A Collaborative Visual Database

by

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ESSTHS

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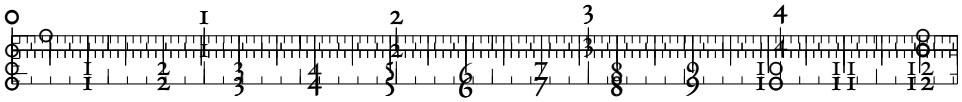

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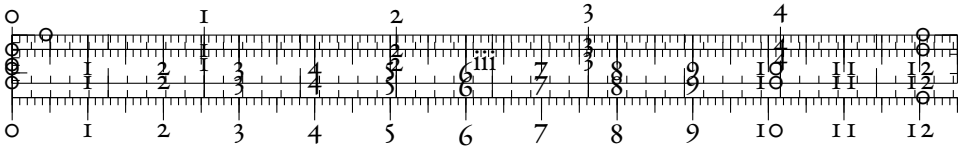

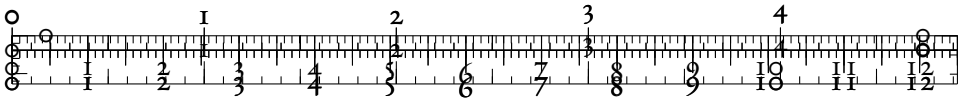

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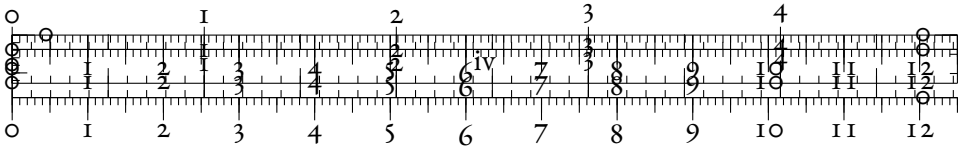

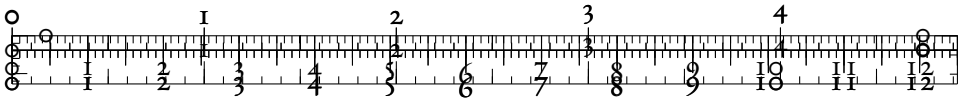

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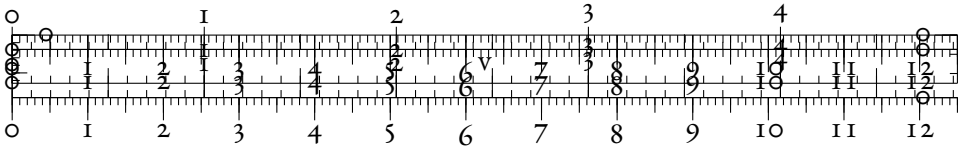
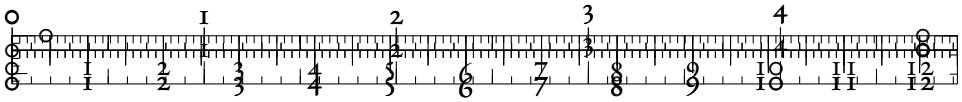




Conclusion

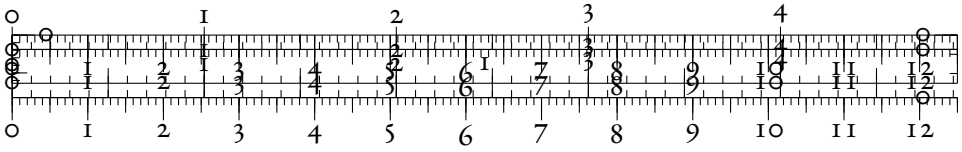
Our project consists in building a visual collaborative database for small and medium-sized businesses, to be used for content management and to be easily connected to web applications with no required technical knowledge. Three months later, we got there.

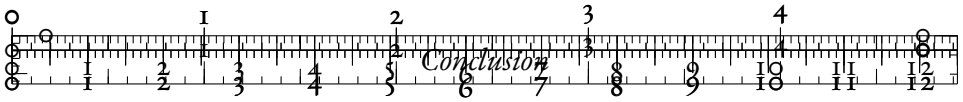
Our prior experience with various other applications and our extensive research of similar solutions gave us an idea about what we actually wanted—collaboration, performance, accessibility, and simplicity. Then, we designed our use cases around these ideals.

Since we had the freedom of choosing whichever technology we wanted, we made sure to make the right choice that would ensure achieving all of our requirements. We analyzed our options, and we picked what evidently was the best choice for our use-cases. Throughout this, we presented our application's architectural patterns, composition, and conceptual study. We dived deep into collaborative algorithms in theory and practice, and we chose the one that fit our application the most.

Eventually, we explored our technology stack and presented more patterns and ideas that would lead to the desired performance and usability goals.

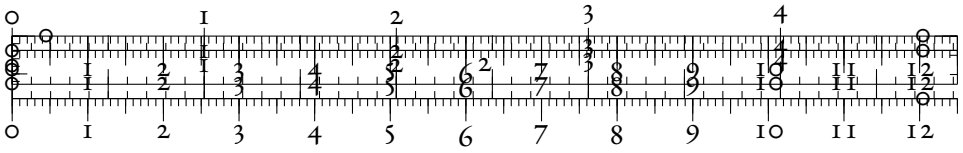
Finally, and since an idea is worthless unless it is brought to life, we explored our application's implementation with its different screens and features.

