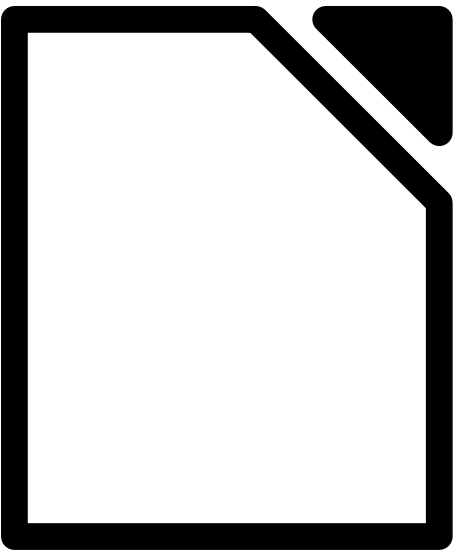




Collabora Productivity



LibreOffice's Android port

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Collabora Productivity

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What has been done

Cross-compiling, single .so

- Need to decide what will be run on the machine building LO (build) and on the target platform (host)
- Need a single liblo-native-code.so, due to stupid Android linker limitation (128 libs)
- Need to bypass all unit tests
- Mostly done by Tor Lillqvist back in the SUSE times



(via [tml](#))

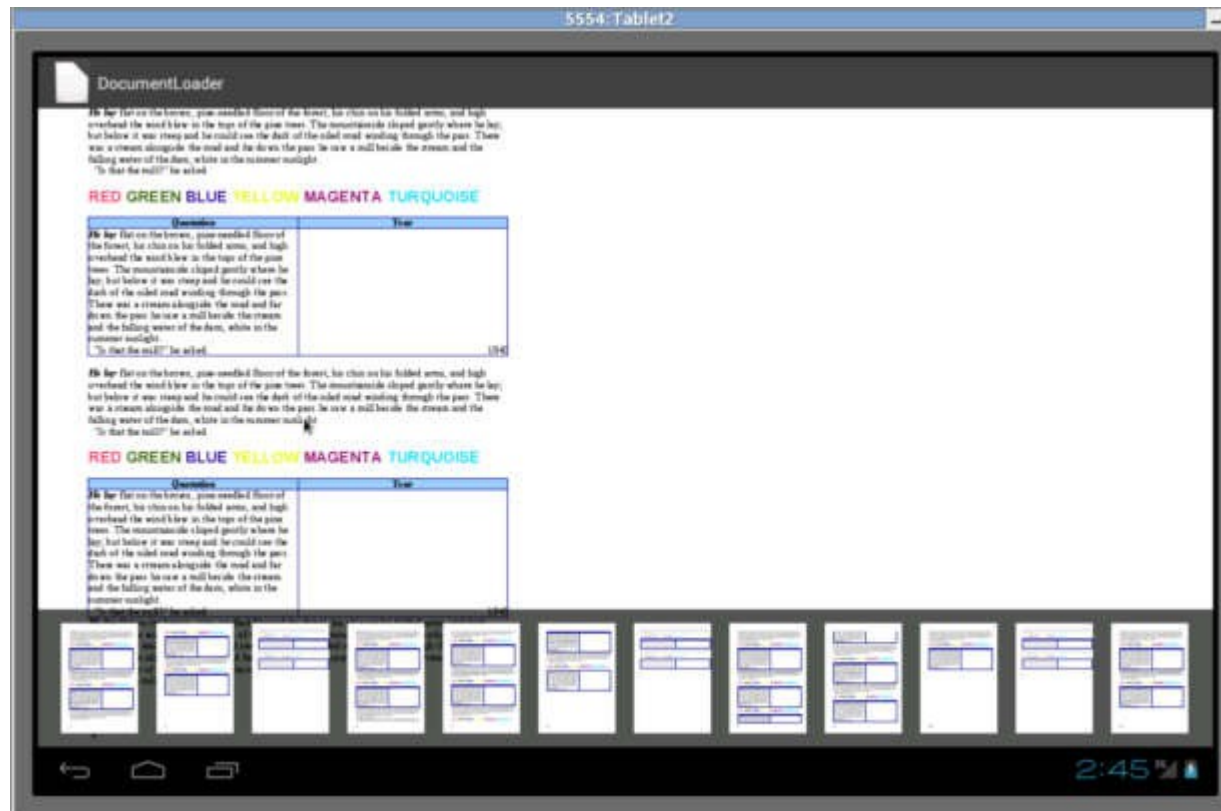


DocumentLoader prototype

- This was a viewer application
 - Writer-only
- Rendered each page as a bitmap
 - Problem: what resolution to use
 - Too large: out of the memory
 - Too small: unreadable if you zoom in
- Again mostly done by Tor Lillqvist



