Launch of HDMI 1.4 Specification

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HDMI Market Update
850 Licensed Adopters

As of 8/09

Source: 04/2009, HDMI, LLC
Adopters by Geographic Distribution

HDMI Adopters Distribution

- EU/ROW: 14%
- US: 16%
- Japan: 8%
- Korea: 8%
- China: 29%
- Taiwan: 25%

Source: 04/2009, HDMI, LLC
Projected HDMI Devices Shipped

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Source: 12/2008, In-Stat
One Billion Unit Installed Base…

Source: 12/2008, In-Stat

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100% HDMI Adoption

2009 Digital Televisions
2010 Blu-ray Players
2012 DVD Players

Source: 12/2008, In-Stat
HDMI 1.4 Overview of Features
Our Vision

What are the trends that will impact the near-term future of consumer electronics?
A New Era of Broadband Convergence
High-Definition Everywhere
Simplicity, Ease of Use
HDMI 1.4 Specification

- HDMI Ethernet Channel
- Audio Return Channel
- 3D Support
- 4K x 2K Support
- More Color Spaces
- New Connectors
24% of all consumer electronic devices will require Ethernet.

100% of game consoles and digital media adapters will have network capabilities.

80% of Blu-ray devices will have network capabilities.

72% of PVR/DVRs will have network capabilities.
HDMI Ethernet Channel

Consolidation of HD video, audio, and data in a single cable
Enables high speed bi-directional communication
Enables IP-based applications over HDMI
Transfer speeds up to 100Mbps
HDMI Ethernet Channel: Use Case

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HDMI Ethernet Channel: Use Case

- Internet connection sharing
- Device-to-device content distribution
- Enables "recording/copying" over HDMI

Enables current and future IP-based applications such as DLNA, UPnP, IPTV, LiquidHD™ and others

All over a single HDMI cable

HDMI 1.4 defines new cables:
- Standard HDMI Cable with Ethernet
- High Speed HDMI Cable with Ethernet

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Audio Return Channel

Simplicity, Ease of Use

Adds an audio channel that enables “upstream” audio connections via HDMI
Simplifies the audio connection between the TV and Audio/Video Receiver
Helps reduce yet another cable within the home
Audio Return Channel: Use Case

Built-in Tuner

With Audio Return Channel

Simplifies cabling by combining the upstream audio capability into a single HDMI cable.

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Heightened Viewing Experience: 3D over HDMI

- The HDMI 1.4 Specification has established a critical infrastructure for implementing 3D in the home
- A major milestone on the path to bringing true 3D gaming and 3D home theater to the mass market
Heightened Viewing Experience: 3D over HDMI

Defines common 3D formats and resolutions

3D support for up to 1080p resolution

Supports many 3D structures:
- Full side-by-side
- Half side-by-side
- Frame packing
- Field alternative
- Line alternative
- Left + Depth
- Left + Depth + Gfx + Gfx Depth

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Heightened Viewing Experience: Support for 4K x 2K Resolution

Same resolution as many state of the art digital theaters

Up to 4 times the resolution of 1080p

3840x2160 24Hz | 25Hz | 30Hz
4096x2160 24Hz

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Heightened Viewing Experience: Real-Time Content Signaling

Enables real-time signaling of content types between display and source devices

Enables the TV to optimize picture settings based on content type

Enables simple, automated picture setting selection with no user intervention

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Heightened Viewing Experience: Real-Time Content Recognition

Text/Graphics

Photo

Movie/Cinema

Game

HDMI

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Heightened Viewing Experience: Support for Additional Color Spaces

Supports digital still camera (DSC) - specific color spaces

- sYCC601
- AdobeRGB
- AdobeYCC601

Enables HDTV’s to reproduce the rich, natural, lifelike colors from digital still cameras (DSC)

Enables consistency and accuracy between DSCs and HDTVs
High-Definition Everywhere:
Micro HDMI Connector

Smaller, portable devices are becoming sources of HD content.

Significantly **smaller** connector for portable devices

Full **19-pin** design

Supports **same electrical performance** as the HDMI Standard & Mini connectors

Enables compact devices to have **all the benefits** of HDMI
Smaller, portable devices are becoming sources of HD content.

Connector Foot Print 37% Smaller
Connector Volume 43% Smaller

* Compare with Type C
High-Definition Everywhere: Automotive Connection System

1) Automotive HDMI Type E Connector

- Satisfy In-vehicle Spec
  - Incorporates design theory for common automotive connector

- Connector Requirements
  - Integrates HDMI and in-vehicle Spec.
  - Mechanical lock structure
  - Multiple keying variation

2) Type A Relay Receptacle

- Connection with Carry-on CE Devices

- Connector Requirements
  - Based on HDMI Type A Spec.
  - Friction lock structure
  - Mates with standard HDMI Type A Plug

A more robust connection specification to withstand the rigors of an automotive environment
Use Case(1) : Connection of In-vehicle Devices

- Type-E Connector
- Rear Seat Display
- Blu-ray Disc Player
- Front Seat Display

Type-E Connector
Use Case(2) : Connection of Carry-on CE Devices

- Automotive HDMI Cable
- Type E Connector
- Rear Seat Display
- Type A Relay Receptacle
- Portable Devices

Type A Cable
New Cable Types
Current HDMI Cable Types

- **Standard HDMI Cable**: Supports up to 720p/1080i. Total bandwidth of 2.25Gbps
- **High Speed HDMI Cable**: Supports 1080p or higher. Total bandwidth of 10.2Gbps

- Supports all HDMI 1.4 spec features except HDMI Ethernet Channel
New HDMI Cable Types

- **Standard HDMI Cable with Ethernet**: Supports up to 720p/1080i. Total bandwidth of 2.25Gbps. Adds support for HDMI Ethernet Channel (up to 100Mbps)

- **High Speed HDMI Cable with Ethernet**: Supports 1080p or higher. Total bandwidth of 10.2Gbps. Adds support for HDMI Ethernet Channel (up to 100Mbps)

- **What’s new?**
  - Supports all the HDMI 1.4 spec features
  - The reserve line is now known as the “Utility” line. Pin 14.
  - Creates a new shielded twisted pair using the following:
    - DDC/CEC Ground + HPD + Utility
    - All lines are now shielded
  - HDMI Ethernet Channel uses this single shielded twisted pair for bidirectional transmission
New HDMI Cable Types

- **Standard Automotive HDMI Cable**
  - Supports up to 720p/1080i
  - Supports all HDMI 1.4 spec features except HDMI Ethernet Channel
  - Uses the same Type-A plug
  - Different testing requirements than other cable types
    - Tighter tolerance to support Automotive Connection System relay connections and other Automotive specific requirements
Questions and Answers

Thank you!

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