InfoComm 2009

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Geoff Walker covers the touch-related showcases at the InfoComm Exhibition.

Geoff Walker is NextWindow's Product Marketing Manager. A mobile-computing industry pioneer, Geoff worked on the world's first laptop at GRiD Systems in 1982 and the first pen tablet in 1989. Geoff served as product architect and VP of Marketing at Fujitsu Personal Systems, where he architected all of Fujitsu's pen tablet products from 1993-1999. Geoff worked on Handspring's first color PDA and the predecessor of the Treo smartphone. After Handspring, Geoff ran his own consulting firm (Walker Mobile, LLC) for seven years, focusing on touchscreens, mobile displays and mobile computers. Most recently Geoff was the Global Director of Business Development for Elo TouchSystems. Geoff holds BS-Electrical Engineering and BS-English degrees from the Polytechnic Institute of New York University.

InfoComm is an industry trade show aimed at the "information communications marketplace", otherwise known as the professional audiovisual business. The show was held in Orlando, Florida in June 2009; about 30,000 people attended from 80 countries. This report covers all aspects of touch at InfoComm 2009 with the exception of touch in "AV control panels", essentially all of which is analog resistive. Because of the digital-signage orientation of this show, optical and traditional infrared were the dominant technologies shown (as expected). However, projected capacitive, vision-based optical, DST, acoustic and EMR digitizer technologies were also shown. Table 1 below lists all 24 companies covered in this report along with the touch technologies that each was showing.

Company	Primary Touch-Enabled Product	Optical	Infrared	Projected Capacitive	Vision-Based Optical	DST (3M)	Acoustic (Sensitive Object)	EMR Digitizer (Wacom)
3M	Touchscreens			X		X		
Advantech	Digital signs		X					
CyberTouch AV	Touch monitors							
DT Research	Tablets & digital signs		X					
Egan Teamboard	Whiteboards	X	X					
GestureTek	3D touch				X			
Hitachi	Whiteboards							
Hyundai	Digital signs		X					
Intelligent Lecterns	Lecterns						X	
Keytec	Touchscreens		X		X			

LG Electronics	Digital signs	X				X		
Lumio	Touchscreens	X						
Nexio	Touchscreens		X					
NextWindow	Touchscreens	X						
Panasonic	Digital signs	X	X					
Park DCS	Kiosks & digital signs		X					
Planar	Digital signs	X						
Primeview	Digital signs	X						
Salitek-Orion	Tiled digital signs	X						
Samsung Electronics	Digital signs	X	X	X				
Smart Technologies	Whiteboards	X			X			
Tablet Kiosk	Tablets							X
Vislogix	Kiosks			X				
Wacom	Pen display tablets							X

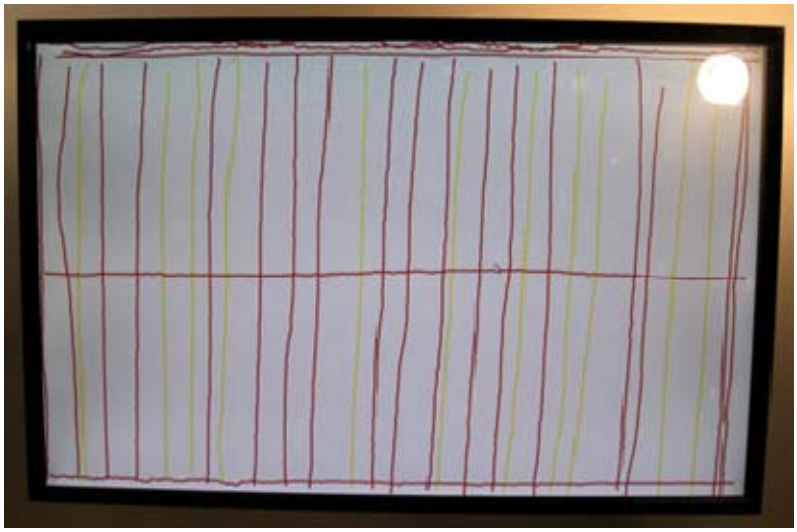
Table 1: Companies exhibiting touch-related products at InfoComm 2009

3M

3M emphasized the "Multi-Touch Developer Kit" (10-touch, projected-capacitive, Win-7, 19.0-inch monitor) that they first announced at SID in early June. They had three 19.0-inch displays showing this technology, and only two showing DST (Dispersive Signal Technology). Attendee interest was strongly biased towards the former. 3M also showed the removable touchscreen-mounting adhesive ("Command Strips") that they first announced at SID, along with their recently-announced "optimized surface-capacitive touch controller for small displays". The demos on the DST touchscreens were provided by DisplayWerks (http://www.displaywerks.com) and Bi-Search International (http://www.bisearch.com).

The performance of the 19.0-inch pro-cap display is the best that I've seen to date. Vertical and horizontal lines are mostly straight; the slew rate (maximum drawing speed) is adequate at about 20 inches/second; all ten touches work well simultaneously. The only performance defect that I could find is a little bit of noise (jagged ink) along the very top edge of the screen. 3M increased the price of the Developer Kit to $1,200 from the $1,000 they used at SID; availability is July 2009. 3M has not yet decided if they are going to market the projected-capacitive touchscreen as a component, or only sell the complete monitor.

