



Digital Media Adapter

Study

January 2011

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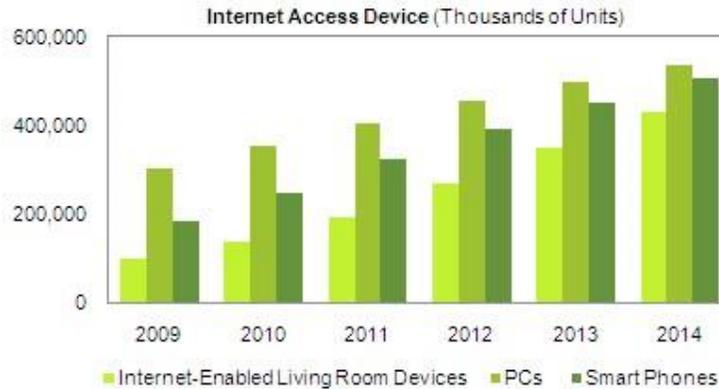


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The market

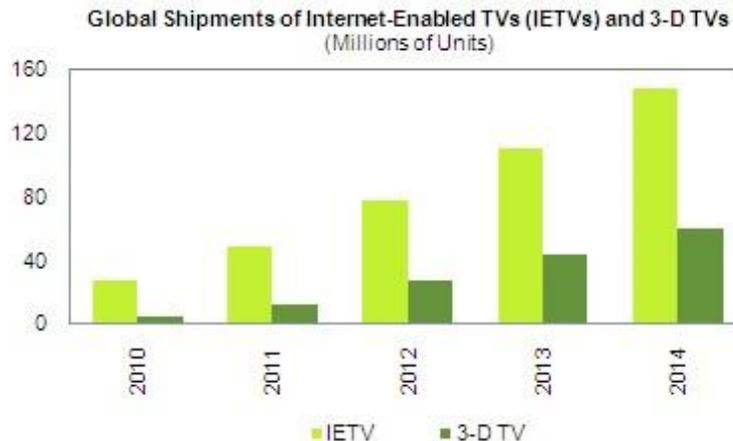
The CE connected device Market is growing

WW market of CE Internet connected devices



Source: iSupply 2010

WW market of Internet Connected TV sets

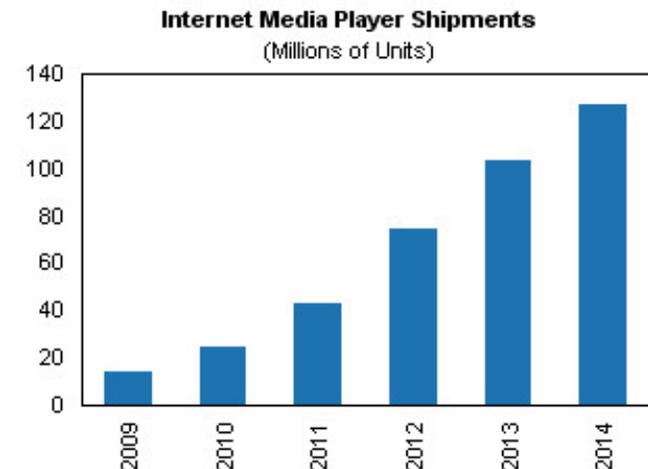


Source: iSupply 2010

CE connected devices market – room for DMA

- The market of Internet-Enabled Living room devices will reach more than 430M units in 2014, from 99M in 2009, showing a CAGR of 34% on this period.
- This shows the need for consumers to have access to Internet content on every screen he has (living-room large screen, PC screen, smartphone).
- The amount of directly connected TV sets will grow from 12M units to 148M on the same period, and will represent 54% of TV shipments in 2014
- This will leave room for other Internet-enabled Living Room devices such as
 - Blue-ray Players
 - Gaming consoles
 - Internet Media players (DMA, hybrid STB...)

WW market of Internet Media Players



Source: iSupply 2010

The market of Internet-enabled Living Room devices will grow dramatically from 2009 to 2014.

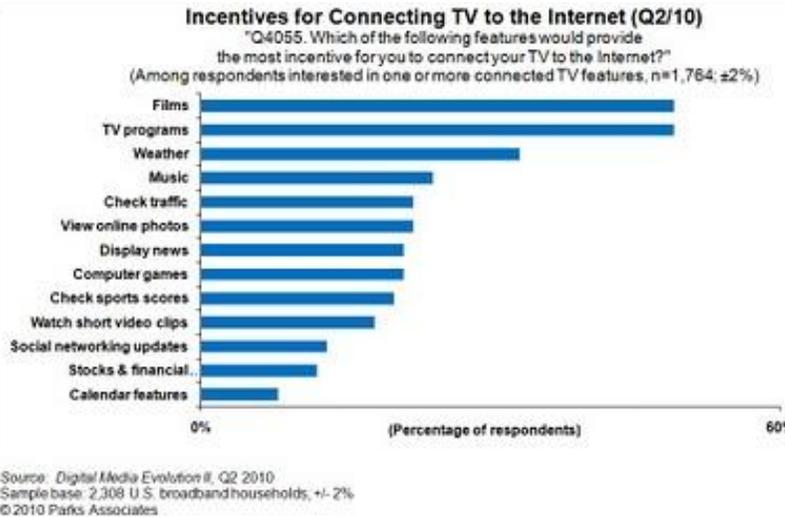
Connected TV sets will grow as well, but will be only a fraction of these devices.

