



Collabora Productivity

LibreOffice Online

-

client side development

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A brief introduction

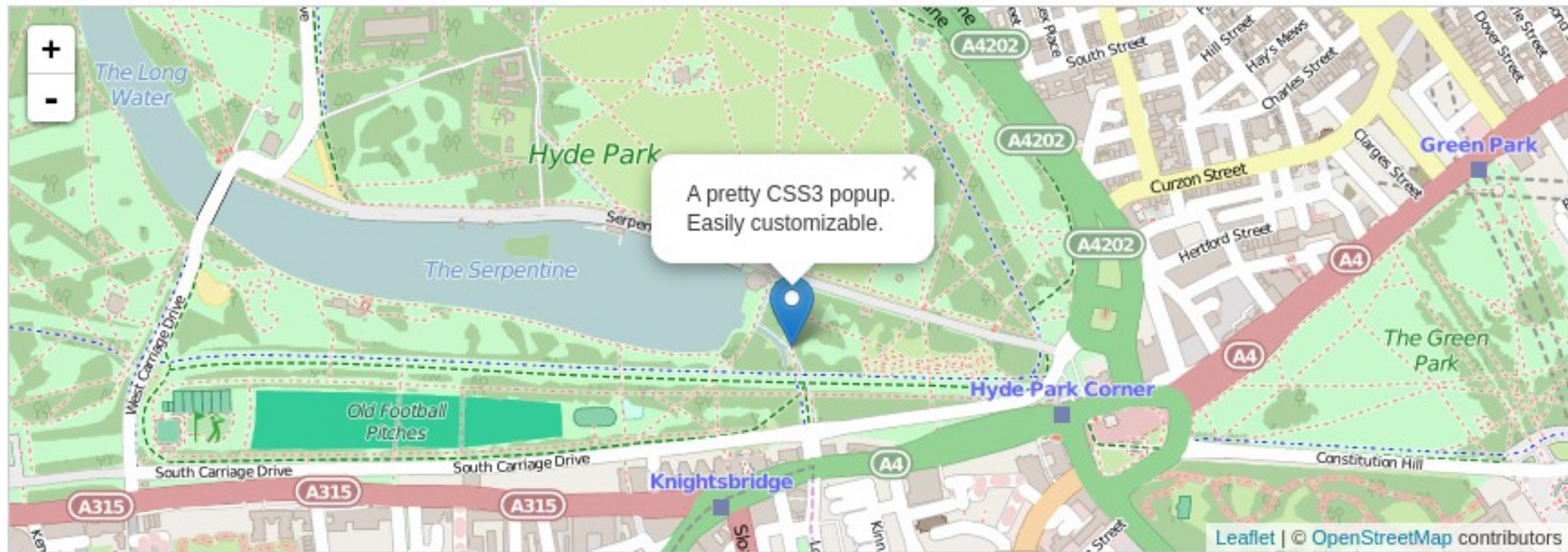
A brief introduction

- LibreOffice Online:
 - development started in April 2015
 - consists of two major parts:
 - the server
 - the client
 - Leaflet
 - JavaScript

