



Integrating LibreOffice with Gnome Documents

- ▼ Markus Mohrhard, Pranav Kant
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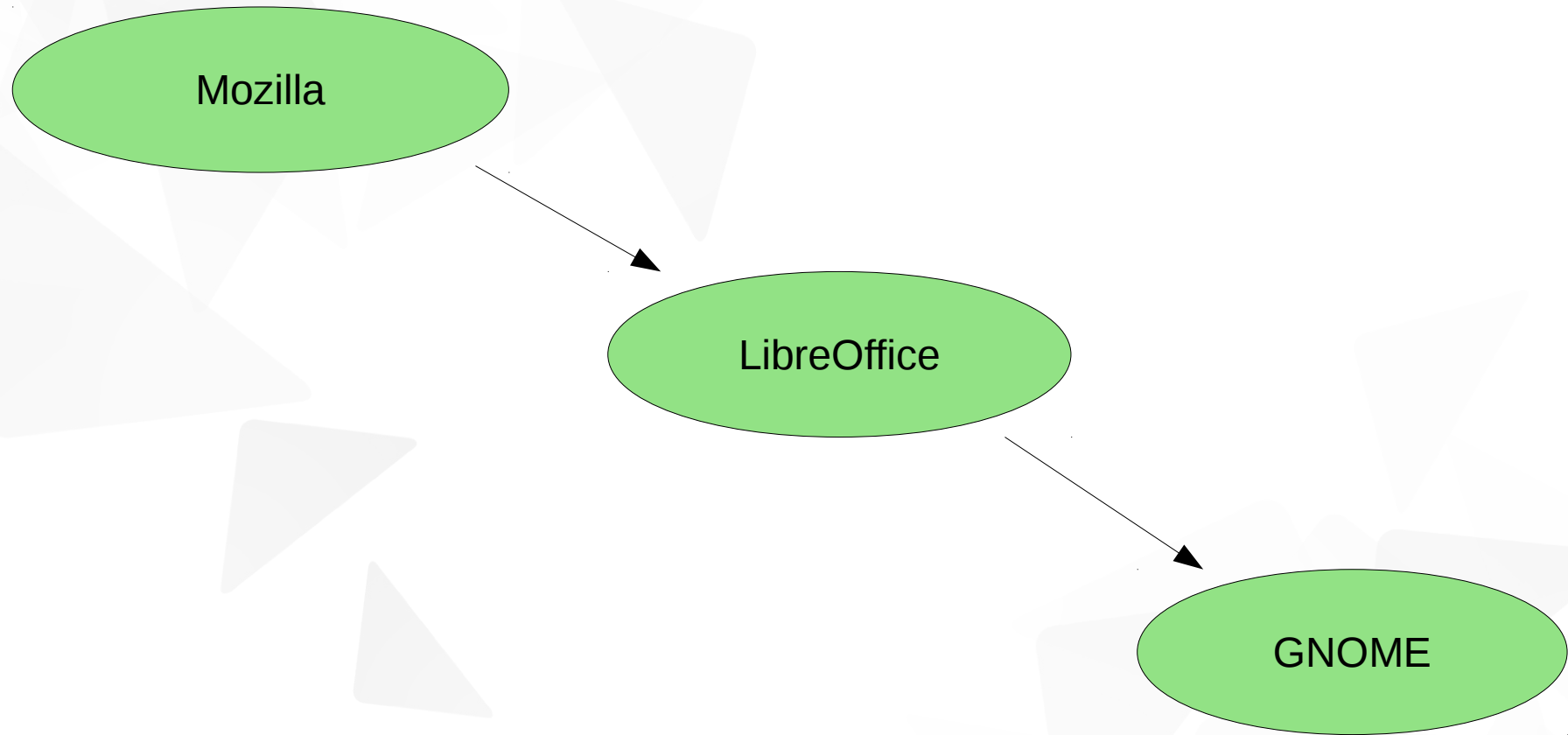
Integrating LibreOffice with Gnome Documents

▼ Pranav Kant

History

- ▼ GSoC 2014 (Andrzej Hunt)
 - ▼ Document rendered as single huge tile
- ▼ January 2015 (Miklos Vajna)
 - ▼ Render the document using 256x256px tiles but ...
 - ▼ Would still render whole document
- ▼ Still a Gtk2 widget
- ▼ Blocks the main thread
- ▼ Can only use from applications written in C/C++
- ▼ Used GtkTable for rendered tiles, and required lot of polishing.

This summer



LibreOfficeKit – Re-using LO core

- ▼ A very simple C/C++ API for LibreOffice
- ▼ Exposes the core value of LibreOffice :
 - ▼ File format filters
 - ▼ Tiled rendering (documents → pixels)
 - ▼ Exposes editing, selections etc.
- ▼ A very simple header only API – no linking
 - ▼ Fully abstract: function pointers, opaque structs etc.
 - ▼ No socket opened, no plugins/simple init.
 - ▼ Global error message
- ▼ LibreOffice online, Android, 'loconv' built on this.

