

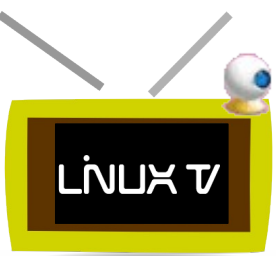
Video Input Status Quo

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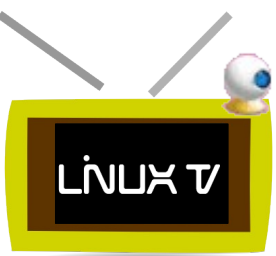
mchehab@redhat.com

<http://linuxtv.org>



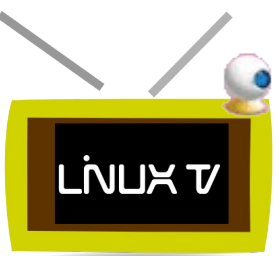
Miniconf Program

- Video Input Status Quo (this presentation)
- Extending V4L2 to support complex media streaming devices
- V4L2 Library
- The video4linux user-space: libv4l2, applications and a server
- Discussion/Round Table: Support for missing digital standards: DVB-H, ISDB, etc
- Next Steps



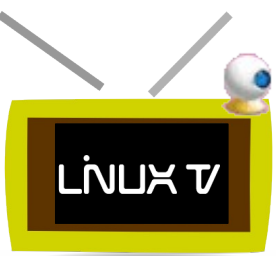
LinuxTV Community

- Development website:
 - <http://linuxtv.org>
 - Provides:
 - Wiki, development trees, API documentation, news, ...
- Main mailing lists for developers and users:
 - V4L Mailing List:
 - <https://www.redhat.com/mailman/listinfo/video4linux-list>
 - Webcams, analog TV, radio receiver
 - DVB Mailing List:
 - <http://linuxtv.org/cgi-bin/mailman/listinfo>
 - Digital TV



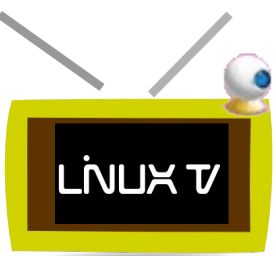
V4L History

- First drivers started on 1994, like pws driver (1994) and libqcam (1995) some being userspace drivers.
- Meltzler brothers wrote bttv kernel driver (1996);
- Alan Cox made a few changes at the bttv original API and ported pms and qcam to kernelspace.
- Those drivers were included on Kernel 2.1, and the API were named as Video4Linux (currently known as V4L1);
- Back at 2002, at Kernel 2.5, V4L2 were introduced;
 - Fix several troubles present at the first API version:
 - V4L1 used to support only 3 generic standards (PAL, NTSC, SECAM);
 - Standard variants weren't supported (PAL/M, PAL/N, SECAM L');
 - Audio control were limited: no proper stereo support, no SAP;
- Still today, there are some drivers and userspace apps implementing only V4L1



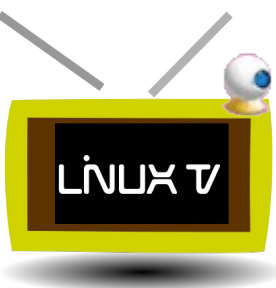
Characteristics

- Supports a wide range of devices
 - Web Cams, radio and TV boards, TV streaming capture, Closed Caption TV, video capture boards, Set Top Boxes, OLPC camera, mobile devices with streaming cameras;
 - The subsystem (V4L and DVB) has about 200 different drivers and large number of different boards (500+).
- Provides 4 different interface types:
 - **Video capture interface** – allows video streaming capture to be presented at screen or stored on hard disk;
 - **Video output interface** – allows controlling TV output port;
 - **VBI interface** (*Vertical Blank Interval*) – for supporting Closed Capture, Teletext, and Electronic Programming Guides;
 - **Radio interface** – for AM/FM reception



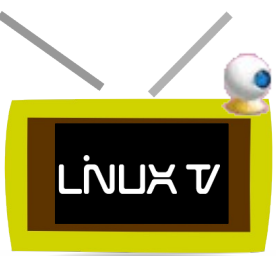
DVB History

- The Metzler brothers implemented on 1999 a driver for the Fujitsu-Siemens DVB-C card and used an extended V4L as API.
- On 2000, Nokia suggested to change the API to use their OST API for DVB drivers.
- The DVB API started to be maintained by Convergence, until 2005, when the company stopped its activities.
- The first DVB drivers and API were added on Linux kernel on 2002, by Alan Cox.
- Taylor Jacob, together with Holger and others, extended the API to support also the ATSC standard;
- Patrick Boettcher wrote, on 2005, the first ATSC driver



