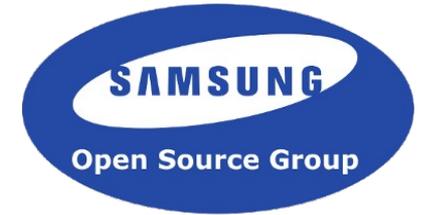# How to Contribute to GStreamer

Luis de Bethencourt
Samsung Open Source Group
luisbg@osg.samsung.com
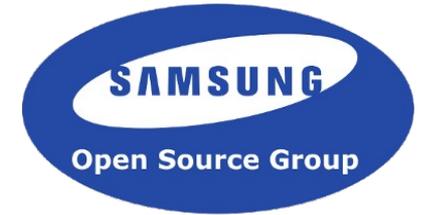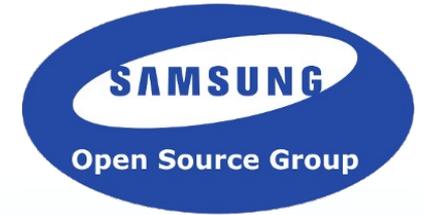
About Me

- Originally from the Canary Islands. Currently in London.
- Joined GStreamer in 2010
  - b870ff15b50c76ef2bad9733493e97b60eca32de

    gaudieffects: Adds new plugin 'gaudieffects'
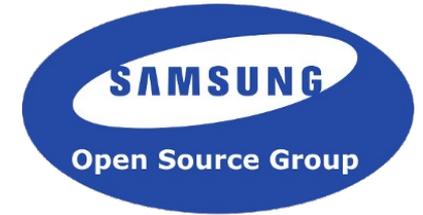- Working for Samsung's Open Source Group

Agenda

- Motivation

- The GStreamer Community

- GStreamer development process

  - Good practices

  - Infrastructure

Motivation

Motivation

- GStreamer is a large and global collaborative software development project

- To handle this, maintainers have a very well optimized workflow

- Each project is different. There isn't a single way to submit a patch

- This talk aims to introduce the GStreamer Community

- And give you a running start to help you join and contribute

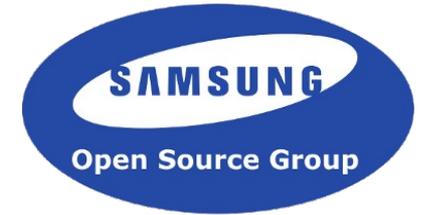**Join us** now and play with GStreamer.

