

Collaborative Apps over Matrix using the Collabs Library

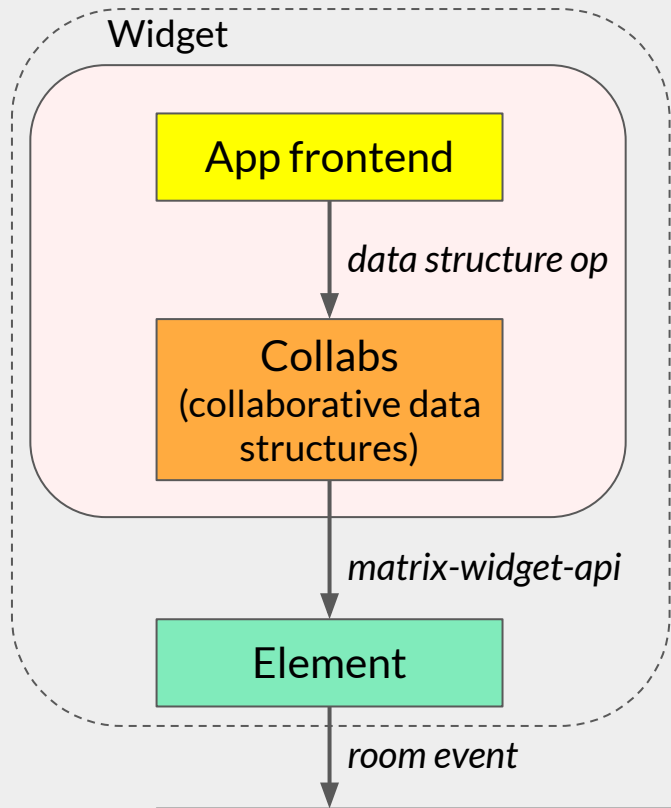
Matthew Weidner

(Alpha Prototype)

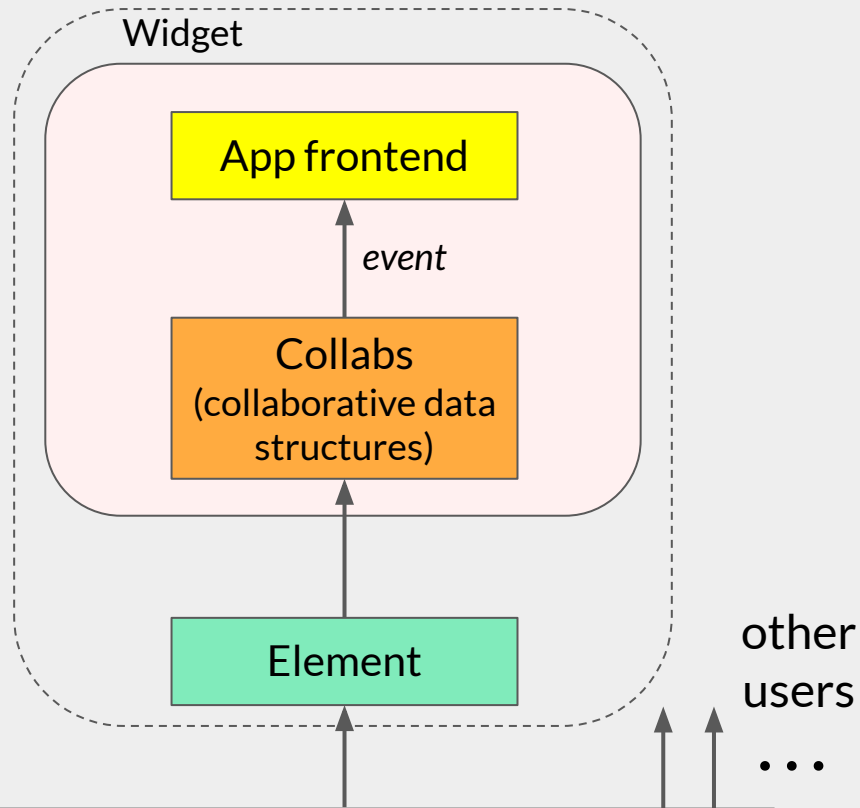


Carnegie Mellon University
School of Computer Science

User 1



User 2



Matrix network

Users

- ✓ E2EE
- ✓ Federated &
self-hostable
- ✓ Open-source tech stack

Developers

- ✓ Deploy w/ static site
- ✓ Matrix handles user
accounts, scaling, ...
- ✓ Forkable

Custom Widget

Clear

Invite to this room

mweidner created and configured the room.

expand

Send an encrypted message...

