Microsoft Surface

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The Microsoft Surface was officially announced on May 29, 2007 at the D5 (All Things Digital) Conference. The Surface announcement came 5 months after the iPhone was officially announced and around a year and a half after Jeff Han released his "Multi-Tough Interaction Experiments" demo reel. Surface is not the first multi-touch device, nor is it the best. However, the Surface does represent a general belief in and backing of multi-touch technology by the computer giant Microsoft. Further, Microsoft established the Surface as a viable point-of-sale business tool, which was unheard of at the time. Microsoft's tag line for the Surface is "Experience Computing Together."

Technologically the Surface is not extremely advanced. The physical device is simply a sheet of acrylic held up by a steel frame in a table form factor. A combination of backlighting the acrylic sheet with 850nm infrared light along with a series of motion cameras enable the perception of touch sensitivity. Meanwhile a DLP projector mounted in the bottom of the table shines the imaging onto a diffusion surface attached to the bottom of the acrylic. The whole setup is brought together by a motherboard running an Intel Core 2 Duo 2.13 Ghz chip with 2gb of RAM and a 250gb hard drive. The Surface runs a modified version of Windows Vista as it's operating system.

Of the technologies used to create the Surface, only the modified version of Windows Vista is really unique to Microsoft. The imaging mechanics of the Surface are no different than that of rear projection televisions, which has been around since the 1970s. The system of cameras and infrared light is known to the multi-touch world as Rear Diffused Illumination. Rear DI is now generally regarded as somewhat of a sub-standard technology in the multi-touch community. Frustrated Total Internal Reflection (FTIR), which is the technology Jeff Han introduced in 2005, seems to be building momentum as the hardware solution of choice among developers.

So if the Surface does not represent new, novel technology, what good is it to modern computing? Multi-touch computing is not new; rather it has been in the works for a number of years. However, multi-touch computing has mostly been evident in fiction. Hollywood has depicted multi-touch computing numerous times in film and television. But the Surface is

extremely important because of the stir and general awareness of multi-touch computing that it created. In effect, by releasing the Surface, Microsoft made fiction fact, commercially and publicly. In addition, Microsoft became a champion of a new way of interacting with the computer - a movement known as Natural User Interface (NUI).

> "Microsoft Surface represents a fundamental change in the way we interact with digital content. With Surface, we can actually grab data with our hands, and move information between objects with natural gestures and touch. Surface features a unique 30-inch tabletop display whose unique abilities allow for several people to work independently or simultaneously. All without using a mouse or keyboard." (*Multimedia Information and Technology 2007)*

When Microsoft released the Surface they showed their belief in the Rear DI hardware solution. Until that time, the Rear DI setup had been viewed as a home-brewed or academic. However, with the adoption of the Diffused Illumination technology, Microsoft stated that the technology was stable and viable at a business level. That step of taking the hardware technology to a business platform has opened up a whole new industry for multi-touch developers.

The Surface is certainly not perfect. It would seem that Microsoft pushed the Surface as the new face of computing, but took its foot off the pedal shortly afterward. Among the Surface's drawbacks are its continued limited availability and $12,500-15,000 price tag. Development is reserved for those who are able to obtain a developers version of the Surface and have the knowledge to write programs in Microsoft's Windows Presentation Foundation or XNA. But even with all of the drawbacks, the Surface has been an important asset to the field of multi-touch computing. Without Microsoft's release of the Surface the interest surrounding table-based multi-touch computing would not be what it is today.


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