

# Outside broadcast on a budget

## The DebConf video team and DVswitch



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# Outline

- Who we are
- The DebConf video team
  - History
  - Current status
  - Future plans
- DVswitch
  - Motivation and design
  - Demonstration
  - Future plans



# Who we are

- Debian users for over 10 years; contributors for 5
- Holger:
  - DD since 2007
  - Debian Edu member, powerpc porter, ftpmaster
  - FAI (fully automatic installation) developer
  - Founded debian-community.org
  - DebConf organizer, founder of the video team
- Ben:
  - DD since 2006
  - Joined the video team after DebConf 5



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# Video team history

- DebConf 3: some recordings, never released
- DebConf 4: no recordings
- DebConf 5: video team founded; recorded all talks using analogue mixer in main hall; DVDs later
- DebConf 6: recorded all talks using single cameras; streamed many; DVDs later
- DebConf 7: recorded and streamed using multiple cameras and DVswitch
- DebConf 8: recorded and streamed using multiple cameras, VGA capture and DVswitch with PiP



# Current status

- People
  - Growing team with A/V experience from several conferences
  - Large number of volunteers needed each year
- Hardware
  - Largely reliant on loaned computers and cameras
  - DebConf budget covers hire of audio equipment, tapes, disks, and not much else
  - Debian and sponsor covered microphones, audio mixers and VGA capture boxes

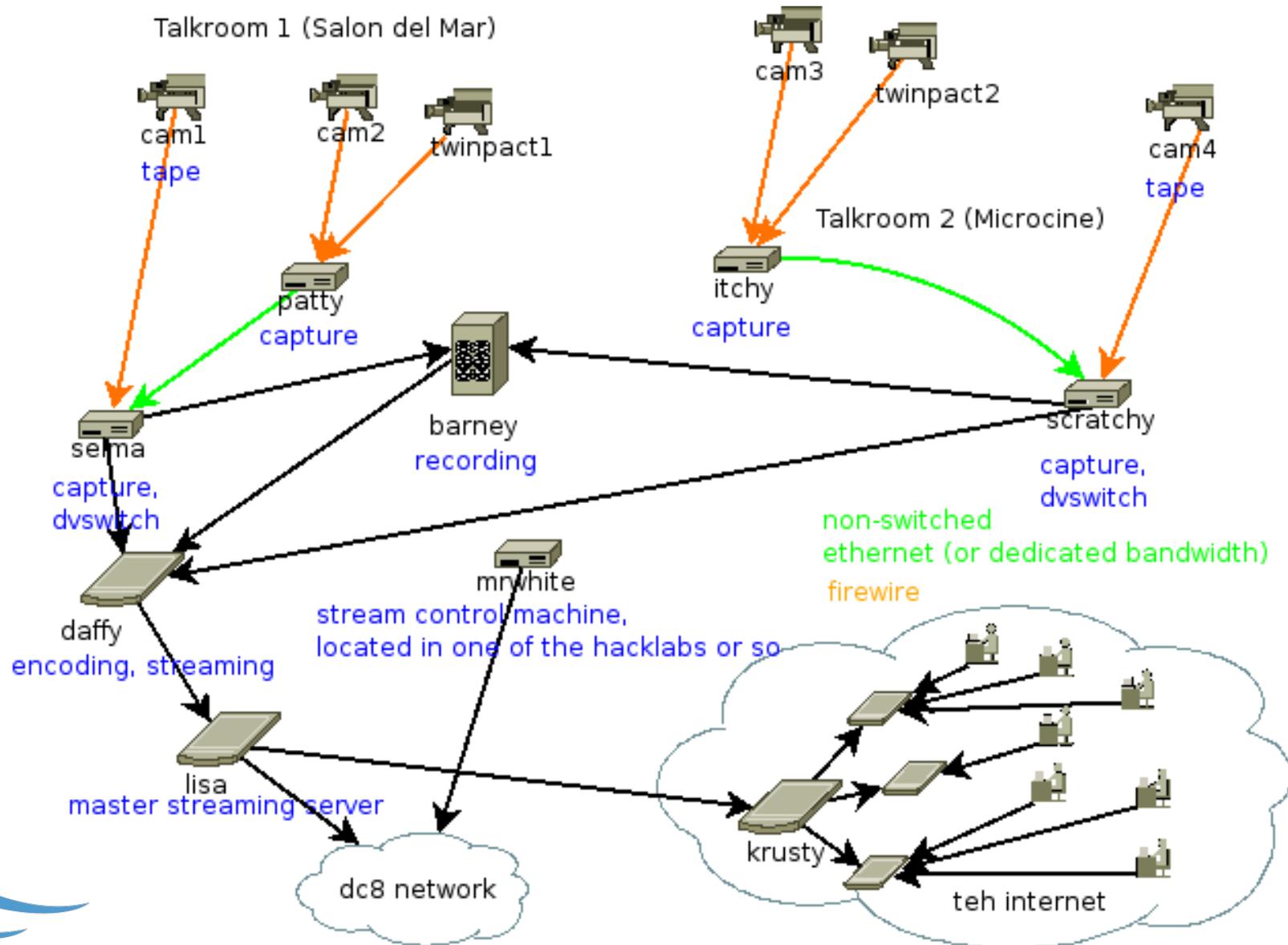


# Current status

- Software
  - Most of the pieces already there
    - dvgrab
    - ffmpeg
    - Icecast 2
    - dvdauthor
  - Workflow: debconf-video package
  - Live video mixing: DVswitch
  - DVDs (eventually): VideoLink



