SAS Infographics Toolkit Project Summary Report

Team #2

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Project Description

This project involved designing and building a prototype for an infographics toolkit. Such a toolkit can help data report designers build customized reports that include visualizations, images, and other elements combined to convey a story. While visualizations are used to represent and summarize data in a graphical format, infographics go a step ahead and customize the visualizations so that they can communicate the main message the report is trying to convey. A detailed design specification and a low-fidelity prototype based on these specifications was built using wireframes. A high fidelity prototype focusing on some of the major use cases was also developed.

Project Objectives

The main objectives of this project are:
- To design a tool set that will provide the users with maximum flexibility and usability for building an infographics.
- To help the users build an infographics by facilitating the superimposition of context over visualizations.
- To provide the users with the ability to handle data that may change dynamically.

Experiential Goals
- The toolkit should be usable as well as useful.
- Experience of using the software should be simple and intuitive. The language used must be unambiguous.
- User should have the desired flexibility of creating the infographics.
- The toolkit's user interface should be aesthetically pleasing and attractive.

Approach

Based on the use case document provided by SAS, we decided to focus on the following use cases while designing and developing the prototype.

1. Replacing slices in a pie chart with images
2. Connecting an image or other visualization to an element in a visualization
3. Customized visualization, images and text in a tooltip
4. Attach/overlay image or custom content to entire visualization
5. Using overlaid or masking images to provide decoration or context
6. Images and custom content in filtering controls

The step by step approach carried out is as follows:

Research

The initial research that was carried out included studying the use case document provided by SAS. The various use cases were evaluated for feasibility to be included in the prototype that will be useful for the intended users. After the use cases to be handled were decided, further research was carried out to decide on the tools to be used for designing the low-fidelity and the high-fidelity prototypes. After appropriate consideration, the following tools were finalized:

- Balsamiq Mockups for building low-fidelity wireframes of the Interface
- HTML and CSS to build the web application for the high-fidelity prototype, with elements of D3.js for the visualizations and graphics.

