

The Future of Interactive Displays

Technologies, Applications, Industry and Markets

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April 26, 2011

Agenda

- What are Interactive Displays?
- How are they changing?
- What difference will they make?
- Interactive Display industry structure
- Market Outlook for Interactive Displays 2011-2016
- Key Interactive Display trends
- Interactive Display applications
- New opportunities for Interactive Displays

What are Interactive Displays?

- Interactive Displays are not just information displays with an integrated touch screen for input
- Interactive Displays are becoming
 - More complex with multiple input and output modalities
 - More diverse and with more diverse applications
 - More widely appreciated and applied

What are Interactive Displays?

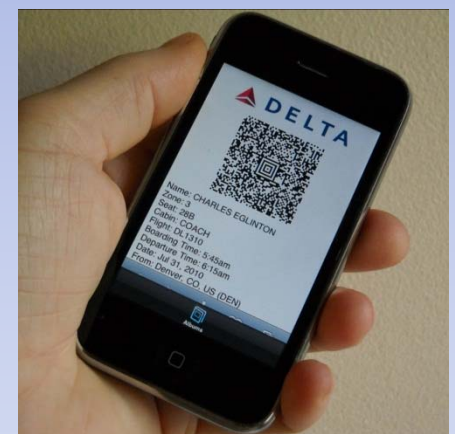
- Interactive Displays are not just information displays with an integrated touch screen for input
- Interactive Displays are becoming
 - More complex with multiple input and output modalities
 - More diverse and with more diverse applications
 - More widely appreciated and applied
- Interactive Displays will see growing market opportunities

What are Interactive Displays?

- Interactive Displays
 - Are any dynamic information display that involves the user or users in direct interaction with the displayed information
 - Are **not** static
 - Are **not** used for generally passive viewing
- Displays are made interactive through the addition of input and output devices
 - Game controllers
 - Touch screens
 - Voice, gesture, facial recognition
 - Actuators - speakers, haptic/force feedback
- Interactive displays require integration of electronic hardware and software
 - Processors, Memory, Networking
 - Operating system and application software

What are Interactive Displays?

- Examples of interactive displays include
 - Automated teller machines
 - Credit card signature terminals
 - Video games
 - Check-in kiosks



Sources: Atari, Frontier, Delta

- These roles illustrate how Interactive Displays can substitute machine interaction for interaction with a person



What are Interactive Displays?

- Today's examples of interactive displays
 - Nintendo Wii, Microsoft Kinect



Source: Reuters



Source: iRobot

- Users and Consumers will in future increasingly expect that they should be able to interact with displays in any setting

Interactive Display Applications



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April 26, 2011

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Interactive Display Applications

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March 22, 2011, 1:12 PM

Controlling Times Square's Screens With a Phone, for Real This Time

By JOSHUA BRUSTEIN



Robert Caplin for The New York Times

A video that showed a man controlling a screen in Times Square with his phone turned out to be a hoax.

Adi Isakovic called [MTV](#) last fall to propose a deal: he would stream live video, [text messages](#) and other content directly from his phone onto the company's gargantuan video screen in Times Square. The demonstration would give Mr. Isakovic the chance show off a technology he had been

Source: NY Times

How are Interactive Displays Changing?



2010 Interactive Displays Conference

CONFERENCE AGENDA – WEDNESDAY, APRIL 21 – THURSDAY, APRIL 22



Day 1 – Wednesday, April 21, 2010

- 8:00** Continental Breakfast
- 9:00** Conference opening remarks
Valerie King, Conference Producer
INTERTECHPIRA
- 9:05** Opening remarks from conference chair
Jeff Han, Founder, PERCEPTIVE PIXEL

Session 1: Market and Industry Overview

- 9:15 Touch Panel Market Analysis**
- Overview of over 170 touch panel suppliers and over a dozen touch technologies
 - New trends of the touch panel market: Windows 7 of touch, in-cell touch, projected capacitive, etc.
 - Market forecast of touch panel market from 2009 to 2015
- Dr. Jennifer Colegrove, Director – Display Technologies, DISPLAYSEARCH**
- 9:45 How Mass Adoption will Change Multi-Touch Computing**
- Trend: Heading towards the mass market
 - Moves in the ISV market
 - Beating everyone to the game – creating multi-touch hooks
 - Windows 7 – What's next in the OS world?
- Rick Seger, President, N-TRIG INC.**
- 10:15 Making Sustainability Choices in Interactive Displays**
- Sustainability in innovation
 - Sustainability as strategy
 - What is green technology anyway?
 - The reality of environmental regulation
 - ...And how to choose where you are in this list

