Despite a Slowdown, Smartphone Advances Are Still Ahead

By Nick Wingfield

The arrival of the original iPhone in 2007 was a quantum leap for cellphones. Phones had never worked or looked like that.

The iPhone 5 that Apple introduced last week with only incremental changes seemed to signal that the industry has entered an era of technological bunny hops.

Faster chips, bigger screens and speedier wireless Internet connections are among the refinements smartphone users can count on year after year in new models, most of them in familiar rectangular packages. They are improvements, to be sure, but they lack the breathtaking impact the first iPhone had, with its pioneering fusion of software and touch screens.

“Since then, it has been kind of incremental,” said Chetan Sharma, an independent mobile analyst. “It does not feel like there is a big shift.”

But big innovations in smartphones are not a thing of the past. Incremental improvements can add up over a span of years, providing the computing horsepower to enable big advances in software. Breakthroughs in smartphone materials, software and even batteries could lead to substantial changes in how smartphones look and function in the years ahead.

One of Apple’s most intriguing recent efforts to redefine the iPhone is Siri, the voice-activated virtual assistant that it introduced in October with the iPhone 4S. The feature has the potential to change how consumers retrieve information on their iPhones, giving them the ability to find information on the Web with natural voice commands and to perform other tasks. The product, though, has been criticized for its inaccuracies.

As Apple continues to improve Siri, Google, the maker of the Android phone operating system, improves on its voice search products. Google and some of its mobile phone partners have also
moved toward replacing the credit card with the smartphone using a technology called near-field communications that lets users make payments wirelessly at cash registers.

That system has been slow to take off because most merchants do not support it yet. Apple is taking a more cautious approach to new mobile payment systems, offering a feature in its new iPhone software called Passbook for storing electronic versions of store payment, gift and loyalty cards.

Technology analysts say smartphones could again see big changes akin to the one Apple introduced in 2007. Wearable computers are a source of fascination among many Silicon Valley companies, especially at Google. The company has put tremendous effort behind Project Glass, eyeglass-like frames that can display texts, e-mails and other information from a smartphone on a miniature screen in front of the wearer’s eye.

Google has said it plans to release a version of the technology for developers that would cost $1,500 in the first half of next year and a consumer version sometime after that.

Although it could take years of work before the technology reached mass market prices, researchers and some intrepid technology companies said they believe wearable computers could be crucial to unlocking a new category of applications called “augmented reality.” Virtual objects and information could be overlaid on the real world. Imagine visiting ancient ruins and seeing, through a pair of glasses connected to a smartphone, how the site looked before its decay. People could eventually play augmented reality games that could involve laying virtual ambushes around corners in the real world.

“A lot of people are thinking about augmented reality as a possible game changer in mobile computing,” said Tobias Hollerer, a computer science professor at the University of California, Santa Barbara, who is researching the field.

Changes in materials could also allow for more radical designs for smartphones and peripherals that connect to them. Corning, a company that makes the glass used in iPhone and other smartphone screens, has developed a flexible product called Willow Glass. Paul Tompkins, director of commercial technology at Corning, said the thin and strong glass could give designers a way to make devices that have more curves conform to a part of the body. A wrist device, for example, could display much of the information that’s now on a smartphone.

“We’re really working hard on that with a couple of companies,” he said. “You can achieve more organic designs.”

Then there are seemingly mundane technical breakthroughs that could take away some of the more vexing aspects of smartphones, like the need to worry constantly about keeping them charged. In 2010, Apple filed a patent application for a small fuel-cell power supply that could potentially give the iPhone and iPad enough juice to last for weeks without the need to plug them in.
Mr. Sharma, the mobile analyst, said cellphone companies in Japan have been working on fuel-cell technology for a long time, but the technology is still years away from being practical. “Whenever it comes into being in a shape and form that’s implementable for smartphones, that will be a dramatic shift,” he said.

Consumers have not been sitting on their wallets waiting for the next big bang. If some people appear bored by the iterative nature of new smartphones, they have not shown it. The smartphone market has expanded so much in the past few years, along with Apple’s standing in it, that sales of late-model iPhones dwarf those of the original.

In its first full quarter on the market, Apple sold a mere 1.1 million iPhones, accounting for $118 million in revenue. In contrast, the company sold 26 million of the devices last quarter, bringing in $16.25 billion in revenue.

The iPhone 5 shows every sign of repeating the success of its predecessors. After Apple and its wireless carrier partners began taking Web orders for the new iPhone early Friday morning, it took only hours for the initial inventory to be claimed.

For latecomers, Apple and some of its wireless carrier partners estimated they could not get them phones until two weeks after Friday, when the iPhone 5 will become available in stores.

Natalie Kerris, an Apple spokeswoman, called orders for the phone “incredible.” Timothy D. Cook, Apple’s chief executive, heralded the iPhone 5 last week at an event to introduce the product. He called it “the biggest thing to happen to iPhone since the iPhone.”

Others, outside the Apple marketing echo chamber, who saw less impressive changes are picking up on the natural downshifting of technology into periods of slower evolutionary change after a big disruption. It happened with autos and home appliances. It happened with PCs.

After Apple’s introduction of the Macintosh in 1984, the broader technology business settled on mice and graphical user interfaces as essential features of personal computers. The industry spent the next two decades producing variations on that theme. The stability of underlying computing platforms allowed the software industry to flourish and made it easier for users to operate the machines.
Similarly, Apple crystallized for much of the cellphone and technology businesses a compelling vision for the modern smartphone. They would have multitouch screens and sensors like accelerometers for determining the orientation of the device; powerful software for taking advantage of that gear with intuitive finger gestures; and a mobile app store for unleashing the creativity of independent software developers.

Many of the central technologies in the original iPhone may have been invented before by other companies, but Apple packaged them in a unique and elegant way, and marketed it to a mass audience with its customary panache. Regis McKenna, a Silicon Valley investor who helped shape Apple’s marketing during its formative years, said the arrival of a computer company in the phone market redefined the potential for the device. “It was a real revolution,” Mr. McKenna said. “It began to bring in a whole vast world of digital opportunity. Voice is really a fairly small part of what we call the phone today.”

The difference in smartphones from year to year may not seem spectacular as Apple and its competitors, like Google, Samsung, Microsoft and even Nokia, push their new smartphones forward a bit more every year, like marathoners trying with each race to better their personal bests by minutes. But the long arc of technological progress is.

Said David Yoffie, a professor at the Harvard Business School, “Five years of incremental change can be very substantial change five years later.”

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