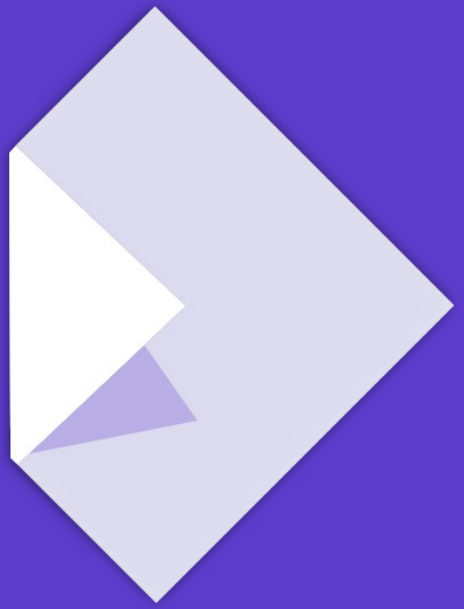
CS3 2020

Bringing Collabora Online to your web-app

its easy ...



Collabora Productivity

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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

What is Collabora Online ?

Documents + Spreadsheets + Slides

- Viewing and Collaborative editing; **Web, Tablet, Phone**

Excellent interoperability with Microsoft formats

- DOCX, DOC, RTF, XLSX, XLS, PPTX, PPT

Many other filters - PDF, Visio, Publisher ...

Powerful WYSIWG rendering, built on **LibreOffice core**

On-premise Integration with your existing EFSS.

- ownCloud, Nextcloud, Seafile, pydio,
  or LMS: Moodle, or chat: Mattermost etc.

Architecture – a bet on CPU threads & network … getting cheaper.

How to get something running fast:

- Install CODE on a dedicated server
  - https://www.collaboraoffice.com/code/
- Setup the SSL for the https access
- Install the integration between your document storage and the Online
  - Or if your are integrating yourself, implement the REST endpoints
  - And modify your webapp to add iframe for the Online
- Enjoy the success! :-)

  Or maybe you have an additional need before you are completely happy with Online in your webapp?

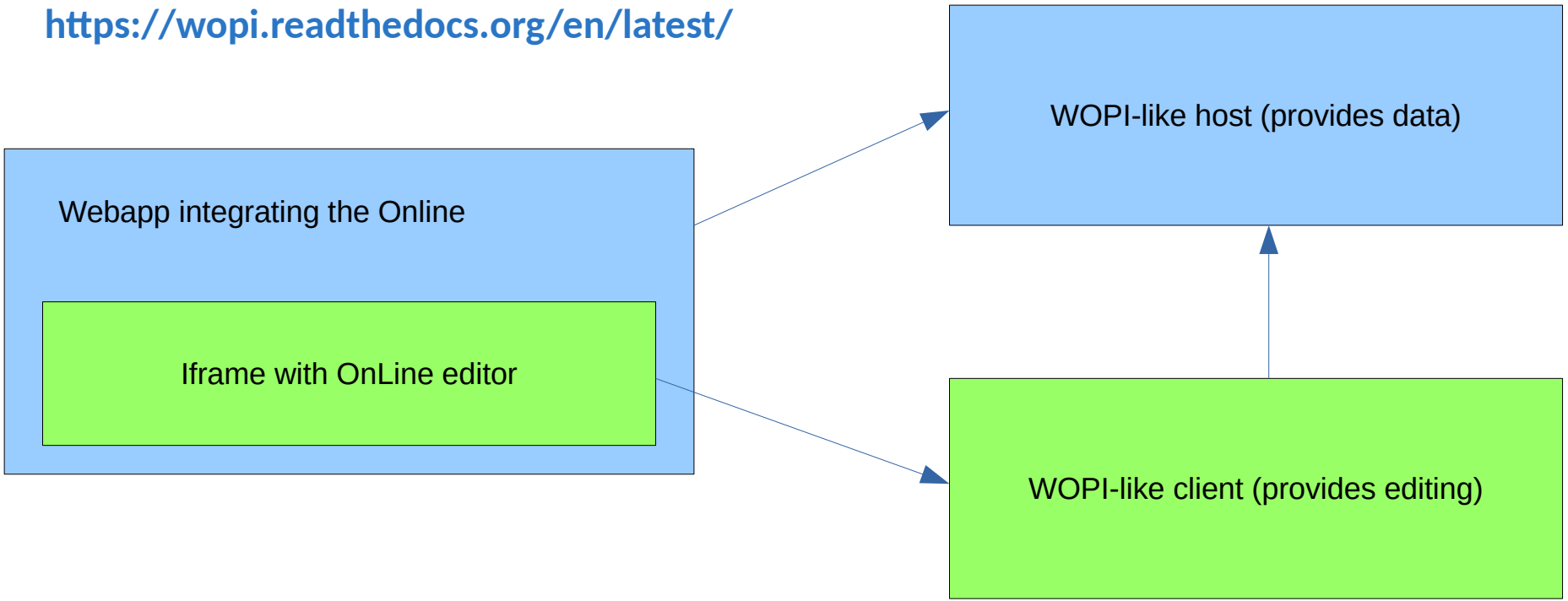
Or build it yourself ...

```
$ git clone
https://git.libreoffice.org/online

$ make run

Launch one of these in your browser: ...
```

File access & Auth like WOPI

The Online uses a WOPI-like protocol

https://wopi.readthedocs.org/en/latest/



REST endpoints

To download the file:

- GET https://<WOPI host URL>/<...>/wopi*/files/<id>/contents?access_token=<token>

Upload back:

- POST https://<WOPI host URL>/<...>/wopi*/files/<id>/contents?access_token=<token>

CheckFileInfo to provide information about the file:

- https://<WOPI host URL>/<...>/wopi*/files/<id>?access_token=<token>

Security token

To be able to access files securely, an authentication token has to be passed to the Online

- From the Online point of view, it can be any random number / string that will be passed as part of the URL when accessing the document storage

Should be generated according to the user who is logged in + the document

- But don’t make it possible to guess the token!
- The ideal is to maintain a list on the server + have a random number (mapped to the element in the list) as the token

JavaScript part – embedding the iframe

The Connector connects to the discovery service

- To get the information about how to initiate the iframe, the 1st call has to be an access to a “discovery” xml
  - In theory, different document types can be served by different servers

Then create the iframe that contains the Online

- Has to be provided with the access token via a POST request
- And then only gets called back when the document is closed again

Recommended steps

- Add WOPI REST endpoints to your web service, for the moment returning only a “Hello World” message.
- Implement the CheckFileInfo endpoint
- Now you can see a constructed document containing just “Hello World” in the Online in a simple HTML page:
  - <html><body>
    <form action="WOPISrc=https://<WOPI host URL>/<...>/wopi/files/<id>" enctype="multipart/form-data" method="post">
    <input name="access_token" value="test" type="hidden"/>
    <input type="submit" value="Load Collabora Online"/>
    </form></body></html>
- In your webapp, create an iframe that embeds the Online
- Implement the real access_token handling
- Update the REST endpoints to actually load real data
- Implement the PutFile endpoint to really save the data

PostMessage magic ...

Tweak loolwsd.xml

```
<net desc="Network settings">

  <frame_ancestors desc="Specify who is allowed to
   embed the LO Online iframe (loolwsd and WOPI host
   are always allowed). Separate multiple hosts
   by space.">localhost:*</frame_ancestors>
```

A little inelegant, but tests cross-site-scripting bits by default.

postMessage:
https://localhost:9980/loleaflet/dist/framed.doc.html?file_path=/.../hello-world.ods

Online Editor - Google Chrome (on d

Online Editor

Not secure | localhost:9980/loleaflet/dist/framed.doc.html?file_path=/opt/libreoffice/online/test/data/hello-world.ods

Hide Save Commands | Show Save Commands
Hide Print Commands | Show Print Commands

Disable default save action
Enable default save action

Modified Status: Saved

UI modification

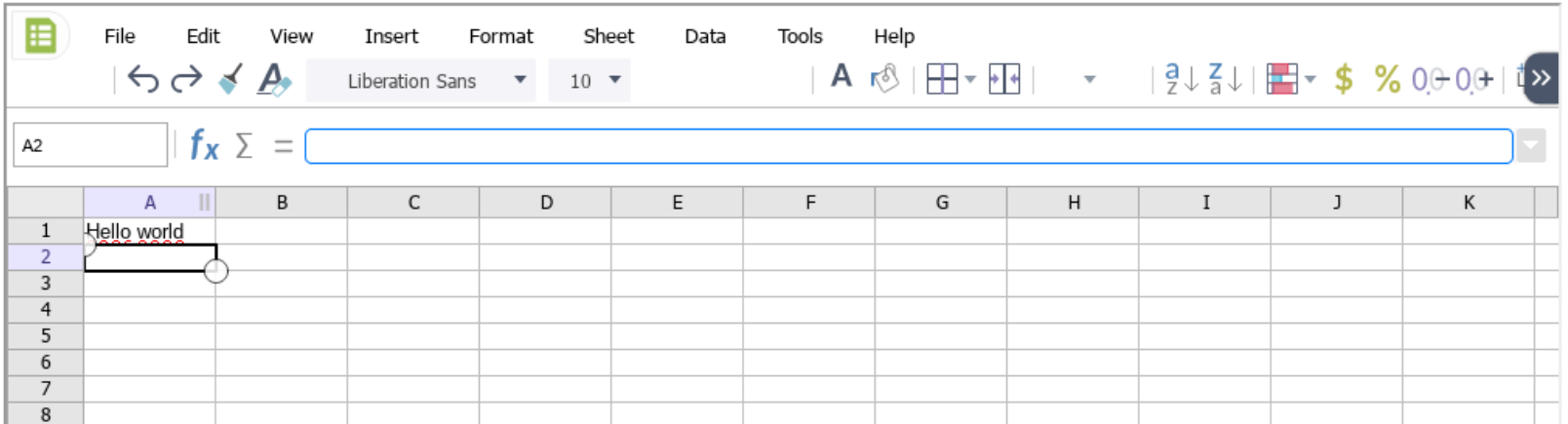
Hide Menubar | Show Menubar

Document frame

If the frame fails to load click here and accept security bits

Play with postMessage control ...

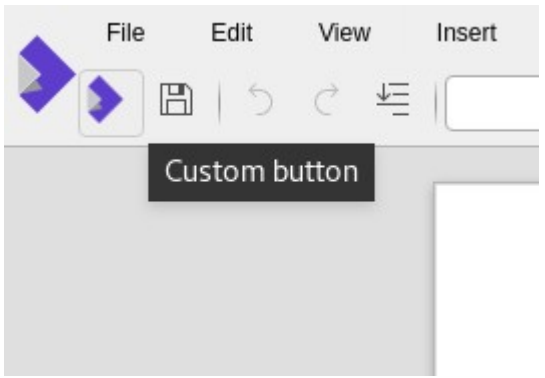
Demo ...



Extending without Touching the Online Code

Sometimes the functionality is too specific to the integration via postMessage

- It’s possible to add a button to the toolbar via a message
- And react on the user pressing it
- See loleaflet/reference.html



postMessage API

For signalling from the iFrame back to the parent frame.

- You can use this after all the JS is loaded – which is signalled by App_LoadingStatus with Status “Frame_Ready”. When that happens, the parent has to send Host_PostmessageReady.
- Then for inserting a button, the host can use Insert_Button
- Each time the button is pressed, the host receives a message Button_Clicked with the id of the button.

CheckFileInfo extensions – to enable or disable features

Most of them were added thanks to a customer request:

- **HidePrintOption, HideSaveOption, HideExportOption:** Hide the appropriate options in the file menubar
- **DisableExport:** Disables export functionality in backend. If set to true, HideExportOption is assumed to be true
- **DisableCopy:** Disables copying from the document in libreoffice online backend. Pasting into the document would still be possible. However, it is still possible to do an "internal" cut/copy/paste.
- **DisableInactiveMessages:** Disables displaying of the explanation text on the overlay when the document becomes inactive or killed. With this, the JS integration must provide the user with appropriate message when it gets Session_Closed or User_Idle postMessage's.
- **DownloadAsPostMessage:** Indicate that the integration wants to handle the downloading of pdf for printing or svg for slideshows or experted document, because it cannot rely on browser's support for downloading.
  - When this is set to true, the user's eg. Print action will trigger a postMessage called Download_As, with the following JSON in the Values:
- **EnableOwnerTermination:** If set to true, it allows the document owner (the one with OwnerId =UserId) to send a 'closedocument' message (see protocol.txt)
- **UserExtraInfo:** JSON object that contains additional info about the user, namely the avatar image.
  - Example: 'UserExtraInfo' => ['avatar' => 'http://url/to/user/avatar', 'mail' => 'user@server.com']
  - Note: There is strict Content Security Policy that restricts image resources (img-src), therefore the avatar URL must not violate the CSP, otherwise it will show as broken images.
- **WatermarkText:** If set to a non-empty string, is used for rendering a watermark-like text on each tile of the document

Examples:

give in to peer pressure: all your friends have !

Alfresco

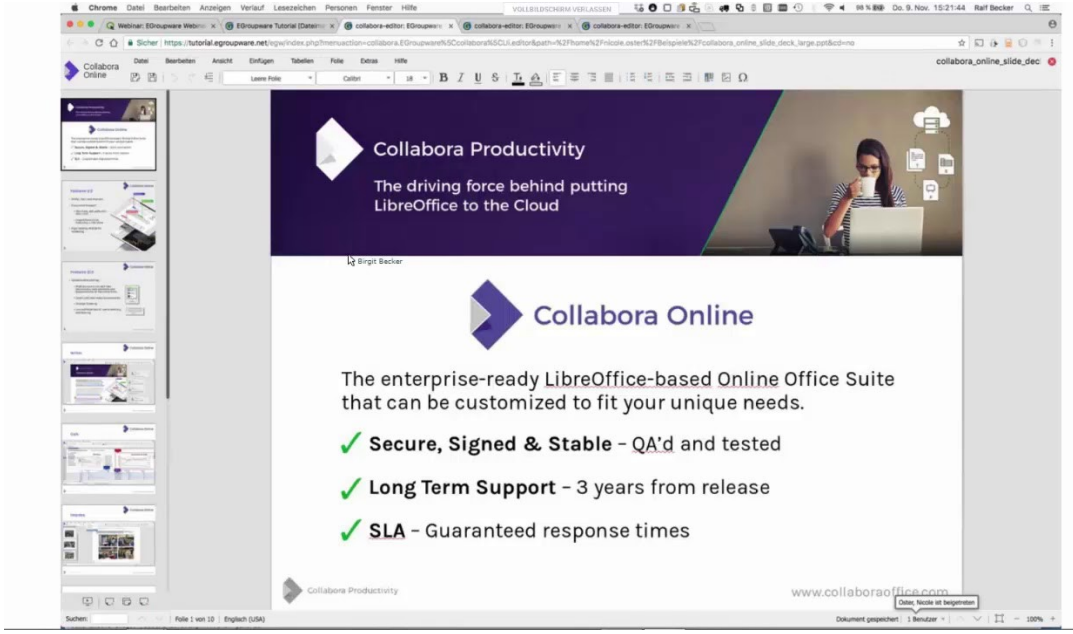
Alfresco connector available thanks to Arawa

- Introduced by Philippe Hemmel at this conference
- Implemented in Java
- To match their integration needs, Collabora has implemented support for monitoring the loolwsd health
    - Several Online nodes can connect to one central place that collects the state