Session 2: Haptic, Gesture, Immersive and 3-D Technology

12:00 The Future of Multi-touch Technology
Jeff Han, Founder, PERCEPTIVE PIXEL

KEYNOTE

12:30 Roundtable luncheon

3:30 Clothing the Emperor: Creating Authentic User Experiences for New Interactive Displays

- Acknowledging that new hardware requires new interaction paradigms
 - Windows, icons, menus and pointers created for the desktop
 - Examining methods and practices for creating the WIMP equivalent for next-generation technologies
- Daniel Wigdor, User Experience Architect, Microsoft Surface, MICROSOFT**

3:00 High-Definition Haptics and Optimized User Experience

- Value of haptics in UX
- New technology – piezo-based high-definition haptics; multi-actuator solutions
- Design benefits: range, strength, precision; reduces lag time and noise; easy integration and tools
- Market applications
- Future of haptics

Christophe Ramstein, CTO, IMMERSION CORPORATION

3:30 Afternoon networking break

4:15 The Rise of the Slate PC

- The huge potential and benefits of the new generation of mobile computers and the necessity of multi-touch
- Guillaume Largillier, Founder and Chief Strategy Officer, STANTUM**

4:45 Technology Spotlight

10 minute presentations/demonstrations on the latest in interactive technology. If interested in presenting, contact Valerie King at valerie.king@pira-international.com

SPOTLIGHT EVENT

5:45 Evening networking reception

Day 2 – Thursday, April 22, 2010

8:00 Continental Breakfast

9:00 Conference opening remarks
Valerie King, Conference Producer
INTERTECHPIRA

9:05 Opening remarks from conference chair
Jeff Han, Founder, PERCEPTIVE PIXEL

9:15 The Mobile Human Interface

- Touchscreens are here to stay, but where is the technology headed?
- Designing the next-generation user interface
- Introducing the mobile human concept handset
- A look ahead

Dr. Andrew Hsu, Technology Strategist, SYNAPTICS

9:45 Advances in Public Display Interaction

- Multi-person approaches
 - Cell phone integration
 - Interaction of depth cameras
- Francis MacDougall, CTO, GESTURETEK**

10:15 TBD
Keith Pradhan, Global Director of Product Management, TYCO ELECTRONICS

10:45 Morning networking break

Session 3: Applications of Gesture, Haptic, Immersive and 3-D Technology

11:15 Beyond Multitouch!? – Challenges and Solutions for ContactFree, Gestural Interaction
Paul Chojecki, FRAUNHOFER INSTITUTE FOR TELECOMMUNICATIONS, HEINRICH-HERTZ-INSTITUT

11:45 Multitouch: an Integrated View of the Market
Miguel Fonseca, Chief Business Officer and Board Member, DISPLAX INTERACTIVE SYSTEMS

12:15 Roundtable luncheon

2:00 Displays and Out-of-Home Entertainment

- Everyone is a gamer!
- Present and future of interactive displays and out-of-home entertainment
- How customer interaction changes everything

Brent Bushnell, CTO, TAPCODE, INC.

2:30 Afternoon refreshment break

3:00 Display for Mobile Devices

- Basic requirements
- Characterization
- Display technologies for future mobile devices

XiaoPing Bai, MOTOROLA

3:30 Redefining Multi-Touch: Large Scale Interactive Displays in the Convergence Era
Petri Martikainen, CEO, MULTITOUCH LTD.

4:00 The Seven Samurai for Selecting Touch Technology

- Technology: Resistive vs. Capacitive vs. Projective Capacitive vs. Optical
- Mobile considerations for view ability: Optical Bonding, contrast and brightness



How are Interactive Displays Changing?

- Sensors, actuators, electronic hardware and software are now sufficiently advanced yet relatively inexpensive so that high performance Interactive Display systems are coming into widespread use
- Interactive Displays are becoming system level products rather than components

What will Interactive Displays be in Future?

