

# State of the GStreamer Project

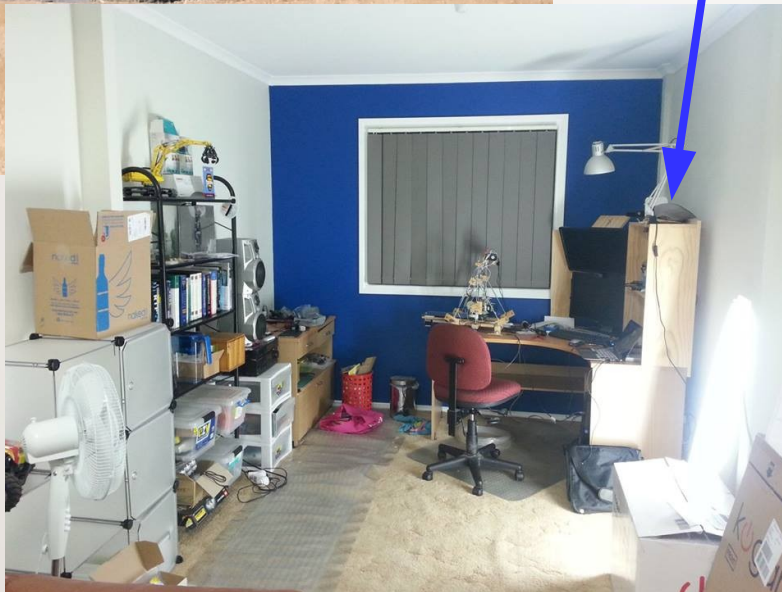
Jan Schmidt

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jan@centricular.com

# Who am I?

GStreamer developer since 2003  
Director & Engineer with Centricular Ltd

# Introduction



I work here

for

 **Centricular**

# Introduction

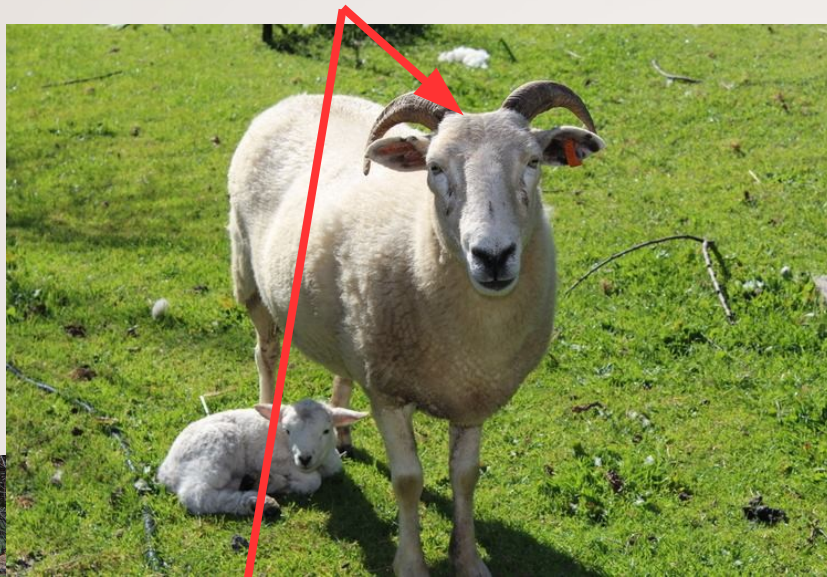


Which is here



# Introduction

With some of these

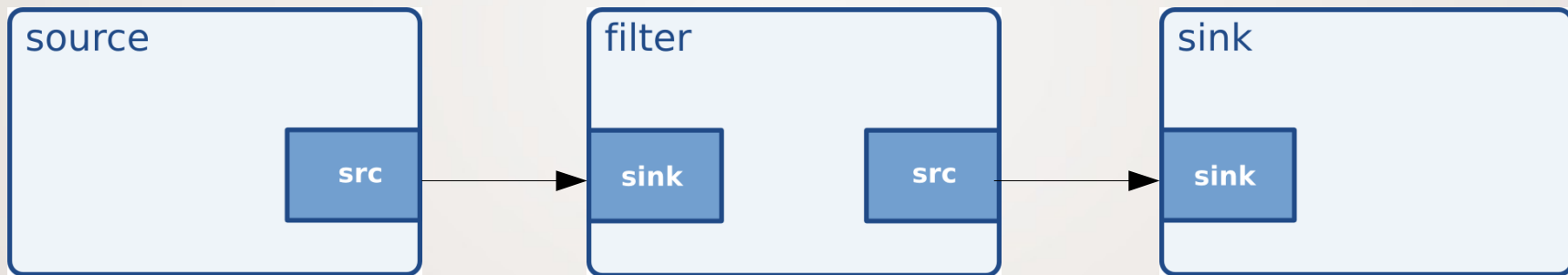


some chickens, cats,  
fruit trees...



# GStreamer

- Pipeline-based multimedia framework
- Basic building blocks – elements, connected through pads



- `filesrc location=test.mp3 ! decodebin ! pulsesink`

# Overview

- Open Source
- Cross-platform
  - Linux, embedded Linux, Windows, OSX, iOS, Android, ...
  - x86, ARM, PowerPC, SPARC, ...
- Stable GObject based C API/ABI
- Bindings for many languages
  - Python, C++, JavaScript, .NET, ...

# Overview

- Not a media player or playback library
- Not a codec and protocol library
- Not a transcoding tool
- Not a streaming server
  
- *But can be (and is) used to implement all that*



# Overview

- Goals
  - Flexible and extensible design
  - Easy to integrate with other software (in both directions)
- Large, active developer and user community
- Ecosystem of companies providing services around GStreamer and companies building their own products and services on top of GStreamer

# GStreamer Applications

- Media players
- Audio/video editors, music composers
- VOIP/video communication
- Web browsers
- Transcoders
- Streaming servers and clients
- ... *and many more*

