

# Open Tech from BBC R&D

...Dirac, Kamaelia and Digital TV Hacks

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# Dirac is...

- A new video codec from the BBC
- Free; available from Sourceforge (MPL, GPL, LGPL)
- Patent\* and royalty-free – anyone can use it
- Comparable in quality to the best of its competitors
- Did I mention Free?

(\*apart from some of our own, but see “royalty-free”)

# Why Develop an Open Source Video Codec?

- We want to spend money on programmes, not codecs.
- We want to distribute our programmes as efficiently as possible.
- We want to develop the best codec possible, obtaining help from other interested parties.
- We want the licence-payer to be able to use the software that they paid for, without restrictions.

# Uses for Dirac

- In the BBC (Creative Archive, News, Online, Signing)
- In Industry
- At home (in set-top boxes, PVRs, your own software)

# The Technology

- Wavelets
- Motion compensation
- Arithmetic coding



# Software supporting Dirac

- VLC 0.8.2
- mplayer (with patch\*)
- Windows media players (with Directshow filter\*)
- FFmpeg (with patch\*)
- transcode (with patch\*)

Adding support to other players has been made as simple as possible – help is always appreciated!

\*available on Dirac website: <http://dirac.sf.net>

# The Future

- Real-time playback of TV-quality video by September
- Beta available by end of 2005
- Release in 2006 (hopefully!)
  
- Probable standardisation through W3C
  
- Help wanted!
  - Software developers
  - Documentation writers
  - Enthusiasts

# More info

<http://dirac.sourceforge.net>



# Other R&D Open Tech: Kamaelia



- A Python-based framework for creating highly-modular concurrent applications
- Concurrency – think pipes
- Designed as a test bed for large-scale media delivery protocols, but generally Very Useful.
- Open-source, tri-licensed (MPL, GPL, LGPL)
- <http://kamaelia.sf.net>

# Other R&D Open Tech: Media Dispatch

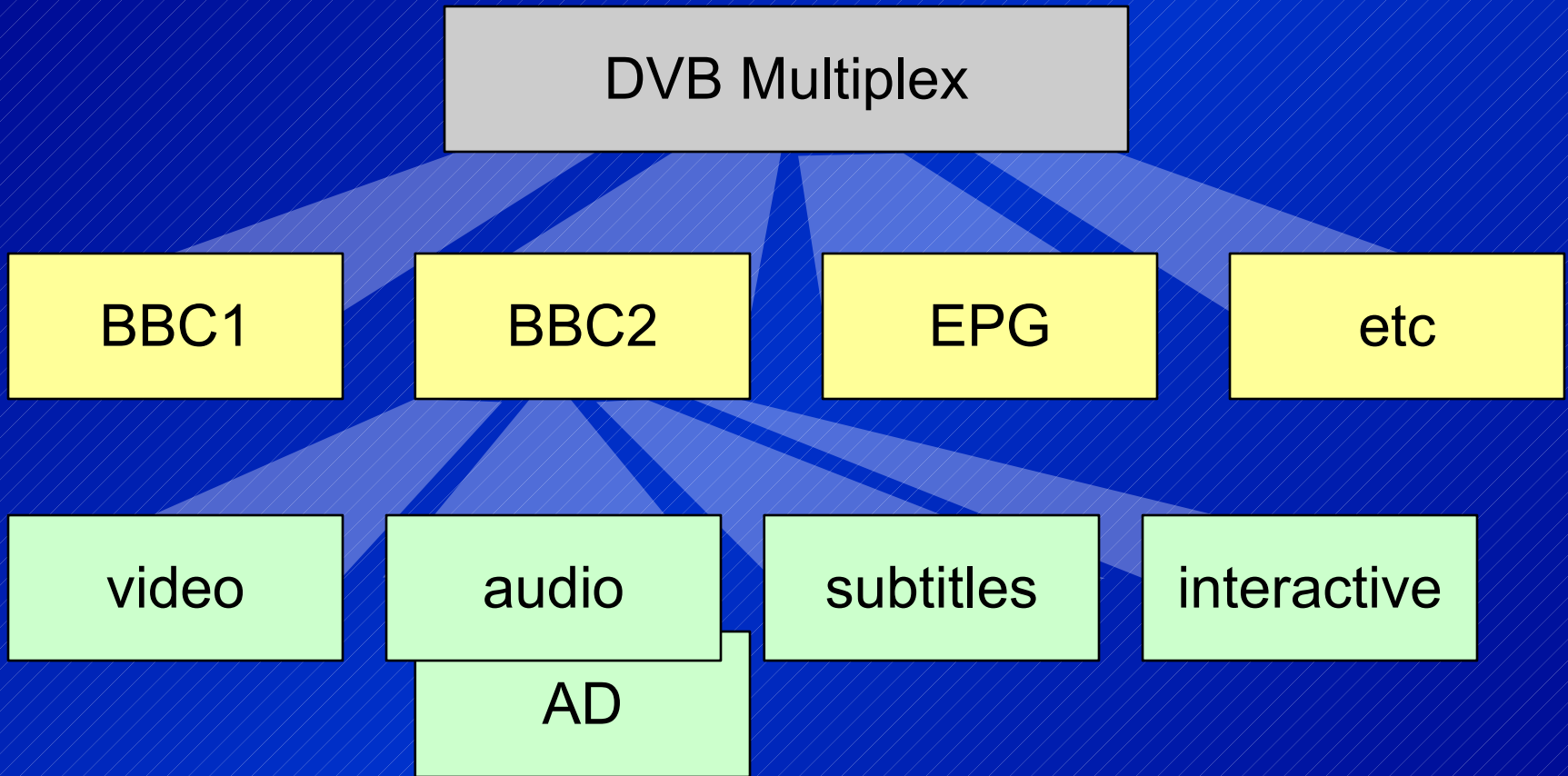
- A protocol for negotiating the electronic exchange of large media files, replacing tapes and couriers.
- Open protocol, being developed collaboratively.
- Open Source reference implementation available by September
- <http://www.pro-mpeg.org/publicdocs/mdg.html>