You'll be cool hacker, you'll be cool.
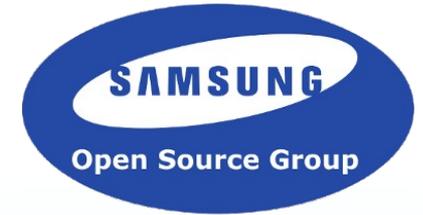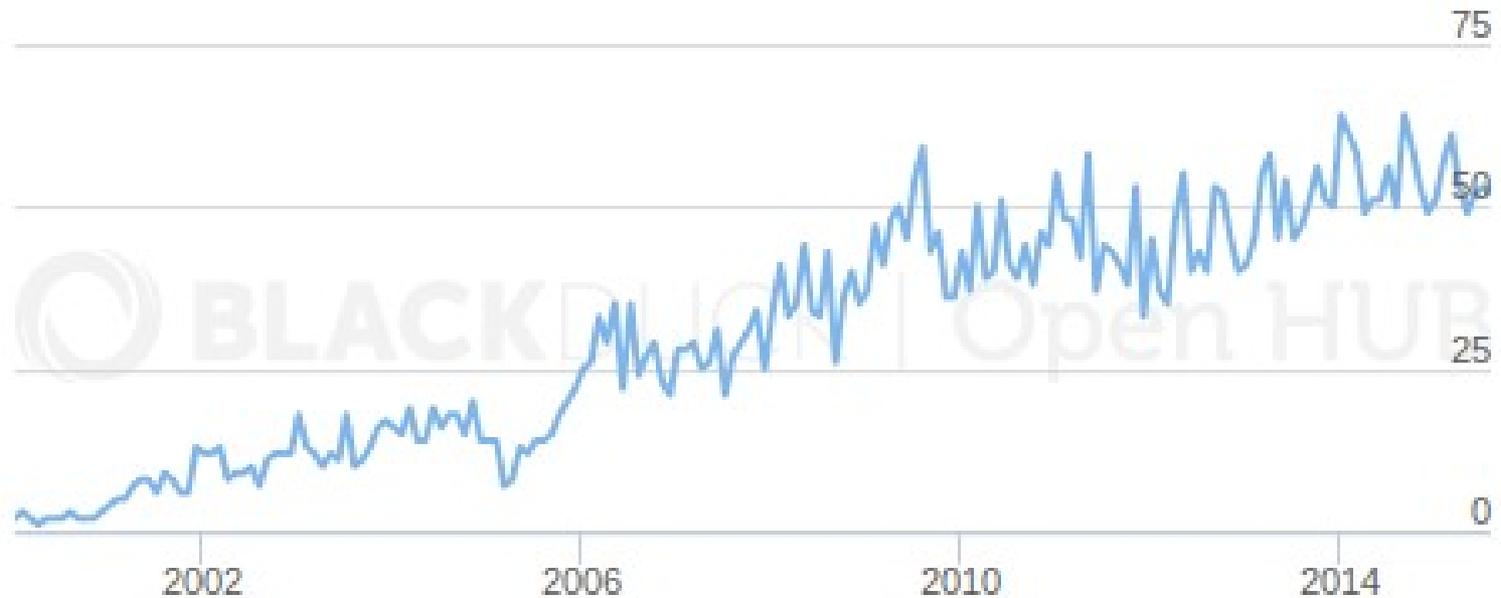
The GStreamer Community
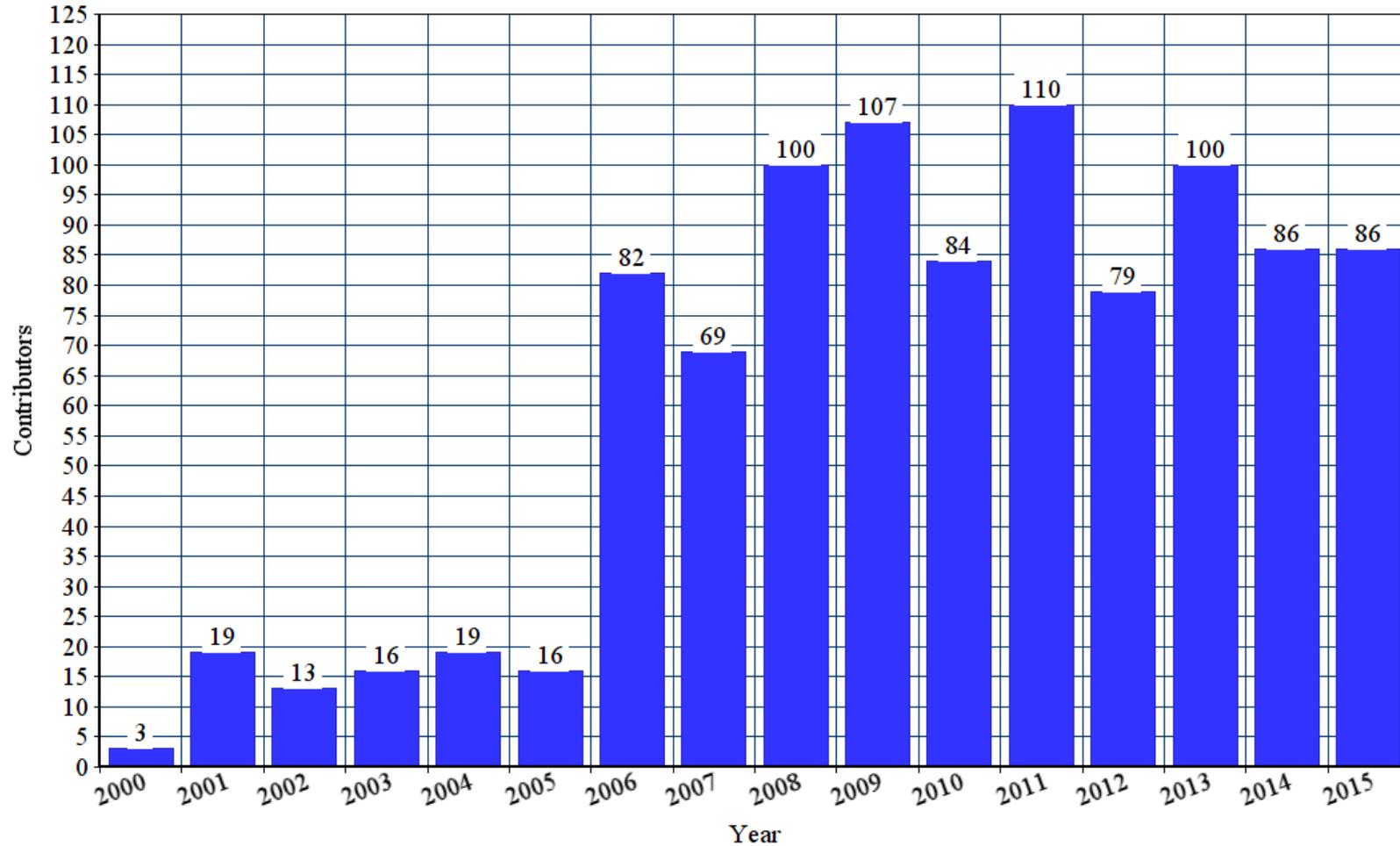
Global Community