# A Brief History

0.0.1 – 10th Jun 1999

0.1.0 – 11th Jan 2001

0.2.0 – 7th Jun 2001

0.3.0 – 12th Dec 2001

0.4.0 – 5th Jul 2002

0.6.0 – 1st Feb 2003

- *GNOME 2 integration*

0.8.0 – 16th Mar 2004

0.10.0 – 5th Dec 2005

- *Stable API guarantees*

1.0.0 – 24 Sep 2012

- *First API/ABI break since 2005*

1.2.0 – 24 Sep 2013

1.4.0 – 19 Jul 2014

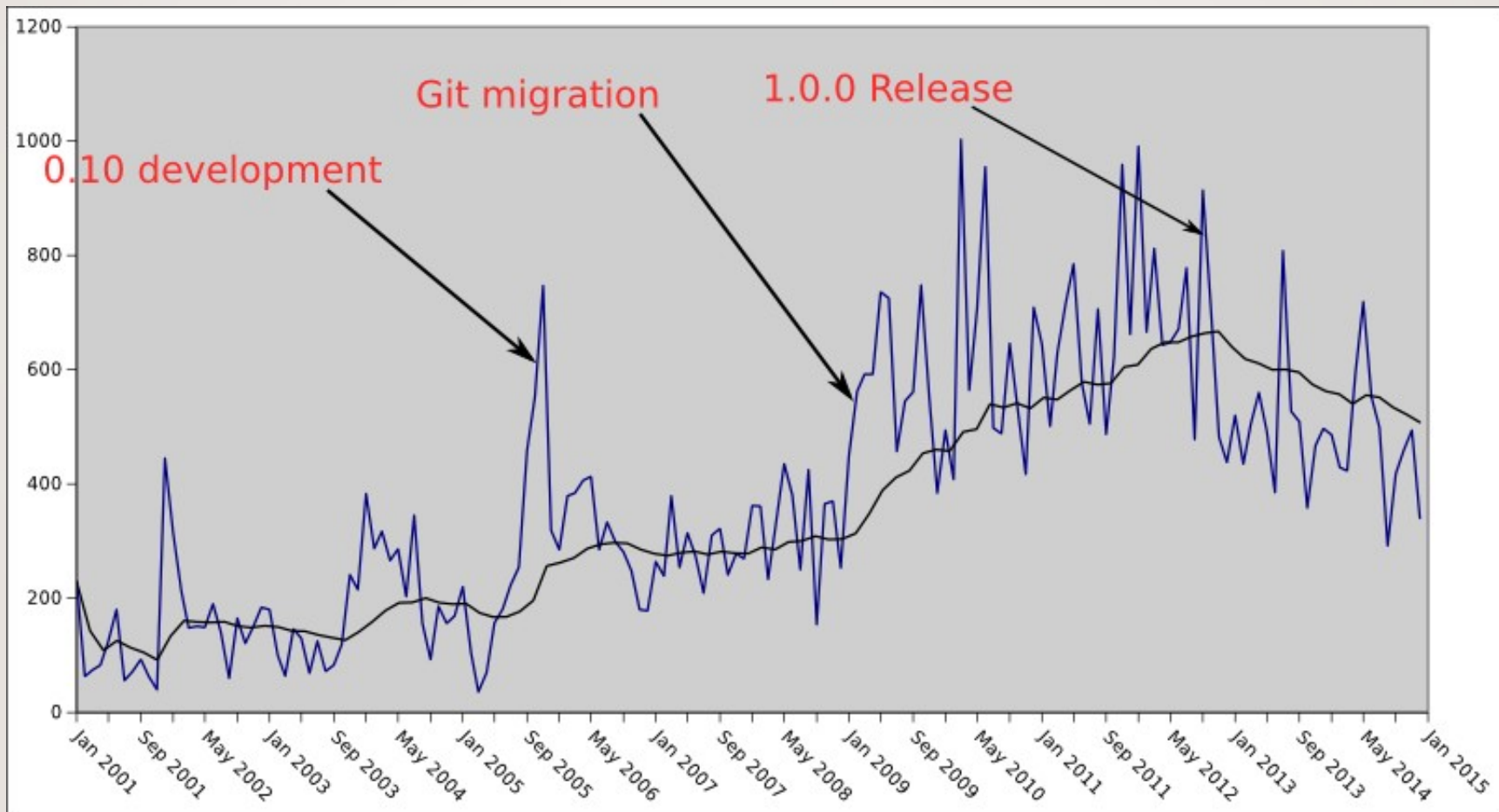
Currently 1.5 – 2 million lines of code

# GStreamer 1.0

- Released in 2012
- First ABI/API break since 0.10 in 2005
- New versioning scheme
- Large changes to internals
- Relatively small porting effort for apps

