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The Transformers

Apple and Google are turning their expertise toward the mobile-phone world, changing the way our cellphones look and maybe even changing much more

By CASSELL BRYAN-LOW

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The cellphone industry is undergoing one of the most dramatic periods of change of its 25-year history.

The reason: The mobile phone is morphing from a device that mainly makes calls into a tiny computer that combines the Web-browsing capabilities of a desktop PC with a host of services for on-the-go users.

A big catalyst for these changes comes not from the ranks of established industry players but from two relative newcomers, **Apple Inc.** and **Google Inc.** These companies bring with them expertise in the worlds of computing and the Internet and are helping spur sweeping changes, from the way mobile handsets look to the wireless services we use. They even are prompting traditional players to adapt their business models.

Computer maker Apple, which launched the iPhone in the U.S. in June and since has rolled it out in several European countries, said it sold four million iPhones globally through mid-January. With iPhone's sizable touch screen and easy Web browsing, some in the industry consider it one of the first devices to bring the full Internet to a cellphone.



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Meanwhile, Google has teamed with a large group of mobile-handset makers, cellular carriers and other technology companies to make mobile-phone software, which is expected to hit the market in the second half. For several years, Google has made software applications that allow Internet searching via cellphones, but the new software will run the guts of the phone, known as the operating system, which controls applications and interacts with the hardware. The move could pave the way for mass-market cellphones that access advanced Internet services and carry its potentially lucrative advertising.

At stake is the direction of the \$874 billion global cellphone industry, according to research concern Strategy Analytics Inc. There are roughly three billion mobile-phone users in the world, which is about half of the world's population. Apple and Google "have immense global influence," says Kang-Heui Cha, head designer of mobile phones at South Korean manufacturer LG Electronics Inc. "With their appearance, we can expect to have a lot more competition in the industry."

To be sure, Apple and Google face big challenges in the complex and already crowded wireless market, which is far from their respective core areas of expertise. Apple has launched only one handset design, while no handset maker has yet launched a cellphone based on Google's operating system. Their moves require heavy investment in time and management focus, and the companies need to navigate delicate relationships with cellphone carriers. The carriers are the key channels for cellphone distribution in many parts of the developed world, but they are nervous about losing turf in the brand battle over cellphone handsets.

Nevertheless, Apple's and Google's moves underscore a shift in focus within the cellphone industry to software from hardware.

"In terms of building a cellphone, it's becoming easier and easier from a hardware perspective," thanks to advancements in technology such as the ability to integrate functions on a single chip, says Andy Rubin, Google's senior director of mobile platforms. As a result, "more focus has been put on software," he said.

Many in the industry expect that one immediate benefit to consumers will be an improved choice of cellphones as established handset makers respond with new

devices that are easier -- and more fun -- to use. Apple's sleek iPhone has raised the bar of consumer expectations, with its candy-colored icons and touch screen that lets users flip through songs and other content stored on the handset with a flick of a finger.

The iPhone has been "a kick up the backside" for the handset makers, says Matthew Key, chief executive of O2, **Telefonica** SA's European wireless unit. O2 is joining with Apple to sell the iPhone in the U.K. Christian Lindholm, director of Fjord PLC, a London-based wireless consulting firm, adds, "The benchmark now is the iPhone. Whatever experience is developed needs to outperform the iPhone."

As handset makers race to catch up, analysts say consumers can expect to see an increasing number of cellphones with iPhone-like features, such as larger screens for better Internet browsing and snazzier interfaces. "Everyone will try and mimic it," says Ben Wood, an analyst at wireless research company CCS Insight, of Solihull, England.

By bringing their understanding of computer software to mobile phones, Apple and Google could help spur developments in handsets. That could include the ability to search for contacts, photographs, emails and other contents stored on handsets in the same way consumers do these things on their personal computers with products such as Google Desktop Search.

"There are still tremendous amounts of innovation in a core phone operating system that needs to be done," Mr. Lindholm says.

While competition has stepped up, existing handset makers are benefiting from the increased attention paid to high-end mobile devices, thanks in large part to Apple's marketing machine around the iPhone's launch.

