

LibreOffice
The Document Foundation

LibreOffice Technology
the unique FOSS platform
for personal productivity

Italo Vignoli



From Product to Platform

- Background
- Road to LibreOffice
- LibreOffice
- Development Resources
- Code Cleaning
- Code Refactoring
- User Interface
- Performance
- Code Quality & Security
- Open Document Format
- Interoperability
- Easy APIs and Libraries
- Recognitions
- LibreOffice Technology



Background



Personal Productivity Market (1)

- **Before 1995**
 - Documents had to be printed to be shared
- **Between 1995 and 2005**
 - Evolution from sharing printouts (analog heritage) to sharing static digital documents (interoperability)
 - HTML was the turning point as it decoupled SW and contents, making interoperability a reality
 - Birth of cloud solutions for personal productivity, from Google (based on business model) and Microsoft (to find an alternative source of revenues from desktop)



Personal Productivity Market (2)

- **Between 2005 and 2010**
 - Availability of XML based document formats
 - Development of the ODF standard document format and of the OOXML pseudo-standard document format
 - OpenOffice.org is the de facto alternative to MS Office
- **After 2010**
 - Announcement of LibreOffice, based on ODF
 - OOXML as cornerstone of Microsoft lock-in strategy
 - Several freeware office suites enter the market, while cloud based office suites grow and evolve



Road to LibreOffice



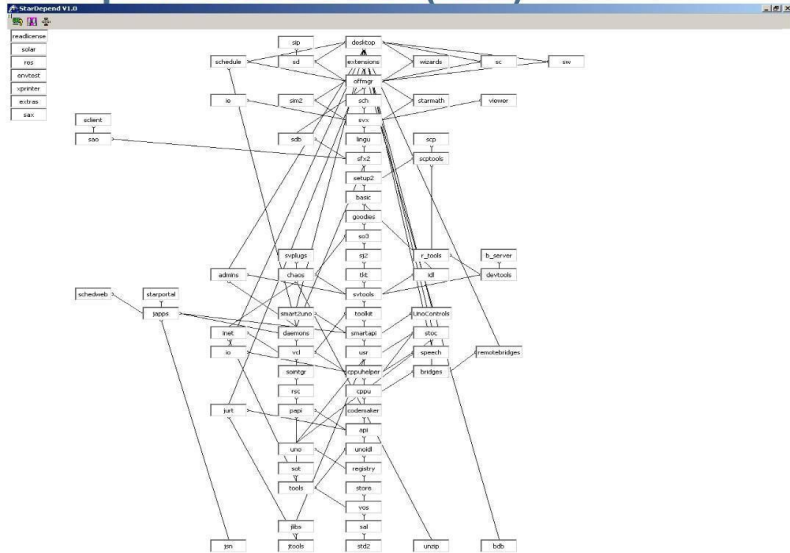
Timeline

- 1985: Marco Borries releases StarWriter
- 1990: StarOffice, with StarCalc & StarBase
- 2000: announcement of OpenOffice.org
- 2006: ODF (Open Document Format) 1.0
- 2010: announcement of LibreOffice
- 2014: ODF (Open Document Format) 1.2
- 2020: LibreOffice 7.0 with ODF 1.3 Draft
- 2021: LibreOffice 7.1 Community

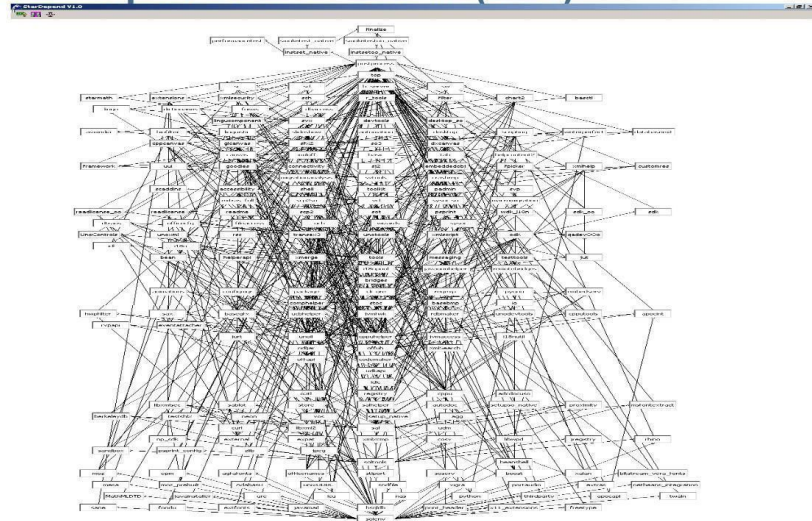


Measure of OOo Technical Debt

Build dependencies SO 5.2 (2000)



Build dependencies OOo 2.0 (2005)



Main Issues

- Code too complex for the average developer
- Build environment too difficult to create and manage
- Slow (and sometime obfuscated) handling of patches from volunteer contributors
- Mentoring of new volunteer developers to reduce the learning curve and speed up the process
- Lack of transparency for project sites, wiki and blog



LibreOffice



Relaunch the Innovation

OpenOffice to LibreOffice

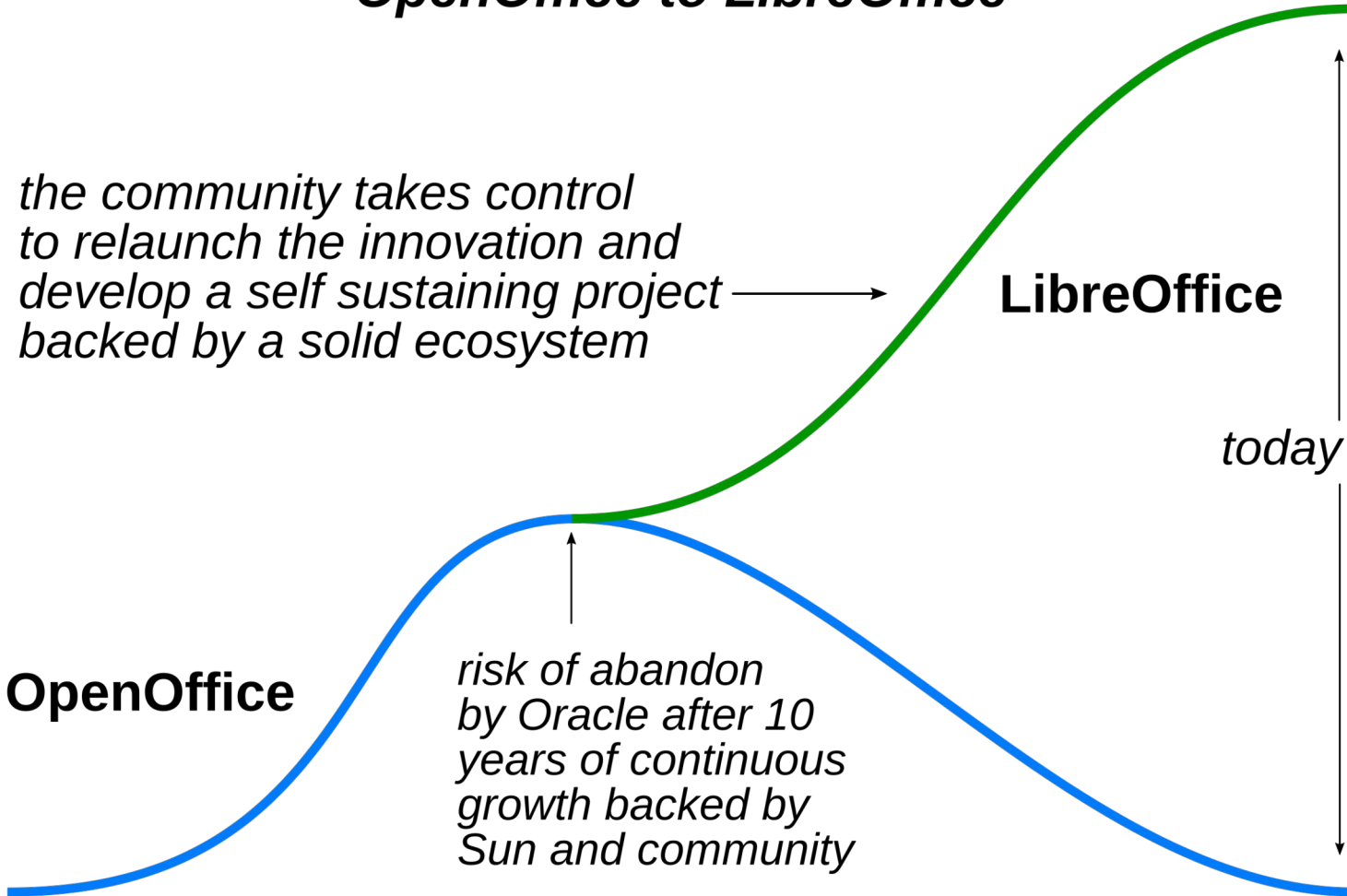
*the community takes control
to relaunch the innovation and
develop a self sustaining project
backed by a solid ecosystem*

LibreOffice

today

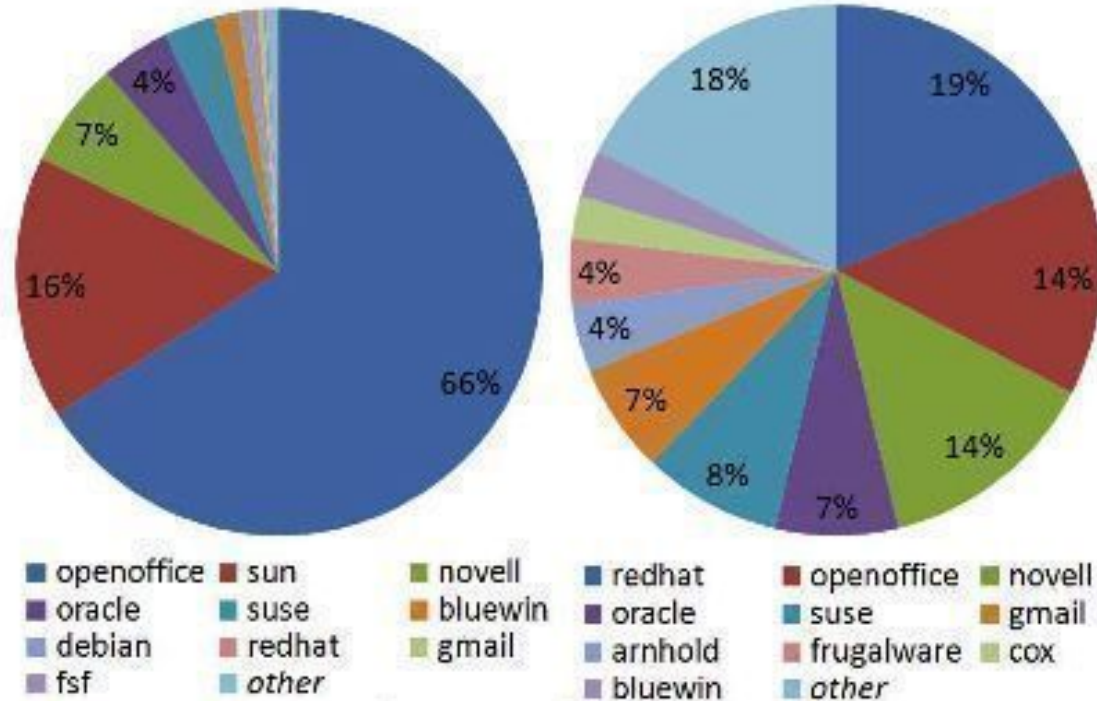
OpenOffice

*risk of abandon
by Oracle after 10
years of continuous
growth backed by
Sun and community*



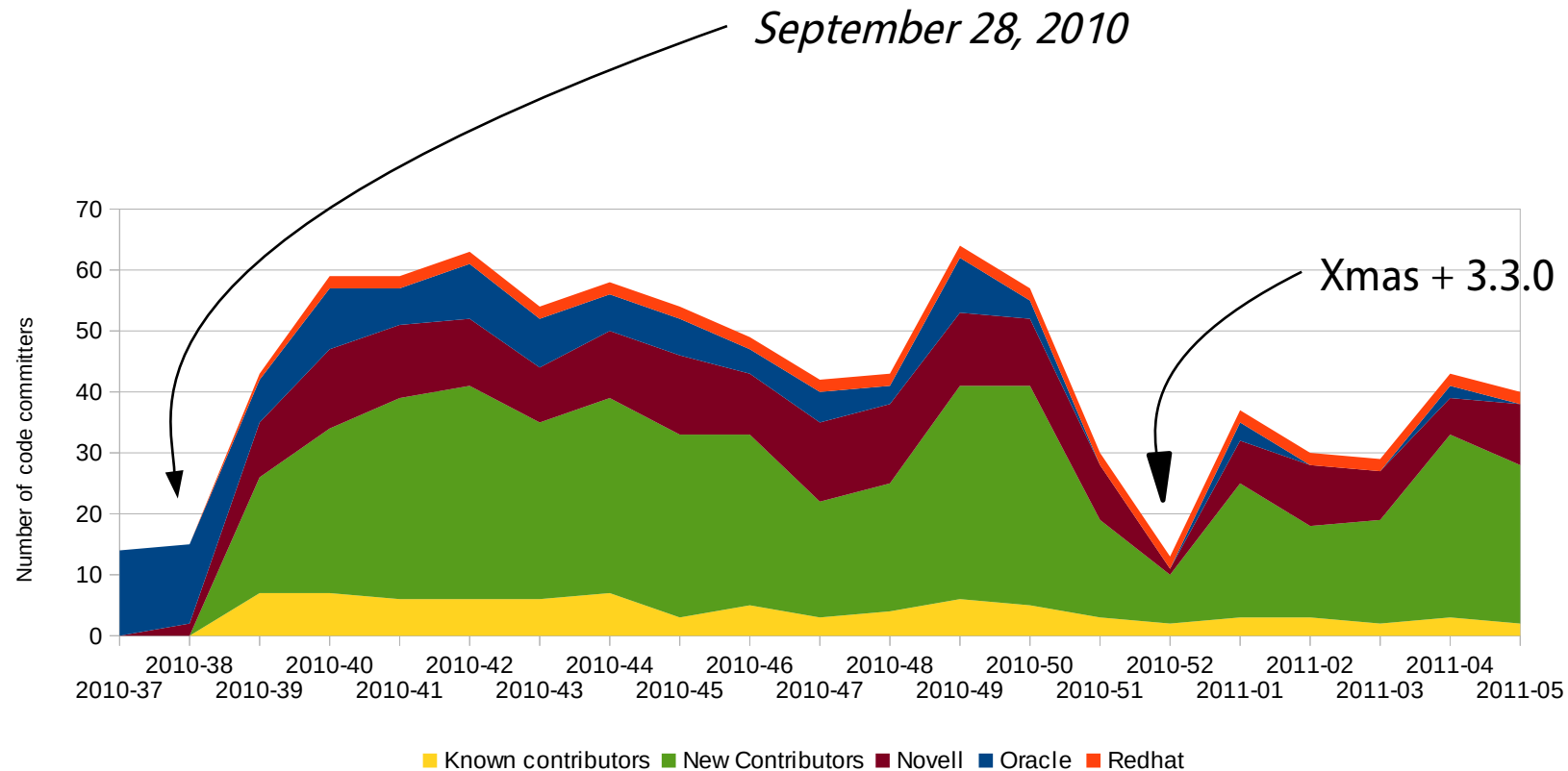


*The total affiliation commit influence for LibreOffice
10 months before (left) & after the fork on 28 Sept. 2010*

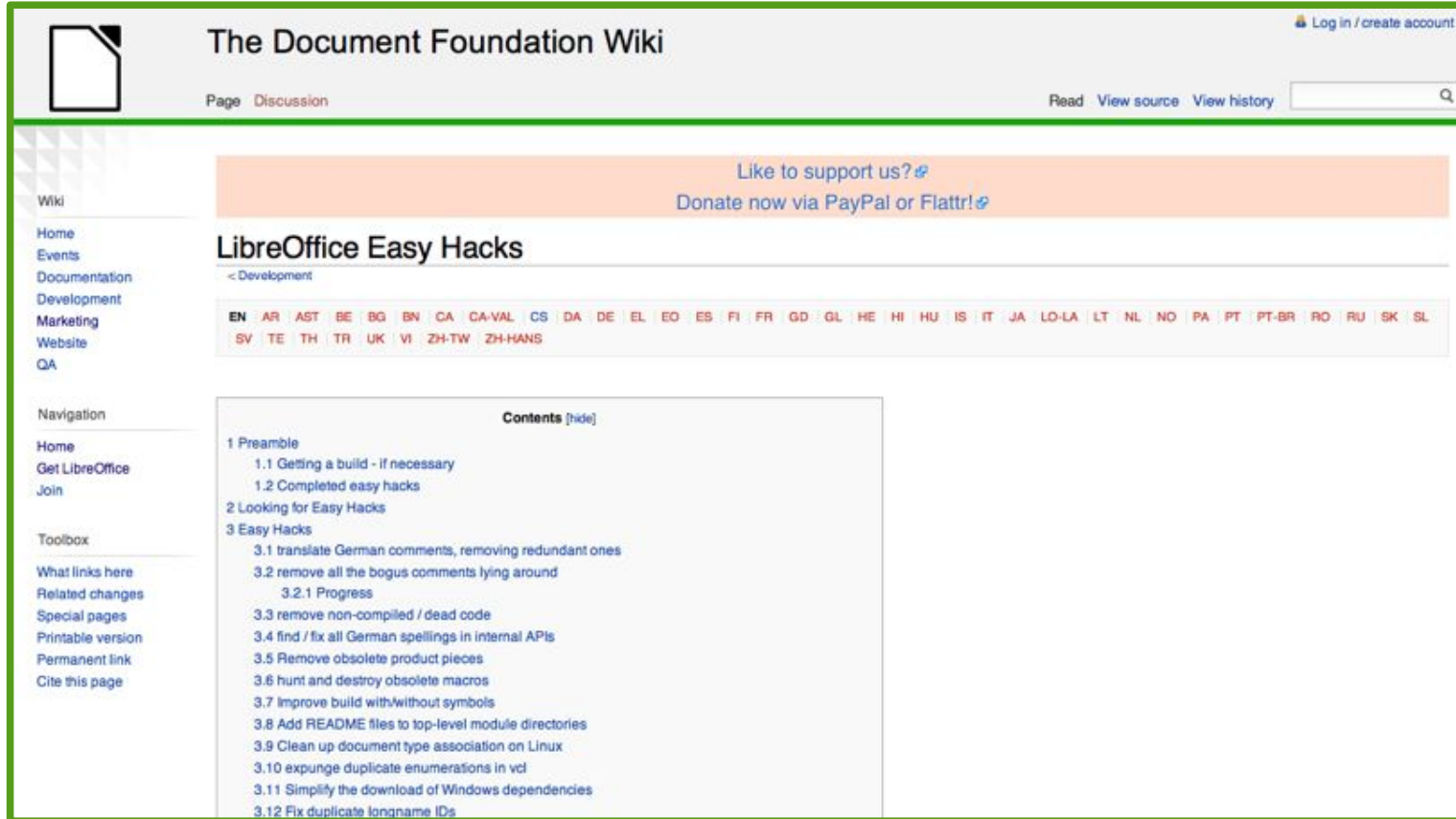


Gamalielsson, J. and Lundell, B. (2011) **Open Source communities for long-term maintenance of digital assets: what is offered for ODF & OOXML?**, in Hammouda, I. and Lundell, B. (Eds.) Proceedings of SOS 2011: **Towards Sustainable Open Source**, Tampere University of Technology, Tampere, ISBN 978-952-15-2718-0, ISSN 1797-836X.