Growing Community

Contributors per Month

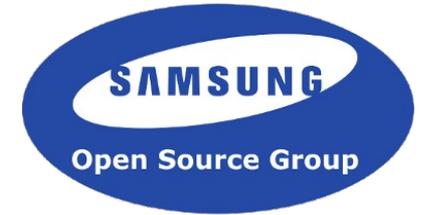- 1,056 contributors (989 by my count)

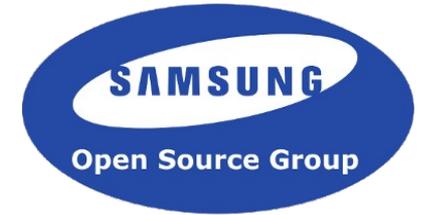Data from openhub.net

Growing Community

git log --reverse --format="%aI %aN" | sort -k 2 | uniq -f 1

Active Community

Commits per Month

Zoom 1yr 3yr 5yr 10yr **All**
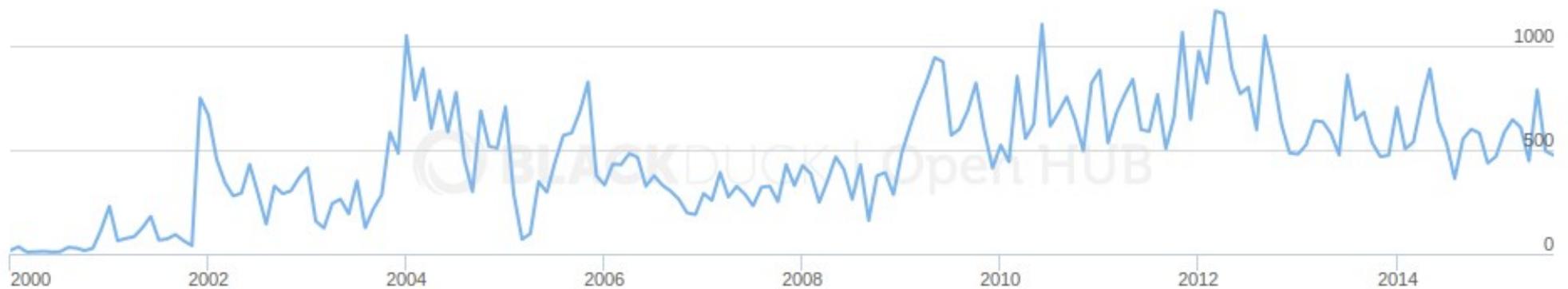
- 88,547 commits

Data from openhub.net

Codebase Growth
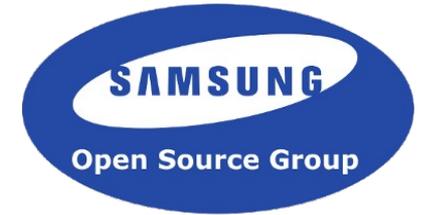
Code, Comments and Blank Lines

