FOSDEM 2020

LibreOffice turns 10 & what's next.

Michael Meeks <michael.meeks@collabora.com> General Manager at Collabora Productivity

@michael_meeks, mmeeks #libreoffice-dev irc.freenode.net

"Stand at the crossroads and look; ask for the ancient paths, ask where the good way is, and walk in it, and you will find rest for your souls..." -Jeremiah 6:16



Overview

- The very early beginning
- The OpenOffice Era
- Launching LibreOffice
- Cleaning a giant codebase
- Features vs. Awareness
- Join us to make the future

After ten years but really 20 years ... or 35 ...

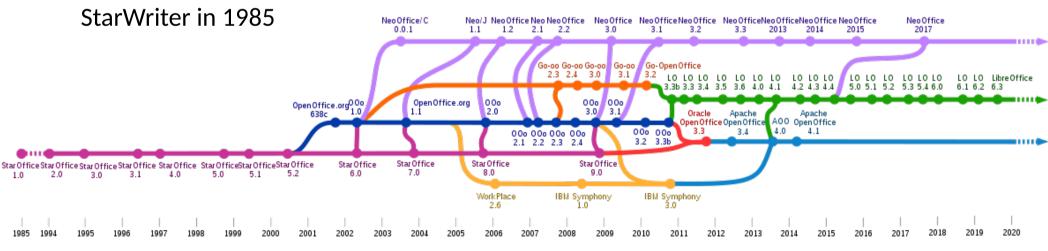




Grown alongside FOSDEM:

20th year of OpenOffice.org too.

- Luckily we have a museum of old code so you can compare !
- 45th year since Marco Börries releases the first version of



StarWriter Pre-dates MS Office (1985 vs. 1990)

At this stage just a word processor.

StarWriter Compact 2.0		
Datei Bearbeiten Ansicht Einfügen	<u>Format</u> Extras	Zusätze Hilfe
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Copyright 1993 bei STAR DIVISION G Teile sind (C) bei Agfa Compugraphic und (C) Microlytics		
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CC-By-SA – Masterhit / wikipedia		
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Historic Object Orientation mania ...

"Lotus's attempt to copyright words, menus and sequences of events is like someone obtaining a copyright on the sequence in which gears are shifted in a car. ..."

"Unfortunately, Basic is over 20 years old. And you know, in software technology **anything** that's **over 20 years old** is **prehistoric**, just like Teletype terminals or punch cards. **A facelift isn't enough.**

Let's take the desktop computer revolution to the **next stage**. What we need are true **object-oriented environments**."

Philippe Kahn, Borland founder & CEO, 1991..

The New York Times, August 18, 1991, Section 3, Page 9.

Lotus vs. Borland, reprised as Google vs. Oracle?

Time for a throwaway re-write ...

Object Oriented Magic !

Object Oriented programming #2 +1 year

Borland's - Philippe Kahn:

"Creating the **initial** "**objects**" is **difficult**, especially for programmers Lotus 1-2-3 who are used to designing the old-fashioned way." \rightarrow

"But ultimately the **payoff** will be **faster**, **less costly development** of new programs and upgrades."

The New York Times (July 26, **1992**, Section 3, Page 1)

"**If** the objects approach is so great, **Mr. Gates** has said, why are Borland's Windows products **so late**?" Borland

Quattro Pro

Creation of an Object Oriented Toolkit: VCL

Visual Class Libraries

• Object Oriented $! \rightarrow$ should be awesome !

Demo apps sell better so:

- StarOffice $3.0 \rightarrow in 1995 \dots$
- A complete redesign of former programs as a crossplatform office suite for Windows, OS/2 and Solaris Sparc
- directly competing with Microsoft Office 95.
- We still have the skeleton and some of this 25+ year old code in LibreOffice today.

was not there myself, but this is as I heard it ...

How (not) to Design: Look at the screen: what you see is objects !

- Epic Object Oriented blunders:
 - I see a spreadsheet cell $! \rightarrow$ object
 - I see a paragraph $! \rightarrow object$
 - I see a table $! \rightarrow object$
 - Power ideas:
 - Our file format can just be a recursive serialization of all our objects !!!!
 - Change-tracking makes this too complex: so tack it on the side & mutate the model.
- Oh dear ! Oh dear ...

Show changes? * × Do you want to show changes to avoid delays? In the current document, changes are being recorded but not shown as such. In large documents, delays can occur when the document is edited. Showing changes will avoid delays.

Yes

No

Fixed many of these things in recent time.

- Binfilter \rightarrow changing object graph ...
 - hideous hack ... removed in LibreOffice 4.0
- Spreadsheets
 - Massive re-factoring for AMD of the Calc core.
 - Sensible, contiguous type span data structures (MDDS)
 - Huge memory reductions, significant performance improvements
 - Thanks to Kohei Yoshida (Collabora)
- Writer
 - Red-lining turned into a view state not model fiddling festival
 - Thanks to Michael Stahl (CIB) for Munich City.



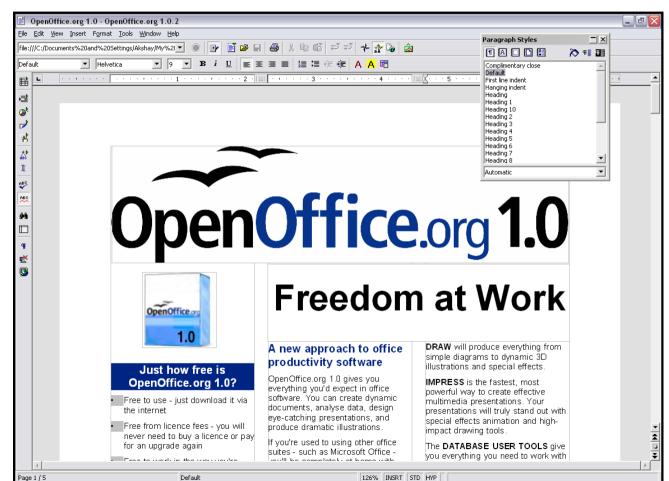
Top Tip: try to spot the panaceas of today and critically examine their claims. Hold onto the good.

OpenOffice ... !

The heady days of FLOSS fixing everything !

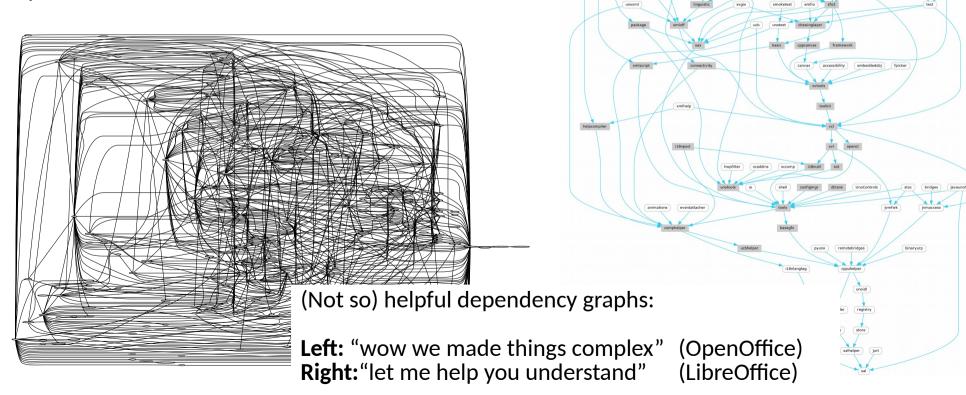
- 1999:
 - Sun buys StarDivision
- Marco Open-Sources
 StarOffice in 2000
 - Dropping E-mail & the desktop for
 - GNOME + Evolution





Attracting developers:

Top tip: get a developer to write & even test your build instructions ...



Development Process ...

Crazy stuff

- Fundamental libraries change API randomly
- Low-level library authors mail everyone:
 - "I just re-ordered the parameters in: void copyFile(string src, string dest); to void copyFile(string dest, string src);
 - "please update all your code !"
- Before moving onto their next master-stroke.

Top tip: Platform / API churn can rapidly overwhelm the ability of application authors to keep up.

But don't worry, rewriting in Java, C#, Haskell, Rust, will make everything better ...

Amazing !?

Build tree in a permanent state of brokenness

- Release engineering:
 - Would branch the tree
 - Try to make it build
 - Chase engineers to fix things
 - Merge all of that
 - After a week or so produce a binary snapshot
 - People would re-base their work on that and ... life would continue.

Top commit counts in the world: StarDivision Releng

Getting a first build ... a month.

Incredibly pleased to have built OpenOffice !

- With aformentioned, un-tested build instructions
 - \$ cvs update # ... wait 10 minutes
- Weeks more work to get something working again

Created ooo-build

- Maintain a public set of patches & fixes necessary to compile the beast in the 1st instance.
 - Built on Frederic Crozat's work for Mandrake (RIP)
- ~Immediately adopted by ~all Linux distros.

Something you can actually package:

~immediately built a distro / packager community behind ooo-build:

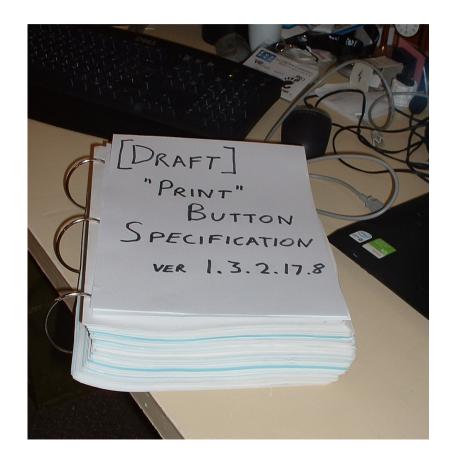
• A day into the build – it is not supposed to fail ...



Visited a UK conference, everywhere I went I found frustration ...

Heavy duty / run-away Process ...





Heavy duty / run-away Process ... #2





Lots of things not getting fixed ...





On Contributor License Agreements ...

Why barriers to entry can be **very** costly to erect:

Fedora Active Accounts

May 2005-Feb 2010

30000 25000 20000 Accounts 15000 Active Accounts 10000 5000 0 08/01 02/0108/01/06 02/01/07 08/01/07 02/01/08 08/01/08 02/01/ 05/01/05 11/01/05 05/01/06 11/01/06 05/01/07 11/01/07 05/01/08 11/01/08 05/01/09 11/01/09

When do you think Fedora dropped their **CLA requirement ?**

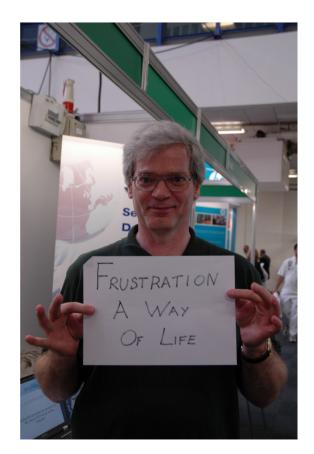
Single Vendor Dominance



No one can control more than 30% of the votes in any statutory body of TDF

Cumulative Frustration & Missed Opportunities ...





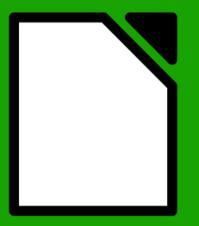
And yet - some wonderful individuals ...



Many heroic StarDivision individuals went beyond the call of duty to work with, mentor, and try to ease their own internal process pain for 'external' developers.

Many StarDivision guys were friendly, helpful, respectful, understanding, encouraging and pleasant.

However, there were significant issues of **corporate** / divisional **culture**.



TDF / LibreOffice

Wonderful logo thanks to Christophe Noack.

LibreOffice: planning it ... 26 days to launch



Budapest, Sep 2, 2010







Launching is tough ... call in our collective favours ...

Management from RedHat

G

Bryan Stevens EVP & CTO



Jonathan Blandford, Sr. Eng. Mgr

THE POWER O





Caolan McNamara, Hacker & Hero

Re: ooofuture

ok, we're finally green over here in ... land, I've now (9pm Wed) got the formal go-ahead that ... involvement in LibreOffice ... is approved, something we've been ***cough*** actually lacking until now, so my ass is now covered again.

One quirk however is: "RE: press release, we'll do it if google does it"

"After you" ... "no after you ..." ... Management from Novell /SUSE





Carlos Montero-Luque, VP Product Mmgt

Dr Jeff Jaffe.

Novell CTO

Markus Rex

SVP & GM OPS



Guy Lunardi, Awesome PM



Two professional PR agencies: Italo Vignoli + SitPub

Un-blocking the magic ... ~10 days to launch

Hi Chris & Jeremy,

The **slight downer** is that to get a ... supporting press release, they **require one from Google** too [**out sourcing** your **due diligence** is great like that ? ;-] - is that something that can fly ? we go live 28th September; it seems you're the **press release king makers**. ...

