

BERLAN 2012 CONFERENCE

17th-19th October

Going Tubes – collaborative editing

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Agenda

- About the speaker
- Why collaborative editing
- Thoughts and decision making
- Getting dirty
- Seeing light
- Opening up
- The results
- Demo
- ▼Q&A



About the Speaker

- Eike Rathke, known on the net as erAck
- Based in Hamburg, Germany
- Worked on StarOffice from 1993 to 2000 for Star Division
- Worked on OpenOffice.org from 2000 to 2011 for Sun Microsystems and one other company
- Works on LibreOffice since 2011, employed by Red Hat, Inc.
- Areas of expertise:
 - Calc core, formula compiler and interpreter
 - number formatter/scanner
 - i18n framework, locale data
- Also mentor and knowledge spreader whenever possible

Why collaborative editing?

In an office suite? Can't everyone use a web service or something in the cloud?



Implement collaborative editing because ...

- Not everyone trusts an arbitrary service provider
- Enterprises do not want their data reside in the internet
- Individual persons neither
- Users do not want to register accounts with umpteen service providers just because each contact uses a different one
- Web services may vanish
- Web services do not offer the full feature set of an office application, and all are different
- Users want to be able to save in the preferred file format (which of course is ODF ;-)
- Users want control over own data



How to start?

Not missing the forest for the trees.



Decision making

- Use an already available framework for communication that
 - uses standard protocols
 - is not bound to a specific server implementation
 - can be used over internet and in intranet
- Telepathy, the framework used by Empathy (GNOME) and KDE Telepathy that offers
 - standard Jabber/XMPP protocol
 - contact-to-contact networking with Tubes over XMPP
 - file transfer
- First LibreOffice application to use collaboration is Calc
 spreadsheet data entry benefits most

Thoughts about Calc

- Avoid complete implementation of a special collaboration mode having to rewrite all data entry and operations
- Original idea was to use change tracking and send/receive change sets, which was discarded because
 - change tracking itself is limited in its capabilities
 - too much overhead to manage the changes <u>before</u> they are applied on the sender side while the change set is created only <u>after</u> the actual change
 - receiver would have to construct undo actions of change sets



Thoughts about Calc, continued

- Instead, send/receive actions and process them as usual on each side
 - benefit: Undo/Redo integration
 - send as clear text
 - easily extendable
 - avoids endianness and binary traps
 - easier to log and debug
 - numeric and formula input need to be parsed on the sender side for locale dependent characteristics
 - transmit as defined in ODF OpenFormula (ODFF)
 - requires stricter separation between view, model and controller than it is currently the case

In the beginning ...

... there was chaos.

Getting dirty.



Telepathy

- libtelepathy-glib is complex
- Provides hundreds of functions, many with asynchronous callbacks to be implemented
- Diving into documentation is challenging
 - docs are sparse on what needs to be done from an application's point of view
- Half-way running framework after 4-5 weeks
 - picking existing (in Empathy) account from the account manager worked
 - connecting to D-Bus worked
 - starting a session, creating a channel to a buddy, offering a tube worked



Seeing light (at the end of a Tube)

In the middle of everywhere.

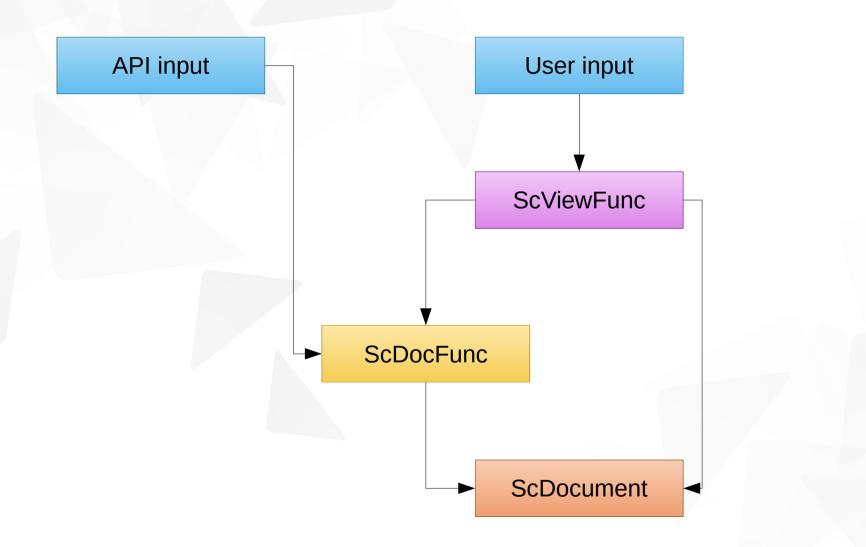


Hackfest @ Collabora

- The Collabora guys (maintainers of Telepathy) chimed in
- Will Thompson, Michael Meeks and myself gathered at Cambridge and locked ourselves in a room for 3 days in March
- For my Telepathy/Tubes related problems Will immediately came up with solutions
- Michael hacked a transfer protocol prototype and split ScDocFunc
- I myself integrated the TeleManager (LibO implementation managing Telepathy and Tubes) to Calc
- Crude "user interface", session was started and file was transferred after having typed "saveme" into a cell