Zoom 1yr 3yr 5yr 10yr **All**
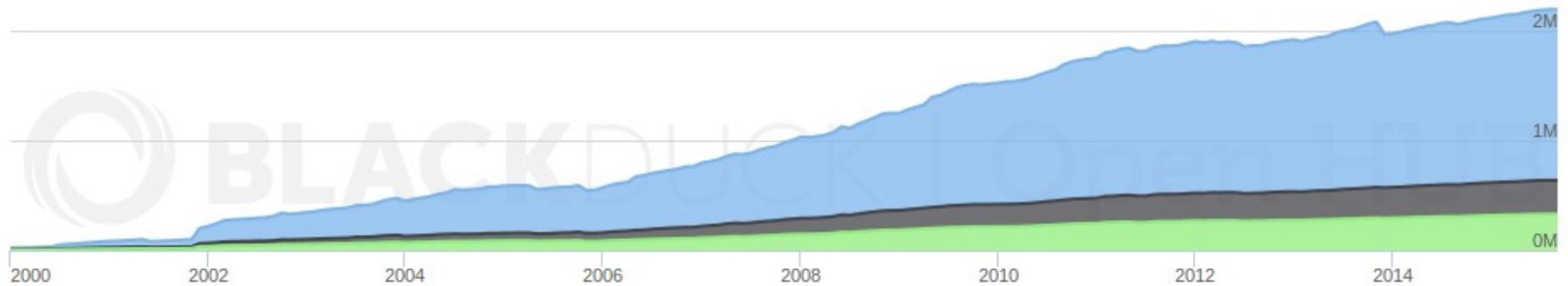
- 1,556,544 lines of code

Data from openhub.net

Professional
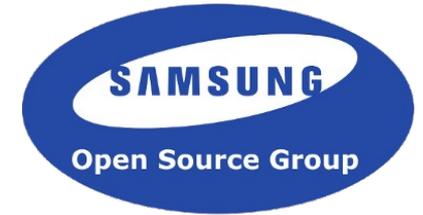
- Commits by the day of the week
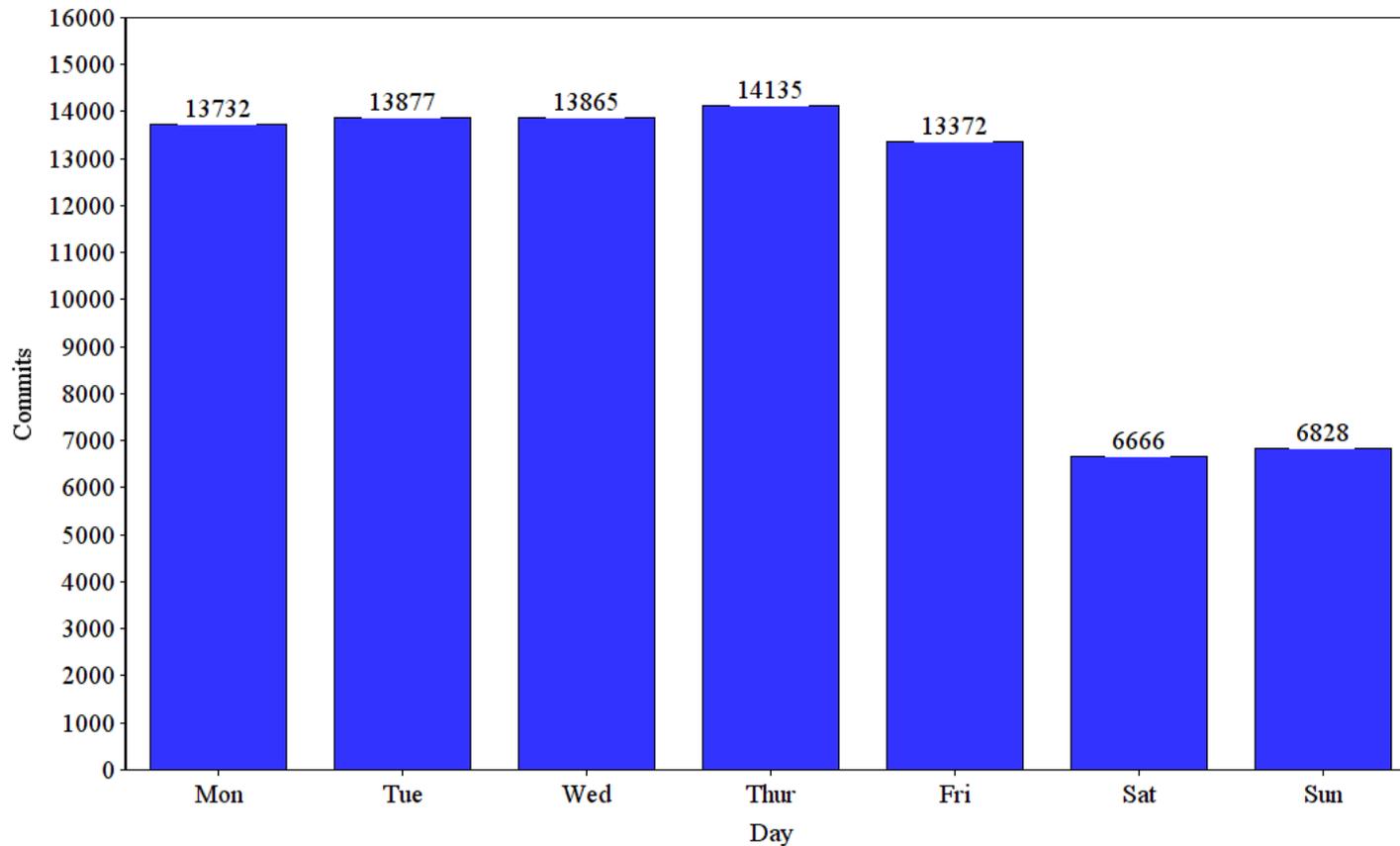
Easy to have impact
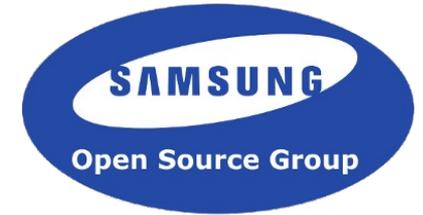
- 13.6% of contributors have more than 20 commits