We have RedHat and Novell management on-board (jrb being CC'd), and are trying to grow that corporate base. We are driving towards a press release [of the form: "we plan to create a real foundation, and here is our source code & Beta binaries"] ...

With such an aggressive timeline, anything that can be done is appreciated. Even without a supporting Google press release, it would be much appreciated to have a Chris DiBona quote, and/or one from Jeremy - who is more acquainted with the details.

Anything with (double) rainbows and ponies mentioned is good I guess and as yet - just some vague commitment to support the growth of the project (as you already do with GSOC) would be great.

... Thanks guys, Michael.



Google came up trumps: 7 days to launch

Michael and Charles,

It turns out Google can move very quickly when we want to. Here is an **approved quote** from Google you can attribute to: **"Chris DiBona, Open Source Programs Manager, Google Inc.":**

"The **creation** of the **Document Foundation** is a **great step forward** in encouraging further development of open source office suites. Having a **level playing field** for all contributors is **fundamental** in creating a **broad and active community** around an open source software project.

Google is proud to be a supporter of the Document Foundation and participate in the project."

Thanks a lot, let us know how we can help with the Foundation in future.

Cheers,

Jeremy.

Bingo ... unlocked everything.





Jeremy Allison



Have a name – but no logo! 6 days to launch

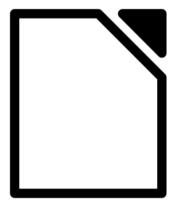
Beautiful in its simplicity cf. Wikipedia's Logo page example

[ooofuture] Proposal Christoph1 (was: Re: Artwork) This evening I tried a lot of different designs, e.g. using the current "dove" (see the Wiki), ... Well, I ended up with something different that might be weird - but I like it and it seems to fit to our naming and mission statement (but don't trust me at the moment, because I am really tired).

...

Question to all: Do you think its suitable in general? If it just requires some tiny changes ... then this can be easily achieved. And if you want to add some critique, then please feel free to **help me to improve it**. I'm **not experienced in graphics design**, although I know some requirements / pitfalls due to my day job.

Thanks to Christophe Noack





Website / Domain Names / Builds ...

Windows & Linux Builds produced by SUSE

Petr Mladek, Fridrich Strba, Thorsten Behrens ٠

Synchronized secretly to MirrorBrain network

Thanks to Dr. Peter Pöml & friends •

Infra setup / Domain registrations etc.

Thanks to Alex Werner & Florian Effenberger •

Website & PR / Marketing

Guy Lunardi, Michael, Charles Schultz, Italo +++ ٠

Petr Mladek

Fridrich Strba

Peter Pöml









OpenOffice.org community members launch the Document Foundation

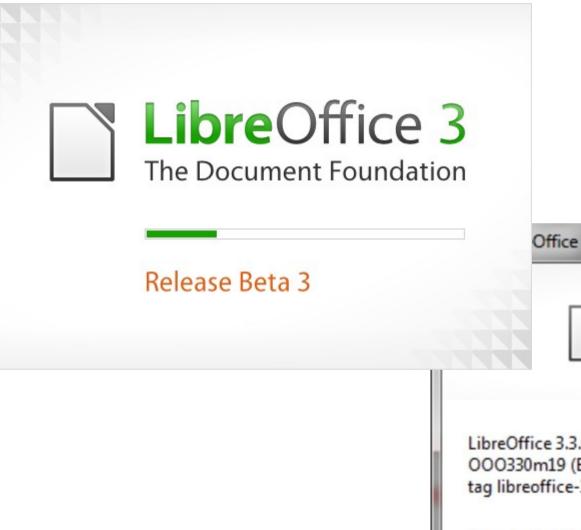
Other Supporters

- **FSF President** Richard Stallman welcomed LibreOffice release ...
- "Viva la LibreOffice", said Guy Lunardi, product management Director at **Novell**
- Jan Wildeboer ... **Red Hat** is proud to join this effort".
- Mark Shuttleworth ... the **Ubuntu** Project will be pleased to ship LibreOffice ... in future releases

More lined up goodwill:

Other supporters:

- Simon Phipps, a Director of the **Open Source Initiative**. "We welcome The Document Foundation initiative and look forward to the innovation it is able to drive ...
- "We welcome the LibreOffice project to the free software community ..." says Stormy Peters, Executive Director of the **GNOME Foundation**.
- Patrick Luby, of **NeoOffice** says "I am happy to see a new, independent LibreOffice foundation
- "... **BrOffice.org** and The Document Foundation share the same values and objectives and we are more than happy to be part of it.", says Claudio Filho
 - Tons more ... collected a vast page listing supporters ...



Looks familiar ? ...

LibreOffice 3 The Document Foundation

LibreOffice 3.3.0 000330m19 (Build:6) tag libreoffice-3.3.0.4

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Technical wins: *under the hood*



Engineering Steering Committee ...

Talking & ensure everyone is heard

Many large FLOSS projects fight tooth & nail

- Module 'maintainers' Rampant waste & re-writing
- Bickering, and passive aggression.

Whole team are peers ... no-one 'owns' modules

• Respect input from local experts: of course !

Calls live transcribed to reduce English listening needs

• Avoids the "Confused IRC wait-fest" problem.

Using Email to Resolve Conflicts Is a Reliable Way of Making Everything Worse

Magic conflict reduction tool



GNUmake \rightarrow 1 make to build ~10k wide

Completed re-write of legacy perl + dmake build system ...

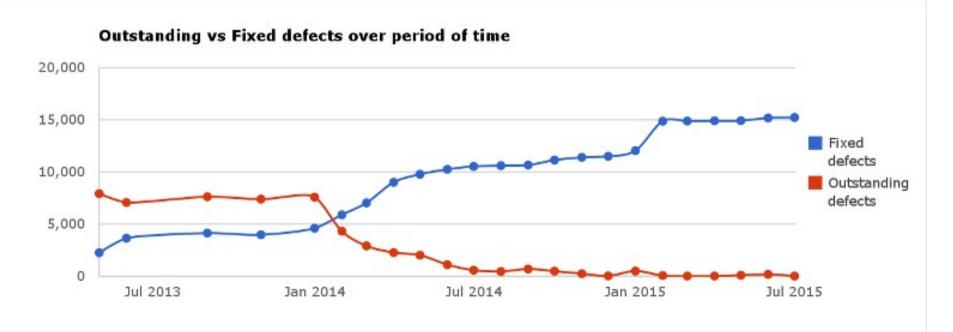
Thanks to Bjoern Michaelsen & team. 250 200 150 150 100 50 0 3.3.0 3.4.0 3.5.0 3.6.0 4.0.0 4.1.0

"LibreOffice is now ridiculously easy to build" Karl Fogel – (now working on "Producing OSS" (v2) ...)

gnumake vs. dmake by module count

Security: Coverity ... score 0.00

Excellent static checker.

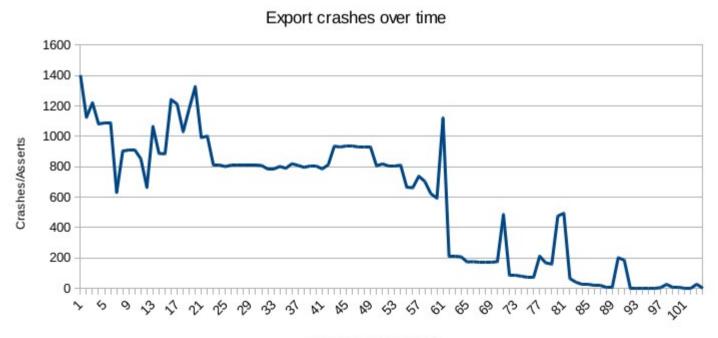


Systematic load crash testing: 100k+ files

Import crashes over time crashes/asserts \$ S N

master build instances

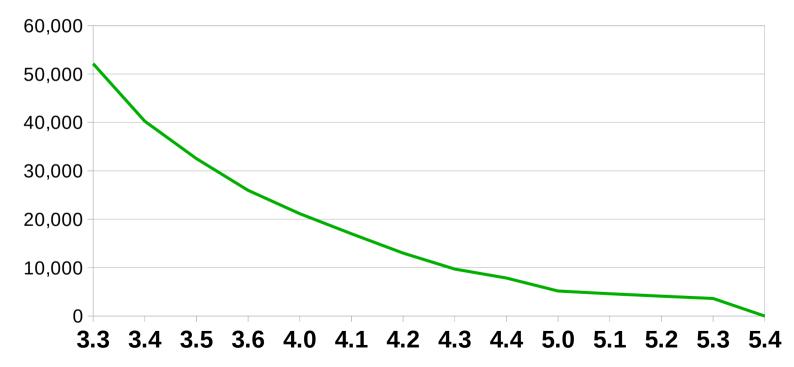
Systematic save crash testing: 100k+ files



master build instances

Quality German Comment Translation: 6.5 years ...

Detected lines of German comment

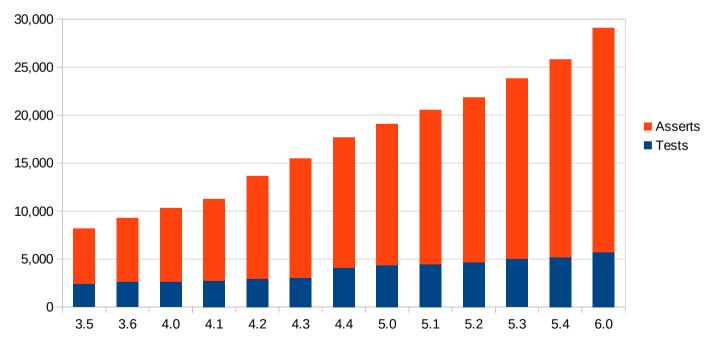




Unit testing - don't fix the same bug twice or more.

Growth in unit tests over time

count of various CPPUNIT macros



Callgrind based automated performance testing.



Built-in crash-reporting: nailing the worst bugs ...



LibreOffice Crash Reports - Powered by Crash, Inspired by Second - All dates are UTC

Code quality improvement ...

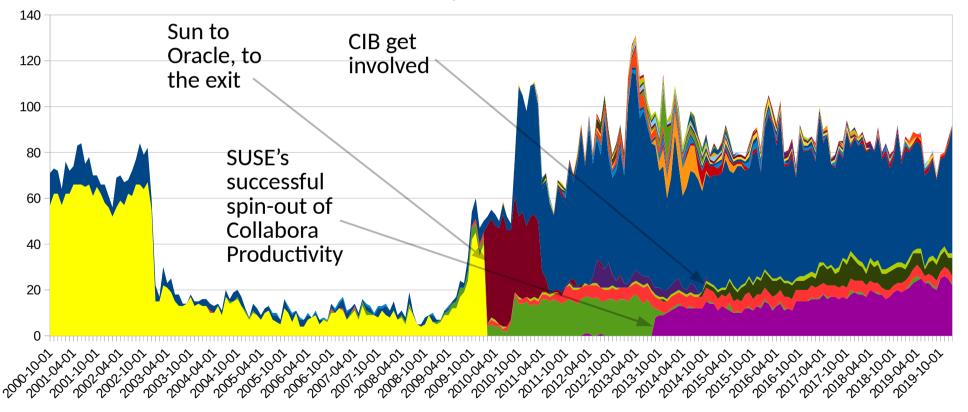
New tools find new bugs – and over time that reduces

• coverity[®] Commits per month easily attributable to various tools 250 WaE A Synopsys Company valgrind 200 FORCEPOINT ubsan ofz 150 forcepoint crashtesting 100 cppcheck coverity 50 asan **Google:** afl 0 **OSS-Fuzz**

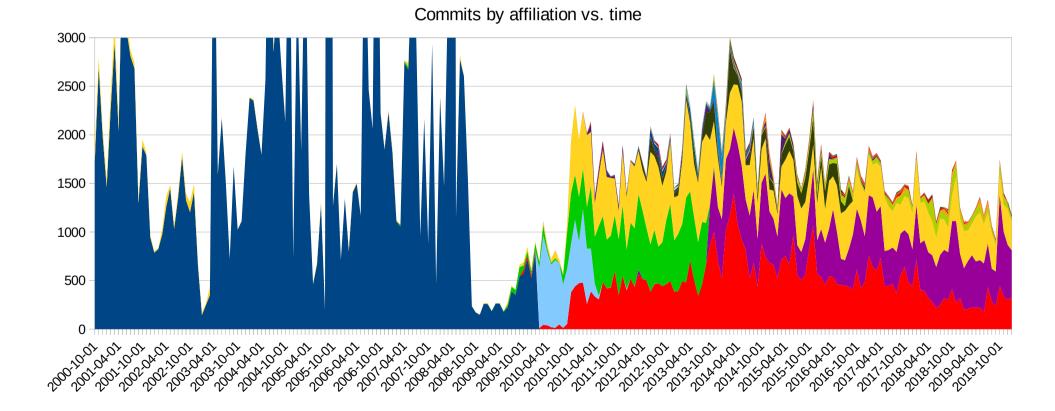
Use lots of different fuzzers / checkers !

