

guest editorial



Change Is the Only Constant

by Geoff Walker

As referred to in the title of this editorial,¹ the rate of change in the touch industry continues to accelerate. Projected-capacitive (pro-cap) touch technology is the ideal poster-child for this rapid change, going from less than \$20 million in worldwide sales in 2006 to well over \$2 billion in 2010. That's a 100x change, or 10,000% in 4 years! Even

the name is changing from "projected capacitive" to just "capacitive" because surface-capacitive touch technology is rapidly becoming irrelevant (only single-touch, hard to integrate, expensive, etc.). Pro-cap is well on the way to displacing analog-resistive, which has been the dominant touch technology for over 30 years. In terms of growth in the overall touch industry, TPK Touch Solutions, a company founded in 2003 and a name that was unknown before 2007, is now the largest supplier of touch screens in the world, with 2010 revenues of over \$2 billion (according to DigiTimes).

This issue includes a Frontline Technology article by Tim Wang and Tim Blankenship from Maxim on pro-cap with an emphasis on the importance of controller performance. Tim & Tim build on Gary Barrett and Ryomei Omote's article on pro-cap in the March 2010 issue of *Information Display*; that article (which is still worth reading if you never got around to it last year) was written primarily from the point of view of sensor design and performance.

The rise of high-volume consumer touch has split the industry into two types of companies: (1) high-volume, low-cost, low-margin, limited-product-line companies focused on consumer markets and (2) lower-volume, higher-cost, higher-margin broad-product-line companies focused on vertical markets. For all practical purposes, there are no significant players who compete in both markets. This is a big change from only 5–7 years ago, when the touch industry was far more homogenous.

This issue includes a Display Marketplace article by Duke Lee from Displaybank in Korea. Displaybank is one of the three primary market-research firms that cover the touch industry (the other two are DisplaySearch and iSuppli). Duke provides some interesting insight into the state of the touch industry, along with the expected update on the growth. Duke also points out that the total area (in m²) of touch screens in tablets will exceed the area of touch screens in mobile phones by the end of 2012 – a very surprising forecast!

Multi-touch is yet another big source of change. It is now very rare to see any touch-technology development (new or enhancement) that is not closely tied to multi-touch in some way. Take the case of traditional infrared touch technology. It has been available for at least 30 years with single touch. In the last few years, a number of companies have launched two-touch versions, but I have yet to see one that is not plagued with severe ghost-touch problems. More recently, two companies (PQ Labs in California and Citron in Germany) have launched a new form of infrared that supports up to 32 touches. This technology breakthrough was developed by re-thinking and re-defining how a 30-year-old technology should work in order to meet today's need for multi-touch.

This issue includes an Enabling Technology article by Daniel Wigdor from the University of Toronto (he is also an ex-Microsoftie); his article includes the term "multi-touch" in the very first sentence. While the article concept started out as an overview of what's happening in multi-touch, it quickly turned into something more

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significant – an examination of a serious problem that is facing the touch industry, one that could greatly impede the progress of touch computing. Read the article and learn all about the problem with the impressive name of “the breadth–depth dichotomy”!

In the 16 months since the launch of Windows 7, camera-based optical touch has exploded into several dozen consumer-desktop products. This is a big change, since prior to Windows 7 this technology appeared in only one consumer product (the HP TouchSmart all-in-one computer) and was found mostly in large displays such as wayfinders and in display-based interactive whiteboards from SMART Technologies. During the 16 months, at least a half-dozen new suppliers have entered the market, touch performance has steadily improved, the OEM cost of the technology has steadily declined, and the meaning of “optical touch” has shifted from traditional infrared to camera-based optical touch.

This issue includes a Frontline Technology article by me, Geoff Walker, the Guest Editor for this issue of *Information Display*. To my knowledge, this is the first technical article on camera-based optical touch that has appeared in any media anywhere (except for conference papers, of course). What else does a Guest Editor do, you wonder? The role starts with deciding what topics the issue’s articles should cover, then finding people who are willing to write the articles. It continues with sometimes creating illustrations for authors, and always shepherding the articles and working with the staff at *Information Display* through the multi-step editing and review process. The last step is writing this editorial. The whole thing is actually a very satisfying effort, especially when (as happened recently) someone told me that they keep the 2010 touch issue on their desk because they often refer to the very useful information it contains.

I hope you enjoy reading this issue!

References

¹Heraclitus (540 BC - 480 BC), quoted by Diogenes Laërtius, in “Lives and Opinions of Eminent Philosophers.” ■

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