- Top 5 contributors represent 42% of commits

- Commits by author
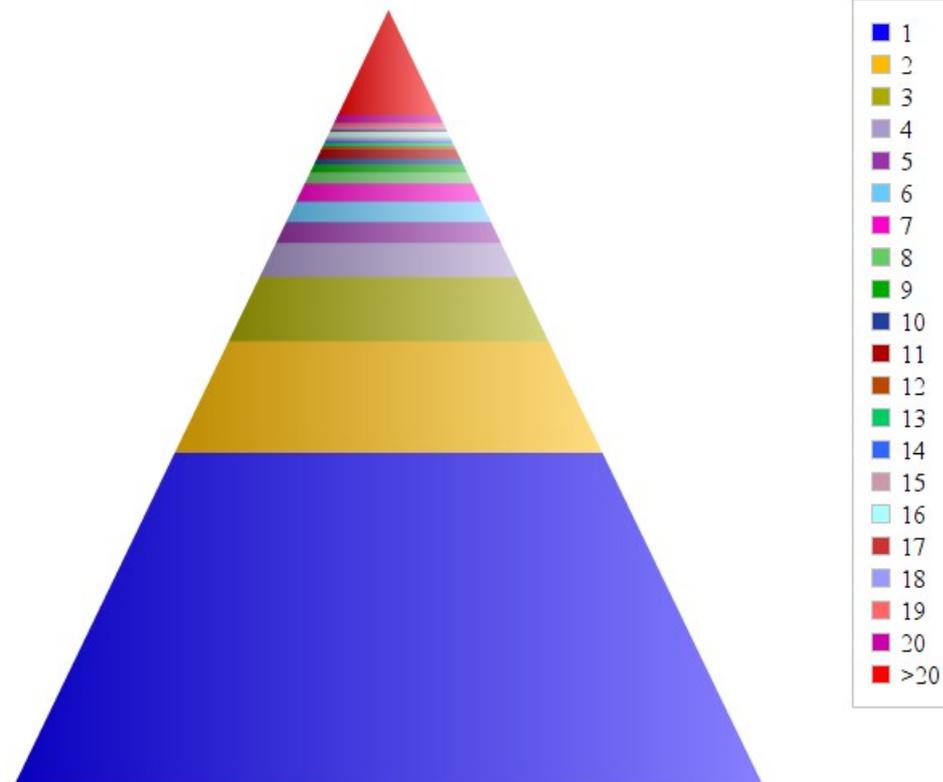
Release Cycle
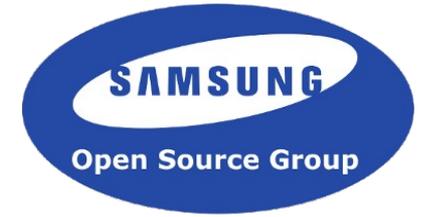
- 0.0.1 [1999-06]

- 0.10 [2005-12]

- 1.0 [2012-09]

- 1.2 [2013-09]

- 1.4 [2014-07]

- 1.6 [2015-09]