Active code committer count per month ...

Committers by Affiliation vs. time



Commits (pre-git in 2010 ~unreliable)



Native-language communities

110n teams are growing, we have currently (Weblate stats)

- 145 used languages ~119 shipping.
- 4605 users
- 404532 translations made

Many thanks to so many for their hard work translating !

Meeting up to plot the future !

FOSDEM – firm but gentle community steerage:







Doing the right thing.



Cakes, Hack-fests, a 1st joint conf. with SUSE











LibreOffice Conferences: Paris 2011

Thanks to La Cantine and IRILL



LibreOffice Conferences: Berlin 2012

Thanks to German Federal Ministry of Economics and Technology.



LibreOffice Conferences: Milan 2013

Thanks to The University of Milan



LibreOffice Conferences: Bern 2014

Thanks to University of Bern & Matthias Stürmer



LibreOffice Conferences: Aarhus 2015

Thanks to: Leif Lohdahl & the Aarhus municipality



LibreOffice Conferences: Brno 2016



Thanks to: RedHat, OpenAlt & Brno University of Technology



LibreOffice Conferences: Rome 2017

Thanks to: Italo Vignoli, Sonia Montegiove & team, and the City of Rome



LibreOffice Conferences: Tirana 2018

Thanks to: Jona Azizaj & team, and OFICINA



LibreOffice Conferences: Almería 2019

Thanks to: Víctor Suárez, Ismael Olea & University of Almería



Next conference: Nuremberg 2020

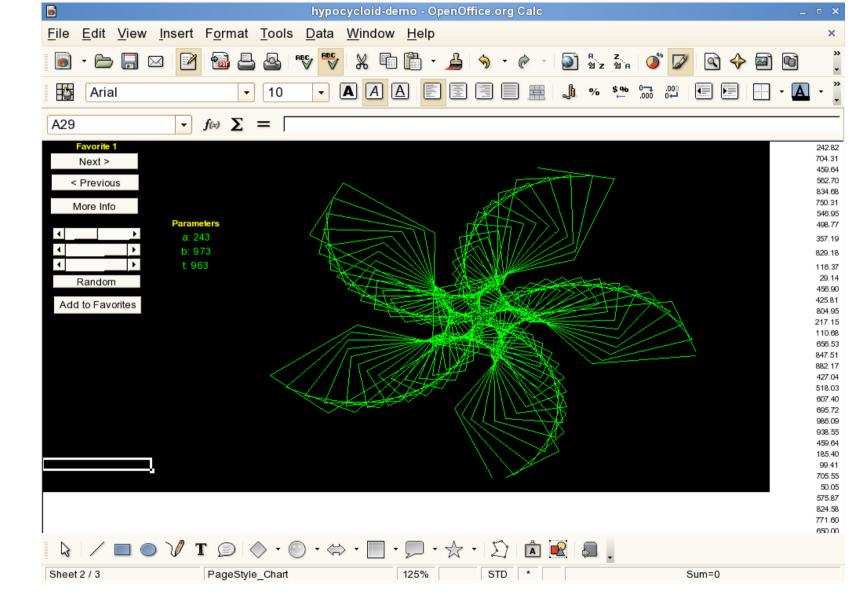




Z-Bau

Sheer depth of new features

VBA



GStreamer

GStreamer multimedia ...



Correct Custom Shapes

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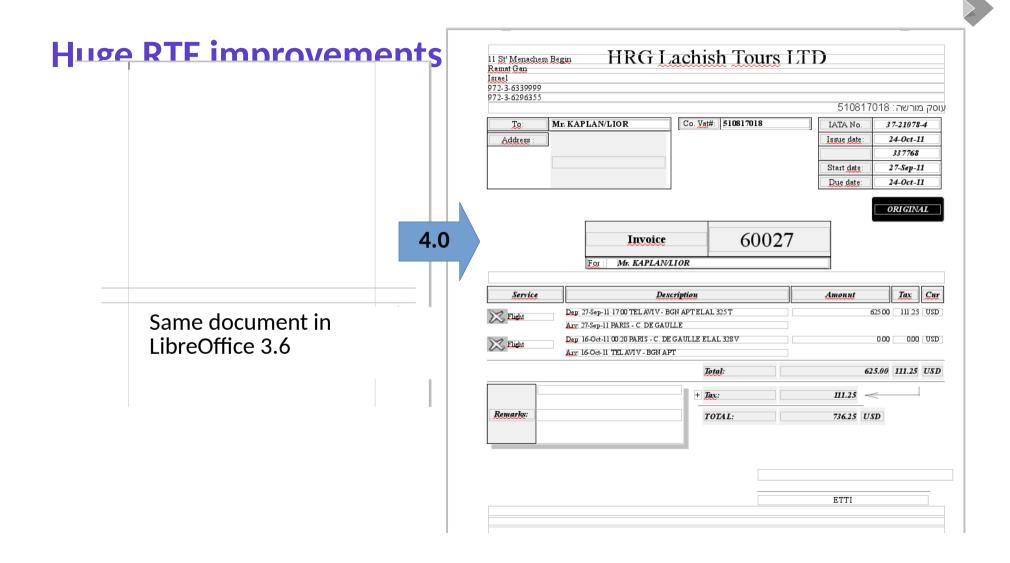
SmartArt fallbacks ...



Text Range **Coments**

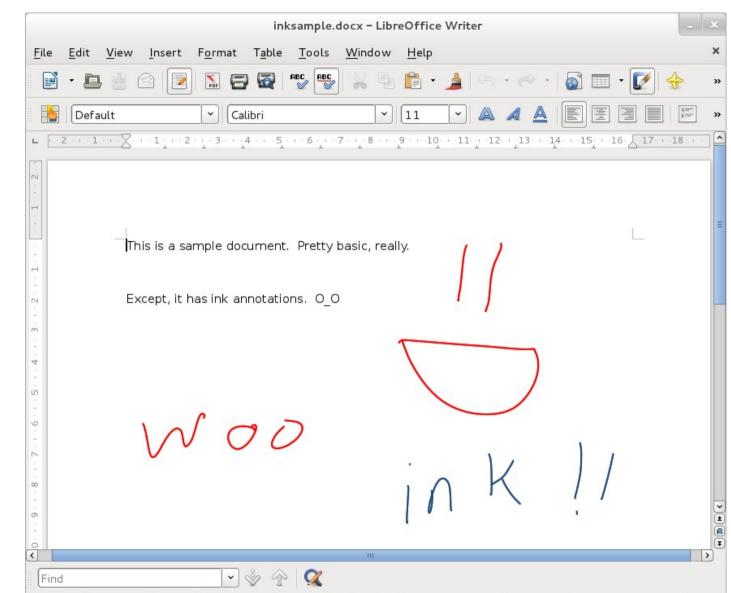
thanks to **OSBA**

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DOCX Ink annotation

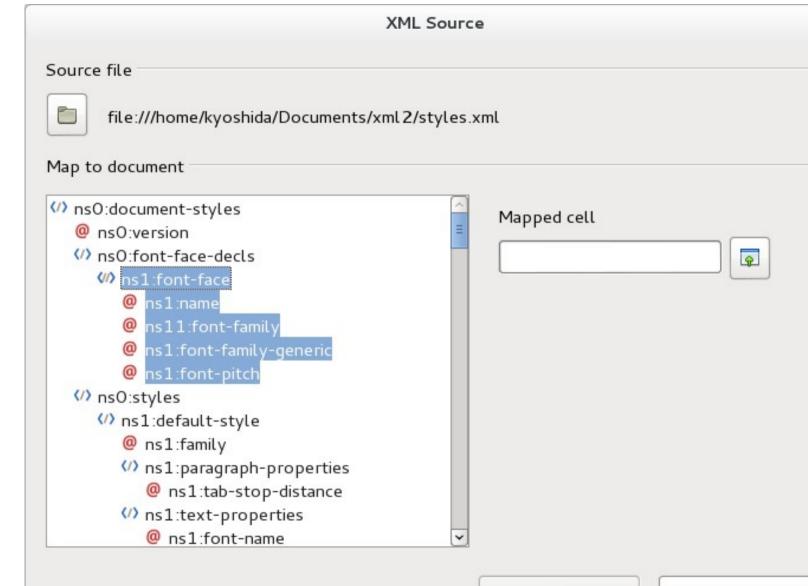
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Arbitrary XML into Calc



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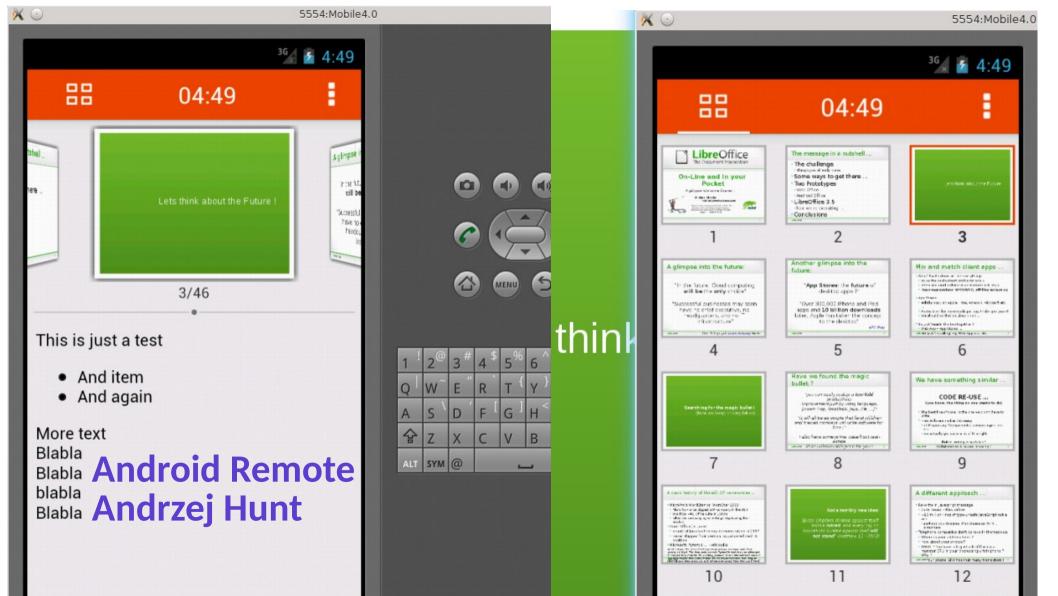
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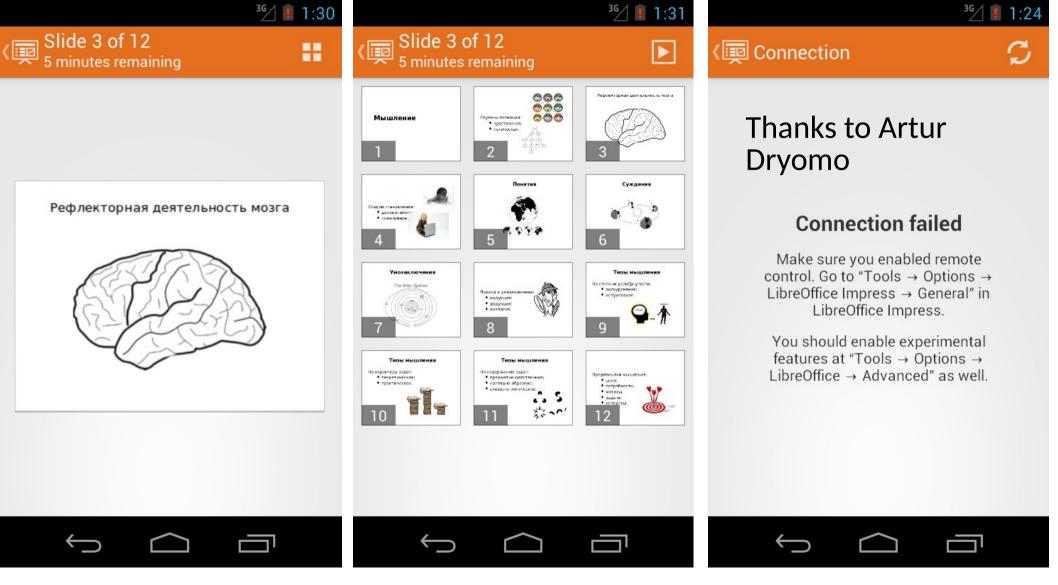
Calc: Conditional formatting ...