EGroupware

Connector available thanks to eGroupware from their repository

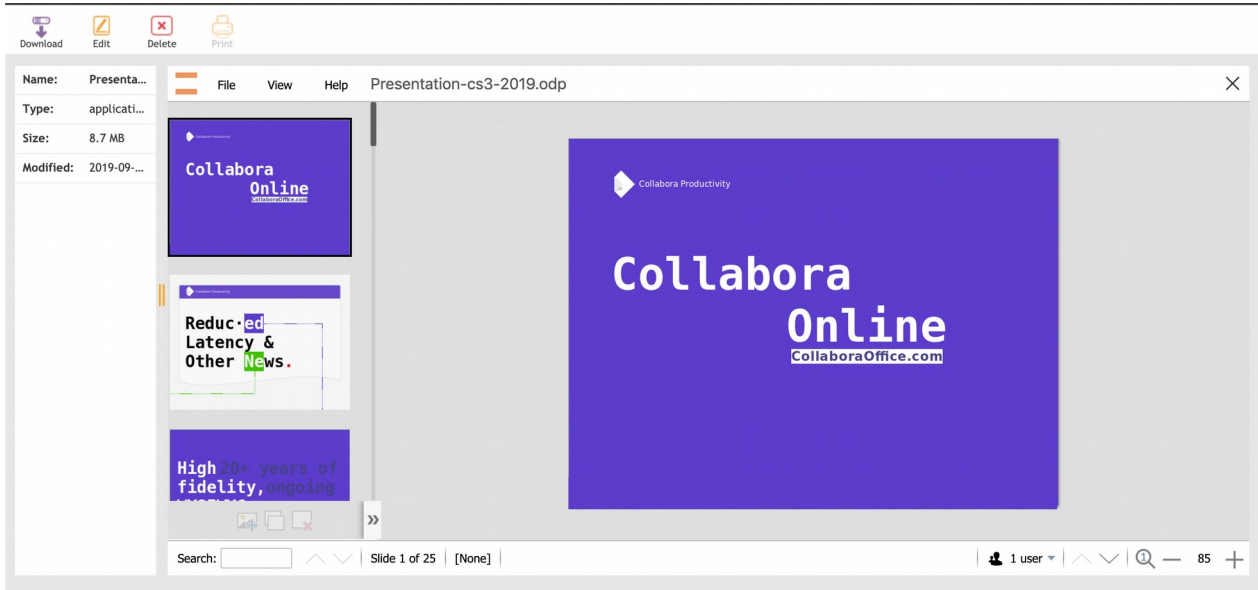
- https://github.com/EGroupware/collabora
- Implemented in PHP + JavaScript
- To match their integration needs, we have
  - Improved the printing in Firefox
  - Updated dockerfiles



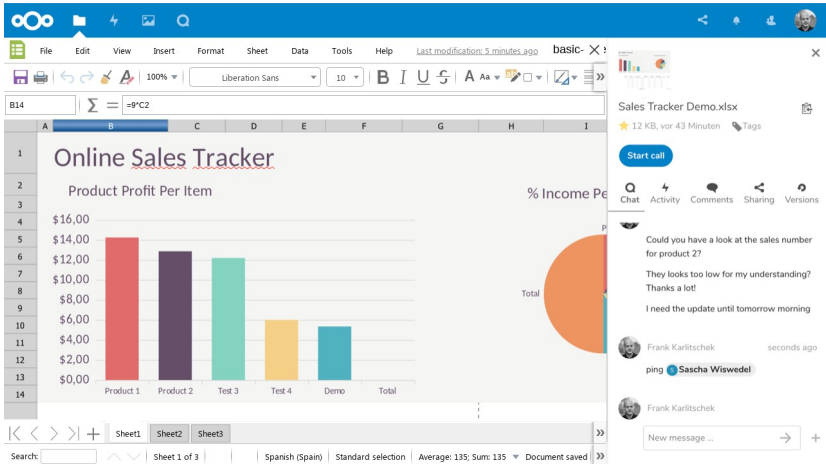
Kolab

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



Nextcloud



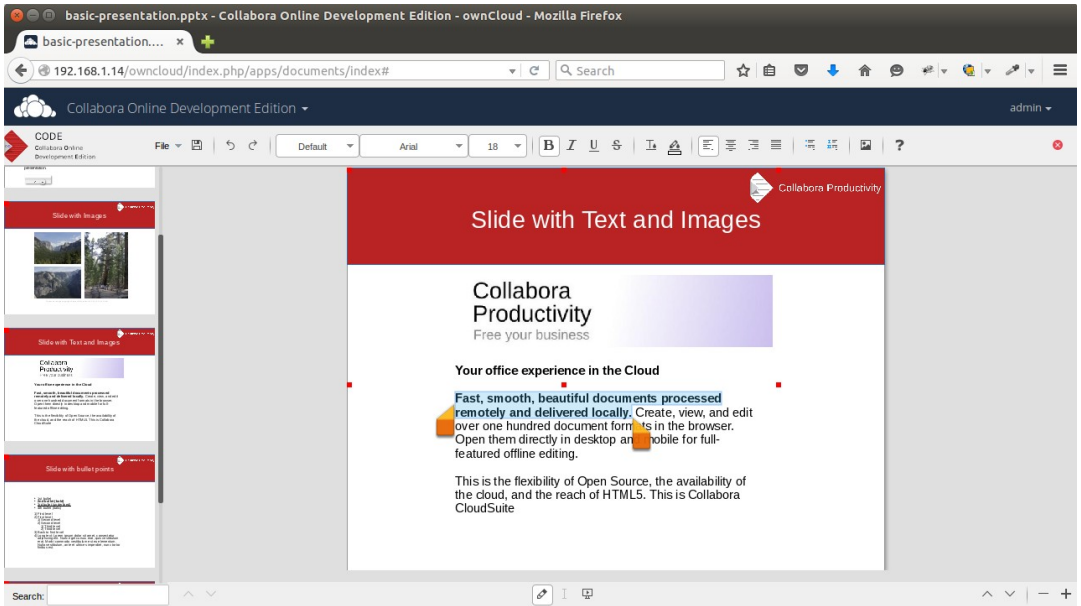
Connector originally developed by Collabora, but now with features from Nextcloud

- https://github.com/nextcloud/richdocuments
- Implemented in PHP and JavaScript
- Many features in the Online were implemented to match the Nextcloud's integration needs, like:
  - 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

Originally implemented by Collabora, now with features from ownCloud.

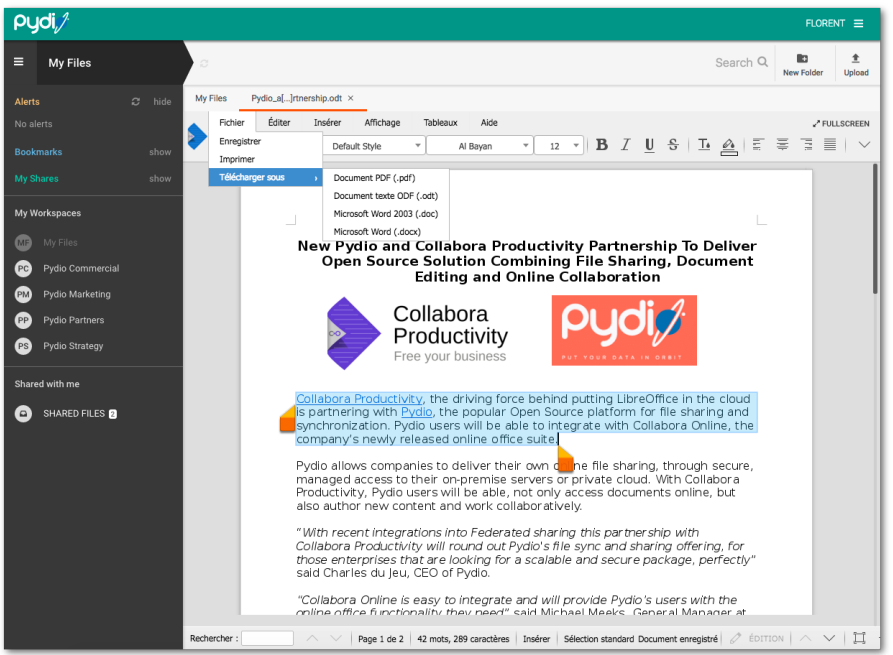
- https://github.com/owncloud/richdocuments
- Implemented in PHP and JavaScript
- To match their integration needs, we are improving Watermarking substantially
  - So that each user in a document can have a different, dedicated watermark



Pydio

Available thanks to Pydio

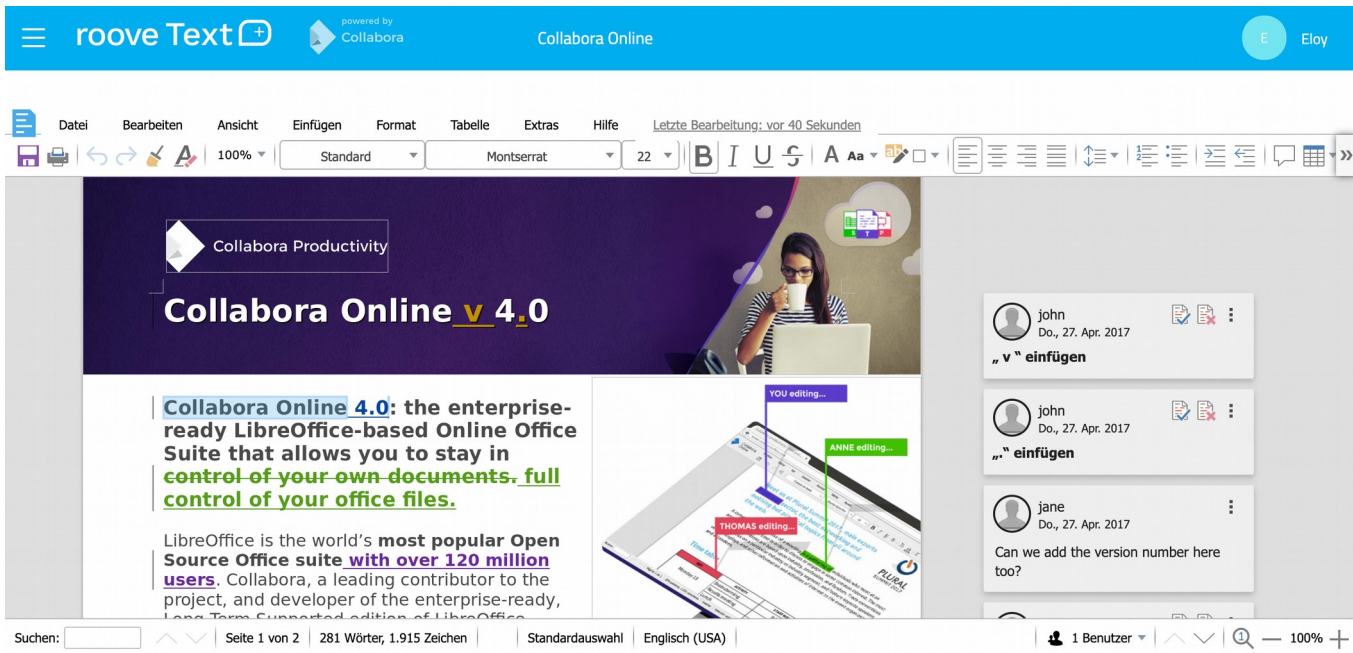
- https://github.com/pydio/pydio-core/tree/develop/core/src/plugins/editor.libreoffice
- Implemented in PHP and JavaScript
- To match their integration needs, we had to extend what characters can be used in the access_token



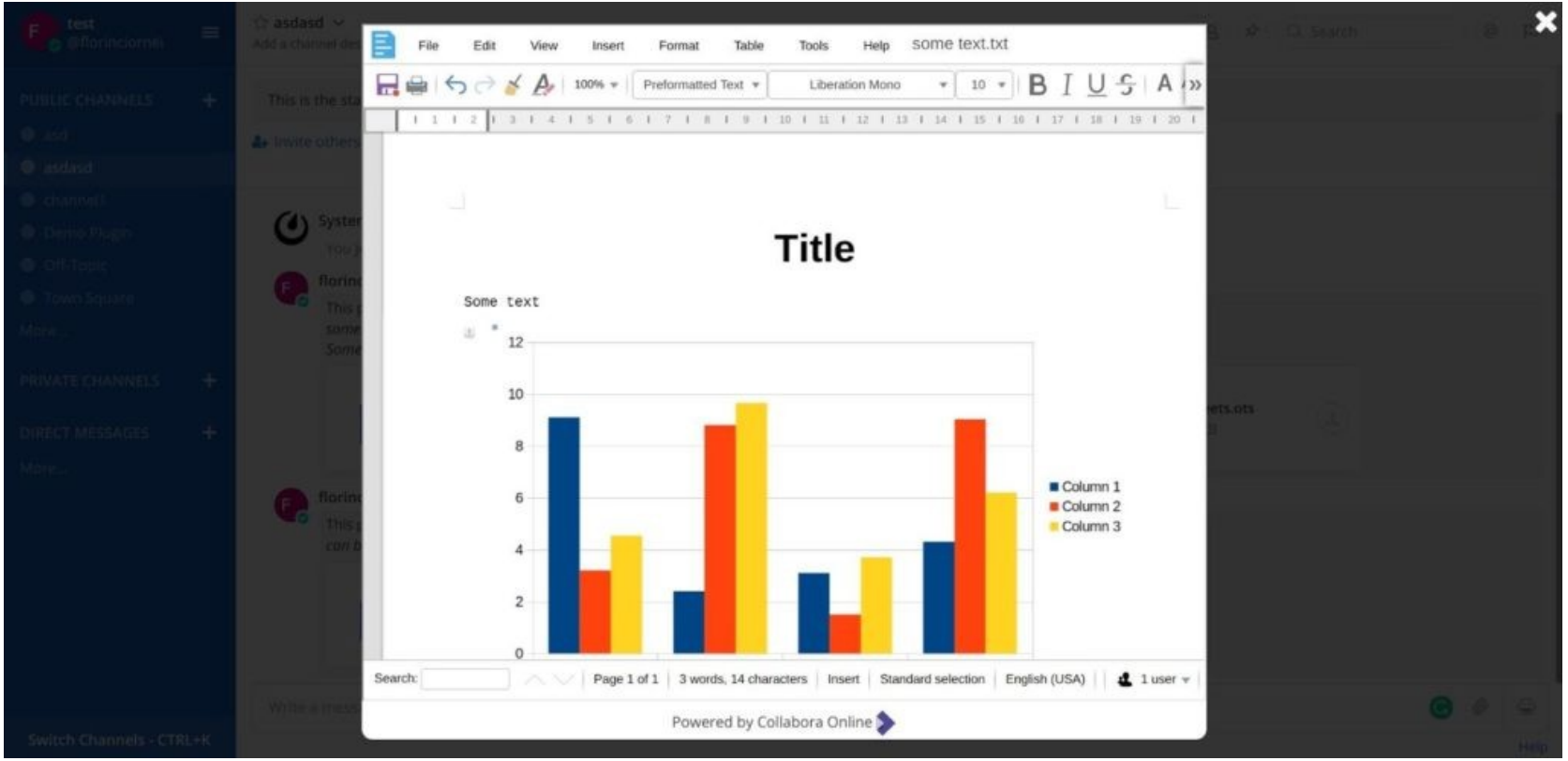
Roove

Connector implemented by SoftDistribution

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



Mattermost


File
Edit
View
Insert
Format
Table
Tools
Help
some text.txt
Preformatted Text
Liberation Mono
Title
Some text
Column 1
Column 2
Column 3
Search:
Page 1 of 1
3 words, 14 characters
Insert
Standard selection
English (USA)
1 user
Powered by Collabora Online

I love to help people do this

just contact me

Implemented for Collabora Online 4.2 *(due ~Feb)*

shipping in CODE now

File Edit View Insert Format Table Slide Slide Show Tools Help Last modification: 5 minutes ago

Title, Content | Carlito | 29

What is Collabora Online ?

Documents + Spreadsheets + Slides

- Viewing and Collaborative editing

Excellent interoperability with Microsoft formats

- DOCX, DOC, RTF, XLSX, XLS, PPTX, PPT

Many other Import filters / Viewing for

- PDF, Visio, Publisher ...