LOKDocView inside LO tree

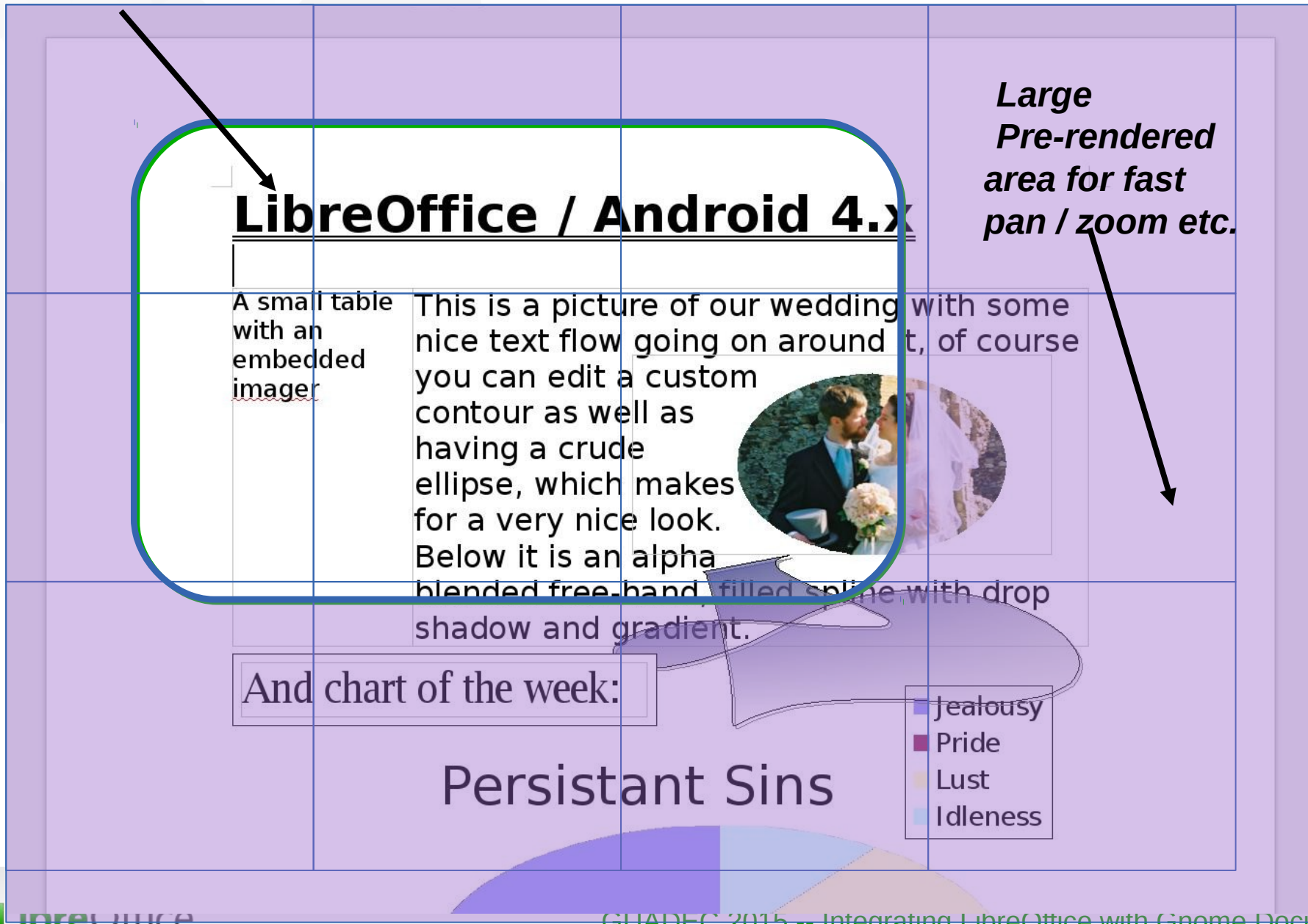
- ▼ libreofficekit/
 - ▼ source
 - ▼ gtk
 - ▼ lokdocview.cxx
 - ▼ tilebuffer.cxx
 - ▼ tilebuffer.hxx
 - ▼ qa
 - ▼ gtktilviewer
 - ▼ gtktilviewer.cxx (test-bed)

Tiled Rendering

- ▼ Divide the document into smaller tiles
- ▼ Render these small tiles independently based on demand
- ▼ Unstable as of now.
 - ▼ Use `#LOK_USE_UNSTABLE_API`
- ▼ Only bitmap-buffer rendering, with 32-bit RGBA colorspace

Fast Tiled Rendering in textures

Tablet display



LOK client - LO core communication

- ▼ A two way channel

LOK Client → LO Core

- ▼ InitializeForRendering(), postMouseEvent(), postKeyEvent()

