

well as objects with small "domino" stickers tacked on to them. Later in its development cycle, Surface also gained the ability to identify devices via RFID.

Bill Gates demonstrates the Microsoft Surface.

The original Surface was unveiled at the All Things D conference in 2007. Although many of its design concepts weren't new, it very effectively illustrated the real-world use case for touchscreens integrated into something the size of a coffee table. Microsoft then brought the 30-inch Surface to demo it at CES 2008, but the company explicitly said that it was targeting the "entertainment retail space." Surface was designed primarily for use by Microsoft's commercial customers to give consumers a taste of the hardware. The company partnered up with several big name hotel resorts, like Starwood and Harrah's Casino, to showcase the technology in their lobbies. Companies like AT&T used the Surface to showcase the latest handsets to consumers entering their brick and mortar retail locations.

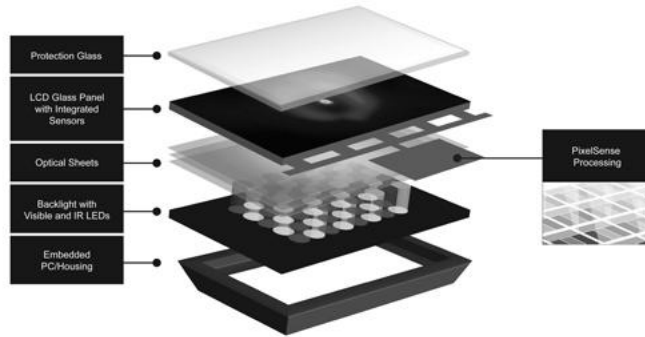
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Surface at CES 2008.

Rather than refer to it as a graphic user interface (GUI), Microsoft denoted the Surface's interface as a *natural user interface*, or "NUI." The phrase suggested that the technology would feel almost instinctive to the human end user, as natural as interacting with any sort of tangible object in the real world. The phrase also referred to the fact that the interface was driven primarily by the touch of the user rather than input devices. (Plus, NUI—"new-ey"—made for a snappy, marketing-friendly acronym.)

Microsoft introduces the Samsung SUR40.

In 2011, Microsoft partnered up with manufacturers like Samsung to produce sleeker, newer tabletop Surface hardware. For example, the Samsung SUR40 has a 40-inch 1080p LED, and it drastically reduced the amount of internal space required for the touch sensing mechanisms. At 22-inches thick, it was thinner than its predecessors, and the size reduction made it possible to mount the display on a wall rather than requiring a table to house the camera and its sensors. It cost around \$8,400 at the time of its launch and ran Windows 7 and Surface 2.0 software.



Credit: Microsoft

Last year, the company rebranded the technology as PixelSense once Microsoft introduced its unrelated Surface tablet to consumers. The name "PixelSense" refers to the way the technology actually works: a touch-sensitive protection glass is placed on top of an infrared backlight. As it hits the glass, the light is reflected back to integrated sensors, which convert that light into an electrical signal. That signal is referred to as a "value," and those values create a picture of what's on the display. The picture is then analyzed using image processing techniques, and that output is sent to the computer it's connected to.

PixelSense features four main components that make up its technology: it doesn't require a mouse and keyboard to work, more than one user can interact with it at one time, it can recognize certain objects placed on the glass, and it features multiple contact points. The name PixelSense could also be attributed to that last bit especially—each pixel can actually sense whether or not there was touch contact.

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Although it would make an awesome living room addition, Microsoft continues to market the Surface hardware as a business tool rather than a consumer product.

Touch today—and tomorrow?

It can't be understated—each of these technologies had a monumental impact on the gadgets we use today. Everything from our smartphones to laptop trackpads and WACOM tablets can be somehow connected to the many inventions, discoveries, and patents in the history of touchscreen technology. Android and iOS users should thank to E.A. Johnson for capacitive touch-capable smartphones, while restaurants may send their regards to Dr. G. Samuel Hurst for the resistive touchscreen on their Point of Sale (POS) system.

In the next part of our series, we'll dive deeper on the devices of today. (Just how has the work of FingerWorks impacted those iDevices anyway?) But history did not end with 2011, either. We'll also discuss how some of the current major players—like Apple and Samsung—continue contributing to the evolution of touchscreen gadgets. Don't scroll that finger, stay tuned!

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Florence is a former reviews editor at Ars.

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