Announcement to Release



Incredible Easy Hacks



The screenshot shows the 'LibreOffice Easy Hacks' page on 'The Document Foundation Wiki'. The page has a light blue header with the site logo and name. Below the header, there's a navigation bar with 'Page' and 'Discussion' tabs, and links for 'Read', 'View source', and 'View history'. A search bar is on the right. A pink banner encourages support via PayPal or Flattr. The main content area is titled 'LibreOffice Easy Hacks' and includes a '< Development' link. A language selection bar is present with various codes like EN, AR, AST, etc. The 'Contents' section is expanded, showing a list of 12 items, including a preamble, completed hacks, and a detailed list of 12 easy hacks for improving the build and documentation.

The Document Foundation Wiki

Page Discussion

Read View source View history

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LibreOffice Easy Hacks

< Development

EN AR AST BE BG BN CA CA-VAL CS DA DE EL EO ES FI FR GD GL HE HI HU IS IT JA LO-LA LT NL NO PA PT PT-BR RO RU SK SL SV TE TH TR UK VI ZH-TW ZH-HANS

Contents [\[hide\]](#)

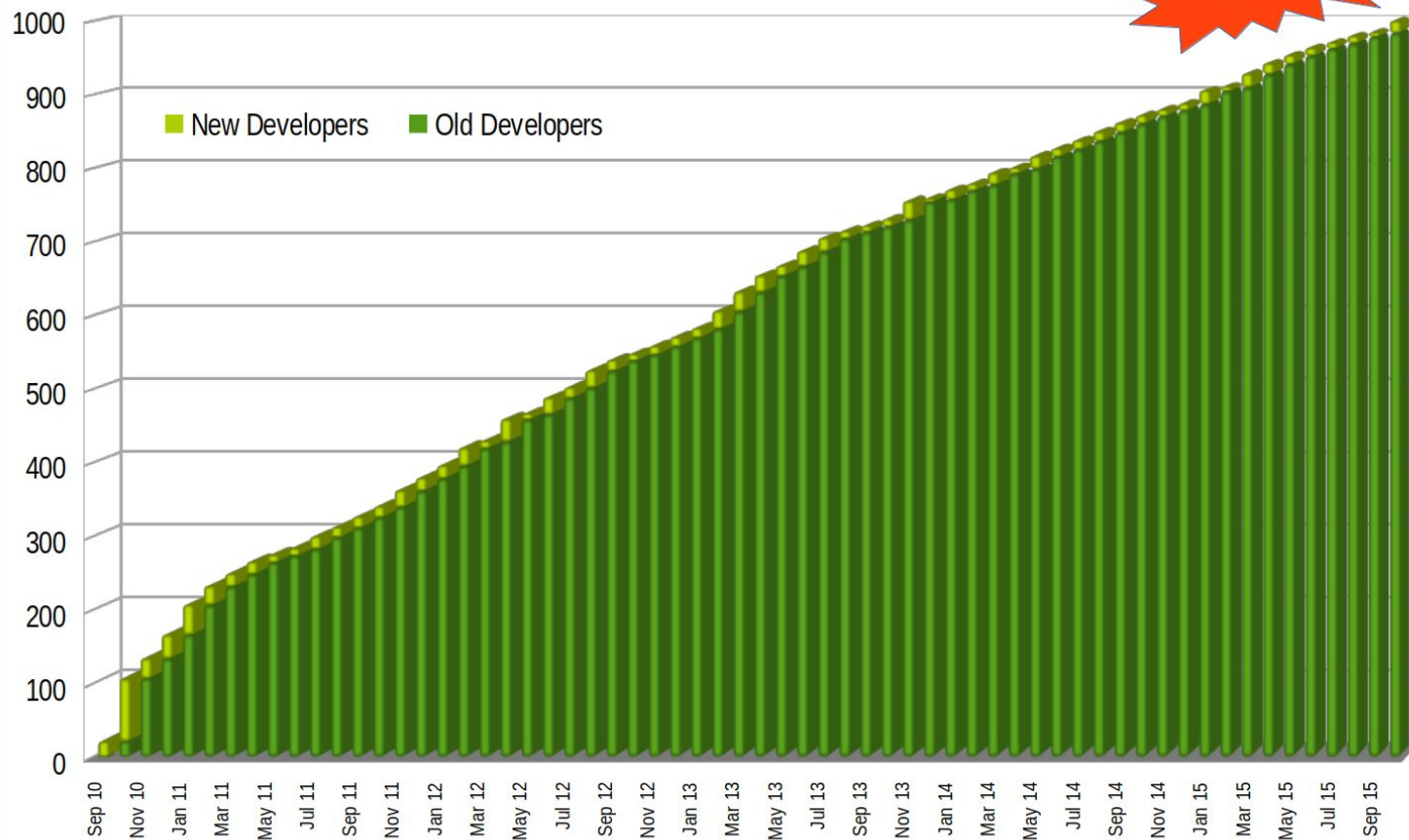
- 1 Preamble
 - 1.1 Getting a build - if necessary
 - 1.2 Completed easy hacks
- 2 Looking for Easy Hacks
- 3 Easy Hacks
 - 3.1 translate German comments, removing redundant ones
 - 3.2 remove all the bogus comments lying around
 - 3.2.1 Progress
 - 3.3 remove non-compiled / dead code
 - 3.4 find / fix all German spellings in internal APIs
 - 3.5 Remove obsolete product pieces
 - 3.6 hunt and destroy obsolete macros
 - 3.7 improve build with/without symbols
 - 3.8 Add README files to top-level module directories
 - 3.9 Clean up document type association on Linux
 - 3.10 expunge duplicate enumerations in vcl
 - 3.11 Simplify the download of Windows dependencies
 - 3.12 Fix duplicate longname IDs

Easy Hacks Advantages

- Easy hacks are simple and accessible tasks for developers new to the project with little or no knowledge of the code
- Easy hacks have a twofold objective: easing the learning curve and solving a number of problems which would distract core developers
- Core developers are committed in mentoring new contributors and checking their work



Serial Growth of LibreOffice Developers from September 2010 to October 2015



1,000



Summary

- Balanced the mix of contributions
- Attracted many new code contributors
- Increased the number of core developers
- Created a strong base of new developers thanks to a huge mentoring effort
- Attracted several new "star" contributors performing challenging cleaning tasks



Objectives

- Reduce software footprint
- Undertake long awaited code renovation
- Remove tens of thousands lines of dead code
- Remove deprecated libraries
- Translate majority of German comments to English
- Many other code renovation actions left and right
- Use state of the art C++ constructs



Development Resources

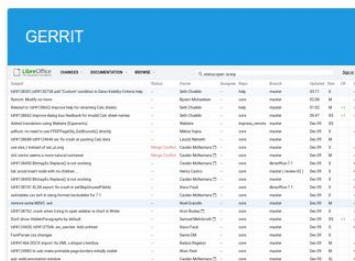


Engineering Steering Committee ...

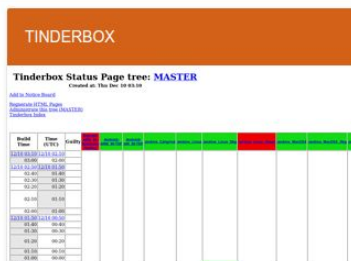
- **Talking & ensure everyone is heard**
- **Many large FLOSS projects fight tooth & nail**
 - Module "maintainers" rampant waste & re-writing
 - Bickering, and passive aggression
- **Whole team are peers ... no-one "owns" modules**
 - Respect input from local experts: of course !
- **Calls live transcribed to reduce English listening needs**
 - Avoids the "confused IRC wait-fest" problem



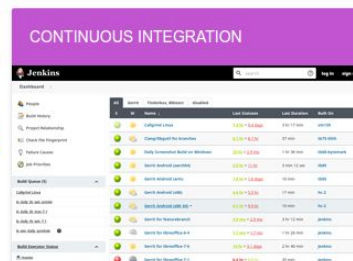
Websites related to LibreOffice Development



Gerrit is the tool LibreOffice developers use for code review. This is where developers submit and review patches.



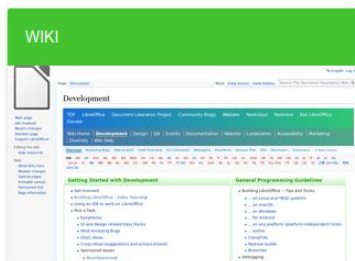
TinderBox present the result of the many, many tinderboxes that build Libreoffice all day and all night.



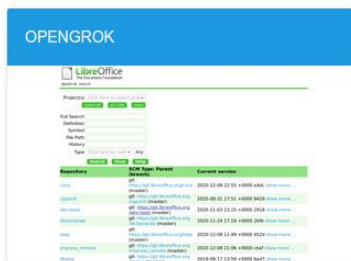
LibreOffice has a Continuous Integration system, running gerrit verification jobs, tinderboxes and all sort of other task.



Bugzilla is the tool for LibreOffice developers, QA and users to submit, triage, handles bug reports.



LibreOffice has a Wiki where you can find a trove of information. It is a wiki, so help organize and keep the content up-to-date.



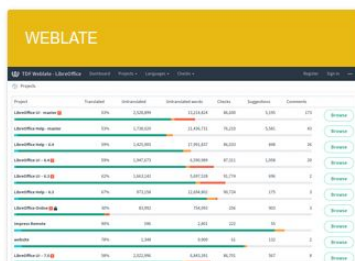
OpenGrok is a source browser, that allows you to do search on the very large LibreOffice code base.



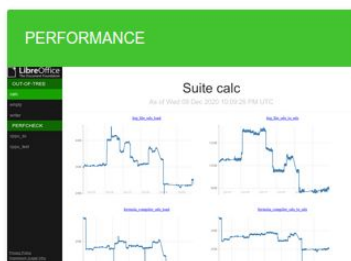
The Online help for LibreOffice contains the end user documentation for Writer, Calc, Draw, Base, Math, and Basic.



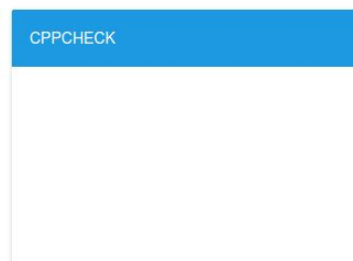
You will find the documentation and examples of use of the API for Universal Network Objects (UNO).



LibreOffice operate a Weblate server with which we manage the translation of the product in many languages.



We run a set of Callgrind Performance tests. the result of which are presented graphically on there.




We run a cppcheck regularly.



We collect crash reports.

Gerrit for Code Review



The Document Foundation

CHANGES DOCUMENTATION BROWSE

Q status:open -is:wip

Sign in

Subject	Status	Owner	Assignee	Repo	Branch	Updated	Size	CR	V
make Skia image cache size configurable	—	Luboš Luňák	—	core	master	16:31	S		
One more OUString::fromUtf(u8"...") simplification	—	Stephan Bergmann	—	core	master	16:29	S		✓
tdf#107229 remove two more obsolete template guide files	—	Seth Chaiklin	—	help	master	16:29	—	+1	
FastParser.cxx changes	—	Dante DM	—	core	master	16:26	S	+1	
tdf#118711 writerfilter: don't hardcode default page description	—	Justin Luth	—	core	master	16:22	S		✓
Don't leave an empty area at the bottom if we can move the text down	—	Caolán McNamara	—	core	master	16:14	S		
Do not call getaddrinfo if we just want the hostname	—	Samuel Mehrbrodt	—	core	master	16:08	S		✓
jsdialog: export dialog id	—	Szymon Klos	—	core	distro/collabora/cp-6.4	15:59	XS		✓
tdf#99613 clarify empty parameters in IF function in Calc	—	Seth Chaiklin	—	help	master	15:52	XS		✓
fix printing of 'margins in comment'	—	Caolán McNamara	—	core	libreoffice-7-1	15:51	S		
negative return passed to parameter that cannot be negative	—	Caolán McNamara	—	core	libreoffice-7-0	15:48	XS		✓
fix printing of 'margins in comment'	—	Caolán McNamara	—	core	libreoffice-7-0	15:43	S		✓
tdf#123613 XLSX shape: fix save	—	Szabolcs Toth	—	core	master	15:30	S		
Catch inadvertent uses of OString(char) ctor	—	Stephan Bergmann	—	core	master	15:19	S		
tdf#138621 Hide the .uno:TemplateManager from customization	—	Seth Chaiklin	—	core	master	15:02	XS	+1	✓
notebookbar: add named ranges management	—	Szymon Klos	—	core	distro/collabora/cp-6.4	15:02	M		✓
tdf#124983 In calc make printable page borders initially visible	—	Ilhan Yesil	—	core	master	14:43	M		✓
tdf#124176: use #pragma once instead of include guards	—	homeboy445	—	core	master	14:33	S		✓
Resolves: tdf#138789 disable widgets on 'none' when status changes	—	Caolán McNamara	—	core	libreoffice-7-0	13:55	S		✓
tdf#136929 docx export: keep frame with paragraph	—	Justin Luth	—	core	master	12:36	S	+1	✓
update ToD statusbar preview	—	Andreas Kainz	—	core	master	12:24	—		✓
tdf#137819 SW: Fix As-Char Anchor of TextBoxes	—	Attila Bakos	—	core	master	12:22	M		✓
tdf#137803 SW: Fix AutoSize of Textboxes	—	Attila Bakos	—	core	master	11:52	S	-1	✗
WIP improve lifecycle of ScPostIt	Merge Conflict	Noel Grandin	—	core	master	10:23	XL		✗
Added translation using Weblate (Esperanto)	—	Weblate	—	impress_remote	master	10:13	XS	-1	

Page 1

>



Commit Peer Review

Change 12213 by sushil_shinde

Review in Progress

Reply...

Reviewers

CC: test_jenkins_mac

Project: Q core

Branch: master

Strategy: Cherry Pick

Updated: 23 hours ago

Change-Id: I5d664867c982e48d2ff01363659282354822e541

Topic:

Code-Review

Verified

Commit: 781575e97a42e7873e5de11f7e987151e0591292 [\(gitweb\)](#)

Author: sushil_shinde <sushilshinde@libreoffice.org> Nov 3, 2014 8:23 AM

Committer: sushil_shinde <sushilshinde@libreoffice.org> Nov 3, 2014 10:53 AM

fdo#85491 : break parameter incorrectly set in .XLSX import.

1) TextBreak Parameter was bydefault 'false'.

2) At xichart.cxx::convert() [line:2973] 'TextBreak' property was changed as per 'labelFreq' value.

4) I have done same thing here and by doing this no existing unit test was failed.

5) Added unit test to check 'TextBreak' value for chart.

Change-Id: I5d664867c982e48d2ff01363659282354822e541

Files	Diff against: Base	File Path	Comments	Size
Commit Message				
		chart2/qa/extras/chart2import.cxx		21
A chart2/qa/extras/data/xlsx/chart-label-text-break.xlsx				
		oox/source/drawingml/chart/axisconverter.cxx		2
				+22, -1

History

Expand All

sushil_shinde

Uploaded patch set 1.

test_jenkins_mac

Patch Set 1:

Build Started http://ci.libreoffice.org/job/gerrit_master/431/

test_jenkins_mac

Patch Set 1:

Build Successful

http://ci.libreoffice.org/job/gerrit_master/431/ : SUCCESS

Commit Peer Review

- Master Branch
 - Committers without review
 - One review for other developers
- Major Release Branch
 - Only bugfixing + one review in any case
- Minor Release Branches
 - Patches from major branch + two reviews



Tinderbox

Tinderbox Status Page tree: [MASTER](#)

Created at: Thu Dec 10 16:30

[Add to Notice Board](#)

[Regenerate HTML Pages](#)


[Administrate this tree \(MASTER\)](#)

[Tinderbox Index](#)

Build Time	Time (UTC)	Guilty	Android-ARM 248 Byonore-Mosling	Android-ARM 86- TDF	Android-x86 86- TDF	Jenkins_Gallgrind	Jenkins_Linux	Jenkins_Linux_Dbg	Jenkins_Linux_Ubuntu	Jenkins_MacOSX	Jenkins_MacOSX_Dbg	Jenkins_Win64_Dbg	Jenkins_Windows	Jenkins_Windows_Dbg	Jenkins_tb77_Arm64	Jenkins_tb77_x64	Jenkins_tb81	Jenkins_tb81_x64
12/10 16:30	12/10 15:30																	
16:20	15:20																	
16:10	15:10												details errs: 1 jenkins_on tb72_core					
16:00	15:00											details errs: 1 jenkins_on tb72 core						
12/10 15:50	12/10 14:50									details errs: 1 jenkins_on tb69_core	details errs: 1 jenkins on tb69_core							
15:40	14:40																	
15:30	14:30									details errs: 1 jenkins_on tb69_core								
15:20	14:20										details errs: 1 jenkins on tb69_core							
15:10	14:10																	
15:00	14:00																	
12/10 14:50	12/10 13:50													details errs: 1 jenkins on tb72_core				
14:40	13:40																	
14:30	13:30																	
14:20	13:20																	
14:10	13:10											details errs: 1 jenkins_on tb72 core	details errs: 1 jenkins on tb73_core	details errs: 1 jenkins on tb73_core				



Continuous Integration

 **Jenkins**

search ? log in sign up

Dashboard

People

Build History

Project Relationship

Check File Fingerprint

Failure Causes

Job Priorities

Build Queue (24)

Gerrit for master (Android)

Callgrind Linux

Tinderbox on Master for Linux-DbgUtil

Tinderbox on Master for Linux

Tinderbox on Master for MacOSX

Tinderbox on Master for MacOSX-DbgUtil

lo bibisect linux64 7 2

lo bibisect linux64 7 1

lo bibisect linux64 6 5

lo win_daily_symbols

Gerrit Linux gcc/release

Gerrit Linux clang/dbgutil

lo bibisect win32 6 5

AllGerritTinderbox, Bibisectdisabled

S	W	Name	Last Statuses	Last Duration	Built On
		Callgrind Linux	5.5 hr > 10 days	5 hr 1 min	vm139
		Clang/Dbgutil for branches	1.7 hr > 1.9 hr	26 min	tb79-pollux
		Daily Screenshot Build on Windows	13 hr > 2.9 mo	1 hr 36 min	tb68-bytemark
		Gerrit Android (aarch64)	29 min > 1 day	12 min	hc-2
		Gerrit Android (arm)	1.1 hr > 2.2 days	11 min	hc-2
		Gerrit Android (x86)	54 min > 19 hr	12 min	hc-2
		Gerrit Android (x86_64)	41 min > 23 hr	11 min	hc-2
		Gerrit for featurebranch	2.9 mo > 2.9 mo	3 hr 12 min	Jenkins
		Gerrit for libreoffice-6-4	1.7 mo > 1.7 mo	1 hr 26 min	Jenkins
		Gerrit for libreoffice-7-0	2.2 hr > 3.8 hr	1 hr 13 min	Jenkins
		Gerrit for libreoffice-7-1	2.2 hr > 3.8 hr	1 hr 18 min	Jenkins
		Gerrit for master	1.1 hr > 1.9 hr	58 min	Jenkins
		Gerrit for master (Android)	1.4 hr > 19 hr	1 hr 4 min	Jenkins
		Gerrit Linux clang/dbgutil	46 min > 4.2 hr	42 min	tb75-illith

Continuous Integration

- Several machines compile LibreOffice
 - Daily or several times per day
 - They also run unit tests
- All supported platforms: Windows, macOS, Linux
- Different compilation options




Bugzilla (Main Page)


Bugzilla – Main Page


version 5.0.6


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**LibreOffice**
The Document Foundation


7.1 Beta1 is available!
Help us to test it
[Click here to download](#)








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Search


Open a New Account


Documentation

Enter a bug # or some search terms [Quick Search](#) [\[?\]](#)

Common Queries:
[Bugs reported in the last 24 hours](#)  | [last 7 days](#) 
[Bugs changed in the last 24 hours](#)  | [last 7 days](#) 

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Bugzilla (Bug List)

Bugzilla - Bug List

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 **LibreOffice**
The Document Foundation

7.1 Beta1 is available!
Help us to test it
Click here to download



[Hide Search Description](#)
Changed: (is greater than or equal to) 24h

197 bugs found.