Leaflet

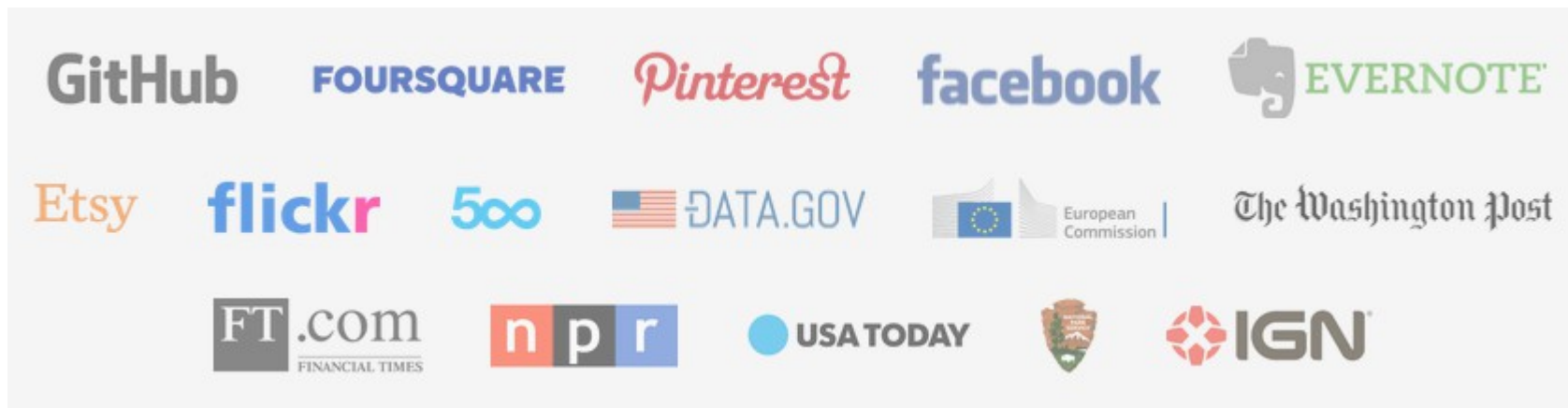
A brief introduction

- how Leaflet usually looks like



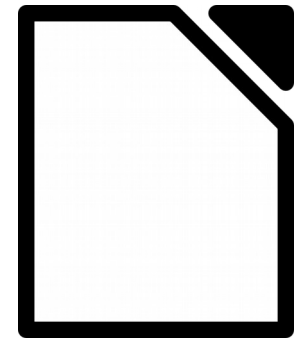
Leaflet

- an open-source JavaScript library
- interactive maps
- tile-based implementation
- used by many big companies



Leaflet

- What have we changed ?
 - added web socket for communication with the server
 - binary images
 - caching more tiles



Loading the document

Loading the document

- used Leaflet's simple CRS (Coordinate reference system)
- the tile at (0, 0) is placed in the left top corner
- request images from server based on the coordinates of the visible area