Powerful WYSIWG rendering

On-premise Integration with your EFSS.

Architecture – a bet on CPU threads & network ...

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Character

Carlito | 29

Paragraph

Spacing: Indent:

0.00 " 0.00 "

0.00 " 0.00 "

0.00 "

Area

Shadow

Line

Position and Size

Search | Slide 2 of 41 | English (UK) | 50

File Edit View Insert Format Table Slide Slide Show Tools Help Last modification: 49 seconds ago

Title, Content | Carlito | 40

What is Collabora Online ?

Documents + Spreadsheets + Slides

- Viewing and Collaborative editing

Excellent interoperability with Microsoft formats

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What is Collabora Online ?
Entrance: Fly In

Category: Entrance

Effect: Basic
Appear
Fly In
Venetian Blinds
Box
Checkerboard
Circle

Start: On click

Direction: From bottom

Duration: 0.50 sec

Delay: 0.0 sec

Search | Slide 2 of 41 | English (UK) | 50

File Edit View Insert Format Table Slide Slide Show Tools Help Last modification: 1 minutes ago

Title, 2 Content over Content | Carlito | 18

Click to add Title

Click to add Text

Click to add Text

Click to add Text

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Slide

Format: Screen 16:9

Orientation: Landscape

Background: None

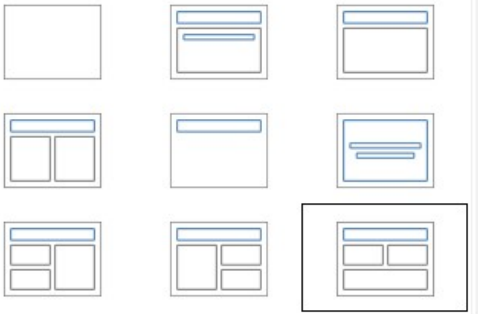
Master Slide: Content_Context_Image_2

Master Background

Master Objects

Master View

Layouts



Search | Slide 3 of 42 | English (UK) | 50

File Edit View Insert Format Table Slide Slide Show Tools Help Last modification: 1 minutes ago

Layout Carlito 18

Title Area for AutoLayouts

Click to edit the title text format

Click to edit the outline text format

- Second Outline Level
  - Third Outline Level
    - Fourth Outline Level
      - Fifth Outline Level
        - Sixth Outline Level
          - Seventh Outline Level
            - Eighth Outline Level
              - Ninth Outline Level

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Used in This Presentation

Recently Used

Available for Use

Search Slide 6 of 42 English (UK) 50

Cleaner theming: status bar

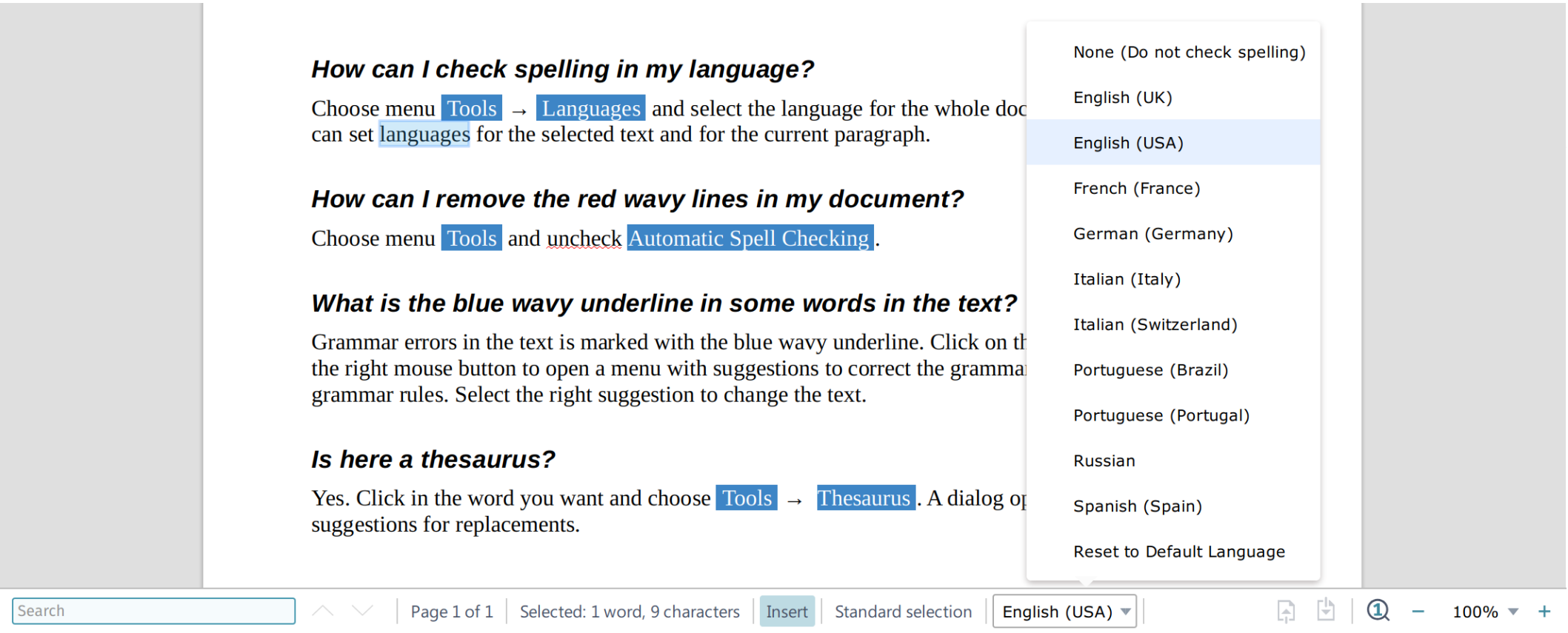
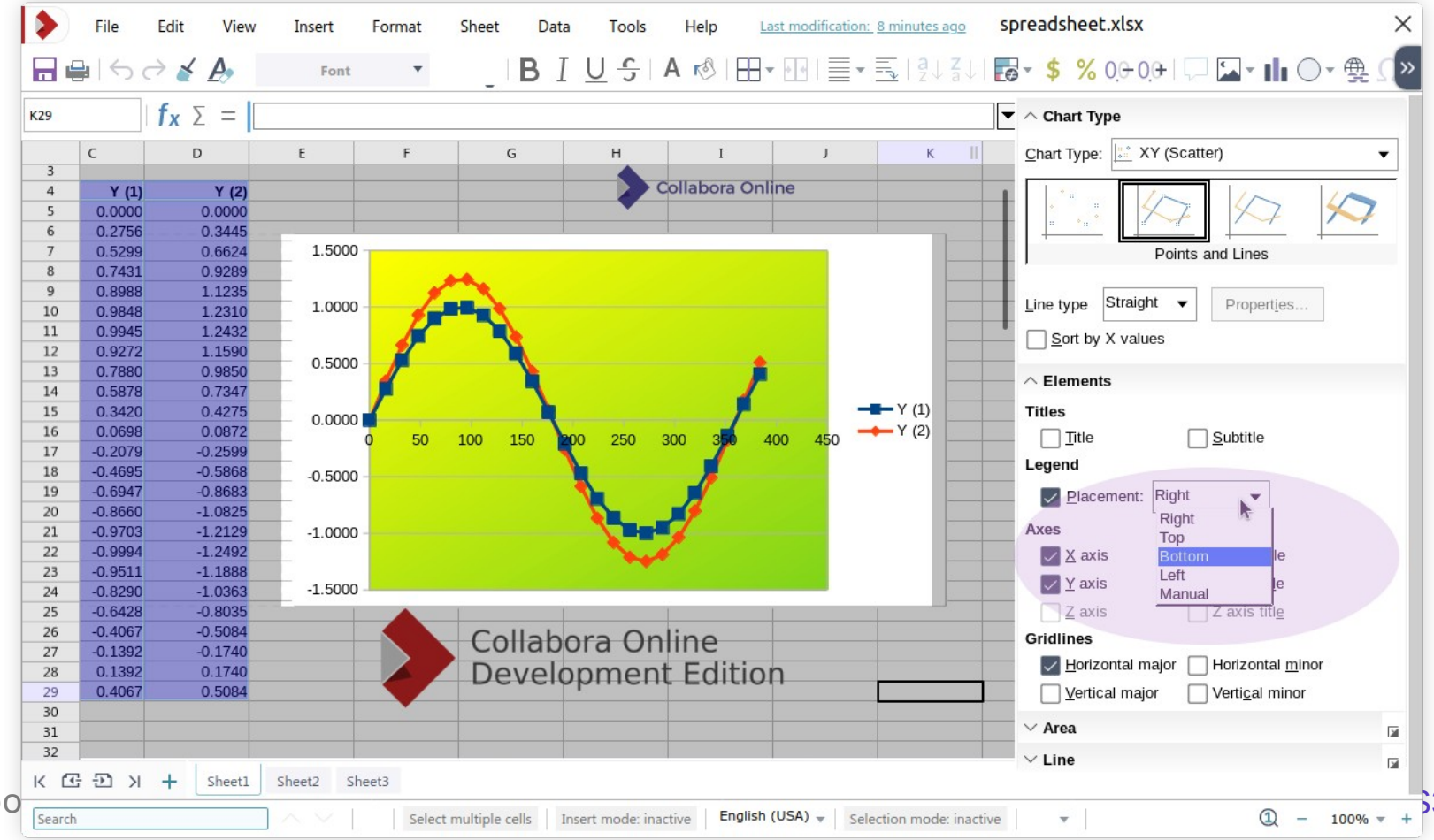
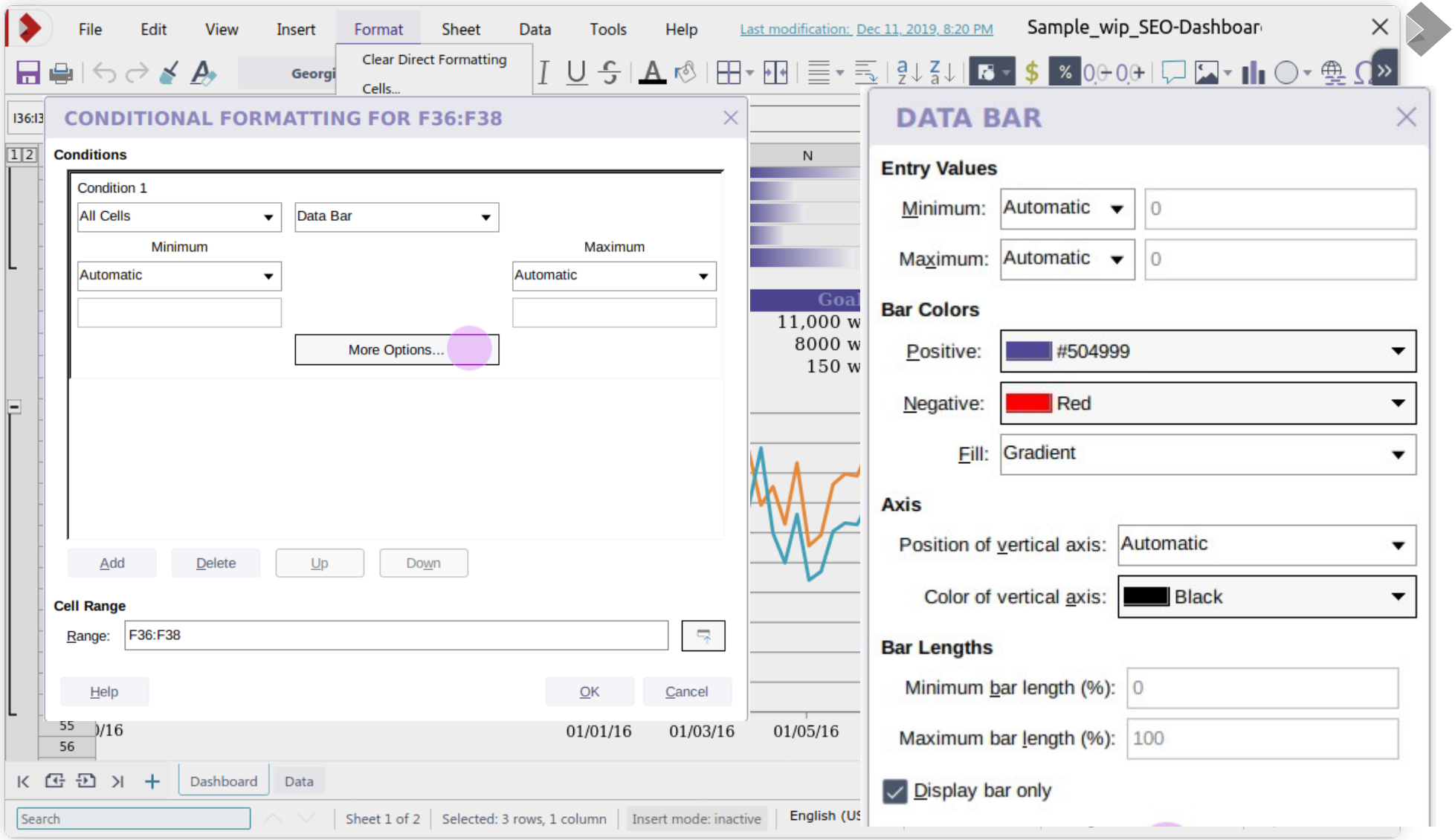
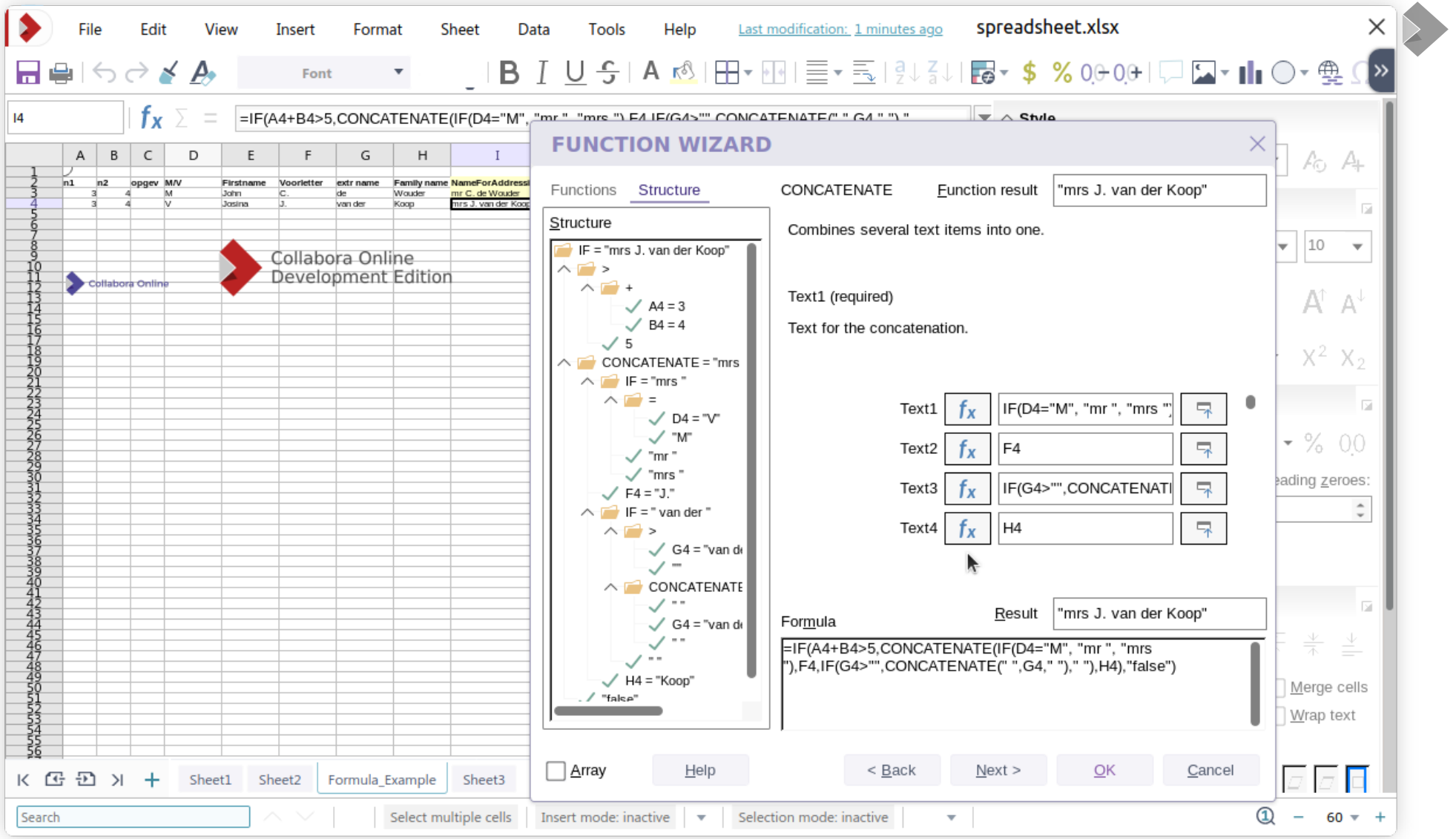
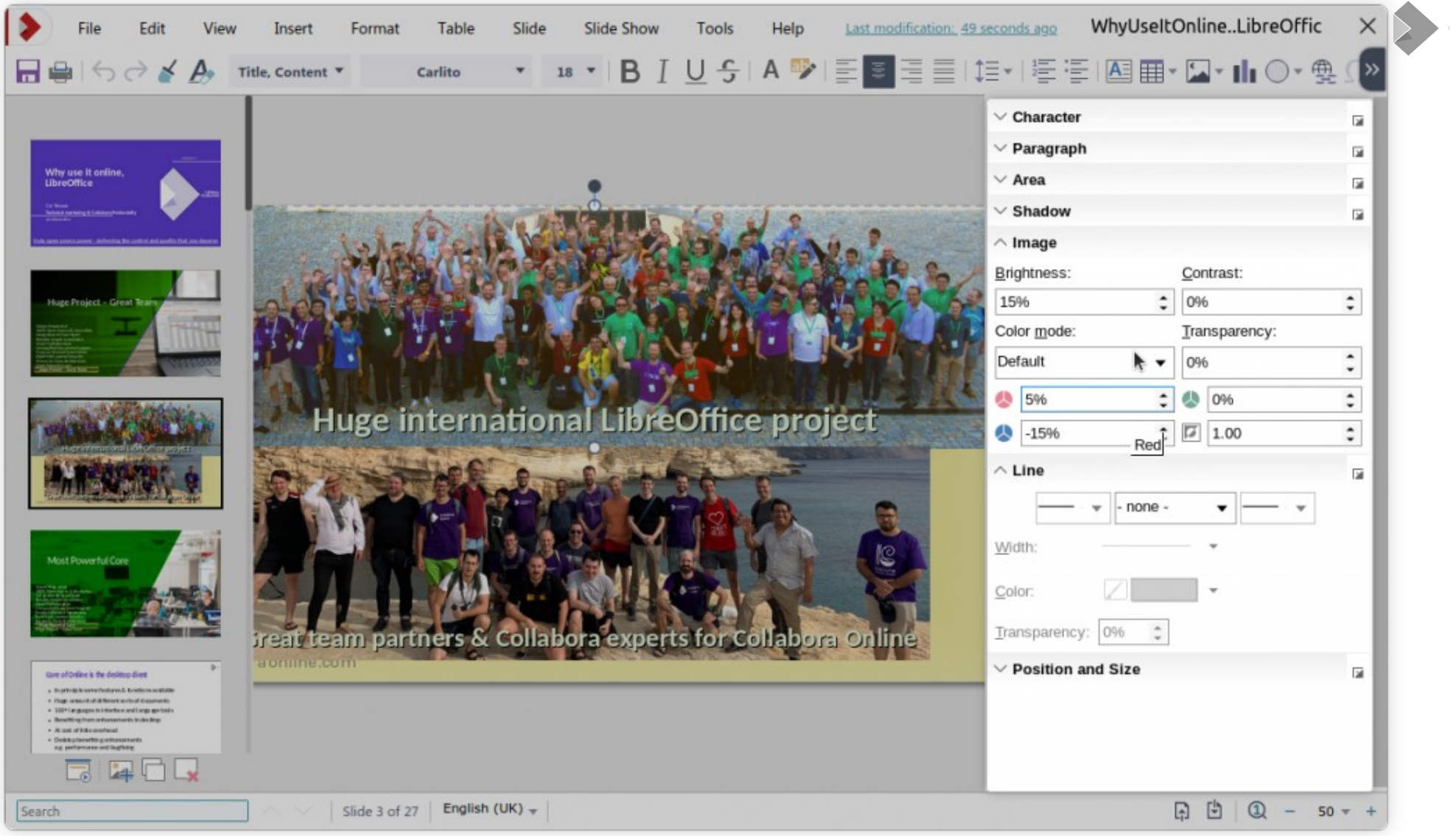