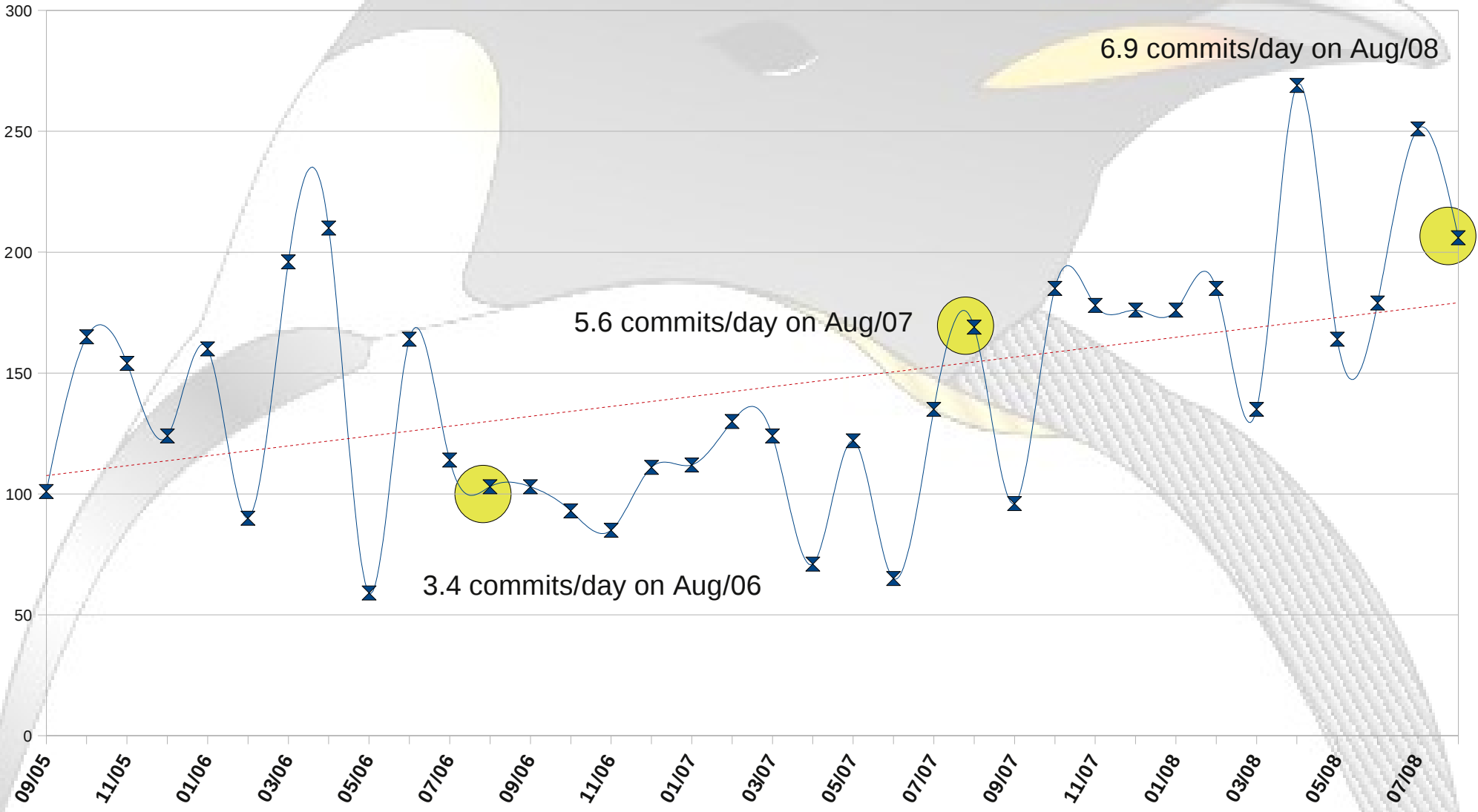
Multimedia Development

- Statistics about V4L/DVB activities

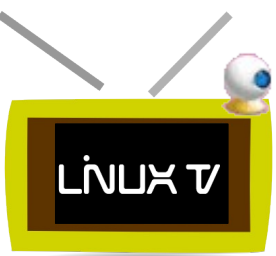


V4L/DVB Activities

Number of Commits by Month for the last 3 years