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4	Abdul	22.61%	P 13.90%	
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5 6 market		contract			price	96.924	96.924	80.769								
7 spot	1.2	today	1-Oct-2012	d/dS	delta	953.472	953.472									
8 vol	12.0%	maturity	1-Dec-2012		prem adj delta	872.703	872,703	1047.243								
9 rate (domestic)	1.0%	Т	0.167	d^2/dS^2	gamma	1497.247	17.967	14.972								
10 rate (foreign)	3.0%	strike K	1.1	d/dt	theta	7.876	0.022	0.018								
11		barrier lower	0	d/dvol	vega	43.239	0.432	0.360								
12 r	0.010	barrier upper	1.5	d^2/dvol^2	volga	=E\$17*OPT_BARR	IER(<mark>B\$7</mark> ,B\$8,E	3\$12,B\$13,E\$9,	E\$10,E\$11, <mark>E\$</mark>	12,E\$13,E	\$14,E\$15	5,E\$16,H12)				
13 <u>f</u>	0.030	rebate	0	d^2/dSdvol		-1262.911										
14		(p)ut or (c)all	С	d/ <u>dr</u>	rho	175.020	1.733	1.444								
15		knock-(i)n or knock-(o)ut	2	d/ <u>dr</u> f	rhof	-191.218	-1.856	-1.547								
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Sheet 2 / 4																





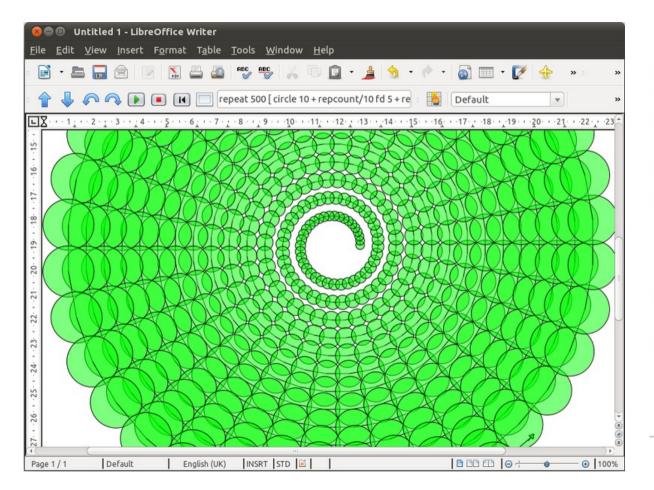
IOS remote control – Siqi Liu

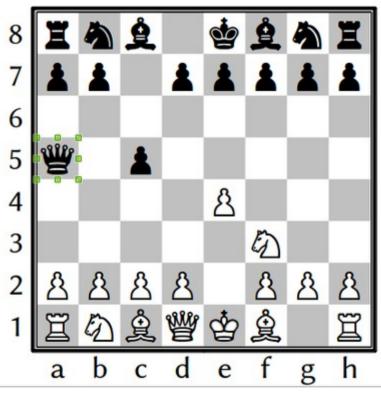




I'm not sure if I'm missing something but what should be a simple task just doesn't want to work. I'm trying to add a drop shadow to a UIView in iOS 6. I'm using storyboards and auto layout. I'm drawing the

LibreLogo - Laszlo Nemeth





Improved / faster image scaling:



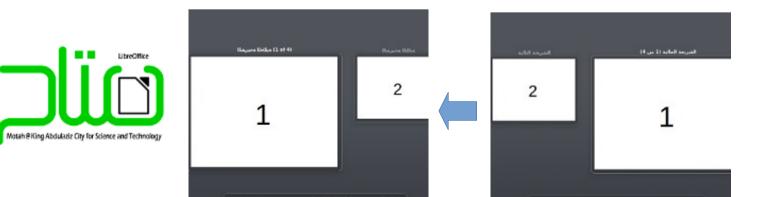
Funky OLE object dragging fixed.

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Right to Left ! ...



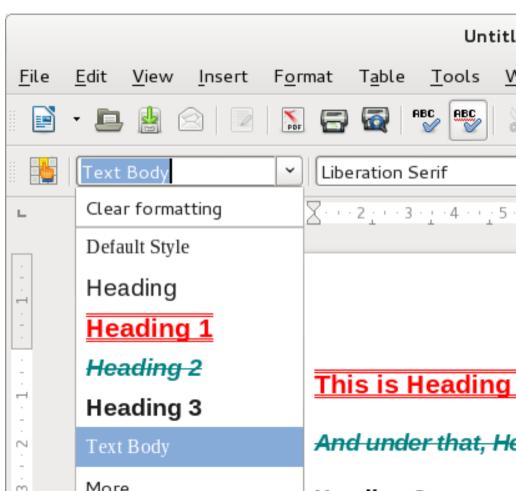
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Template & style previews ...

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Widget Layout ...

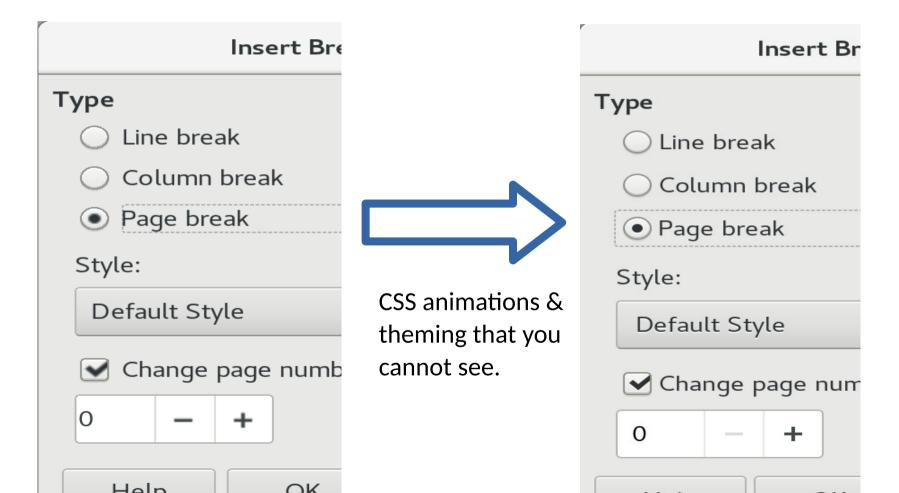
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Re-work all UI to use XML/glade files & layout.

Thanks to Caolan 900 (RedHat) for an epic re-work. 800 700 600 Layout UI old dlg 500 old tab-page 400 Remaining 300 200 100 0 4.0 4.1 4.2 4.3 4.4

Progress on UI / dialog layout

Native platform widgets ... (like WxWidgets)

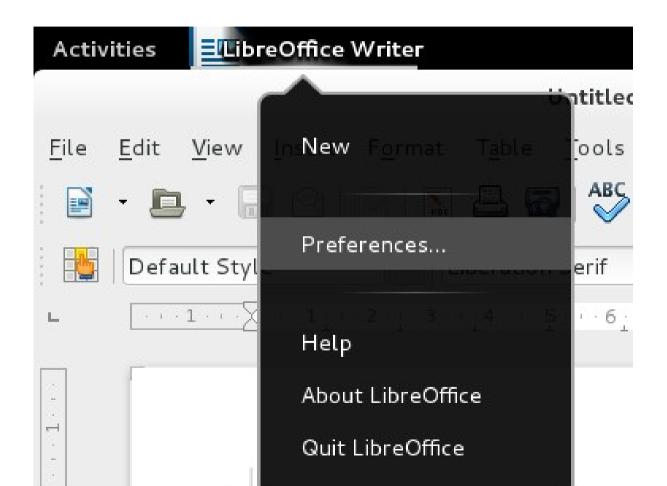


Unity menu integration

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GNOME 3 style app menu ...



Personas

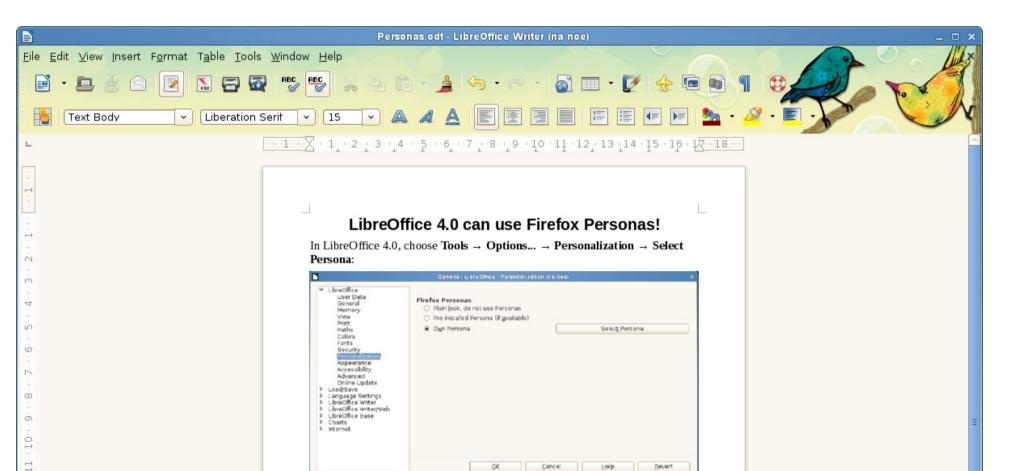
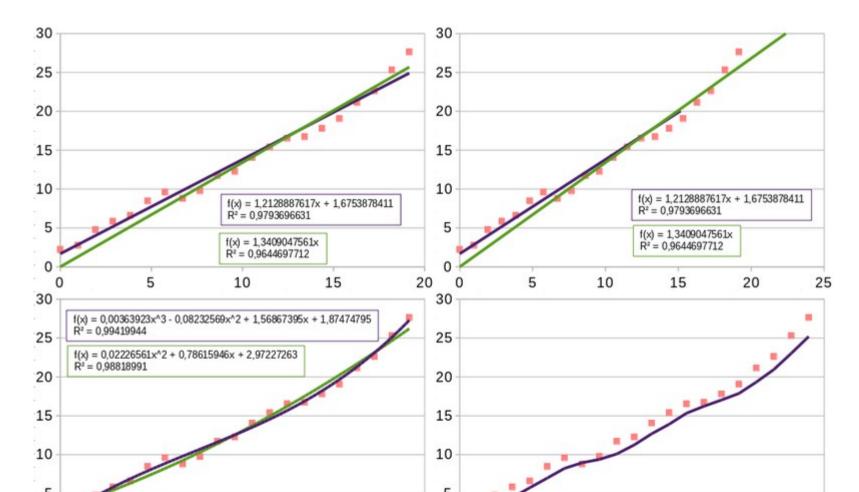


Chart: new trend lines ...



Writer: Character borders ...

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Character border: add border around selected text



Sifr / Colibre & many other new icon sets ...

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New, pretty start screen ...

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Better Windows integration ...

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Plus group-policy mgmt & lockdown

Firebird, native C++ database (de Java-ize)



Calc: Lightning OpenCL calculation

Detailed Calculation Settings	□ ×
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Enable OpenCL for some formula computation: True	
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Thanks to Jagan Lokanatha, Kismat Singh, Kohei Yoshida, Markus Mohrhard, Matus Kukan







LibreOffice 5.0



The Document Foundation





Men - Women - Accessories -

☆ Wish list - 🔭 ·



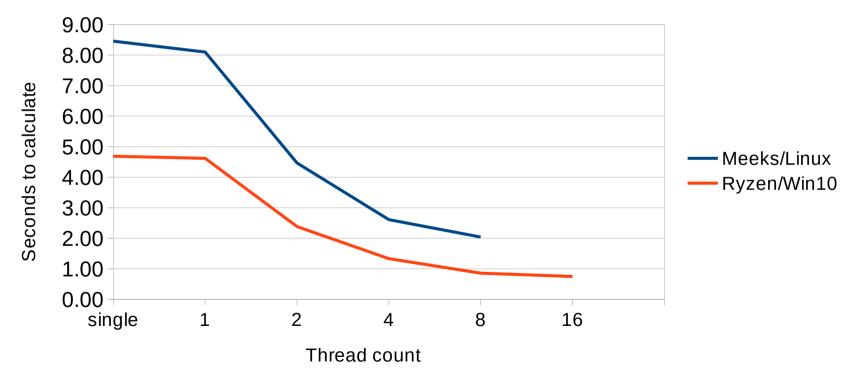
公

Formula wizard improvements

	Function Wizard	
Functions Structure	PRODUCT Func	tion <u>r</u> esult -25
Structure ABS = 25 PRODUCT = -25 SUM = -5 B1:B4 = {1;-2;4;-8} SUM = 5 C1:C4 = {-1;2;-4;8}	Multiplies the arguments. Number 1 (required) Number 1, number 2, are 1 to 30 argume	ents to be multiplied and a result returned.
	Number 2 Number 2 Number 3 Number 4 For <u>m</u> ula =ABS(PRODUCT(SUM(B1:B4),SUM(C1:C4)))	2 % SUM(C1:C4)

Calc – multi-threading fun ...

re-calculating 100k formulae on 1m doubles



Statistics dialog

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Impress: Prettier mode switching ...