DocumentLoader prototype

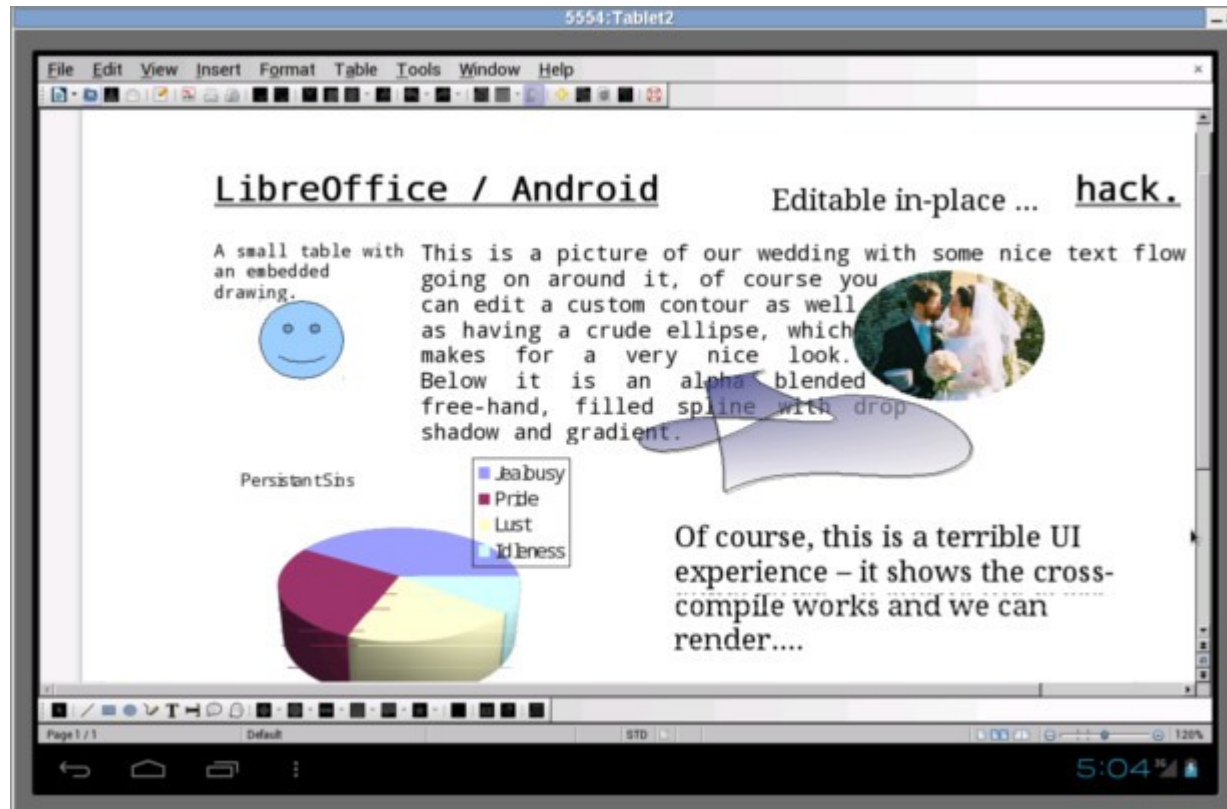


Desktop prototype

- This was an editing application
 - Still Writer-only
- Idea: in case the Android device has a real keyboard / mouse attached
- Rendered the whole desktop to a bitmap
 - Again and again ... :-)
- Initially by Michael Meeks