Chart OLE editing highlight & Chart Sidebar

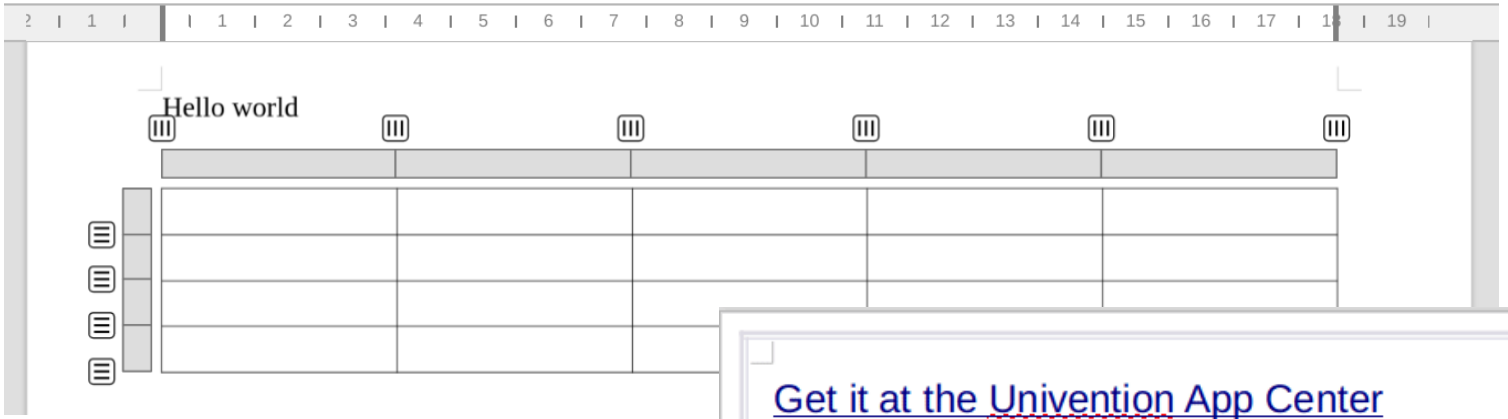


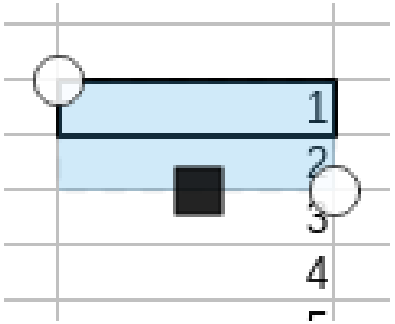

File
Edit
View
Insert
Format
Sheet
Data
Tools
Help
Last modification: Dec 11, 2019, 8:20 PM
Sample_wip_SEO-Dashboar
Clear Direct Formatting
Cells...
CONDITIONAL FORMATTING FOR F36:F38
Conditions
Condition 1
All Cells
Data Bar
Minimum
Automatic
Maximum
Automatic
More Options...
Add
Delete
Up
Down
Cell Range
Range:
F36:F38
Help
OK
Cancel
DATA BAR
Entry Values
Minimum:
Automatic
0
Maximum:
Automatic
0
Bar Colors
Positive:
#504999
Negative:
Red
Fill:
Gradient
Axis
Position of vertical axis:
Automatic
Color of vertical axis:
Black
Bar Lengths
Minimum bar length (%):
0
Maximum bar length (%):
100
Display bar only
01/01/16
01/03/16
01/05/16
Dashboard
Data
Search
Sheet 1 of 2
Selected: 3 rows, 1 column
Insert mode: inactive


File Edit View Insert Format Sheet Data Tools Help
Last modification: 1 minutes ago
spreadsheet.xlsx
Font
I4
=IF(A4+B4>5,CONCATENATE(IF(D4="M", "mr ", "mrs "),F4,IF(G4>"",CONCATENATE(" ",G4," "),"),H4),"false")
Collabora Online
Development Edition
Collabora Online
FUNCTION WIZARD
Functions
Structure
CONCATENATE
Function result
"mrs J. van der Koop"
Structure
IF = "mrs J. van der Koop"
>
+
A4 = 3
B4 = 4
5
CONCATENATE = "mrs
IF = "mrs "
=
D4 = "V"
"M"
"mr "
"mrs "
F4 = "J."
IF = " van der "
>
G4 = "van d
""
CONCATENATE
" "
G4 = "van d
" "
" "
H4 = "Koop"
"false"
Combines several text items into one.
Text1 (required)
Text for the concatenation.
Text1
IF(D4="M", "mr ", "mrs "
Text2
F4
Text3
IF(G4>"",CONCATENATI
Text4
H4
Formula
Result
"mrs J. van der Koop"
=IF(A4+B4>5,CONCATENATE(IF(D4="M", "mr ", "mrs "),F4,IF(G4>"",CONCATENATE(" ",G4," "),"),H4),"false")
Array
Help
< Back
Next >
OK
Cancel
Sheet1
Sheet2
Formula_Example
Sheet3
Search
Select multiple cells
Insert mode: inactive
Selection mode: inactive
60
Merge cells
Wrap text


File
Edit
View
Insert
Format
Table
Slide
Slide Show
Tools
Help
Last modification: 49 seconds ago
WhyUseItOnline..LibreOffic
Title, Content
Carlito
18
Why use it online, LibreOffice
Huge Project - Great Team
Most Powerful Core
Huge international LibreOffice project
Great team partners & Collabora experts for Collabora Online
Character
Paragraph
Area
Shadow
Image
Brightness:
15%
Contrast:
0%
Color mode:
Default
Transparency:
0%
5%
0%
-15%
Red
1.00
Line
- none -
Width:
Color:
Transparency:
0%
Position and Size
Search
Slide 3 of 27
English (UK)
50

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





Get it at the Univention App Center

The easiest way to install CODE for a quick tryout is to download it as a virtual appliance from the Univention 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** **VMware ESXi**.

https://hub.docker.com/r/collabora/code/

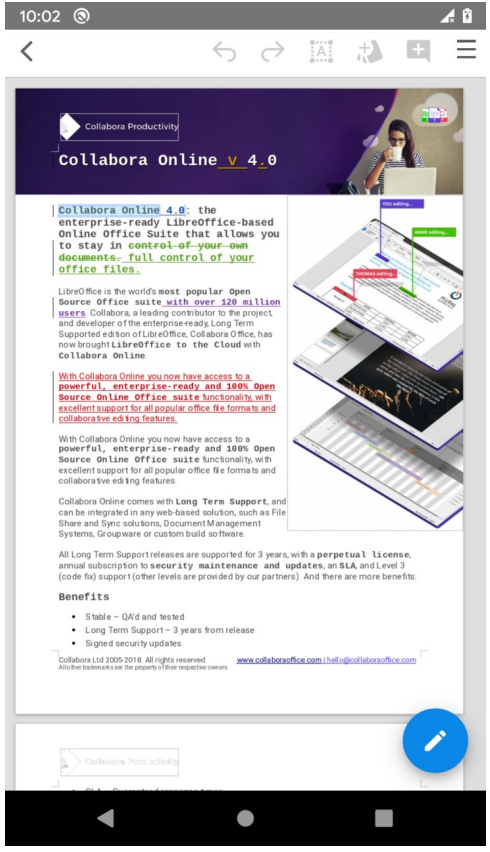
Grab CODE docker image from Docker Hub

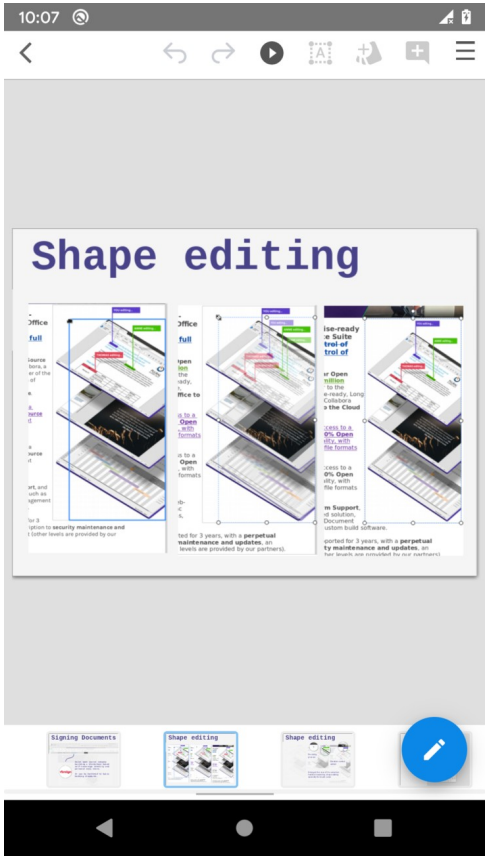
The collabora/code Docker image can be installed to any x86-64 host (e.g. on Linux and Windows 10), and it is fully configurable. For more information about setup and configuration for deployment, please read the CODE Docker page. If you want to try it out quickly, you can set up CODE docker image with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