This leaves room for other devices such as Blue-ray players, gaming decks and Digital Media Adaptors.



The usage and value of connected TV sets

Usages expected for US Connected TV sets



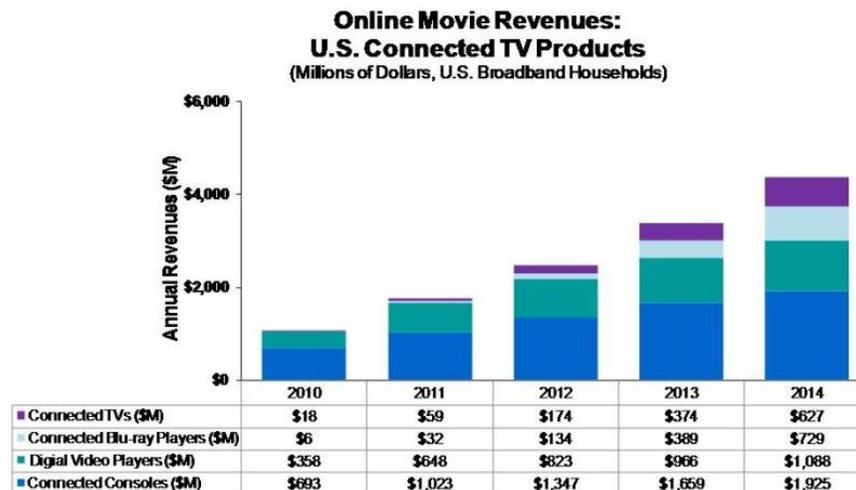
The consumer usage will be for online movies

- Survey made in the US shows that by far consumer expectation from a connected TV set is to have access to film and TV programs, and far less to social networks or other Web-based activities.
- This is supported by the evolution of the online movie revenue in the US, expected to reach \$5 Billion in 2014, though still a fraction of the multibillion DVD rental business.
- Situation might differ region per region, but we expect Europe to follow the same trend.
- Consumer do not value high the Internet capability of digital cameras or Blue Ray player, but gives more value (100\$) to that function when attached to a TV set. This could give a good indication for the pricing of a specific Internet device.

The major usage expected by consumer from connected TV set is watching movies and TV programs.

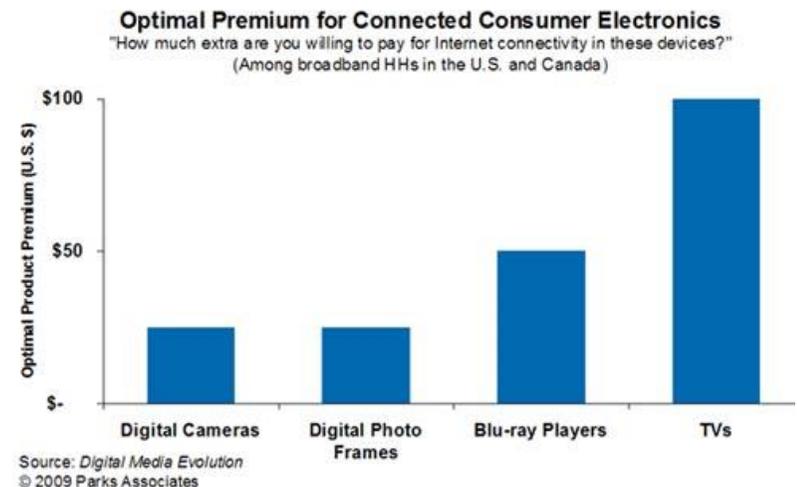
This is supported by projection of online movie revenues.

Online movie revenues per device in the US



Source: Connected Living Room: Web-enabled TVs and Blu-ray Players © 2010 Parks Associates

Value by consumer of a Internet enabled TV set



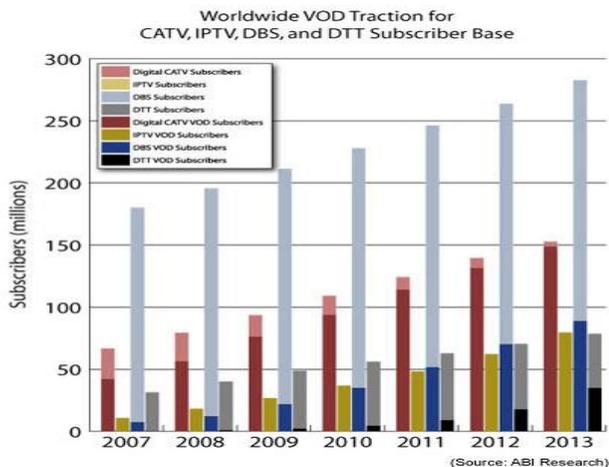
Typical price attached to the Internet function for a TV set is about 100\$ today for the US market.



