In Agatha Christie’s 1925 mystery *The Secret of Chimneys*, Lady Eileen “Bundle” Brent, Lord Caterham’s eldest daughter, drives Anthony Cade, the book’s hero, up to London at the then-alarming speed of 50 mph.

Chimneys is Lord Caterham’s ancestral pile. If it’s near the real Caterham, a village in southern England, then Bundle drove on roads whose speed limit remains 50 mph. Having a faster, more modern car wouldn’t have helped her and her passenger reach London any sooner.

As I listened to the mystery on my iPod, a thought occurred to me: Do we really need faster computers? Of course we—meaning computational scientists and engineers—want more computing power. As if to tap into that demand, Former Editor-in-Chief Francis Sullivan challenged *CiSE* readers in 2007 to describe scientific problems they’d tackle if they had a petaflops computer on their desks. (You can read the winning entries in *CiSE*’s November/December 2007 issue, pages 55–59.)

But does the general public need faster computers? The question is neither idle nor unimportant. The gains in processing speed characterized by Gordon Moore’s famous law will cease when silicon-based transistors become so small that thermal noise blurs the difference between ones and zeroes. Intel, Samsung, and other chipmakers, as well as university labs, are investigating new physical paradigms to forestall that fate. Some of those paradigms are already showing promise. In February, a team from IBM’s Thomas J. Watson Research Center in Yorktown Heights, New York, reported a graphene-based transistor with a gate length of 240 nanometers that runs at 100 GHz.¹

But building a computer based on graphene or some other molecule will take more than R&D. Without a compelling consumer need and concomitant revenue, the likes of Intel aren’t going to invest in retooling their chipmaking plants. And just to be clear, I do mean computing power. Consumers clearly want denser, more capacious storage media. My iPod can hold 2,000 hours of music, but only 10 hours of video.

Consumers also want faster data downloads. Using Comcast’s highest data rate, 50 megabits per second, it would probably take 8 hours to fill my iPod with music or video.

There is, however, one consumer need for faster CPUs: video games. You might have seen TV ads for *Mass Effect 2*, a role-playing space opera that runs on PCs and Microsoft’s Xbox 360 game console. The Xbox CPU is based on the Xenon processor, which operates at 100 gigaflops. For that power, you get real-time animation that’s far ahead of old, cartoon-style games, but far behind the CGI fidelity of the movie *Avatar*.

The quest for better video games, culminating perhaps in a Star-Trek-style holodeck, could well be enough to push up the power of consumer CPUs. But what if it isn’t? So, here’s my challenge to you: Devise a consumer use for petaflops computing power and send it to me at cday@aip.org. Unlike Francis, I can’t promise a prize, but I will feature the best ideas in a future column.

Reference


Charles Day is a senior editor at *Physics Today*, but by the time you read this column, he’ll have a new job: editor of the *Physics Today* Web site. He’s keen to beef up the Web site’s coverage of computational science. If you have any ideas, contact him at cday@aip.org.