IPTV Overview

Presented by Paul Ashun

TV Platforms Group

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IPTV Overview

Chapters:

1. What is IPTV (as opposed to internet TV) ?

2. What is VOD (as opposed to IPTV)

3. Middleware and Video

4. Common IPTV Models

5. Other factors

6. Questions

What is IPTV
(and what is
internet TV)

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1a - What is IPTV

- Still evolving
- Digital TV delivered using technologies used for computer network. Internet Protocols (http, rtsp, igmp)
- A TV like 'quality of service' (always on, reliable)
- Can be 'live' or pre-recorded (on-demand)
- Usually over a managed/closed network

Eg. Virgin TV, Tiscali TV, BT Vision

1b - What is Internet TV

- Digital TV delivered using technologies used for computer network. Internet Protocols (http, rtsp, igcmp)
- No guaranteed 'quality of service'
- Usually delivered via open-internet / un-managed network

Eg. YouTube, BBC iPlayer on browser/PC

1c – Managed Networks

Control over

- bandwidth allocation
- contention ratio   } Controlled
- content   'quality of service'

1d – Open Internet (Unmanaged networks)

- – Variable bandwidth
- – Higher contention ratio (20:1)
- – Less control over content

} Little control over 'quality of service'

1e – Open Internet (Unmanaged networks)

- The BBC is working to ensure quality of service with ISPs. This will possibly change the definition of IPTV through the consensus that the quality of service is good over the open internet

Open Internet

Managed Network

YouTube

Virgin VOD

TV iPlayer (on Virgin)

