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Prime Time for Wearable Devices?

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Welcome to ***NealNotes***; this is my inaugural blog post. Not exactly Proustian prose, but there you have it – short/succinct. Going forward, I'll comment on various technology trends/issues/ideas, in short, whatever *tech*les my fancy (sorry, inveterate punster too, even when borderline like that one).

Unless you have successfully disengaged yourself from every conceivable 21st Century communications device, you've probably been hearing a lot about wearable devices – that they're the next big trend/revolution/most stupendous technological invention since the cotton gin, ad nauseum.

Well, not quite, but wearable devices were yakked about incessantly at CES 2014 last month and the overall buzz is getting louder.

The market potential is enormous. Last July, *eWeek* reported that Juniper Research estimates the number of wearable devices will increase from about 15 million devices this year to 150 million devices by 2018. Pebble raised more than $10 million through a Kickstarter campaign, amassing more than 70,000 backers for its smart watch. And behemoths like Intel are also making significant investments in this area. Last September Intel rolled out Quark, a new line of system on chips (SoC) designed to power wearable devices. The chips, noted Intel, are also designed for power efficiency and their small footprints, rather than for performance.

Intel has also invested in Recon, a wearable device maker that makes Google Glass-like headsets for sports enthusiasts. And the company has also purchased a stake in Thalmic Labs, which manufactures MYO, an armband that allows users to control objects via various hand gestures.

Despite the burgeoning popularity of wearable devices, there are still a number of issues to overcome, noted Kevin M. Kitagawa, Director of Strategic Marketing, Imagination Technologies. The UK-based company creates/licenses a broad range of processor IP solutions including graphics, video, vision, CPU and embedded processing, multi-standard communications, cross-platform V.VoIP and VoLTE and cloud connectivity.

"Currently there's a lack of standards, no common APIs and issues in syncing hardware elements to ensure seamless interoperability for a good user experience" said Kitagawa. "Battery life is also a big barrier to wide scale deployment as wearable devices such as watches and fitness bands need to last weeks or months, not just a day as they do right now."

Kitagawa added that the industry and consumers are still trying to determine what the "killer app" is and what exactly they want from their wearable device.

"It'll eventually happen but the industry needs to build this – the effort must include OEM partners, industry consortiums, software vendors, app developers and others in order to achieve market success," he said.

All of the above, added Peter Cooney, Principal Analyst, SensiAn Research, a UK market research firm, could be issues for smart wearable vendors to overcome in a fledgling market where new concepts are emerging all the time and many developers new to electronic design may find it difficult to move from the idea stage to a fully working product.

"Many semiconductor vendors are already working to simplify this process and help developers bring their ideas to life with a fast time to market," said Cooney. "Vendors like Texas Instruments and Nordic Semiconductor offer starter kits and reference designs containing many of the key components needed for apps like low-power microprocessors and wireless connectivity as well as software solutions."

Cooney added that while battery technology hasn't kept pace with semiconductor technology, there

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Cooney added that while battery technology hasn't kept pace with semiconductor technology, there are new energy harvesting techniques being developed that will also improve wearable device battery life.

And Linley Gwennap, who heads up Mountain View, CA-based The Linley Group, a market research firm that concentrates on the semiconductor industry, said as the market expands, processor vendors will develop unique products for it. A smart watch processor, note Linley, could integrate a display controller, which may need to handle alternative low-power displays such as E Ink and Mirasol, and a camera interface.

"It could integrate analog functions such as a touch screen controller and audio connections. If it also integrates a Bluetooth controller, the entire system could be reduced to a single chip, enabling the low prices necessary to boost adoption," said Gwennap.

So where does this all leave us this year? Jon Peddie, founder of Tiburon, CA-based Jon Peddie Research, thinks we'll eventually be wearing smart devices on our faces, arms, belts and feet – it's a "logical and potentially useful and obvious extension of miniaturized communicative technology."

Peddie believes 2014 will be a year of experimentation, discovery and refinement – manufacturers will learn what features are useful - and sellable -- and how much and how universal inter-compatibility is required.

His 2014 winners? Health monitors will be the most popular – gadgets like Pulse, Fitbit, blood pressure monitors. But head mounted AR/VR devices like Google Glass, Optinvent and Ocular Rift will be novelty items, worn when/where permitted in restricted/specialized locations.

"When they can be disguised and camouflaged to look like normal sunglasses or corrective glasses their popularity will increase, again subject to laws (not while driving)," he said.

And further down the line, Peddie said wearable devices like smart watches may have even more uses.

"A smart watch could also serve as a weapon – it could have a built-in Taser and pepper-spray dispenser. And a coffee warmer would be nice too."

billion.

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