

A Quick Overview of Home Entertainment Technologies

The purpose of this talk is to gather feedback and determine areas of interest for deep live lectures in 2007/2008.

Disclaimer

- This talk discusses technologies that are publicly available. It is for information purposes only.
- Service and hardware providers are mentioned as examples – this is not a recommendation for any supplier.
- It is your responsibility to ensure that you comply with all relevant legal/contractual obligations. eg.
 - Receiving a TV signal requires a TV license
 - Service providers may restrict what equipment may be connected to their networks

Analogue Terrestrial Television (ATT)

- This is the traditional method used to broadcast television signals. Signals are sent by radio waves from a national network of masts and antennae.
- Approaching end of life
 - The EU Commission has recommended digital switchover and analogue switch-off, to be completed in all Member States by 2012.

Leverage your PC and TV

- Add a tuner card to your PC
 - From €60 - €170
 - Watch TV on your PC
 - Turn you PC into a PVR (hard disk recorder)
- Output to your TV
 - See media center info later



- <http://www.radionics.ie>
- <http://www.elara.ie/products/detailsfull.asp?productcode=ECE1143742/>
- <http://www.komplett.ie/k/ki.aspx?sku=117285>

Digital TV

- Uses state-of-the-art digital technology to broadcast television signals. Digital is much more flexible than analogue and it allows the transmission of perfect pictures in various display formats, including high and standard-definition television, in both conventional and wide-screen versions.
- Digital TV can be received:
 - Through an aerial (DTT)
 - Via Satellite (Using a dish)
 - Using Cable (or MMDS)
 - Over Broadband (also IPTV)

Digital Terrestrial TV

- Digital Terrestrial Television (DTTV or DTT) is an implementation of digital technology to provide a greater number of channels and/or better quality of picture and sound. It is received using a normal rooftop or set-top TV aerial. A set-top box is required together with an existing TV set or a new digital TV set designed to receive the new digital signals. DVB-T stands for Digital Video Broadcasting - Terrestrial and it is the DVB European consortium standard for the broadcast transmission of digital terrestrial television.
- A DVB-T pilot trial in Dublin is underway. The four Irish-based terrestrial stations, RTE1, Network2, TV3 and TG4 along with six radio channels are currently broadcast. A formal start date is still to be announced.
- Freeview (UK only)
 - Freeview is a brand name for the free digital terrestrial television (DTT) service in the United Kingdom, using the DVB-T standard. Currently, Freeview provides about 46 television channels, and 27 radio channels. To receive the Freeview services, a set-top box (typically costing between UK£20 and UK£100) or a new television with an integrated digital tuner is required.

Digital Terrestrial TV (2)



View Digital TV on your computer

- EPG (with timers)
- Recording software

- eBay – USB DVB-T (€5 +p&p)



Freeview
(depends on where you live)
eBay (€25 and up +p&p)



Digital Satellite TV

- Direct broadcast satellite (DBS) is a term used to refer to satellite television broadcasts intended for home reception, also referred to as direct-to-home signals. To receive digital satellite television a 'mini-dish' is required on the outside of the building. A set-top box is also required to decode the digital satellite signals.
- Signals (channels) can be
 - **FTA** - Free To Air - which means you don't need to put a card into the satellite decoder.
 - **FTV** - Free To View - which means that a card is needed, but it is "free". The signal is encrypted to prevent those without a card watching. Generally only people in a particular area get a card and cards might vary with area.
 - **Subscription** - A card is required and you pay an annual or monthly subscription
- Free to Air channels can be received without payment.
- Sky offers Pay TV and subscription digital satellite to people in Ireland.
 - Sky offer additional services such as Sky+ and some High Definition programming

Digital Satellite TV (2)

- Dishes and decoders can be purchased from discount supermarkets or electronic stores.
- Another option is to buy a second hand Sky dish and decoder. Older versions of these are readily available as customer upgrade to newer offerings from Sky. (Buy and Sell about €100).
A Sky box with no card will receive all of the BBC channels - some UTV - lots of others (but not RTE or Channel 4)
- Freesat from Sky (UK only)
 - This is a British non subscription based satellite service from BSkyB which gives viewers access to 150 channels. While many of the channels available on the platform can be accessed with standard free-to-air satellite decoders available from providers other than BSkyB, the Freesat from Sky allows access to six additional channels: Channel 4, Five, Five US, Five Life, and Sky Three.
 - Full package about £150
 - Card only for about £20
- Lots of info available eg
 - <http://www.lyngsat.com/packages/skyuk.html>
 - <http://homepage.eircom.net/~watty/satellite/satellite.htm>



Digital Satellite TV (3)

