Collab-UI: A collaborative user interface prototyping tool

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Nowadays, prototyping has become an integral part of the software development cycle. Functional prototypes can provide a valuable insight on the products characteristics and they are highly utilized in various agile development methods [2]. However, the process of designing a prototype from a scratch and discussing its properties with the development team is often lengthy and overly complicated. Persons participating in this process have to rely on external communication tools and sequential workflow. The effectiveness of the prototyping team would be greatly improved by a collaboration-oriented prototyping tool that would let everyone contribute in real time.

Since no such solution is currently publicly available, in this paper we present a new user interface prototyping tool named Collab-UI. It is designed to help people develop prototypes of applications utilizing HTML and CSS in their presentation layer. Our goal is to provide a solution that is accessible from any device, regardless of its operation system and hardware capabilities. Therefore, we designed Collab-UI as a dynamic web application that integrates real time collaboration with browser-enabled communication channels and online management system of existing prototypes. We aim to develop an all-round solution that encapsulates all activities related to user interface prototyping in a single online platform.

Because functional prototypes are often kept and steered towards the final product quality instead of being discarded [1], we have designed Collab-UI to be able to export the prototypes as a fully functional source code.

To achieve this, we utilized GrapesJS[1], an already existing browser-based prototyping solution and gradually added more and more collaborative and communication aspects to it. Currently, the core Collab-UI feature structure includes:

— User management
  o E-mail based user registration and verification
  o User notification system
— Project management
  o Basic & detailed prototype overview
  o Prototype collaborators management
  o Collaborator privileges support
— Real-time prototyping
  o Interactive and customizable prototype editor (see *Figure 1*)
  o Immediate prototype change propagation and synchronization
  o Connected collaborators overview
— Source code export & version management
— Means of communication
  o Voice chat
  o Text messaging

In order to provide these features, our application relies on a number of specialized technologies and external libraries. The backend part of the application consists of a pair of databases (a relational and a non-relational one) and two dedicated application servers – each taking care of different tasks. These servers expose their REST APIs for clients to call upon.

The presentation layer is built on various specialized JavaScript libraries, all of which cooperate together with GrapesJS[1] in order to provide the desired functionality. Even though the technological stack is quite diverse, all the end user needs in order to start prototyping is a common web browser with JavaScript support.

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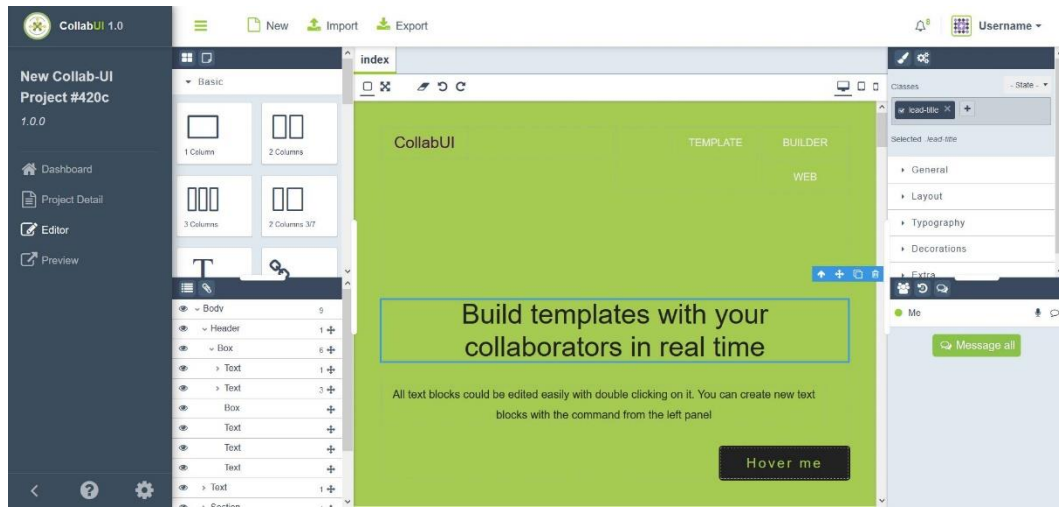[1] `http://grapesjs.com/`

Figure 1. Screenshot of the Collab-UI interactive prototype editor

Our application is primarily aimed at UI/UX designers and frontend developers working together in development teams. However, it can be also used by any other person included in the user interface prototyping process – even by the product owner himself (e. g. to check on the progress of the team).

So what are the steps required in order to start prototyping with Collab-UI? Every user needs to go through the registration process in the first place. Fortunately, this process is rather simple and it is no different from registering on other websites. The user will be registered under his e-mail address and his basic information (such as name and surname) will be stored in a relational database. After activating his account via an activation link sent by e-mail, he can immediately log in and create an empty project. Every project is characterized by its name, owner and a set of user-defined tags. When a new project is created, its owner can start working on the prototypes right away, or he can instead invite some collaborators. Each project collaborator is identified by his e-mail address and a privilege (edit or watch), which has been assigned to him by the project owner during the invitation process. From this point, any project member with sufficient privileges can start working on the existing prototypes or create a new one. Since the application is not publicly available yet, there is currently no limit for the maximum number of user interface prototypes per project.

Every prototype change is synchronized across all connected clients by a dedicated NodeJS server in real time. This collaborative way of work can be considered the key feature of our application.

The idea behind Collab-UI is to provide a universal tool which overcomes the notorious issues associated with user interface prototyping in teams. We have managed to address these issues by providing a way for individuals to communicate and collaborate in real time without the use of any external applications. It is important to note that Collab-UI is accessible from any device via standard internet browser and it can be used to design user interfaces for both mobile and desktop devices.

As for the future work, there are numerous new features that could be added into the application in order to make it even more helpful and enjoyable to use. Moreover, it is built on technologies which are constantly evolving and therefore it offers a lot of possibilities for future work in this regard.

References

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