PC iPlayer

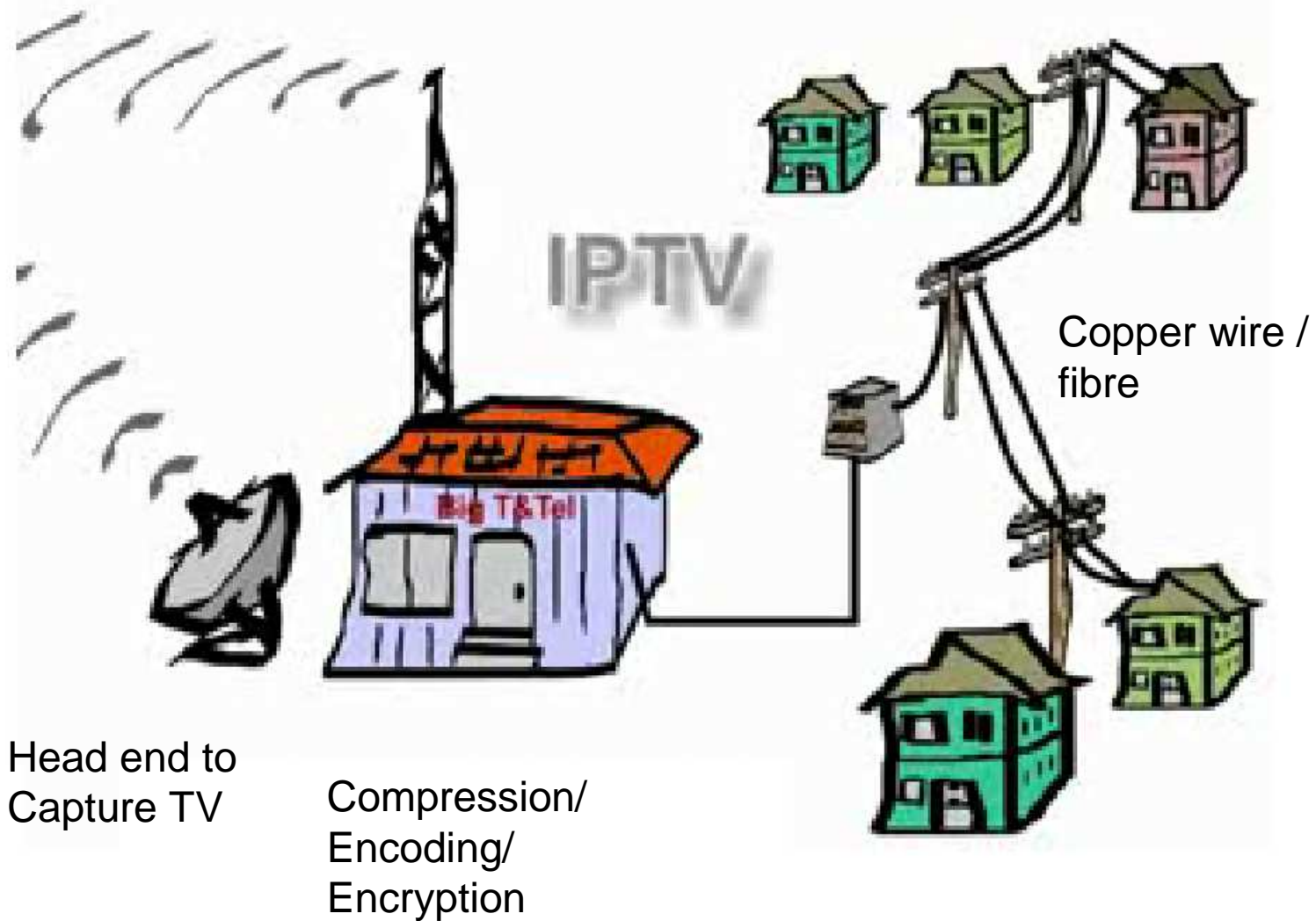Tiscali TV

BT Vision

FreeSat

Orange TV

How to capture/create IPTV

IPTV

Copper wire / fibre

Head end to Capture TV

Compression/ Encoding/ Encryption

IPTV over the network cloud

Mobile Device

Wifi / wimax

Computer

ADSL

Network

ADSL

Hybrid fibre coax

Set-top Box

Cable Set-top Box

Freesat
Tiscali
BT Vision
[Orange TV]

Virgin

Protocols
- http
- rtsp
- igmp

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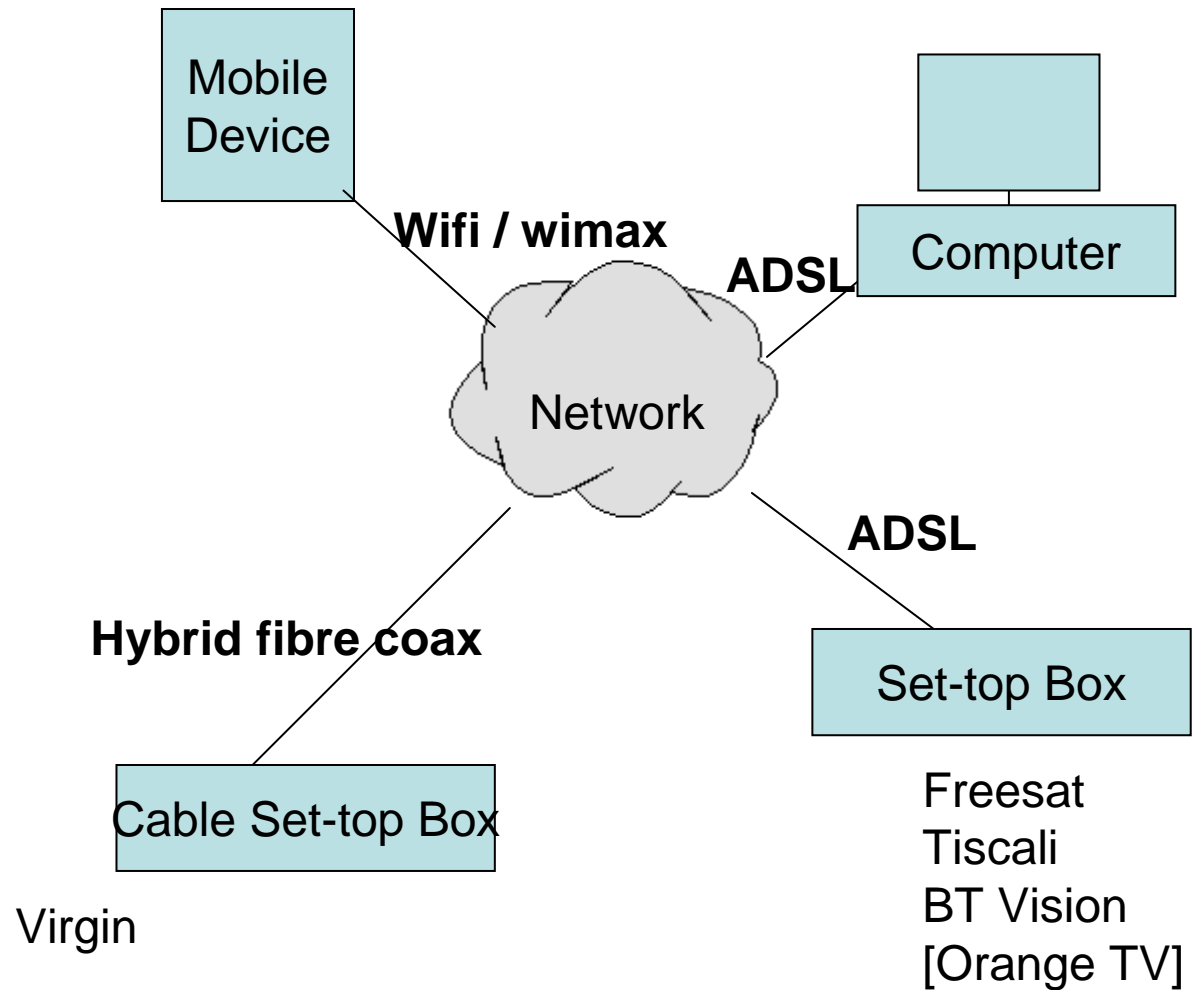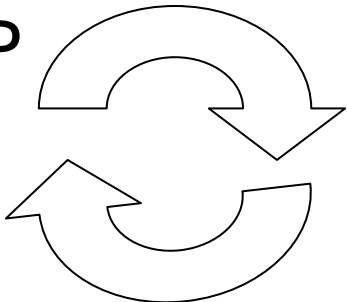
Why IPTV and not Broadcast