- Interactive Displays will address societal needs and wants encompassing
 - Communication
 - Education
 - Telemedicine
 - Entertainment
 - Advertising
- Today **total available market revenue** for these applications that could incorporate or be enhanced by Interactive Displays exceeds \$600 Billion

TAM



Sources: Cisco, Reuters, NuPhysicia

What Difference Will Interactive Displays Make?

- Outcomes
 - Communications
 - Telepresence systems improve communications and enable reduced travel costs and reduced environmental impacts
 - Entertainment
 - Interactive entertainment opportunities will expand providing a more engaging experience and perhaps yield improved personal fitness
 - Education
 - Instructional systems will better convey complex information leading to improved learning and comprehension
 - Healthcare
 - Telemedicine will yield better access to treatment and lower health care costs
 - Advertising
 - Improved engagement with customers leading to increased sales

Interactive Display Industry Structure

- Sectors
 - Venue Owners and Operators
 - System Owners and Operators
 - Networking
 - System Integrators
 - Content Authoring and Distribution
 - Software Providers
 - Hardware/Device Manufacturers
 - Researchers



Interactive Display Industry Sectors

Sector	Role/Function
Venue Owners and Operators	Public Venues, Sports, Transportation, Events and Exhibitions, Gaming Arcades, Museums, Educational and Training Institutions, Cinemas, Restaurants and Clubs
System Owners and Operators	Outdoor and Indoor Advertising
Networking	Wired and Wireless Networking Services
System Integrators	Integration of Display System Solutions
Content Authoring and Distribution	Digital Signage Content
Software Providers	Application Software, Middleware, Content Development and Management, Operating System (OS) Software
Hardware/Device Manufacturers	Displays, Input/Output Devices, Networking, Wireless
Researchers	Interactive Display Research and Development

Market Outlook for Interactive Displays

- Identify key Interactive Display market segments
- Discuss the total market size for the key market segments
- Analyze the penetration of Interactive Displays in these segments
- Examine the forecast revenue for products and services incorporating or enabled by Interactive Displays

Market Outlook for Interactive Displays

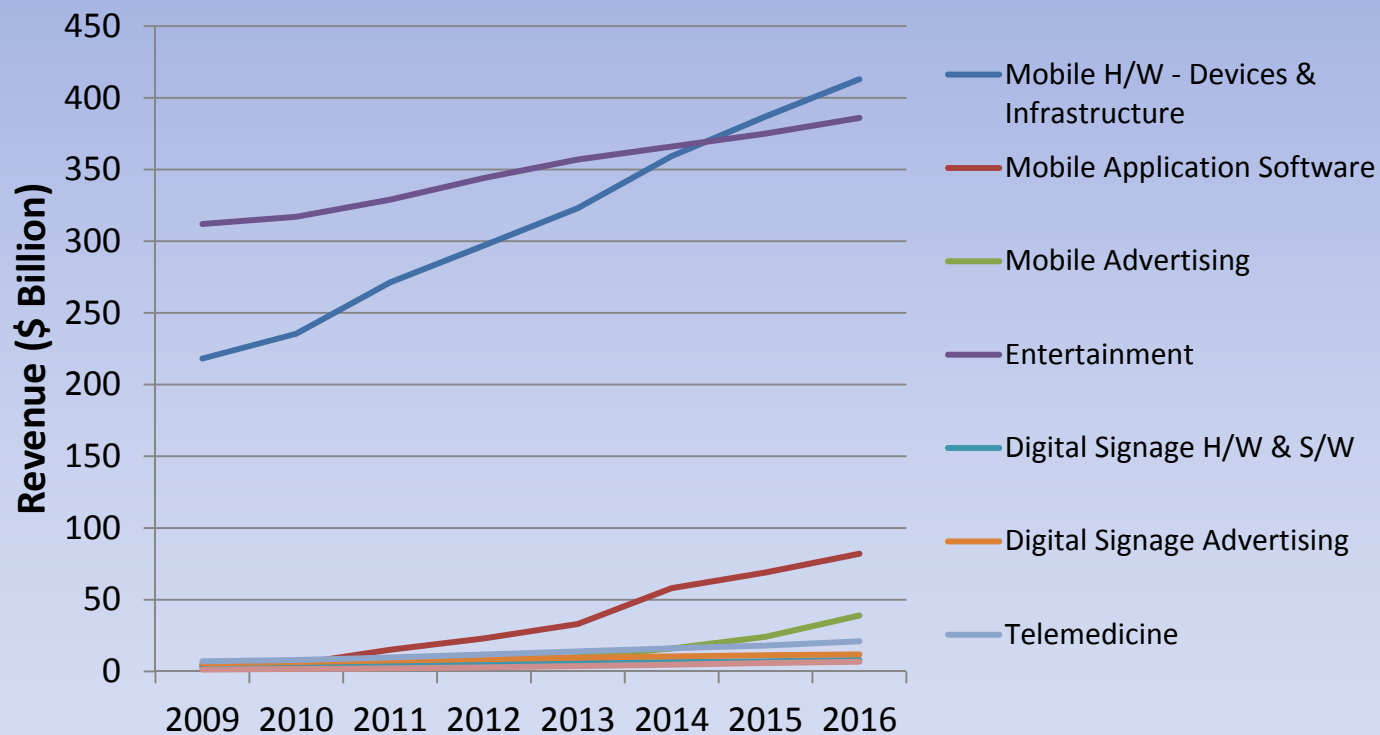
- Key market segments
 - Mobile Devices
 - Entertainment
 - Digital Signage
 - Educational, Training, Exhibit, Industrial, and Institutional
 - Telemedicine
 - Telepresence
- Today some penetration of Interactive Displays in each of these segments
- Degree and Rate of penetration of Interactive Displays varies by segment

