On the Lightside: SID Mobile Displays Conference

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If Mae West were to deliver one of her most famous lines today, she might ask if you've got a portable consumer electronic device in your pocket. (And for the record, the original inquiry was about a gun, not a pickle as is widely misquoted.) Between our mobile phones, MP3 players, PNDs (portable navigation devices), and other indispensible gadgets, it's a wonder that we're not seeing pinstripe suits with cargo pants.

And what do almost all these portable devices have in common? Displays. From the user control interface to accessing information, displays are playing increasingly important roles in product features and competitive differentiation in a crowded market. With the multi-touch functions of the Apple iPhone, displays are even displacing the electromechanical buttons that used to be required on such devices.

Displays are driving the portable device market, and it should be no surprise that developments are moving rapidly in all segments of this field. That's why the Society for Information Display (SID) created a "Hot Topics" conference three years ago to cover the mobile displays landscape. This year, the third annual SID Mobile Displays 2008 was held in San Diego on September 22 and 23. A great deal of useful information was packed into those two days.

As might be expected, there were sessions that focused on the displays themselves and their related technology. Vinita Jakhanwal from iSupply helped set the stage with forecasts of 4 billion small to medium displays in 2007 growing to more than 5 billion by 2012. Of these, the mobile phone handset market is the most dominant segment, though declining prices will actually lead to a decline in total revenues in spite of strong growth in unit shipments.

There were presentations on LCD and OLED technologies, but these went far beyond the usual recap of advantages and disadvantages. For example, Chang Hoon Lee from Samsung Mobile Display discussed the need for new metrics to measure display performance, especially for sunlight readability. Mike Hack from UDC made the point that standard lifetime specifications for displays simply measure the time until the device reaches half its original light output. With some technologies, such as OLEDs, this fails to take into account any color shifts, such as is caused by differential aging of materials.

But the conference was far more than just a discussion of how to make (and measure) better display panels. It also delved deeply into many of the design and technology issues required to create a fully functional and competitive mobile device. For example, Geoff Walker from Elo TouchSystems gave a wide ranging overview of touch technologies for displays, and how these are changing how we interact with mobile devices. He included an extensive comparison of the various competing touch technologies.

And there were surprises in the touch technology area. For example, infrared touch eliminates many of problems with the electro-mechanical approaches to touch screens, but they are prohibitively complex and difficult to manufacture. Kevin O’Reilly from RPO, Inc. presented a whole new approach that adds infrared multi-touch to a portable display with just two LED emitters and a single CCD sensor. The LED light is distributed using parabolic reflectors (on for each axis), and then fiber optic light guides capture the light on the opposite edges of the display, channeling it to the single sensor. The result is a device that is easy to manufacturer, has a low part count, never needs calibration, and works with just about anything: a finger, glove, stylus, or pen.

The presentations even dug down into some of the engineering issues that end users won’t even notice most of the time. Diffusers play an essential role in the making of an efficient LCD backlight, and Brett Shriver from Global Lighting Systems and Philip Chu from Wavefront Technology presented insights into how these components could be made effectively. Julian Norley from GrafTech International showed how a new graphite sheet technology could effectively diffuse heat within mobile phone handset displays, which is a concept that is appreciated by anyone who has cooked their cheek or ear from a cell phone hotspot.

Fariborz Pourbigharaz from AMD and Kyle Baker from California Micro Devices (CMD) dug into the issue of display interfaces for mobile devices, and the implications for interconnects and their impact on device design. Packetized data and high speed serial connections help simplify the connections between components, and can open the door to mobile phone handsets with multiple displays.

But perhaps the most interesting segment of all was the final one, covering projection technology for mobile devices. Bill Coggshall of Pacific Media Associates started the session with an overview of the market and forecasts that indicate that mobile miniature projectors could reach more than 6 million units shipped in 2012. Michael O’Keefe from 3M demonstrated a pocket projector slated to start shipping

in October, that uses a tiny LCOS microdisplay with an LED light source. Sang K. Yun from Samsung Electro-Mechanics presented a novel imager based on Spatial Optical Modulator (SOM) technology that uses a micro-mechanical to create and control a diffraction array. Ian Brown from Microvision showed how their pico projector imaging technology relies on a single scanning micro-mechanical device, illuminated with tiny red, green, and blue lasers.

These are just a few of the many highlights from the presentations, but the conference had one more important feature. In spite of the packed schedule of presentations, there was still lots of time allocated to breaks and receptions. This provided more than ample opportunity to meet and speak with the presenters and the other participants. Since it is a relatively small conference, and is attended by many high level members of companies involved in the mobile device industry, many people were able to make new networking connections and I suspect that more than a few deals were initiated over the two days.

These days, you could spend your entire life simply attending one conference or trade show after another. Given the dense amount of information presented, and the chance to mingle and meet others within the industry, the SID Mobile Displays 2008 was certainly worth making room for it on the calendar.

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