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NeoNode N1

Can a unique interface put this compelling smart phone on the map?

Cellphones and smartphones are huge business, with many hundreds of millions sold each year. The market is dominated by a few larger players, the likes of Nokia, Motorola, Samsung, Sony Ericsson and so on. While most of the cellphones sold don't qualify as "smartphones," an increasing number do, and the term "smart" is relative anyway. Fact is that phones are sold on features these days (certainly not on quality of service and voice quality - both of which appears far worse than a decade ago). The more features the sexier and more alluring the phone, and the more likely it is to coax the buyer/user not only into getting a new phone, but also into purchasing an expensive calling plan and additional services. And of them are many, and they are getting ever more compelling. Cellphones use anything from rudimentary proprietary operating systems to sophisticated operating platforms such as Symbian, Linux or Microsoft Windows Mobile.

Some phones are totally different, and made by companies you have likely never heard of. NeoNode is one such company, and their product, the NeoNode N1 one such phone. It's not actually new; the N1 has been around for several years, gathering a small following and a wild diversity of opinions. NeoNode itself is located in Sweden, and apparently dedicated to their technology and determined to make it work.

The NeoNode N1

What is the NeoNode phone? It's different from anything else you've seen. When it first came out in 2002 or so, the small glossy soapbar phone was considered almost impossibly small and also quite futuristic looking. But technology does not stand still, and in 2006 the NeoNode N1, while still one of the smaller phones, no longer stands out. In

fact, some might consider it a bit
chunky, and its rounded, featureless
shape a bit dated. Lacking any
polished, brushed or powder-coated
metallic finishes, all creased or
beveled, the all-plastic N1 looks more
like a small remote control perhaps,
or some other low-tech plastic device.
NeoNode knows that and has a
replacement almost ready, the
NeoNode N2 which is said to be
much sleeker and more in line with
the expectations of the iPod
generation. But for now I'll
concentrate on the existing N1 as it
exemplifies NeoNode's revolutionary
technology.

How rare is the N1? Despite a semi-
test production run of several thousand, so rare that I could not find one on eBay (and
ended up getting a device directly from the company). If you can't find something on
eBay, for all practical purposes it doesn't exist. But exist the N1 does, and it's a
remarkable device. What makes it so special?

In short, it is a bold, experimental marriage of standard off-the-shelf components with
entirely new and different technology and ideas. The standard part consists of the fact
that the N1 is actually based on Windows Mobile. Connect it via a USB cable to a
desktop or notebook running Microsoft ActiveSync, and it'll immediately be recognized.
That comes in handy as being able to use widely supported software components is
always preferable to one-off utilities that may or may not work very well, or require
constant updating as the operating system changes.

In addition, the N1 also uses some of the Windows Mobile applications. There's the mail
client, Pocket Internet Explorer, Notes, the Media Player, and a couple more. That,
however, is about as far as the familiar Windows Mobile look goes. Other apps may
have been ported, but I haven't seen them yet.

A unique interface

What's so special about the NeoNode then? That would be its interface which is like no
other. There is no physical keypad or keyboard at all. That itself isn't revolutionary, and
the N1 also has fairly standard components such as a four-way directional pad located
beneath its portrait-oriented rectangular display. The pad not particularly responsive or
easy to use, but we'll get to that later as we assess each part of the N1.

The unique and different thing of the NeoNode phone is that it uses a touch screen
unlike any you've used or seen. In contrast to most touchscreens that sense the
pressure of a stylus or a finger, the NeoNode's "zForce" technology uses a grid of
infrared beams to determine the location of your finger. The grid consists of eight
horizontal and nine vertical "beams." You can't see them as they are integrated in the
roughly 1/8-inch rise of the bezel that surrounds the display. So that is how the display
senses the location of a finger. Quite obviously, a 9 x 8 array of sensors isn't anything

position of your finger and the direction in which you move a finger. The latter ability is used to give the NeoNode its totally unique personality and mode of operation.

Swipe, swipe, swipe

You see, instead of the usual menus and pulldowns, most operations are performed by sweeps of your finger - usually your thumb - across the surface of the NeoNode's display. For example, to answer the phone you sweep left to right. To terminate a call and hang up, you swipe right to left. To bring up programs or selections, you swipe up along the left side. To access options within an application you swipe up along the right side. To move between screens, or modes of operation, within an application, you swipe left or right along the top edge. If this sounds like the dreaded "gestures" that never really caught on in pen computing, it's not. The swipes are much simpler, there are only a few, and they are consistently used throughout all applications. The idea here is to let you hold a phone in the palm of your hand and operate it entirely with your thumb. No need to push buttons, view tiny menus, pull out a tiny stylus, or use scrollwheels, rockers or other such vexing miniature controls.