# Example setup: DebConf 8



# Future plans

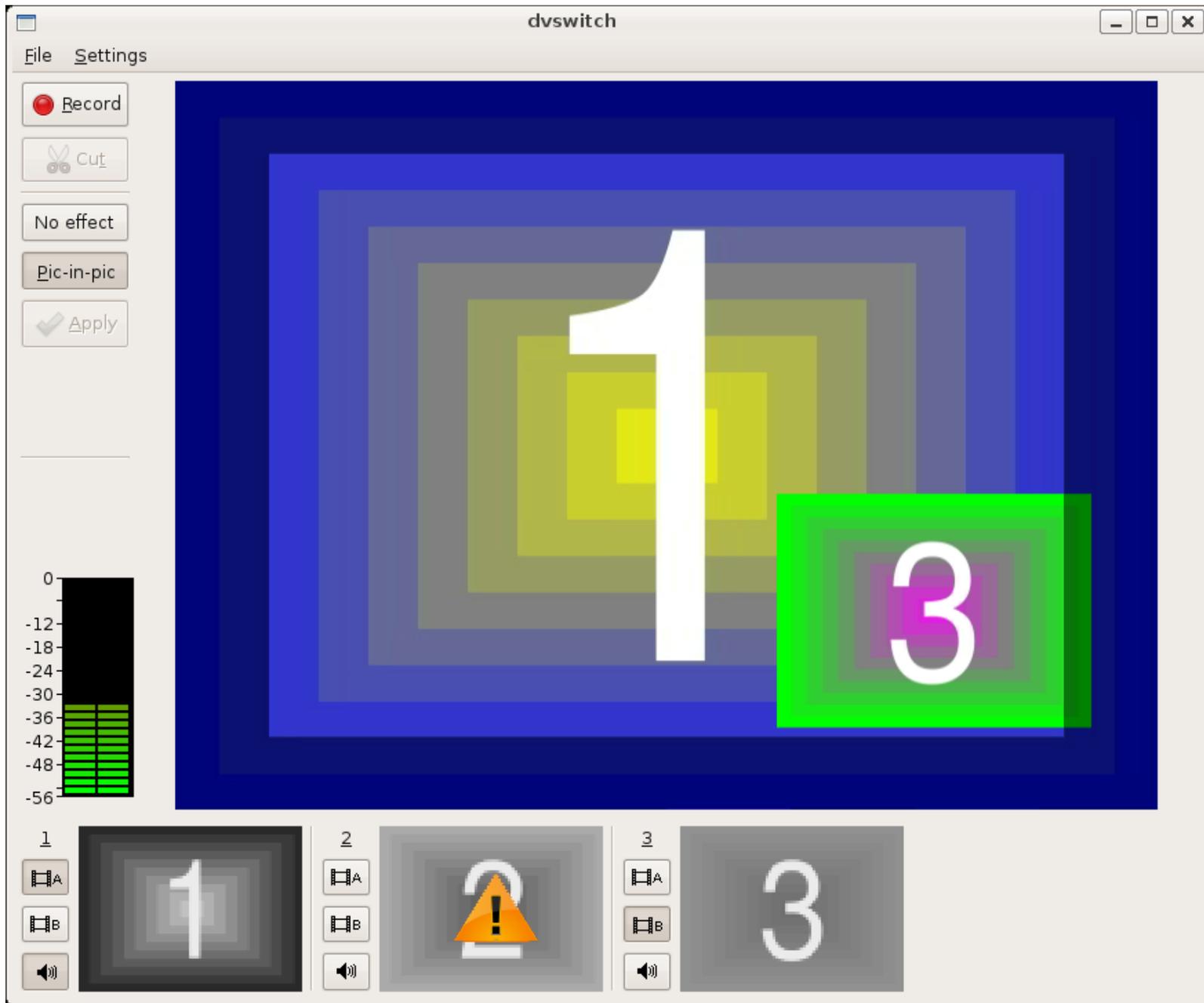
- Recruit more volunteers
  - [debconf-video@lists.debconf.org](mailto:debconf-video@lists.debconf.org)
  - #debconf-video on OFTC
- More automation
  - Post-processing is a bore
  - So are transcoding and uploading
- Better quality recordings
  - Practice makes perfect
  - Software can help



# DVswitch: motivation and design

- Written in 2007 for DebConf 7
- Used by video team, and a few others, since then
- Simple user interface
- Multithreaded and non-blocking to achieve “soft real-time” behaviour
  - “Main” thread handles the user interface
  - Clock thread maintains a frame clock at about 25 or 30 Hz, adjusted to match audio source; passes work to mixer thread
  - Mixer thread generates output
  - Network thread transfers frames from sources to mixer and from mixer to sinks





# Sources

- DVswitch can use any number of sources (given a large enough screen)
- dvsource-firewire and dvsource-v4l2-dv use dvgrab to read from a Firewire or USB DV source - a camera, Twinpact or potentially a VTR
- dvsource-file reads from a file - useful for testing, idents
- Switching between sources was easy and needed little CPU work
- Dubbing - taking audio from one source and video from another - was not much harder



Mixing sources needs lots of cycles to re-encode



# Recording and streaming

- DVswitch can send its output to any number of sinks
- dvsink-files records the DV stream to files
  - Opens a new file when it sees a cut notice
  - Stops writing when it sees a stop notice
- dvsink-command runs a command with the DV stream on standard input
  - We could use a pipe, but that has a small buffer
  - For a live (low-bandwidth!) stream, run `ffmpeg2theora` and pipe the result to an Icecast client



# Future plans

- Build on RTP and RTSP rather than our own protocol
- Discovery of sinks and sources using zeroconf
- Save and restore sessions
- Fade and mix effects
- Palette of effects – define them in advance and pick from the palette when going live
- Tally lights
- “Tape roll” of file sources



# Thank you for your attention!

Questions? Suggestions?  
Anything else?

<http://wiki.debconf.org/wiki/Videoteam>

<http://dvswitch.alioth.debian.org>