1.6 Release Stats
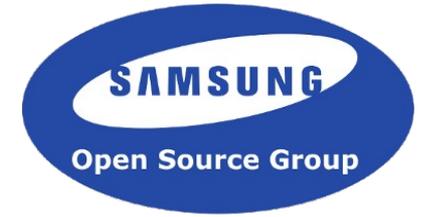
- 6,558 commits

- 230 contributors

- 122 new contributors

Commercially Backed
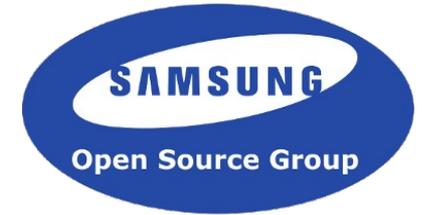
- 1.6 Release contributions

  - Centricular 44%

  - Collabora 17%

  - Samsung 15%

  - Rest 24%

(Mostly) based on email address domains

People stay, must be fun!
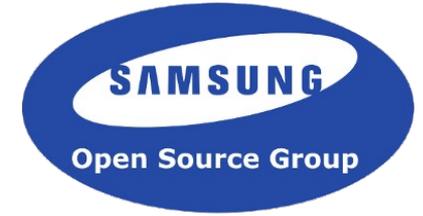
- 1.6 Release contributors
    - 4% joined before 2006
    - 17% joined before 2010
    - 28% joined before 2012
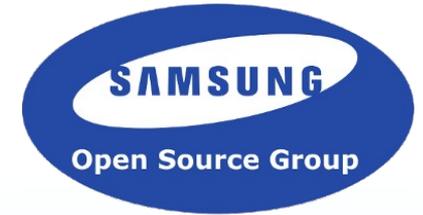
Contribution steps

Contribution steps
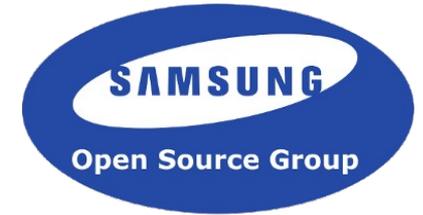
- Early research

- Patch preparation

- Patch formatting and posting

- Waiting feedback

- Patches landed

Early research
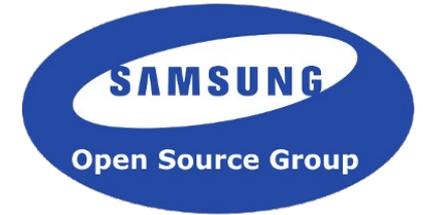
- Experiment with gst-launch-1.0

- Learn about elements with gst-inspect-1.0

- Read GStreamer Application Development Manual

  - http://gstreamer.freedesktop.org/data/doc/gstreamer/head/manual/html/index.html

- Read GStreamer Plugin Writer's Guide

  - http://gstreamer.freedesktop.org/data/doc/gstreamer/head/faq/html/index.html

- Read examples in codebase

  - They can be found in the "tests/examples" folder of each GStreamer module

  - For example: http://cgit.freedesktop.org/gstreamer/gst-plugins-good/tree/tests/examples

- GstPlayer (or any other application based on Gstreamer, except snappy)

- Read the codebase

- Ask questions in the mailing list or IRC

Contribution ladder
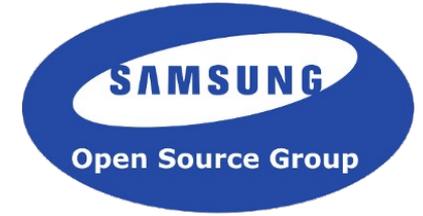
GStreamer is a **big Open Source project** where you not only have to do technical work but also will have to interact with its big (and diverse) friendly community.

For that reason, it's important to get started in a way that enables the **newcomer** to contribute patches but also to **understand the community** and related workflows

Contribution ladder to get started:

- Bug triaging
- Bug reporting
- Code reviewing
- Bug fixing
- Enhancements or new features

Build GStreamer
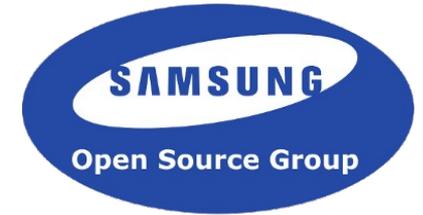
- mkdir -p gst/uninstalled
- cd gst/uninstalled
- git clone git://anongit.freedesktop.org/gstreamer/gstreamer
       (and all interesting modules in http://cgit.freedesktop.org/gstreamer/)
- cd ../..
- cp gst/uninstalled/gstreamer/scripts/gst-uninstalled ..
- edit MYGST in gst-uninstalled
- /gst-uninstalled
       (now all paths lead to the uninstalled version)
- echo $PATH
- cd gstreamer
- /autogen.sh; make
       (congratulations! you have your own latest gstreamer core)
- which gst-launch-1.0
       (gst-inspect-1.0 will only have coreelements)
- cd ..; cp gstreamer/scripts/git-update.sh .
- /git-update.sh