By far the most interesting aspect of 3M's exhibit was the multi-touch demo provided by Jeff Han (Perceptive Pixel's Founder & Chief Scientist / NYU Researcher). This demo is so creative that it's extremely difficult to describe. It has many different functions. For example, suppose you create a window filled with a Microsoft Virtual Earth map. Then you create another window within the first window, filling it with a different kind of data retrieved from the Internet – perhaps Google geographic data. The inner window is like a "lens" that shows a different view of the same data. The inner window can be moved independently of the outer window; both can be simultaneously zoomed or rotated (which requires 4-finger multi-touch).



3M's 19.0-inch projected-capacitive 10-touch monitor (note noise in lines drawn along upper edge)

Another example is a search function which allows you to type in any words (e.g., "redsox" in the photo on the next page); it retrieves the first 16 images containing that word from the web. The amazing part is that it does it almost instantaneously. In fact, blinding speed is a major characteristic of this demo program. You can put video in multiple windows and then literally throw the windows around the screen much faster than I've ever seen before, and without any lag in the video at all. Apparently Jeff Han has optimized the demo in such a way as to eliminate all of Window-7's built-in gesture-recognition delays. The performance is simply amazing.

A tiny fraction of Jeff Han's multi-touch demo

Another example is the ability to freeze a video and drag a still photo out of the video, attached to it by a curved green line (like a string). You can do this multiple times to create "reference points" in the video. Then later when you drag any of the tethered stills back into the video, it resumes playing from that point.

Another example is a "fun function" that starts with a small green rectangle on the screen. You can drag the rectangle around the screen and not much happens, but when you start flicking it, a wild variety of colored lines and shapes start pouring out of the rectangle and bouncing around the screen (see the second photo on the next page). If you want to remove something from the screen, you simply flick it off the screen; to clear the screen, you simply drag your fingers (as many as you want) down the screen and it's like sweeping the screen clear. The blazing performance, the graphics, the colors, the creativity of the functions all combine to make a multi-touch demo that's like nothing I've ever seen before. It's simply amazing. http://www.3mtouch.com

Advantech

Advantech's digital signs include infrared touch as an option, but Advantech wasn't emphasizing touch. In the opinion of one of the booth reps (an inside sales manager), touch in digital signage isn't going to go anywhere until there's a clear business model that justifies touch. In his opinion, there isn't yet a well-defined method of monetizing the value of a user touching the screen. While interactivity has the ability to provide additional information to the advertiser about what the user selected, turning a transactional touch into cold, hard revenue still hasn't been accomplished yet. http://www.advantech.com

CyberTouch AV

A CyberTouch AV booth rep said that they are working on enhancing their applications to use multi-touch, and they will have it out soon. Since CyberTouch uses resistive touch technology exclusively, it's unclear what technology they will be using for multi-touch. The best guess is probably digital resistive; second guess is probably projected capacitive. This is a good example of a typical "command & control" application where multi-touch seems superfluous, but the vendor is working on adding multi-touch anyway. Multi-touch is here to stay – Thanks, Apple! http://www.cybertouch.com/av.html

DT Research

DT Research develops and manufactures tablet devices and digital signage solutions for vertical markets. According to a booth rep, DT Research uses traditional IR for touch in all their WebDT digital signage products "because it's the most durable touch technology that's available". They use a controller sourced from IRTouch in China but they make their own frames (sensors) for cost reasons. Their digital signage appliances cover 12- to 65-inches. http://www.dtresearch.com

Egan TeamBoard

Egan's standard whiteboards use analog resistive touch technology, like many other competitive products, but they claim to also offer optional infrared touch (up to 110-inches) and optional optical touch. They weren't demoing the optical touch, and I can't find any mention of anything other than resistive on Egan's website, so I'm a bit skeptical.

One interesting feature of Egan's whiteboards is a surface that allows the removal of permanent marker. The removal is accomplished by marking with dry-erase ink on top of the permanent (e.g., Sharpie) ink; the combination of the surface coating and the dry-erase ink absorb the permanent ink. I saw it demoed, and it's quite amazing. http://www.teamboard.com

GestureTek

GestureTek focuses exclusively on "3D touch"; they don't do anything in what they call "X-Y touch" (i.e., traditional two-dimensional touchscreens). The GestureTek booth included three main demos, a Surface-like table, a floor-projection "cube", and a 3D motorcycle-driving game. Of these I found the game to be the most interesting; it's sort of like a Nintendo Wii game without the controller. The gesture-reading camera uses cues such as the distance between your hands to control speed and the rotational angle of your hands to control direction.