ID	Product	Comp	Assignee	Status	Resolution	Summary	Changed
107984	LibreOff	Draw	libreoffice-bugs	UNCO	---	Missing pixels on right and bottom when export/copy drawing	14:27:40
131238	LibreOff	Base	libreoffice-bugs	UNCO	---	SQLite/ODBC: LibreOffice fails Unicode compliance with multi-byte characters, such as emoji, for example 🍌	08:50:43
134421	LibreOff	LibreOff	libreoffice-bugs	UNCO	---	Replace xcu settings storage with sqllite database	08:39:35
135096	LibreOff	Writer	libreoffice-bugs	UNCO	---	LibreOffice is showing empty image frames after save to ODT (tracking changes enabled). File reload solves it	Wed 19:09
136762	LibreOff	Calc	libreoffice-bugs	UNCO	---	LibreOffice does not paste after v7	14:26:50
138226	LibreOff	Writer	libreoffice-bugs	UNCO	---	Poor and slow HTML importation - vertically stretched elements	04:15:07
138259	LibreOff	Linguist	libreoffice-bugs	UNCO	---	Tools>Language>For All Text change default languages for all documents	Wed 16:31
138266	LibreOff	Writer	libreoffice-bugs	UNCO	---	Increase default space for line numbering	Wed 17:49
138376	LibreOff	Calc	libreoffice-bugs	UNCO	---	The attached spread sheet frequently crashes after saving during closing.	Wed 17:23
138476	LibreOff	Calc	libreoffice-bugs	UNCO	---	LibreOffice Calc file loading time, saving time and response time. FILEOPEN, FILESAVE	03:49:26
138478	LibreOff	Calc	libreoffice-bugs	UNCO	---	CALC: Dynamic conditional colour formatting in autofiltered arrays	03:49:30
138484	LibreOff	Writer	libreoffice-bugs	UNCO	---	Libreoffice/Preferences/LibreOffice Writer/Print Comments settings choices are not reflected in File/printer settings/Options choices configuration, printing	03:49:35
138485	LibreOff	Document	libreoffice-bugs	UNCO	---	help.o search result links to other page than where the search string was found	03:49:39
138495	LibreOff	Linguist	libreoffice-bugs	UNCO	---	Removed duplicate lines from spelling dictionaries	03:49:45
138497	LibreOff	Writer	libreoffice-bugs	UNCO	---	Changing anchor to page changes position of image became of different position area (which isn't adapted)	03:49:50
138625	LibreOff	LibreOff	libreoffice-bugs	UNCO	---	The footnote number in an imported word text is not in a superscript, like in the original.	13:17:17
138710	LibreOff	Calc	libreoffice-bugs	UNCO	---	Crash when deleting cell rows (multi_type_vector::position#1707: block position not found!)	00:33:52
138748	LibreOff	UI	libreoffice-bugs	UNCO	---	Replace number format "Language" with "Locale"	14:47:08
138750	LibreOff	Writer	libreoffice-bugs	UNCO	---	Add option to make paragraph border color same as paragraph default font color	14:45:46
138752	LibreOff	Writer	libreoffice-bugs	UNCO	---	regular expressions find with newline fails search	Wed 17:08
138757	LibreOff	BASIC	libreoffice-bugs	UNCO	---	Crash when	Wed 17:34



Bug Triaging

- Periodically check bugzilla reports
 - Confirm bugs
 - Detect duplicates
 - Prioritize
 - Verify patches




Project(s) [select all](#)[all code](#)[clear](#)Full Search Definition Symbol File Path History Type [Any](#)[Search](#)[Clear](#)[Help](#)

Repository	SCM Type: Parent (branch)	Current version
core	git: https://git.libreoffice.org/core (master)	2020-12-08 22:55 +0000 e4dc show more ...
cppunit	git: https://git.libreoffice.org/cppunit (master)	2020-08-31 17:51 +0000 9429 show more ...
dev-tools	git: https://git.libreoffice.org/dev-tools (master)	2020-11-03 13:15 +0000 2918 show more ...
dictionaries	git: https://git.libreoffice.org/dictionaries (master)	2020-11-24 17:19 +0000 2bfb show more ...
help	git: https://git.libreoffice.org/help (master)	2020-12-08 11:49 +0000 452d show more ...
impress_remote	git: https://git.libreoffice.org/impress_remote (master)	2020-12-08 21:06 +0000 cbaf show more ...
libabw	git: https://git.libreoffice.org/libabw (master)	2019-08-17 13:59 +0000 6ad7 show more ...
libcdr	git: https://git.libreoffice.org/libcdr (master)	2020-11-04 15:23 +0000 bf3e show more ...
libetonyek	git: https://git.libreoffice.org/libetonyek (master)	2020-05-20 07:14 +0000 4b4d show more ...
libfreehand	git: https://git.libreoffice.org/libfreehand (master)	2019-11-03 12:03 +0000 961c show more ...

OpenGrok



Online Help

 LibreOffice 7.0 Help

Module ▾ Language ▾

Please support us!

Index ▾

Search in all modules


1 2 3 4 5 6 → →


WRITER
abbreviations
accessibility – LibreOffice Writer
address books – exchanging
adjusting page margins and cell widths
alphabetical indexes
anchors – objects
animations – text
arithmetic operators in formulae
arranging – headings
Asian languages – search options
Asian languages – sorting
paragraphs/table rows
aspect ratio – resizing objects
AutoCorrect function – adding exceptions
AutoCorrect function – headings
AutoCorrect function – smart tags
AutoCorrect function – text documents
AutoCorrect function – turning off
AutoCorrect function – word completion
AutoFormat function for tables
automatic bullets/numbers – AutoCorrect function
automatic changes on/off

The LibreOffice Help

LibreOffice Help pages are displayed in your system default web browser.

The Help references the default settings of the program on a system that is set to defaults. Descriptions of colours, mouse actions, or other configurable items can be different for your program and system.

 The Help system for all versions of the software is based on the same source files. Some of the functions described in Help may not be included in this particular distribution. Some features specific to a distribution may not be mentioned in this Help.

 Help pages of LibreOffice Extensions still use the old Help system. The old Help system help pages [are available from here](#).

The LibreOffice Help pages features

The Module List

Located on the top of the page, click to open the drop-down list and select the LibreOffice module to display the module Help main entry page.

The Language List (Help online only).

Available only in the online version, select the language to display the current help page.

The Help Index

The Help Index displays a list of keywords for all LibreOffice modules. Click on any keyword in the list to open the linked Help page.

Searching the Help Index

Contents

- Text Documents (Writer)
- HTML Documents (Writer Web)
- Spreadsheets (Calc)
- Presentations (Impress)
- Drawings (Draw)
- Database Functionality (Base)
- Formulae (Math)
- Charts and Diagrams
- Macros and Scripting
- LibreOffice Installation
- Common Help Topics



LibreOffice 6.4 API Documentation

- [Installation Guide](#) An overview of all necessary installation steps (e.g. environment variables) to use LibreOffice SDK.
- [IDL Reference](#) Complete LibreOffice 6.4 API reference.
- [Java UNO Runtime Reference](#) Reference documentation of the Java UNO runtime API.
- [C++ Reference](#) Reference documentation of the C++ UNO runtime and a set of C/C++ base and helper functions and classes to abstract from the system layer.
- [Development Tools](#) Overview and a short description of the UNO development tools.
- [Examples](#) A collection of examples in different programming languages (Java, Python, C++, Basic, OLE, CLI).
- [Additional Examples](#) A git repository with additional examples from various contributors: `git clone https://git.libreoffice.org/sdk-examples`

ENHANCED BY Google



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The Document Foundation acknowledges all community members, please find more info [at our website](#).

[Privacy Policy](#) | [Impressum \(Legal Info\)](#) | Copyright information: The source code of LibreOffice is licensed under the Mozilla Public License v2.0 ([MPLv2](#)). "LibreOffice" and "The Document Foundation" are registered trademarks of their corresponding registered owners or are in actual use as trademarks in one or more countries. Their respective logos and icons are also subject to international copyright laws. Use thereof is explained in our [trademark policy](#).

API for UNO



Weblate for Localization

TDF Weblate - LibreOffice							Register	Sign in	...
Dashboard									
This site runs Weblate for translating the software projects listed below. You need to be signed in to translate, otherwise you can only make suggestions.									
Project	Translated	Untranslated	Untranslated words	Checks	Suggestions	Comments			
LibreOffice UI - master	53%	2,528,891	13,214,783	86,600	5,195	173	Browse		
LibreOffice Help - master	53%	1,737,952	21,435,649	76,210	5,590	43	Browse		
LibreOffice Help - 6.4	59%	1,425,905	17,991,837	86,033	848	26	Browse		
LibreOffice UI - 6.4	59%	1,947,673	6,590,989	87,311	1,058	20	Browse		
LibreOffice UI - 6.3	62%	1,663,142	5,697,528	91,774	696	2	Browse		
LibreOffice Help - 6.3	67%	973,158	12,694,802	90,724	175	3	Browse		
LibreOffice Online	30%	83,992	754,093	256	903	3	Browse		
Impress Remote	90%	596	2,801	222	55		Browse		
website	78%	1,341	9,800	61	132	2	Browse		
LibreOffice UI - 7.0	58%	2,022,996	6,843,391	86,701	567	8	Browse		
LibreOffice Help - 7.0	55%	1,602,781	19,875,430	82,143	2,751	19	Browse		



Huge Localization Effort

- **Localization Teams**
 - ~**120** shipping languages
 - **145** active language projects
 - **4605** registered translators
 - Over **400K** translations made
- **LibreOffice is available in more native language versions than any other application**



Performance (Suite)

LibreOffice
The Document Foundation

OUT-OF-TREE

calc

empty

writer

PERF CHECK

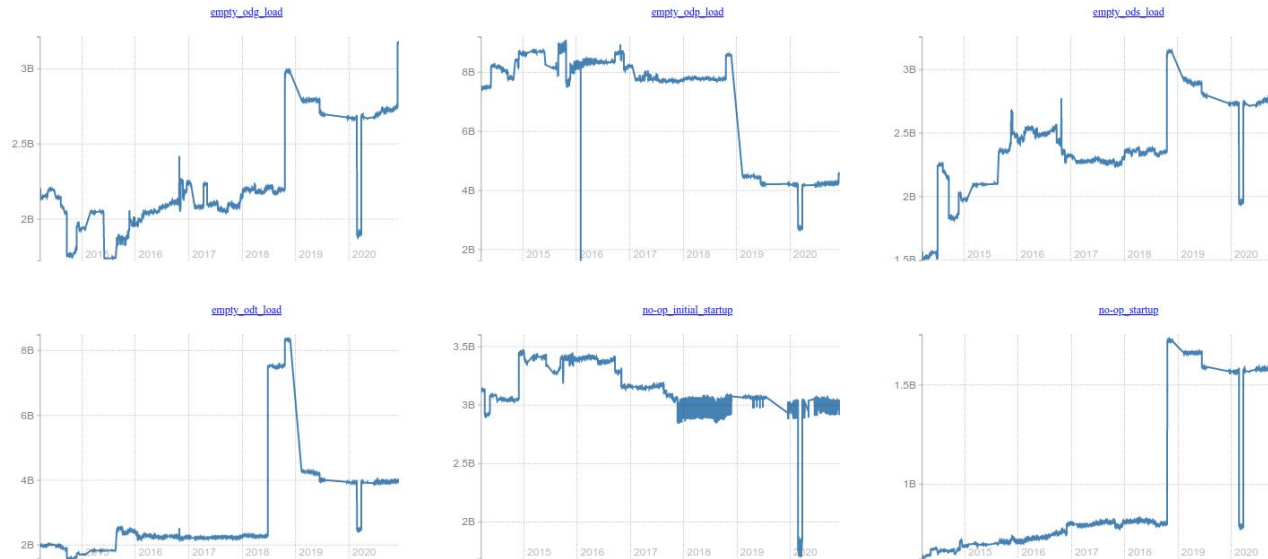
cppu_sc

cppu_test

[Privacy Policy](#)
[Impressum \(Legal Info\)](#)

Suite empty

As of Thu 10 Dec 2020 03:02:45 PM UTC



Performance (Writer)

LibreOffice
The Document Foundation

OUT-OF-TREE

calc
empty
writer

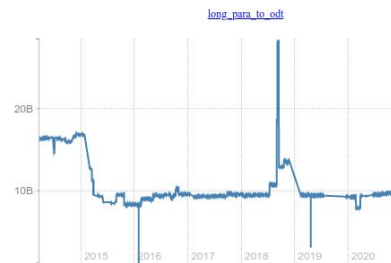
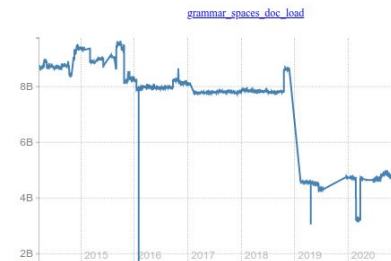
PERF CHECK

cppu_sc
cppu_test

Privacy Policy
Impressum (Legal Info)

Suite writer

As of Thu 10 Dec 2020 03:02:22 PM UTC



Performance (Calc)

LibreOffice
The Document Foundation

OUT-OF-TREE

calc

empty

writer

PERFCHECK

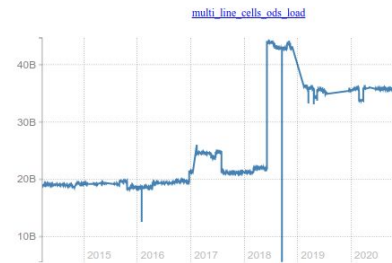
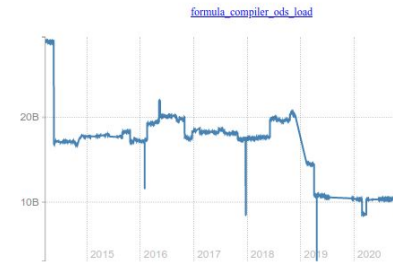
cppu_sc

cppu_test

Privacy Policy
Impressum (Legal Info)

Suite calc

As of Thu 10 Dec 2020 10:00:03 AM UTC



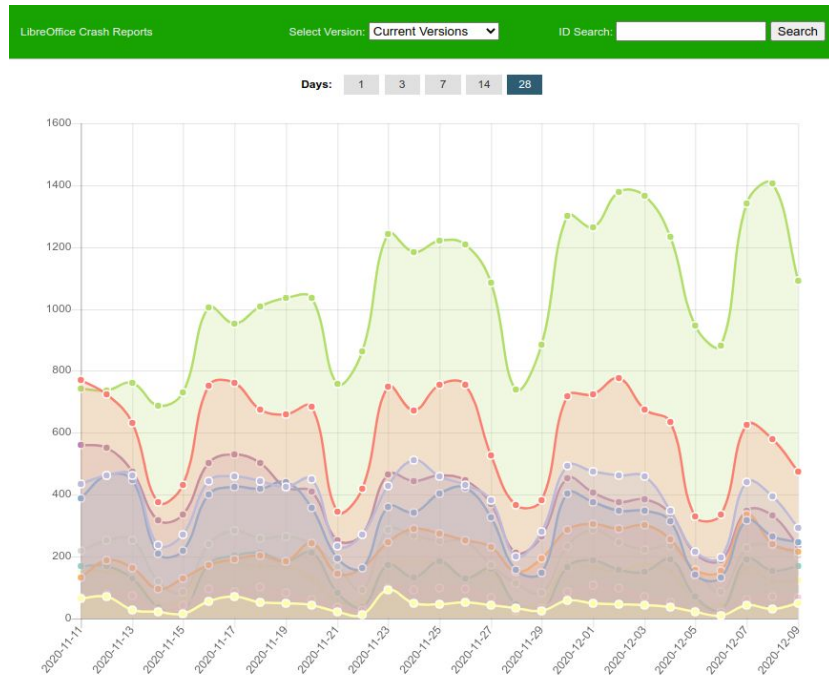
CppCheck Report

Cppcheck report - LibreOffice 2020-06-13 19:58:00 41c465b5ee443ec04441077b5eb80f263336ea8a, CppCheck 2020-06-13 18:19:47
6d5d12f283cf568d2dfe09aa77cb41f34b322d62:

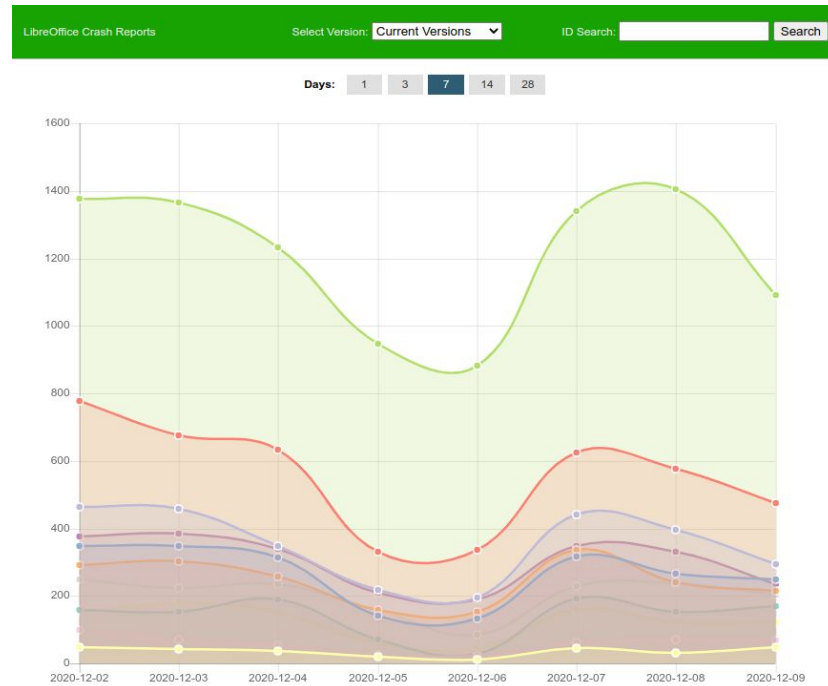
Defect summary:		Line	Id	CWE	Severity	Message
<input checked="" type="checkbox"/> Toggle all						
Show #	Defect ID					
<input checked="" type="checkbox"/>	3526		unusedFunction			
<input checked="" type="checkbox"/>	1733		unreadVariable			
<input checked="" type="checkbox"/>	1392		noExplicitConstructor			
<input checked="" type="checkbox"/>	947		knownConditionTrueFalse			
<input checked="" type="checkbox"/>	866		useStdAlgorithm			
<input checked="" type="checkbox"/>	451		unknownMacro			
<input checked="" type="checkbox"/>	432		syntaxError			
<input checked="" type="checkbox"/>	324		uninitVar			
<input checked="" type="checkbox"/>	306		nullPointerRedundantCheck			
<input checked="" type="checkbox"/>	288		identicalConditionAfterEarlyExit			
<input checked="" type="checkbox"/>	279		variableScope			
<input checked="" type="checkbox"/>	251		allocaCalled			
<input checked="" type="checkbox"/>	240		redundantAssignment			
<input checked="" type="checkbox"/>	202		constParameter			
<input checked="" type="checkbox"/>	124		duplicateExpression			
<input checked="" type="checkbox"/>	108		missingOverride			
<input checked="" type="checkbox"/>	94		uninitMemberVar			
<input checked="" type="checkbox"/>	90		duplicateCondition			
<input checked="" type="checkbox"/>	87		constVariable			
<input checked="" type="checkbox"/>	80		ConfigurationNotChecked			
<input checked="" type="checkbox"/>	77		redundantInitialization			
<input checked="" type="checkbox"/>	73		assertWithSideEffect			
<input checked="" type="checkbox"/>	66		knownArgument			
<input checked="" type="checkbox"/>	51		duplicateConditionalAssign			
<input checked="" type="checkbox"/>	47		shadowVariable			
<input checked="" type="checkbox"/>	44		dupInheritedMember			
<input checked="" type="checkbox"/>	36		operatorEqVarError			
<input checked="" type="checkbox"/>	33		deallocuse			
			missingInclude		information	Cppcheck cannot find all the include files (use --check-config for details)
			UnoControls/source/base/registercontrols.cxx			
		79	unusedFunction	561	style	The function 'ctl_component_getFactory' is never used.
			accessibility/source/extended/AccessibleBrowseBoxBase.cxx			
		522	unknownMacro		error	There is an unknown macro here somewhere. Configuration is required. If IMPLEMENT_FORWARD_XINTERFACE2 is a macro then please configure it.
			accessibility/source/extended/AccessibleBrowseBoxCheckBoxCell.cxx			
		44	unknownMacro		error	There is an unknown macro here somewhere. Configuration is required. If IMPLEMENT_FORWARD_XINTERFACE2 is a macro then please configure it.
			accessibility/source/extended/AccessibleGridControlBase.cxx			
		443	unknownMacro		error	There is an unknown macro here somewhere. Configuration is required. If IMPLEMENT_FORWARD_XINTERFACE2 is a macro then please configure it.
			accessibility/source/extended/accessibleeditbrowseboxcell.cxx			
		62	unknownMacro		error	There is an unknown macro here somewhere. Configuration is required. If IMPLEMENT_FORWARD_XINTERFACE2 is a macro then please configure it.
			accessibility/source/extended/accessibleiconchoicectrl.cxx			
		51	unknownMacro		error	There is an unknown macro here somewhere. Configuration is required. If IMPLEMENT_FORWARD_XINTERFACE2 is a macro then please configure it.
			accessibility/source/extended/accessiblelistbox.cxx			
		62	unknownMacro		error	There is an unknown macro here somewhere. Configuration is required. If IMPLEMENT_FORWARD_XINTERFACE2 is a macro then please configure it.
			accessibility/source/extended/accessiblelistboxentry.cxx			
		94	syntaxError		error	syntax error
			accessibility/source/extended/accessibletable.cxx			
		157	unknownMacro		error	There is an unknown macro here somewhere. Configuration is required. If IMPLEMENT_FORWARD_XINTERFACE2 is a macro then please configure it.
			accessibility/source/extended/accessibletablebase.cxx			
		43	syntaxError		error	syntax error
			accessibility/source/extended/accessibletablebarpage.cxx			
		192	unknownMacro		error	There is an unknown macro here somewhere. Configuration is required. If IMPLEMENT_FORWARD_XINTERFACE2 is a macro then please configure it.
			accessibility/source/extended/accessibletablebarpagelist.cxx			
		331	unknownMacro		error	There is an unknown macro here somewhere. Configuration is required. If IMPLEMENT_FORWARD_XINTERFACE2 is a macro then please configure it.
			accessibility/source/extended/accessibletablelistbox.cxx			
		67	unknownMacro		error	There is an unknown macro here somewhere. Configuration is required. If IMPLEMENT_FORWARD_XINTERFACE2 is a macro then please configure it.
			accessibility/source/extended/accessibletablelistboxtable.cxx			
		252	unknownMacro		error	There is an unknown macro here somewhere. Configuration is required. If IMPLEMENT_FORWARD_XINTERFACE2 is a macro then please configure it.
			accessibility/source/extended/textwindowaccessibility.cxx			
		1503	syntaxError		error	syntax error
			accessibility/source/helper/accessmgt.cxx			
		23	unusedFunction	561	style	The function 'AccResId' is never used.



Crash Test (28 Days vs 7 Days)



LibreOffice Crash Reports - Powered by [Crash](#) - Inspired by [Socorro](#) - All dates are UTC - Impressum (some German legal stuff)



LibreOffice Crash Reports - Powered by [Crash](#) - Inspired by [Socorro](#) - All dates are UTC - Impressum (some German legal stuff)



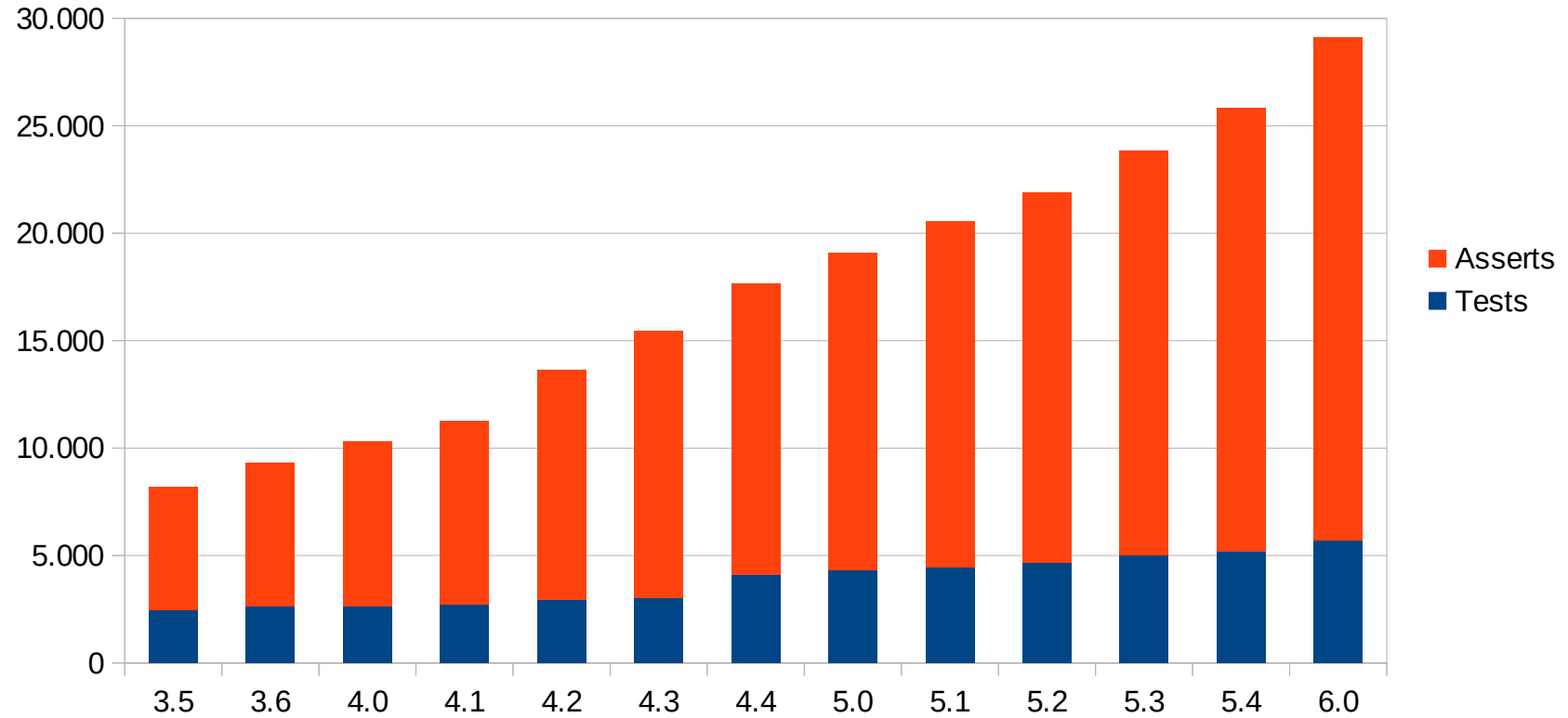
Crash Tests

- Check crashes when opening and saving documents
- Sample size: 55,000 documents
 - Most come from bug reports (as attachments)
- Periodicity: weekly



Growth in unit tests over time

count of various CPPUNIT macros



Unit Tests

- Check key elements in documents
 - Import AND Import + Export + Import
- Variable coverage
 - Good coverage for new document formats



Regression Detection Tools

- Regression
 - A problem that was not present in previous versions
- LibreOffice tool: *bi-bisect* (*binary bisect*)
 - Binary repository from different development stages
 - Recompilation not necessary