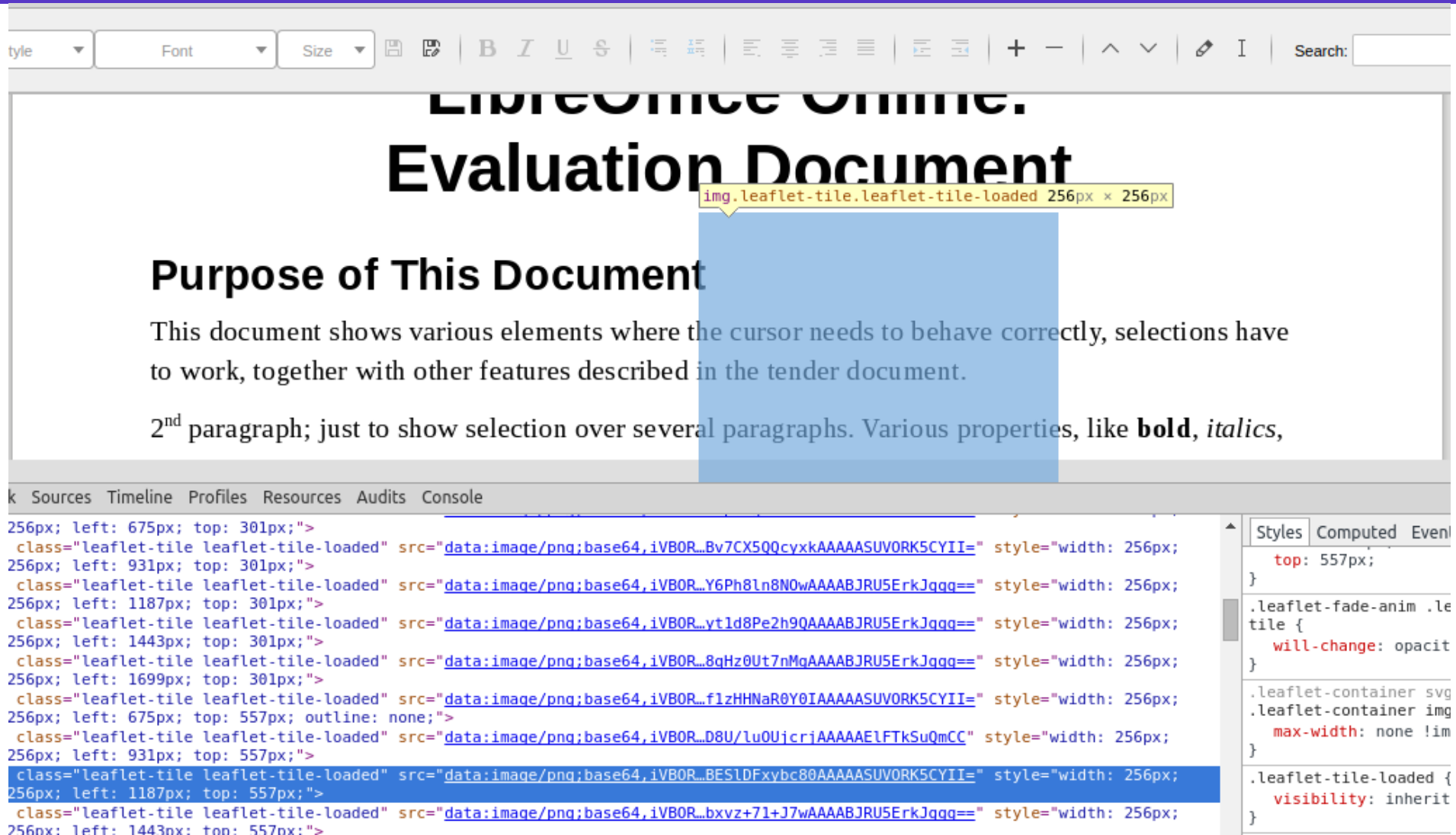
Loading the document

- the server sends binary .png images → these are transformed into data URIs
- example: An HTML fragment embedding a picture of a small red dot: ●

```

```

Loading the document



LIBREOFFICE ONLINE.
Evaluation Document

Purpose of This Document

This document shows various elements where the cursor needs to behave correctly, selections have to work, together with other features described in the tender document.

2nd paragraph; just to show selection over several paragraphs. Various properties, like **bold**, *italics*,

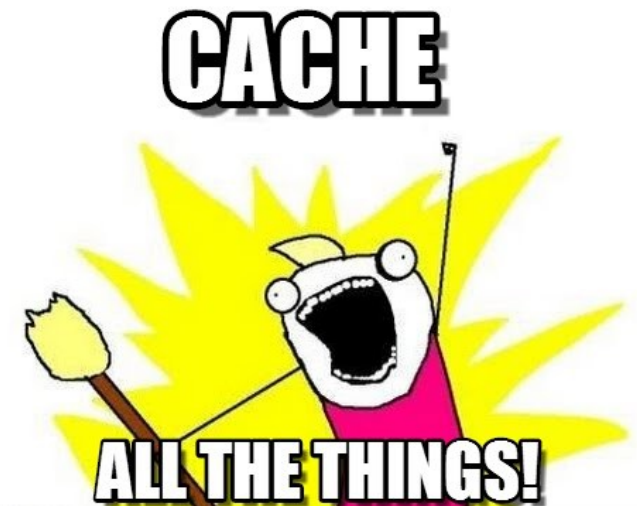
```
256px; left: 675px; top: 301px;">  
  class="leaflet-tile leaflet-tile-loaded" src="data:image/png;base64,iVBORwBv7CX50QcyxkAAAAASUVORK5CYII=" style="width: 256px;  
256px; left: 931px; top: 301px;">  
  class="leaflet-tile leaflet-tile-loaded" src="data:image/png;base64,iVBORwY6Ph8ln8N0wAAAABJRUSErkJqqg==" style="width: 256px;  
256px; left: 1187px; top: 301px;">  
  class="leaflet-tile leaflet-tile-loaded" src="data:image/png;base64,iVBORwyt1d8Pe2h9QAAAAABJRUSErkJqqg==" style="width: 256px;  
256px; left: 1443px; top: 301px;">  
  class="leaflet-tile leaflet-tile-loaded" src="data:image/png;base64,iVBORw8qHz0Ut7nMgAAAABJRUSErkJqqg==" style="width: 256px;  
256px; left: 1699px; top: 301px;">  
  class="leaflet-tile leaflet-tile-loaded" src="data:image/png;base64,iVBORwf1zHHNaR0Y0IAAAAAASUVORK5CYII=" style="width: 256px;  
256px; left: 675px; top: 557px; outline: none;">  
  class="leaflet-tile leaflet-tile-loaded" src="data:image/png;base64,iVBORwD8U/lu0UjcrjAAAAAE1FTkSuQmCC" style="width: 256px;  
256px; left: 931px; top: 557px;">  
  class="leaflet-tile leaflet-tile-loaded" src="data:image/png;base64,iVBORwBES1DFxybc80AAAAASUVORK5CYII=" style="width: 256px;  
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  class="leaflet-tile leaflet-tile-loaded" src="data:image/png;base64,iVBORwbxvz+71+J7wAAAABJRUSErkJqqg==" style="width: 256px;  
256px; left: 1443px; top: 557px;">
```