GestureTek's motorcycle-driving game

The performance of the Surface-like table was very poor; dragging a photo across the screen with single-touch was very jerky, while rotating a photo with two touches produced unpredictable results. A booth rep said that the poor performance was due entirely to the IR content of the overhead sodium-vapor lights. http://www.gesturetek.com

GestureTek's "Cube" floor projector and Surface-like touch table

Hitachi Home Electronics

Although Hitachi was showing only whiteboards and no display-based touch, a tabletop projector and associated whiteboard caught my eye (see the photos below). The application was a Sudoku game; the UI for selecting a digit (shown in the right photo below) was interesting but clumsy. http://www.hitachi.us/digitalmedia

Hitachi's table-top projector and whiteboard running a Sudoku game

Hyundai IT America

Hyundai showed lots of displays but only one had touch; it was a 46" with traditional infrared touch. One of the more interesting displays was a tiled 3D display that used the polarization method. http://www.hyundaiit.com

Intelligent Lectern Systems

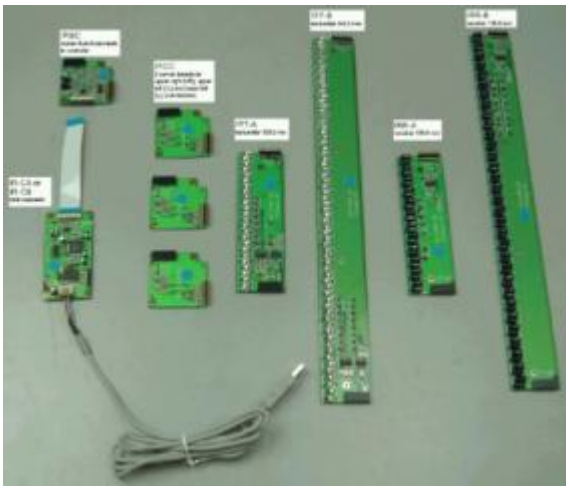
Intelligent Lectern Systems demonstrated a zero-bezel-style lectern using Sensitive Object's Virtual Acoustic Matrix (bending wave) touch technology (http://www.sensitiveobject.fr/spip.php?lang=en). The border surrounding the lectern's LCD was loaded with a QWERTY keyboard and dozens of illuminated soft-keys. Bending-wave touch (including Elo's APR and 3M's DST) is ideal for zero-bezel-style applications such as this because the entire substrate is touch-sensitive, not just the area where the LCD is located. http://www.intelligentlecterns.com

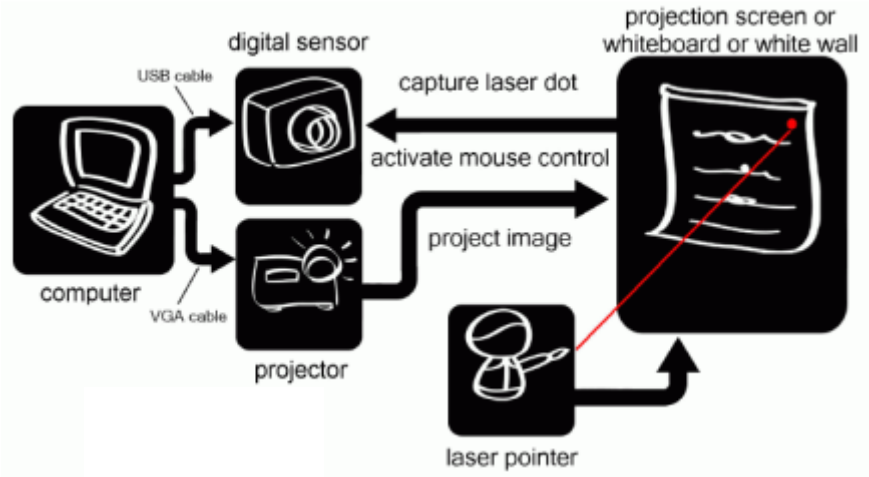
Lectern using Sensitive Object's acoustic touchscreen for zero-bezel effect with many soft-keys around the LCD

Keytec

Keytec is a touchscreen manufacturer in Dallas, TX; I've always considered them to be a bit of a maverick. At InfoComm they were focused mainly on laser-touch for gaming and large-format applications, and on traditional infrared touch. The latter is available in standard sizes from 32- to 65-inches, and in an interesting resizable form in which the integrator connects IR transmitter and receiver segments to build a touch screen from 5" to 70" in any aspect ratio. Segments come in two lengths, 131 mm (~5-inches) and 349 mm (~14-inches).

Keytec's laser-pointer touch (trademarked View Touch) isn't new; it's been around at least a couple of years. But as vision-based optical touch such as Microsoft surface becomes more visible (no pun intended), Keytec is taking the opportunity to increase the marketing visibility of View Touch. Here is Keytec's block diagram of how View Touch works. http://www.magictouch.com





On the left are Keytec's components for build-it-yourself resizable IR touchscreens. On the right is a block diagram of Keytec's laser-pointer touch technology

LG Electronics

LG had a very large booth dedicated to showing many different applications of digital signage (they called their booth "Digital City"), but there were only two examples of touch. The first was a 42-inch wayfinder display at the entrances to the booth (photo to the right); it was integrated by Kristel Displays (http://www.kristel.com) and used 3M's DST touch technology (one of Kristel's favorite technologies). The second was a 60-inch display in the Educational section of the booth; it used the NextWindow optical touchscreen, integrated by Intas (http://www.intas.co.kr). http://www.lgcommercial.com