Interactive Display Market Segments

Market	Platform
Mobile Devices	Mobile Phones, Portable Media Players, Portable Gaming Platforms, Digital Cameras, Tablet PCs, Notebook PCs, Unified Mobile Device
Entertainment	Cinema, Home Theater, Out of Home Venues, Gaming
Digital Signage	Advertising, Retail, Point of Sale, Merchandizing, Public Information Displays
Educational, Training, Exhibit, Industrial, and Institutional	Classroom education, Exhibits, Collaboration, Training, Simulation, Marketing
Telemedicine	Diagnosis, Patient Education, Collaboration, Training
Telepresence	Collaboration, Robotics, Interpersonal and Group Communications

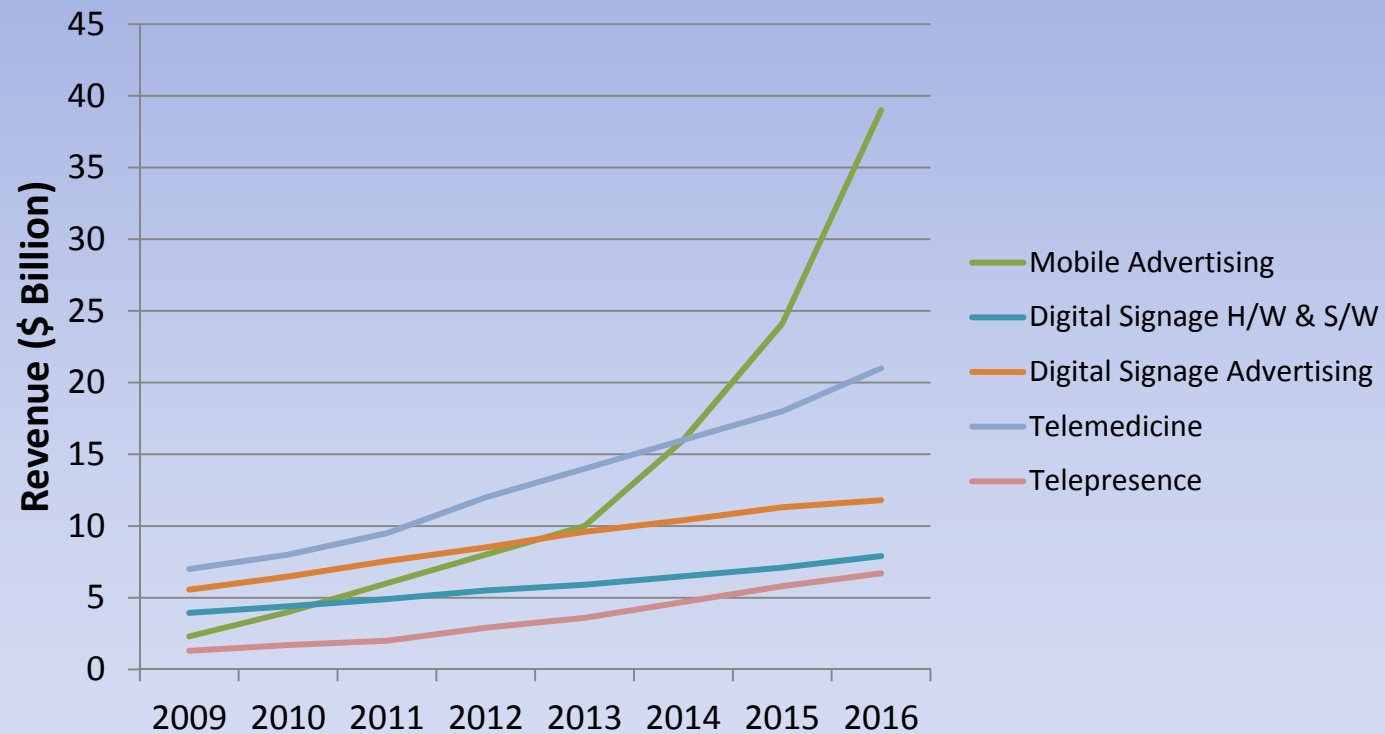
Market Outlook

- Total global revenue (**TAM**) for key market segments



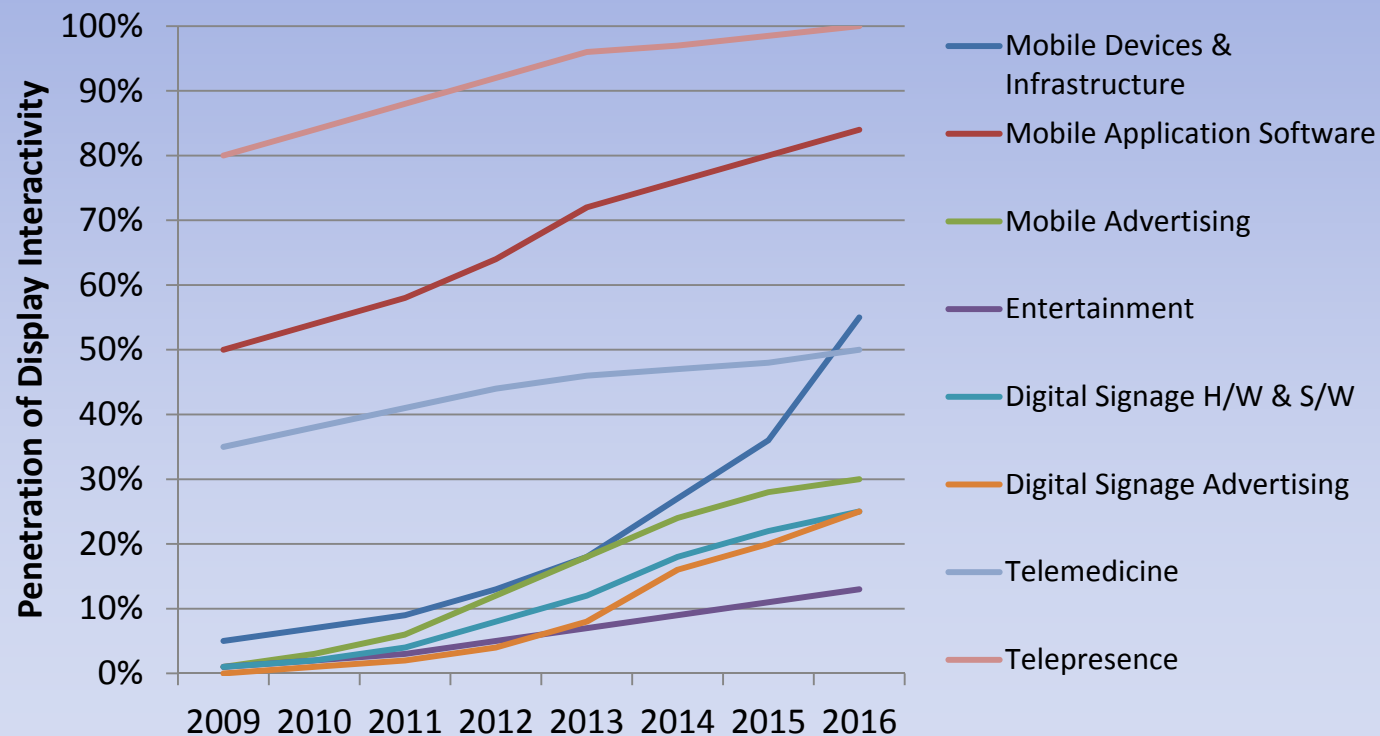
Market Outlook

- Total global revenue for key market segments (Detail)