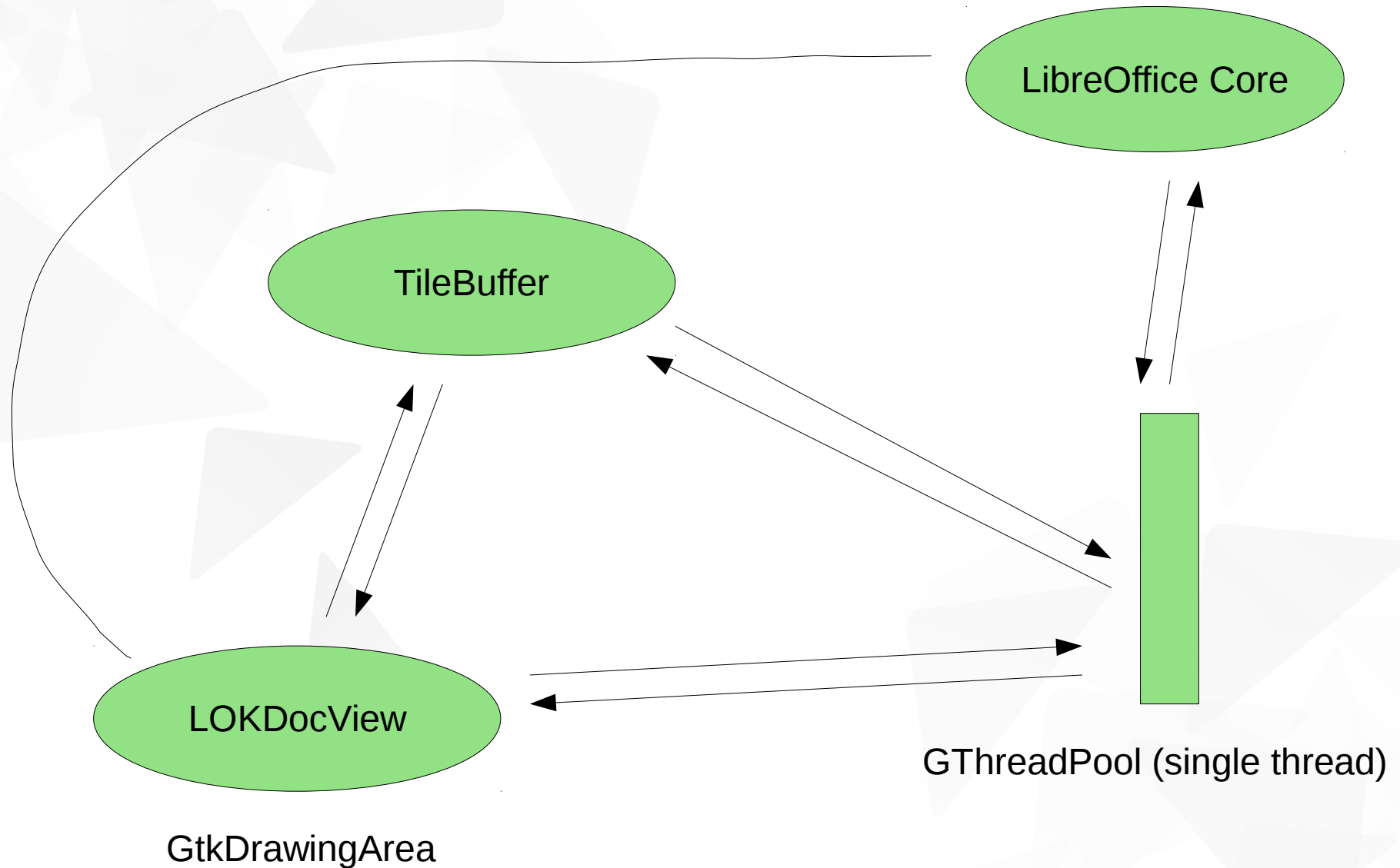
LO Core → LOK Client

- ▼ Implemented using callbacks
- ▼ LOK_CALLBACK_INVALIDATE_TILES: drop all given tiles cached on client-side
- ▼ LOK_CALLBACK_INVALIDATE_VISIBLE_CURSOR: set the new position of your cursor
- ▼ LOK_CALLBACK_TEXT_SELECTION: set the selection overlay rectangle

Existing clients

- ▼ Gtktiledviewer – a test application inside the LO source code tree
- ▼ LibreOffice Android
- ▼ LibreOffice Online
- ▼ Unoconv – python frontend for LibreOffice document conversion

LOKDocView - Architecture



LOKDocView - APIs

- ▼ lok_doc_view_new (GInitable)
- ▼ lok_doc_view_open_document
- ▼ lok_doc_view_set_zoom
- ▼ lok_doc_view_get_zoom
- ▼ lok_doc_view_post_command
- ▼ lok_doc_view_set_edit

LOKDocView – Future

- ▼ OpenGL for rendering ? GtkGLArea ?
- ▼ Better tile buffer algorithms
- ▼ Ship .gir and .typelib files

Using from C

- ▼ `pDocView = lok_doc_view_new (instpath, cancellable, error);`
- ▼ `lok_doc_view_open_document(pDocView, docpath, cancellable, callback, userdata);`

Use from any language bindings

```
// build the application's UI
_testViewer: function () {
    this._window = new Gtk.ApplicationWindow ({
        application: this.application,
        title: "LOK Document Viewer",
        default_height: 600,
        default_width: 800,
    });
    this._sw = new Gtk.ScrolledWindow({ hexexpand: true,
                                        vexpand: true });
    this._window.add (this._sw);

    this._view = LOKDocView.View.new(inst_path, null, null);
    this._sw.add(this._view);
    this._view.open_document(doc_path);
    this._window.show_all();
}.
```

