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

[Logos of various 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:

```html
<img src="data:image/png;base64,iVBORw0KGoAAAANSUhEUgAAAAA
AAAFCAYAAACNbyblAAAAHElEQVQI12P4//8/w38GIAXDIBKE0DHxgljNBAAO
9TXL0Y4OwAAAABJRU5ErkJggg=" alt="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,
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 products 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

Collabora Office

Welcome

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

// Languages

- HTML 5
- CSS 3
- SASS

// Hobbies

- Creative Writing
- Enamelling
- Personal Fitness
- Fly Fishing

// Portfolio

- Brochures
  January 2015
- Folded leaflets
  November 2014
- Website rebranding
  October 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
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

- 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
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*, 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. 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
Thank you!

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