Main usage for connected TVs : VoD

There is a strong interest for VOD services

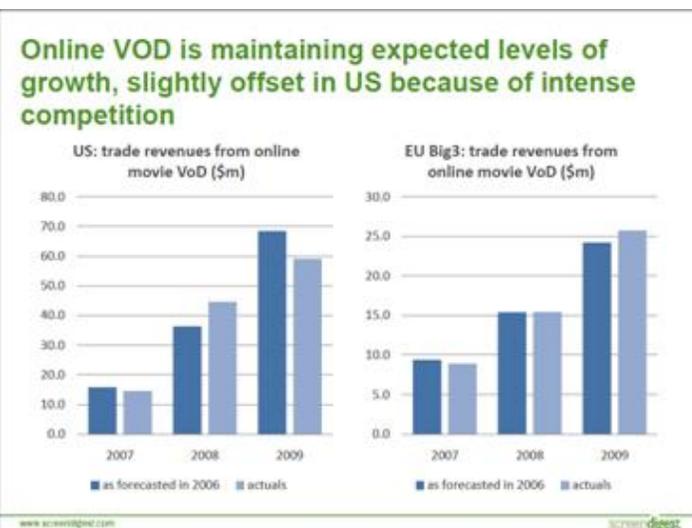
In 2011 some 435m homes around the world will be taking video-on-demand (VOD) or near-video-on-demand (NVOD) services, equivalent to 38% of the world's TV households.



Source: ABI Research 2009

Netflix continues to win new subscribers and the marketing costs per new subscriber acquired, continue to drop.

VOD is a way for operators to gain customers from competitors



Source: Screen Digest 2009

The example of Netflix

Digital has become more than just renting or selling: The Netflix model

- Netflix Watch Instantly offers 20,000 movies and TV shows at no additional cost to DVD subscribers
 - Over 2,000 of these titles are sub-licensed from pay-TV firm Starz
 - ~50% of library is movies
 - Directly aggregated titles are typically >4 years old
- According to Netflix, 48% of customers streamed at least 15mins in last 90 days of 2009
- 50m Watch Instantly streams in 4Q 09, totaling 43m hours
 - Movies constitute 60% of streams
 - What will the impact be on library sales on transactional platforms?



Some key points

- VOD consumption is important and will grow
- In the US, more and more cable users are canceling their cable subscription to get an OTT service from Microsoft and others through XBOX
- Situation might differ region per region, but we expect Europe to follow the same trend.
- The difficulty has been so far to get an interesting offer for the end-user in terms of :
 - Catalogue
 - Information regarding the offering
- We propose to combine our DMA offer with a tool to promote content

Source: FiZ analysis 2010



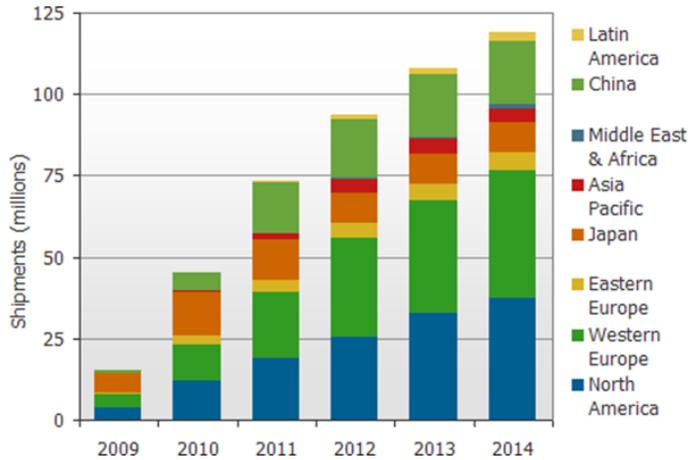
A large installed base of non Internet enabled TV sets

The sales of Internet enabled TV (IETV) sets is expected to grow up to 42% of shipment in 2013.

Situation might be different per region, and we expect a IETV penetration rate of 28% WW and about 45% for Europe LCD TV.

This leaves for European market at least more than half of installed base to be connected via an Internet enabled Living room device.

WW shipment of Internet enabled TV sets

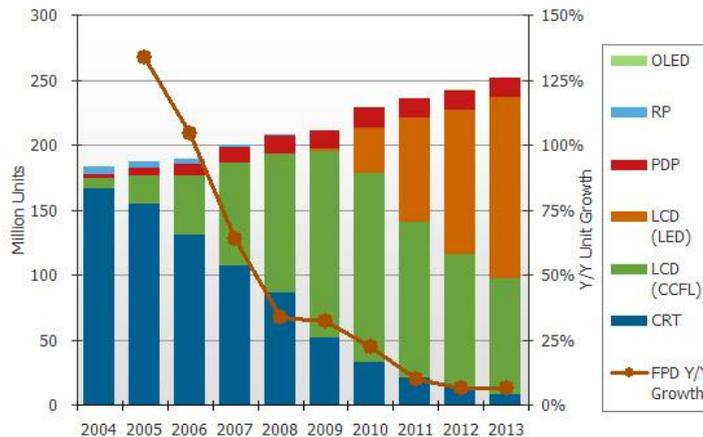


Source: DisplaySearch 2010

Not all TV sets will be Internet enabled

- While the sales of Internet-enabled TV (IETV) sets started primarily in 2009, this TV category is expected to reach up to 42% of the worldwide TV set shipment in 2013.
- Based on these figures, our basic estimation on the WW installed base on TV sets is that IETVs will represent about 28% in 2013.
- Situation might be different per region. If we consider Europe, we estimate that IETVs will represent there up to 75% of the major brand portfolios by 2013 (at least for FTV range).
- Based on this assumption, we expect then that the ratio of LCD IETV sets could reach about 45% of the LCD TV installed base.
- Nevertheless, this leaves more than half of the installed base that will require additional devices for Internet connection.