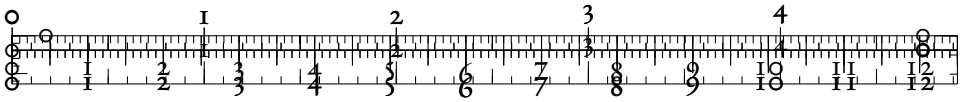




No application is ever complete, but we hope that within these three months we were able to create a disruptive solution that would fix one broken part of the internet.

We also hope that this project and this work sets the example for what is possible with the modern web, within a limited timeframe, a single laptop, and an idea.





Acronyms

CmRDT Commutative Replicated Data Type

CMS Content Management Software

CRDT Conflict-free Replicated Data Type

CvRDT Convergent Replicated Data Type

DOM Document Object Model

FDD Feature-Driven Development

GPU Graphics Processing Unit

JSON JavaScript Object Notation

MVC Model-View-Controller

MVVM Model-View-ViewModel

OT Operational Transformation

OTP One-Time Password

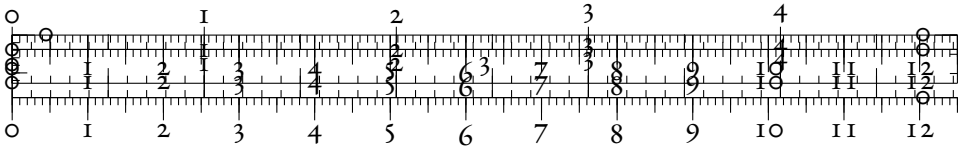
P2P Peer-To-Peer

RBAC Role-Based Access Control

RDMBS Relational Database Management System

SaaS Software as a Service

SDK Software Development Kit



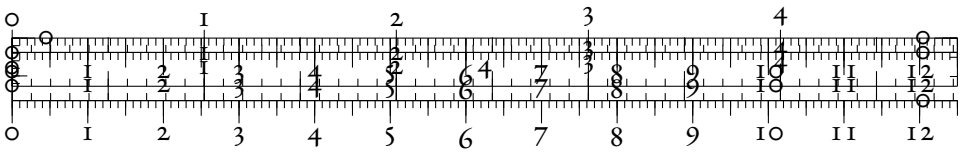
SSPL Server Side Public License

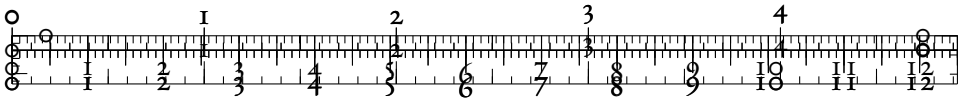
UI User Interface

UX User Experience

WAI-ARIA Web Accessibility Initiative – Accessible Rich Internet Applications

WOOT WithOut Operational Transformation

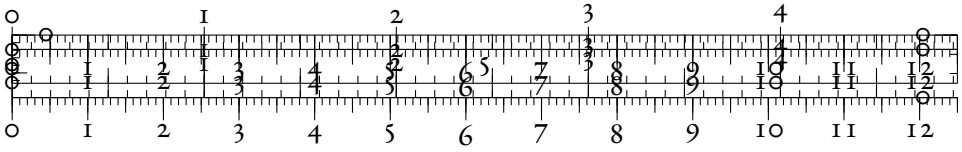


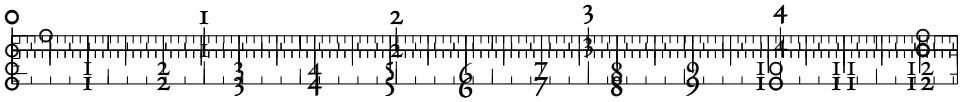


Glossary

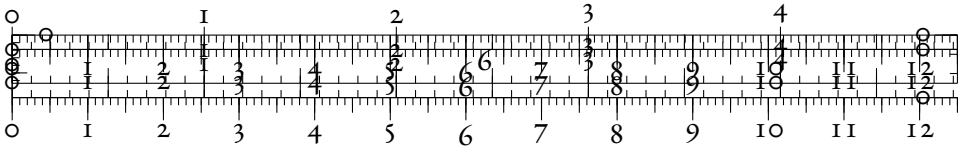
cacheable A cacheable response is an HTTP response that is stored to be retrieved and used later, saving a new request to the server [1].

polyfill A piece of code used to provide modern functionality on older browsers that do not natively support it [2].





Bibliography

[1] *Cacheable - MDN Web Docs Glossary: Definitions of Web-related terms | MDN*. en-US. URL: https://developer.mozilla.org/en-US/docs/Glossary/cacheable (visited on 06/07/2021).

[2] *Polyfill - MDN Web Docs Glossary: Definitions of Web-related terms | MDN*. en-US. URL: https://developer.mozilla.org/en-US/docs/Glossary/Polyfill (visited on 06/07/2021).