# Open Source from the BBC

All the projects mentioned and more at

<http://www.bbc.co.uk/opensource>

# Digital TV Hacks



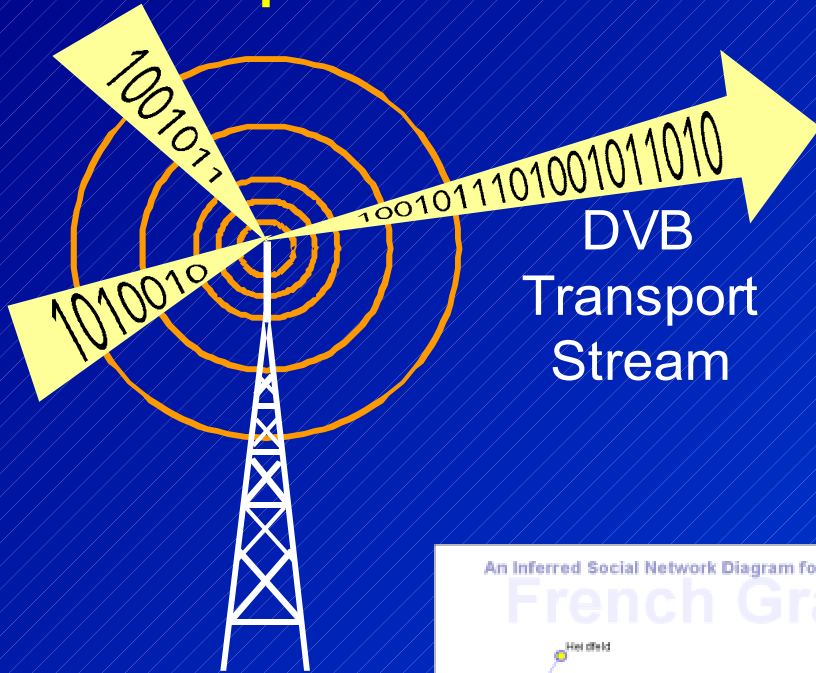
# Getting a Transport Stream

- DVB PCI/USB card
  - See compatibility list at [http://www.linuxtv.org/wiki/index.php/Supported\\_DVB\\_cards](http://www.linuxtv.org/wiki/index.php/Supported_DVB_cards)
- PVR (eg Topfield TF5800)
- Some Set-Top Boxes
  - esp DreamBox: <http://www.dream-multimedia-tv.de>