Touch at LG Electronics: wayfinder using 3M's DST

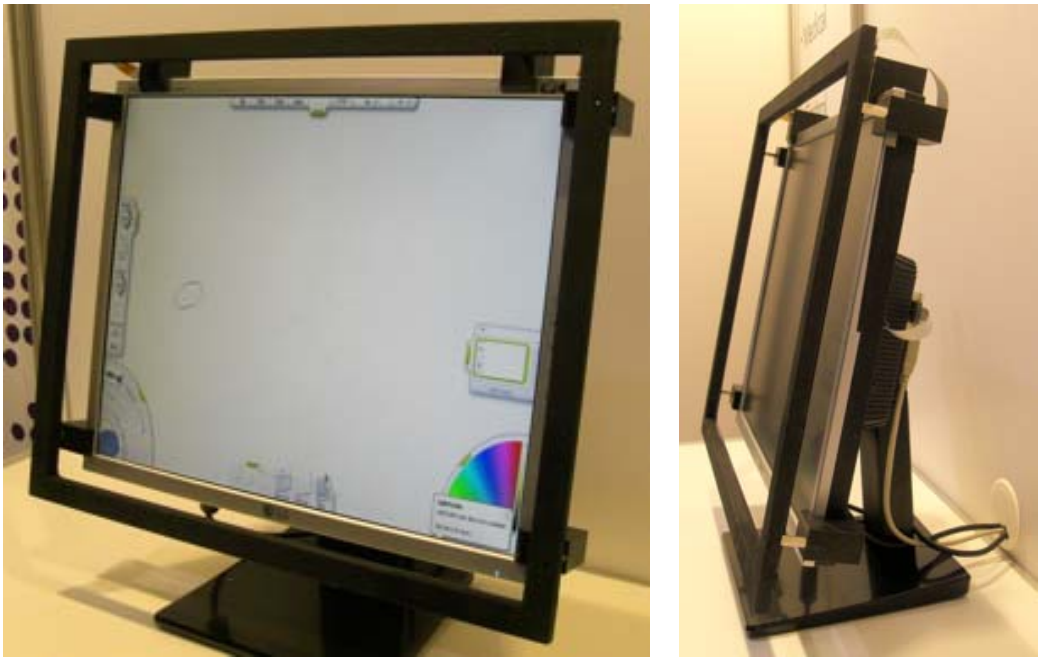
Lumio

Lumio was showing three displays: two 22-inch and one 42-inch (an AiO). One of the 22-inch displays showed what they called "remote touch". The touch frame was suspended about one inch above the LCD; a booth rep said that this is aimed at medical applications where the users want to avoid actually touching the display. The demo worked, but it's always a little tricky to touch small targets with your hand suspended in mid-air.

The performance on the 42-inch AiO (running the standard Fingertapps demo program) and the 22-inch (running a photo collage application from UI Centric) was very poor. Even in single touch, the 42-inch performance was poor.

The calibration at the edges was way off and there were dead areas along the sides. A booth rep said that they were unable to adjust the touchscreen to match the resolution of the AiO's LCD. Outside of the Lumio booth, the only Lumio touchscreens I found at the show were in the Primeview booth (see the Primeview section for more information). http://www.lumio.com

Lumio's 22-inch (left) and 42-inch (right) touch displays



Lumio's "remote touch" for medical applications

Nexio

Nexio is a Korean manufacturer of traditional IR touchscreens from 10.4-inch to 103-inch and touch monitors from 10.4- to 19-inches. At CES 2009, Nexio seemed to be highly focused on selling multi-touch screens through partners such as WorldBridge (http://wbweb.co.kr/hci/eng/) into emerging applications such as multimedia marketing. At InfoComm a booth rep said that they are no longer working with WorldBridge and are now focused on "delivering hardware to integrators". I took this to mean that they got a bit too far ahead of the market and have now returned to the cold reality of what it actually takes to sell touchscreens. Nexio's booth included only one multi-touch display – the usual Google Earth demo running on a 42-inch display. The price of the 42-inch IR touch overlay was $1,600. http://www.inexio.co.kr

NextWindow

NextWindow is the leading supplier of optical touchscreens. They were exhibiting two product lines, their large-format touch overlay & integrator components, and their OEM components currently being sold into the consumer all-in-one computer and monitor market. The latter components were displayed in the form of the second-generation HP TouchSmart and the first-generation Dell Studio One. As shown in Table 1 at the beginning of this article, there were at least 10 optical touchscreens on display at InfoComm 2009. All of these were from NextWindow except one from Lumio and one from Smart Technologies. By the same measure, there were at least nine traditional infrared touchscreens at the show; this represents a gain in "market share" for optical compared with 2008, where the majority of large-format touchscreens were traditional infrared. http://www.nextwindow.com

David Villarina from NextWindow demonstrating a large-format touch overlay (left) and the new Dell Studio all-in-one computer that incorporates NextWindow's PC-OEM touchscreen components.