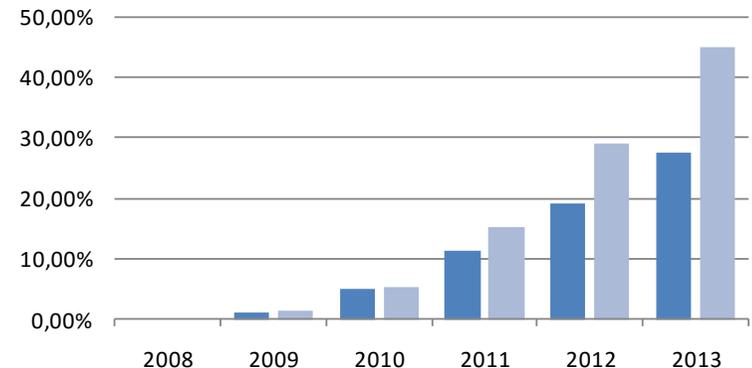
WW shipment of total TV sets



Source: DisplaySearch 2010

Max. % of connected TVs WW and Europe

% installed base of Internet enabled TVs



■ % TV Worldwide ■ % LCD TV Europe

Source: FIZ analysis 2010



Why TV will take time to integrate everything?

- Internet Enabled TV seems to be the way to propose the entire set of services to consumer.
- But, beyond the figures of the analysis in the previous pages, other factors will prevent the TV manufacturers to integrate every service in their product before several years
 - ▶ Lifecycle of the TV product: a TV lifetime is typically close to 7 years (a trend to 5 years has happened recently because of flat screen and digital reception). Service lifecycle is by far shorter, and TV manufacturers are not well structured to support extensive after-sales support and upgrade.
 - ▶ Competition between TV manufacturers will prevent to have standardised offer: each of them will strive for its own portal, while consumer does not want to stick only to services attached to his TV manufacturer.
 - ▶ The second (and third) TV set in the home place will not be Internet enabled.

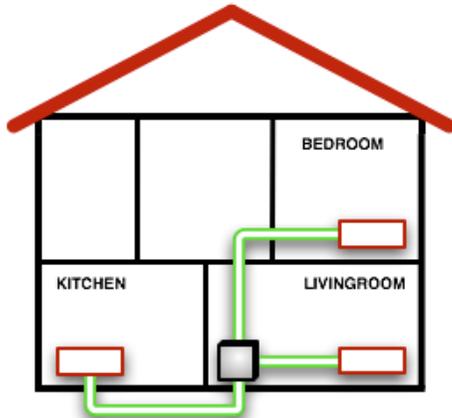


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The consumer use case



The consumer proposal



- « **I wish I could access to a rich online video store in one click** »
 - ▶ People want to have access on demand to movies to be enjoyed on their 16/9 large screen home theater system.
 - ▶ They want this operation to be fast and easy, in a few clicks on their remote control
 - ▶ The same is true for TV sets located in the other rooms, especially in the bedroom. This means the device capable to offer such a service must be small, easy to install and have wireless Internet access.

- « **I wish I could see on my TV/Home theater system all the movies and pictures stored on my computer** »
 - ▶ The same device must then also capable to have access to all computers connected to my home network
 - ▶ The system must be easy to install, to use and compatible with the most standardised solutions and the different computer systems



Data from the field

- Data coming from Roku users (<http://www.roku.com/roku-products#2>)

(based on 21438 reviews)

■ Pros

- ▶ Easy to use (19790)
- ▶ Compact (19113)
- ▶ Easy to set up (18387)
- ▶ Built in wi-fi (16438)
- ▶ High quality picture (16243)

■ Cons

- ▶ Want more video choices (8726)
- ▶ Need fast internet service (2130)
- ▶ Inconsistent performance (1437)
- ▶ Difficult to set up (1185)
- ▶ Difficult to use (193)

■ Best Uses

- ▶ Primary TV (14234)
- ▶ Living room (12990)
- ▶ Bedroom (7034)
- ▶ Secondary TV (5770)
- ▶ Family room (68)



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The competition



Competition to DMA

- The connected TV case has been analysed in the previous chapter, and clearly shows that Internet-enabled TV sets will be less than 50% of the installed base by 2014. Room remains for Internet enabled-devices attached to the TV set.
- The main competition for such device will be from
 - ▶ The gaming consoles (Sony PS3, Microsoft X-Box)
 - ▶ The hybrid IP – digital TV adapter (especially in regions where terrestrial TV is well implemented and analog switch-off is planned – e.g. France)
 - ▶ Other DMAs (Popcorn Pop Box, Apple TV 2.0, Roku...)
 - ▶ The Google TV devices
 - ▶ HDD based Mediacenters (Western Digital WDTV Live Plus, BASF...)
 - ▶ Connected BluRay players (Samsung, LG, Philips, Sony...)
 - ▶ The offer from Pay-TV operators



Competition: gaming consoles



■ Plus

- ▶ Storage is included in the device (typically 250GB HDD)
- ▶ High video and audio quality
- ▶ UI interface getting benefits from the powerful GPU
- ▶ Very good connectivity and home network capability
- ▶ VoD and services offering
- ▶ Usage versatility (BluRay, game, home network, VoD...)

