

The Year Of The Digital Pen



IT MIGHT BE a little late for predictions, but

I think this year the digital pen will be mightier than the sword. The digital pens used with platforms like Samsung’s Galaxy Note 2 work well for note taking, drawing, and other functions that finger painting doesn’t do well.

The Galaxy Note 2 pen is based on technology from Wacom. It’s the same technology found in the digitizing tablets that I use with PCs, except they don’t have a display under the pen. Digital pens are pressure sensitive, so most don’t feel like a ball point or a pencil when you use them, but they aren’t bad.

PEN UNDER PRESSURE

I recently got to use N-trig’s DuoSense Pen 2 with an HTC tablet (Fig. 1). The pen does make a difference. Unlike other digital pens, the Pen 2 feels like a conventional ball-point pen on paper—smooth movement with a little drag—which was intentional (see “N-trig DuoSense Digital Pen Offers True ‘Pen-on-Paper’ User Experience” at [engineeringTV.com](#)).

The Pen 2 comes with a set of removable tips to provide different kinds of feedback. It boasts better than 0.4-mm accuracy because the matching N-trig DuoSense capacitive controller detects the pen tip and senses 512 levels of tip pressure using an in-pen ASIC (Fig. 2).

The controller can handle multiple finger touches and palm rejection, which was critical on the 7-in. tablet I was using because my palm then could rest on the screen without interfering with the finger or pen input. This was one of the biggest differences when working with an active surface. It isn’t an issue with most digitizing tablets that only recognize the pen and not the hand or fingers.

The hover support was useful when applications took advantage of it. Popup menus would appear or buttons would be highlighted when the pen was above the surface.

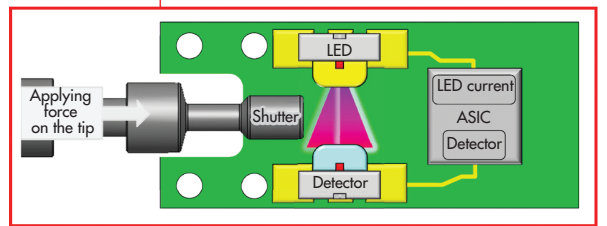
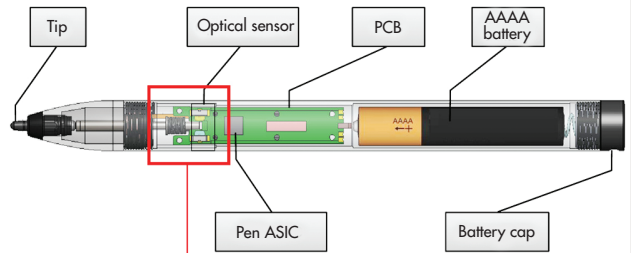
But using the hover function can be a challenge depending on the application. For example, if the pen tip is close enough to the surface for the hover effect, then a slight, unintended movement can cause the pen to draw. On the plus side, the palm rejection makes a big difference for hover support since it is much easier to hold the tip close if the palm is helping to stabilize the hand.

PEN INCONSISTENCY

Generally, I have a problem with the plethora of use methodologies employed with pen-enabled applications. Simply giving programmers an application programming interface (API) will only lead to confusion.

Android tends to be wild and wooly. That’s good for new

1. N-trig’s DuoSense Pen 2 can be used with a range of tablets, phablets, laptops, and all-in-one desktop systems.



2. The touch sensor detects the Pen 2’s tip. An ASIC in the pen captures the pressure information and transmits it along with button status information.



ideas, but it leads to inconsistencies between applications. Every one of the applications I used with the Pen 2 had a slightly different way of selecting, erasing, and performing other functions.

Windows usually has a more rigid set of standards, but that runs contrary to letting new ideas emerge. Unfortunately, we are really at the beginning of the tablet/pen era, and most of the ideas being employed are sub-par and based on the limitations of the past.

For example, the HTC platform I was using had four ways to enter text using a pen. That was nice, because not everyone uses script or prints well. The problem was that it was the pen or nothing. A virtual keyboard wasn’t an option.

Features like the hover sensing also really need to become universal. Not all pens will have this capability, though, so what’s an operating-system (OS) designer to do? Likewise, pen input needs to be more universal, which means adding to an application and providing transparency need to be easy. I’m thinking about annotations scribbled on the sides of pages.

Using the pen for input is a learning experience. I actually had good penmanship in grade school, but it has languished because of disuse. Even my printing tends to look more like scribbles. On the other hand, I am getting much better at using the pen with practice.

More changes will come. The Pen 2 that I used had a battery inside, but there likely will be a supercap version in the future that takes a wireless charge in seconds.