Styles	Computed	Event
	top: 557px;	
.leaflet-fade-anim .leaflet-tile {	will-change: opacity;	
.leaflet-container svg .leaflet-container img	max-width: none !important;	
.leaflet-tile-loaded {	visibility: inherit;	

Caching

Caching

- tiles outside of the viewing area are pre-fetched and cached
- tiles are not deleted when removed from the DOM tree



Viewing the document

Viewing the document

- implemented a scroll API → scroll bars can be easily plugged in
- based on Leaflet's panning methods
- the document can also be panned with the mouse
- different zoom levels

Viewing the document

- selections are implemented as a SVG overlay
- text can be selected and copied from the document
- the user can shrink / enlarge the selection

“LibreOffice is the world's premier Open Source office suite. Collabora is proud to be part of the LibreOffice community, and to build our supported product targeted at the enterprise on top of the freely available LibreOffice code.”

Editing the document

Editing the document

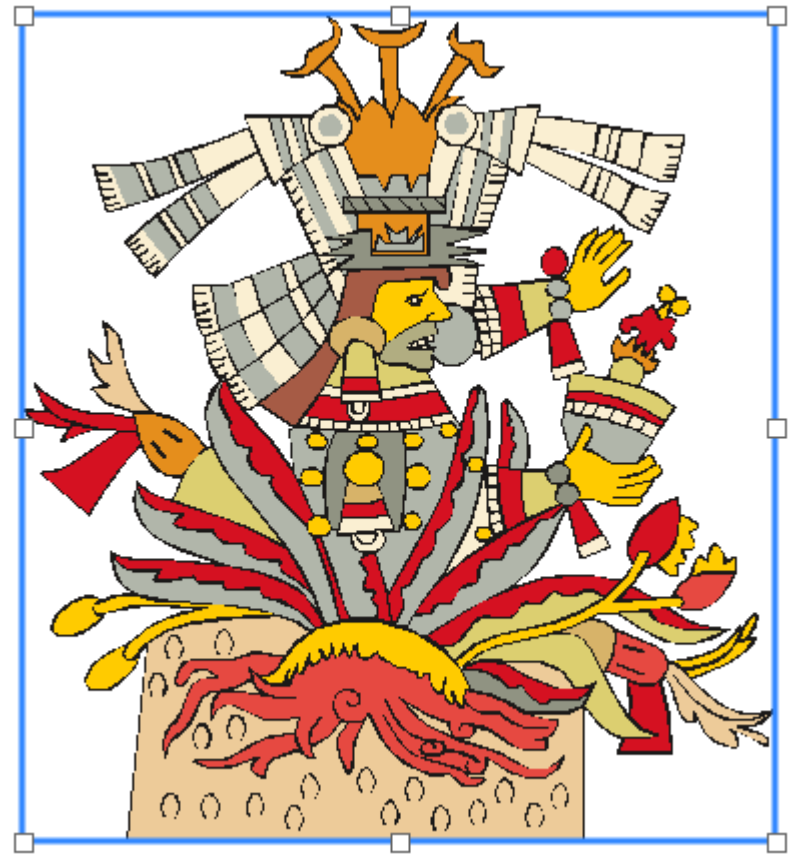
- typical scenario: key strokes are sent to the server → tiles are invalidated → new tiles are requested and repainted → cursor is moved, etc.