- Two-way data flow (video on demand)
- Greater personalisation / tailored advertising
- Combined features
  - Voice over IP
  - Messaging/Recommendations
  - Chat around content

IPTV- Key Protocols

- **HTTP**
  Request
  Response

  (hyoer-text-transfer-protocol)

  Firefox, Internet Explorer

- **RTSP**
  play
  pause
  record

  (real time streaming protocol)

  Real Player, Windows Media Player
  (streamed video)

- **IGMP**

  (internet group management protocol)

  - connecting to multicast stream (TV channel)
  - changing from one channel to another

What is
VOD

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2a - What is VOD

- Select and watch video content (usually over a network)

- Either content is streamed or downloaded with/to the application

- Apps have a subset of VCR functionality including RWD, Pause, FFWD etc.

- Push VOD – delivered to set top box from broadcaster

2b - What is VOD

- Not necessarily over IP. Eg. Push VOD
- Push VOD – delivered to set top box from broadcaster

Eg. BBC iPlayer, YouTube, BBC Archive, Rimokon quiz, Tiscali, BT vision

Middleware

And

Video Codecs

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3a – Middleware

- Set-top box software that allows us to write applications
- Affect application capabilities

3b – Middleware

- Middleware
  - MHEG – (Freeview / Freesat)
  - Liberate – (Virgin)
  - ICTV/other – (once trialled by Tiscali; used by US web sites)
  - HTML/JavaScript (KIT/Proprietary operators)
  - Mediaroom (BT Vision)

3c – Codecs

- Compression/Decompression
- File extension specifies codec used to compress/decompress
- Lossy/Lossless

3d – Codecs

- Codecs
  - H.264
  - MPEG4
  - MPEG2
  - WMV9

H.264

- 1. Up to 50% in bit rate savings: Compared to H.263v2 (H.263+) or MPEG-4 Simple Profile, **H.264** permits a reduction in bit rate by up to 50% for a similar degree of encoder optimization at most bit rates.

- 2. High quality video: **H.264** offers consistently good video quality at high and low bit rates.