Desktop prototype

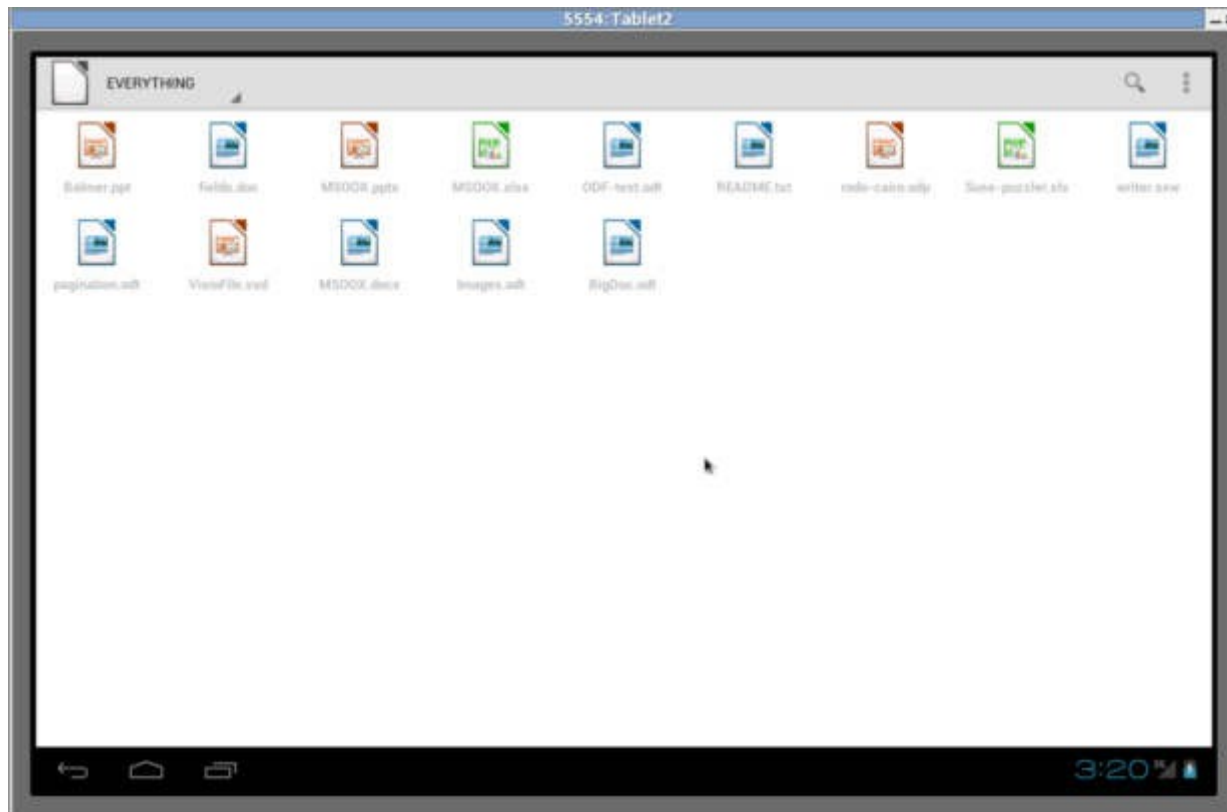


Document browser

- Idea: most Android phones have no built-in file manager
- Let's add one that uses DocumentLoader for viewing files supported by LO
- Initially by Ian Billet (GSoC)
 - Improvements by Igalia
 - See [An update on LibreOffice for Android](#)



Document browser



Tiled rendering

- Idea: render many 256x256px tiles
 - Instead of using UNO to render a single huge bitmap
 - Used by Firefox for Android successfully
- Initially for Writer
 - Mostly by Jan Holesovsky (Collabora)



Tiled rendering for Impress

- If we can do it for Writer, it must be possible for Impress and Calc, too
- Tiled rendering for Impress
 - Initially by Andrzej Hunt (GSoC)
- And Calc... no so easy
 - Was done on a feature branch, never merged to master



Tiled rendering for Impress

LibreOffice GTK Tiled Viewer

19 Use Quad View

Applications ...