# Transport Stream Processing

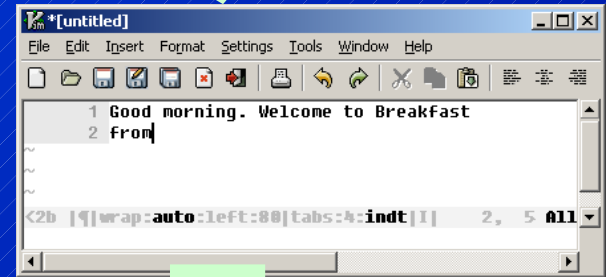
- DVB tools – <http://sourceforge.net/projects/dvbtools>
- Project X - [http://www.lucike.info/page\\_projectx.htm](http://www.lucike.info/page_projectx.htm)
- PVA Strumento - <http://www.offeryn.de/dv.htm#pvas>  
(not so useful)

# Example Hack: Social Networks

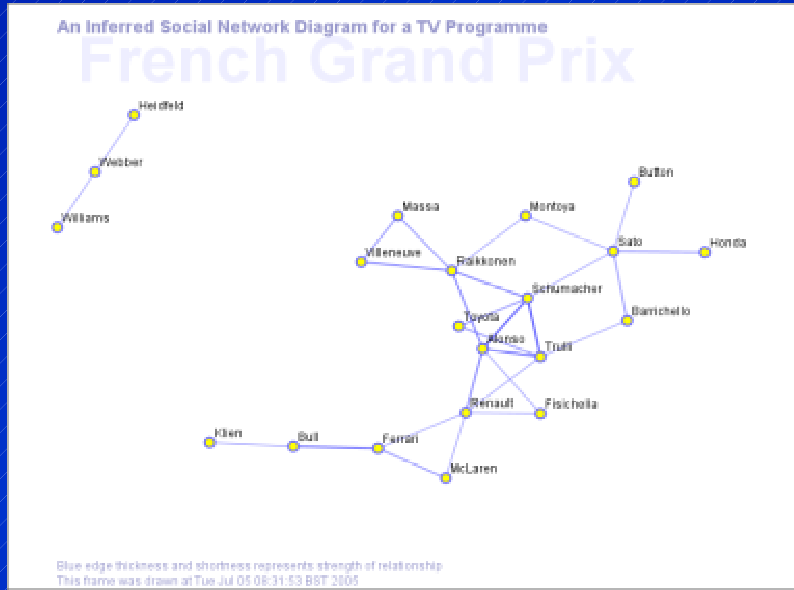


Good morning. Welcome to Breakfast  
from

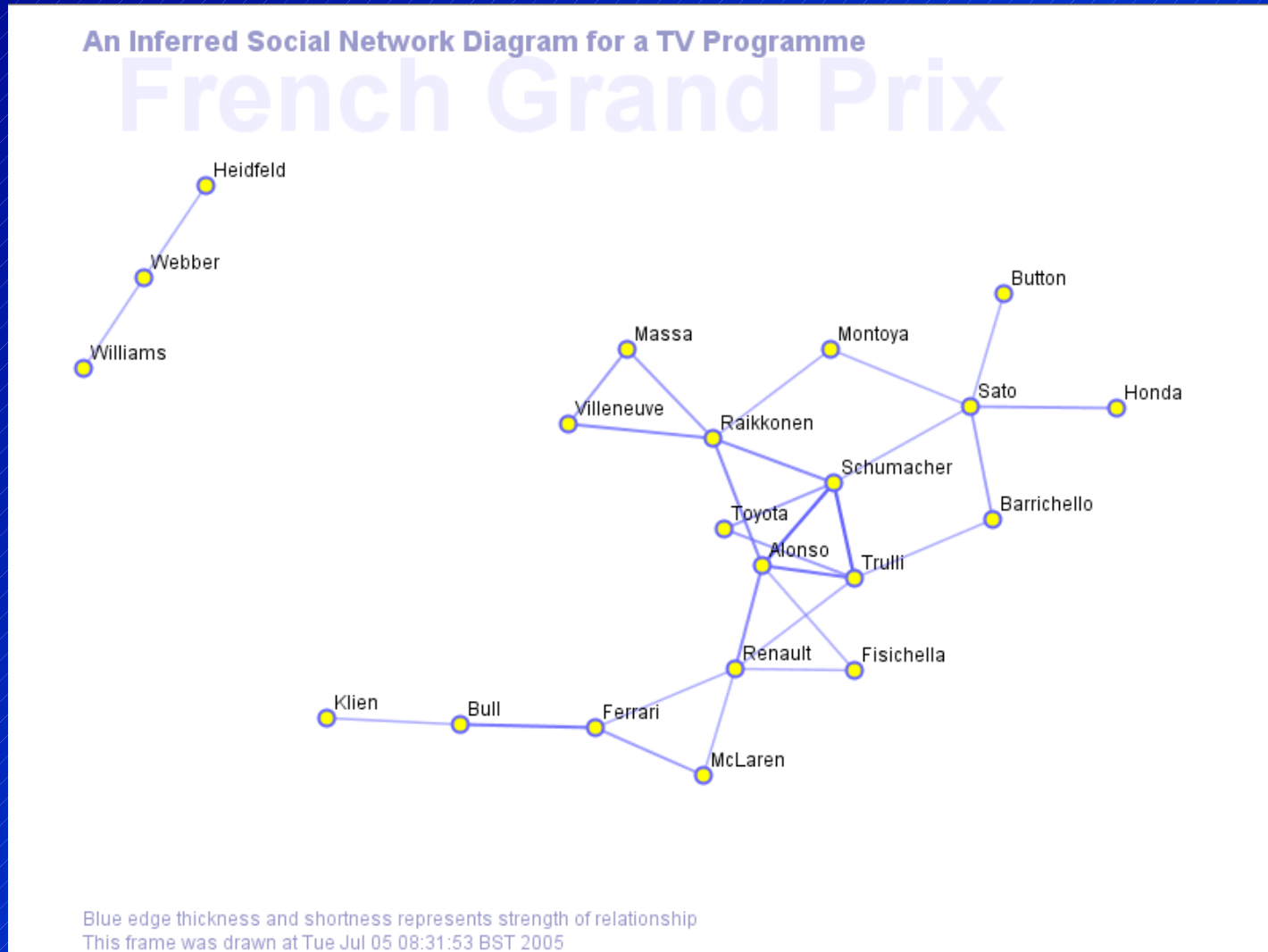
OCR



PIESPY



# Social Network of an F1 race





# Tools Used in This Hack

- PieSpy
  - <http://www.jibble.org/piespy>
- “Quick hack” streaming libs and visualisation code
  - [http://www.elvum.net/stuff/sn\\_subtitles.jar](http://www.elvum.net/stuff/sn_subtitles.jar)

# Fun and games with EPG data

- Track TV trends by looking at the incidence of words in EPG data (eg “celebrity”, “cult”, “pie”)
- Write a “TV Personality Top Ten” and watch people’s careers rise and fall
- Procmail for TV – send \$WHO to /dev/null

# New ways to “watch TV”

- Soundtrack + Audio Description = podcast
- Subtitle-triggered slideshow
- Transcode to DivX/Xvid (or Dirac!)
- Create your own edited highlights by searching subtitles for keywords
- Automatically create a “scrapbook” programme containing every bit of TV about ponies (or whatever)

# More cool stuff to do

- Write an open-source interpreter for interactive TV
- Extract recipes from the subtitles of cookery programmes and feed them to your robotic kitchen
- Run beat-detection algorithms against soundtracks; detect and extract music

# And more...

- Run a cut-detector on TV programmes and determine their “paciness” from the cut-rate: watch TV that suits your mood
- Run stress analysis software on soundtracks and create a politician lie-detector

# Further Information

- BBC Open Source projects:
  - <http://www.bbc.co.uk/opensource>
- BBC Research & Development
  - <http://www.bbc.co.uk/rd>
  - [info@rd.bbc.co.uk](mailto:info@rd.bbc.co.uk) – email address for general enquiries
- Me
  - [stephen.jolly@rd.bbc.co.uk](mailto:stephen.jolly@rd.bbc.co.uk)