Panasonic Broadcast & Television Systems

From a touch perspective, the centerpiece of the Panasonic booth was an 85-inch plasma display using the NextWindow optical touchscreen, integrated by U-Touch and running demo software from UI Centric (shown in both photos below). The touchscreen was applied directly on top of the plasma front glass, without adding an additional cover glass. A very nice feature was the ability to erase annotation using a standard felt whiteboard eraser; this was accomplished by making use of the object-size recognition capability of the NextWindow optical touchscreen. Other than whiteboards, there was only one other touch application in the Panasonic booth: a wayfinder that used traditional infrared touch. The only unusual thing about this display was a slanted (beveled) IR window; a booth rep said that it was designed to make it easier to clean the display. http://www.panasonic.com

Kalem Fletcher from UI Centric demonstrates the 85-inch Panasonic plasma display with the NextWindow optical touchscreen

Park DCS

Park DCS is a Korean manufacturer of kiosks and digital signs; they were showing 42" and 52" with touch. They use only traditional IR touch, which they claim to manufacture themselves (it was unclear if they use a third-party controller). A booth rep said that they are currently developing outdoor IR touch in response to what they see as significant market demand. http://www.parkdcs.com

Planar

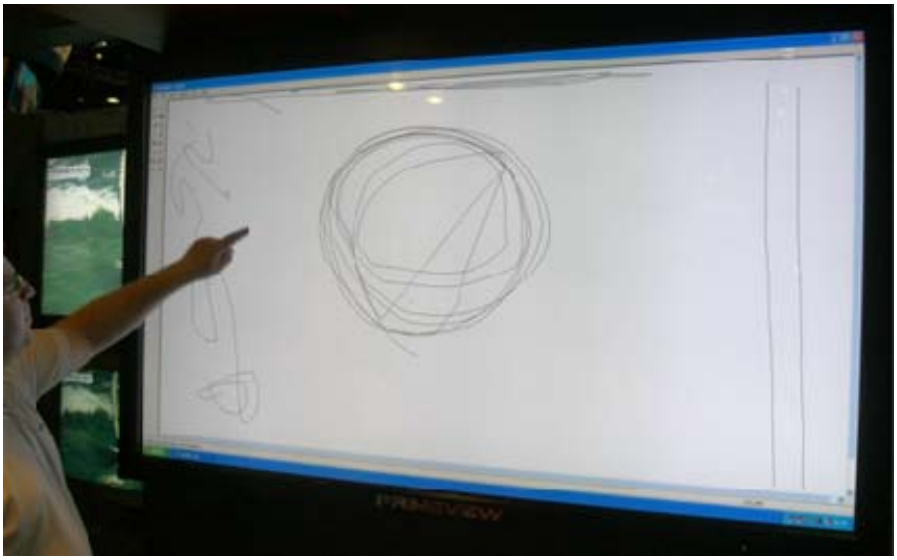
Planar was showing a 70-inch LCD equipped with a NextWindow optical touchscreen integrated by U-Touch (http://www.u-touch.co.uk). The touch performance was adequate. http://www.planar.com

Liam Slattery from U-Touch demonstrating NextWindow's touchscreen on the 70-inch Planar LCD

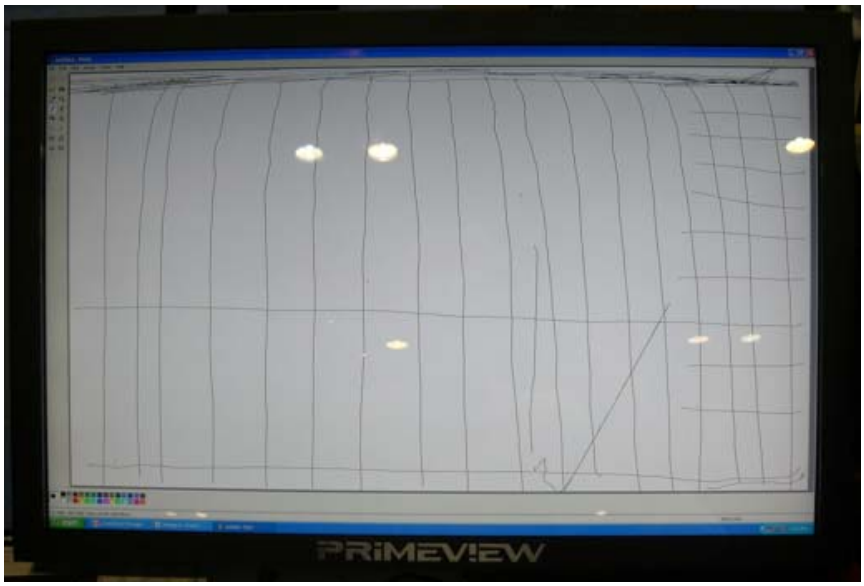
Primeview

Primeview is a monitor integrator that develops display-based products from 5- to 82-inches for vertical markets. Their sweet spot is 32- to 42-inches. Primeview has started allowing space in every display for touch; if a given project doesn't need touch they simply insert a filler. In their booth, Primeview showed a 70-inch LCD with the Lumio touchscreen. The performance with one or two touches was adequate, with some flakiness at the top of the screen (e.g., the cursor diverged from the finger by several inches).

