Digital Living Network Alliance:

Sharing Digital Content

Overview

Who We Are: A cross-industry organization of leading consumer electronics, computing industry and mobile device companies.

Our Founding: Established in June 2003 by 17 companies

Our Vision: A wired and wireless interoperable network where digital content such as photos, music and videos can be seamlessly shared through personal computers (PCs), consumer electronics (CE) and mobile devices in and beyond the home.

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Overview

Our Goal: To enable the cross-industry convergence by establishing a platform of interoperability based on open and established industry standards.

Our Initiatives:

- Design guidelines for interoperable products
- Develop liaisons with other industry standards bodies
- Implement compliance testing and certification programs
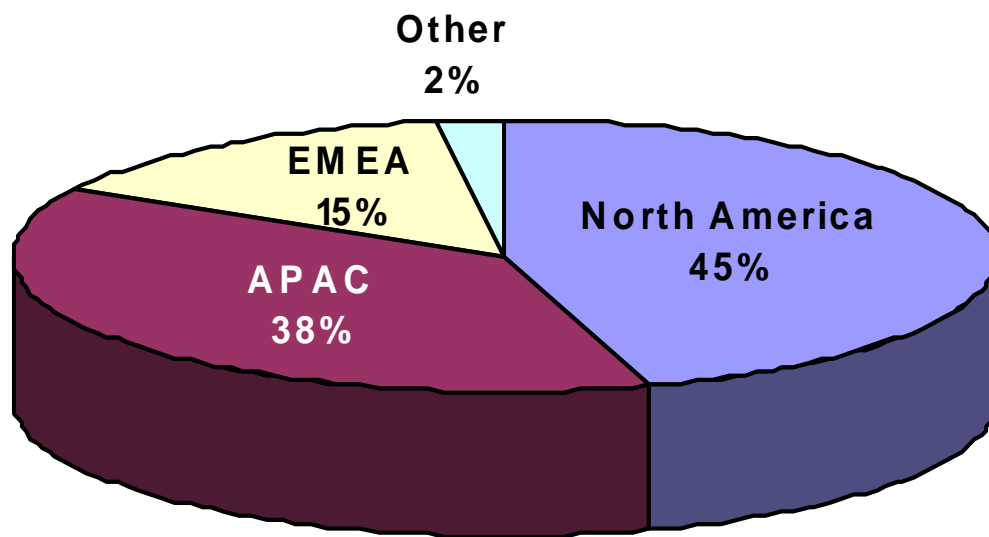- Implement a consumer-focused logo program for certified products

Overview

- Total Members: 333*
  - 21 Promoter Members
  - 311 Contributor Members
- Rapid Growth
  - Significant interest in collaborating interoperability initiatives across all related industries
- Truly Global
  - 23 countries represented
  - Full member, in-person meetings held in multiple regions worldwide
  - Plugfests held worldwide
- Effective Digital Networking Organization
  - Commitment of global brands
 - Commitment of high-level executives

