Means of (re)production: GStreamer
Outline

GStreamer: Multimedia for all
@fluendo.com: What we're up to
GStreamer
What is GStreamer?

* A multimedia library and set of plugins
* Modular building blocks for media applications
Brief example

v4l2src ! ffmpegcolorspace ! ximagesink
GStreamer history

* 0.0.9 October 1999
* 0.1.0 January 2001
* 0.3.0 December 2001
* 0.4.0 July 2002
* 0.6.0 February 2003
* API Stable
* 0.8.0 March 2004
* 0.10.0 December 2005
GStreamer history

No one can accuse us of version number inflation :) 

Next incompatible break will be the last: 1.0
An application-based introduction

A tour through GStreamer
Players

Historically the first applications built on GStreamer

Surprisingly difficult
Players: solutions

How do applications interact with a playing media pipeline?

* Generic core API to create and interact with pipeline
* Media pipeline runs in threads
* Messages posted both synchronously and asynchronously from pipeline
Players: solutions

Synchronization between audio and video

* Threads
Players: solutions

Autoplugging: play any format

* Registry of "typefinders"
* Registry of capabilities that plugins can handle
* Elements that perform autoplugging for you
Transcoding / capture

E.g. thoggen DVD ripper, radio production apps, flumotion
Transcoding / capture: solutions

Robustness

* long-running pipelines
* high load
* large number of different codecs
Transcoding / capture: solutions

Features

* language bindings
* many capture sources
  * v4l, firewire, ...
* network data flow over tcp
* network clock synchronization
"Embedded" applications

GStreamer is becoming very common in embedded consumer devices

* Small library size
* Ability to scale down
  * modular design
* Ability to use dedicated hardware for processing
Nonlinear editors

E.g. the PiTiVi video editor, the Jokosher audio editor

* "Segment seeks": start playing from 3 seconds, go to 10 seconds
* Nonlinear editing library: gnonlin
Live/teleconference apps

Telepathy, lots of embedded apps
* dynamically adjusting pipeline latency
* clock slaving (run audio clock at rate of remote audio source)
* rtp/rtsp protocols
* network buffering algorithms
Media production

The great unknown: VJ/DJ-style apps, synthesizers

* realtime behavior
* efficiency
What is Flumotion?

An end-to-end streaming server: capture, effects, encoding, streaming
Demo

webcam streaming
History

* Flumotion streams GUADDEC: June 2004
* 0.0.1 September 2004
* 0.1.0 October 2004
* 0.2.0 March 2006
* 0.4.0 January 2007
Afraid of 1.0? :(
Status

Streamed the GPLv3 announcement
Run in Fluendo's streaming platform

* Live streaming of many major Spanish media providers

Still evolving
@fluendo.com: Others

Elisa media center

PiTiVi video editor
Conclusion

We're hiring!

Andy Wingo, JAH
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