■ Minus

- ▶ High price – typically above 299\$
- ▶ Buyer's motivation is first for gaming, not for movie viewing
- ▶ Large size and form factor



Competition: hybrid IP-TV decoders



HbbTV

BBC
iPlayer



■ Plus

- ▶ Affordable price
- ▶ Promoted by TV analog switch-off
- ▶ Small form factor
- ▶ Can be with additional feature such as PVR (embedded or external HDD)
- ▶ VoD « natural feature » (watching TV)
- ▶ Services independant from CE manufacturers (HbbTV)

■ Minus

- ▶ Offer per today is not coupled to VoD offer
- ▶ HBBTV offer might take time to really take-off (standardisation process can be long)
- ▶ Buyer's motivation is first for TV viewing
- ▶ Not always with great Home Network capability



Competition: CE devices (BluRay)



■ Plus

- ▶ Reasonable price, but higher than DMA
- ▶ Promoted by BluRay, that goes well with VoD offer for movie lovers
- ▶ Brand power of key players
- ▶ Backward compatibility with DVD

■ Minus

- ▶ Home network capability not always included
- ▶ Usually no open API for apps with cell phones (might change)
- ▶ Service offer limited to the services by the CE manufacturer





Competition: Google TV STB



■ Plus

- ▶ Full search service, including FTA and pay-TV live TV channels, multiple VoD stores and PVR
- ▶ Access to Android Apps
- ▶ Integration with cell phones
- ▶ Brand power

■ Minus

- ▶ Expensive device (300\$ as per today)
- ▶ Set-up is difficult for getting all functionalities (IR blaster to drive other devices)
- ▶ Integration not fully done, especially with Pay-TV operators (except Dish)
- ▶ Business model in conflict with other actors of the TV industry (ad based model)





Competition: HDD mediacenters



■ Plus

- ▶ Integrated storage capacity, main motivation for buyers to store their personal records
- ▶ Usually good versatility in terms of codecs and video file formats
- ▶ Capable to connect to other HDD (USB) for additional storage
- ▶ Reasonable form factor

■ Minus

- ▶ Expensive device (250\$ as per today)
- ▶ Not always including home network capability
- ▶ No API/SDK for new apps (e.g. smart phones)





The Unique Selling Points for DMA

- Simplicity and attractiveness of the offer :
 - ▶ Access to an attractive VoD catalog
 - ▶ Access to all multimedia resources from your home
- Price positioning : should be at 89€ street price
- UI must be well designed
 - ▶ supporting an attractive easy-to-use characteristic
- Small form factor, easy to position and to integrated close to the TV set
- Openess of the solution – compatible with all DLNA devices
- Compatibility with several smartphones platform (iPhone, Android...)