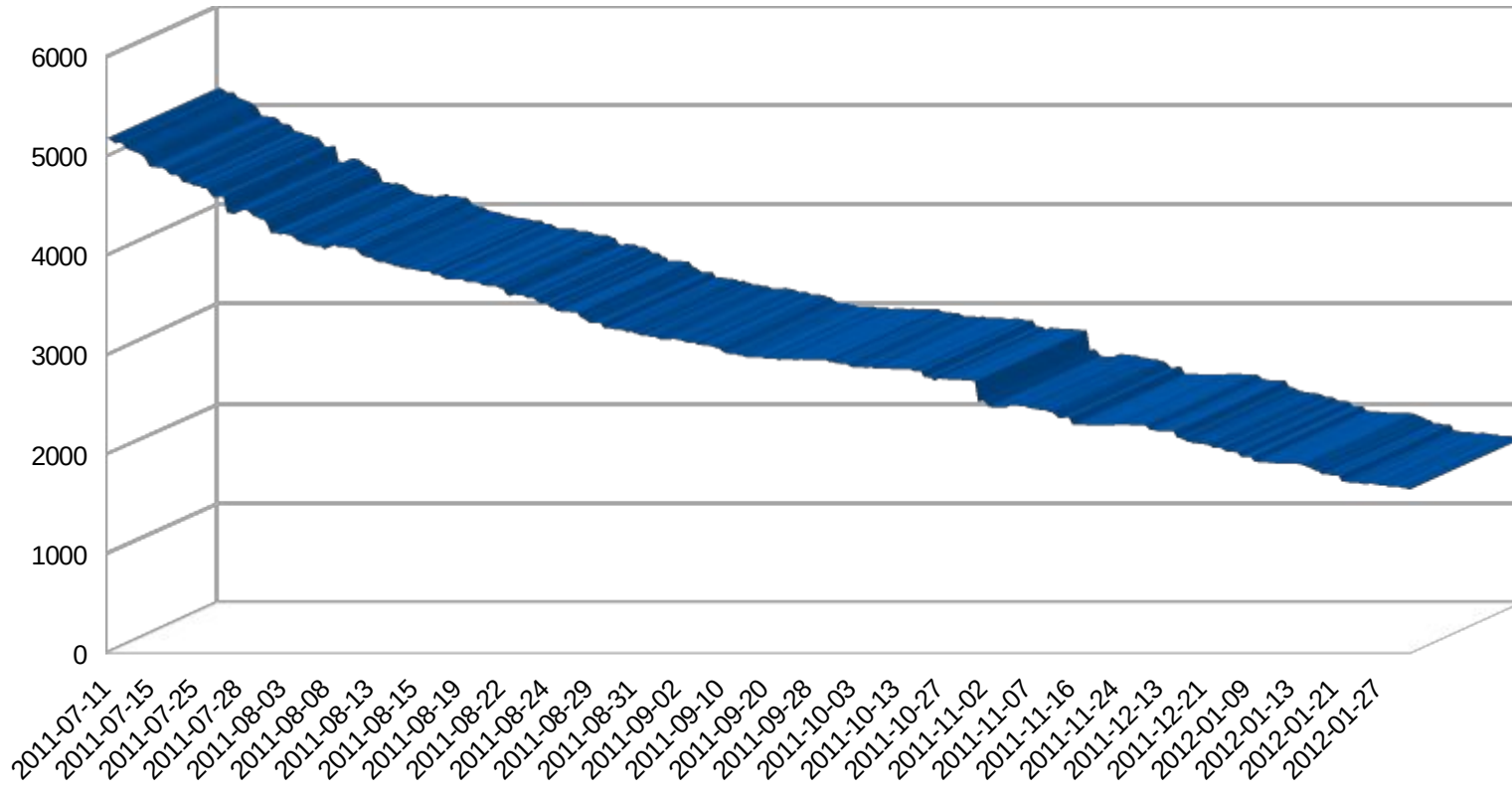


Code Cleaning



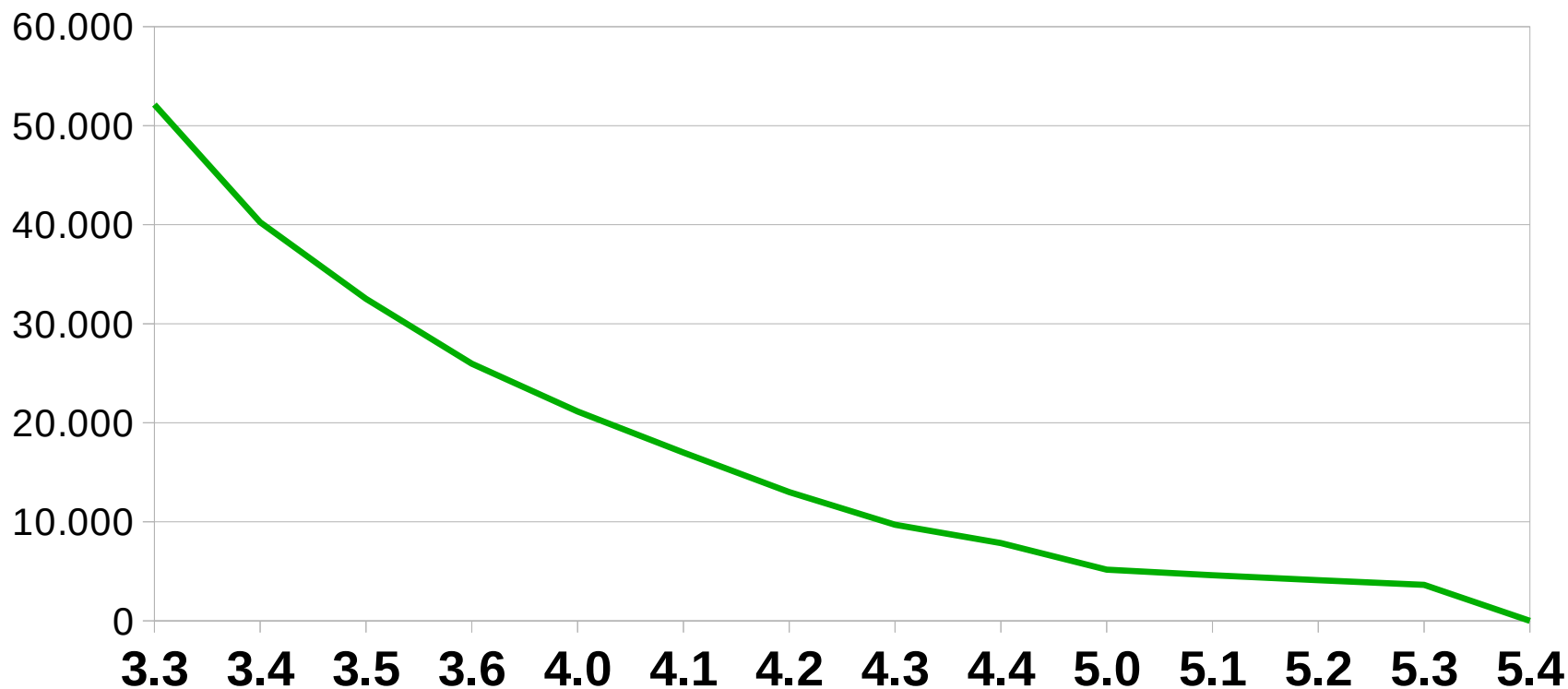
Removing Unused Code

Remaining unused method count



German Comment Translation

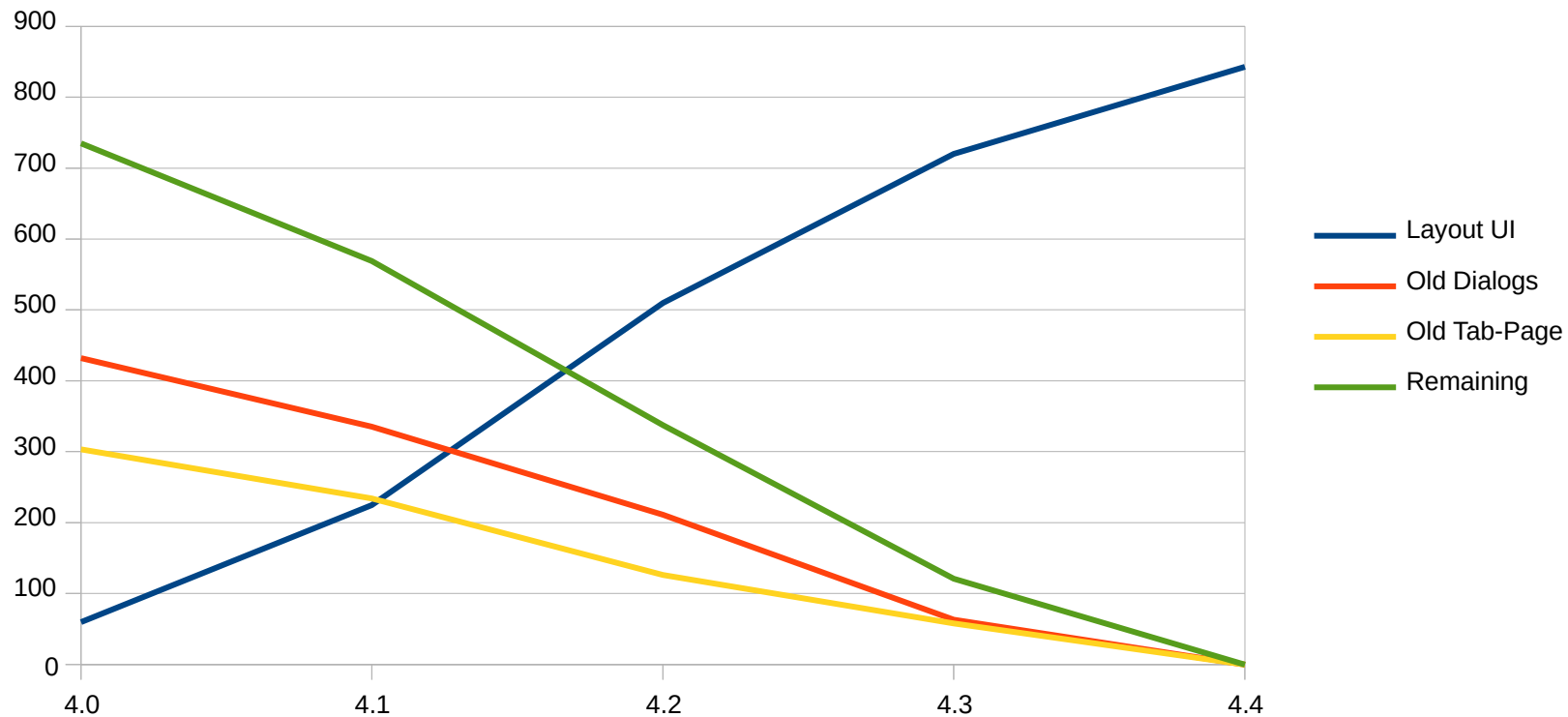
Detected lines of German comment



Code Refactoring



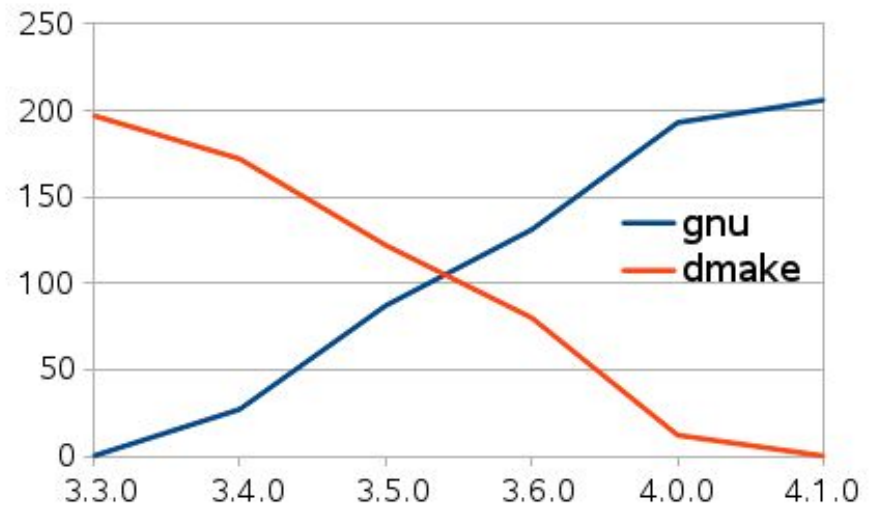
UI Layout Conversion



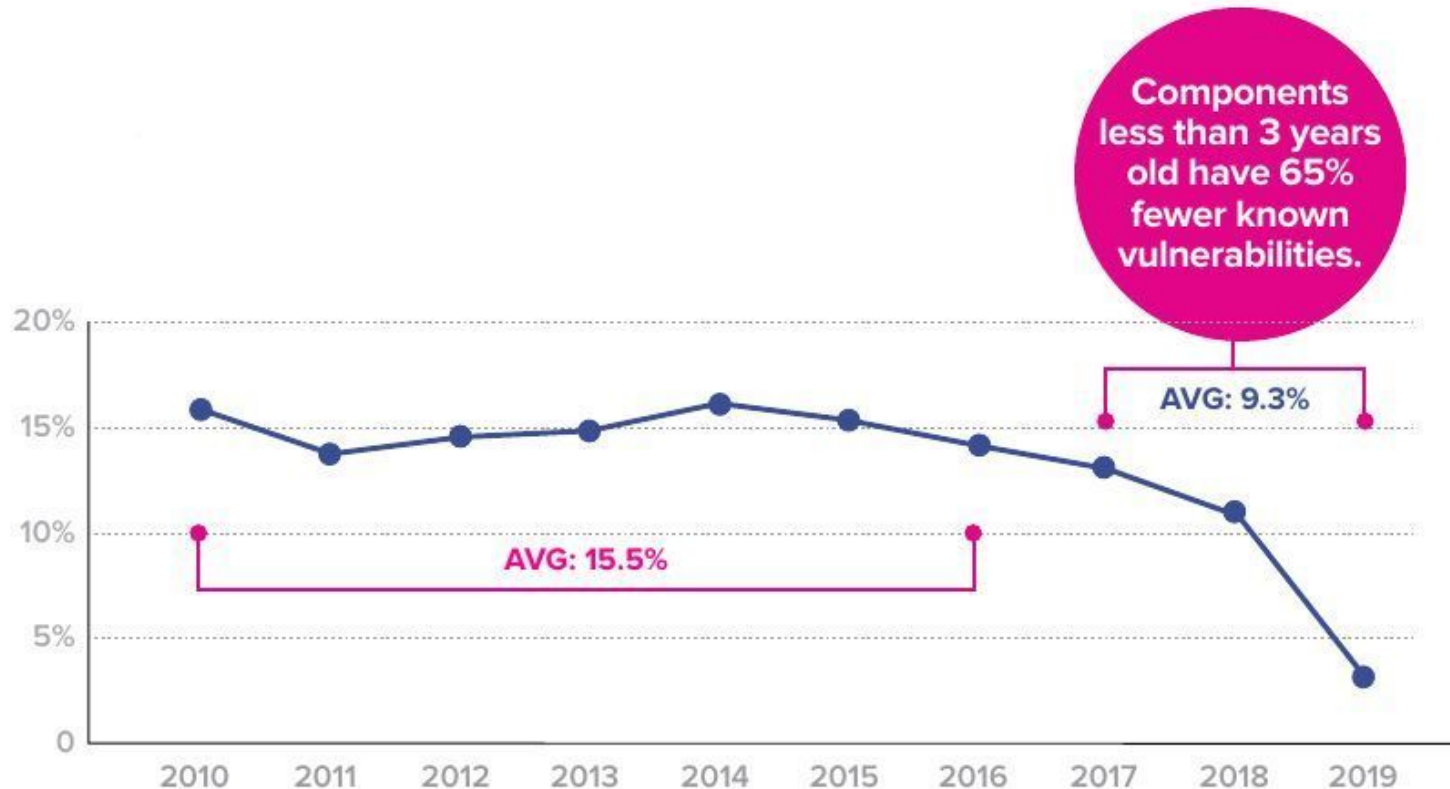
GNUmake: 1 make to build ~10k wide

- Completed re-write of legacy perl + dmake build system ...
- Carl Fogel: "LibreOffice is now ridiculously easy to build"

gnumake vs. dmake by module count



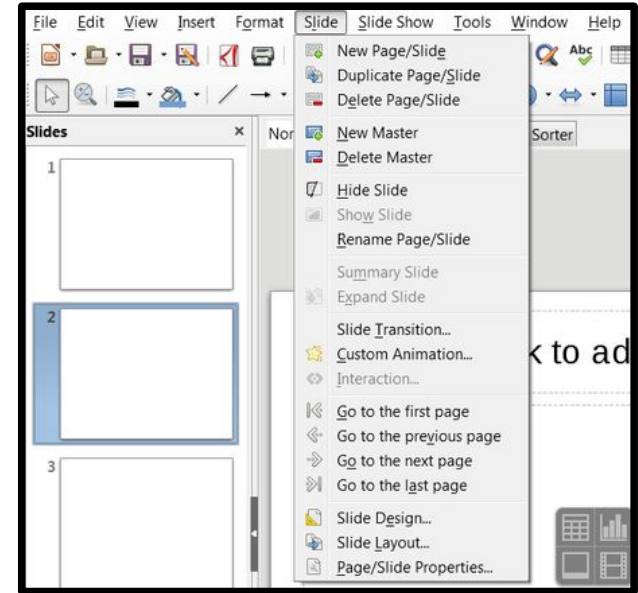
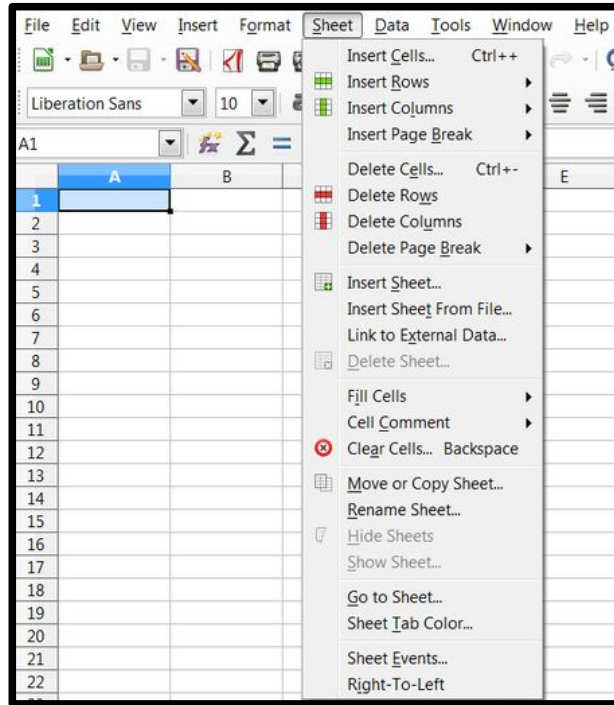
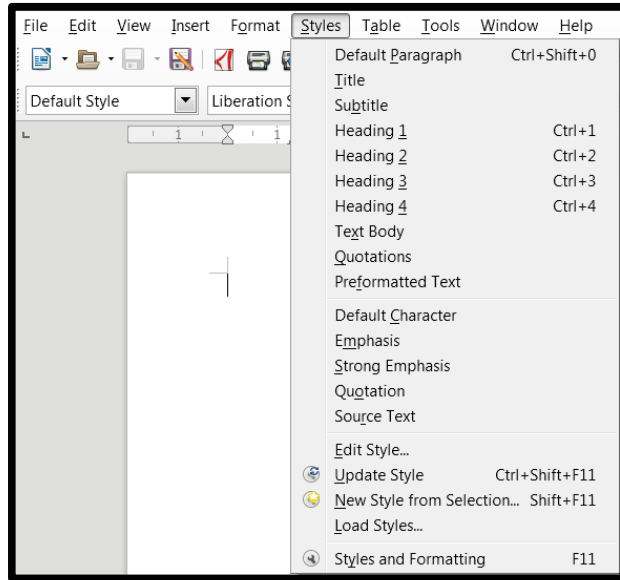
Advantage of Refactoring



User Interface

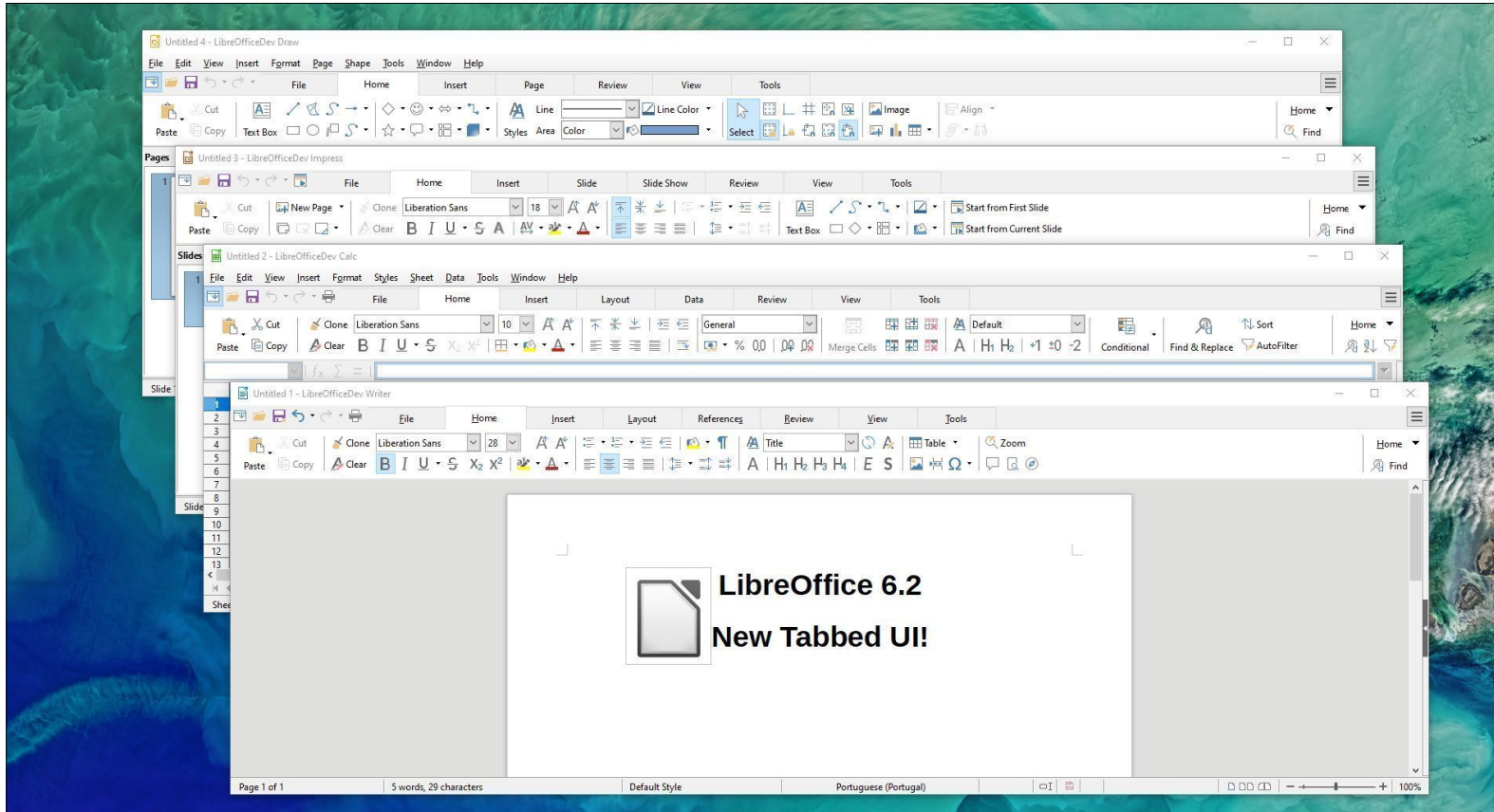


Reorganization of Menus

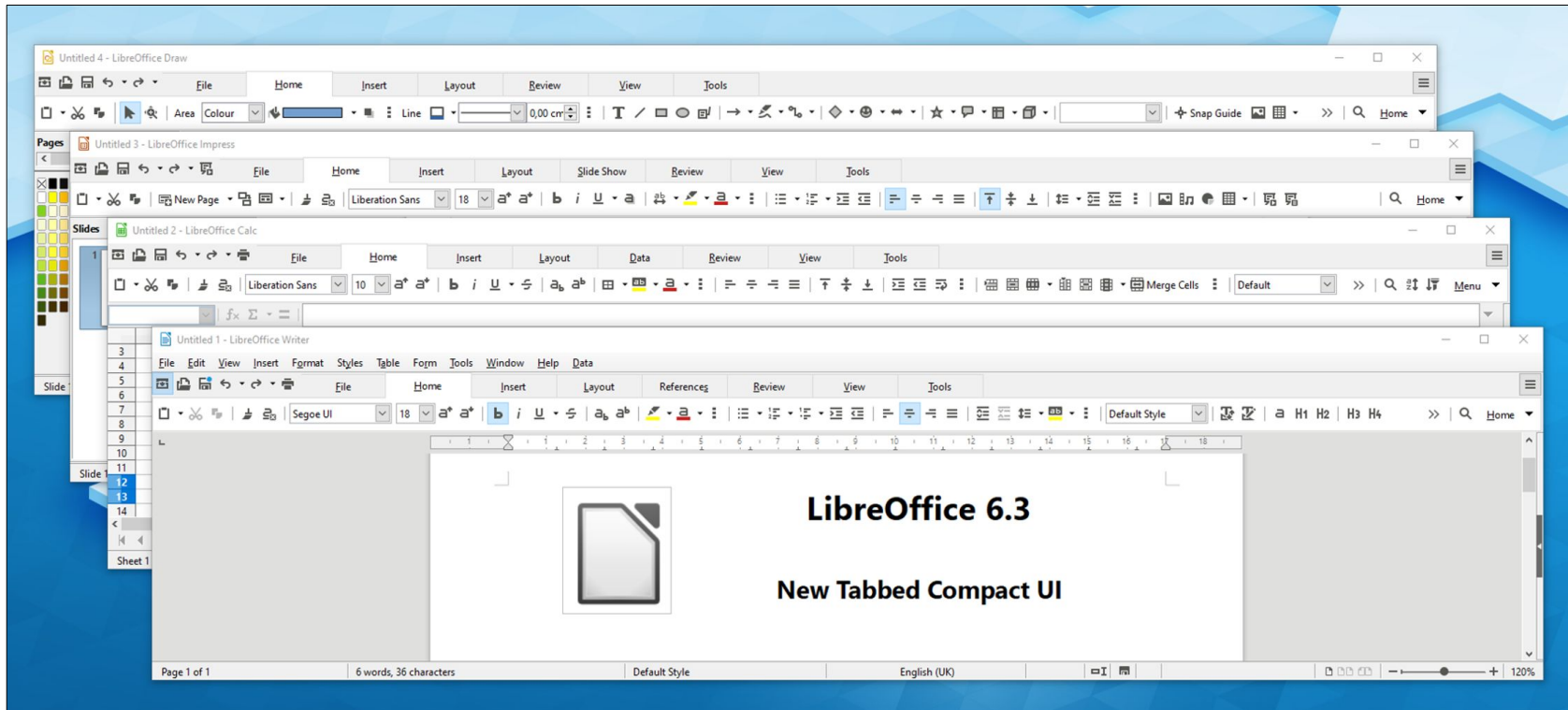


Reorganization of Writer, Calc and Impress menus, including the addition of a Styles menu (Writer), a Sheet menu (Calc) and a Slide menu (Impress)