Sidebar Improvements ...

...

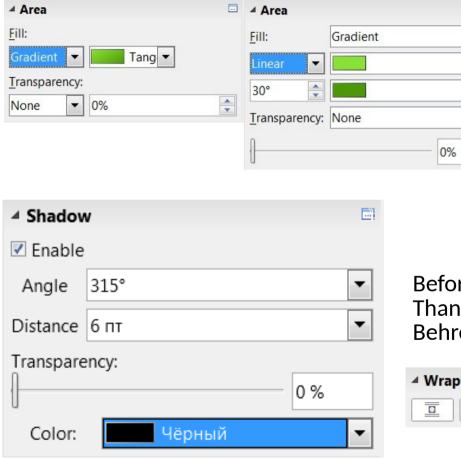
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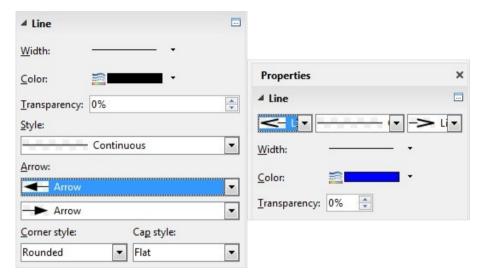
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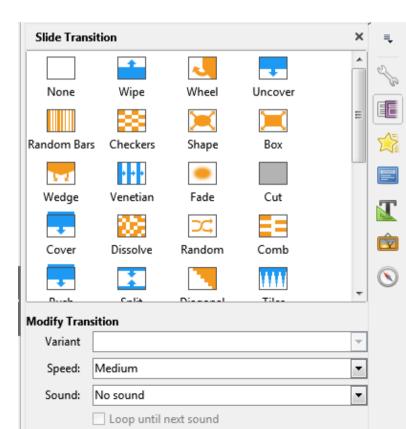


Before on the left, after on the right. Thanks to: Rishabh Kumar (GSoC), Yousuf Philips, Katarina Behrens (CIB)

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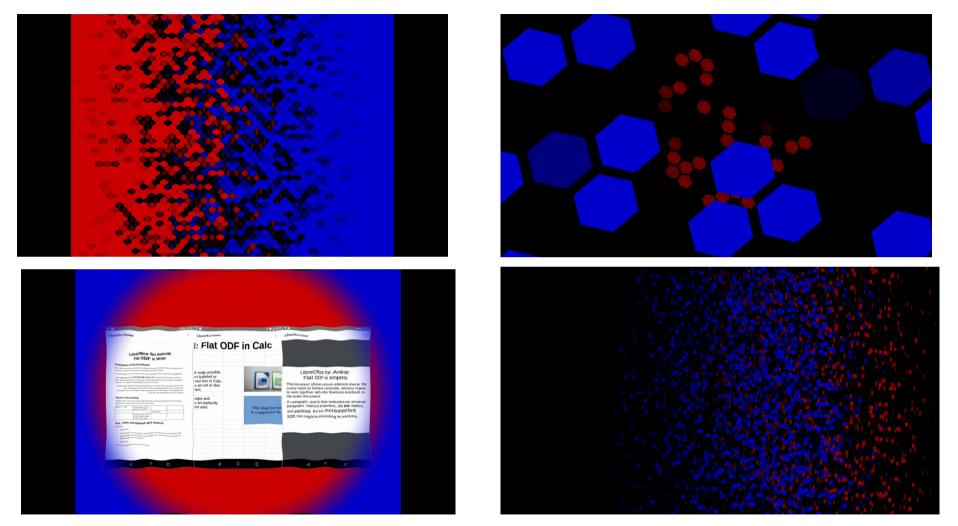


Transition preview & presenter console re-work.

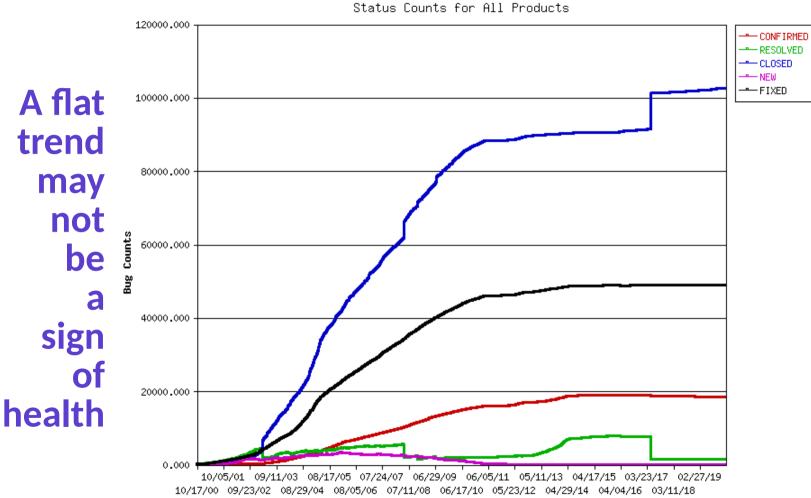


Switch views / re-start-timer etc. Bundling the console ...

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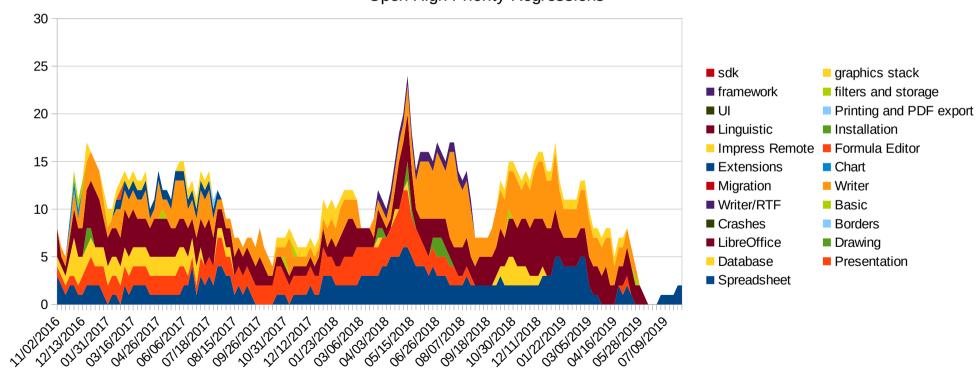


Thanks to: Emmanuel Gil Peyrot (Collabora), Tomaž Vajngerl (Collabora)





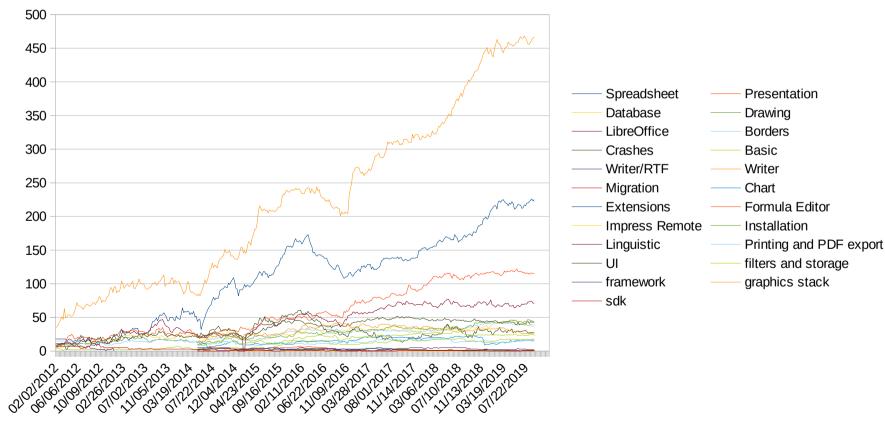
Open High Priority Regressions ...



Open High Priority Regressions

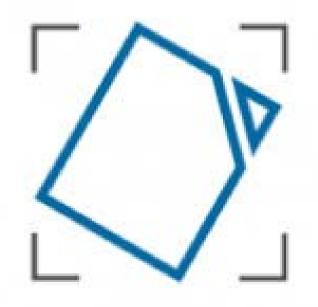
Reasonably flat regressions ...

Regressions by component vs. time



Fridrich Strba & David Tardon

An extension of our ODF message:

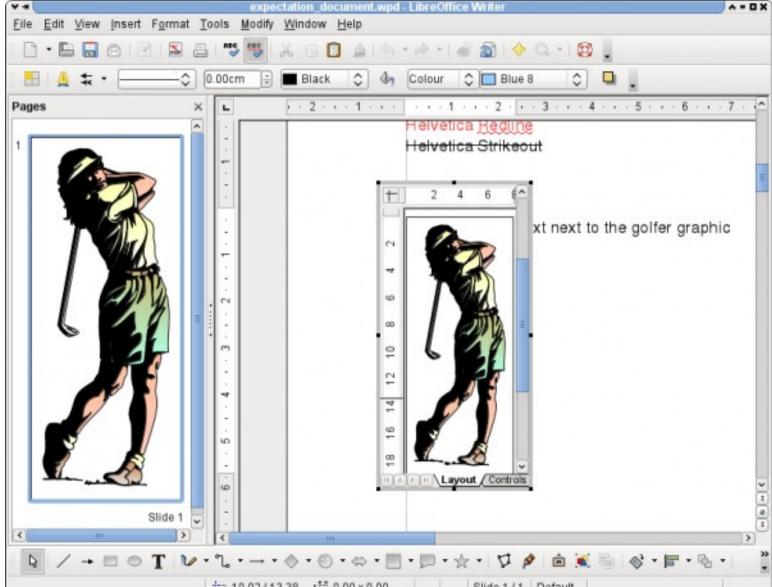


Document Liberation Own your content

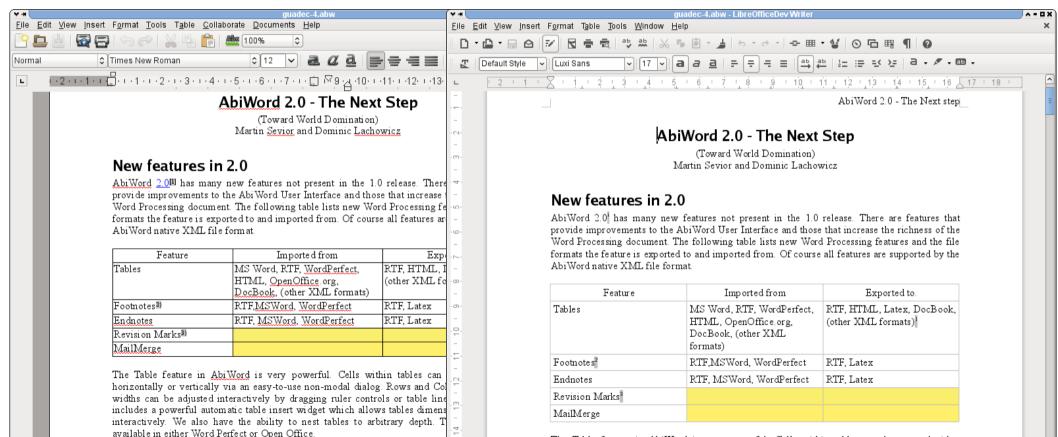
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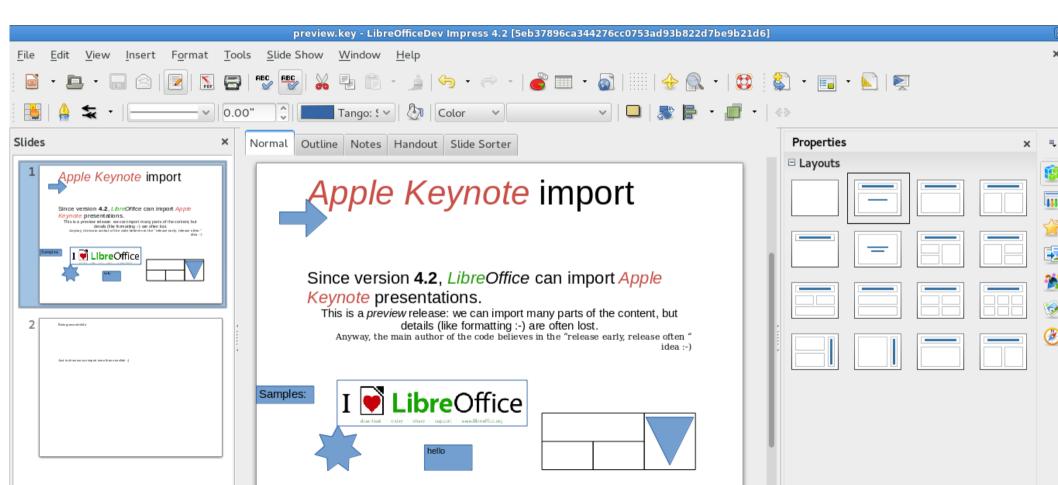
Abiword import