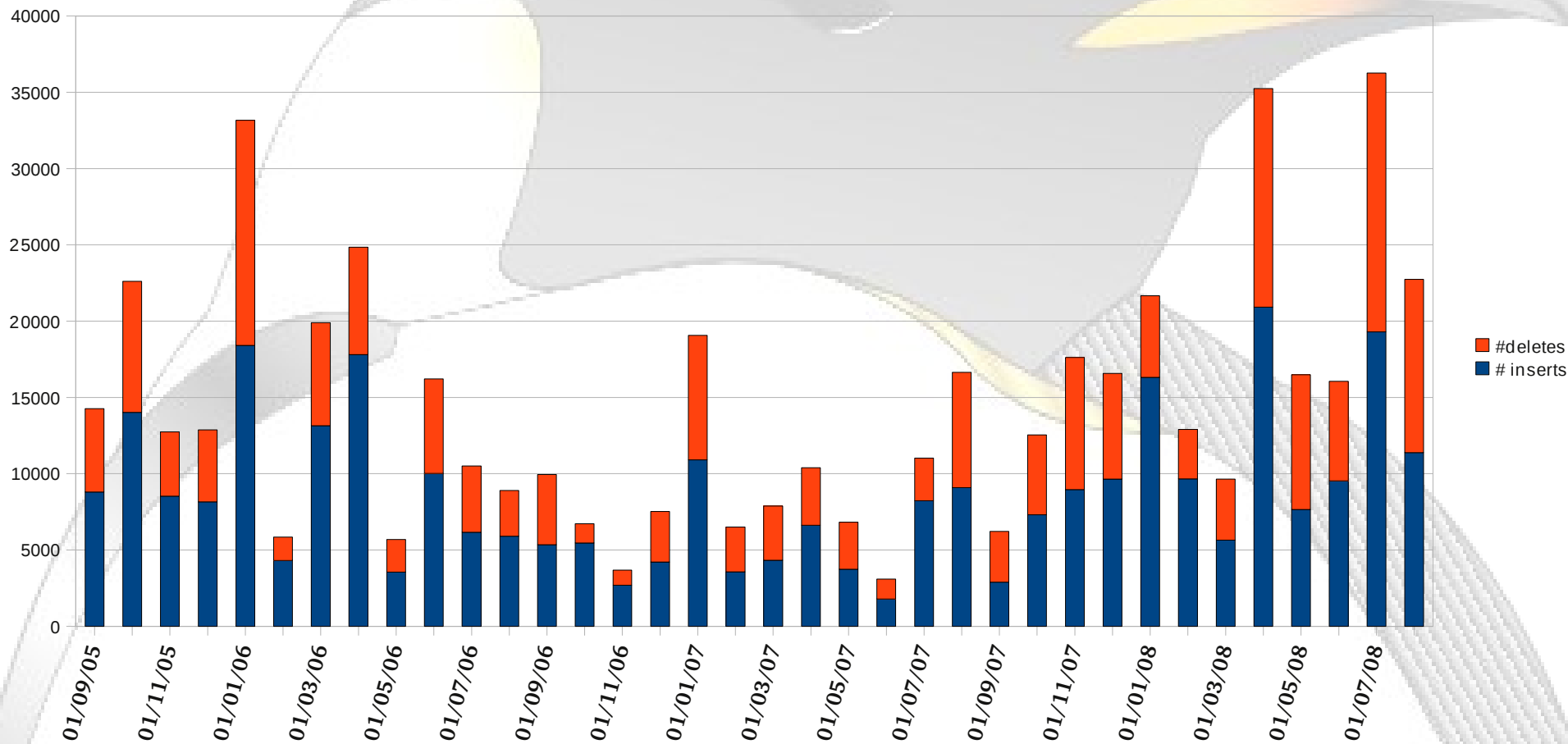


Only commits to drivers, without merge commits up to Aug, 31 2008

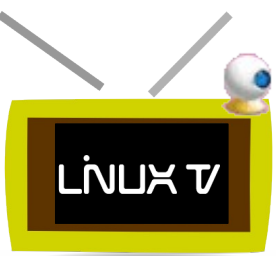


Changed lines by month

Line changes per month