Using from javascript

feature/gsoc-tiled-rendering

LibreOffice 5.0

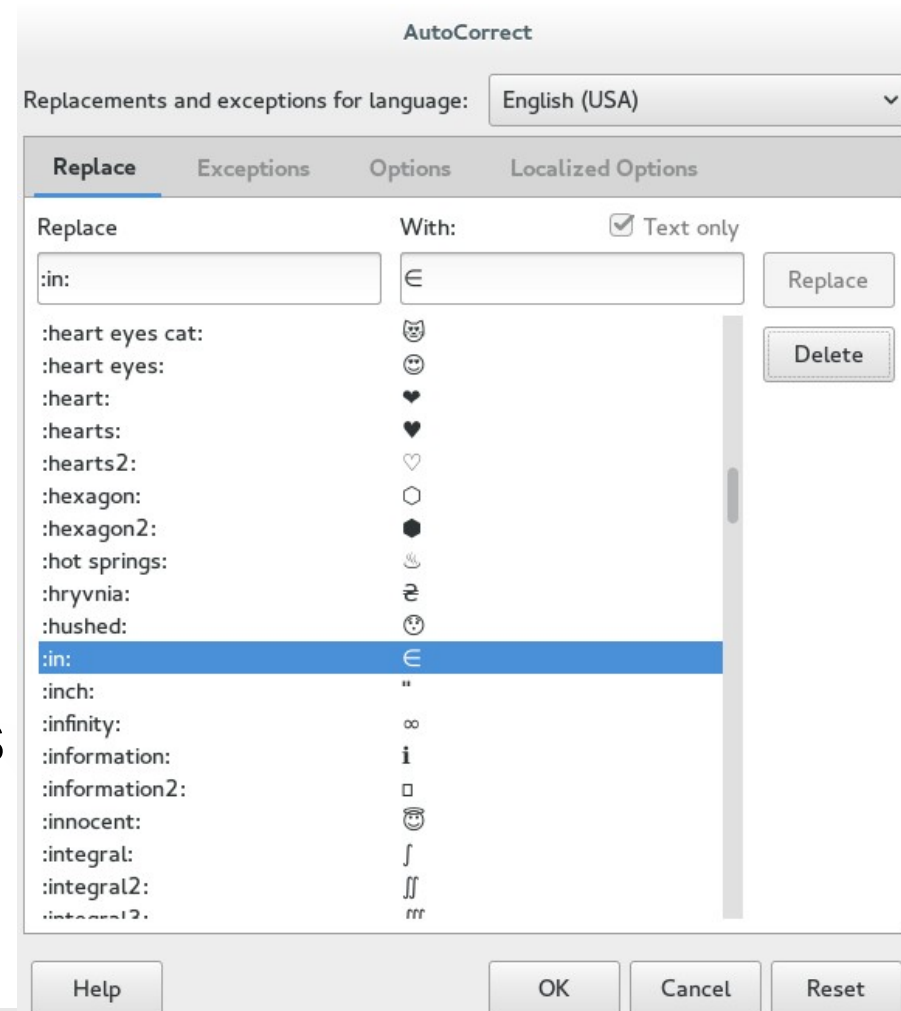
Emoji and in-word replacement support

- Fast insertion of common emoji and special unicode characters

e.g.

🖱️	as	:keyboard:
×	as	:X:
😊	as	:smile:
—	as	:--:
7/8	as	:7/8:

- Done through the correction tables

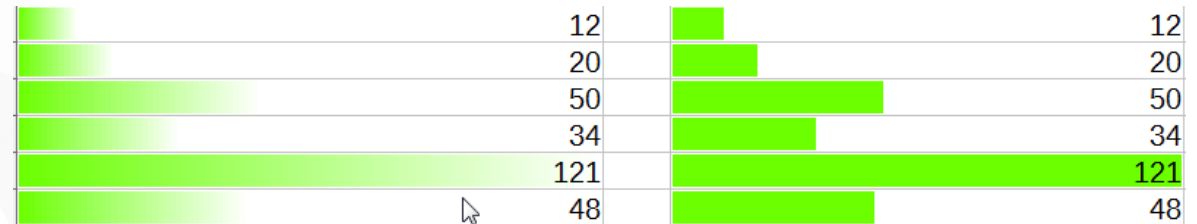


Better Interoperability

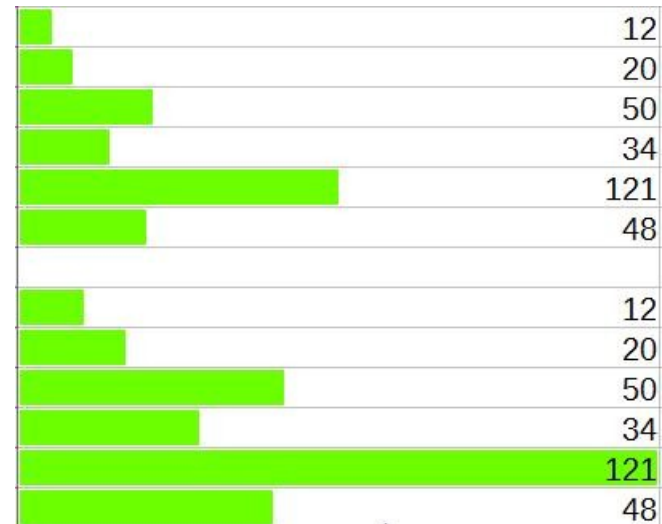
- ▼ DOC, DOCX, RTF, XLSX interoperability fixes
- ▼ Support for MSO 2007 OOXML vs OOXML spec
- ▼ Improved Keynote import filter
- ▼ Improved Freehand import filter
- ▼ Many ODF, OOXML validation fixes