Editing the document

- how are key strokes captured?
 - we have a hidden text area in which the user types
 - keyboard events are intercepted
 - browser compatibility issues, the keyboard event is different across browsers

Editing the document

- images and shapes can be moved and resized



Editing the document

- copying
 - the ClipboardEvent is captured in the hidden text area
 - due to security issues, access to the user's clipboard is quite restricted
 - the event must be handled synchronously when captured, else it will 'expire'

Editing the document

- what's next for copying
 - there is ongoing work for a Clipboard API (current status: Working Draft)
 - very little support for rtf
 - plain text or html currently works better
 - alternatives: zeroclipboard library
 - but this uses flash which will soon be deprecated

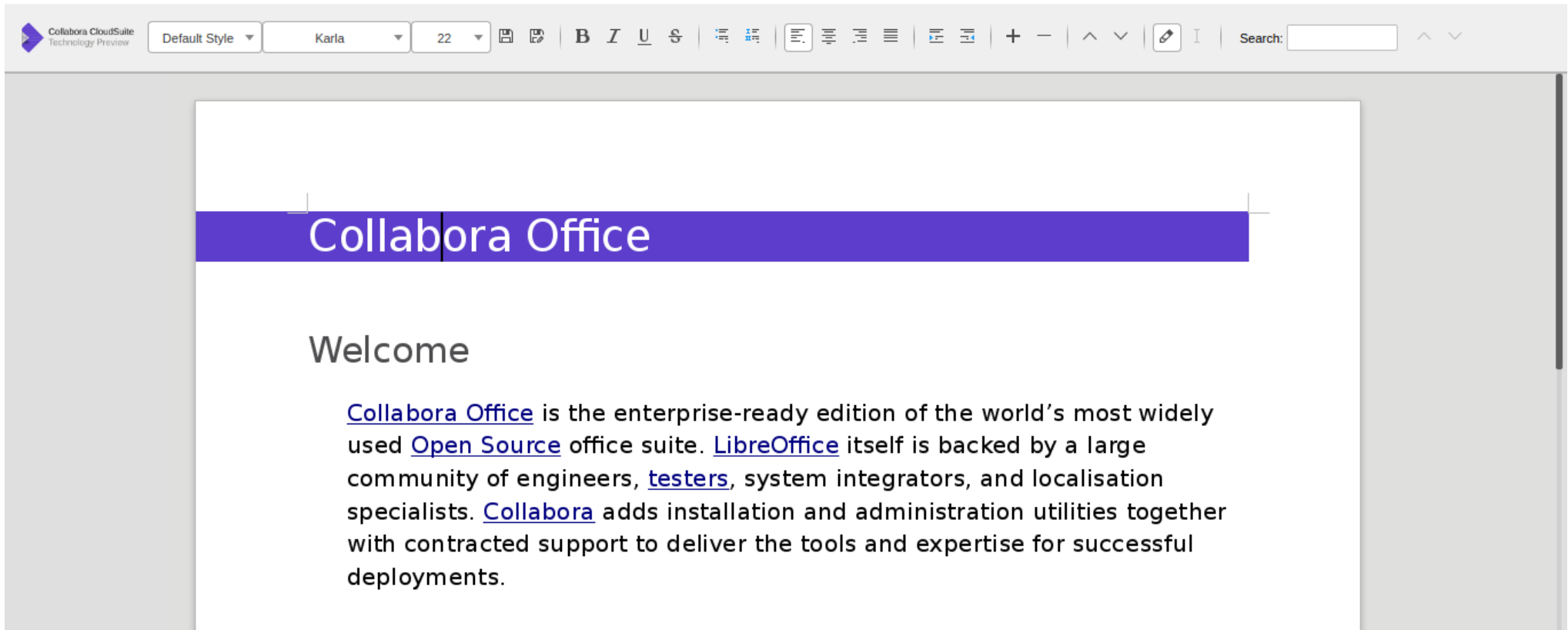
The toolbar

The toolbar

- we've extended Leaflet's API to provide methods for building / using the toolbar
- most of the methods work through a UNO command
- it's easy to plug in and out different toolbar components
- can be easily integrated in an already existing JavaScript application