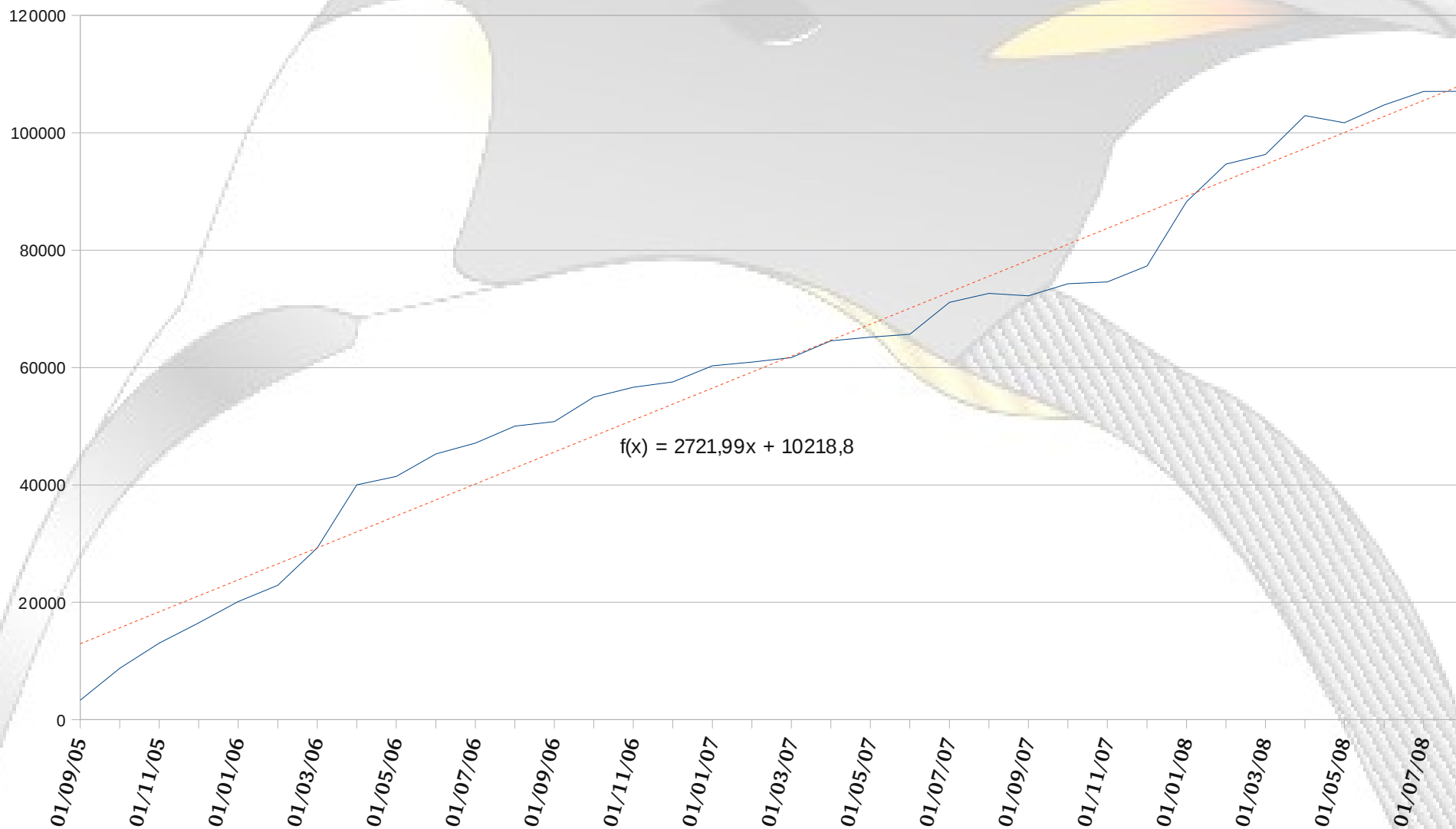


About 1200 lines changed by day, on July!



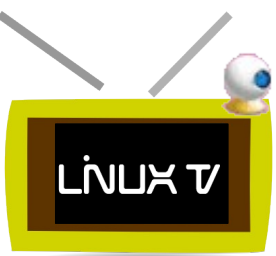
Amount of changes/month

Growth of #lines on V4L/DVB (Inserts - deletes)