Early Prototype

The early phase of the project involved coming up with multiple sketches for the prototype's user interface. When the sketches were evaluated and the final user interface design sketch was finalized, an early prototype was developed using the Balsamiq Mockups. This prototype looked like this:
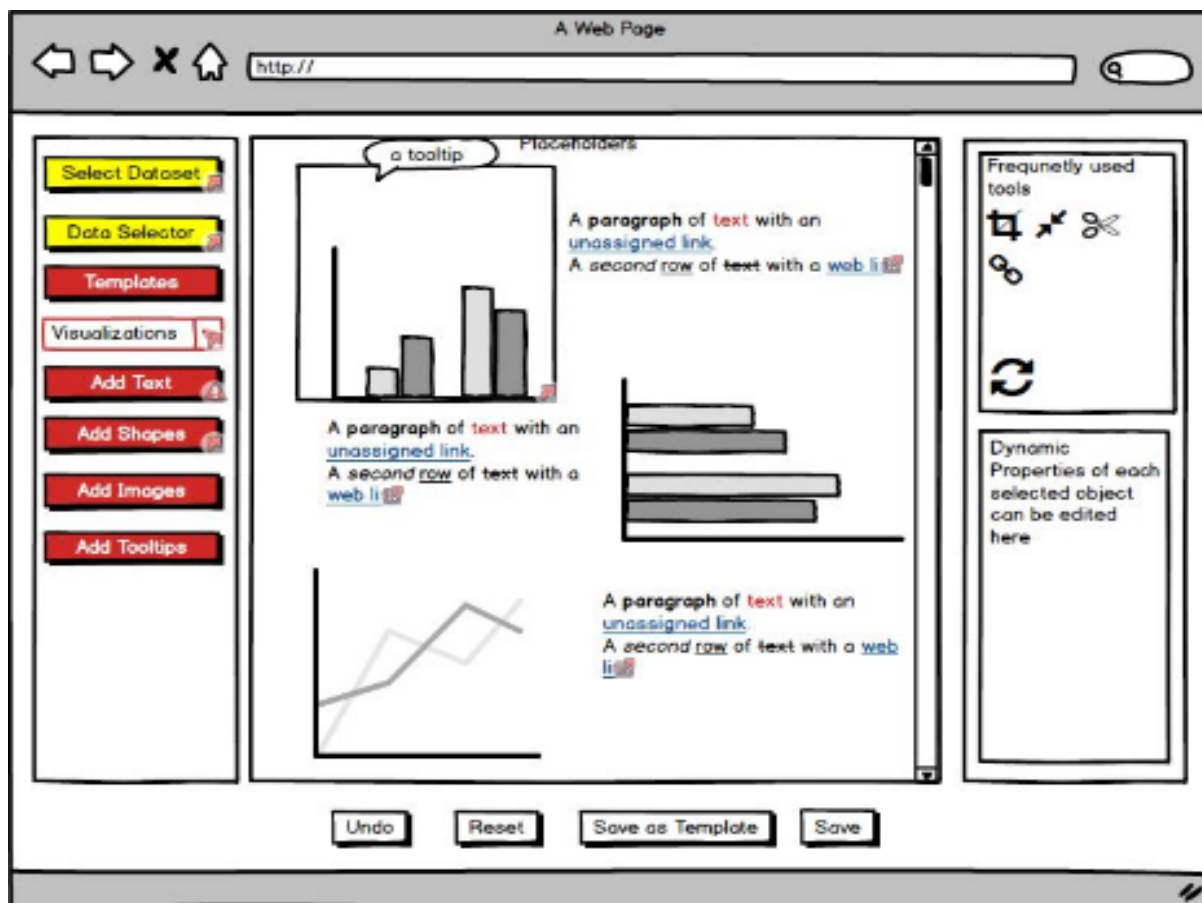

Formative Evaluation

A formative evaluation was carried out on the early Balsamiq prototype. This involved semi-structured interviews with task observations while the participants carried out the given

tasks as well as a survey at the end of each task. Two participants were recruited for this evaluation, both with some statistics/data analytics experience. The detailed results for the interview and survey are provided in the test_results.docx file. A summary of the results can be drawn as follows:

● Positives: Simple, clean interface and layout
● Needs Improvement: Unclear language