Primeview also showed a 24-inch AiO with a single-touch Lumio touchscreen (they said it was supposed to be two-touch, but that Lumio had not been able to get it working properly). I drew the vertical lines shown in the third photo below; there is clearly some non-linearity where the lines bend inward as they approach the top of the screen. There is also some general flakiness at the top of the screen – notice for example, the zingers heading off towards the top right corner of the screen. Finally, the short diagonal line towards the bottom right of the screen was caused by a piece of dust falling on the screen (which was at about a 75-degree angle). http://www.primeview.biz



Primeview's 70-inch LCD using the Lumio touchscreen



Primeview's 24-inch AiO LCD using Lumio's touchscreen

Salitek-Orion Displays

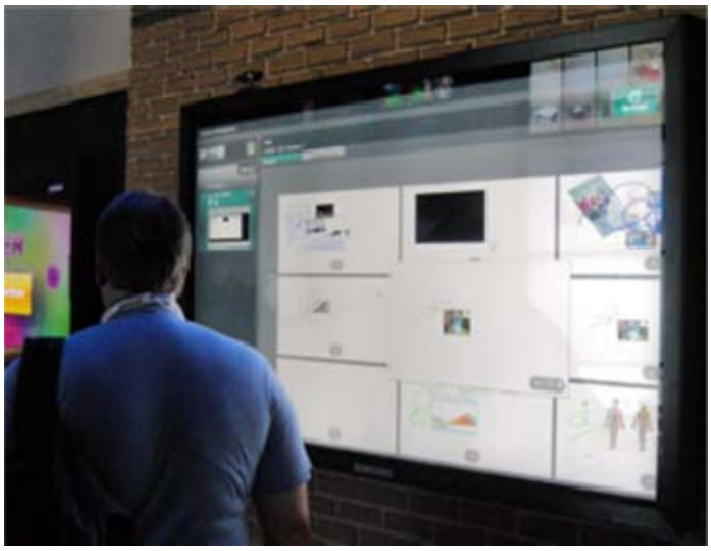
Salitek, the US importer for Orion Displays, focuses on creating multimedia displays consisting of tiled 42-inch plasma screens (with less than 4 mm seams!). In one portion of their booth they were showing an 84-inch (42-inch x 4) display using a NextWindow optical touchscreen and running an application written by Content Interface (http://www.contentinterface.com). Personally I found the application to be very attractive. Leveraging the tiled nature of the display, it allowed splitting and replicating windows almost ad infinitum (as hinted at in the left photo below). In the right photo below, there were 16 simultaneous video windows. http://www.salitek.net

Orion's tiled 84-inch plasma display using NextWindow's optical touchscreen and an amazing demo application from Content Interface (not Fingertapps)

Samsung Electronics

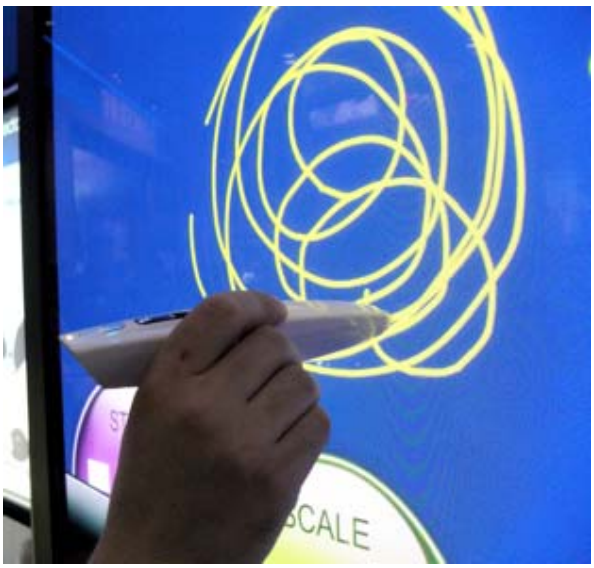
In my opinion, Samsung had by far the most touch-oriented exhibit in the entire show. They showed seven different touch-enabled products and/or applications using four different touch technologies. Each of the seven is described separately on the following pages with associated photos.

In an exhibit entitled "Interactive Whiteboard", Samsung showed a 65-inch LCD with the NextWindow optical touchscreen running an educational application. There is a webcam on the upper left corner of the LCD frame; this is intended for student interactivity. The performance of the NextWindow touchscreen seemed very good, although it was only single-touch. I asked the Samsung booth rep about the problem of fingerprints on the touchscreen. He said that Samsung is working on an anti-fingerprint film that is intended to be laminated on the front surface of the cover glass. He said that while the film has a hardness of 5H, that isn't enough to prevent damage from intentional vandalism by a student.



Samsung's 65-inch LCD education-market demo with NextWindow's optical touchscreen

Samsung demonstrated what might be considered a new touch technology – I call it "Plasma IR". The technology starts with a standard plasma display modified to intentionally produce modulated IR from each pixel (normally the IR produced by a plasma display is filtered out by the front-of-screen filter assembly). A hand-held IR receiver (shown in the right photo below) receives the IR, demodulates it and transmits a signal via Bluetooth to the display controller which then calculates the touch location. The IR receiver includes a tip switch to ensure that it is actually touching the screen before it signals the display controller. The system is designed to support four simultaneous IR receivers. Is this really a practical touch technology, and does the world really need yet another touch technology? I don't think so!