- ▼ *desktop*: - legacy name, StarOffice 5 had a 'desktop' complete with 'Start' menu etc.
here lives the real 'main' desktop/source/app/app.cxx
desktop
- ▼ *sd*: - Star Draw (Impress)
Drawings + Presentations
- ▼ *sw*: - 'Star Writer'
Word processor
- ▼ *sc*: - Star Calc
Spreadsheet

```
graph TD; sd((sd)) --> oox((oox)); sarmath((sarmath)) --> oox; sw((sw)) --> vbanhelp((vbanhelp)); sc((sc)) --> vbanhelp; oox --> filter((filter)); vbanhelp --> filter; filter --> xmlsecurity((xmlsecurity)); filter --> svx((svx)); filter --> dbaccess((dbaccess)); xmlsecurity --> package((package)); svx --> package; svx --> editeng((editeng)); svx --> formula((formula)); editeng --> linguistic((linguistic)); avmedia((avmedia)) --> linguistic; linguistic --> xmloff((xmloff)); xmloff --> sax((sax)); stx2((stx2)) --> sax; stx2 --> drawinglayer((drawinglayer)); stx2 --> framework((framework)); stx2 --> cppo((cppo));
```

Tiled rendering on Android

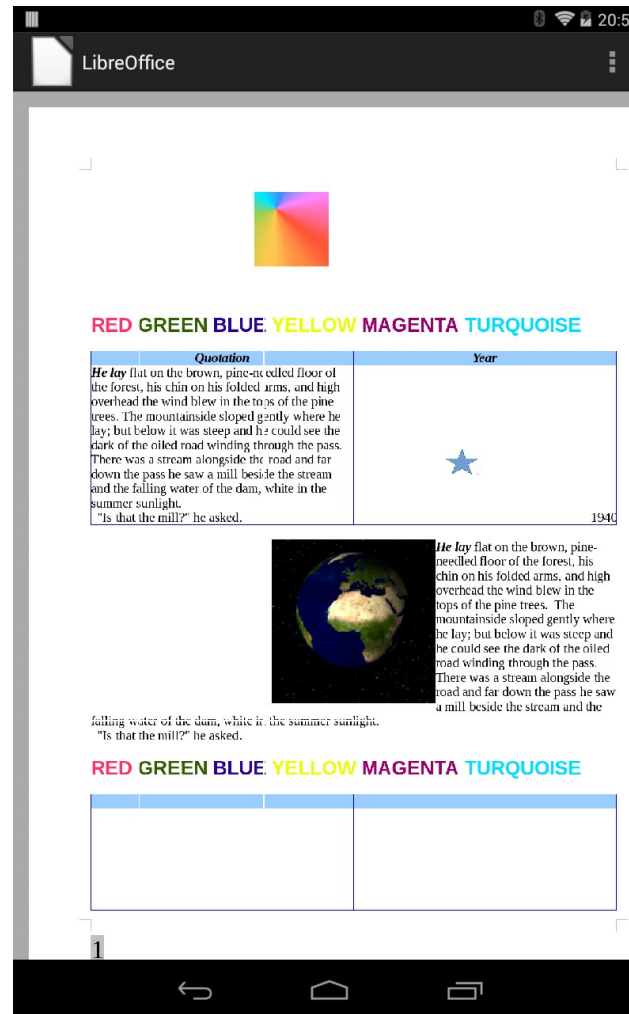
- We use a subset of Fennec
 - Firefox for Android
- Via LibreOfficeKit
 - The tiled rendering API is currently declared unstable
 - C + C++ wrapper + JNI
- Initially by Tomaž Vajngerl (Collabora)
- Thanks to Smoose



(via [LOCon 2014](#))



Tiled rendering on Android



Play store release

- LibreOffice is for end-users
- One could build from source
- There were even tinderbox daily builds
- The real release is still what's available from the play store
- <https://play.google.com/store/search?q=libreoffice>
- Several last-minute fixes



Google play



What about editing?



