



## Innovation Series: Touchscreen Technology

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Should a technology first created during the Nixon administration get billing during our 2008 innovation series? That's the question we have before us today as we examine touchscreens, which were invented in 1971.

Oh, don't look so surprised. Long before **Apple's** (Nasdaq: [AAPL](#)) iPhone made the technology ubiquitous, there were mall kiosks, automated teller machines, and point-of-sale systems. Millions of devices employ different types of touchscreen technology.

### Let your fingers do the typing

And I do mean "different types." Wikipedia reports that there are 10 different ways to create a touchscreen. The most intriguing approach may be the capacitive screen, which is what you have if, [like me](#), you're one of the reported 4 million to own an iPhone.

Capacitive screens are ideal for mobile phones because they employ sensors that identify and interpret finger gestures. Here, "sensors" is code-speak for "microprocessors" from the likes of **Cypress Semiconductor** (NYSE: [CY](#)) and **STMicroelectronics**.

But it was Germany's **Balda** that created the iPhone's screen using a capacitive system that's both smudge- and scratch-resistant and that can handle more than one finger at a time. (Users magnify images on the iPhone by applying a thumb and forefinger to the screen and slowly pulling outward.)

Demand for technology like Balda's is growing. Witness **Nokia** (NYSE: [NOK](#)), which announced at this month's Mobile World Congress that it would be employing touchscreen interfaces in selected models by the second half of the year. South Korea's **LG Electronics**, meanwhile, introduced several touchscreen phones at the show.

No surprises there. Researcher iSuppli says that by 2012, the industry will grow to account for \$4.4 billion in revenue, up from \$2.4 billion in 2006.

In short: You haven't missed out on the touchscreen opportunity if you didn't buy Apple.

Need a suggestion? How about [Motley Fool Inside Value](#) pick **3M** (NYSE: [MMM](#))? The legendary maker of household must-haves invented dispersive signal technology (DST) in 2002. Similar to capacitive touchscreens, DST employs sensors on a chemically treated glass surface to detect the energy created by touch. Algorithms then interpret the data.

The difference between capacitive screens and DST screens is in how they're used. 3M bills its invention as technology for large formats and interactive signage.

There's also **Garmin** (Nasdaq: [GRMN](#)), which, in addition to [giving voice](#) to its latest navigation systems, plans a smartphone with an embedded GPS and -- *surprise!* -- a touchscreen interface. We can argue another time over whether Garmin's entry into the smartphone market is a good idea; what matters in the here and now is that another heavy hitter is turning to touchscreens.

### Can I see your ID, please?

But "touchscreen" doesn't necessarily mean "mouse and keyboard substitute." Many other uses for touchscreens are emerging. One of the most interesting is for security.

I'm talking about biometrics, where your personal attributes -- that is, eye color, voice, and, yes, touch -- are used to secure devices you own. Overall, the International Biometric Group projects

the industry will account for \$7.41 billion in annual revenue by 2012, up from \$3.01 billion last year.

[Upstart AuthenTec](#) (Nasdaq: [AUTH](#)) won't wait. It claims to have shipped more than 25 million devices with its fingerprint sensors. Many of those are mobile phones, but AuthenTec is also supplying PCs with its technology.

And while point-of-sale systems have long employed touchscreens, the technology behind them is becoming more sophisticated. For example, privately held **Pay By Touch** has established a network whereby users can access their "wallets" by placing a finger on a biometric reader.

Today, Pay By Touch scanners are available in more than 3,000 locations in the U.S. and Europe. And each new location brings with it the possibility of forever transforming grocery shopping and other high-volume retail.

Maybe that's overstating it. Pay By Touch is, after all, a start-up. Or maybe touchscreens are exactly the sort of technology whose transforming power -- from ATMs to iPhones -- has gone untouched by investors for far too long.

No longer.

A touch of related Foolishness is within your reach:

- Even **Amazon** (Nasdaq: [AMZN](#)) is [getting into](#) the touchscreen business.
- You can safely ignore [the iPhone panic](#).

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