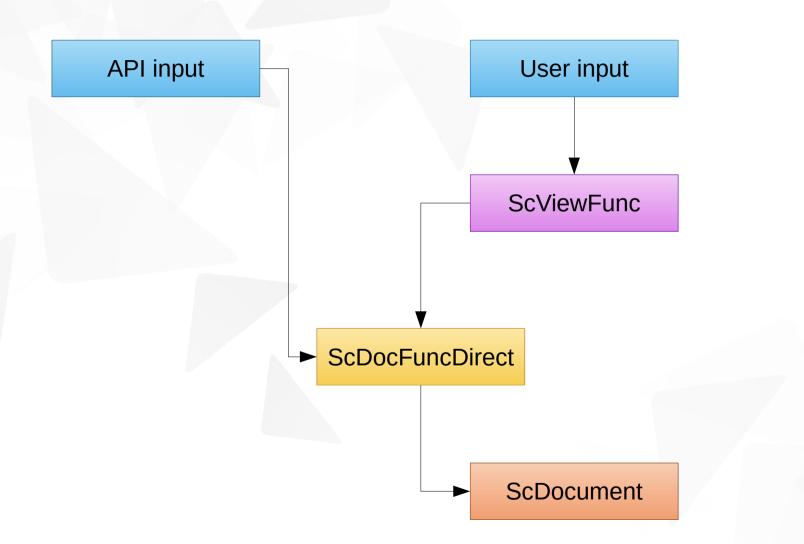


Calc input flow



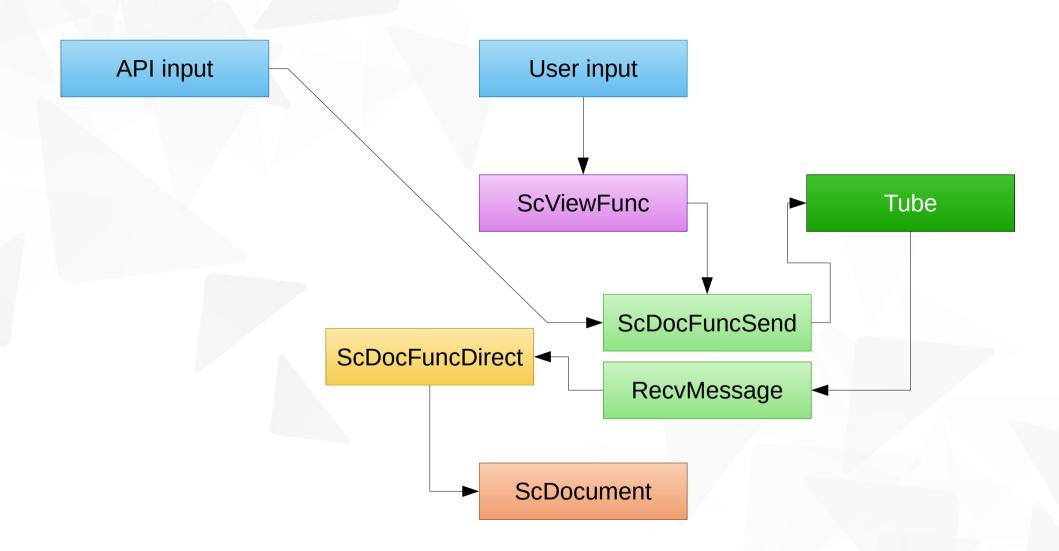


Calc input flow, modified direct





Calc input flow, modified tubed





Opening up

Google Summer of Code 2012



Google Summer of Code 2012

- Matúš Kukan
- Implemented menu entry in Calc as File \rightarrow Collaboration
 - automatically added when build is configured with --enabletelepathy
- Changed the contacts dialog displayed from that menu
 - display avatars
 - select an alias/contact pair and start a session
 - demo session can be started from the same dialog without the need for Jabber accounts or server
 - updates when contact list changes
- Removed the hack of needing LIBO_TUBES=slave / master environment variables to distinguish clients

Google Summer of Code 2012

- Made editing tied to a single document, previous prototype received changes in all open documents
- Automatically send the current file and associate the session when starting a 1-to-1 session
- Enabled MUC (Multi-User-Channel) for many-to-many sessions, inviting is possible
- When collaborating notify if contact leaves
- Send back edit events to ensure consistent strict ordering
- Restructured code and moved collaboration fragments from module sc to module tubes where they belong
- Code using tubes does not need to link to libtelepathy-glib anymore, only 2-3 headers are exported from module tubes
- Adapted unit tests to new code

LibreOffice

The results

Technical pointers.



Where to find things

- All Telepathy/Tubes related code in module tubes
- Check tubes/README
- Build with - enable telepathy configure switch
 - needs libtelepathy-glib 0.18 at least
 - #define ENABLE_TELEPATHY is set for use in code for the rare case where it needs to distinguish
- Calc collaboration specific code
 - resides in sc/source/ui/collab/
 - portions (grep for ENABLE_TELEPATHY) in
 - sc/source/ui/inc/docsh.hxx
 - sc/source/ui/docshell/docsh.cxx
 - sc/source/ui/view/cellsh3.cxx

Demo

Pause those boring slides.



Questions?

I hope to be able to answer.



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Thank you ... for hacking LibreOffice!

See you on IRC #libreoffice-dev at freenode
 or libreoffice@lists.freedesktop.org mailing list



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