Promoter Members

Board of Directors

hp invent   intel   Microsoft

NOKIA   Panasonic

PHILIPS   SAMSUNG   SONY

FUJITSU   HUAWEI   IBM

KENWOOD   lenovo

MOTOROLA   NEC   Pioneer

SHARP   ST

TEXAS INSTRUMENTS   THOMSON   TOSHIBA

DLNA Interest
Has No Boundaries

Where Members are Headquartered

Other 2%

EMEA 15%

North America 45%
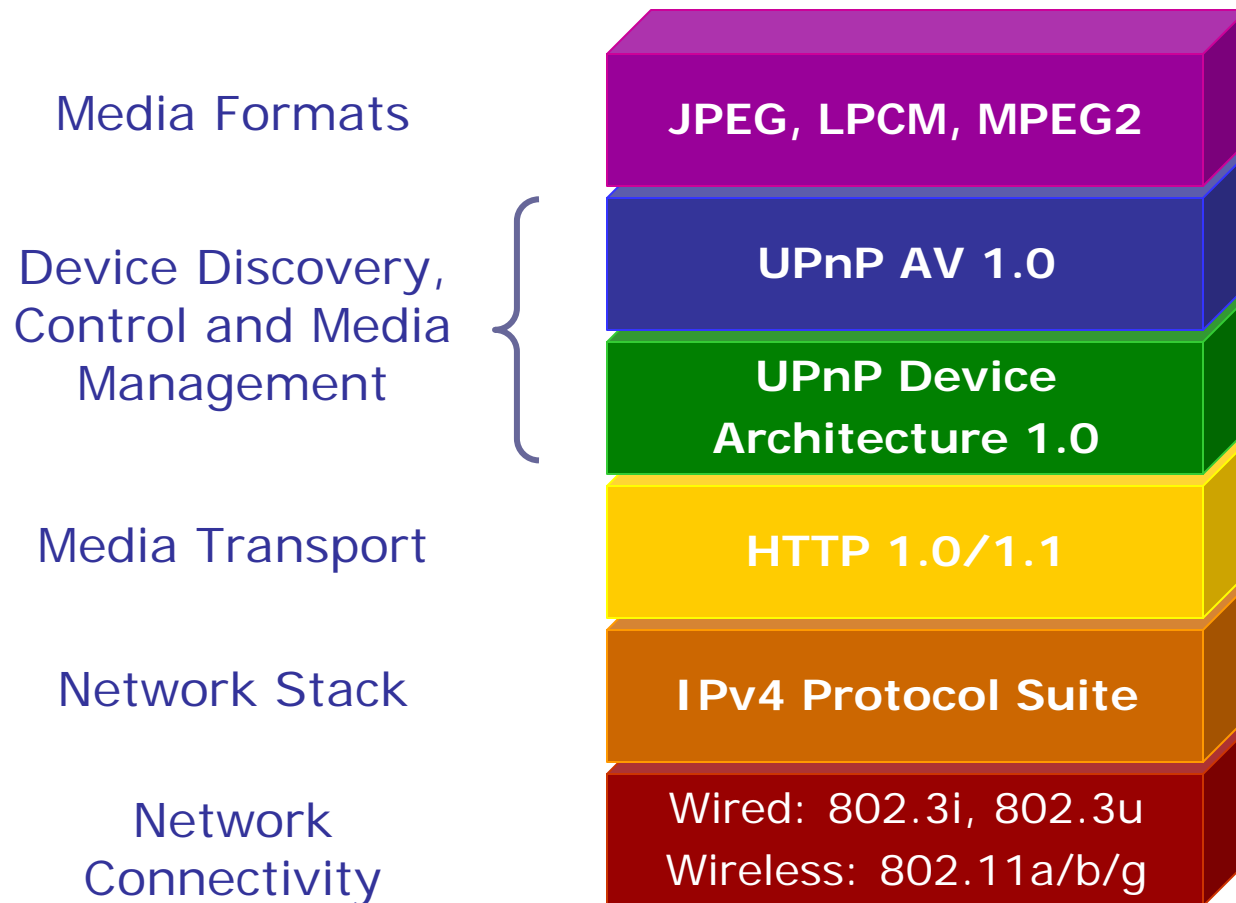
APAC 38%

Industries Represented by Membership

- CE
- Components
- Mobile
- Network
- PC
- R & D
- Semiconductor
- Telecommunications

Home Networked Device Interoperability Guidelines
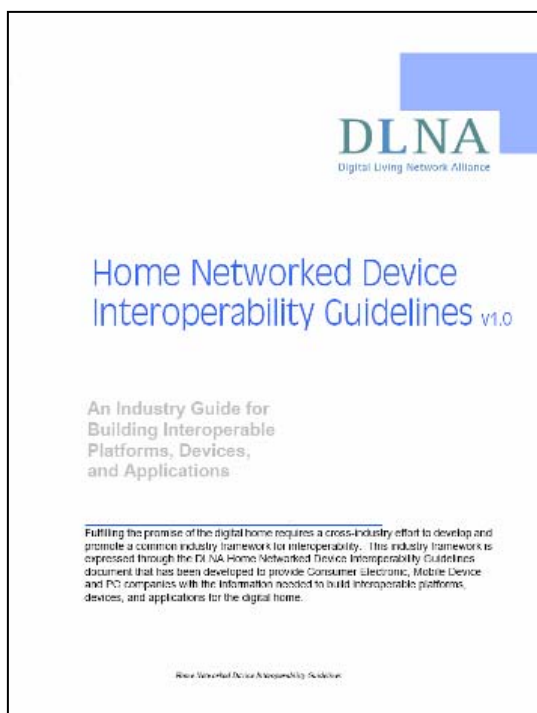
- Published June '04, 1 year after org. formed

- Collaborative effort of cross-industry members

- Formed from consumer usage scenarios and open & established CE, PC and Mobile industry standards

Home Networked Device Interoperability Guidelines

Media Formats

Device Discovery, Control and Media Management

Media Transport

Network Stack

Network Connectivity

JPEG, LPCM, MPEG2

UPnP AV 1.0

UPnP Device Architecture 1.0

HTTP 1.0/1.1

IPv4 Protocol Suite

Wired: 802.3i, 802.3u
Wireless: 802.11a/b/g

Optional Media Formats Addendum

Imaging
GIF·TIFF·PNG

Audio
MP3·WMA9·AC-3·AAC
·ATRAC3plus

Video
MPEG1·MPEG4·WMV9

- Published January '05

- Added support for 11 media formats

- Broadened applicability of Interoperability Guidelines

Plugfests: Building Momentum to Certification

| 2005-2006 Plugfests	Location
DLNA Interoperability Guidelines (June 2004)	Asia-Pacific Q1 2005
DLNA Interoperability Guidelines (June 2004)	Asia-Pacific Q2 2005
DLNA Interoperability Guidelines (June 2004)	Asia-Pacific Q3 2005
DLNA Interoperability Guidelines (June 2004)	North America Q4 2005
DLNA Interoperability Guidelines (June 2004 and March 2006)	North America Q1 2006
DLNA Interoperability Guidelines (June 2004 and March 2006)	Europe Q2 2006
DLNA Interoperability Guidelines (June 2004 and March 2006)	North America Q3 2006
DLNA Interoperability Guidelines (June 2004 and March 2006)	Asia-Pacific Q4 2006