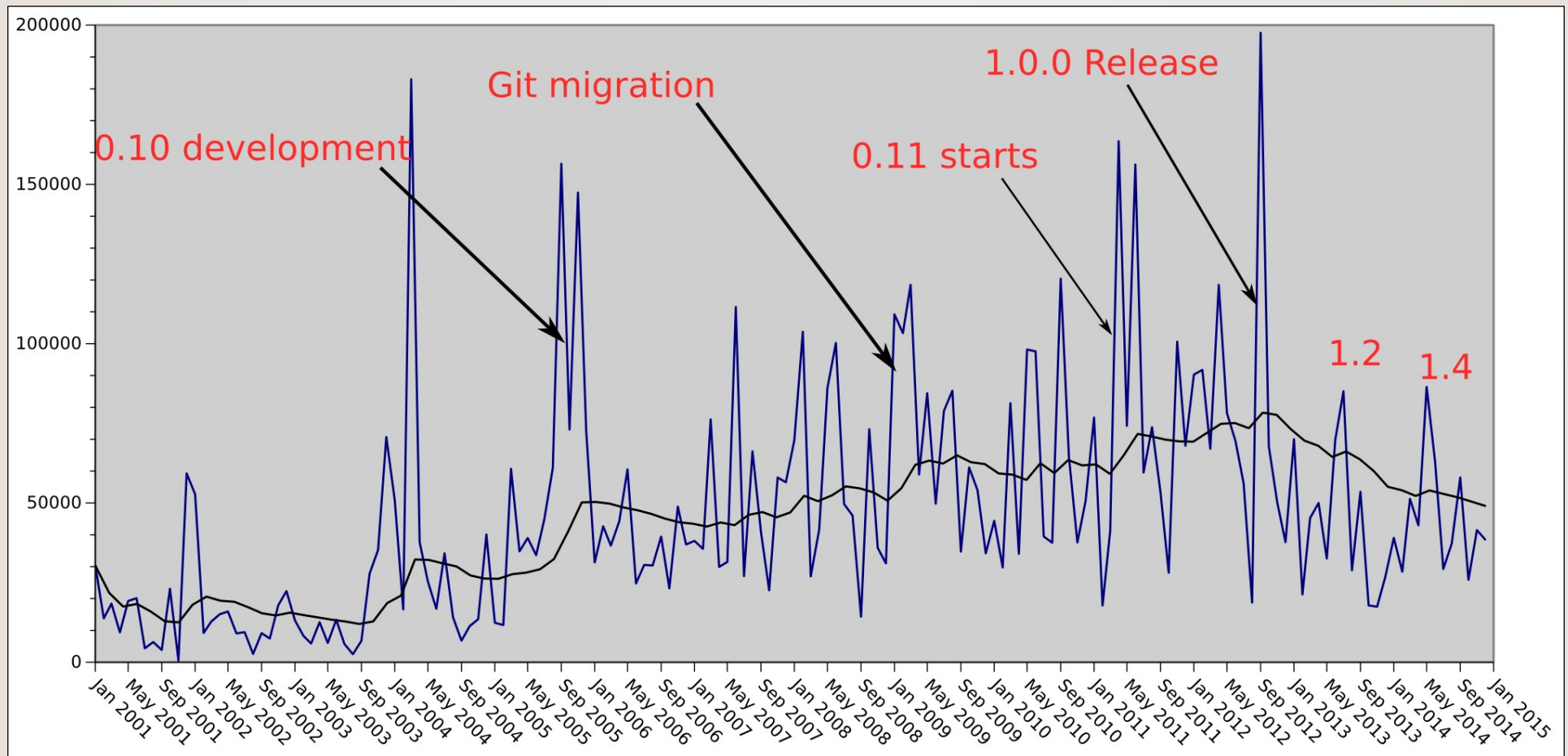
# Measuring Project Health

- Number of commits/month



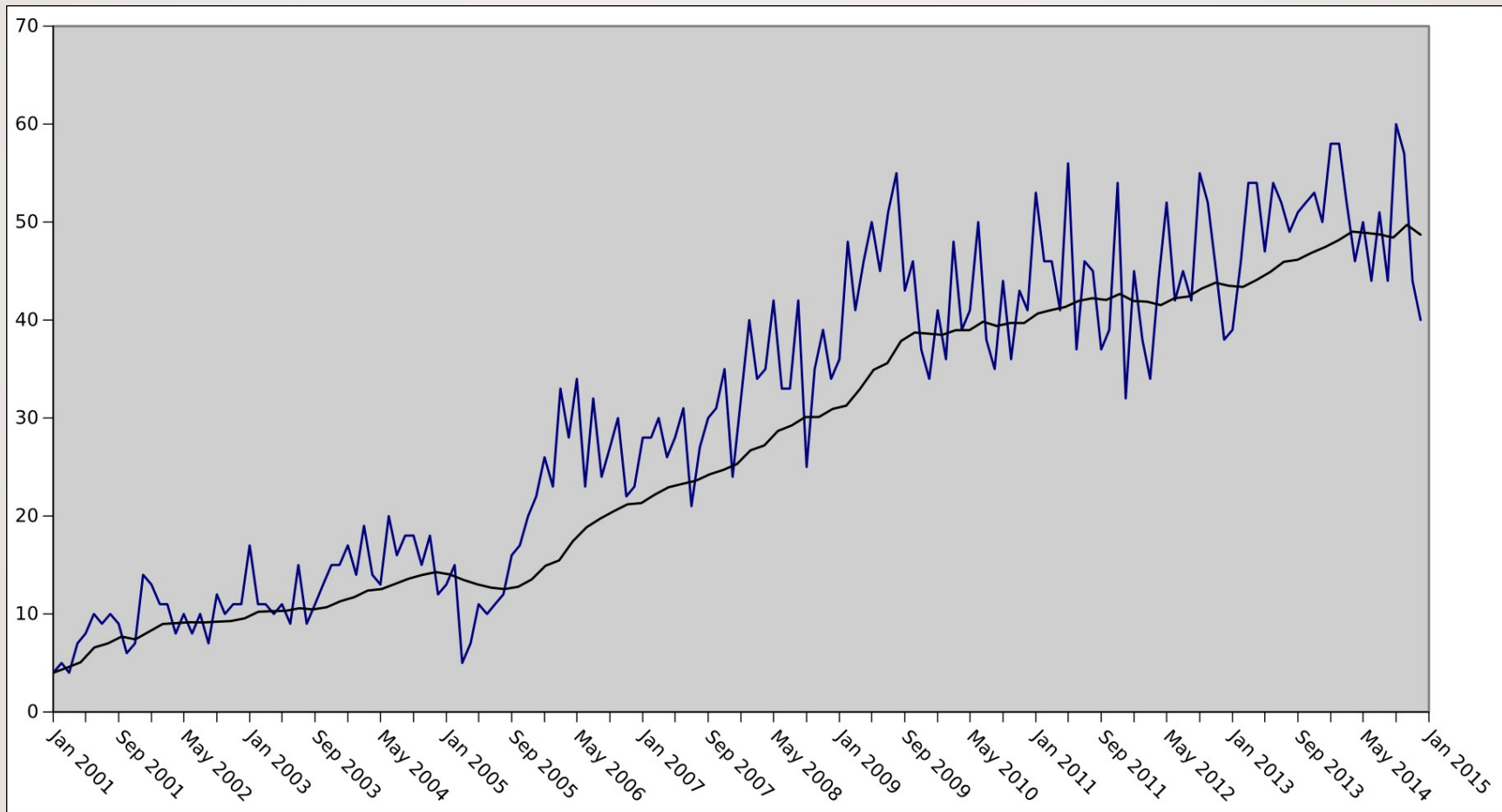
# Measuring Project Health

- Lines of code/month



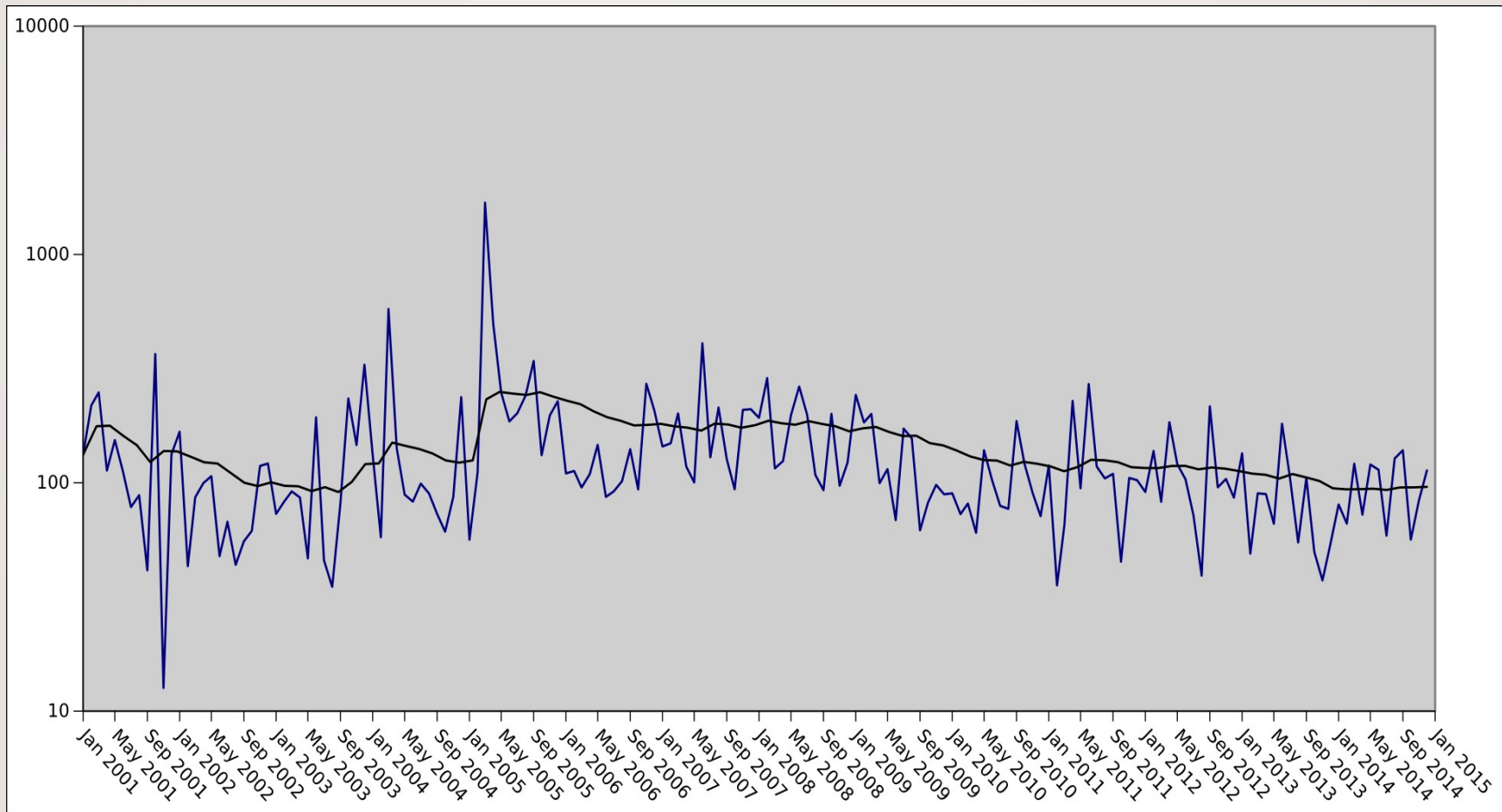
# Measuring Project Health

- Number of authors/month



# Measuring Project Health

- Commit size (lines/commit)





# Conclusions

- Bugzilla stats would be interesting
- Things have slowed down since 1.0
- Less work, easier work, or just works?

# Recent Developments

- OpenWebRTC
  - Open Source WebRTC implementation from Ericsson Labs
- OpenGL integration
  - Integrated support for GPU processing operations
- Improving hardware resource usage
  - Better support for on-chip function units
  - Hardware decoders and encoders

# Demo

# Recent Developments

- TVs – LG and Samsung
  - LG took over WebOS from HP
  - Samsung hiring
- HLS/DASH improvements
  - Adaptive bitrate switching
  - Trick modes
- RTSP retransmission
  - Improves performance under packet loss