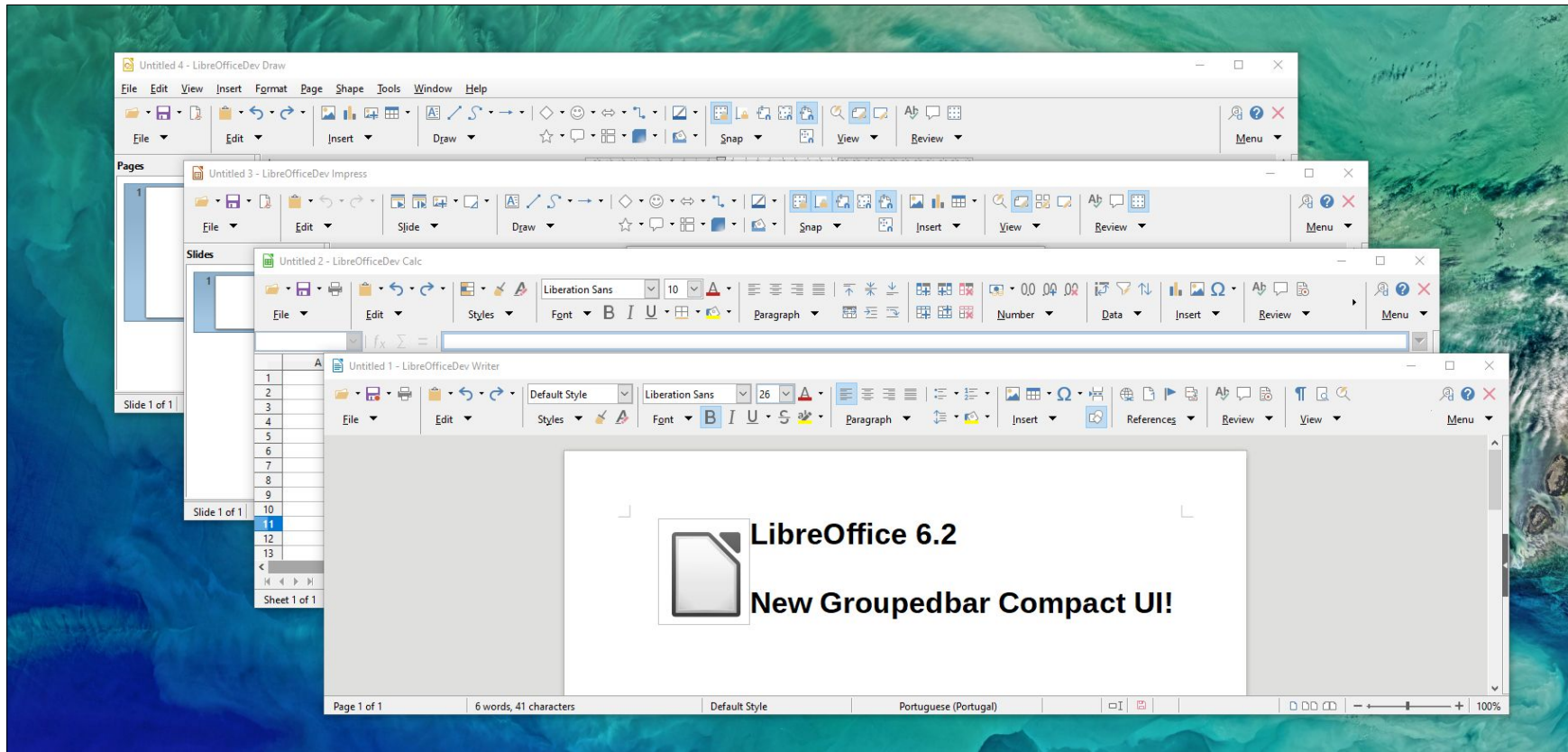
NotebookBar



NotebookBar Compact



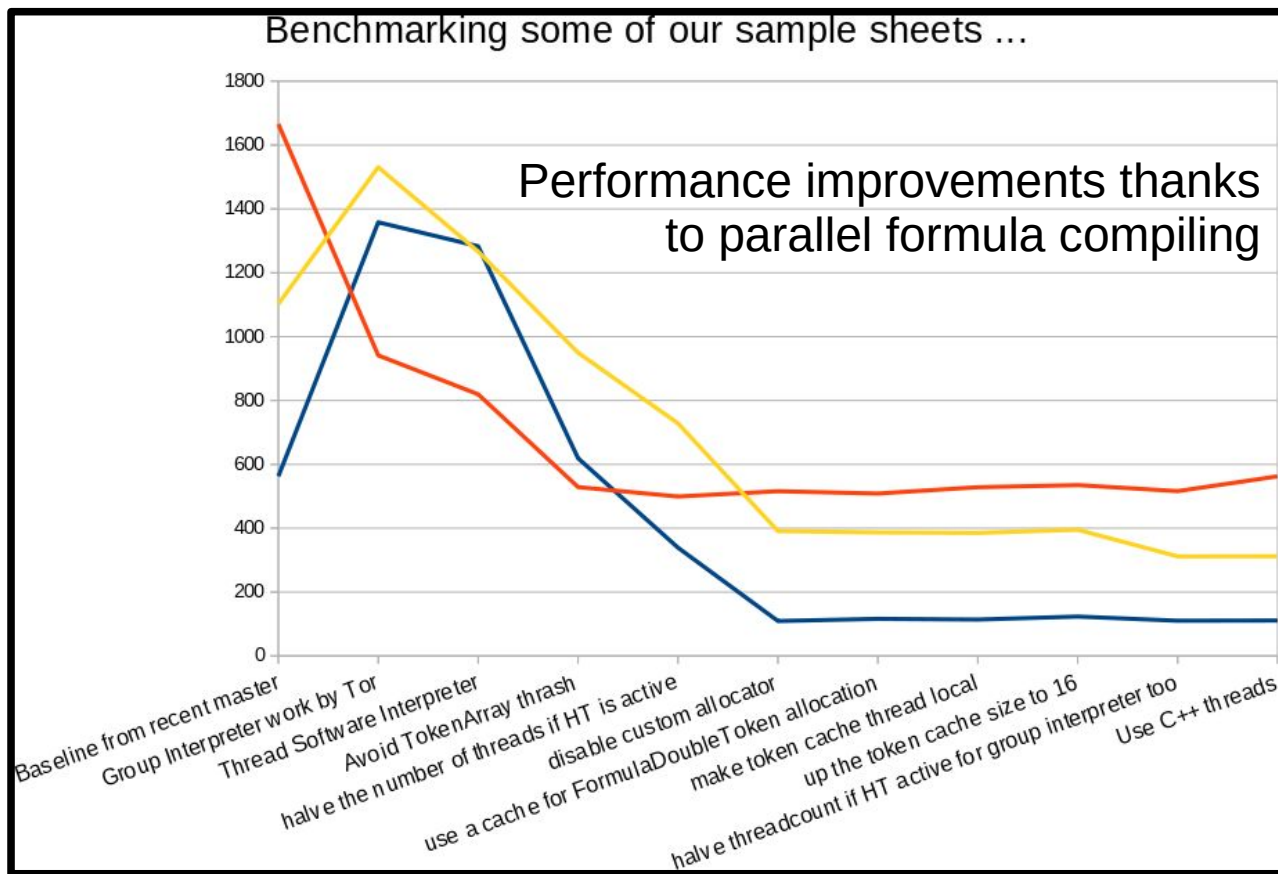
GoupedBar Compact



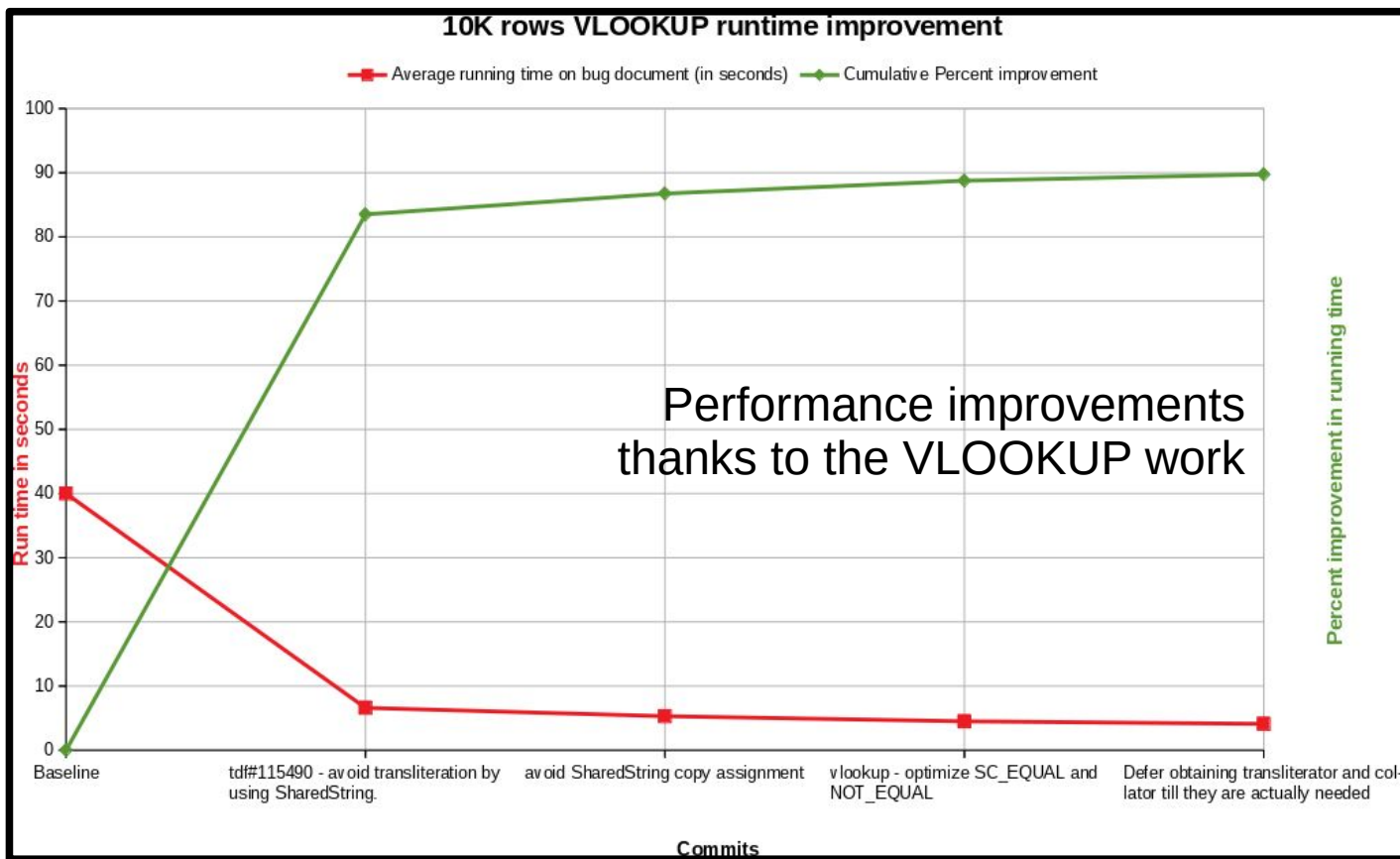
Performance



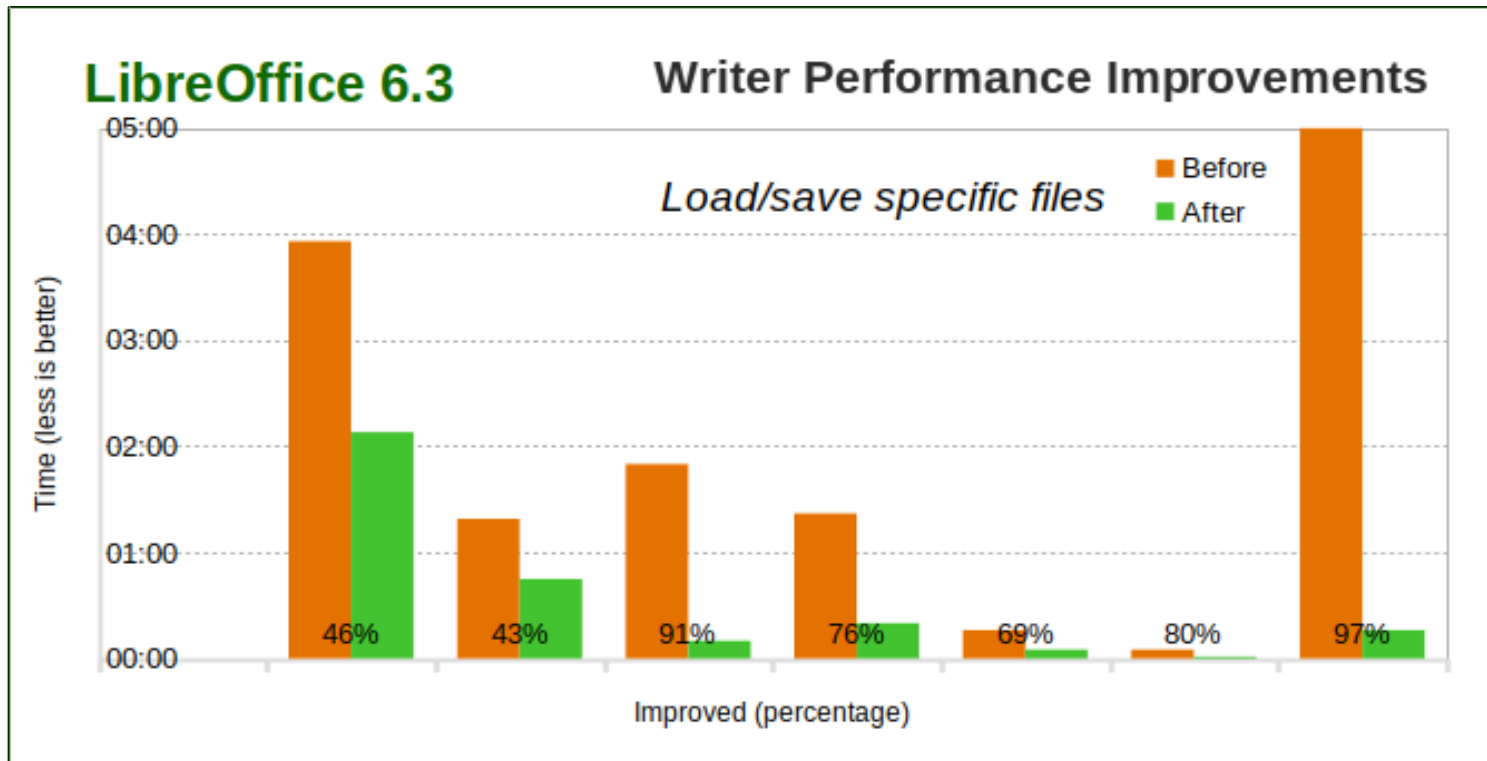
Calc 6.1



Calc 6.1



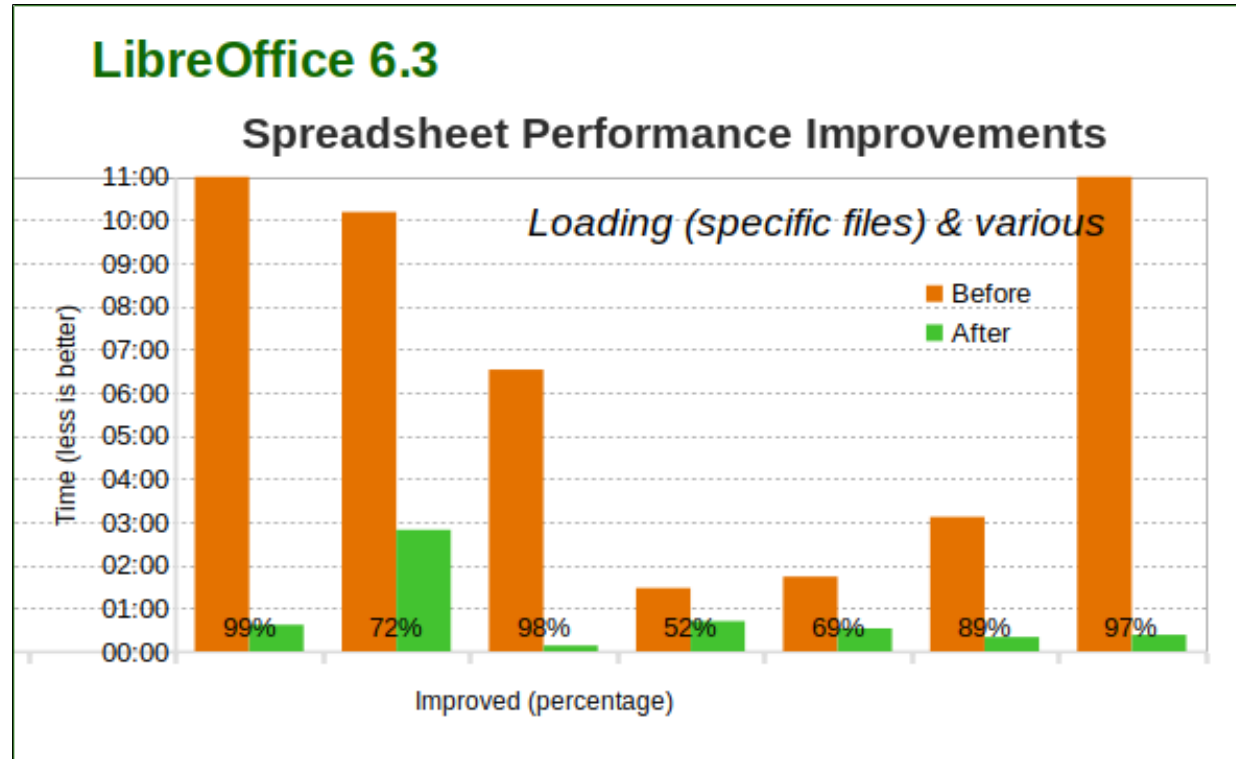
Writer 6.3



Significant Open/Save performance improvements



Calc 6.3



Significant Open/Save performance improvements



Code Quality and Security



Static Code Analysis

- Tool: *Coverity Scan*
 - Free for open source projects
- Detects dead code, uninitialized variables, uncaught exceptions...
- Defect density reduced from 1.1 to ~0,00x
 - Density measured in defects every 1.000 lines
 - Average density for similar sized projects: 0.71