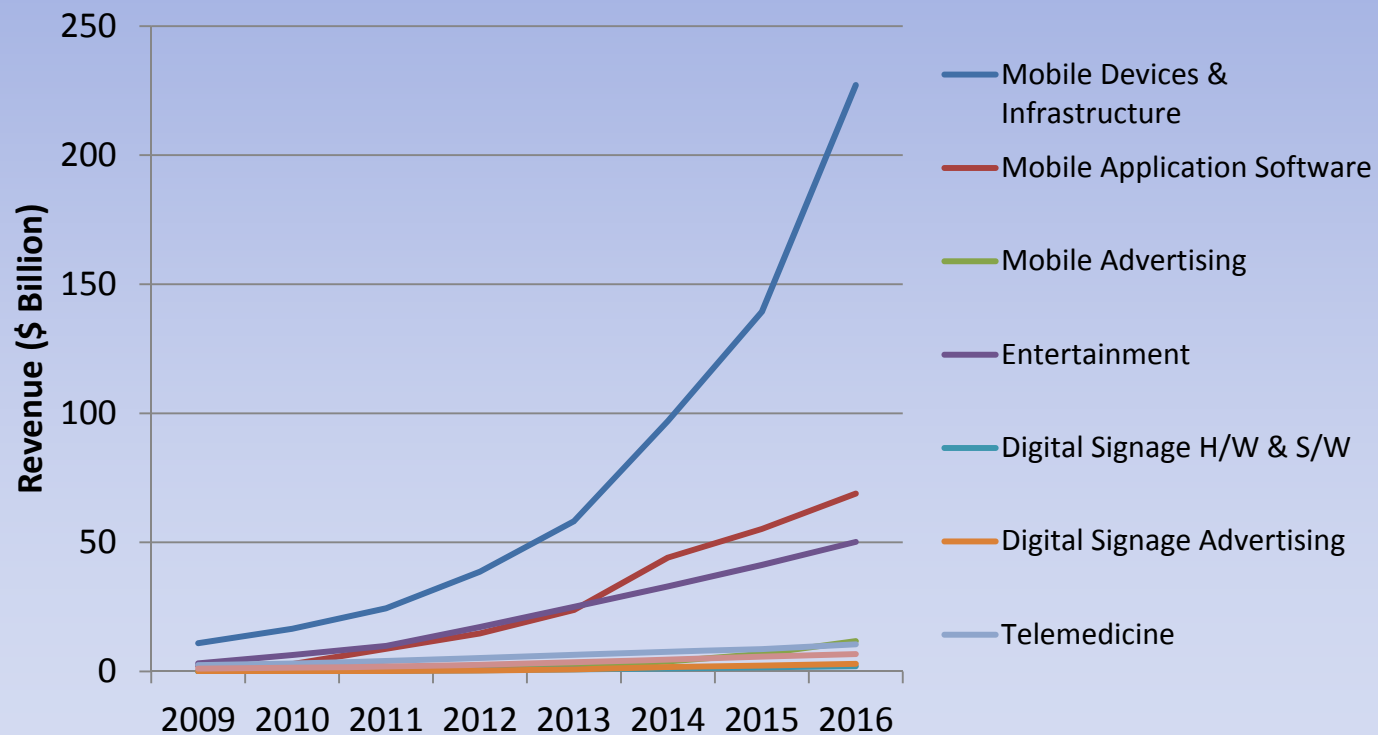
Interactive Display Market Outlook

- Market Penetration of Interactive Displays by Segment



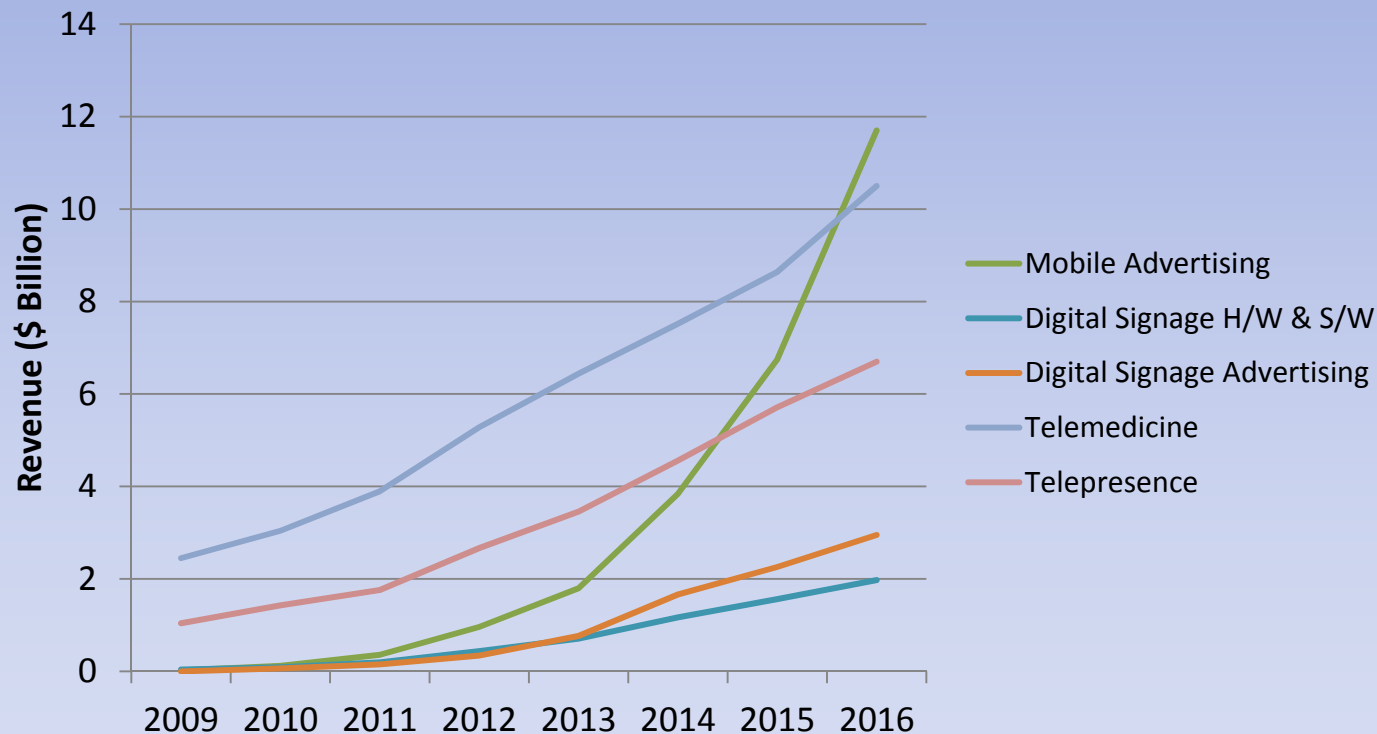
Interactive Display Market Outlook

- Market revenue incorporating and enabled by Interactive Displays



Interactive Display Market Outlook

- Market revenue incorporating and enabled by Interactive Displays (Detail)



Summary

- Interactive Display systems combine displays, I/O devices, electronic hardware and software to provide users a more engaging experience
- Users understand Interactive Displays and are coming to expect displays to be interactive
- Substantial growth opportunities for Interactive Displays at the component and system levels
 - Mobile – Devices & Infrastructure, Application Software, Advertising
 - Entertainment
 - Telepresence
 - Telemedicine

Upcoming Report

- Announcing a New Report from IntertechPira
 - *“The Future of Interactive Displays to 2016”*
 - Available Date Q2 2011
 - For details contact:
 - Bill Allen, Tel +44 (0) 1372 802 086
 - bill.allen@pira-international.com

Questions?

Phillip Wright,

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