- The Dreambox is a Linux-powered DVB satellite, terrestrial and cable digital television decoder (set-top box), produced by German multimedia vendor Dream Multimedia. eBay from €170 to €500 depending on features
- Its firmware is officially user-upgradable, since it is a Linux-based computer, as opposed to third-party "patching" of alternate receivers. All units support Dream's own DreamCrypt conditional access (CA) system, with software-emulated CA Modules (CAMs) available for many alternate CA systems.
- The built-in Ethernet interface allows networked computers to access the recordings on the internal hard disks on some Dreambox models. It also enables the receiver to store digital copies of DVB transport streams on networked filesystems or broadcast the streams as IPTV to VideoLAN clients.
- The combination of third-party developers and network connectivity makes Dreambox use particularly common among enthusiasts.
- Some Third-party software is neither officially endorsed nor supported by Dream Multimedia and voids the official warranty.



Digital Cable TV

- To receive digital TV via a cable connection people need to subscribe to one of the cable TV providers who then provide a set-top box to go with an existing TV set. Cable service is normally limited to highly urban areas. MMDS services operate in rural areas
- NTL and Chorus offer this service

Digital Satellite/Cable TV (2)

- If your service provider allows it – you may be able to use an alternate set-top box which provides additional functionality
- Additional Functionality
 - Enhanced EPG
 - PC connectivity
 - PC control over the TV
 - Streaming video or audio from PC to TV
 - Recording TV programs to your PC
 - Internet connectivity
 - Plugins (Weather, IMDB movie information)
 - Enhanced TeleText
 - Games



Digital TV over Broadband

- A high speed Internet connection (i.e. broadband) is required.
- Eg A/DSL, a cable Internet connection or an ISDN, T1 or T3 line.
- High speed Internet connection is required for high quality audio/video.
- IPTV (Internet Protocol Television) has become a common denominator for systems where television and/or video signals are distributed to subscribers using Internet protocols.
- Magnet offer a service in parts of Dublin which provides
 - Broadband
 - Digital TV & Radio
 - Telephony



Other

- Mobile TV
 - Using technologies such as DVB-H, DMB or 3G, are now becoming viable alternatives for personalised, mobile, one-to-one delivery of broadcasting services.
 - O2 are running a trial with 350 customers from Mar to Aug 2007
- Placeshifting
 - The Slingbox™ (produced by Sling Media, Inc) is a TV streaming device that enables consumers to remotely view their cable, satellite, or personal video recorder (PVR) programming from an Internet-enabled computer with a broadband Internet connection. The Slingbox can redirect up to four live TV streams from a cable box, satellite receiver, or DVR to the viewer's PC located anywhere in the home or, when using a broadband Internet connection, anywhere in the world. This way of accessing content is known as placeshifting.
 - SlingPlayer™ Mobile lets you watch your TV and all of its programming on Windows Mobile cell phones or PDAs



Media Centers

- Essential a hard disk with built in media player
- Handles virtually all formats of video audio and still pictures and outputs to a TV
- Generally
 - connect to pc via USB or wireless network
 - connect to tv via RCA connectors or S-video or HD-DVI
- A big advantage is that .AVI or .DIVX movies can be played straight on your TV with no conversions

Media Centers (2)



< €100

VCD, (VOB)DVD, MPEG1/2/4, DIVX3.X, DIVX4.X, DIVX5.X
MP3
JPEG



€130 and up

MPEG1 (AVI, MPG, DAT) MPEG2 (AVI, VOB) MPEG4 (AVI, DivX, XviD)
MP3, AC3 (Normal, POP, Jazz, Rock, Ball, Classic sound effects)
JPEG, Motion JPEG



€300

Network MediaPlayer-350

AVI: MS-MPEG4v3/DivX/Xvid, WMV: WMV9,
MP4: MPEG4 Video, DAT: MPEG1, VOB: MPEG2,
MPG/MPEG: MPEG1/MPEG2
MP3, OGG Vorbis
JPG/JPEG

BitTorrent

- BitTorrent is a peer-to-peer (P2P) communications protocol for file sharing.
- BitTorrent is a method of distributing large amounts of data widely without the original distributor incurring the entire costs of hardware, hosting and bandwidth resources. Instead, when data is distributed using the BitTorrent protocol, recipients each supply data to newer recipients, reducing the burden on any individual source, providing redundancy against system problems, and reducing dependence upon the original distributor.
- Content providers such as the BBC make programs available for legal download
- There are numerous compatible BitTorrent clients eg.
 - Azureus <http://www.vuze.com>
 - µTorrent <http://www.utorrent.com/download.php>
 - BitTorrent <http://www.bittorrent.com/download>

Xbox

- Subject to presenter availability
- Hard Mods
- Soft Mods

Browsing

- <http://www.digitalworldz.co.uk/forums/>
- <http://www.world-of-digital.com/forums/>