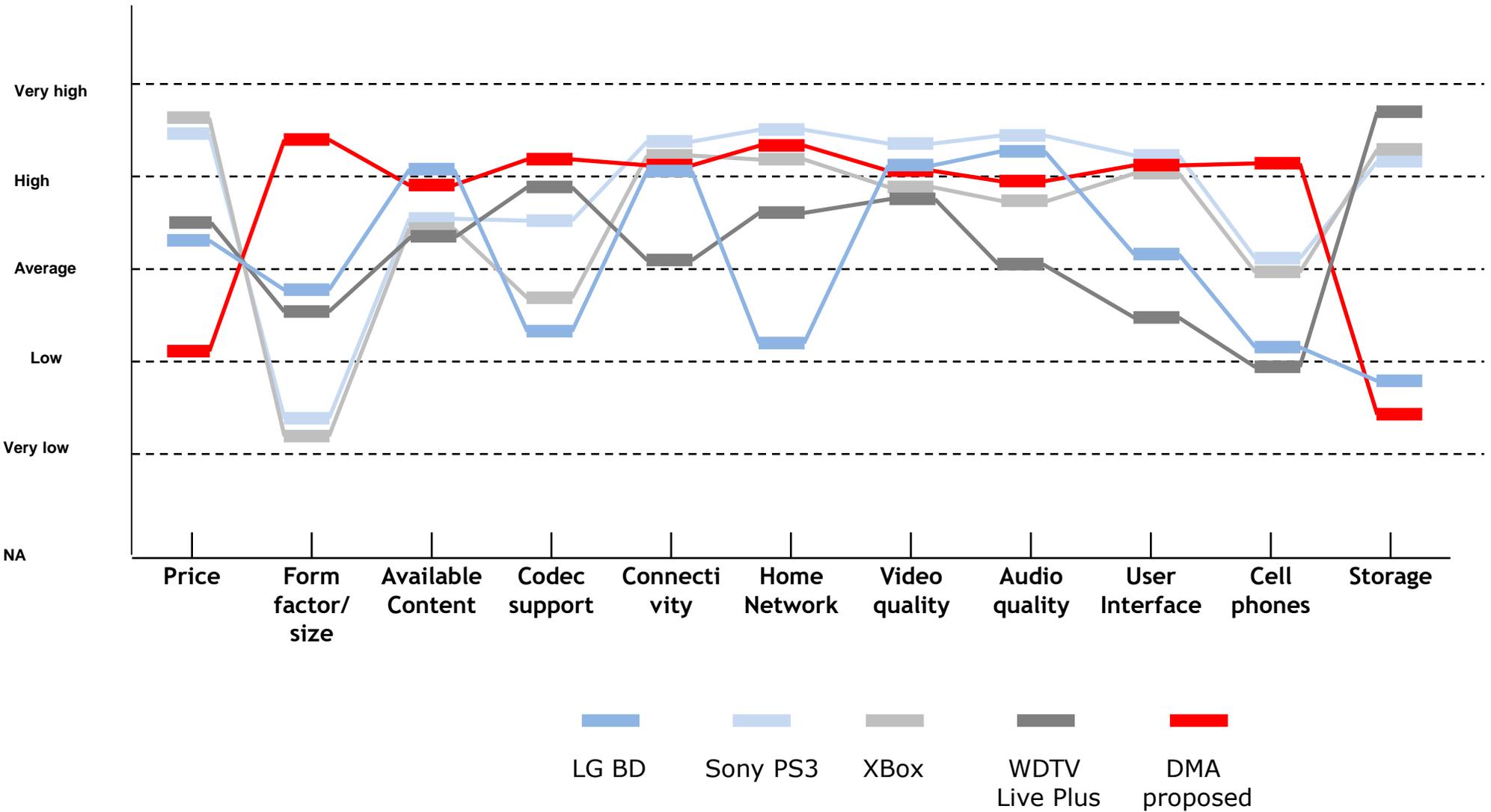


The Unique Selling Points for DMA

Key Element	Description
Price	Price, financial conditions
Form factor / size	Product size, slimness, quality of materials, easy to integrate/hide close to TV set
Available content	Number of VoD stores that can be reached, quality/variety of their offer, other services
Codec/video files compatibility	Variety/number of video codecs and file formats that can be supported
Connectivity	types of outputs : USB, audio, wifi, ethernet, HDMI, component, SCART
Home Network	Capability to be used in home network, proprietary environment or standard (DLNA)
Video quality	1080p or 720p
Audio quality	SPDIF, AC3, multi-channel
User Interface	Ease of use, quality of the UI of the TV screen
Remote via cell phones	Possibility to use iPhone or Android cell phones as remote controls
Apps / SDK	System allowing further development of apps
Storage	Local storage or not (HDD)