First Steps with GStreamer
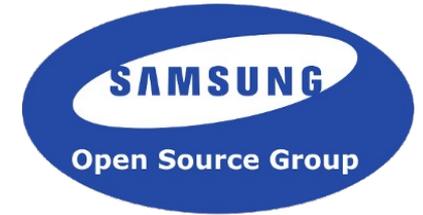
• **Test failures**: Test reported bugs in GStreamer's Bugzilla (bugzilla.gnome.org/browse.cgi?product=GStreamer)

• **Report bugs**: Check the continuous integration server (https://jenkins.arracacha.collabora.co.uk/) or you run 'make check'. Once you selected the tests, you check if it has been reported in Bugzilla. If it isn't, report it. You can try to find the root issue why they fail and work on a patch to fix it. Join the conversation with useful information!

• **Fix bugs**: you go to the GStreamer's Bugzilla and search for relevant bugs that you might help with and/or you might have an interest in working on.

• **Enhancements or new features**: open a new bug thread in Bugzilla with your idea and design. Confirm the feature is of interest and the design is approved before you start coding.

Small steps: at the beginning, it's normally more useful to start with bug triaging, test failures, small fixes because it allows you know the workflow and community in an easier and faster way

Patch formatting and posting

- Gst-indent
  - Run gst-indent on .c files.
  - You can find it at: http://cgit.freedesktop.org/gstreamer/gstreamer/tree/tools/gst-indent

- Bugzilla
  - Register an account in bugzilla.gnome.org
  - Two possible ways to submit a patch:
  - Create a new bug
    - https://bugzilla.gnome.org/enter_bug.cgi?product=GStreamer
  - If a bug already exist, attach your patch to it
  - Add link to bugzilla as the last line of the commit message

Attachments

qtdemux: support for cenc auxiliary info parsing outside of moof box (5.31 KB, patch) 2015-09-25 09:45 BST, Philippe Normand	none	Details | Diff | Review
Add an attachment (proposed patch, testcase, etc.)		View All

The perfect commit message
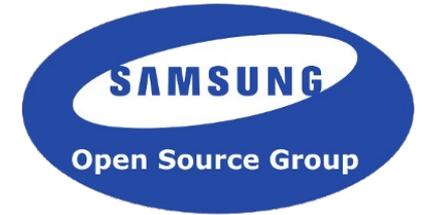
commit 41fdf21a60ca69bdc90bef367fbce41dcf4415ad
Author: Tim-Philipp Müller <tim@centricular.com>
Date: Sat May 30 14:27:05 2015 +0100

   queue: avoid slice allocs/frees for each item

   Microoptimisation: Let GstQueueArray store our
   item struct. That way we don't have to alloc/free
   temporary QueueItem slices for every item we want
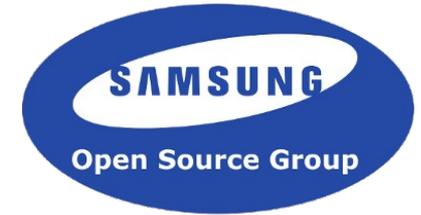   to put into the queue.

   https://bugzilla.gnome.org/show_bug.cgi?id=750149

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Waiting for feedback
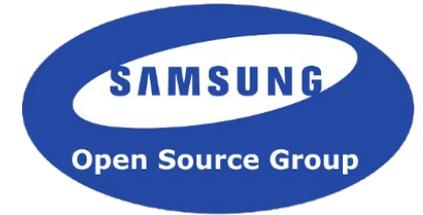
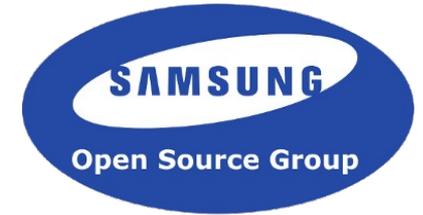- Review happens in bugzilla
- Give some time for reviewers to show up
- If no reviews in a week
  - Ask people directly
  - Who? Git log and git blame are your friends

Patches landed
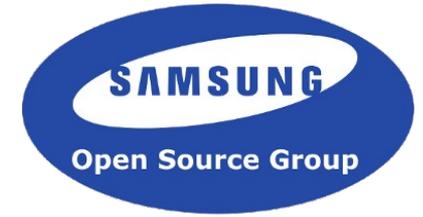
- Once accepted. A maintainer will push the commit upstream.