Custom Widget

Clear

Invite to this room

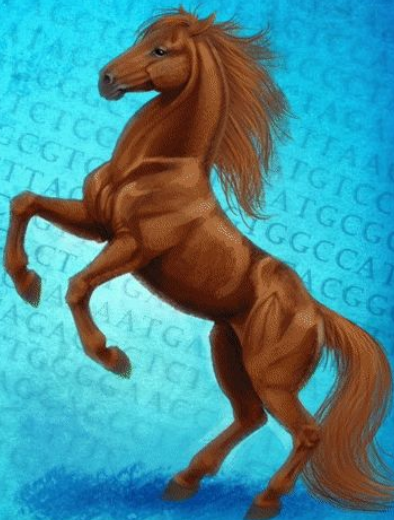
mweidner created and configured the room.

expand

Send an encrypted message...

Custom Widget

Chestnut



Genetic markers for Chestnut color:

- e e
- a a
- g g
- cr cr
- d d
- ch ch
- F F
- z z
- sty sty
- rb rb
- rn+ rn+
- sbl+ sbl+
- w+ w+
- to+ to+
- o o
- spl spl
- lp lp
- patn1 patn1
- patn2 patn2

show help ?

CC BY NC SA

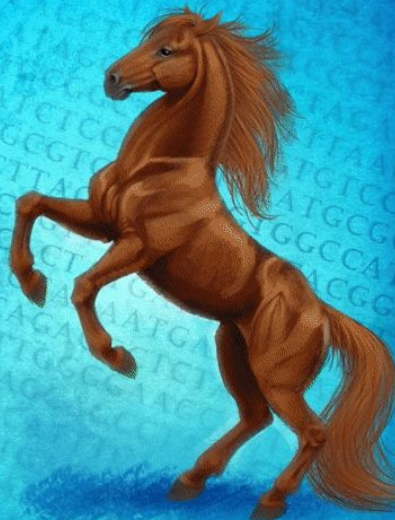
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CC BY NC SA

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Modified from an app by Jennifer Hoffman, <https://horse.jenniferhoffman.net/horse-color-genetics.html>

Collabs is a TypeScript library of client-side **collaborative data structures** (specifically, CRDTs).

```
// Whiteboard state: a collaborative Map.  
boardState: LwwCMap<[x: number, y: number], string>;  
  
// When user draws:  
boardState.set(pt, color);  
  
// Respond to changes (possibly external):  
boardState.on("Set", (event) => {  
  ctx.fillStyle = boardState.get(event.key)!;  
  ctx.fillRect(event.key[0], event.key[1], GRAN, GRAN);  
});
```


**Collabs is a collections library, not
just a set of CRDT implementations.**

- Keep your data model & types
- Flexible & extensible
- Composition (objects, collections, ...)

Collabs

(Alpha Prototype)

<https://www.npmjs.com/package/@collabs/collabs>

<https://compoventuals-tests.herokuapp.com/>



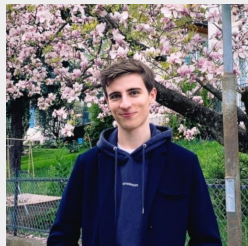
Heather Miller
CMU, Faculty Advisor



Huairui Qi
CMU (M.S. 2020)



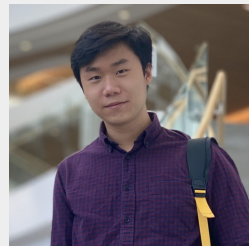
Ignacio Maronna
CMU (M.S. 2020)



Maxime Kjaer
EPFL/CMU (M.S. 2021)



Ria Pradeep
CMU (B.S. 2021)



Benito Geordie
Rice

Thank you!