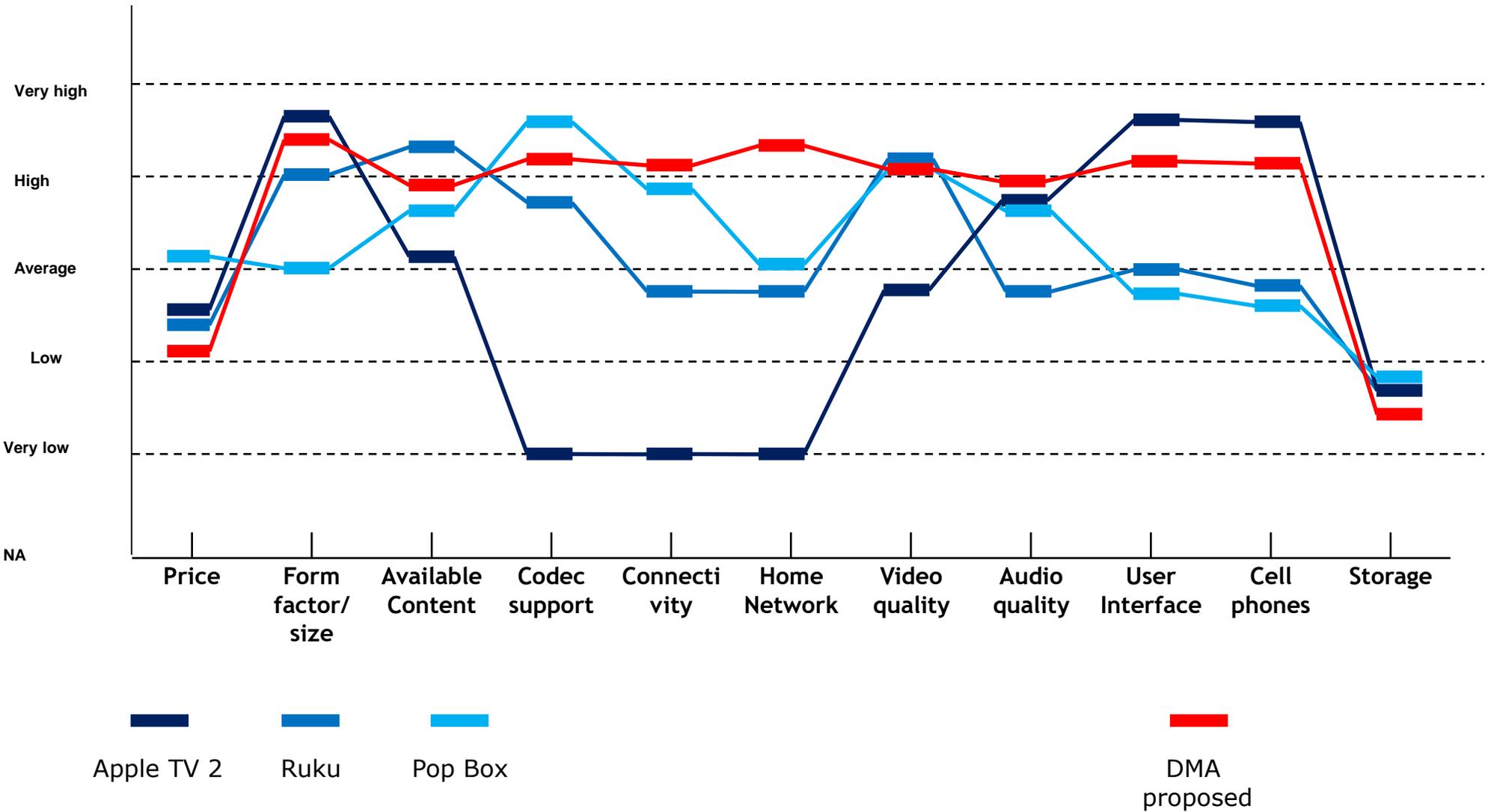


Value curve versus game decks/HDD mediac./B Ray



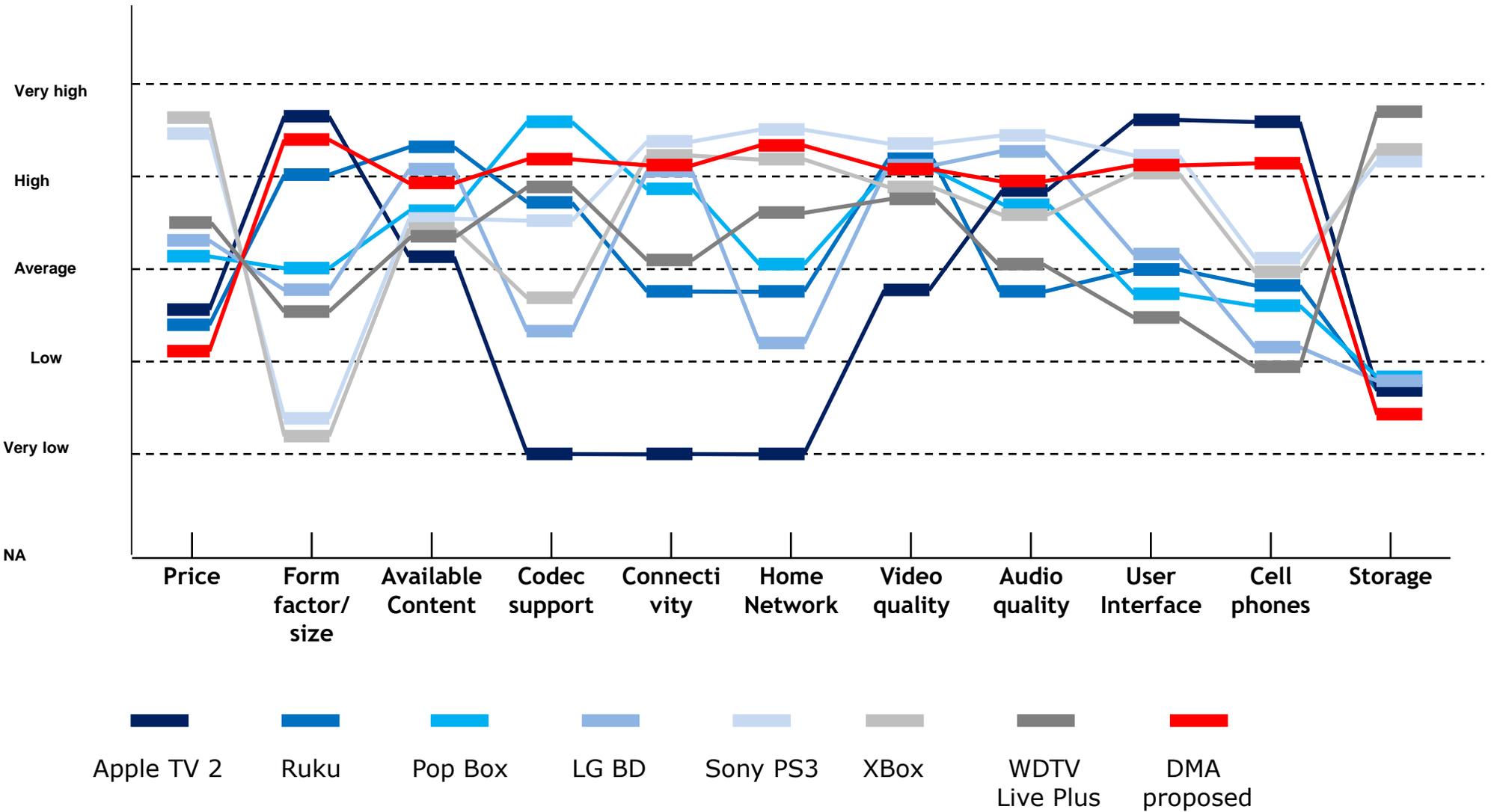


Value curve versus other DMAs





Value curve with all devices





SWOT

<p>Strengthes</p> <ul style="list-style-type: none"> ▪ Lower cost device ▪ DLNA open compatibility ▪ Simplicity of the service offered to consumer ▪ Ease of use ▪ Comes with an attractive VoD offer ▪ Small cabinet size ▪ Price range affordable 	<p>Weaknesses</p> <ul style="list-style-type: none"> ▪ No big name like Google – depends on brand name we can find ▪ Service is VoD only, means less than Google offering a full search range ▪ No browsing through open Internet ▪ Pure IP device, no DVB-T reception embedded
<p>Opportunities</p> <ul style="list-style-type: none"> ▪ Get benefit of the AppleTV 2.0 intro ▪ Support from VoD vendors ▪ General consumer trend for getting on demand content ▪ Exploit the installed base of non Internet-enabled TV sets ▪ Exploit compatibility with smartphones via dedicated apps 	<p>Threats</p> <ul style="list-style-type: none"> ▪ Push from Pay-TV/Telco operators to include VoD offer in their subscription, using their own STB ▪ Competition from game consoles (Xbox, PS3...) ▪ Depends on the content pf the VoD partner we can ally with ▪ Penetration rate in Internet-enabled TV set (low risk) ▪ Cost reduction from Intel based platforms (Google TV)