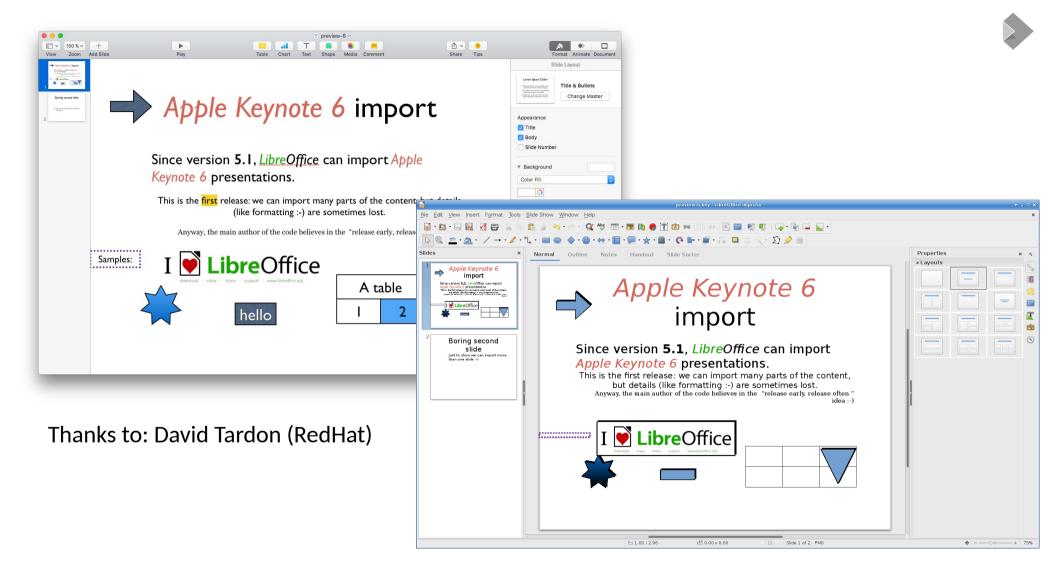


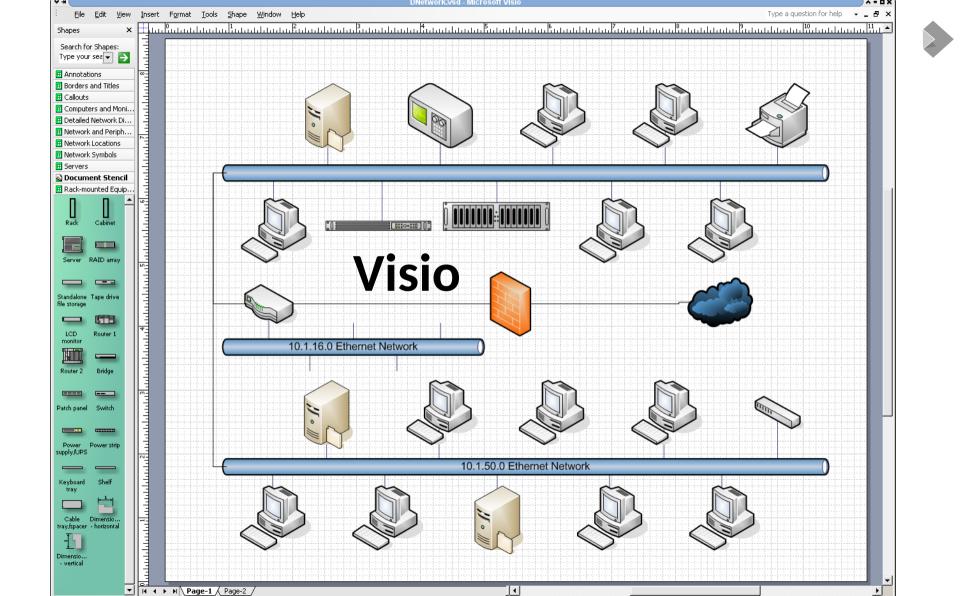
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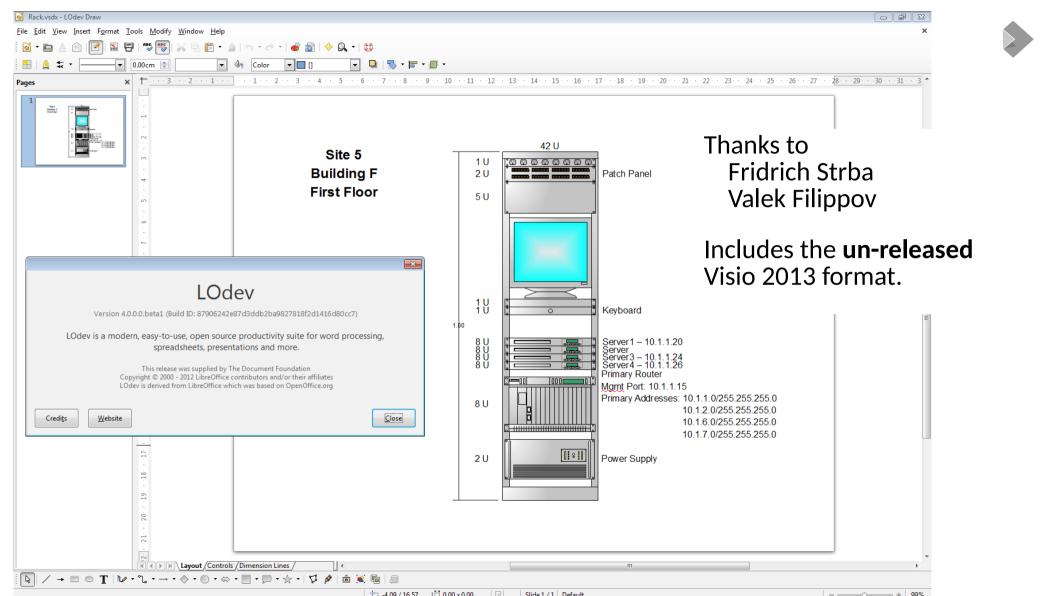
The Table feature in AbiWord is very powerful. Cells within tables can be merged either horizontally or vertically via an easy-to-use non-modal dialog. Rows and Columns heights and widths can be adjusted interactively by dragging ruler controls or table lines. The unix build

Initial Keynote filter ...









4 5 6 9 10 11 12 13 14 15 16 17 18 19 20

B



Партнёрские способы взаимодействия взрослого и ребёнка.

> Обучение детей средствам общения через игру.

> > Усвоение социальных норм и правил поведения.

знаний.

школьного возраста.

Развивать коммуникативность.

Формировать основы нравственных

Microsoft Publisher import thanks to Brennan Vincent Разновозрастные сонтакты междуновозрастные сонтакты междуновозрастные сонтакты междуновозрастные (GSOC) Истьми дошкольного возраста Valek Filippov Fridrich Strba



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Ignoring tons of post 2016 features ...

Online / Cloud integrations



Alfresco connector available thanks to Arawa & Magenta

• Implemented in Java



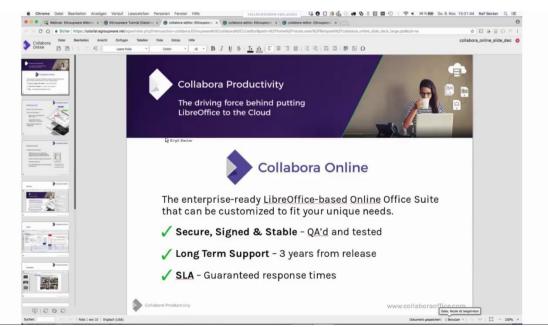
collabora online.com

collaboraonline.com

EGroupware

Connector available thanks to eGroupware from their repository

- https://github.com/EGroupware/collabora
- Implemented in PHP + JavaScript
- To match their integration needs, we have
 - Improved the printing in Firefox
 - Updated dockerfiles

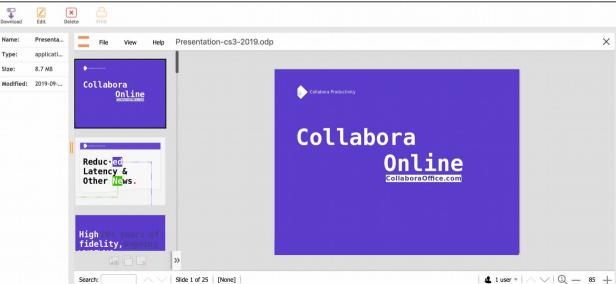




Kolab

Connector available thanks to Kolab themselves.

- https://git.kolab.org/source/wopi/
- To match their integration, we had to expose various functionality via postMessage
 - Like closing all the views from the master view, downloading or printing



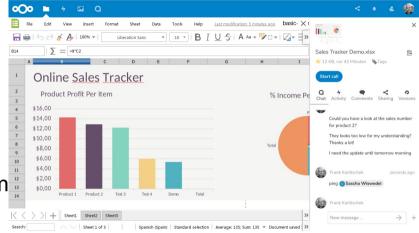
collabora online.com



Nextcloud

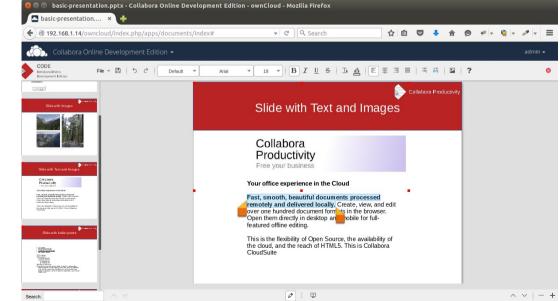
https://github.com/nextcloud/richdocuments

- Implemented in PHP and JavaScript
- Many features in the Online were implemented to managemented to managemented.
 - Specification of avatars in CheckFileInfo
 - Support for templates TemplateSource in CheckFileInfo
 - /hosting/capabilities for early check of whether a particular version supports some features or not
 - And many more...



ownCloud

- https://github.com/owncloud/richdocuments
- Implemented in PHP and JavaScript
- To match their integration needs, we are improving Watermarking substantially
 - So that each user in a document can have a different, dedicated watermark

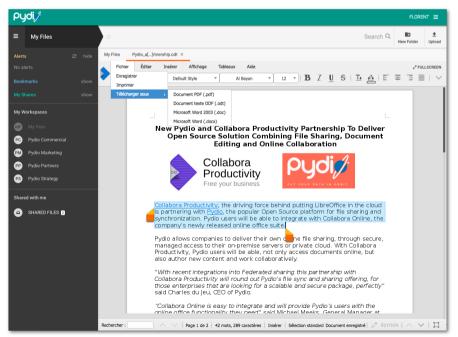


collaboraonline.com

Pydio

Available thanks to Pydio

- https://github.com/pydio/pydio-core/tree/develop/core/src/plugins/editor.libreoffice
- Implemented in PHP and JavaScript
- To match their integration needs, we had to extend what characters can be used in the access_token



collaboraonline.com

Roove

Connector implemented by SoftDistribution

Suchen:

Seite 1 von 2 281 Wörter, 1.915 Zeichen

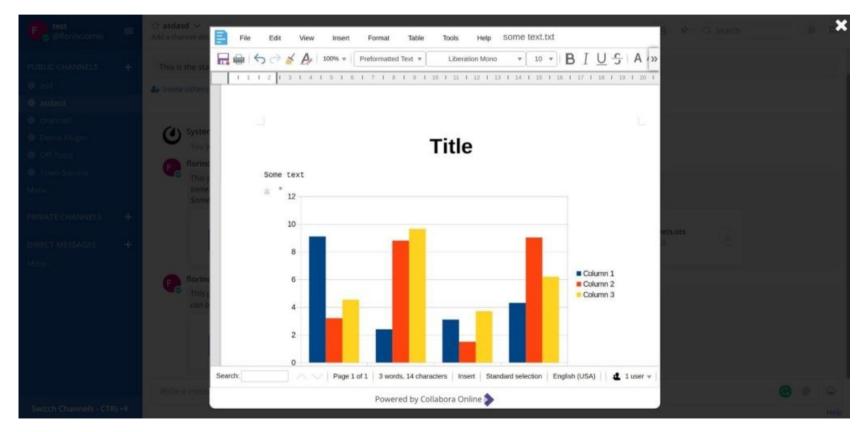
For their integration, we had • to improve Save as and full-screen handling of presentations.