Now we've seen numerous attest at doing things differently. Often, the proposed solution is simpler or more logical than the established way, yet for some reason the innovation doesn't catch on or trips over some small fact. The DVORAK keyboard, for example, makes much more sense than the standard QWERTY layout, yet it never caught on because almost everyone learns QWERTY first and it's almost impossible to switch. Likewise, in automobiles we've standardized on having the gas on the right, the brake next to it, and the clutch, if present, on the left. Anything else requires relearning which can range from being a nuisance to being dangerous. A different way of operating a computer isn't dangerous, but it certainly can be a nuisance. Unless, that is, it makes perfect sense. An example of something that made perfect sense was Jeff Hawkins' brilliant Graffiti text entry system that used a simple set of mnemonic keystrokes to generate all letters of the alphabet. Everyone was skeptical at first, and virtually everyone mastered it within 15 minutes or so. It was a huge success until Xerox sued Palm over it, claiming patent infringement. The case was eventually thrown out, but not before Palm had decided to give up on the marvelous Graffiti and replace it with a less intuitive solution that contributed to bringing upon the demise of Palm PDAs. In any case, the NeoNode's swiping interface is similarly simple and brilliant.

How does it work?

But let's get back to the NeoNode and its unique interface. At first, you feel lost, especially since the user's manual that comes in the elegant, tidy NeoNode box is

the initial feeling is that you might never get it. Especially since the swipes need to be applied methodically. So you turn on the NeoNode with a tiny button to the right of the keypad and start swiping. If you are the type who is able to follow instructions you may get it almost right away. If you're more the experimental type (as I am), you start swiping and see what happens, hopping from application to application and finding yourself inside options, and settings, and likely never where you want to be. However, within a remarkably short time you'll see how it all fits together and that there is a well thought-out--even brilliant--method to it all. And a method that you quickly pick up and then never forget.

To give you an idea of how this works, once you turn the phone on, you'll be greeted by the "locked" symbol. After all, you wouldn't want random touch to generate commands or calls. A set of small triangle arrows show where and in what direction to swipe to unlock the phone. That visual aide is used throughout the interface; the arrows always show what swipe options are available. Once unlocked, you're greeted with a standard info screen: time in large numbers, date, and various icons showing signal strength, battery charge, network used, ringtone, messages, and so on. Three sets of triangle arrows show the swipe options. Swipe up on the left side to bring up application icons, sets of six round ones per screen. Swipe up center to bring up a phone dial pad. Swipe up along the right to bring up options. You always exit any given situation with a backward swipe from right to left, so that is in essence the "Esc." And you can close any application by sweeping upper right to lower left.

To illustrate how this works, lets get into the N1's camera applications. Swipe up along the left to get the application icons, tap on the camera icon to start the application. Once there, swiping left and right along the top toggles between camera and image review mode. In each mode, swiping up along the right brings up available options, swiping left to right along the bottom quits out of either the option or the application, depending on where you are. At times, there is text that explains or prompts. In the camera application,

or "no." Those are executed by either swiping left to right for a yes, or right to left for a no. It's all logical, and quickly feels so.

That's really all there is to the interface. Using a simple, logical swiping system to operate the entire phone, all aspects of it. And unlike many other small form-factor operating environments that all too often bop smack into limitations where the chosen metaphor breaks down, that's rarely the case with the NeoNode. Perhaps that's because there aren't all that many applications on the device, and the company has had ample time to perfect their operation. More likely, it simply makes that much sense.

Some frustrations

That is, however, not to say that all is perfect. Just like on digital cameras, not all icons are self-explanatory. Theoretically the infrared sensors should allow "hovering" to bring up explanations, but that is not (yet) implemented on the NeoNode. Another possibility would be tiny text complementing the icons, as is often done on digital cameras, but apparently that would go against the strongly developed Scandinavian urge to keep things clean and simple. As a result, you likely commit a few errors while figuring out what some of the more obscure icons do. Some applications resort to simple lists where you pretty much have to use the navigation pad. That doesn't fit into the minimalist elegance of the interface.

A bigger issue is the infrared digitizer itself. It has absolutely no problems identifying swipes (again, finger only; no stylus), and where required it handles taps in a very innovative way, by issuing a brief vibrate when a tap registers. That would quickly become annoying if it were used for all taps, so it is limited to where you really need it, like when dialing a phone number. A problem I ran into is that the infrared grid works very well around the perimeter, but much less so in the center. Reliably entering a "5" in the center of the on-screen keypad was at times a challenge. Either it picked up the "8" beneath it, or it required a slow, deliberate, precise pressing on the screen. It also seemed that the grid was sensitive to certain lighting conditions, as one would, in fact, expect from an infrared-based system. I should mention that other NeoNode users I talked to did not have that problem, so perhaps it was unique to my device.

For the most part, however, the numeric entry pad works just fine, and you can use a variety of data entry methods. There's the standard multiple-letters-per-button common to almost all phones, there's the Tegic T9 predictive system and so on. This same method is also used for text entry into notes.

Windows Mobile, but...

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