- 3. Error resilience: **H.264** provides the tools necessary to deal with packet loss in packet networks and bit errors in error-prone wireless networks.

- 4. Network friendliness: Through the Network Adaptation Layer, **H.264** bit streams can be easily transported over different networks.
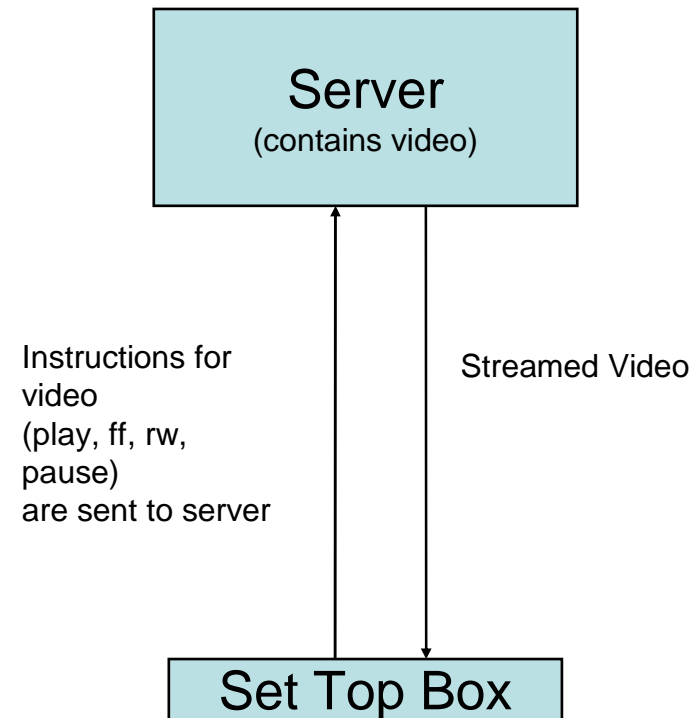
IPTV/Internet TV Platforms/Operators

OPERATOR	MIDDLEWARE	CODEC	DELIVERY NETWORK	MANAGED NETWORK
Tiscali	(client-side Java)	h.264	ADSL	YES
BT Vision	Mediaroom	h.264	ADSL	YES
Virgin	Liberate (Seac-change)	Mpeg 2	Hybrid fibre co-ax	YES
Freesat	MHEG 1.06 turbo	Not implemented	Any – dependent on isp	NO
Freeview (other than BT vision)	MHEG	Dependant on ISP	Any – dependent on isp	NO

Common IPTV/VOD models

4a – Common models

Server Side Video / Client Side Application

Server
(contains video)

Instructions for
video
(play, ff, rw,
pause)
are sent to server

Streamed Video

Set Top Box

Contains:
- application code previously downloaded

Disadvantages
-Slower to load video
-Longer round trip to server
battling against bandwidth

Advantages
-Greater capacity for video
on servers than set-top/pc

4b – Common models

Server Side Video / Server Side App

Server
(contains video and app)

Set Top Box
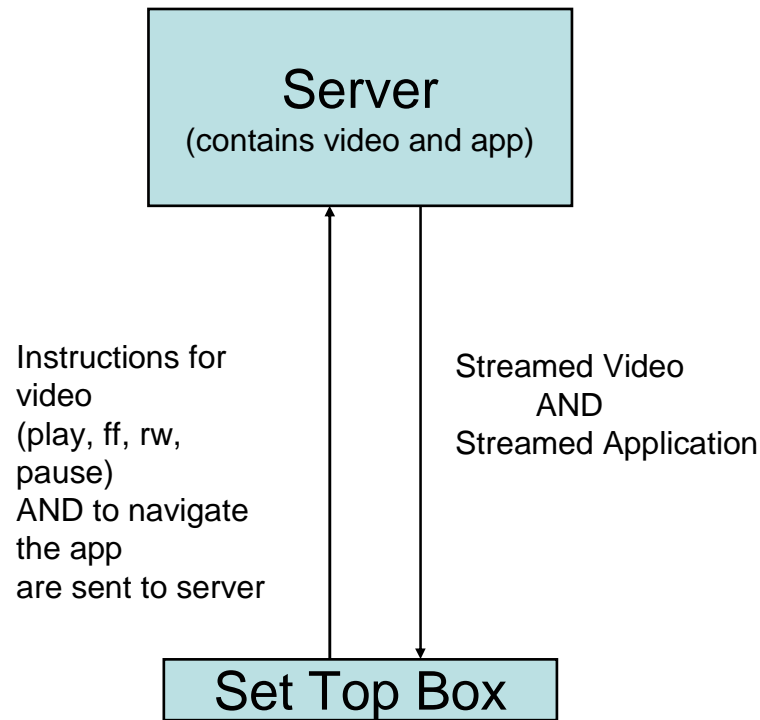
Instructions for
video
(play, ff, rw,
pause)
AND to navigate
the app
are sent to server

