# 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

# @fluendo.com: Flumotion

# What is Flumotion?

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

# Demo

webcam streaming

# History

* Flumotion streams GUADEC: 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!

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