Tiled rendering / Calc

- Basic problem: pixels, not twip / 100th MM
- Second try by Kohei Yoshida (Collabora) in a few days
 - Separate code, no handling of charts, etc.
- Next: got it into master, without breaking desktop rendering
 - Further improvements: see work by Krisztián Pintér



Tiled editing

- If we have a viewer, why not allow editing, too?
- Needs input handling and lifecycle management for tiles
- Firefox renders webpages
 - Javascript → they need to update rendered webpages as well



gtk tiled viewer

- Android wants a whole .apk each time
 - See also the mentioned single .so
 - Development not productive
- Let's sort out core + sample LOK client via GTK
- Real 256x256px tiles there by me



Basic editing framework, selections

- Kindly sponsored by TDF
- Since doing all the heavy-lifting for free did not happen for quite some time
- Not a product, but enough that the rest can be done as usual development
- Selections, as that requires a working overlay



Hello world: Blinking text

- Example of changing document
- Without input handling



Keyboard and mouse/touch

- Keyboard: Unicode + control characters
- Need to map backspace to e.g. `.uno:SwBackspace`
 - Requires a fully working `SfxDispatcher`
- Mouse/touch
 - Tap somewhere → blinking cursor appears
 - Long push → selects words

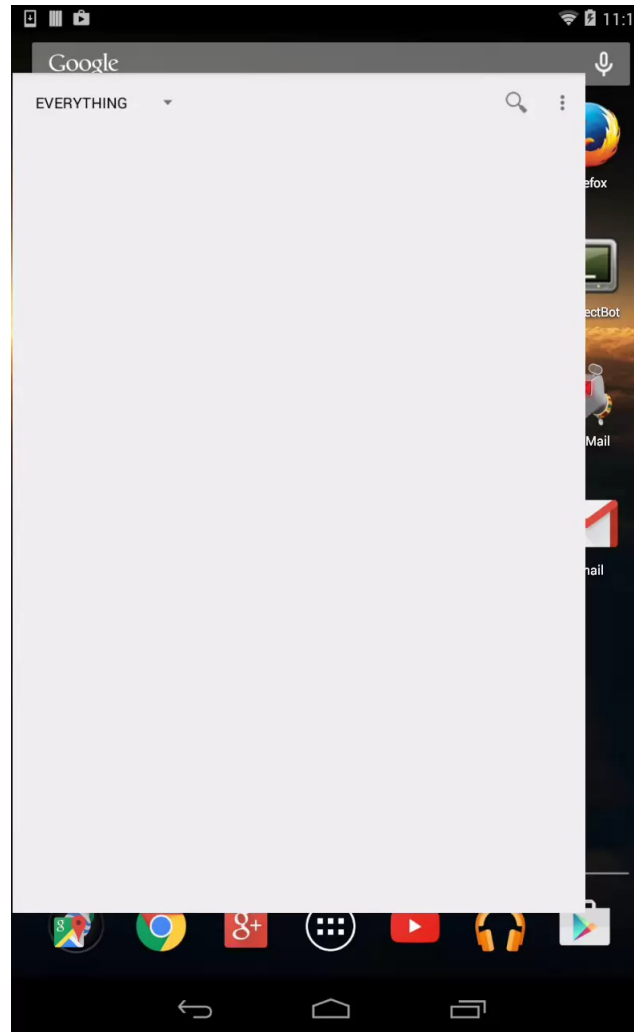


Native overlay

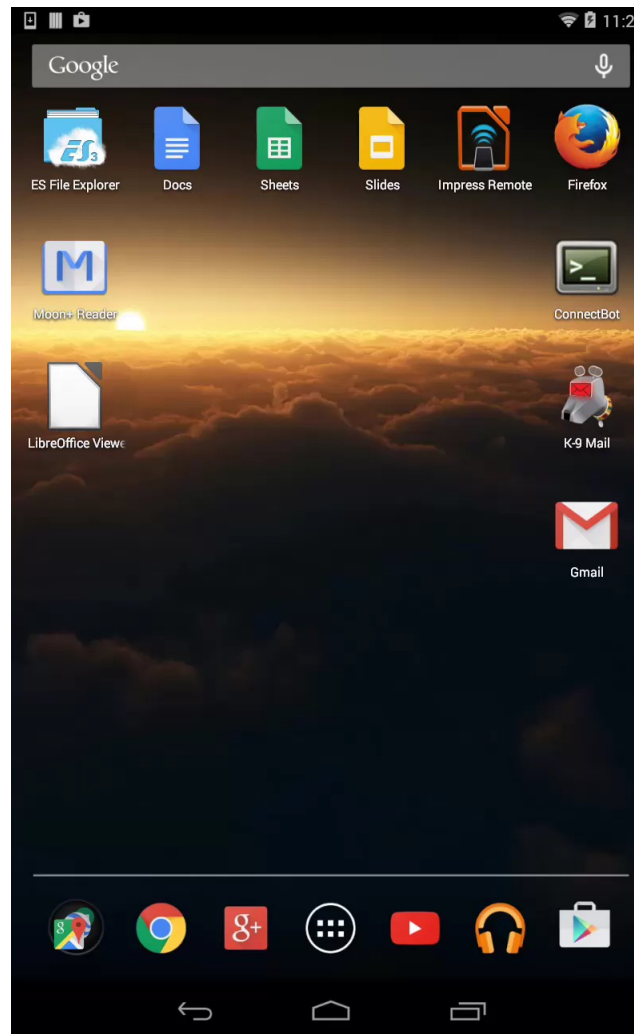
- Content that should be outside the tiles
- E.g. blinking cursor
- Selection, handles to adjust it
- And then: the same for Calc, Impress :-)