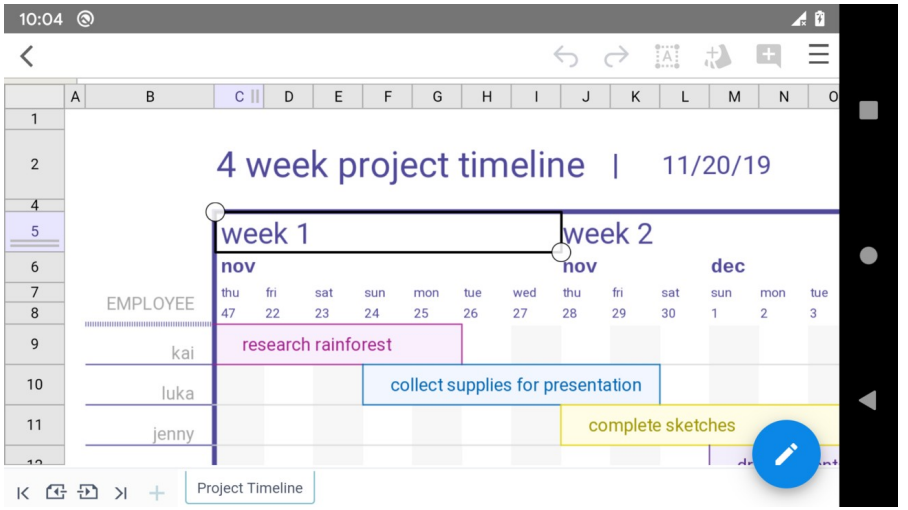
Collabora Online Mobile

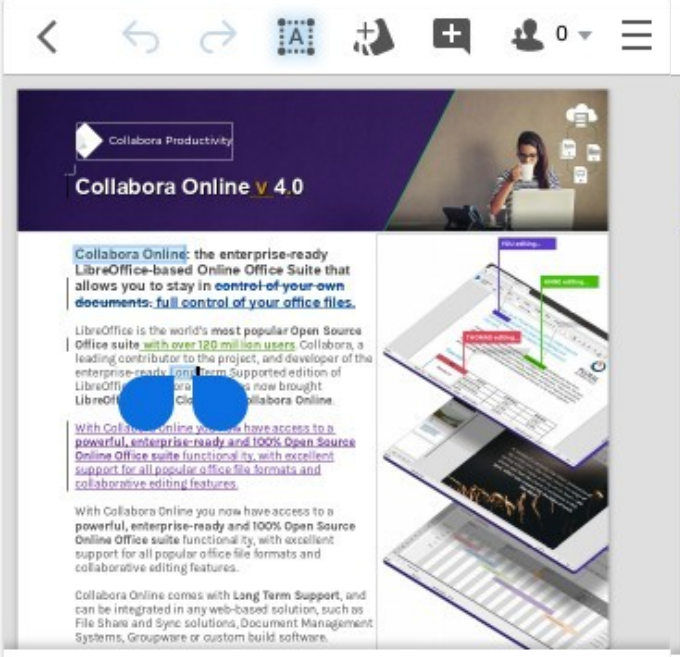
with a Nextcloud customer

Completely re-written mobile UX: one-handed use








Collabora Productivity
Collabora Online v 4.0
Collabora Online: the enterprise-ready LibreOffice-based Online Office Suite that allows you to stay in control of your own documents: full control of your office files.
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 functional ity, with excellent support for all popular office file formats and collaborative editing features.
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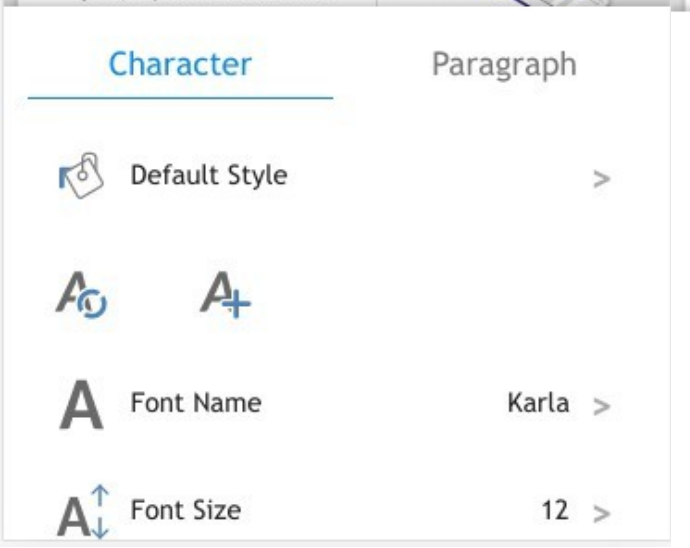
Collabora Online comes with Long Term Support, and can be integrated in any web-based solution, such as File Share and Sync solutions, Document Management Systems, Groupware or custom build software.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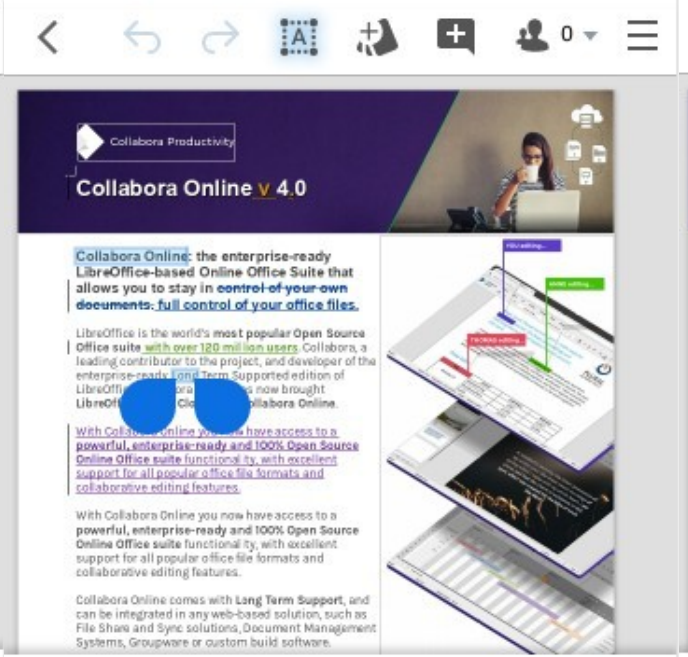
Collabora Productivity
Collabora Online v 4.0
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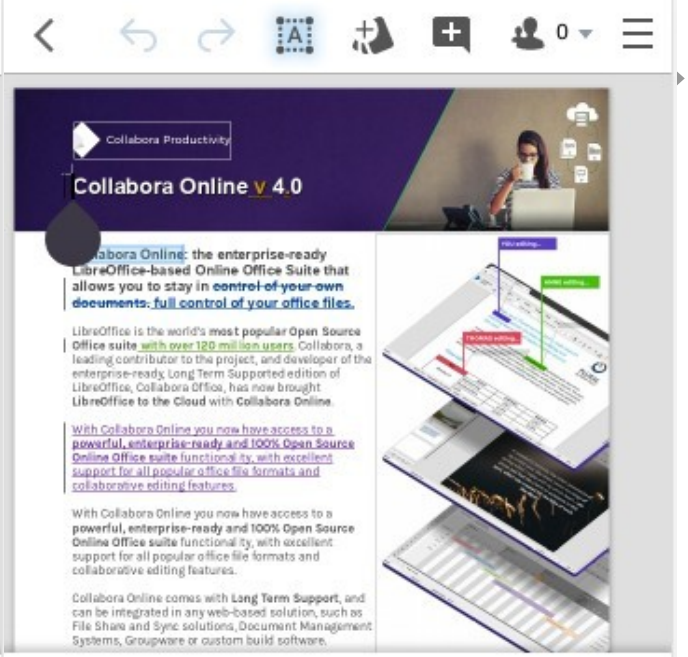