Coverity Scan

DEFECTS WE FIND INCLUDE



Crashes



Security
Vulnerabilities



Concurrency



Memory
Corruption



Uninitialized
memory



Error handling



Resource leaks



Coverity Scan Score

Dec 06, 2020

Last Analyzed

6,143,004

Lines of Code Analyzed

0.00

Defect Density

Defect changes since previous build dated Dec 05, 2020

0

Newly detected

1

Eliminated

Defects by status for current build

26,283

Total defects

0

Outstanding

356

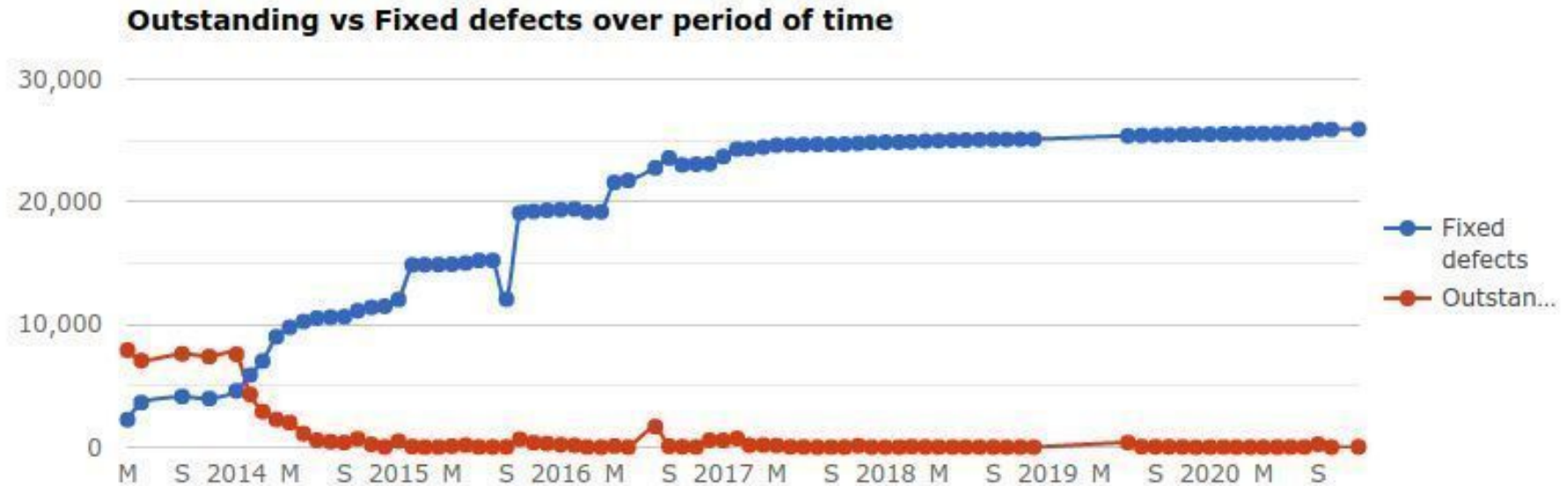
Dismissed

25,927

Fixed

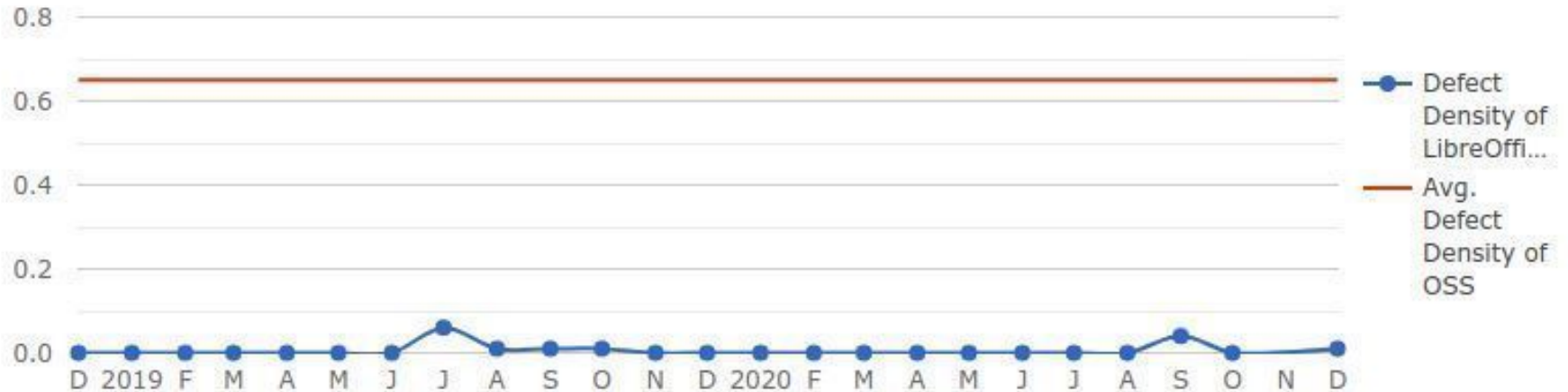


Coverity Scan @ LibreOffice



Coverity Scan @ LibreOffice

Defect Density over period of time

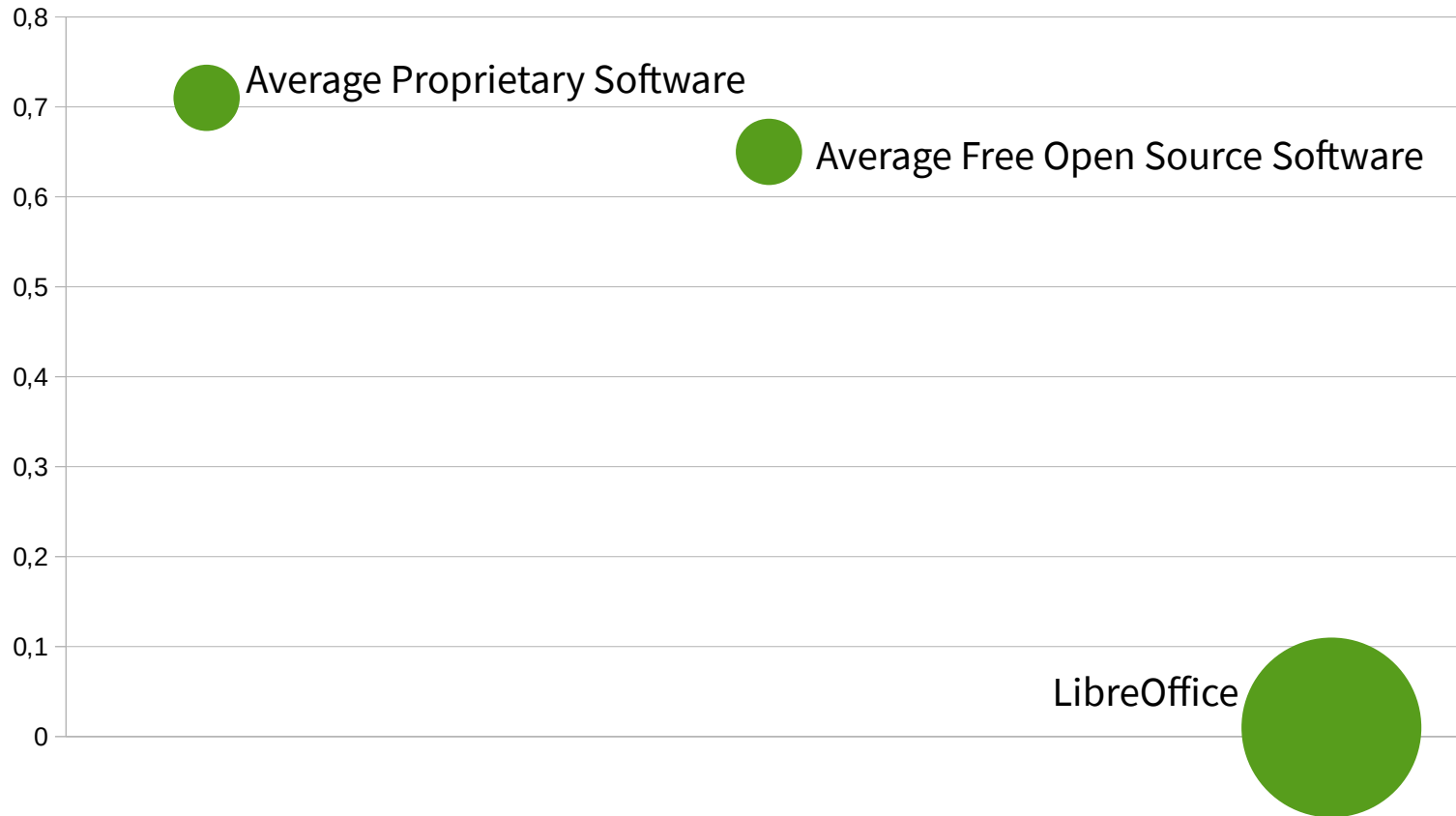


The graph compares the defect density of the project with the average defect density of open source projects that are similar in size (i.e. more than 1 million lines of code)



Issues x 1000 Lines of Source Code

Source Code Scan by Coverity Scan (since 2015)

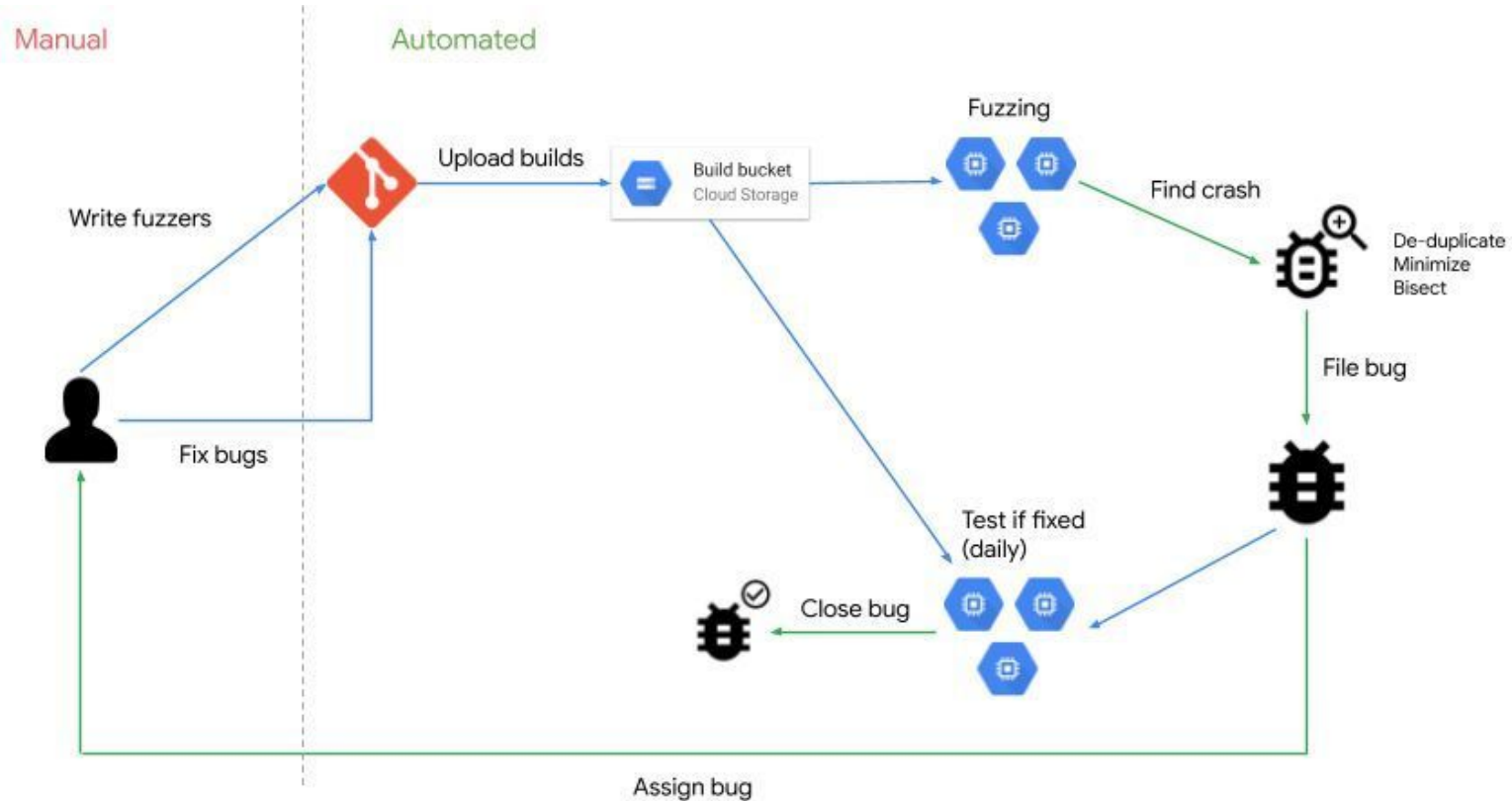


Fuzzing

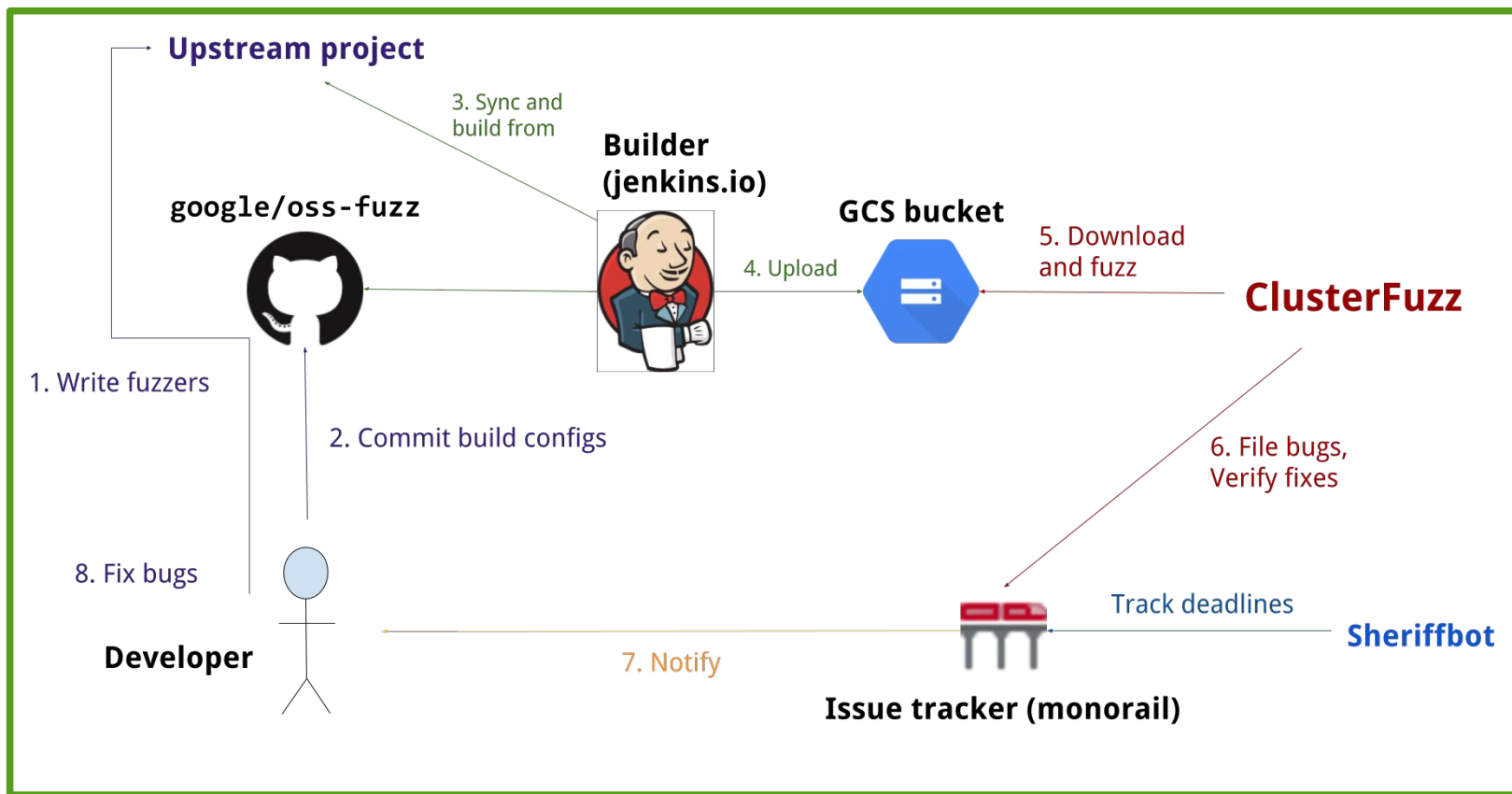
- Feeding a program random data in order to induce faults
- Black box fuzzing assumes nothing about the expectations of the program
- White box fuzzing knows about the underlying formats and protocols



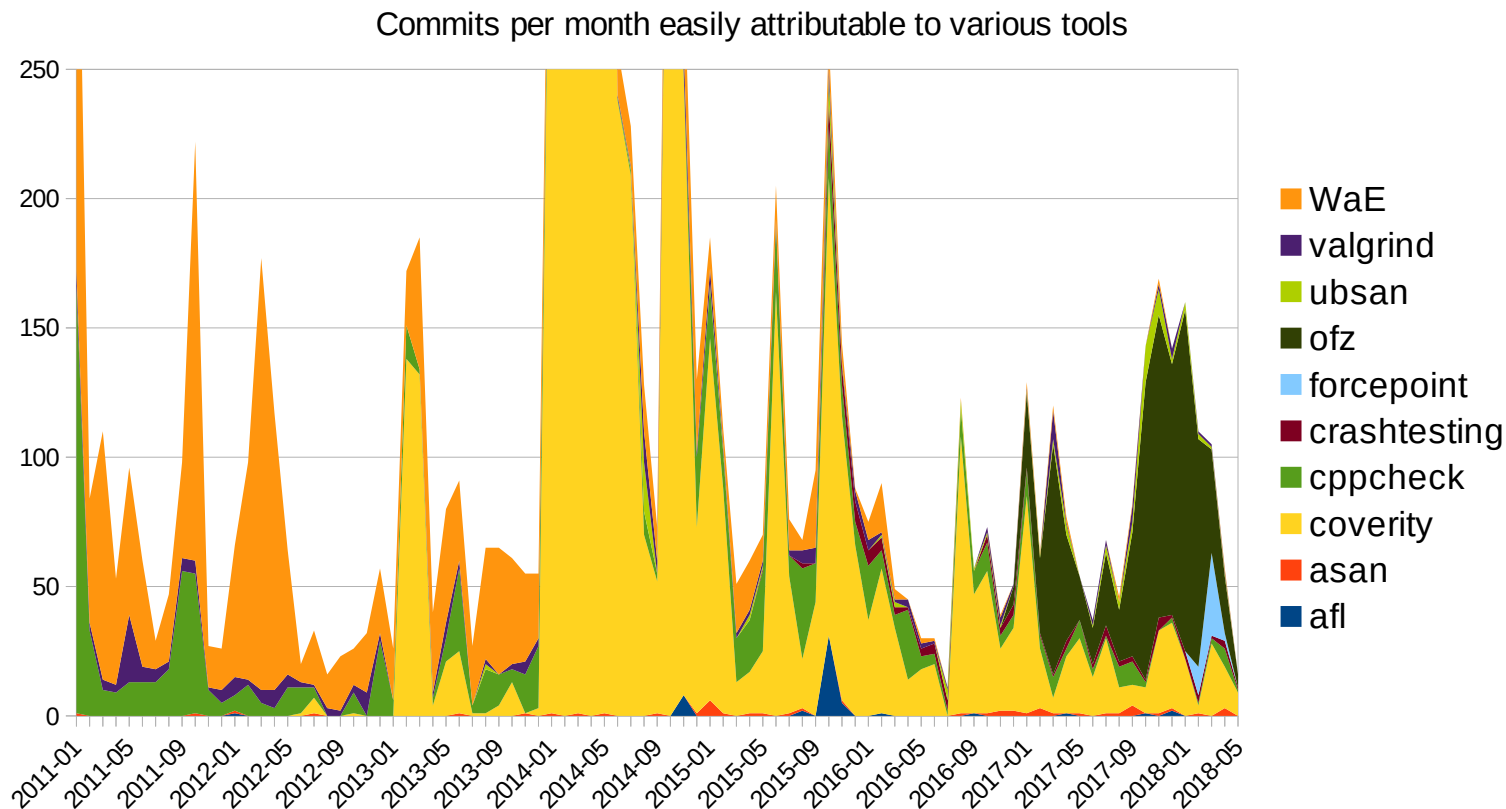
Fuzzing



Google's OSS-Fuzz



Commits Based on Fuzzing



Fuzzing: the Take Home ...

- New tools find new bugs, and the number reduces over time
- Hard to see: not everyone uses consistent git commit tooling references, for instance Crashtesting is badly under-represented



Open Document Format





Open Document Format

the true document standard
which offers freedom of choice



ODF Philosophy

- The philosophy behind the ODF standard document format was to design a mechanism in a "vendor neutral" manner from the ground up using existing standards wherever possible
- Although this means that software vendors would need to tweak their individual packages more than if they continued down their original routes the benefits for interoperability were important enough to justify the move



Open Document Format

- **Independent** from a single product: anyone can write a software that handles an open format
- **Interoperable**: allows the transparent sharing of data between heterogeneous systems
- **Neutral**: it does not force the user to adopt, and often buy, a specific product, but leaves a wide choice based on features and quality versus price ratio
- **Perennial**: protects user developed contents from the “evolution” based obsolescence of technology



ODF Advantages

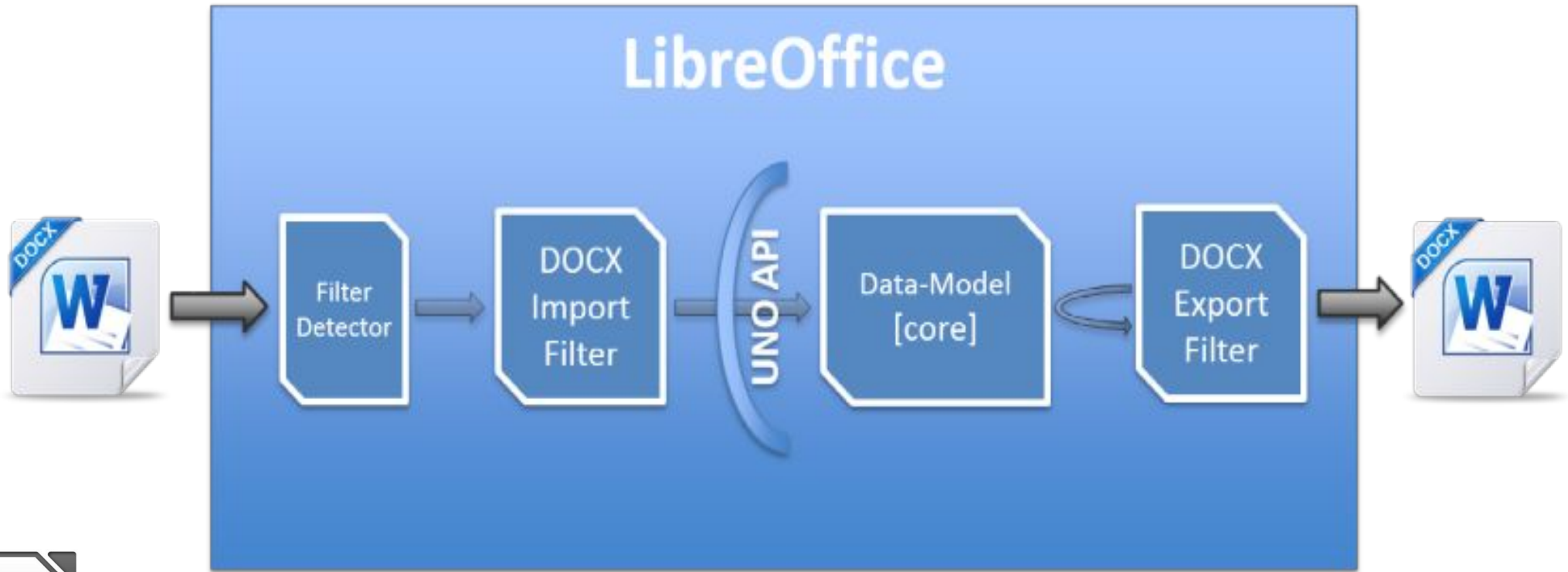
- ODF is solid and robust
- ODF is consistent across OS
- ODF is truly interoperable
- ODF is predictable
- **ODF is the best standard file format for users of personal productivity SW**