Streamed Video
AND
Streamed Application

contains:
- no storage in the box

Disadvantages
-Slower to load video/app
-Longer round trip to server
battling against bandwidth
/contention ratio

Advantages
-Greater capacity for video
-Larger app size for
more functionality

4c – Common models

Client Side App / Client Side Video

Set Top Box/PVR

Disadvantages
-Inability to leverage server for capacity.

Advantages
-Quick seamless transitions between video and scenes.
-Store app locally and take box from a to b (i.e. to a friends house)

contains:
- application code previously downloaded
- video previously downloaded

4d – Common models

Peer-to- Peer Video / Client Side Application

Set Top Box/PVR

video
video
video
video
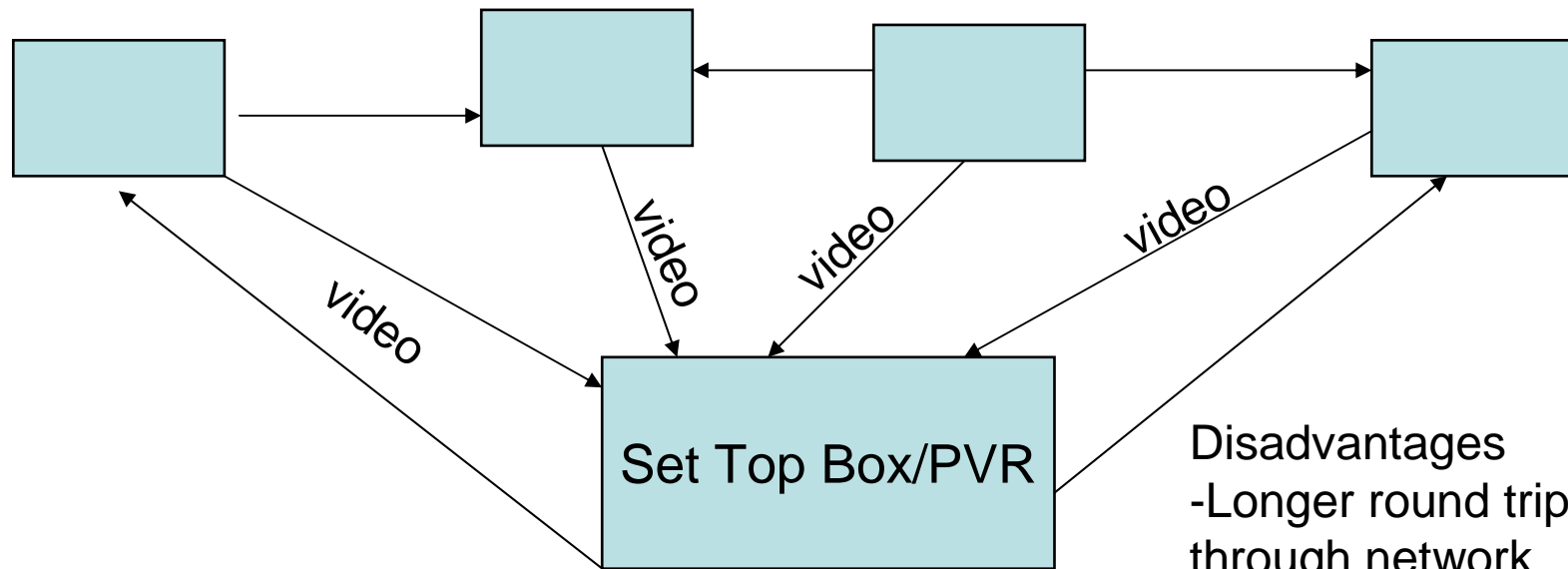
Disadvantages
-Longer round trip to through network

