiconductor Manufacturing International Corp., a new contract chip maker in Shanghai that is part of China's hopes for establishing a globally competitive semiconductor industry.

China is looking for more people like Xie — overseas Chinese with EE degrees, several years of experience and a hankering to pack up and head back to the motherland, where they can apply all they have learned at places like Intel, AMD or Microsoft.

That notion was a pipe dream in the 1990s, when American and European companies with plenty of cash were hunting for engineers, and China presented too few worthwhile, challenging opportunities. Of the 320,000 Chinese who studied overseas from 1978 to 1999, only one in three has returned home, according to the latest available data.

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Changes in attitude

But attitudes are changing in the government, in industry and among overseas Chinese.

The Shanghai government, for instance, is offering tax breaks to returning Chinese electrical engineers. More than 1,000 have settled in the Shanghai area, according to government data, and they have founded more than 150 companies, mostly small enterprises.

For its part, SMIC has built a primary school and spent more than \$1 million on an indoor swimming pool with heated floor tiles. Although reliable data is hard to come by, one survey conducted last year noted that more than 60 percent of overseas Chinese are willing to return home within 5 to 10 years.

As the global information technology industry falters, China is still emphasizing the build-up of its IT infrastructure. Science parks dot the suburbs of Beijing and Shanghai, foreign capital is steadily flowing into research and design centers, and the raw talent from Chinese universities is in place. "We have a lot of good people wanting to come back," said one senior mechanical engineer. "Before Tiananmen Square, people hated China. They couldn't wait to escape. Now they want to come back."

Even the most optimistic, however, concede that things are moving quite slowly. There is a lot of talk about coming back, but not enough engineers have committed to doing so. And among those that have, there is not enough experience to make a noticeable push beyond the manufacturing sector and into chip design.

Battles to fight

To surmount this hurdle and attract more experienced, innovation-oriented returnees, other battles must first be fought, said Usha C. V. Haley, a China scholar and professor at the University of Tennessee, Knoxville.

"China's legal system is flawed and little respect exists for intellectual property," she said. "Almost all foreign investors in China have grave concerns about protecting their intellectual property rights and patents. This environment does not encourage locals, including returned Chinese, to invest in new technological breakthroughs."

There is support for this theory among industry players in China, some of whom have privately noted that most serious R&D doesn't happen in China despite regular news reports about new, foreign-backed R&D centers opening there. That has led to complaints about how it is harder for locals to get the experience they need. "We [Chinese] need training in doing more projects whereas others [foreigners] may need training in specific technology development," said Ding Qi-qi, director of R&D at Shanghai Fudan Microelectronics, one of China's larger IC design houses.

Ding is among those pushing for his engineers to go overseas, with the hope

that they will return to Fudan and help the company design more sophisticated chips. "Those [returnees] that have more experience will be the leaders in projects, so he not only leads the project but is responsible for training the people within the team," he said. "After the project is over, the designing capability of the team will be greatly improved."

In semiconductor manufacturing, where China has made its boldest moves so far, returnees are playing a small but growing role. At SMIC, the key role of technology development chief is held by Simon Yang, a Shanghai native who worked at Intel for 14 years and served as the chip maker's director of device and process integration.

But many of the senior positions belong to Taiwanese. Sitting in his office, Xie said he is not sure if enough returnees have come back to build up a large follow-on generation of experienced engineers. "The reality at SMIC is we need not only those people who originate from China, but also those from Taiwan and Italy and others. With the help of those people from other countries, this will be successful."