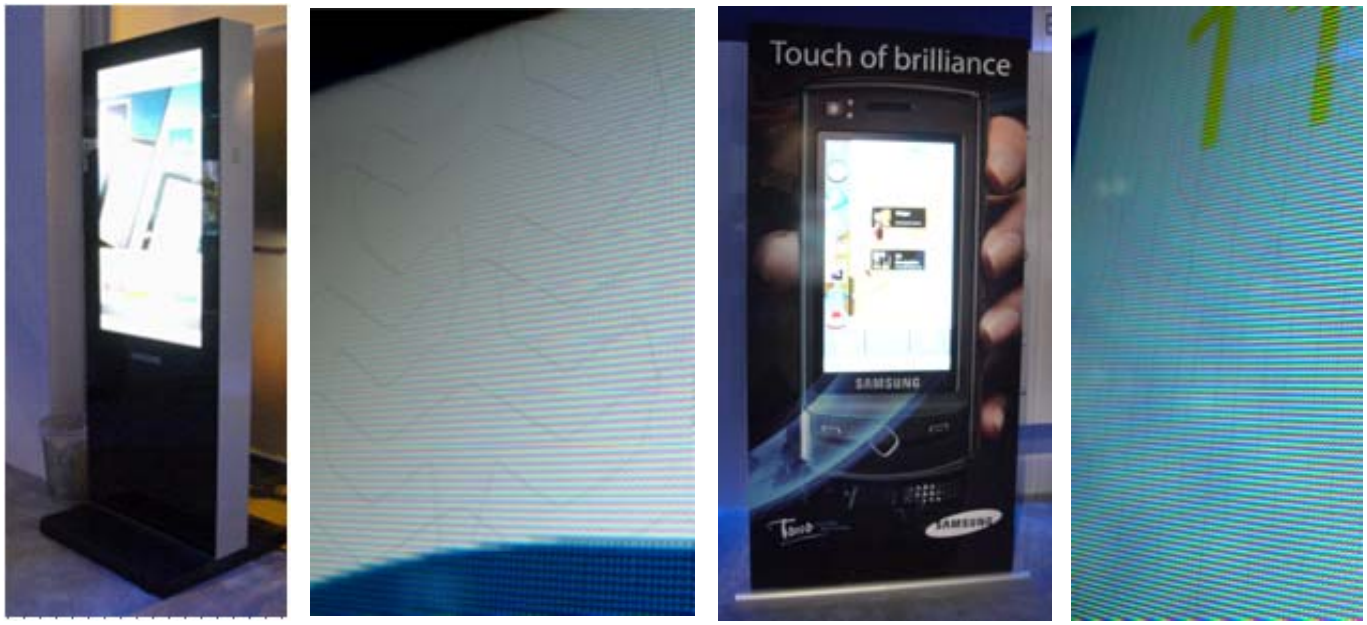
Samsung's "Plasma IR" touchscreen

As an example of "typical" interactive retail signage, Samsung showed an 85-inch LCD running a car-paint-selection application (left photo on the next page). Interactivity was provided by a traditional infrared touchscreen.

The problem I have with this application is the lack of economic justification. Where's the payback? Samsung also used traditional infrared touch in a typical wayfinder sign that provided details on the various sections of Samsung's large booth (right photo below).

Samsung's 85-inch interactive digital retail sign (left); Samsung's 65-inch interactive wayfinder sign (right), both with traditional IR touchscreens

Samsung showed a very elegant zero-bezel kiosk using what a booth rep insisted is Samsung's own projected-capacitive touch technology. You can see from the reflections in the left photo on the next page that the entire front surface of the kiosk is a single sheet of glass; the pro-cap sensor film is laminated onto the back surface of the glass in the area of the LCD. The right photo on the next page shows a contrast-enhanced close-up of the wire pattern (in reality the wire is just barely visibly, and only when viewed on a white background). The pattern itself is quite unusual. In a normal pro-cap sensor, each X-Y intersection forms a capacitive sensing node; to maximize resolution, the number of intersections is usually maximized – that's why pro-cap sensing patterns are usually made up of diamond (zig-zag) shapes. This pattern is notable for its lack of intersections. The pattern design calls into question the method by which the controller senses touch.



The left two images show Samsung's elegant zero-bezel kiosk with Samsung's own projected-capacitive touchscreen (and an enhanced-contrast close-up of the sensing wire pattern). The right two images show a different Samsung kiosk with a non-Samsung projected-capacitive touchscreen (and an enhanced-contrast close-up of the sensing wire pattern)

Samsung also used projected-capacitive in another zero-bezel kiosk entitled "Touch of Brilliance" that was promoting Samsung's smartphones (right two photos above). However, a booth rep insisted that the pro-cap technology used in this kiosk was not a Samsung product and that it was "just for this show". The sensing wire pattern was very different than the previous kiosk – although it too was notable by its lack of intersections. This pattern was even more invisible and very difficult to photograph.

The most unique touch application in the Samsung booth was a touch-operated vending machine. According to Russell Young from Samsung (shown in the left photo below), this is an actual product developed for Kraft and built by Crane. Why put touch in a vending machine? Kraft's reasons are based on marketing. Suppose the customer puts money in the machine and buys a package of mini-Oreos. Kraft research has shown that mini-Oreo buyers typically also want something salty to balance out the sweetness; the vending machine can then offer the customer a discount on an additional purchase of Planters peanuts. It's all about communicating with the customer and maximizing the amount of money extracted from the customer's pocket. The vending machine, which runs Windows XP Embedded, can make use of the big (46-inch) LCD to communicate lots of information to the customer, e.g., the nutritional info shown in the right photo below.