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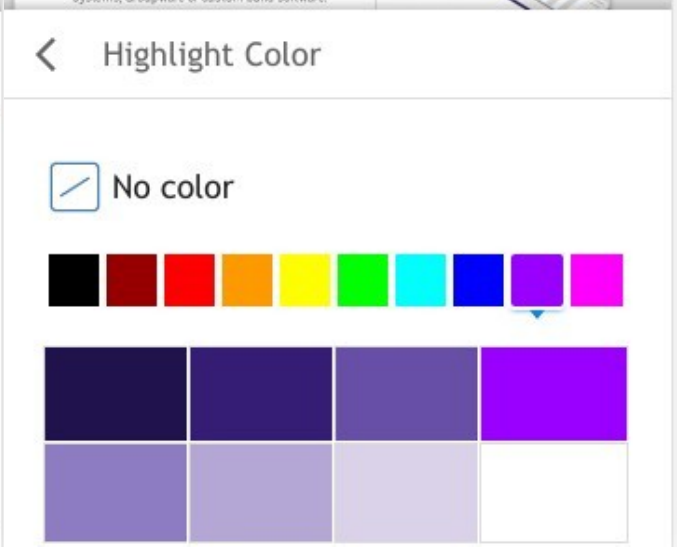
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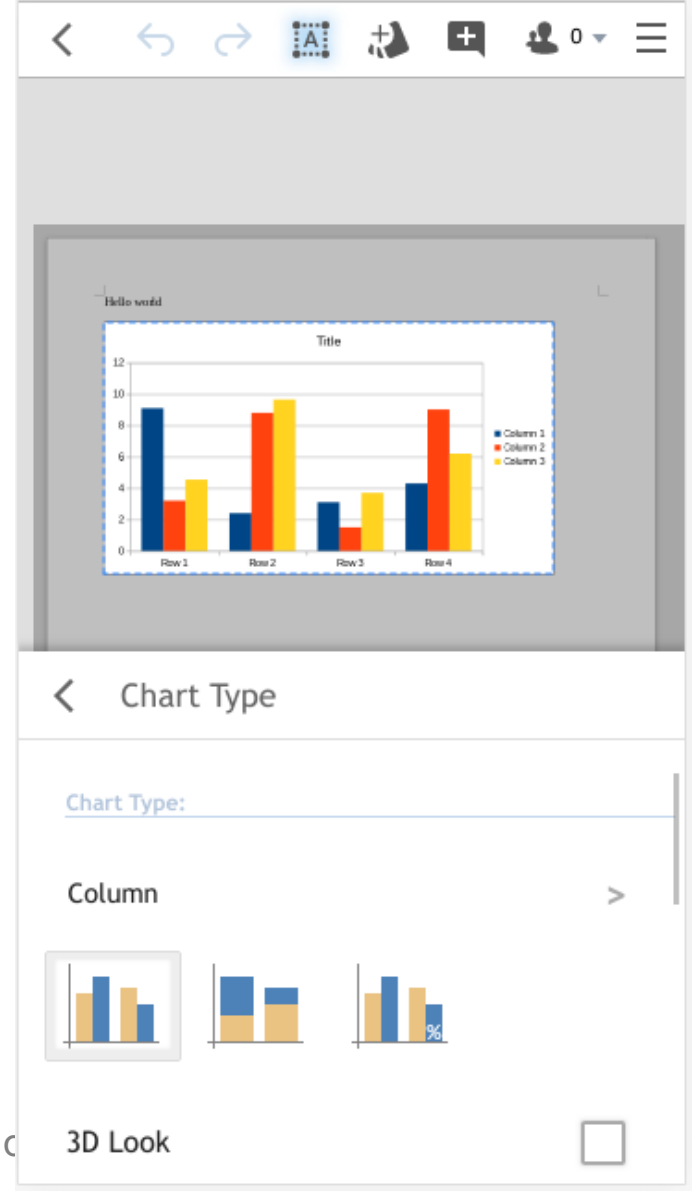
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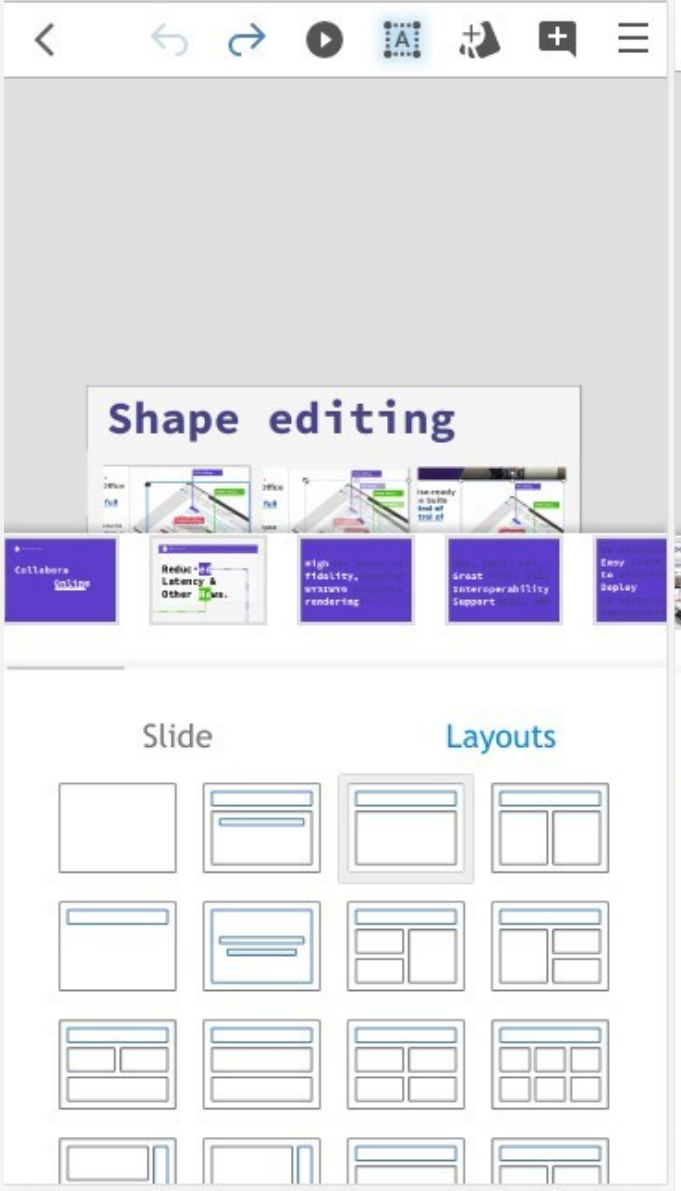
Row 3
Row 4
Column 1
Column 2
Column 3
Chart Type
Chart Type:
Column
3D Look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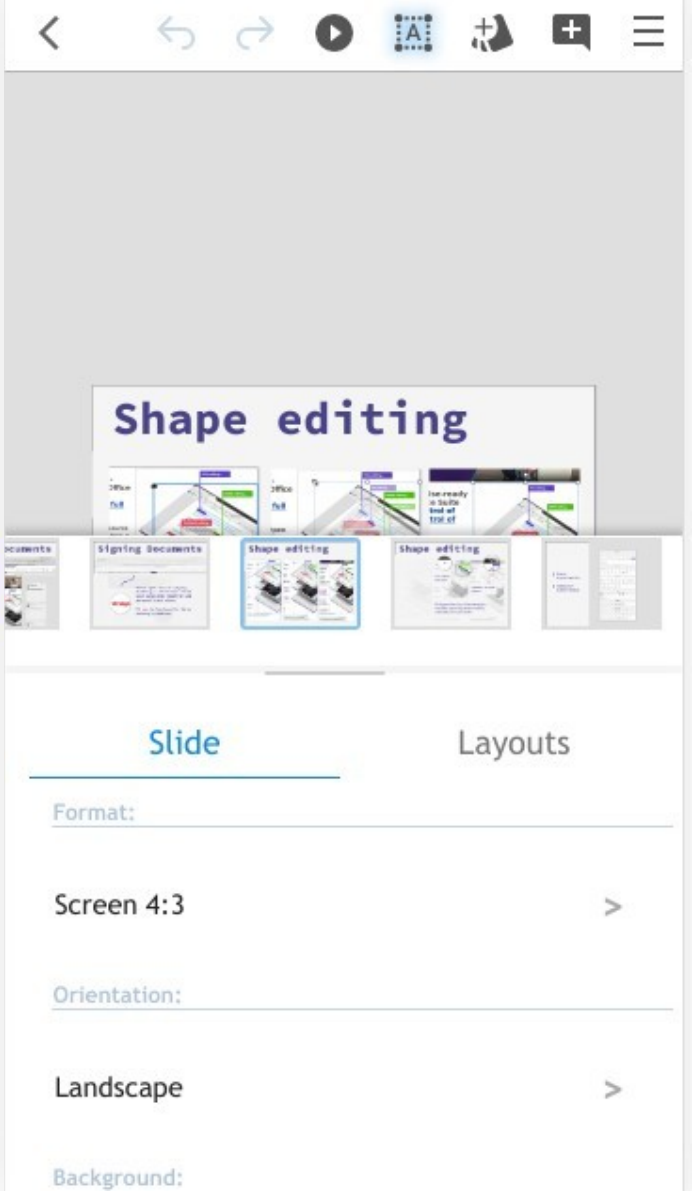
Slide
Layouts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Layouts
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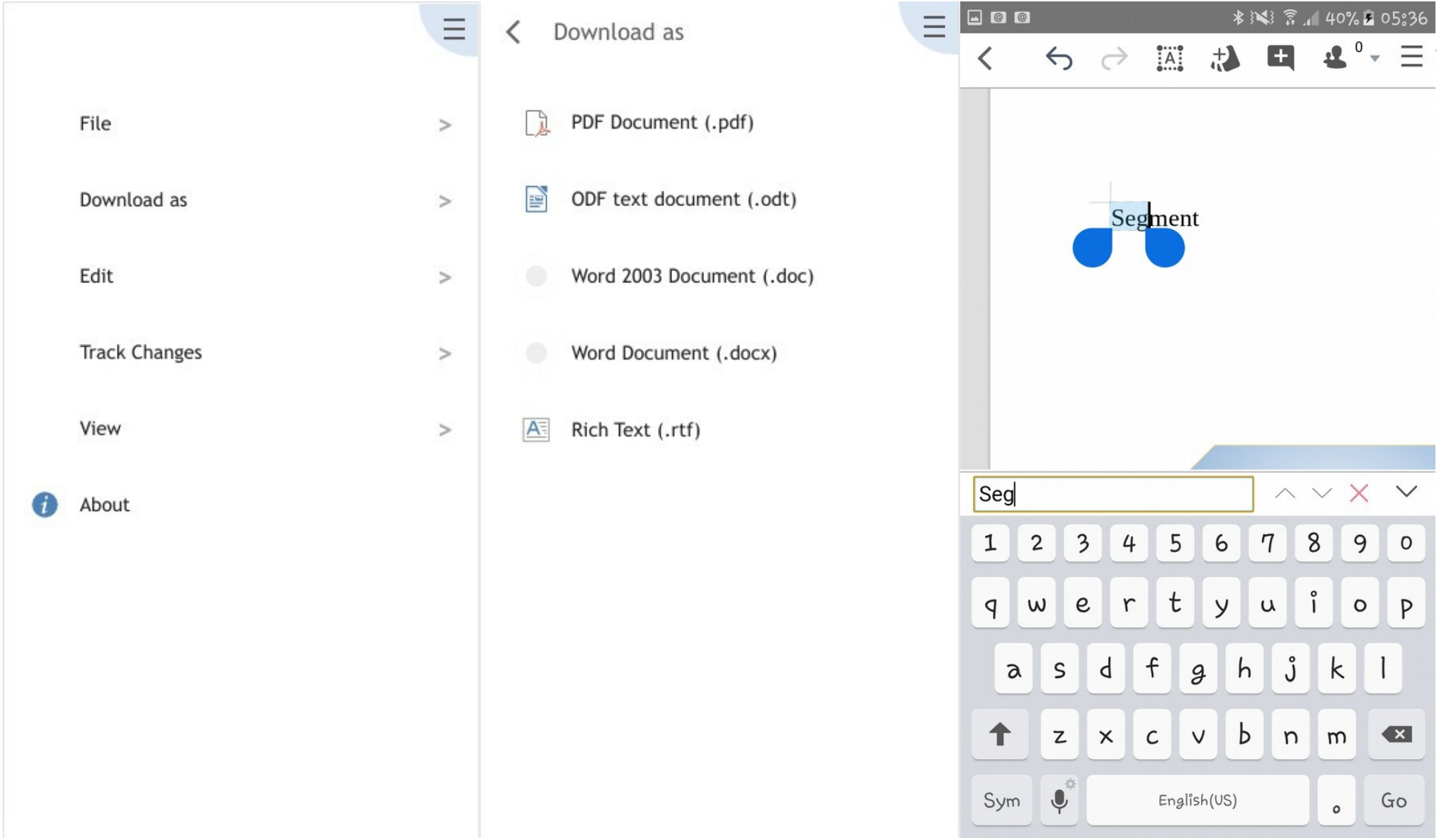
Landscape
Background: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Track Changes
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ODF text document (.odt)
Word 2003 Document (.doc)
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Rich Text (.rtf)
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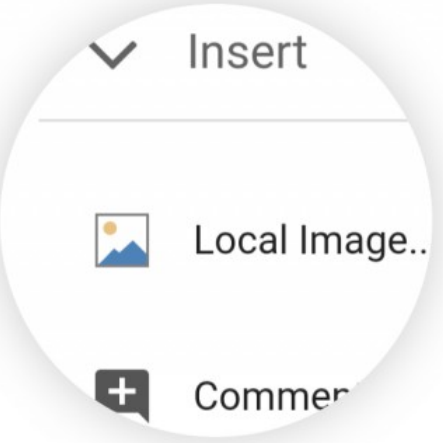
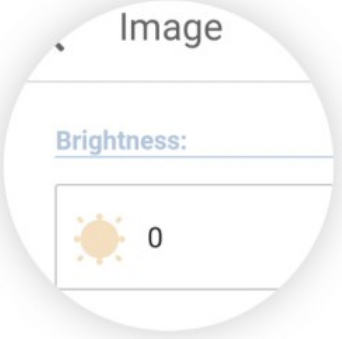
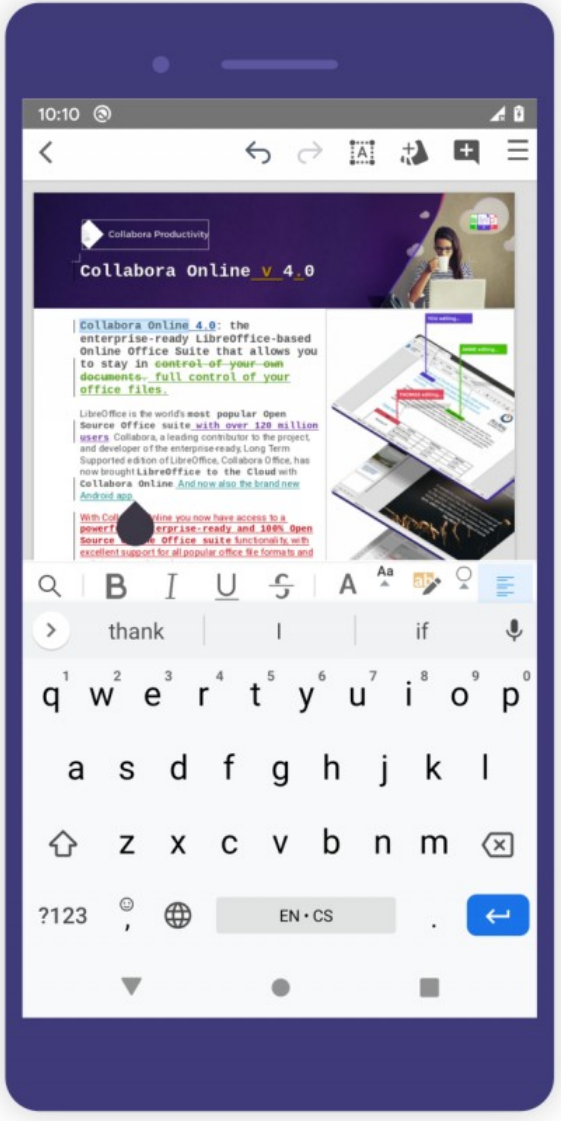
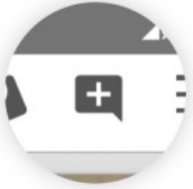




