

Displays of the future: Smart, bendy, 3D and more

May 27 2010, By Brier Dudley

Talk about gazing into the future. Imagine ultra high-definition TVs not much thicker than a millimeter. How about electronic books made with plastic screens that flex like a magazine? Or perhaps a display that lets you touch a virtual version of yourself on the other side of the glass?

The technology to build these crazy new [gadgets](#) is being shown in Seattle this week during [Display](#) Week, the Society for Information Display conference.

A combination science fair and industry bazaar, the event is drawing 6,000 people from most of the companies developing TVs, monitors, touch screens, electronic books and cell phone screens.

Inventors and component manufacturers will be showing their latest creations to consumer-electronics companies, looking for technology and materials to build the next iPad or wafer-thin 3-D TV.

In other words, this week's schmoozing at the Washington State Convention Center will lead to shiny toys you'll be pining for in 2011 and 2012.

It's a heady time for displays, which are moving way beyond glass panels that simply display information.

"A display is no longer an output device -- it's now also an input device," said Stevie Bathiche, research director in Microsoft's Entertainment and

Devices division's applied-sciences group.

Bathiche, one of the conference keynote speakers, has spent years developing displays that function as "membranes" between the real and the virtual worlds.

They include Microsoft's Surface computer, which turns the display into a tabletop that uses optics, vision systems and software to "see" people using the system and understand their gestures.

During his speech, Bathiche plans to demonstrate prototypes from his lab, including the "Magic Window."

"If we are able to put all the pieces together, and they work right ... it will feel like you have put a window on the wall or office and it's a window into someone else's home or office," he said. "It will be as if the person's in the next room."

The ultimate goal with interactive displays is to use "digital magic to bring people together," he said, "so we probe the gap between people who are not near each other and make them feel near each other."

BREAK FROM REALITY

Other innovations surfacing at the show are intended to take people away from reality, including technologies for building thinner and brighter TVs and 3-D movies and sports events.

DuPont, for instance, will show prototype OLED (organic light-emitting diode) panels made with a new technology that could lead to affordable TVs made from the ultrathin, ultrabright and energy-efficient material.

"We think now we've got the technology where we can make OLED a

widespread competitor for LCD," said Bill Feehery, global business director at DuPont Electronics.

OLED displays are widely used in cellphones and car stereos, but they're still too expensive for TVs, aside from a few small and outrageously pricey showpiece models such as an 11-inch model Sony tried selling for \$2,500.

A big reason for the cost is the speed and inefficiency of the current manufacturing process, in which layers of organic material are applied to a substrate then evaporated through a screen, said Feehery and John Richards, manager of the business group.

DuPont figured out a high-speed process similar to inkjet printing that sprays layers of the material onto a substrate. It results in a core TV panel that's about a millimeter thick.

The company expects its "third generation" OLED technology will appear in mass-market TVs and help bring prices down starting in 2012.

DISPLAY TECHNOLOGY

If OLED is the Ferrari of the display show, then its bicycles will be the electronic paper materials used to display digital books.

E Ink, the company that provides display technology to Amazon.com's Kindle and other devices, will show versions of its display material that are flexible and support color.

Although Apple apparently has found a hit with its LCD-based [iPad](#), there's still a huge and growing market for digital books and other products with flicker-free, electronic paper screens, according to Lawrence Schwartz, E Ink product director.

"People look to different devices for different things," he said. "The LCD screens are great for full color, watching movies and videos and highly interactive games with motion -- that's definitely their strength.

"People are looking to e-readers for the attributes you'd expect -- readability in direct sunlight, all different environments, being able to read for a long time, long battery life, thinness."

Because E Ink uses little power, it's also starting to appear on devices that haven't traditionally had displays, like thumb-drive computer-memory sticks.

"I honestly think there is an enormous opportunity still in e-books that are beyond what people are aware of today," he said.

The electronic newspaper market, for instance, has "just started to really happen with our technology -- as you have these larger, more flexible displays, it's more like a real newspaper experience," he said.

Thankfully it will be awhile before you can magically see the people behind this page. I need some time to clean my desk first.

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