Advantages
-Leverage other PC/set-tops with the same video for speedy download

contains:
- application code previously downloaded
- video streamed from other pcs/boxes

Middlewares on devices
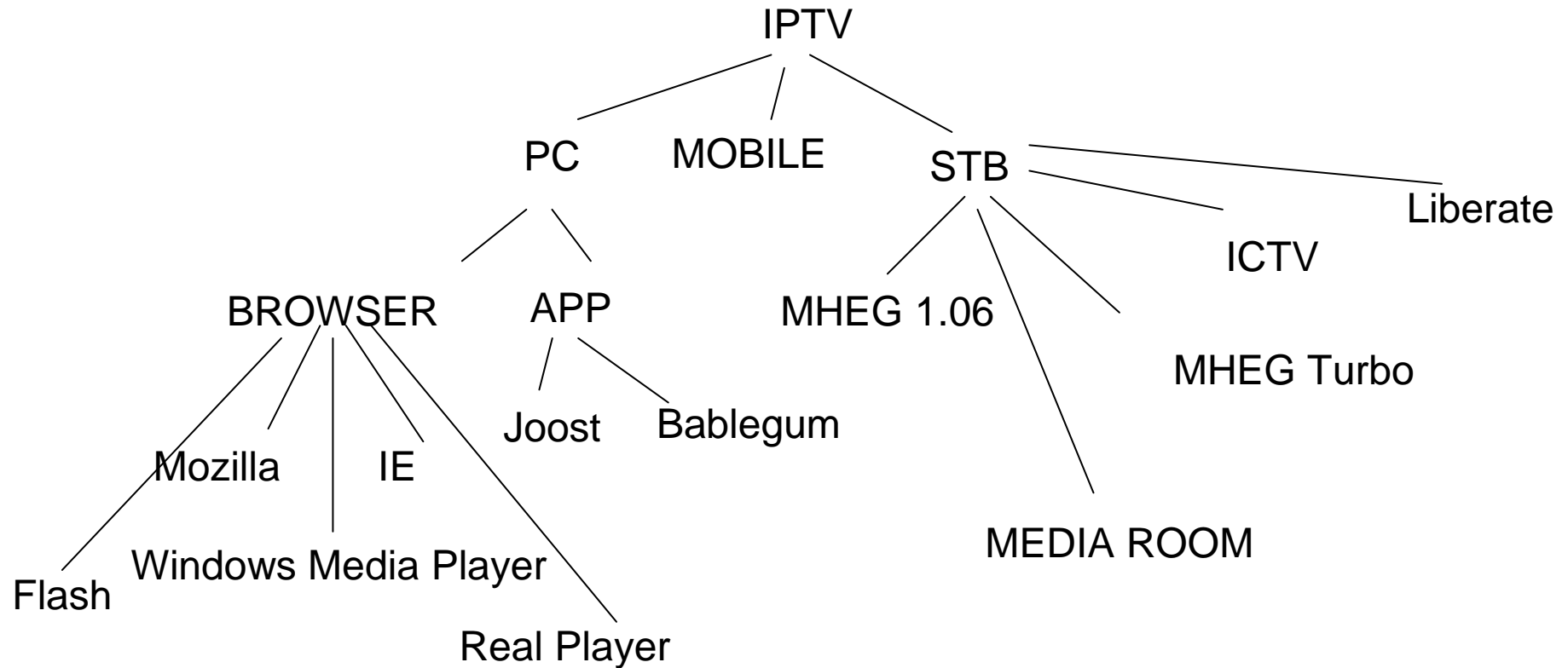
Other Factors

5 – Other Factors

- Digital Rights Management (DRM)
- Security (logging in / privacy)
- Messaging
- Mobile Devices
- Authoring
- Video Delivery
- Games consoles
- User experience & design

IPTV Overview

Thanks for your time

Any Questions ?

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