- Set the patch state to 'Committed' in bugzilla.

- Set the bug milestone and status.
 – Current milestone 1.7.1
  – Status: Resolved and Fixed

- **\o/**

Be Social

It is very important to communicate with the group. They are a lovely bunch.

- **Mailing lists**: http://gstreamer.freedesktop.org/lists/
  - gstreamer-announce – for important announcements (moderated)
  - gstreamer-devel – general discussion (open for you to talk here)

- **IRC**: #gstreamer @ irc.freenode.net

- **GStreamer Conference**: every year around October

- **GStreamer Hackfests**: twice a year

If you do this, you will normally be able to get engaged in GStreamer in a much easier way, which will help you to grow your knowledge and status in the community.

Finding Bugs
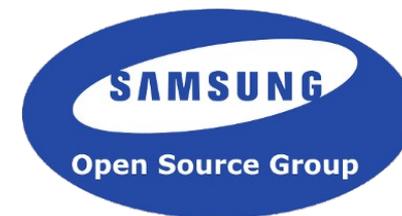
- Use GStreamer from the git (development version)
- Run gstreamer/tree/scripts/five-bugs-a-day.pl
- Search in https://bugzilla.gnome.org/browse.cgi?product=GStreamer

```
~/d/g/h/g/scripts (master) $ ./five-bugs-a-day.pl

10 random bugs:

videorate: Add a property to modify clip speed
https://bugzilla.gnome.org/show_bug.cgi?id=699077

Need ""reverse-funnel"" element
https://bugzilla.gnome.org/show_bug.cgi?id=707605

Writing a seekable element
https://bugzilla.gnome.org/show_bug.cgi?id=332332

rtmpsrc: Crash due to unsafe thread handling in librtmp when setting state from PLAYING->PAUSED
https://bugzilla.gnome.org/show_bug.cgi?id=729099

Reduce the number of plugins without external dependencies
https://bugzilla.gnome.org/show_bug.cgi?id=559431

[encodebin] Add formatters support
https://bugzilla.gnome.org/show_bug.cgi?id=649841

tags: add mapping for ID3 ""TPE3"" frame
https://bugzilla.gnome.org/show_bug.cgi?id=730496

rtsp: stream does not start with playbin until all rtp sessions got data
https://bugzilla.gnome.org/show_bug.cgi?id=708867

h264parse: wrong duratiiong calculation of outgoing buffers
https://bugzilla.gnome.org/show_bug.cgi?id=667559

Plugin rtmp segmentation fault when stopping stream almost immediately
https://bugzilla.gnome.org/show_bug.cgi?id=739263

More bugs at:
  - http://gstreamer.freedesktop.org/bugs/
  - https://bugzilla.gnome.org/browse.cgi?product=GStreamer
```

Finding Bugs
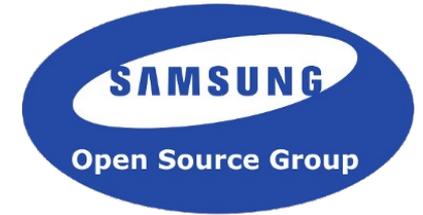
- That said, it is best to focus on an area of Gstreamer to develop expertise or even maintain a component. Then bugs will come to you.
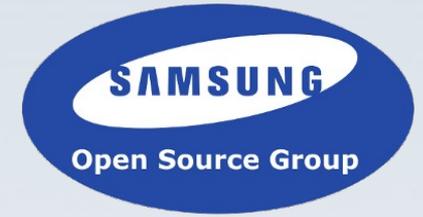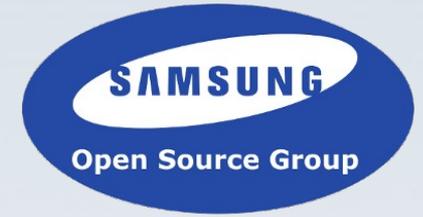
Find Me
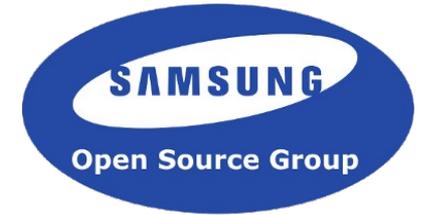
- If you ever struggle when joining or participating with the community…

.

     luis@debethencourt.com
     luisbg@osg.samsung.com
     luisbg @ freenode
     @luisbg

Questions?

Thank You!