Collabora Office

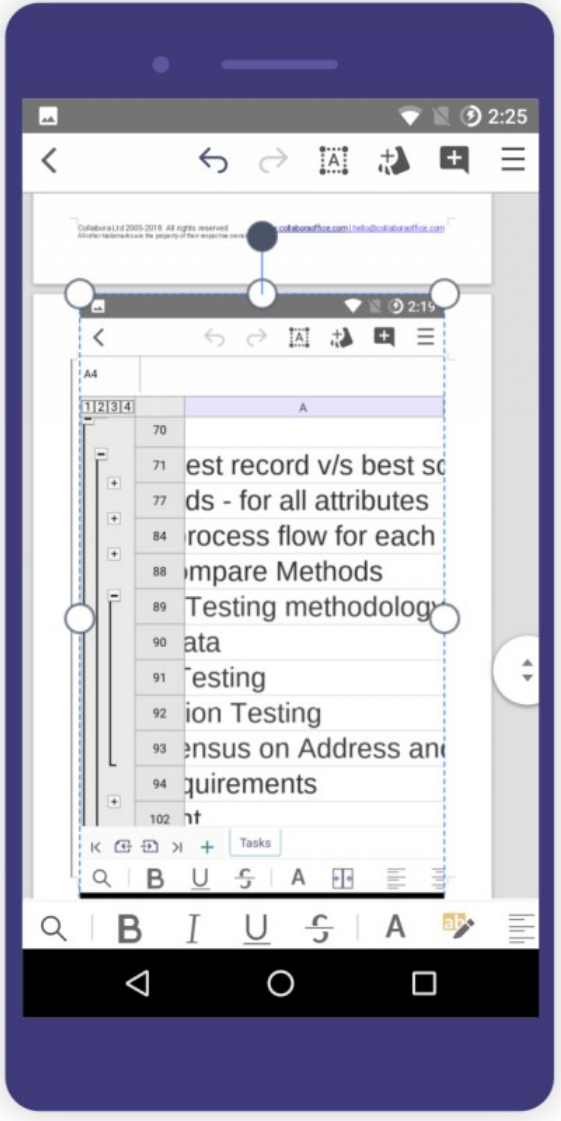
collabora or

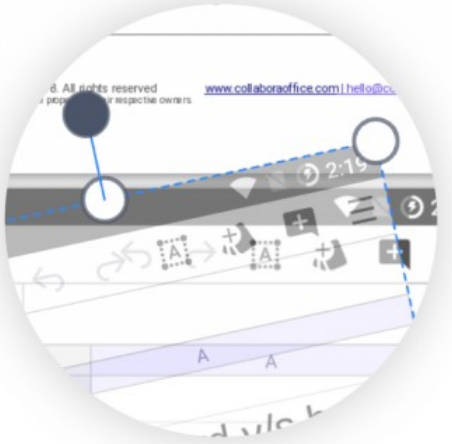




Collabora Office

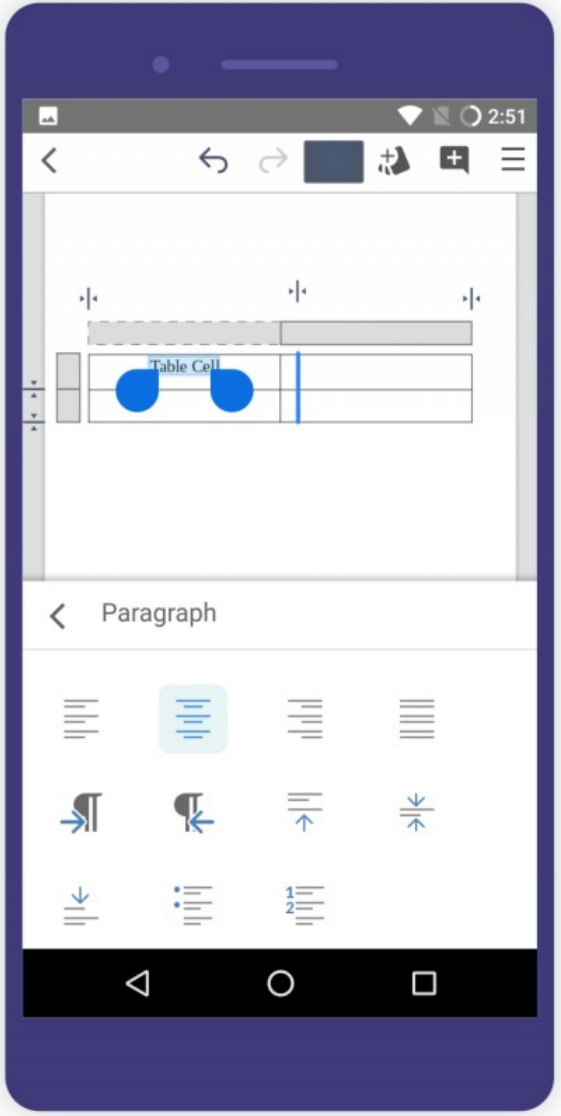
collabora or



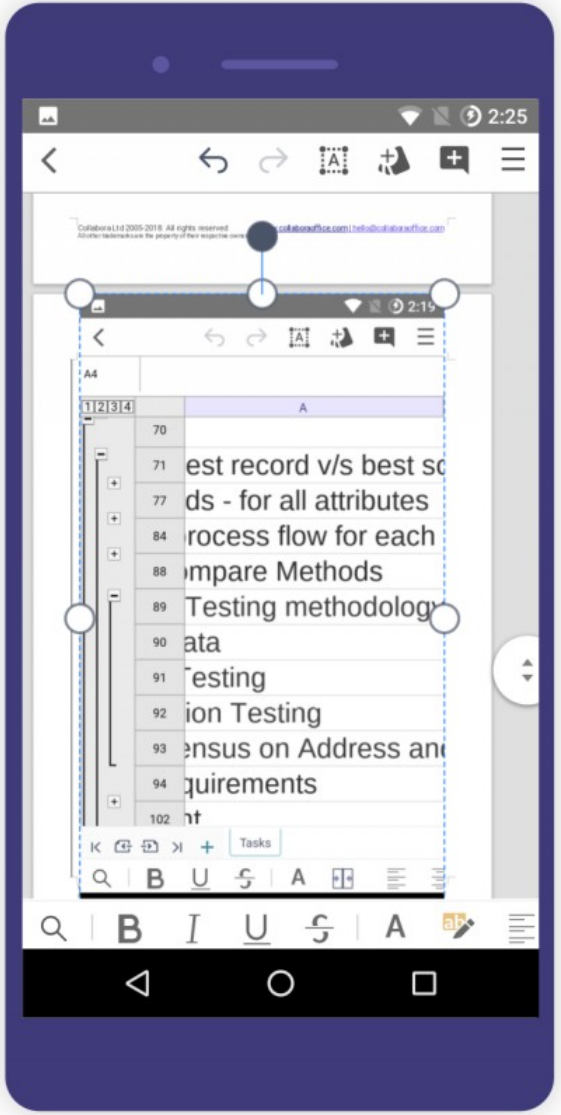


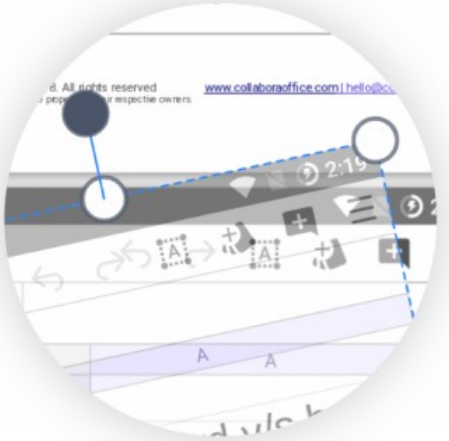
Collabora Office

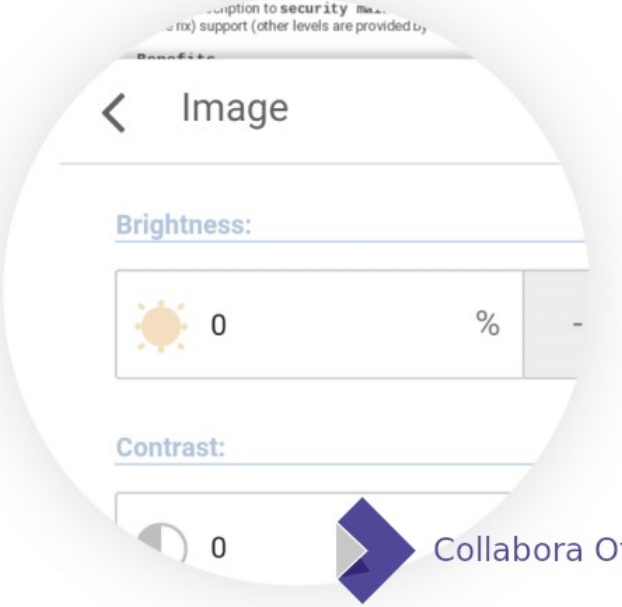
collabora or



Collabora Office







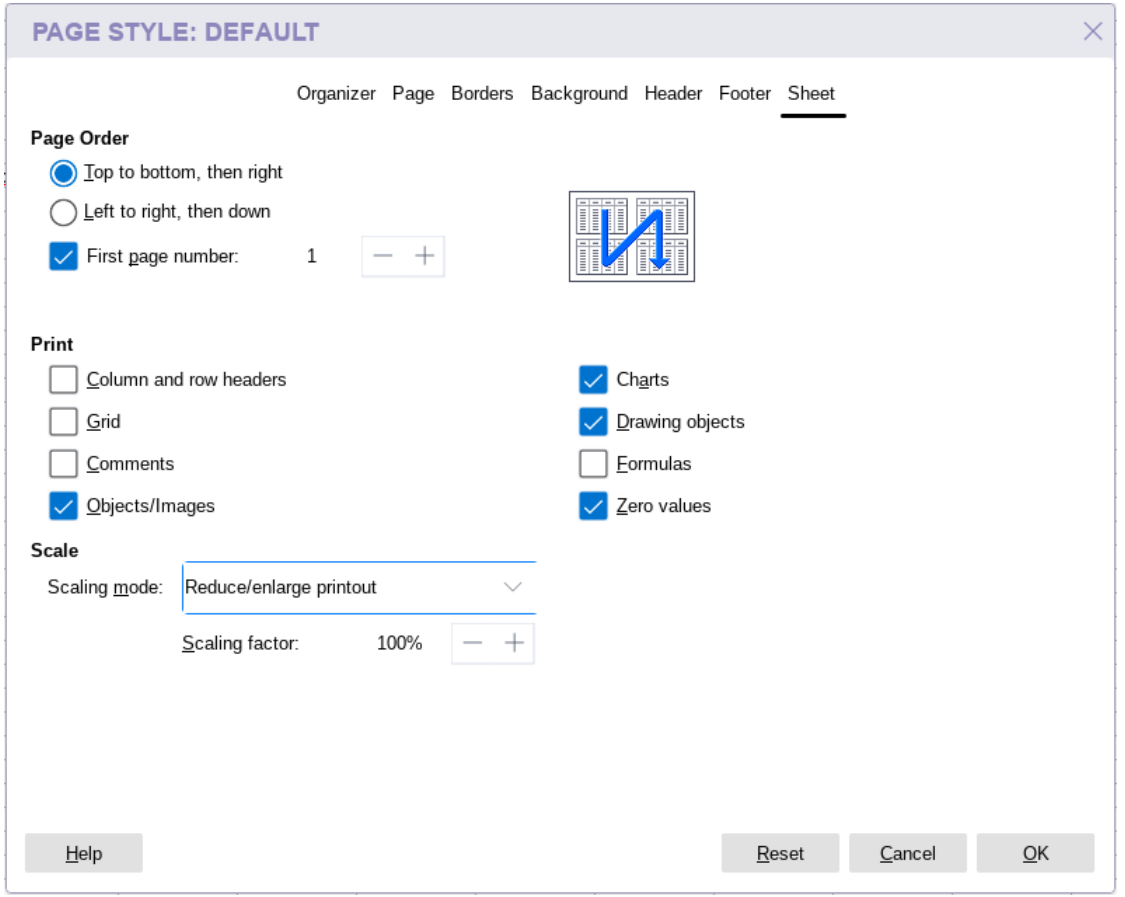
Collabora Office

collaboraor

Online / Widget theming implementation ...

Custom look & feel

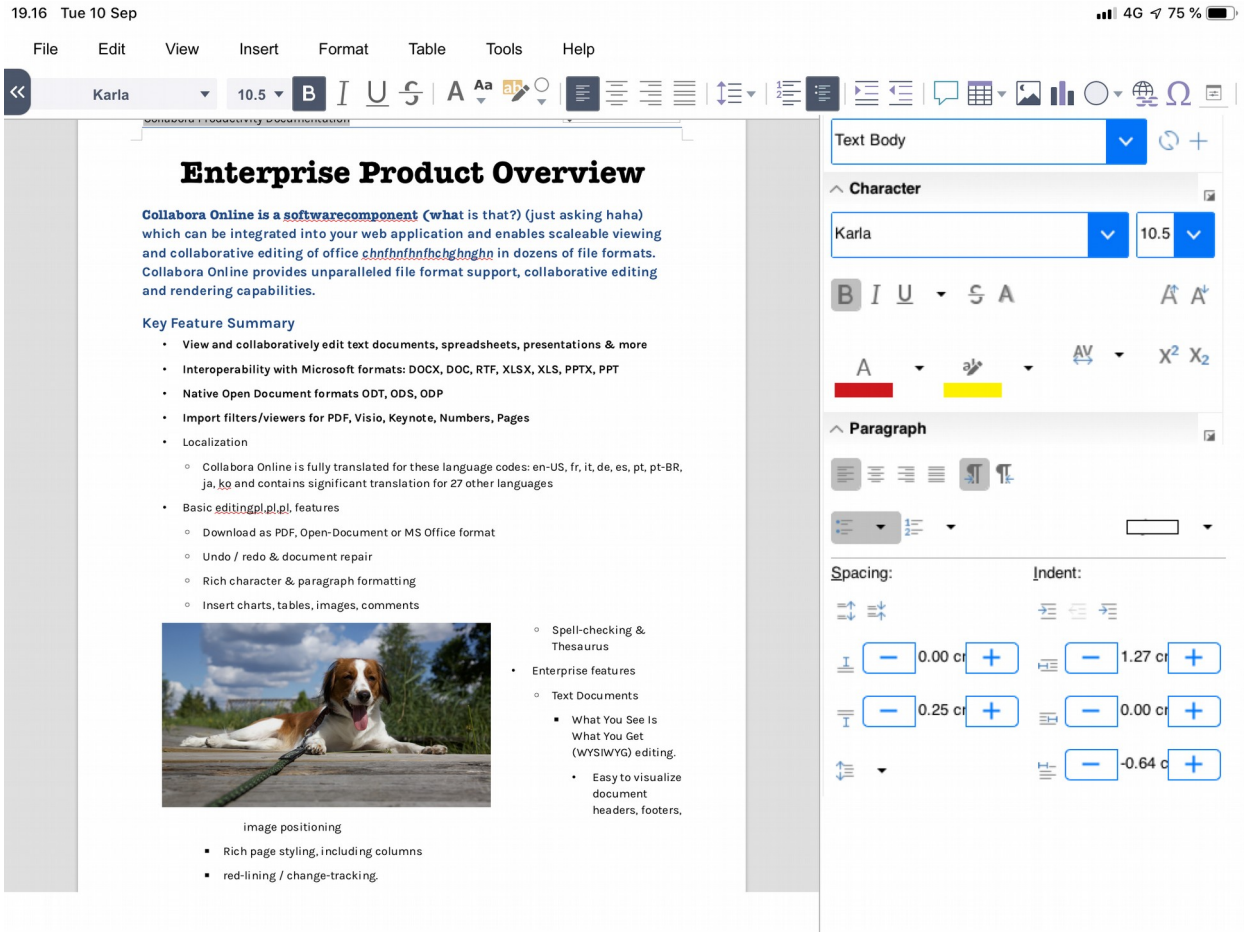
- Custom SVG branding of individual widgets
- Building on native widget framework.
- ~easy to re-use for other platforms (volunteer?)



Native iOS version for tablets ...

Co-Developed with Adfinis

- A great partner !



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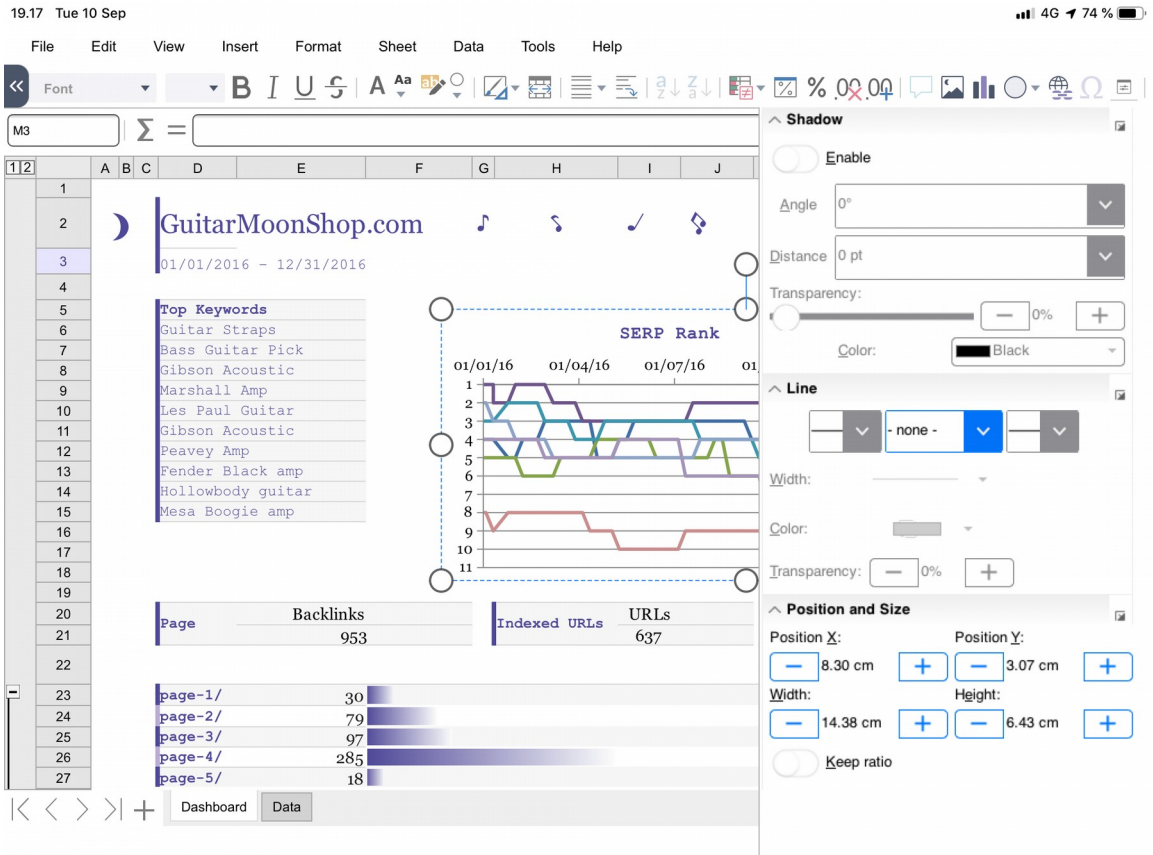
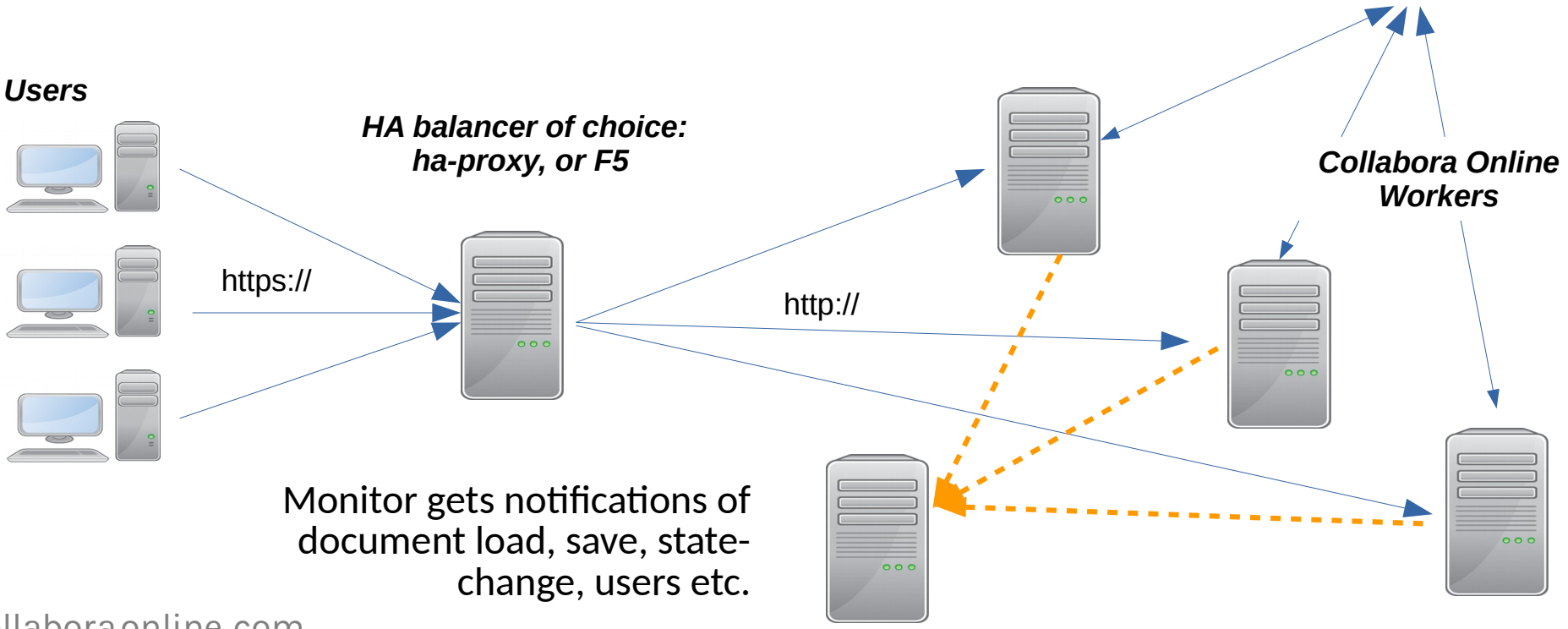


Monitoring APIs:

Either **poll** each server: new Prometheus text-based format compatible end-point thanks to 1&1



The pieces you can’t see

Integration improvements

- Masses of new extensible API to embed Online into your application

Performance

- Loading time, dialog rendering time
- Improved PDF rendering
- Unipoll – code simplification.
- Profiling infrastructure

UX / infra changes

- Rich Copy/Paste support
- Many new dialogs converted to async
- Multi-window focus re-work.

