

COWASM

Collabora Online: WASM

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Collabora
Online

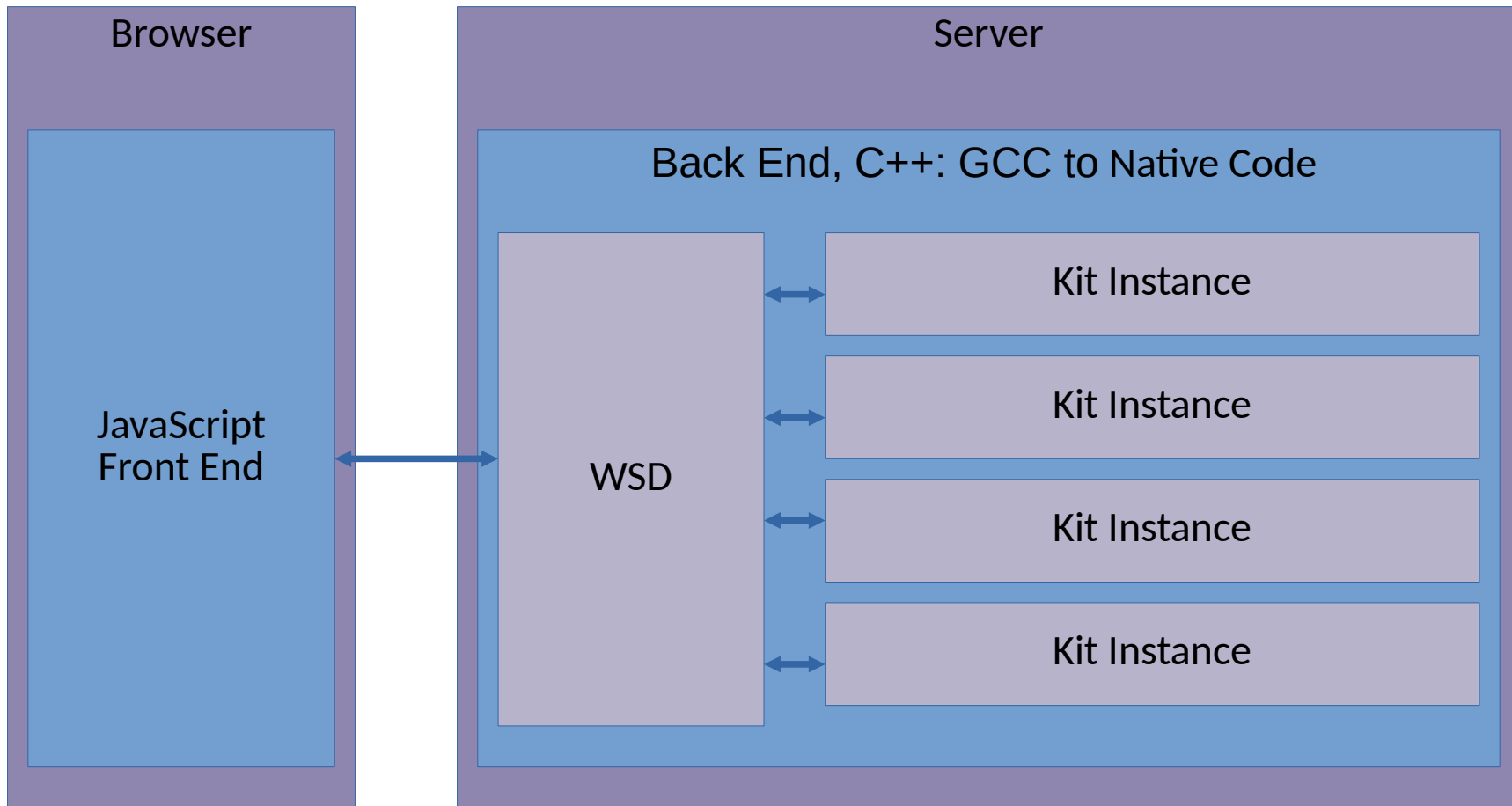


Technical Day
COOL
days





Collabora Online: Typical Overview





No server and it doesn't work of course



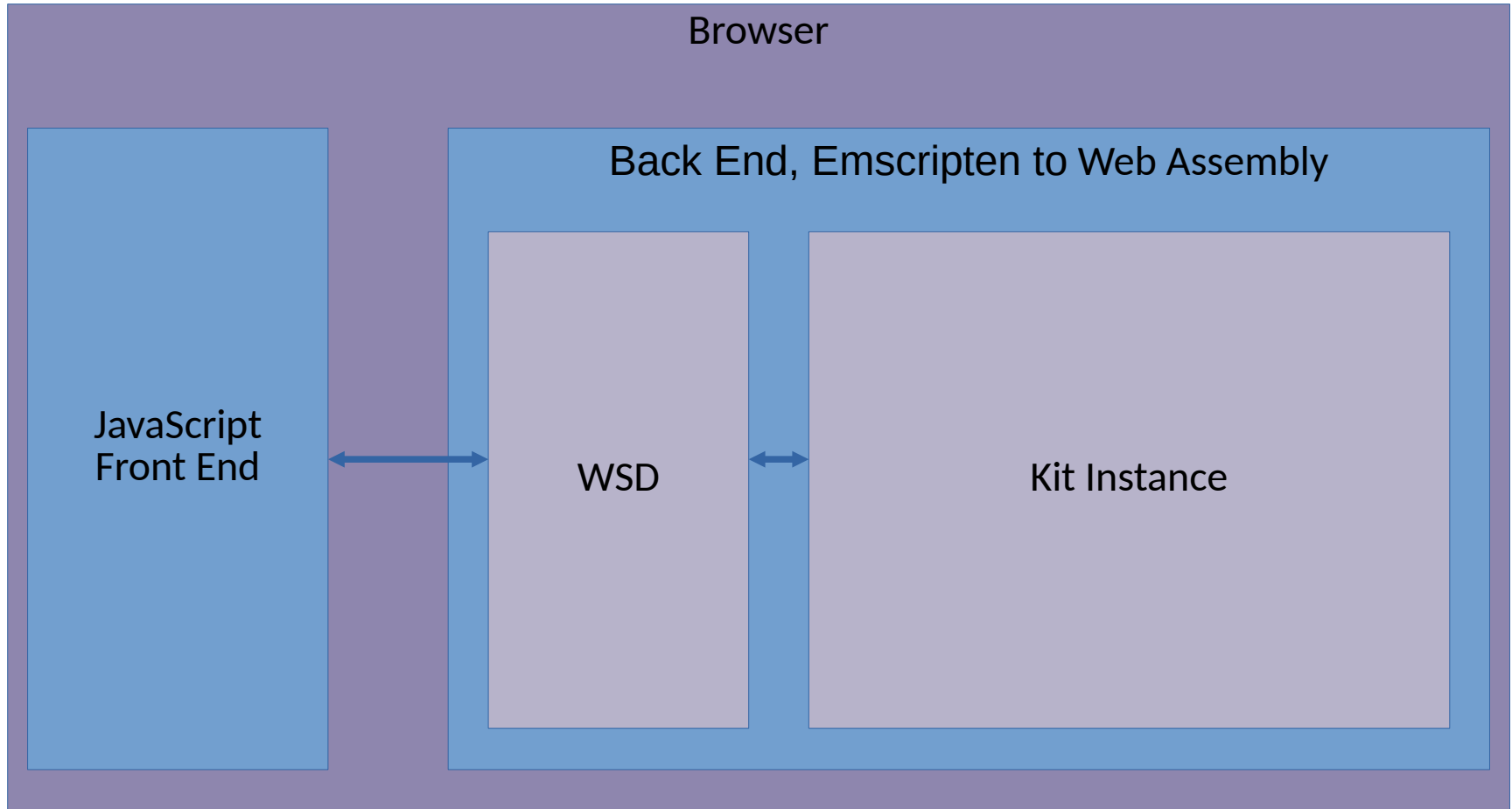
Web Assembly

High performance binary executable format

- Available in browsers for years
 - Runs in the same sandbox as JavaScript
- Emscripten compiles C++ to WASM with LLVM
- Website Security Policy determines if it is allowed to be executed



Collabora Online: COWASM Overview





COWASM

core+online ported to wasm

- Gory details on porting to WASM
 - <https://git.libreoffice.org/core/+refs/heads/master/static/README.wasm.md>
 - Thanks to allotropia for their work on porting core to WASM
- Normal online server when requested by client redirects to a wasm page which triggers downloading the wasm binary
 - Get this just right and the wasm can be cached so it's a one time download
 - Feed it a copy of the document
- COWASM embedded online server executes in the browser
- JavaScript client communicates with embedded COWASM similar to normal server



Security Policy Headache #1

Collabora Online integration

- Intricate dance of multiple web applications and servers
- Browsers super paranoid about allowing wasm to execute
 - [https://en.wikipedia.org/wiki/Spectre_\(security_vulnerability\)](https://en.wikipedia.org/wiki/Spectre_(security_vulnerability))
 - https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/SharedArrayBuffer
- Basically both the embedding app and embedded app have to agree to that arrangement



Security Policy Headache #2

Nextcloud

- Thanks to Julius Härtl for bootstrapping how to get the Nextcloud richdocuments integration to provide the appropriate security content headers from that side
 - <https://github.com/nextcloud/richdocuments/pull/3260>
- Then can set matching ones from the Collabora Online side to get the browsers to allow WASM
- Not plain sailing yet. Configure CO for reverse-proxy mode, so all data appears from the same server hosting Nextcloud
- And chrome needs https
- And maybe some sites pull logos, etc from a third location that doesn't have the magic headers
 - So make the chain of adding headers conditional on wasm enabled in Collabora Online

Video


Practicalities

- Incomplete, just one way online→offline for now
- Build time resources
 - Linking takes > 25G RAM
- Threading
 - A little unclear if number of threads reported in wasm is threads the system has or the number of threads wasm can use



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Thank you!



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