Standardauswahl Englisch (USA)

Mattermost



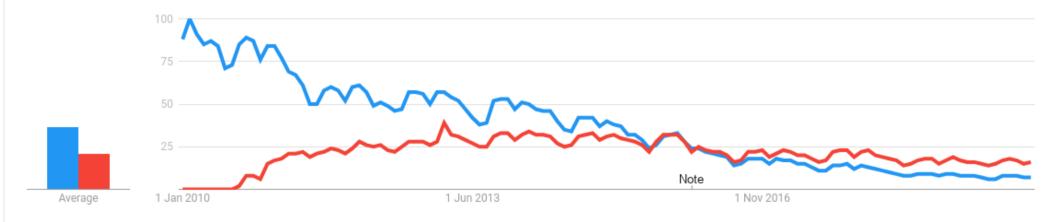
collabora online.com

Why show you all that ? because we're engineers just make a better mouse-trap ... !

Trademarks / Brands / Marketing - important ...

Took 5 years to overtake OpenOffice.org's Google Trend

- Software Features, Quality, UX, all hugely better but ...
- Still serving ~250,000 downloads per week to disappointed users.

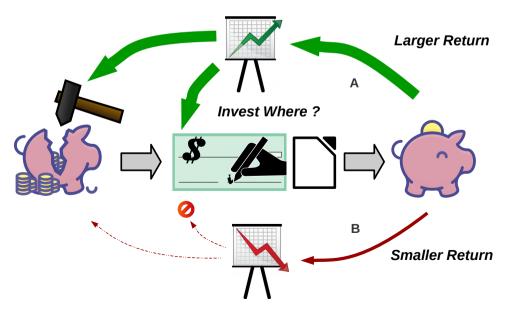


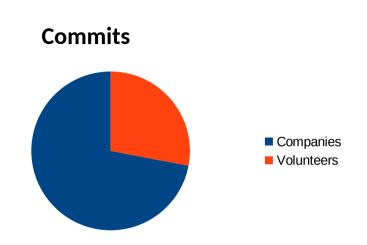
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You think it is about the code

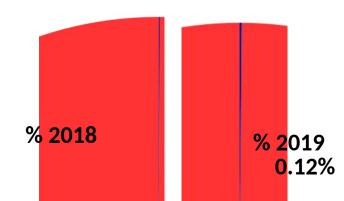
Really Branding, Trademark, Ecosystem

- Almost more important ...
- Economics drives almost ~everything

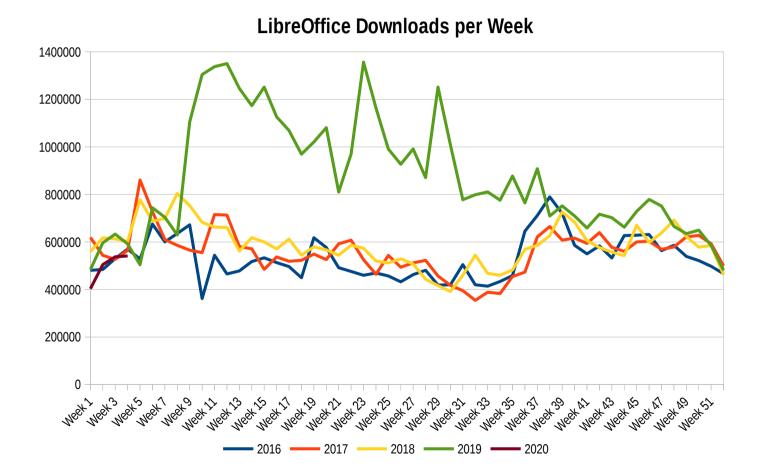




Web interest to Companies

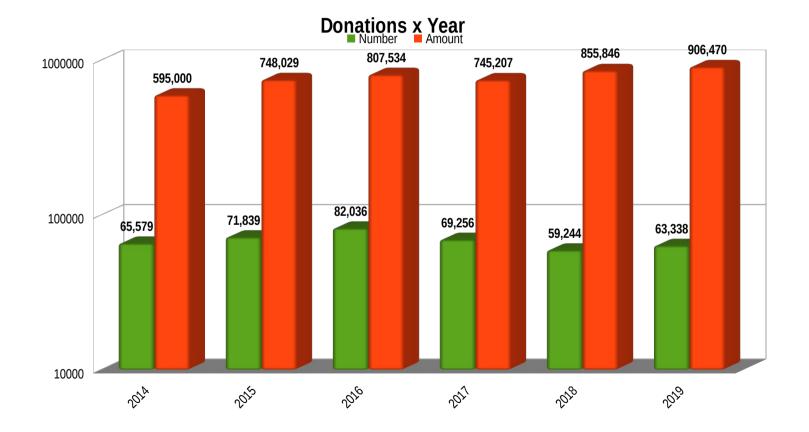


LibreOffice downloads @ 0.8 - 1.2m/week+

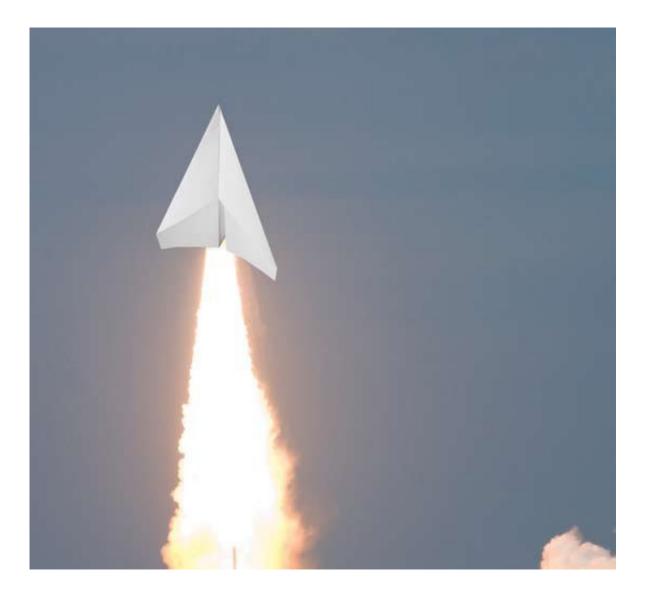




Grateful to our generous donors for funding infra



The Future ...



Who can predict the future ?

Listen to our users & visionaries:

- "Everything will move to the web / Online !"
- "I'm thrilled with my native Chrome-book LibreOffice!"
- "I want to collaborate on my mobile Phone !"
- "I want to load & edit docs even off-line"
- "I want to chat & collaborate live, on-line with no network" ... (!?)

Working closely with others ...

Need smart people to help us create the future

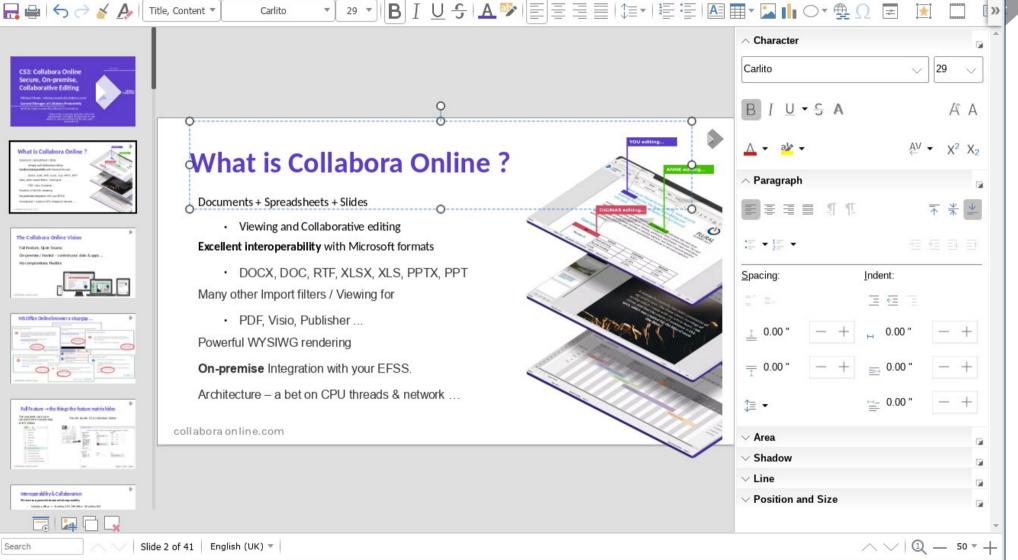
• An Artificial Intelligence

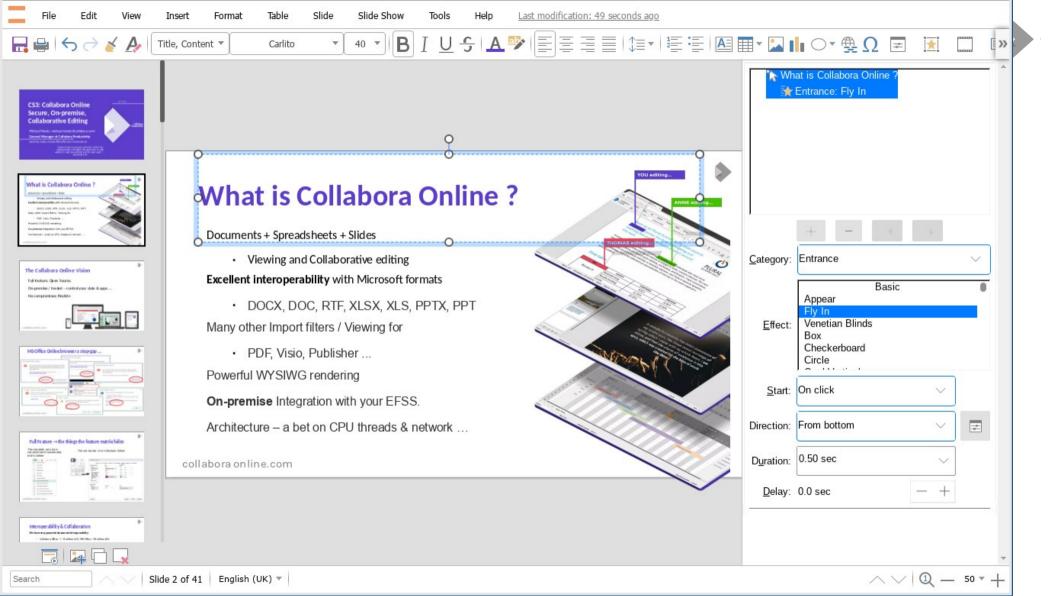
of stunning subtlety, of conversational brilliance

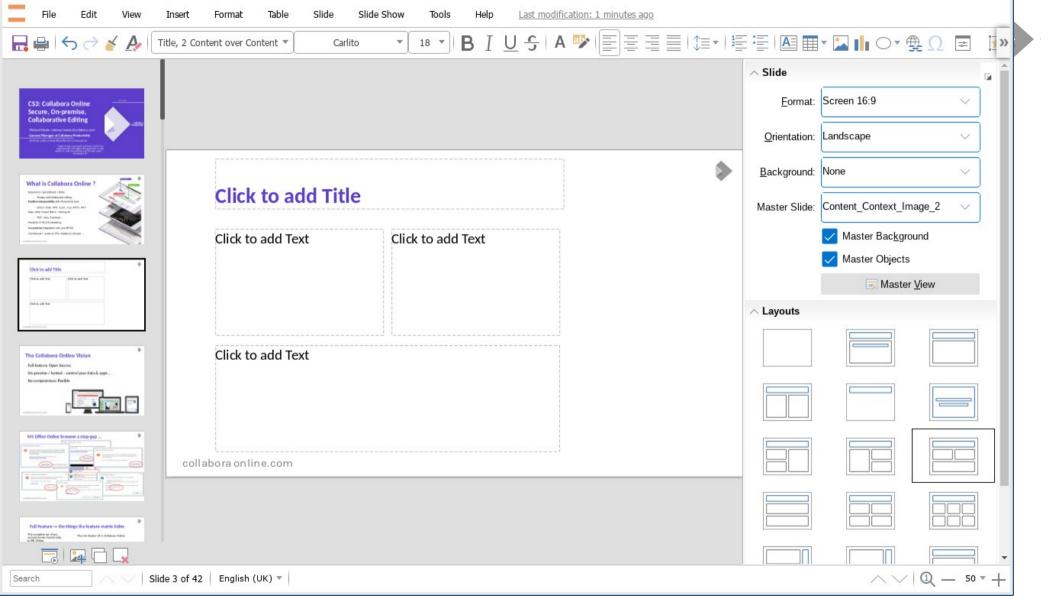
- That can understand what you're doing
- And can suggest cool new things to do.
- "Trained on Documents" (TM)