"The trend has been cheaper and cheaper phones; this is a real shot in the arm to some of the manufacturers," Mr. Wood says.

David Steel, a vice president of marketing in the mobile division of Samsung Electronics Co., the world's second-largest handset maker by market share, says the company has had higher-than-expected sales of its touch-screen handset, called F700, since its November launch in Europe. The iPhone "is helping consumers understand that they can access [on a mobile phone] the whole range of Internet services they are used to using," he said.

Analysts expect Apple and Google to spur a whole range of development in services that consumers can access on the go, as more people browse the Web on mobile devices. That could include the creation of personalized home pages or playing of sophisticated video games, as well as mobile-specific services, such as turn-by-turn directions or searching for the nearest restaurant or hotel.

Google, with its plan to allow third-party developers to access tools to build additional features on top of its operating-system software, in particular could prompt an array of new features for cellphones. The software-developer community "is much more powerful" in generating new ideas than any software company or service provider, says Yves Maitre, head of devices at French-based carrier Orange, a unit of **France Telecom SA**.

Cellphone users also may see lower prices, but they'll have to put up with more advertising in exchange. That is because Google, with its Internet-advertising savvy, is rallying developments in cellphone advertising, which could be used to offset the cost of airtime or services such as downloads of music or video. Google executives have said cellular services or handsets could eventually be subsidized by revenue from the advertising consumers view on cellphones. Many in the industry believe the ability to track users' whereabouts makes mobiles a lucrative source of advertising revenue.

While analysts believe it could be a while before advertising revenue takes off, there already are signs of what is to be expected. A new British wireless provider called Blyk Ltd. offers consumers bundles of text messages and voice minutes free if they receive six advertising messages a day from dozens of companies, including **Adidas AG** and **L'Oréal SA**. Industry giants such as service provider **Vodafone Group PLC** and handset maker **Nokia Corp.** are experimenting with advertising, aiming to be better positioned against Google when mobile advertising does take off.

The arrival of the computing-world giants also is helping to spur changes in how some established companies view their business. Nokia, the world's largest handset maker, is pushing into Internet-related services such as music downloading and maps, the strongholds of Apple and Google, respectively. To do so, the Finnish handset maker has announced a string of acquisitions of companies in Internet-related niches, including the planned \$8.1 billion acquisition of U.S. navigation-software maker **Navteq Corp.** Last month, Nokia restructured its organization to carve out a unit to focus on the new direction.

Nokia Chief Executive Olli-Pekka Kallasvuo says the company needs to be alert to remain competitive against new entrants that are taking on the industry with different strategies. "We are fighting battles against the traditional competition as well as the newcomers like Apple," he says. "It's not only one model, one competitor; it's many business models."

With the shift toward services such as Internet and navigation on cellphones, he said, "What we are going to experience now will be the biggest change the cellphone industry has ever experienced."

Meanwhile, **Microsoft Corp.**, which launched its first cellphone software in 2001, has accelerated efforts to broaden its reach from its traditional base of business

customers to consumers. The U.S. software giant recently bought Musiwave, a company that provides music services to mobile operators and media companies, for \$46 million. "We've given it more urgency and more weight" as a result of Apple's move into mobile phones, says Pieter Knook, senior vice president of Microsoft's mobile unit.

Microsoft also serves as a lesson in how hard it is to crack the mobile market; its efforts to get its software in cellphones has taken longer than it expected. One big challenge has been building ties with cellular operators, which, in many markets, control the distribution of handsets. Says Mr. Knook, "We have found there certainly is a balance between the experience you want to shine through to the end user and how much the operator wants to customize it."

Seven years after entering the market for operating systems in so-called smart phones -- which can send email, surf the Internet and download software such as videogames -- Microsoft held a 12.2% market share as of the third quarter of 2007, according to researcher Canalys.com Ltd., of Reading, England. That puts it in the No. 2 spot, behind Symbian Ltd., a U.K.-based consortium, of which Nokia had a 68.1% share.

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