SWOT dedicated to Google TV STB

<p>Strengths</p> <ul style="list-style-type: none"> ▪ Lower cost device ▪ Home network DLNA open compatibility ▪ Simplicity of the service offered to consumer ▪ Ease of use ▪ Comes with an attractive VoD offer ▪ Small cabinet size ▪ Price range affordable 	<p>Weaknesses</p> <ul style="list-style-type: none"> ▪ Service is VoD only, means less than Google offering a full search range ▪ No browsing through open Internet ▪ Limited functionality ▪ No coupling with other devices
<p>Opportunities</p> <ul style="list-style-type: none"> ▪ Google TV complex to understand ▪ Complex to set-up, especially outside the scope of Dish networks (IR blasters etc...) ▪ Google TV not integrated with most of the typical TV devices available in Europe (Pay-TV STB, retail STB...) ▪ Conflict between Google TV and HBBTV initiative ▪ Use of keyboard might remain an issue for deployment 	<p>Threats</p> <ul style="list-style-type: none"> ▪ Cost-down of Google TV solution in the next two years ▪ Alliance between VoD companies and Google to be referenced in the Google Search (subsidised model) ▪ Idem with potential alliance between PayTV operators and Google (very unlikely because of ads business model)



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High level DMA specifications



Media specifications

- **DLNA 1.5** client capabilities
- Supports Media Formats and Subtitles
 - Video standards: H.264, WMV9, MPEG 1/2/4/SD/HD, VC1, DivX, Xvid
 - Video file formats: MKV, AVI, WMV, ISO, IFO, MP4, VOB, ASF, M2TS, MOV, TP, TS, MPG, DivX
 - Audio standards: MPEG 1 Layer 1&2, MP3, MPEG 2 AAC, MPEG 4 AAC, AC3, WMA, OGG Vorbis, LPCM, DTS Pass through, FLAC
 - Audio file formats: AAC, AC3, WAV, PCM, MP3, OGG, WMA, MKA
 - Photo formats: JPEG, TIFF, PNG, GIF, BMP
 - Subtitles: SRT, SSA, IDX and SUB
- Video resume, fast forward, backward, pause
- Supports DRM for specific video stores
- You Tube access
- Picture features
 - Supports Background Music to allow viewing photos and listening to music
 - Screen saver
 - Support picture zoom in, zoom out, move and rotate
 - View photo in Thumbnails Mode
 - Support photo slide show
- Language Support
 - English / German / French / Italian / Spanish / Dutch / Russian / Polish / Czech



Connectivity and HW

- Network Connections
 - Ethernet LAN: 10/100 Mbps, RJ45
 - Embedded Wireless 802.11 b/g/n
- Wireless Network Security
 - WEP Encryption 64/128 bit
 - WPA-PSK/WPA2-PSK
- Power
 - Integrated power supply
 - Input Power: AC 220~240 Volts/50~60Hz
 - Power Consumption: 12.5 W maximum (To be discussed)
- IR remote and remote functions
 - Simple IR, with few buttons – to be discussed with UI concept
 - Play/Pause/Next/Previous/FFW/FBW
 - Adapted to UI for easy navigation (UI to be defined)
 - IR control commands to be accessible via Ethernet/WiFi (API) to allow control via apps on iPhones and android cell phones
- Hardware Specifications
 - IR receiver
 - 4 or 8GB Flash memory
 - A/V Output : HDMI 1.3, S/PDIF (Coaxial and/or optical)
 - USB : to be discussed (access to media files – Windows/Linux file systems)
 - Status LED Indicator:
 - ✓ Power
 - ✓ IR reception
 - ✓ Network Media Traffic: Receiving media traffic through Ethernet
 - One LAN Port, 10/100 Mbps Ethernet RJ-45



General specifications

- Physical Specifications (target – **to be discussed – smaller is better**)
 - Item Weight: tbd
 - Item Dimension: 95 (W) x 95 (D) x 30 (H) mm
 - Packing Weight: tbd
 - Packing Dimension: 130 (W) x 130 (D) x 60 (H) mm
- Environmental Specifications
 - Operating temperature: 0°C ~ 50°C
 - Operating humidity: 10% ~ 90% (Non-condensing)
 - Storage temperature: -40°C ~ 70°C
 - Storage humidity: 5% ~ 90% (Non-condensing)
- Package Contents
 - Digital Media Adapter
 - Remote Control (2 AAA batteries included)
 - Power Cable
 - Quick Start Guide
 - HDMI Cable
 - Support CD with DLNA server SW to be installed on PC
 - Warranty Card
- Certification
 - FCC/CE/DLNA 1.5 /HDMI1.3



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Discussion



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Thank you