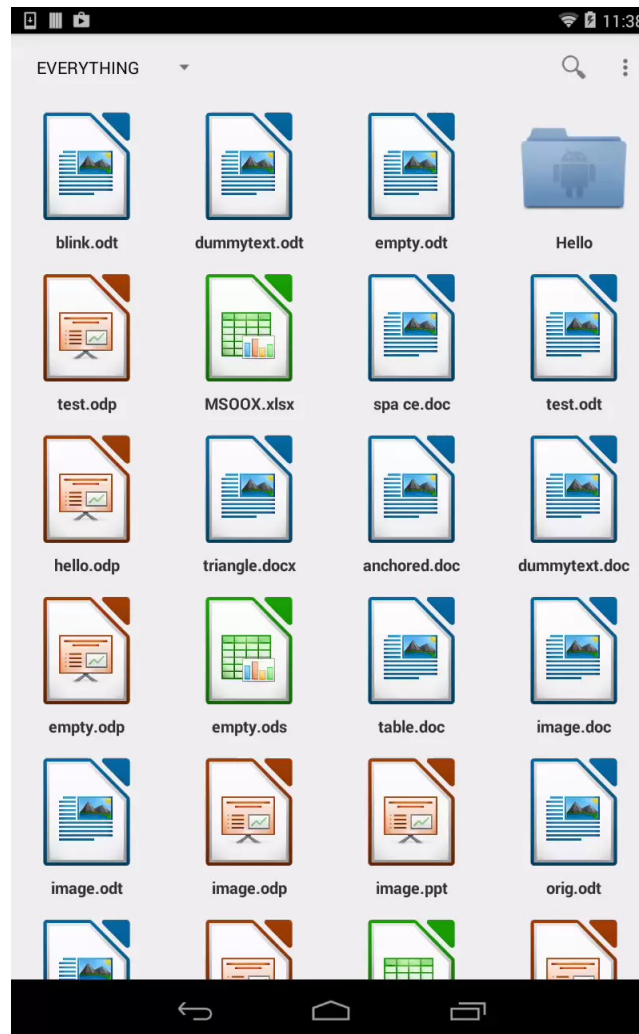
Writer Android Demo



Impress Android Demo



Calc Android Demo



Plans for the future



Easy hacks

- Support for flat ODF
 - Find what services are missing and enable them
- Support for Search
 - LOK API is there
- Support copying of text
 - LOK API is again ready to use
- Feedback about save
 - Error reporting, when it is complete



Thanks

- Collabora is an open source consulting company
 - What we do and share with the community has to be paid by someone
- SUSE, Smoose and TDF sponsored this work
- Credits: Henry Castro, Jan Holesovsky, Kohei Yoshida, Michael Meeks, Miklos Vajna, Siqi Liu, Tomaz Vajngerl



Summary

- LibreOffice on Android is in progress since 2010
 - Viewer now available in the Play store
 - Editing is an experimental feature
 - Sounds interesting?
 - Plenty of easy hacks around the document browser in the bugzilla
- Thanks for listening! :-)
- Slides: <http://vmiklos.hu/odp>