Conditional formatting

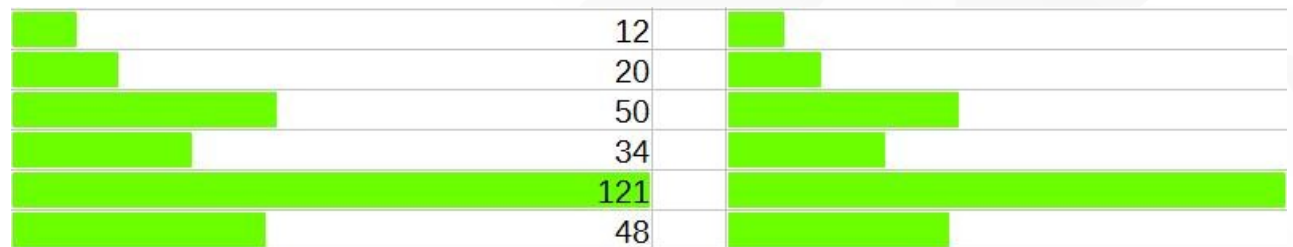
Gradient or solid



Minimum and maximum length



Show/Hide value



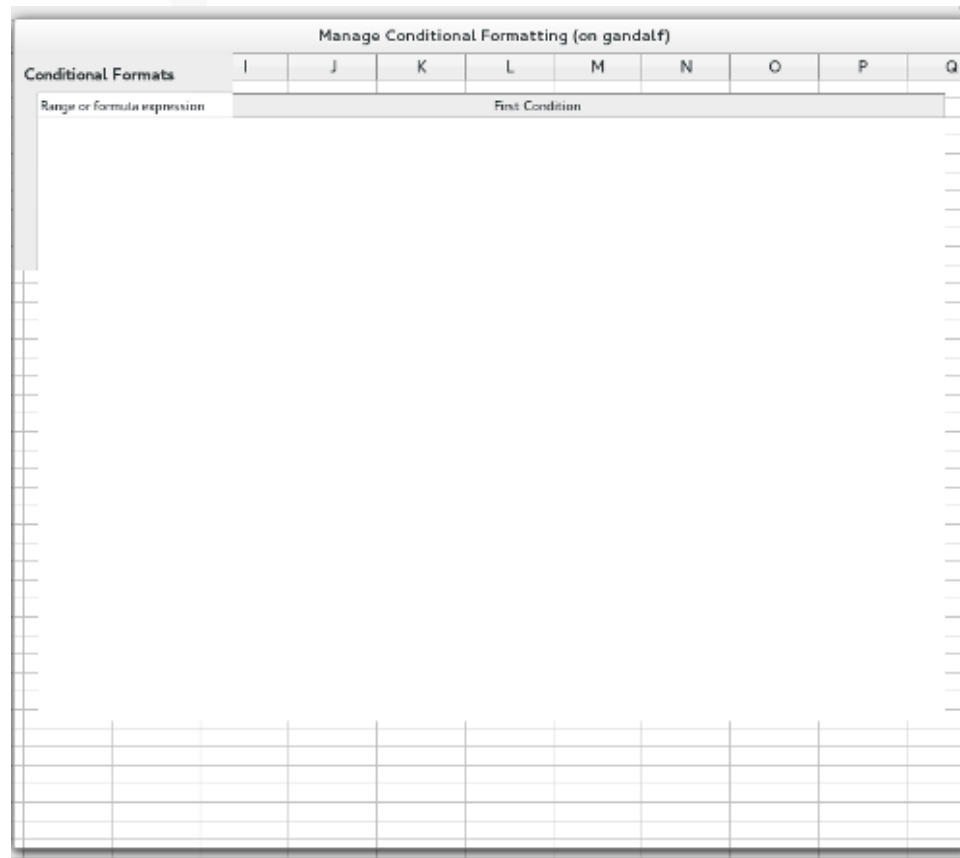
Spreadsheet formula improvements

- ▼ Table structured references
 - ▼ Last huge missing formula interoperability feature
- ▼ A:A / 1:1 entire column/row references
 - ▼ Allows to address whole columns and ranges easily
 - ▼ Better interoperability
- ▼ New formulas
 - ▼ ENCODEURL, ERROR.TYPE, CEILING.MATH, FLOOR.MATH

RenderContext

- ▼ Previously direct rendering
- ▼ Now double buffered rendering (for many places already)

Previously:



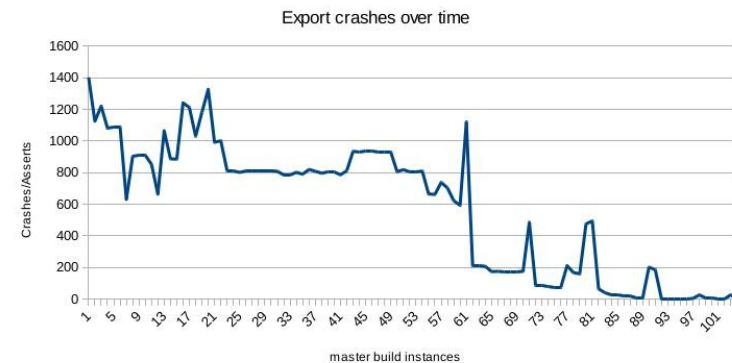
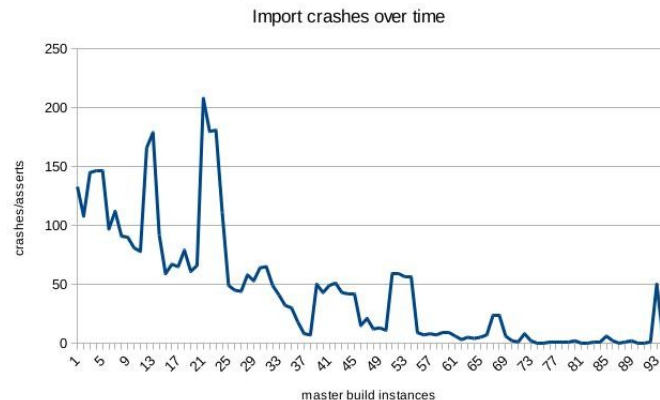
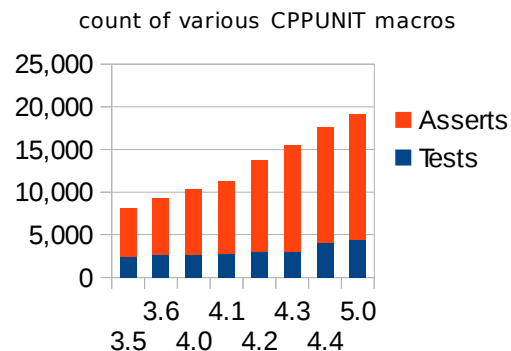
Idle handling

- ▼ Previously fixed timeouts for different tasks
 - ▼ Rendering (30ms)
 - ▼ Resizing (50ms)
- ▼ Now work is done when main loop is idle
 - ▼ Still different priorities
 - ▼ Snappier
 - ▼ As fast as possible

Code Quality

- ▼ Coverity
 - ▼ 0.00 score for some time now
 - ▼ More than 10k issues resolved
- ▼ Crash testing
 - ▼ Testing import and export with 75k bugzilla documents
- ▼ Unit testing