The toolbar

Cloudsuite toolbar



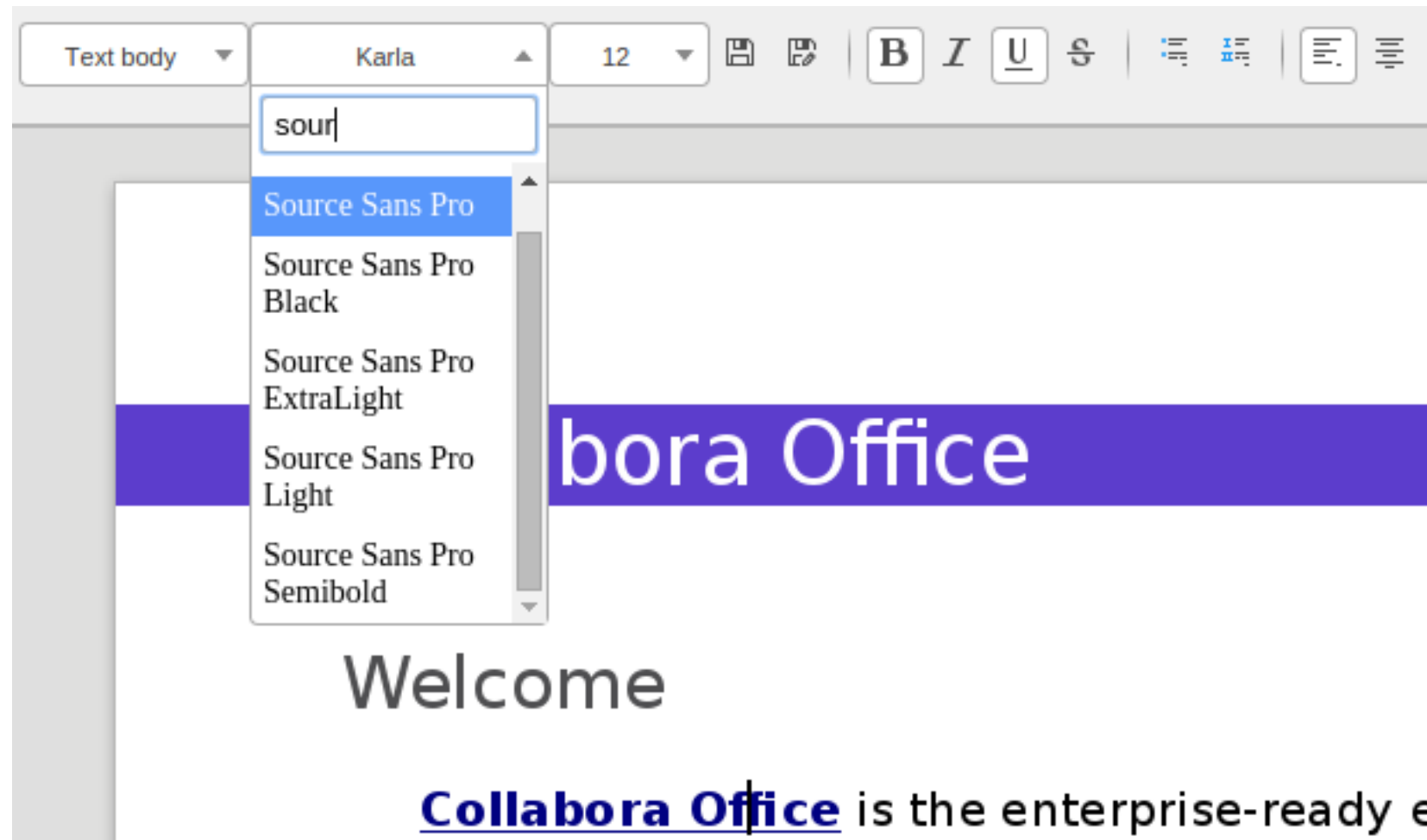
The screenshot shows the Collabora CloudSuite interface. At the top, the toolbar includes the Collabora CloudSuite logo, a 'Default Style' dropdown, a 'Karla' font dropdown, a '22' size dropdown, and various text formatting icons (bold, italic, underline, strikethrough, bulleted list, numbered list, indent, outdent, link, unlink, insert link, insert image, zoom in, zoom out, undo, redo). A search box is located on the right side of the toolbar.

