Can the U.S. Beat China on Innovation?

China is on pace to become the world's most important source for innovation by 2020, overtaking both the U.S. and Japan, according to a public opinion survey conducted by drugmaker AstraZeneca that will be released next week.

According to the survey results, which were pre-released earlier this week, the U.S. is currently viewed as the world's most innovative country, according to 30 percent of the 6,000 people who were polled, followed by Japan with 25 percent and China at 14 percent.

But 10 years from now, China will be the world's center of innovation, according to 27 percent of those who were polled in the U.S., India, Sweden, China, U.K. and Japan. 17 percent believe that India will be the world's top locale for innovation in 2020, followed by the U.S. with 14 percent and Japan with 12 percent.

The rise of China and India as innovation powers isn't just a matter of perception. It's already occurring. As Computerworld columnist Patrick Thibodeau recently noted, China now has the world's fastest supercomputer, at 2.5 petaflops, and it's working on building an exascale system (approximately 1,000 times more powerful than a petaflop system) by 2016.

Meanwhile, China also recently laid claim to having the world's fastest passenger train. The Harmony Express reached a top speed of 302 miles per hour in a test run between Beijing and Shanghai. And let's not forget about renewable energy. According to a report by Cambridge, Mass.-based Greentech Media, 8 of the world's 15 most successful producers of solar panels are based in China, including numbers 2, 3 and 4.

Certainly China's low cost of capital and labor favors its expansion in R&D. Let's not overlook India as it continues to pour investments into research opportunities in pharmaceuticals, medicine and renewable energy, to name a few. Critics will argue that the quality of engineers that are graduating from China's education system are inferior to those being taught in the West. CIOs I know who have outsourced application development and support to companies in India claim that once you get past the top tier of engineering grads in India, the quality of engineers begins to drop considerably.

That may be. But both India and China are continuing to crank out engineers at a mind-blowing pace. They may not all be MIT-caliber, but they sure have a lot of scientists to throw at technical challenges.

Some maintain that the innovation race is already a lost cause for the U.S. Certainly the global economy has changed dramatically in the last 10-to-15 years and the balance of power has shifted. For sure, the seeds of innovation that have been planted by India and China in recent years have begun to blossom.

But in relative terms, it really wasn't that long ago that Silicon Valley and other U.S. entrepreneurs set the world on fire with Web 1.0 and Web 2.0. There's still a tremendous amount of innovation taking place from the Bay area to the Bay state, on everything from alternative energy sources to fresh approaches to e-commerce.

Still, several things will have to change in order for the U.S. to keep pace with China and India, starting with paying greater attention to education beginning at a grade-school level. An annual international study conducted by the Organization for Economic Cooperation and Development which compares how young people in different countries fare in core academic subjects places the U.S. in the middle of the pack in reading and science and below the international average in math.

Meanwhile, if the U.S. hopes to keep pace with China's government-driven R&D initiatives, greater collaboration will be needed between private industry and government.

One important intangible is drive. China, for one, is pushing hard to take the lead on a number of fronts (wind power, high-speed rail, etc.). Time will tell whether the U.S. is hungry enough to fight to retain its elite status as an innovation superpower.