# Pitivi

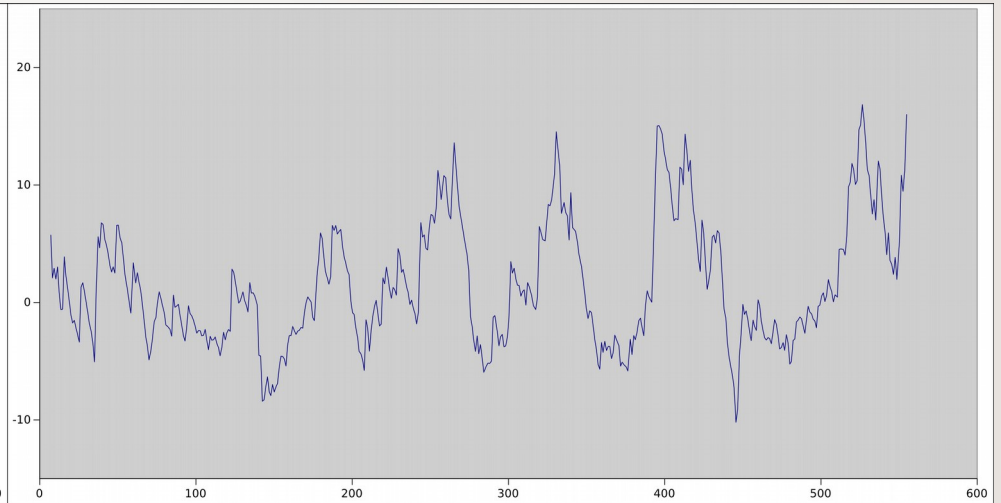
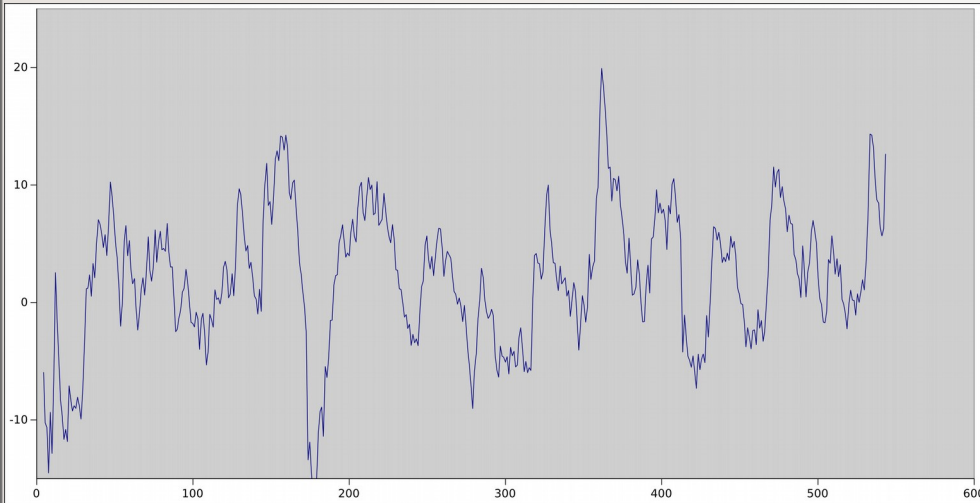
- Ongoing development to make Pitivi work well
- <http://fundraiser.pitivi.org/>
  - Raised 22,510 € to fund development so far
- Driving some great development upstream
  - GstAggregator
  - gst-validate
  - gst-editing-services

# Meanwhile, on the mailing list

- *“Hi! Over the last few months I've been working on a project for the European Space Agency that is scheduled to be launched next year for use on the International Space Station, providing astronauts with a mobile procedure viewer in the form of a slightly modified Nexus 5 smartphone.”*
- Scheduled to go up in Q1/2015, I believe

# More...

- Network clock improvements
  - More stable & accurate
  - Ongoing



# 3D Movies

- Stereoscopic 3D video support
  - In progress



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# Demo

# More...

- New Device Probing API
  - Easier discovery of camera and audio devices
  - Demo
- Higher level APIs
  - GstPlayer API

# Better Debugging

- Quality Assurance and tools
  - Continuous Integration
  - New tracing subsystem
  - gst-debug-viewer
  - gst-validate & GstHarness
- gst-devtools repository

# Work in Progress

- Bug-fixing/Maintenance
- New codecs/formats
- KLV
- DVB/MPEG-TS improvements
- Improving Wayland support
- V4l2 encoder/decoder support
- Better live mixing

# Getting Involved

- IRC - #gstreamer on freenode
- Mailing Lists – gstreamer-devel on <http://lists.freedesktop.org/>
- Bugzilla – <http://bugzilla.gnome.org> & <http://gstreamer.freedesktop.org/bugs>

# Questions?