Prototype Development

Based on the feedback received from the early-prototype evaluation, the Balsamiq prototype was further improved and changes were made where necessary. The reviewed Balsamiq prototype looked like this:
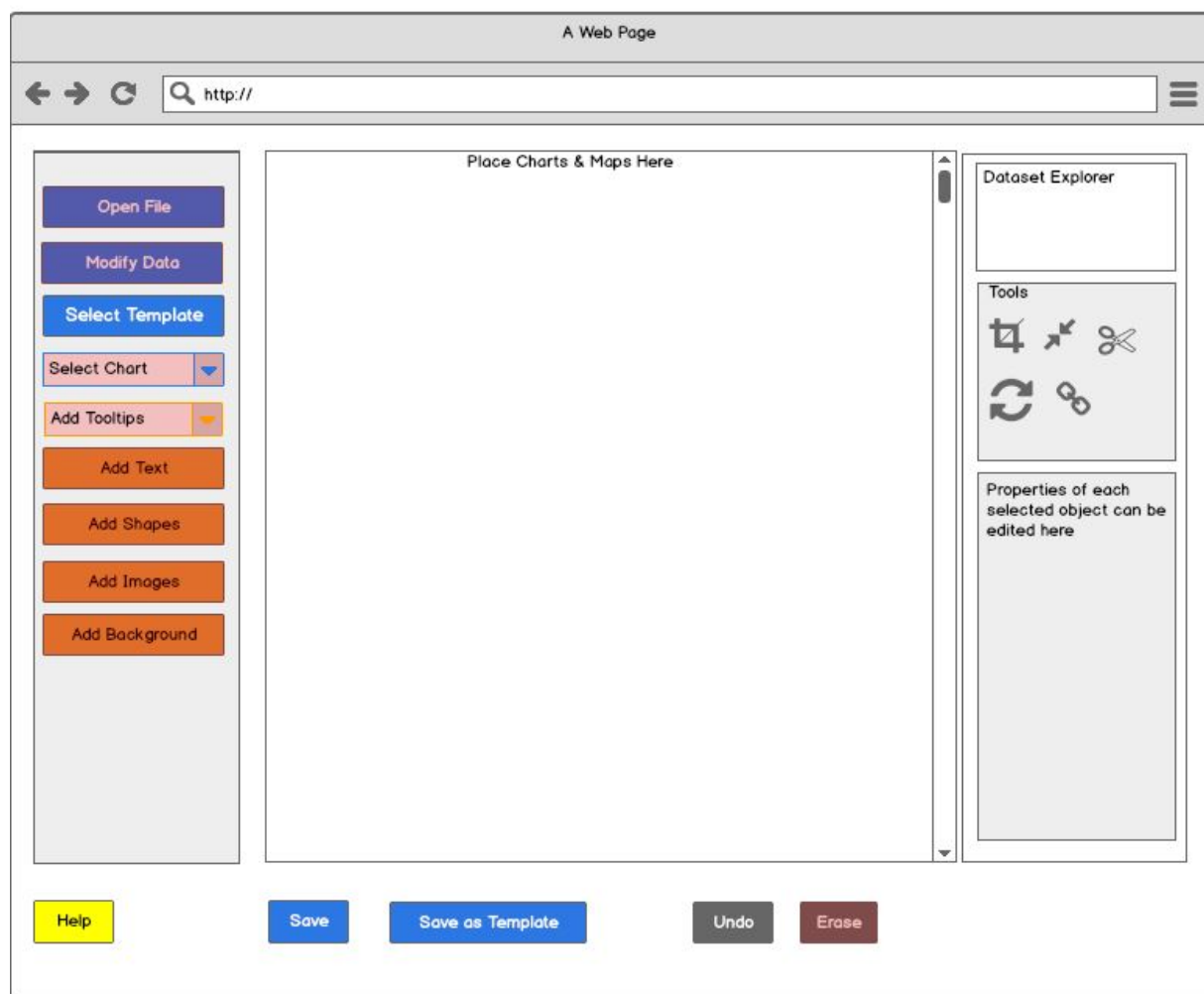
A web application was developed for the high fidelity prototype which focussed on few of the mentioned use cases.

Final Evaluation and Testing

A final round of evaluations was done to carry out a thorough survey of all the tasks included in the prototype and to gauge the improvement over early prototype. Overall, participants rated the onboarding and adding visualizations tasks as being easy. Some aspects that negatively impacted ratings were the prototype fidelity and terminology used in the Tooltips controls and dialog boxes. The detailed results of the final user evaluation and testing is given in the test_results.docx file.

Discussion

The early-prototype and post-development surveys and user testing revealed that the ease of use of the low fidelity prototype was highly affected by the restrictions posed in various functionalities of Balsamiq. The wireframe prototype does not provide any way for direct manipulation of elements on the canvas, and it lacks certain transitions between the tasks. To facilitate the understanding and breakdown of each task, a wizard based interface was designed for the low-fidelity prototype. But the high fidelity prototype takes a more modern approach. Direct manipulation, such as dragging objects, clicking on the objects to change properties, resizing , etc, can be done using the high fidelity prototype.

Future Work

We would extend this project by completing several more iterations of prototypes and evaluations of the prototypes. Furthermore, we would conduct future evaluations with the high fidelity prototype since it allows for direct manipulation of screen controls and elements as opposed to the low fidelity prototype.