Growth in unit tests over time

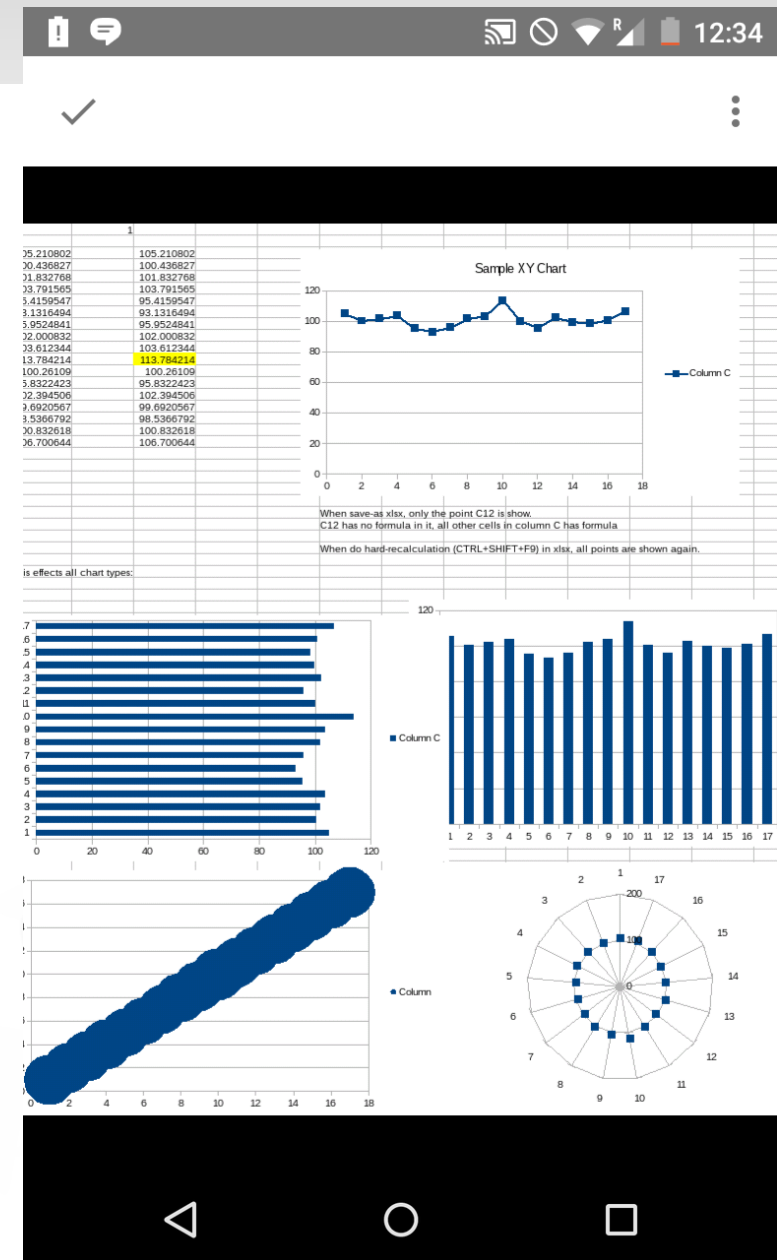


Compiler plugins

- ▼ Many new custom clang compiler plugins
 - ▼ simplifybool: **return bTest : false : true;** to **return !bTest;**
 - ▼ de-virtualization: avoid unnecessary *virtual* calls
 - ▼ staticmethods: methods that don't access member variables
 - ▼ Many more
- ▼ Asan (Address sanitizer)
- ▼ Ubsan (Undefined behavior sanitizer)
- ▼ Leak sanitizer

Android

- ▶ tdf.io/androidviewer
- ▶ Successful tender to get the project going
 - ▶ Limited editing (disabled in the official builds)
 - ▶ Uses tiled editing
 - ▶ On LibreOffice core side same callbacks as iOS, LibreOffice Online, Gnome Documents



Web – LibreOffice Online

- ▼ First prototype based on Broadway
 - ▼ Learned a lot of lessons from it
- ▼ New design
 - ▼ tdf.io/onlinerepo
 - ▼ Based on LibreOfficeKit
 - ▼ Shares the LibreOffice abstraction with Android, Gnome Docs, iOS
 - ▼ LibreOffice runs on server
 - ▼ Tiled rendering
 - ▼ Javascript library to interact with server (based on Leaflet)
 - ▼ Developed by Collabora & IceWrap

5.1 and the future

Reuse Mozilla updater for LibreOffice

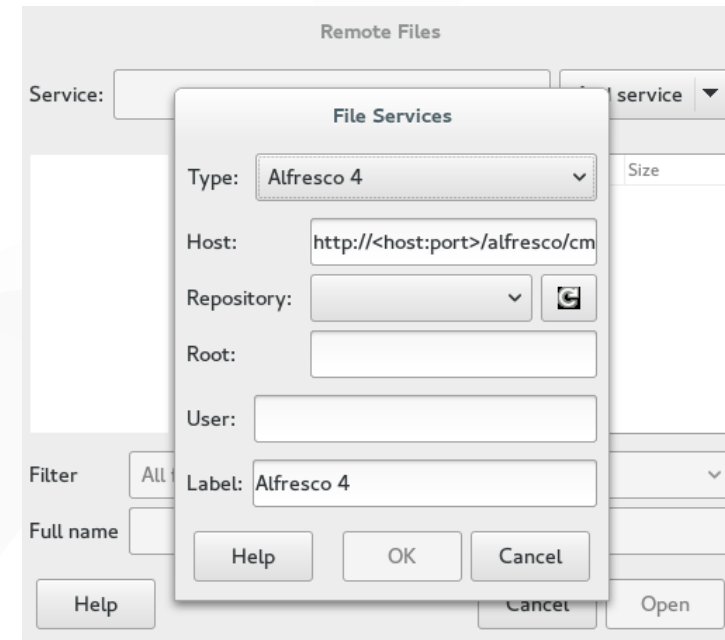
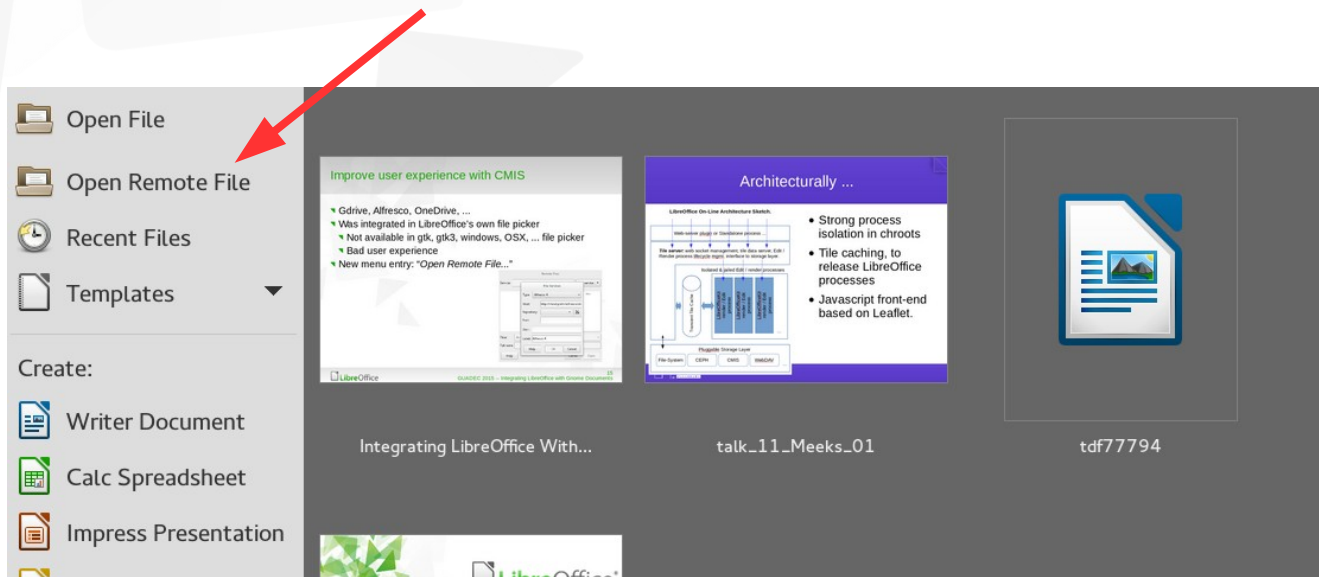
- ▼ Existing update experience is horrible
 - ▼ Get update notification
 - ▼ Go to website
 - ▼ Download new version (more than 100MB)
 - ▼ Install new version
- ▼ Automatic updater
 - ▼ Only a differential package
 - ▼ Happens in the background