Certification & Logo Program

- Launched September '05; supported by quarterly plugfests worldwide

- Verifies that products are designed to DLNA's Interoperability Guidelines and meet DLNA's certification testing requirements

- 89 Publicly-named DLNA CERTIFIED devices to date:

8 Digital Media Servers	23 Laptop PCs
4 Digital Media Players	7 HDD/DVD Recorders
15 LCD TVs	3 Digital Media Adapters
27 Desktop PCs	2 Network Attached Storage Devices

Updates to the Home Networked Device Interoperability Guidelines

- Published March '06

- Continued collaboration between cross-industry members

- Broadens the DLNA Network to include printer and mobile device capabilities, giving consumers more products and features that they want and expect to use
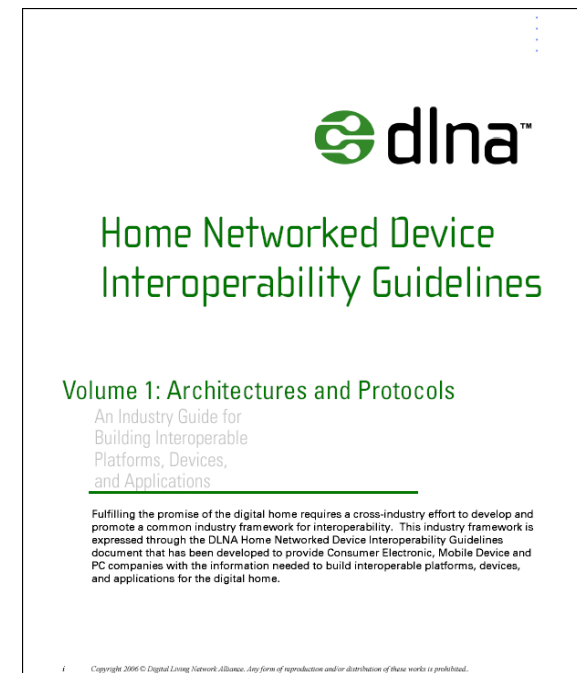
Extended Mobile Support

- AVC (MPEG-4) video coding standard
  - Mandatory media format for video interoperability
  - Designed for optimized content storage and transfer
  - Offers low bit rate/high quality transport

- Bluetooth® technology support
  - Optional wireless transport protocol common in mobile devices

Additional Mechanisms

- ## Real-time Transport Protocol (RTP)
  - Common transport for streaming audio and video over the Internet
  - Simplifies support for Internet streaming content

- ## Quality of Service (QoS)
  - Improves robustness and reliability of streaming content delivery
  - Available across the entire DLNA network

- ## Upload/Download
  - Content can be uploaded and downloaded between mobile devices and AV products

10 More Device Classes

In addition to Digital Media Server (DMS) and Digital Media Player (DMP), the current Guidelines now support:	
Digital Media Renderer	(DMR)
Digital Media Controller	(DMC)
Digital Media Printer	(DMPr)
Mobile Digital Media Server	(M-DMS)
Mobile Digital Media Player	(M-DMP)
Mobile Digital Media Uploader	(M-DMU)
Mobile Digital Media Downloader	(M-DMD)
Mobile Digital Media Controller	(M-DMC)
Mobile Network Connectivity Function	(M-NCF)
Media Interoperability Unit	(MIU)

What do the current Guidelines mean?

- Guidelines previously addressed:
  - Two device classes (DMS and DMP)
  - The ability to pull image, video or audio content from a server to a player
  - For example:
    - Use a TV remote control to select a video stored on a DMS and watch it on the TV
    - Use a stereo remote control to select a song stored on a PC and play it on the stereo

What do the current Guidelines mean?

- Guidelines now address:
  - 12 device classes (printer, mobile DMS, mobile DMP, etc.)
  - The ability to pull *and* push image, video or audio content from a server to a player/renderer
  - The ability to print
  - The ability to manage media with a mobile device
  - For example:
    - Upload images from a digital camera to a PC or TV for viewing
    - Use a mobile phone to transfer a song from the PC to the stereo, and play the song
    - View a photo from a media server on a TV, and send it to print on a networked printer

Roadmap

Link Protection Guidelines

- Released in October 2006
- Defines link protection for commercial content
- Preserves rights of copyright owners and content providers
- Lays the necessary groundwork to introduce commercial content into the DLNA network

Certification & Logo Program Expansion

- Rolls out 1H 2007

- Compliance test tools and interoperability test plans currently in development

- Plugfests continue to aid in program development

  - Next Plugfest: Q4'06 Seoul, Korea

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Summary

- DLNA Interoperability Guidelines have been updated to:
  - Bring Printer and Mobile Device capabilities to the DLNA network
  - Introduce 10 additional device classes as well as mobile device support and full-network mechanisms
- Upcoming initiatives include:
  - Certification & Logo Program support for current Guidelines
  - Content Protection Guidelines to be released in 2006
- Membership growth continues
  - 331 members to date; global representation
- Momentum for truly digital living continues to build rapidly through the efforts of DLNA and its members