The easy to predict Future ... already done pending release

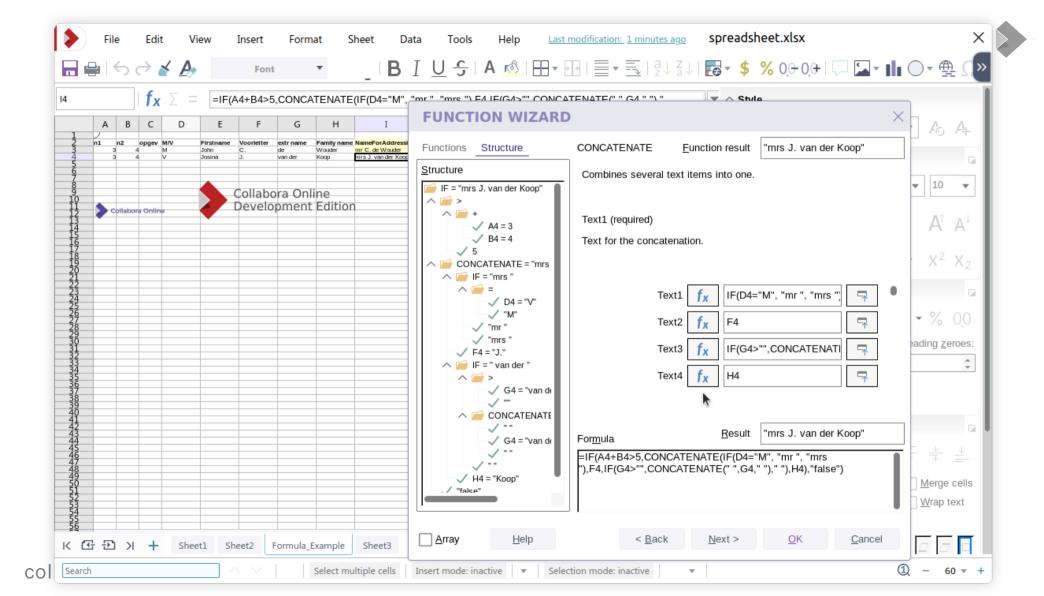


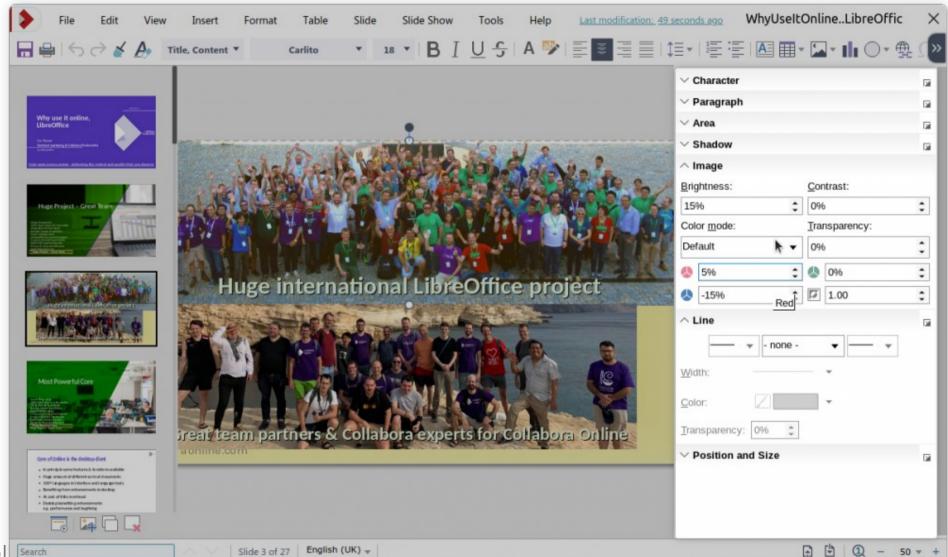




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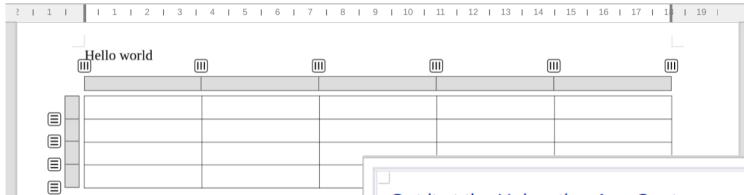
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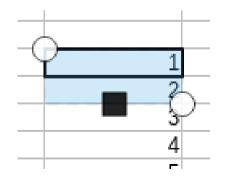




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Many more wins: eg. touch resizing handles, URL popup





collabora online.com

Get it at the Univention App Center

The easiest way to install CODE for a quick tryout is to download it as a <u>virtual appliance from</u> the University App Center. This appliance contains the Collabora Online Development Edition, and the additional software you need to get you up and running in minutes. You can choose between two types of integration, CODE + Nextcloud or CODE + ownCloud. Each appliance is available in four formats: KVM, Virtu https://hub.docker.com/r/collabora/code/

Grab CODE docker image from Docker Hub

The <u>collabora/code</u> Docker image can be installed to any x86-64 host (e.g. on Linux and Windows 10), and it is fully configurable. For more information about setup and configuration for deployment, please read the <u>CODE Docker page</u>. If you want to try it out quickly, you can set up CODE docker image with file sharing integration in less than 5 minutes in a very basic way, following these instructions: <u>quick tryout with ownCloud</u> or <u>quick tryout with Nextcloud</u>.

Collabora Office Mobile *bring LibreOffice to Android & iOS*

Completely re-written mobile UX: one-handed use

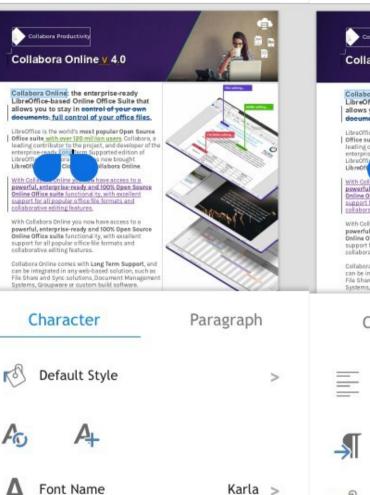






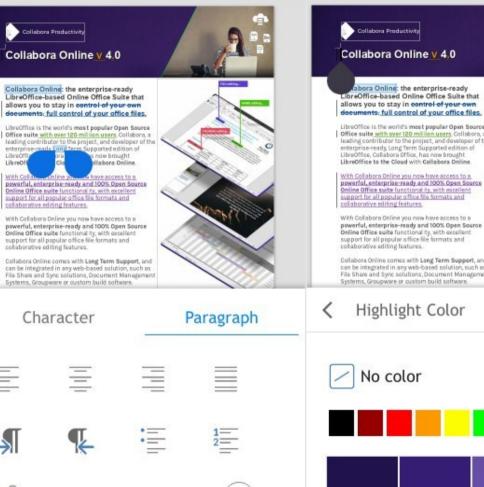
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Collabora Online v 4.0 abora Online: the enterprise-ready ibreOffice-based Online Office Suite that

LibreOffice is the world's most popular Open Source Office suite with over 120 million users. Collabora, a leading contributor to the project, and developer of the enterprise-ready Long Term Supported edition of LibreOffice, Collabora Office, has now brought LibreOffice to the Cloud with Collabora Online.

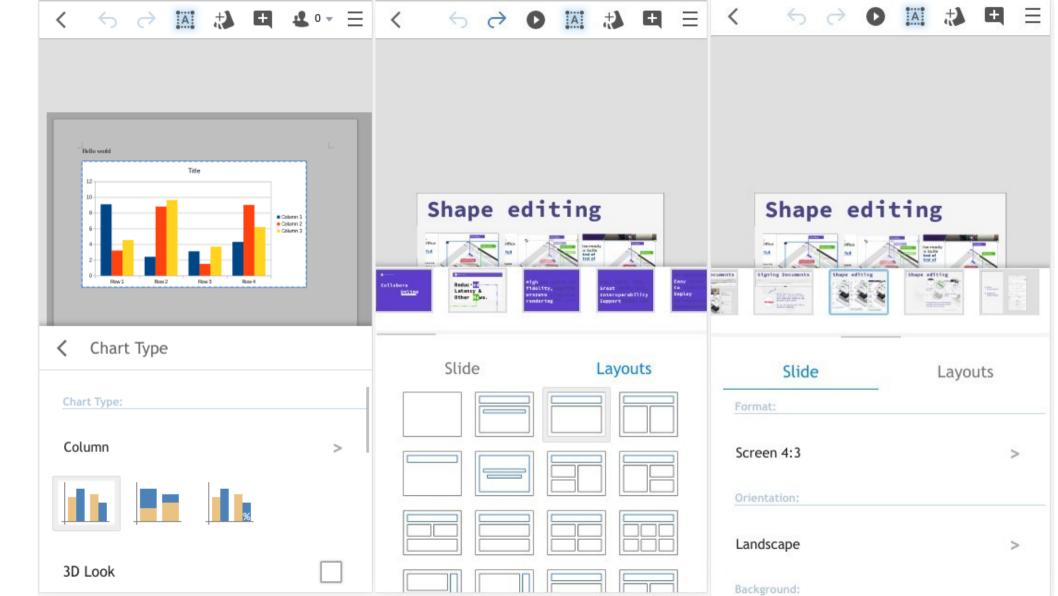
With Collabora Online you now have access to a powerful, enterprise-ready and 100% Open Source Online Office suite functionality, with excellent support for all popular office file formats and collaborative editing features.

With Collabora Online you now have access to a powerful, enterprise-ready and 100% Open Source Online Office suite functionality, with excellent support for all popular office file formats and collaborative editing features.

Collabora Online comes with Long Term Support, and can be integrated in any web-based solution, such as File Share and Sync solutions, Document Management Systems, Groupware or custom build software.



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About

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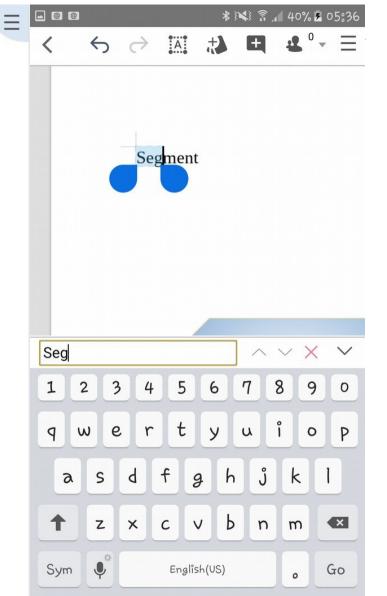
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Get involved:

We paid the technical debt ... what's next ?

Easy Hacks:

- A great way to get involved ...
- https://wiki.documentfoundation.org/Development/EasyHacks

Paid down much of the technical debt

- Lots more things to be done [!]
- Love Javascript ? C++ ? UX design ? Documentation ? Sysadmin ? Translation ? Marketing / Advocacy ?

User Experience

- Tons of paper-cuts, significant wins & good things to do
- Also Documentation: to keep up with that !



Conclusions & Questions ...

- Did what we had to to make this code-base survive & thrive.
- Thank you to all the many, many people I didn't name for their amazing contributions.
- Help Guard our Digital Sovereignty

• We need your help !

- Challenging & fulfilling work
- Join the LibreOffice team
- We rely on your support !
 - Thank you for it !

Oh, that my words were recorded, that they were written on a scroll, that they were inscribed with an iron tool on lead, or engraved in rock for ever! I know that my Redeemer lives, and that in the end he will stand upon the earth. And though this body has been destroyed yet in my flesh I will see God, I myself will see him, with my own eyes - I and not another. How my heart yearns within me. - Job 19: 23-27