Nathan Yee (through GSoC)

Improve user experience with CMIS

Szymon Kłos (through GSoC)

- ▼ Gdrive, Alfresco, OneDrive, ...
- ▼ Was integrated in LibreOffice's own file picker
 - ▼ Not available in gtk, gtk3, windows, OSX, ... file picker
 - ▼ Bad user experience
- ▼ New menu entry: *"Open Remote File..."*



Automated error checking in Calc

- ▶ How to help user prevent spreadsheet errors?
 - ▶ Spreadsheets are complex
 - ▶ Finding errors is difficult
 - ▶ Surveys shows every complex spreadsheet contains errors
- ▶ Show results in formula wizard
- ▶ Unit feature (started by Andrezej Hunt)
- ▶ Check for common errors

Oct 16, 2014

DEALS

Spreadsheet Mistake Costs Tibco Shareholders \$100 Million

ARTICLE

COMMENTS (5)

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By GILLIAN TAN [CONNECT](#)

It pays to double-check the numbers.

That's the lesson [Tibco Software Inc.](#) and [Goldman Sachs Group Inc.](#) GS -0.80% learned in the [software company's more than \\$4 billion sale](#) to Vista Equity Partners, which is paying about \$100 million less in the deal because of a spreadsheet mix-up.

Other GSoC tasks

- ▼ Implement Apple Numbers filter (*Anurag Kanugo*)
- ▼ Haskell UNO Language Bindings (*Jorge Mendes*)
- ▼ Finish integration of Firebird backend (*Popa Adrian Marius*)
- ▼ Dynamic Text Chaining (*Matteo Campanelli*)
- ▼ Cleanup internal Calc drawing units (*Krisztian Pinter*)
- ▼ Review of the sidebar & its functionality (*Rishabh Kumar*)
- ▼ More and better Tests (*Varun Dhall*)



Welcome

The Document Liberation Project is a home for the growing community of developers united to free users from vendor lock-in of content.

A routine problem encountered by computer users today is the discovery of personal digital content created years ago and stored in old, outdated file formats. Frequently, these old files cannot be opened by any application on the user's current operating system. The users are, put simply, locked out of their own content. The most common reason for this inability to access old data is the use of proprietary file-formats that result in vendor lock-in.

What happens when not just an individual, but an entire organization such as a government is unable to read or access digital data from past years? The consequences of any vendor lock-in are reaching much deeper than what people would expect. When documents are stored and used by a public administration via proprietary or undocumented formats, they unintentionally restrict access to essential information to citizens, administrations and businesses. Astonishingly enough, sometimes governments themselves are unable to open their own documents after an upgrade of their operating system and office software.

Going forward, the obvious solution to this problem is to use true open standards that are duly and fully documented. But as things stand today, we must face a daunting reality: a significant amount of our legacy digital content is encoded in proprietary, undocumented formats.

The Document Liberation Project was created in the hope that it would empower individuals, organizations, and governments to recover their data from proprietary formats and provide a mechanism to transition that data into open file formats, returning effective control over the content from computer companies to the actual authors.

We believe...

- ... that documents and their content belong to their creators, not software vendors;
- ... that access to content you own should not be hindered by the fact that the application that created it is not maintained any more or that the application does not work on the particular operating system that you use;
- ... that use of truly open and free standards for encoding digital content is the only long-term guarantee that a user's digital content will never be beholden to a single vendor;

Contribute to LibreOffice

- ▼ https://wiki.documentfoundation.org/Development/Easy_Hacks
- ▼ Also tasks related to Gnome
 - ▼ Improve Gtk backends
 - ▼ Better system integration
 - ▼ Libraries provided by LibreOffice to other projects
 - ▼ DLP
 - ▼ libcmis
 - ▼ ...
- ▼ LibreOffice conference
 - ▼ 23rd to 25th September in Aarhus, Denmark



Thank you ...

▼ ... listening!



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