The main content area displays a document with a blue header bar containing the text 'Collabora Office'. Below the header, the word 'Welcome' is followed by a paragraph of text:

[Collabora Office](#) is the enterprise-ready edition of the world's most widely used [Open Source](#) office suite. [LibreOffice](#) itself is backed by a large community of engineers, [testers](#), system integrators, and localisation specialists. [Collabora](#) adds installation and administration utilities together with contracted support to deliver the tools and expertise for successful deployments.

The toolbar

A closer look at the toolbar



The toolbar

Searching

Collabora CloudSuite Technology Preview

Table Cont... | DejaVu Sans Con... | 11 | [B] | [I] | [U] | [Link] | [Unlink] | [List] | [Unlist] | [Indent] | [Outdent] | [Justify] | [Align] | [Text Color] | [Background Color] | + | - | ^ | v | [Edit] | [I] | Search: rebranding

// Languages

HTML 5 | CSS 3 | SASS

The Gimp

// Hobbies

+ CREATIVE WRITING | + ENAMELLING

+ PERSONAL FITNESS | + FLY FISHING

// Portfolio

Brochures January 2015

Website rebranding October 201

Folded leaflets November 2014

Business cards October 2014

The toolbar

- a few other features not available through UNO commands:
 - goToPage / goToPart
 - Enable editing / viewing mode
 - Zoom in / out
 - Enable mouse selection or panning

The toolbar

The image shows a screenshot of the LibreOffice application interface. At the top, the 'Collabora CloudSuite Technology Preview' logo is visible on the left, and a search bar is on the right. The main toolbar contains various icons for file operations (Save, Print, Undo, Redo), text formatting (Bold, Italic, Underline, Strikethrough), alignment (Left, Center, Right, Justify), and zooming (Plus, Minus, Home, End). Below the toolbar, the LibreOffice window displays a presentation slide titled 'Collabora Productivity'. The slide features the LibreOffice logo and the text 'Collabora Productivity'. On the left side of the slide, there is a sidebar with navigation options: 'Open File', 'Templates', and 'Create:' followed by 'Writer Document', 'Calc Spreadsheet', 'Impress Presentation', 'Draw Drawing', 'Math Formula', and 'Base Database'. The main content area of the slide shows a collage of images: a spreadsheet titled 'Budget for 2014', a document titled 'Ema Snapper', and a presentation slide with the same 'Collabora Productivity' content. At the bottom of the slide, the contact information '+44 1223 362 967 libreoffice@collabora.com' is displayed.

Testing

Testing

- automated testing is possible
- Leaflet was already using the mocha JavaScript framework
- nice way of testing the new and the old features of Leaflet
- we can replay an editing session

Testing

LOLeaflet test

- ✓ Load all new tiles 45ms
- ✓ Set permission to "readonly"
- ✓ Set permission to "edit"
- ✓ Set permission to "view"
- ✓ Place the cursor by clicking
- ✓ Make a word Bold 602ms
- ✓ Get document size
- ✓ Get document type
- ✓ Check pages
- ✓ Go to the next page 114ms
- ✓ Search backwards 420ms
- ✓ Search not found 131ms
- ✓ Scroll to the top
- ✓ Scroll to the middle
- ✓ Check if pre-fetching works 6002ms

- the tests have to be run in the browser
- an alternative is to use PhantomJS, but it currently only has hixie-76 websockets
- PhantomJS 2.x promises RFC 6455 websockets, so this will be the way to go

Testing

- performance while editing
- tile loading time it's really good on average (< 100 ms)
- we are still working on improving it
- might have to do with how binary images are loaded in the browser

Demo

Document Simple Exam | x

another editing demo

Collabora CloudSuite
Technology Preview

Title

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B *I* U ~~S~~ Search:

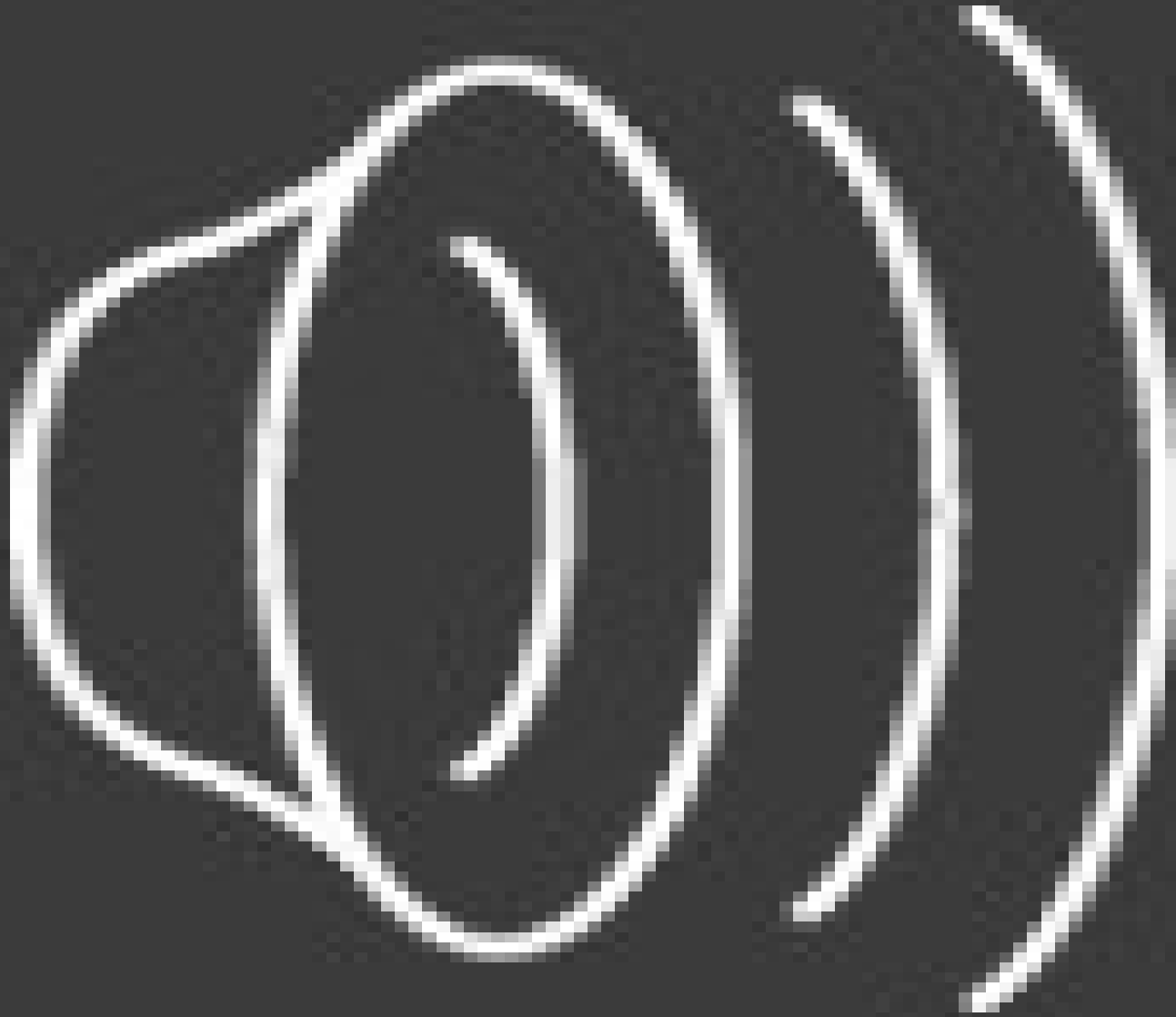
LibreOffice Online: Evaluation Document

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2nd paragraph; just to show selection over several paragraphs. Various properties, like **bold**, *italics*, and underlined. But also **increased font size**, that might be interesting for selections. But this paragraph needs to be a bit longer. This paragraph needs to be a bit longer. This paragraph needs to be a bit longer. This paragraph needs to be a bit longer.

Right-aligned paragraph... This paragraph needs to be a bit longer. This paragraph needs to be a bit longer. This paragraph needs to be a bit longer. This paragraph needs to be a bit longer. This paragraph needs to be a bit longer. This paragraph needs to be a bit longer.



Thank you!

- Slides will also be available on <http://mihai-varga.blogspot.com/> (sometime soon)