Security & Anonymization

- Anonymized logging
- 3rd party penetration testing

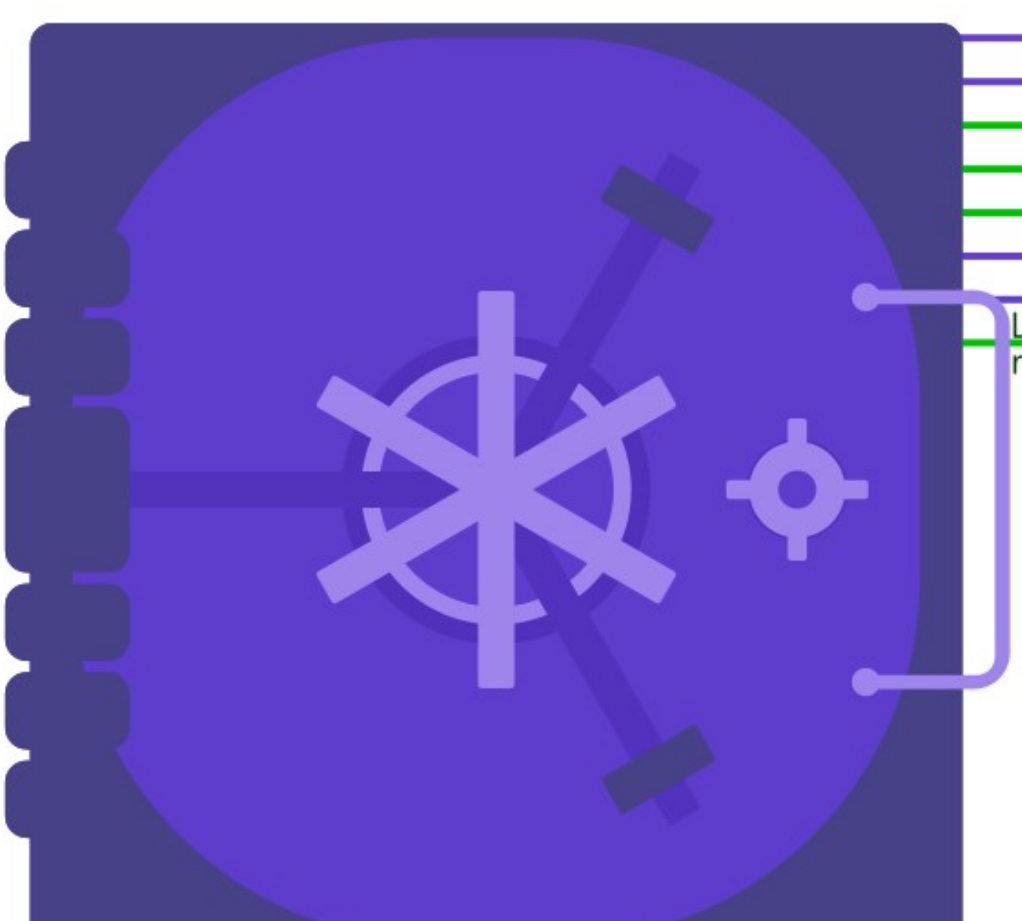
And much much more …

Deployment & HA

some distinctives

Digital Sovereignty

or :don't let your document data out of your site [sic]



on your premise / Private network

Virtual machine / Docker container

Seccomp-bpf ~no sys-calls

Extremely sparse filesystem

Chroot per document

Systematic load crash testing

Industry beating coverity score

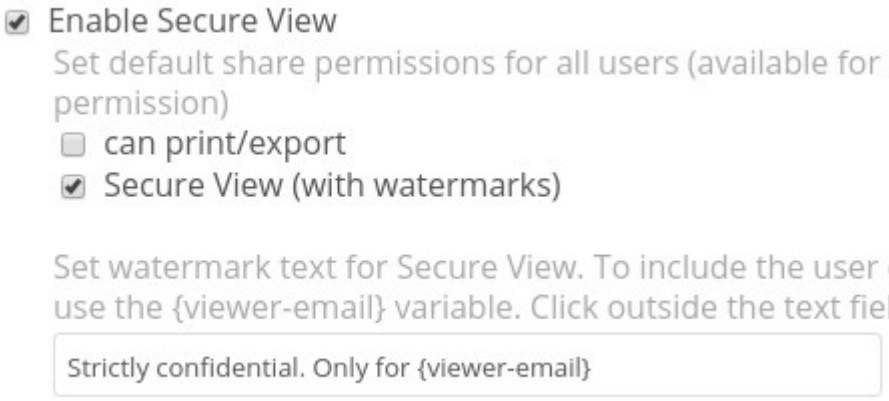
LibreOfficeKit rendering instance

Document data is held in your server room.

Not sent to every single device to be controlled by the browser + JS + local debugger.

C'bra sends pixels to clients.

Real Secure View: send only watermarked *pixels* ...

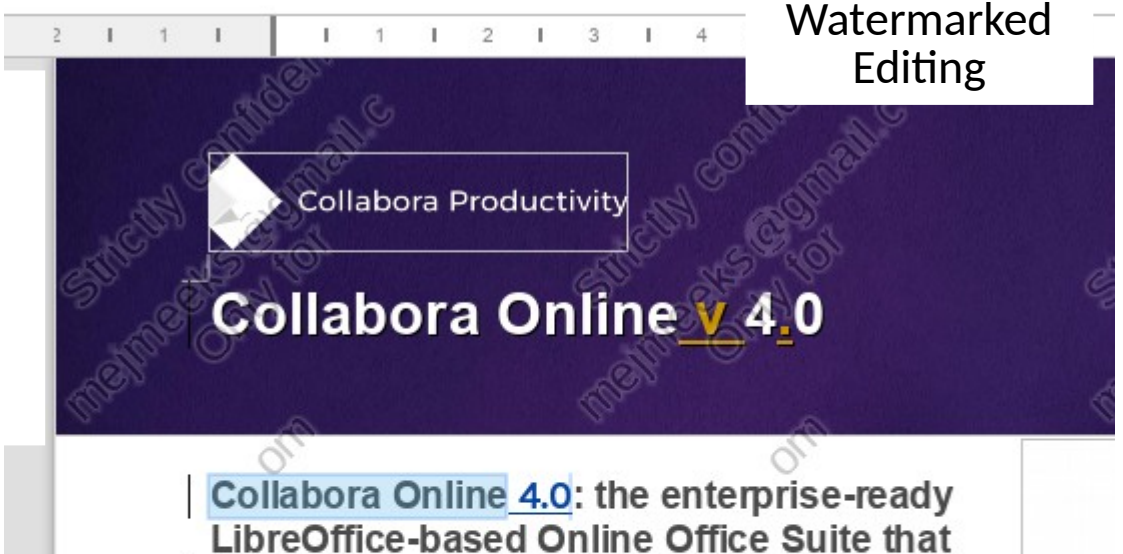


Simple, Elegant, Federated
No central points of failure:
corporate or technical

for ownCloud

Granular permissions

- Edit, Print, Share, Download
- Watermarked PDFs if print allowed.



Simplicity & Scalability

Large deployments / HA pieces

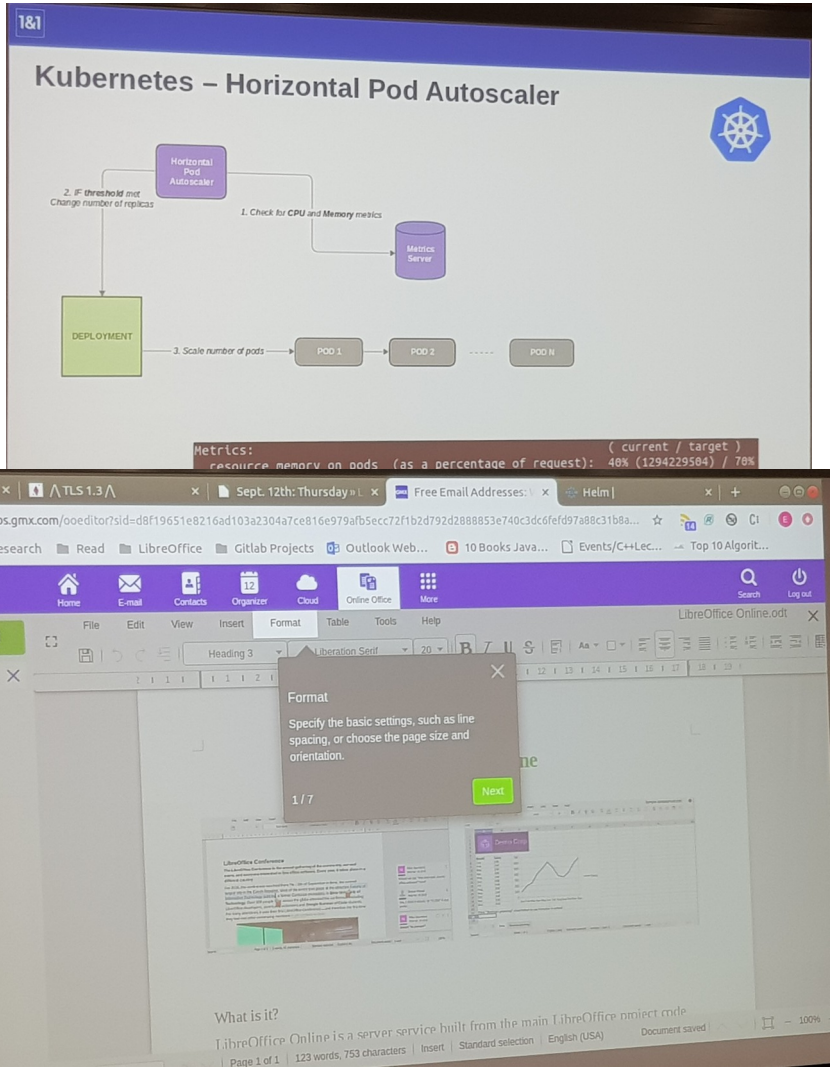
- Scales with the network.

Simple architecture:

- No new HA Database
- No new message-bus
- No shared data storage

eg. 1&1 / GMX

- ~millions of users with access

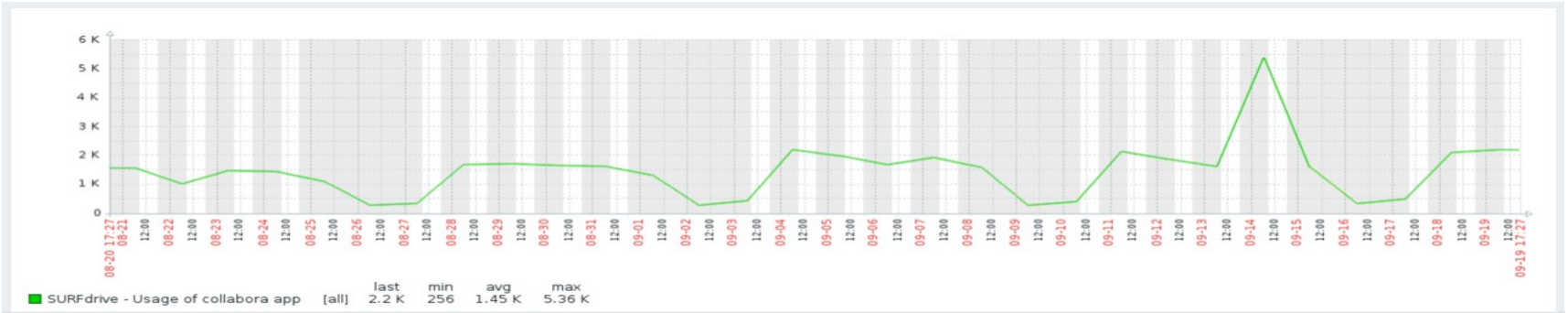


Collaboration Protocol

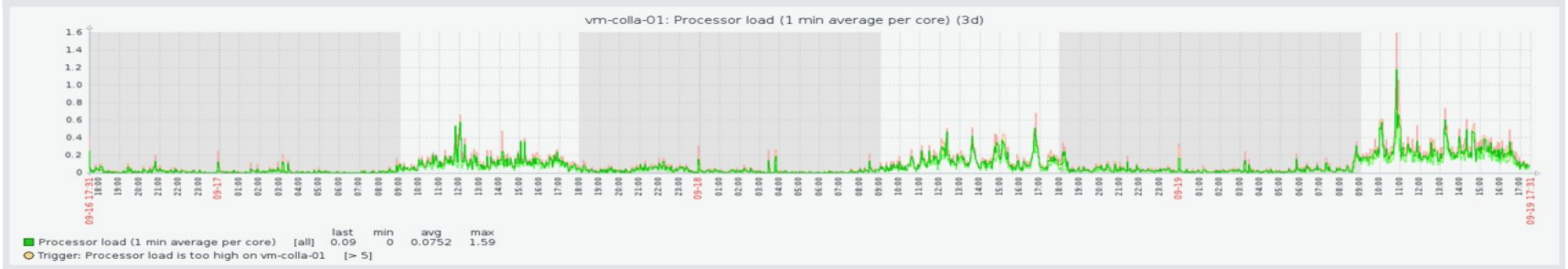
- **Not** composable operations: CompSci → get all excited about this.
- Real-world use-cases:
  - 90% of the time → “One user working alone on the authoritative document”
  - ~10% of the time → “Lots of users in a call, co-editing / scoring / minuting”
  - ~0% of the time → conflicting edits with undo/redo on the same document
- Conflicts fundamentally not computer-resolvable always
  - Better to back-off & show the user
- Bring all the keystrokes & mouse movements
  - Into the same process – same memory space – same CPU

Real world: ~45k users – Collabora Online - SURFdrive

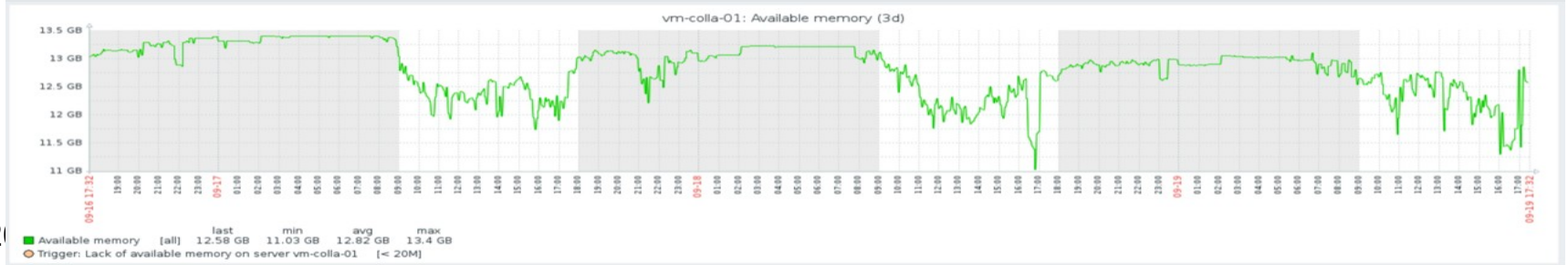
Usage



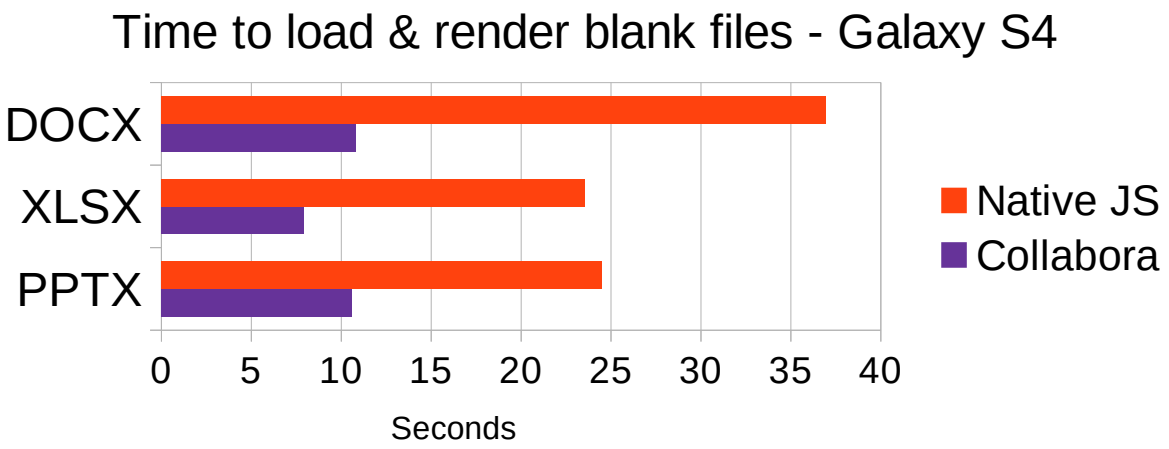
CPU



Free RAM: 13.5Gb → 11Gb



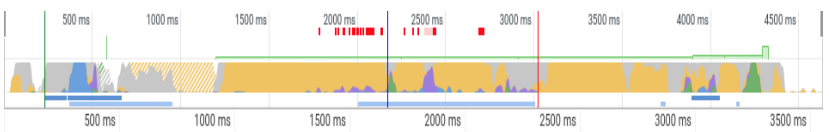
Mobile: do the work on battery, or in the data-center ?



First cut pre-optimized numbers

With data: larger spreadsheets
10x faster → 1000X faster.

Threaded, GPU accelerated
spreadsheet core



Before (above) to after (left) –
re-ordering & optimizing *“Hello World”* DOCX load -
~3.5s from start.

Collabora Productivity

Conclusions

- Our mission applied
- Easy to deploy & scale
- Easy to integrate
- Georgeous, interoperable Document collaboration
- Architected for Digital Sovereignty

- Rapid improvement
- Backed by large, diverse community & Berlin based Stiftung.
- Built with LibreOffice …
- Contact me:

michael.meeks@collabora.com

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