The touch technology used is Samsung's projected-capacitive, laminated to the inner surface of a sheet of chemically-strengthened (CS) glass for vandal-proofing. This is an application where an above-surface touch technology such as optical or infrared would not be practical from a vandal-proofing point of view. http://www.samsung.com

Samsung's touch-LCD vending machine

Smart Technologies

Smart Technologies showed a 65-inch display equipped with Smart's DViT (Digital Vision Touch) overlay and running Windows 7 (left photo on the next page). The performance was very poor. Trying to rotate a photo in Microsoft's Touch-Pack Photo Collage application was an exercise in frustration – it almost couldn't be done. Even in single-touch the performance was poor; double-clicking to execute a program typically took more than six tries. Playing the Touch Pack's Rebound game (shown in the right photo below) was difficult at best because of the

erratic touch functionality. Playing the Touch Pack's Physics game was almost impossible; the erratic nature of even single-touch made it exceptionally difficult to move and rotate objects.

Smart Technology's Windows-7 multi-touch demonstration (using DViT); Touch Pack Photo Collage application (left) and Touch Pack Rebound game (right)

Smart showed two Surface-like vision-based touch tables; a slide presentation in another part of their booth illustrated several varieties of tables (see the two photos below). Smart appears to have integrated touch-table functionality into their K-3 educational product line; the left photo on the next page is an example of educational game content displayed on one of the tables.

Smart Technologies' Surface-like vision-based touch tables (two slides photographed on-screen from one of Smart's presentations)

Smart also showed an interesting transparent & reversible rear-projection screen (shown in the right photo on the next page). "Reversible" here means that the user can touch an on-screen icon and flip the image so that it's readable from the back side of the screen. The projection surface is a frosted film on the back side of the glass. The booth rep said that the technology was originally created for an ambulance application where the EMTs needed to be able to access trauma data both inside and outside of the vehicle. The touch technology used on both sides of the screen was DViT, but it wasn't physically the same hardware as on the Windows-7 display. I was unable to identify exactly how it was configured. http://www.smarttech.com

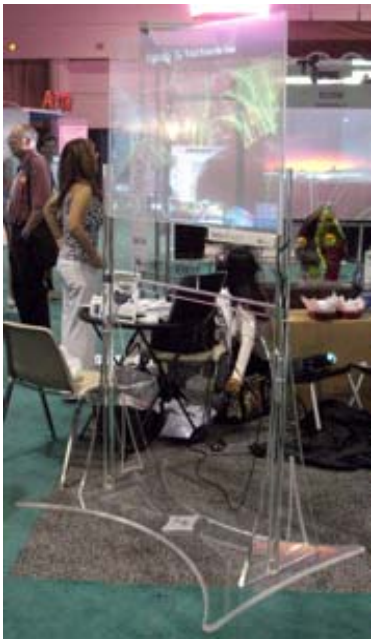

Screen photo from one of smart's Surface-like touch tables (left); Smart's transparent reversible projection screen (right)

Tablet Kiosk

Tablet Kiosk started life as a supplier of consumer Tablet PCs; now they're focused exclusively on vertical markets. Recently they've been getting some traction in the "controller" space, e.g., stadium audio system controllers and high-end home-control systems. They have expanded their tablet product line significantly in the last year or two; one new product has snap-in I/O modules that support a variety of interfaces. Most of their products use standard analog resistive touch, since they tend to emphasize touch rather than pen, but one new product has both a resistive touch screen and the Wacom EMR pen digitizer (Wacom's latest controller supports both technologies in a single ASIC). http://www.tabletkiosk.com

Vislogix

Vislogix is a small provider of interactive touch solutions. The most interesting product they were showing was the "Holo-iTouch", a transparent rear-projection touch-display package made entirely out of acrylic that breaks down into a surprisingly small travel case. The list price of the Hoto-iTouch is $14,100. The touchscreen is constructed using Visual Planet's projected-capacitive "ViP Interactive Foil" film (http://www.visualplanet.biz), which is available from 30- to 116-inches. http://www.vislogix.com




Vislogix's "Holo-iTouch" using Visual Planet's projected-capacitive film

Wacom

Wacom showed only their interactive pen displays (17-, 19- and 21-inch), not the new projected-capacitive and surface-capacitive touchscreens that they've been showing at other shows lately. The 21-inch pen display (DTZ-2100) includes two finger-sensitive (capacitive) "Touch Strips" for zooming and scrolling. These pen displays are typically sold to integrators rather than end users. http://www.wacom.com http://www.wacom-components.com

Summary: InfoComm 2009 was a vibrant and exciting show for touch – even though touch isn't really what the show is about. Optical and traditional infrared dominated the show floor, with neither one having a strong lead. Several varieties of projected capacitive were on display, as well as examples of vision-based optical, DST, acoustic and EMR digitizer technologies (and of course lots of analog resistive in AV "control panels".

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