# ■ Stylusmanship

## *At last a truly universal standard*

The first demonstration of a tablet and stylus being used with a computer happened in 1956. Then the famous Rand tablet was introduced (1960), and who can forget the Apple Newton (1993) or the Palm Pilot shortly thereafter?

Using a stylus or pen for computer input has been primarily for two pur-

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poses: designers and artists, and note taking and/or annotation. A stylus is truly a natural user interface. However, there are several issues with using a stylus on a display, not the least of which are parallax, latency, and inking. Those issues are not as prevalent with a direct contact pad for the stylus. And despite what Mr. Jobs said, you can't really write with your finger.

Over the years, several noteworthy machines have been introduced with styluses. Lenovo, Toshiba, Samsung, and Microsoft, to name a few, came out with products. They, and others, all perform well and share the same two common problems: (a) if you lose the stylus, it's expensive to replace and (b) you can't use a stylus from a Toshiba on a Microsoft.

That was then.

Intel spearheaded the effort for a universal stylus around the end of 2014 and started talking to other vendors. It was an idea whose time had come, and by early 2015 most of the members had joined. All the expertise from the industry helped drive the spec.

Now, after almost two years of hard and diligent work, the non-profit Universal Stylus Initiative (USI) consortium has released its stylus and device specification. The important part of this announcement is one word—universal. Thirty companies have joined USI and signed up to support it and deliver products based on its specifications. That means any company offering a tablet, a laptop, a smartphone, a 2-in-1, an all-in-one, or any other touch-screen–based device will be able to use a stylus from any other member, or any third party who has built one to the USI specifications.

The development of USI 1.0 Specification was a collaboration among several companies, including multi-national OEMs (Dell Inc.; HP Inc.; Lenovo Group Ltd.), as well as silicon and component providers (Atmel/Microchip Corporation; Cirque Corporation; Hanvon Technology Co., Ltd.; Intel Corporation; Sharp Corporation; Synaptics Inc.; Wacom Co., Ltd.; Waltop International Corporation). Sharp Corporation, Hanvon Technology Co., Ltd., and Waltop International Corporation recently demonstrated a working implementation of the USI 1.0 Specification. (Watch the video.)

**PETER MUELLER**, Chairman USI.

*Source: USI*

"Our goal was to have a single, universal stylus capable of operating with all the devices that a consumer owns or uses in the workplace. The USI 1.0 Specification achieves this goal. It replaces multi-protocol, propriety approaches with a single solution for the entire marketplace to use." said Peter Mueller, chairman, USI.

The USI 1.0 Specification defines a standard for a signaling mechanism and communication protocol between a stylus and a touch-enabled device. The specification provides a two-way protocol that was designed from the ground up to support a broad range of base features including multiple, simultaneous styluses as well as extensibility for per-vendor customization and future usages.

When the standard is employed, users will be able to use a single USI stylus on any of their USI-enabled devices and any USI stylus shipped with devices will work with other USI-enabled devices, even those from different manufacturers. Additionally, the specification also provides the capability to use multiple styluses from different manufacturers on a single device. This is a revolutionary capability and an industry first that is being enabled by the USI 1.0 Specification.

An additional benefit of the USI standard is the ability to deliver a consistent stylus user experience across platforms. This consistency and ease of use, coupled with interoperability, increases the consumer appeal of an active stylus and will help proliferate the technology. The spec also allows for vendor extensions while staying within the standard (buttons, different functionality, etc.).

USI 1.0 is fundamentally a protocol spec, and the consortium steered clear of specifying implementation specifics.

They do, however, have a minimum on the resolution at 150 DPI, but the spec allows for a stylus resolution equal to the native display. For force/pressure they support up to 4096 levels. And they support erase as well as flexibility to add additional functionality via buttons or sensors.

USI is also developing a compliance testing program to ensure devices meet the compatibility and performance requirements. USI's goal will be to enable self-certification, but they will also host USI-sponsored events to allow for compliance testing. The USI will, however, manage and issue the certifications. Looking to the future, this could enable/authorize independent labs to do the testing and certification (like UL, who bought Futuremark).

The first units (styluses) could show up by the end of this year but will probably not appear in device suppliers' roadmaps until the holiday preseason next year. There will be plenty of penned up demand (heh).

Approximately 259 million tablets will ship in 2016, according to Gartner, Inc. Most of those tablets will be active-stylus–capable and ship bundled with a stylus. Touch Display Research predicts that active-stylus market revenue will double from nearly $3 billion in 2016 to almost $6 billion over the next four years.

### ● What do we think?

*A stylus is the fifth input device after the keyboard, the mouse, voice, and touch. It's a natural user interface, and one that has been wanted for a long time. What USI does is to make the stylus as interchangeable as a mouse is today. That's a really a major breakthrough, both in technology and in politics. Getting 30 companies to put aside their petty efforts at indefensible attempts at differentiation through proprietary designs is a major accomplishment. The hold-out companies will sadly come to the realization once again, open always wins, proprietary almost*

*always loses, and at the least is too expensive. There are still other protocols out there. Wacom, even though a member of USI, has their own and is licensing it. Microsoft, through their acquisition of Ntrig, has their own (e.g., Surface) and is also offering licensing now.*

*The old joke of creating a new standard means that now there are three standards. Can USI unify the market on a single solution? It sure would be nice. It is a heavy standard but a very complete solution. I hope it gains momentum.*

*The built-in market for the universal stylus is artists and designers. There should also be a strong interest from people doing photo editing (think about how hard it is to outline a part of a picture with a mouse. However, it isn't for everyone. You won't use a stylus for everything (like scrolling or page flipping), and I don't think you'll ever be able to write on a screen as you do on a paper tablet. I can write really tiny on a paper tablet, just can't do it on a screen, partially because of the parallax (can't see the nib well enough). But that's OK. Just being able to make notes quickly with whatever device I happen to have with me will be a major benefit.*

*However, my friend Gary Baum (Ntrig and MyScript) disagrees and says, "I might take issue with this statement. While you are correct, you cannot write the same way, the pen-on-device experience is close to pen-on-paper now. The benefits of interactive ink, specifically editing and formatting, is a significant productivity enhancement not possible on paper. Net plus for the device," he said.*