Interoperability



Roundtrip Test



Original File



Roundtripped File

- Use Interop libraries provided by Microsoft
- Capture the following details from document:
 - # of Page
 - # of Words
 - # of Characters (no spaces)
 - # of Characters (with spaces)
 - Paragraphs
 - Lines
- Compare the results for Original and Roundtripped files
- Generate the result files

.NET TOOL



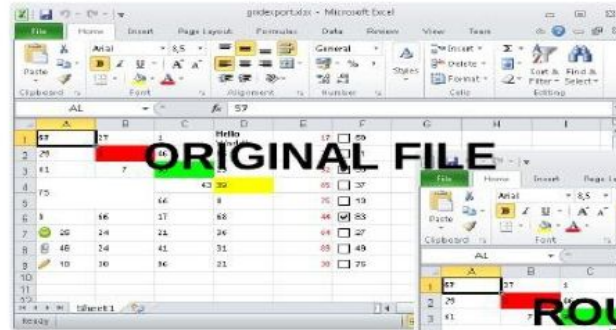
Result CSV



Original File



Roundtripped File



Result CSV

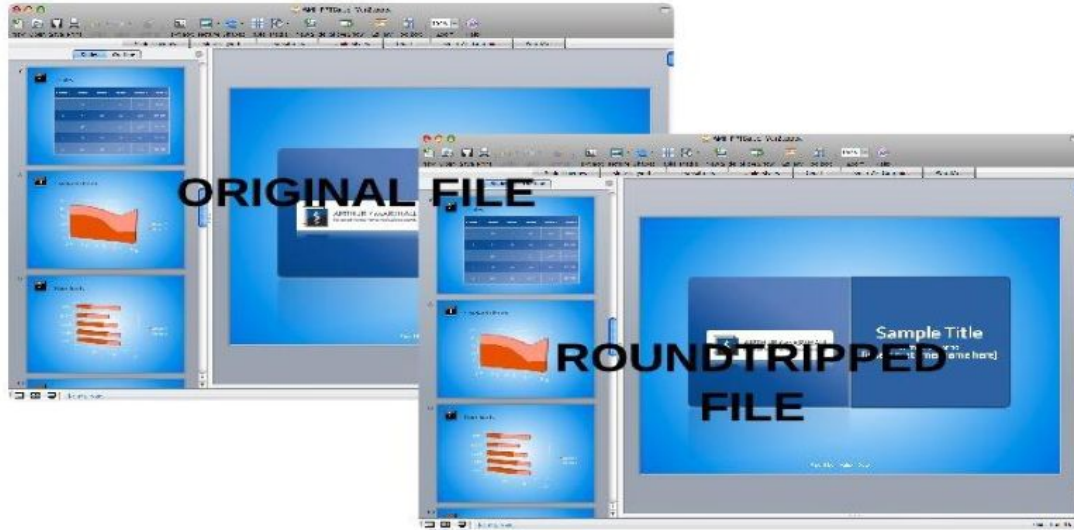
- Scan active grid for following:
 - Cell Values
 - Cell Formulas & Functions
 - Pivot Table & Sorting Metadata
 - Objects / Charts
 - Images / Shapes
- Repeat the same for remaining worksheets (Sheet 2 ... Sheet n)
- Compare values for Original and Roundtripped Files
- Generate the result file



Original File



Roundtripped File

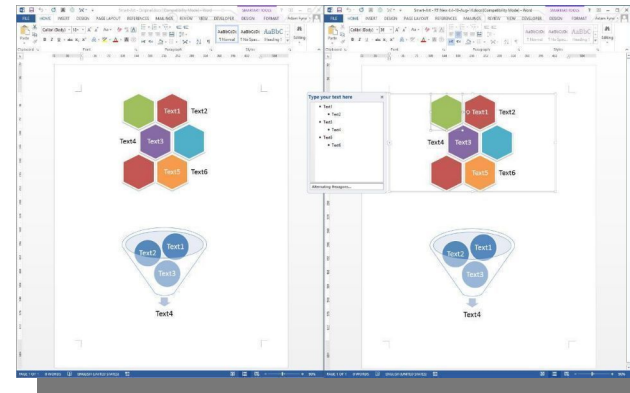
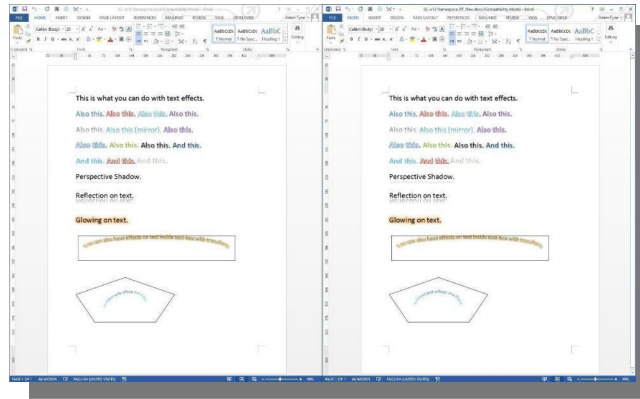
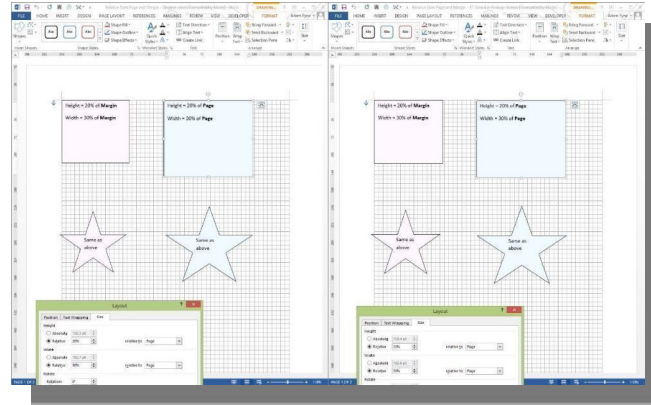
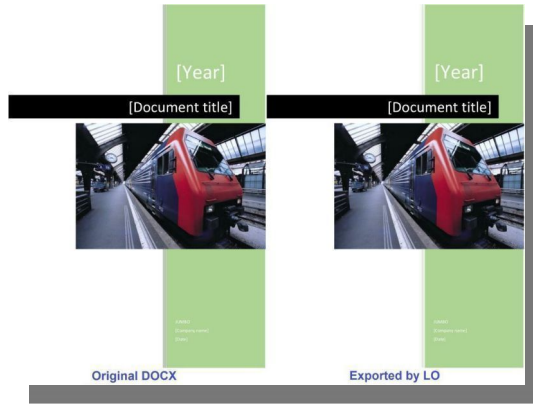


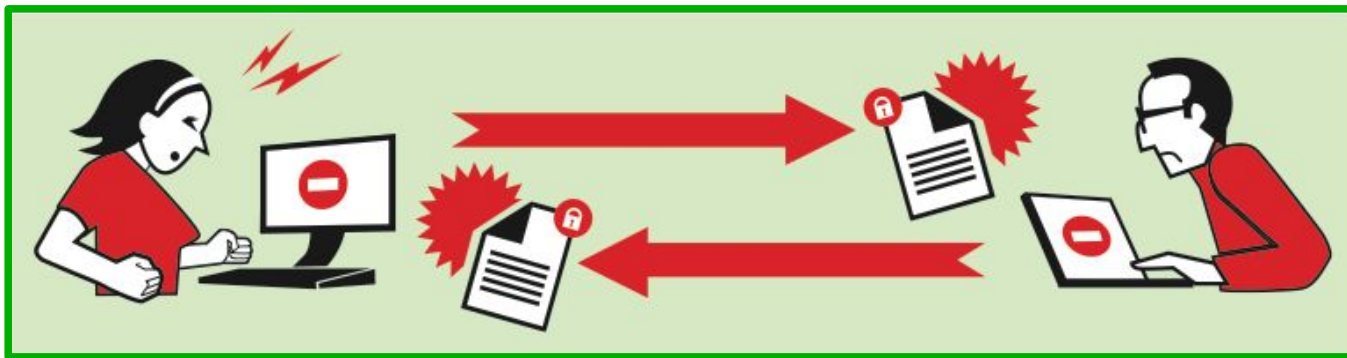
- Scan slides for following:
 - Plain Text
 - Shapes / Images
 - Objects / Charts
 - Master Layouts
- Compare values for Original and Roundtripped Files
- Generate the result file



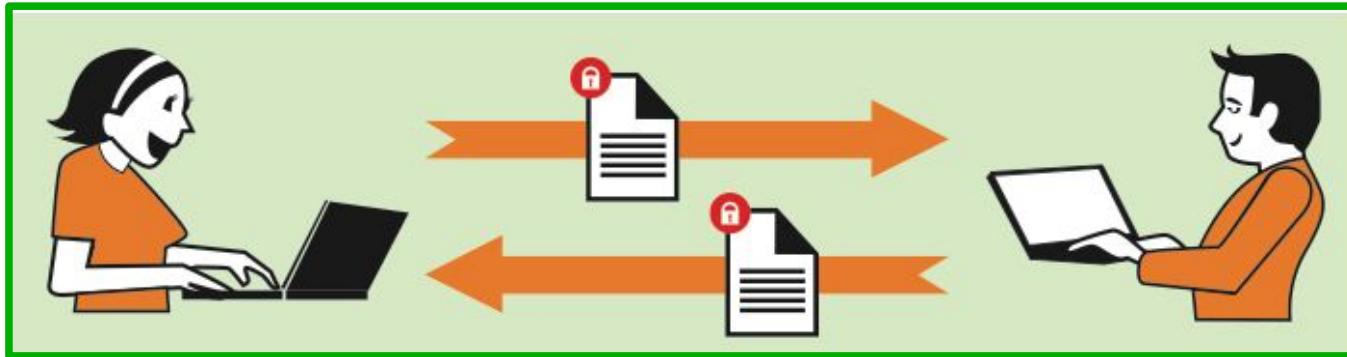
Result CSV

Document Interoperability

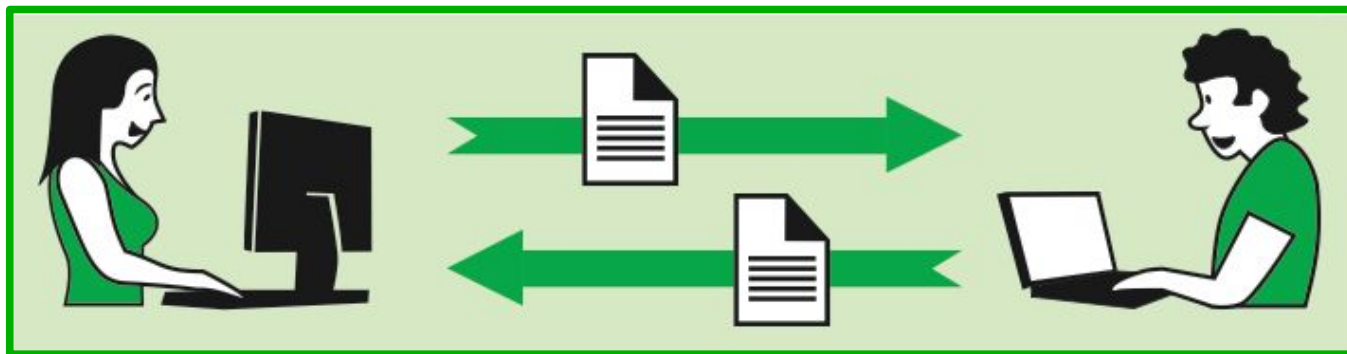




**Proprietary
Document Format
DOC/XLS/PPT**



**Pseudo-Standard
Document Format
DOCX/XLSX/PPTX**



**True Standard
Document Format
ODT/ODS/ODP**



LibreOffice Kit

ScriptForge Libraries



LibreOfficeKit

- LibreOfficeKit can be used for accessing LibreOffice functionality through C/C++, without any need to use UNO
- The essence of the idea is to provide a thin API for LibreOffice, that allows people to write small, external apps without having to compile or link to LibreOffice, and learn UNO or other complex topics
- Allows fast rendering of documents for any application



LibreOfficeKit Elements

CORE REPOSITORY

- **tilebench**: benchmarks document tile rendering
- **android**: used by native (legacy) Java / Fennec app
- **lokdocview**: gtk+ widget to easily re-use LibO in custom gtk+ apps
- **gtktiledviewer**: a demo app for testing / development

ALSO EXTERNAL REPOSITORIES

- **lloconv**: format converter (<https://gitlab.com/ojwb/lloconv>)
- **gnome-documents**: (<https://wiki.gnome.org/Apps/Documents>)
- **COOL**: Collabora Online (<https://github.com/CollaboraOnline/online>)



ScriptForge Libraries

- ScriptForge libraries are an extensible and robust collection of macro scripting resources for LibreOffice to be invoked from user Basic or Python scripts
- ScriptForge libraries help overcome LibreOffice Application Programming Interface (API) steep learning curve, as they offer easy access to and management of actual windows and documents, automation on Calc sheets, cells and ranges of cells, management of dialogs and their controls as well as access to data contained in databases



Recognitions



Future of OSS 2016



Ubuntu 18.04 LTS Default Desktops Applications Survey

Office Suites Category



LibreOffice Technology

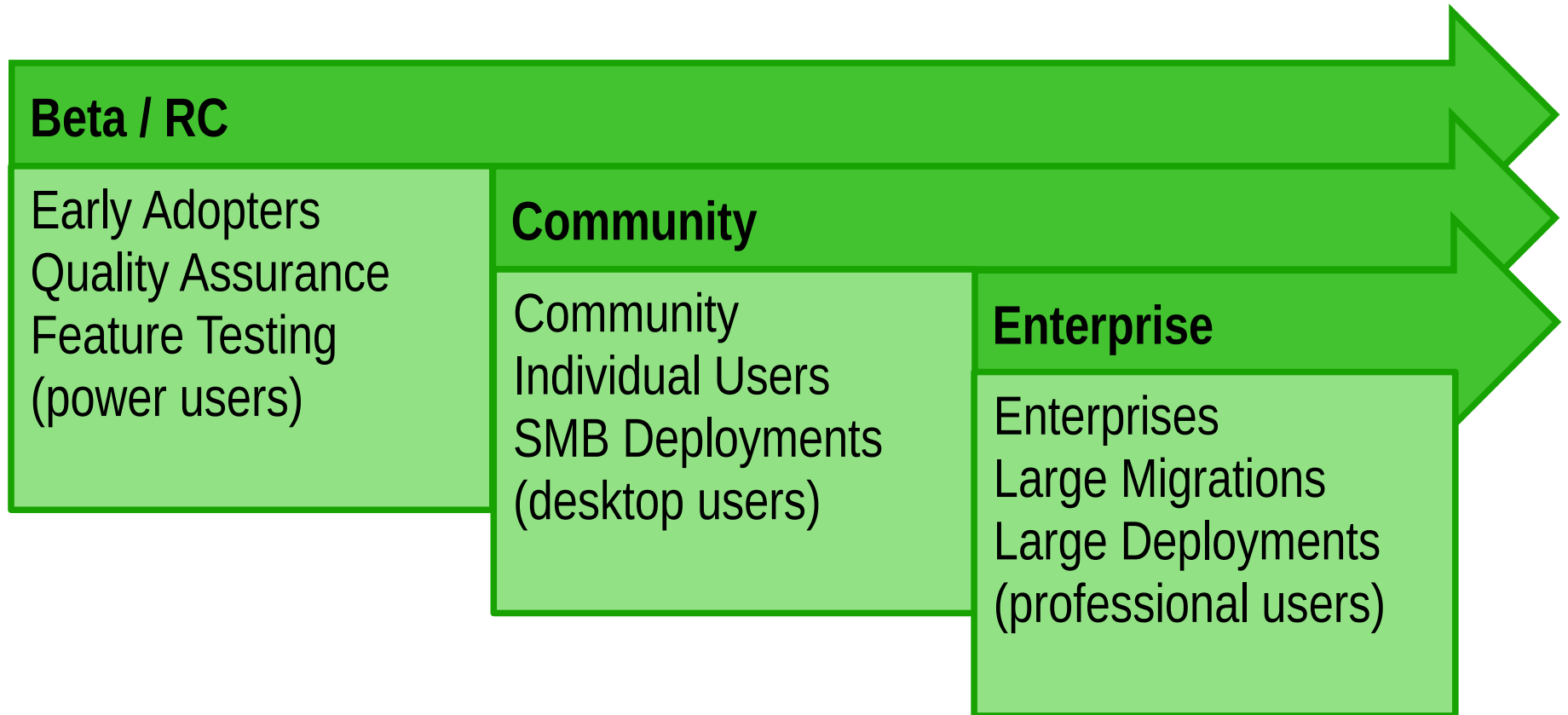


LibreOffice: Product to Platform

- 2010: LibreOffice only for the Desktop
- 2020: LibreOffice for the Desktop, LibreOffice LTS optimized for Enterprises, LibreOffice Online for the Cloud, LibreOffice Mobile for Android & iOS, and LibreOffice for Chrome OS
- All these products, from different organizations, share the same engine, which is common to all modules



LibreOffice Versions & Users



LibreOffice Technology

- LibreOffice Technology is the result of 10 years of development in the right direction
 - Same processing engine common to all modules
 - Based on a cleaned and refactored source code
 - With a focus on code quality and consistency
 - Supported by easy and extensive APIs
- The best open source platform for personal productivity tightly integrated on desktop, mobile and cloud



Desktop Platforms

Writer UI	Calc UI	Impress UI	Draw UI
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Mobile Platforms

Writer UI	Calc UI	Impress UI	Draw UI
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Cloud Platforms

Writer UI	Calc UI	Impress UI	Draw UI
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Open Document Format (ODT / ODS / ODP / ODG)

Common Productivity Engine



LibreOffice
The Document Foundation

WP UI	SS UI	PS UI
DOCX	XLSX	PPTX
WP Engine	SS Engine	PS Engine

Desktop Platforms

WP UI	SS UI	PS UI
DOCX	XLSX	PPTX
WP Engine	SS Engine	PS Engine

Mobile Platforms

WP UI	SS UI	PS UI
DOCX	XLSX	PPTX
WP Engine	SS Engine	PS Engine

Cloud Platforms

Proprietary and Open Core Office Suites

LibreOffice Technology Based SW

- Desktop (TDF, Red Hat & SUSE)
- Enterprise LTS (Collabora & CIB)
- Online / Cloud (Collabora & CIB)
- Android (Collabora)
- iOS & Apple Store (Collabora)
- Windows Store (CIB)



LibreOffice USP

- The best open source office suite ever, backed by a strong community and a strong ecosystem
- Based on the ODF ISO standard document format for interoperability and digital sovereignty, and providing a superior compatibility with proprietary document format
- The best of FOSS, with professional support available for organizations using office productivity for production and management of strategic business contents



Thanks

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