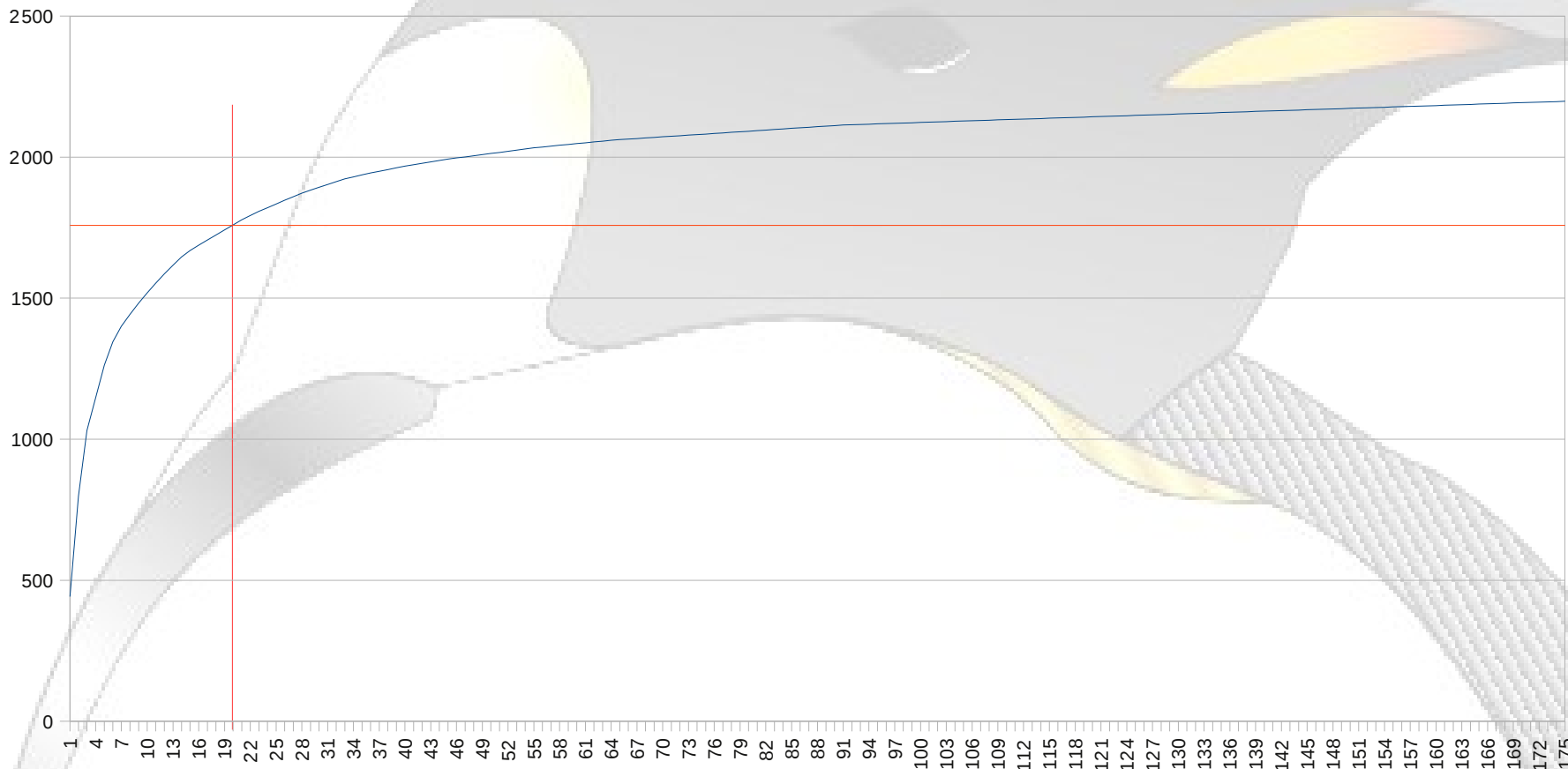
10

About 91 new lines (with newer features/supported boards) are added by day



Authorship diversity

Patches per author

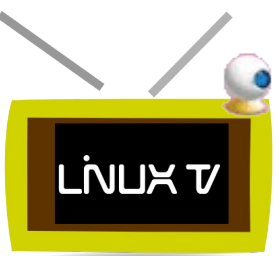


175 different authors during one year period (from Sept, 1 2007 to Aug, 31, 2008)

About 11% of the authors submitted 80% of the total number of patches

20% of the authors made 88% of the total number of patches

84 authors submitted just one patch



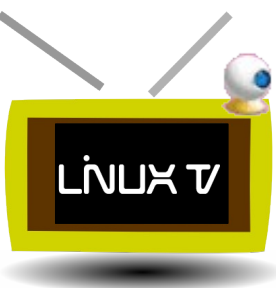
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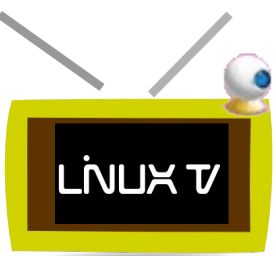
Thank you all that are helping
With the development of good
V4L/DVB drivers!

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V4L/DVB

Next Steps on Video Input development



Next Steps

- Add support for other digital tv standards: DVB-S2, DVB-T2, DVB-H, ISDB, DMB, DSS;
- Convert V4L1 drivers to V4L2 and remove kernel support for V4L1
 - Userspace library will provide backward compatibility;
 - Old webcam drivers will likely be merged on gspca
- Add support for flexible V4L hardware, extending the V4L2 API

Each one of the above topics will be covered on the next speeches, so stay tuned!