Optimization Swisscom Design System - Chart Components

Graduate

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Initial Situation: Swisscom AG currently uses a design system known as Swisscom Digital Experience (SDX). This platform provides a repertoire of reusable components, along with well-defined guidelines, to facilitate the creation of static web pages and web applications specific to Swisscom AG. Within the SDX framework, three different types of chart components are provided: a pie chart, a horizontal bar chart and a vertical bar chart. As part of an ongoing effort, Swisscom AG is in the process of migrating these legacy chart components to more modern, standardised web components that have a consistent and unified structure. While the pie chart has already been optimised to conform to web component standards, the remaining chart implementations continue to rely on rudimentary technologies such as HTML, Sass and TypeScript. Furthermore, the use of these legacy chart components fails to enforce a consistent design and usage approach, resulting in inconsistent visual representations and confusing code readability. The objective of this thesis is to reimplement the legacy chart components into web components by leveraging the capabilities of the Stencil library, accompanied by the use of Scalable Vector Graphics (SVG).

Approach / Technology: A comprehensive analysis of the legacy chart components was undertaken to clarify the required functionality and identify potential areas for improvement. This analysis focused on the horizontal and vertical bar charts. By examining the functional requirements of these chart components, a new design approach was formulated. The objective was to create chart components with a consistent design and improved usability. Swisscom AG specified the use of specific technologies to accomplish this task. Key technologies used include the Stencil library, which serves as the basis for implementing web components, SVG (Scalable Vector Graphics), which is used to display scalable graphics, and anime.js, a library that facilitates the creation of appealing and seamless animations. A prototype of the proposed solution was developed for testing and familiarisation purposes. The implementation of the new web components was then started using an agile development process. Finally, usability and user experience (UX) tests were conducted to validate the viability of the chart components in terms of developer usability and user experience.
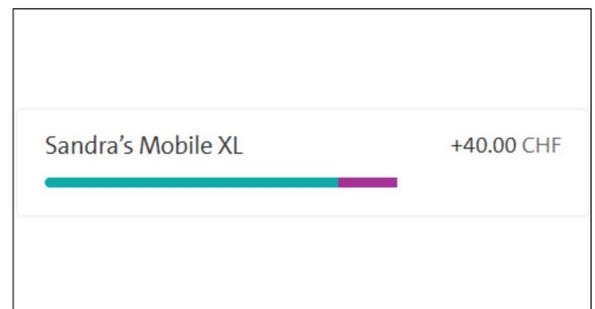
Result: To ensure timely delivery of a high quality product, only the horizontal bar chart component was implemented. This component handles input attributes and generates rendered output in the web browser, as shown in figure 3. It displays error messages for incorrect or inconsistent data input. The visual design is consistent, responsive and improves user experience across desktop and mobile devices. All necessary information is visible without additional user interaction. Using SVG, the component displays colored stacked bars and associated labels. Design constraints outlined by SDX have been incorporated. Rigorous testing, including manual testing and a code test suite, verifies the correct behaviour of the web component. The component is delivered as a web component that can be initialised using a single HTML tag. This approach enhances the usability of the component within HTML, as depicted in figure 1. The results of usability testing indicate positive feedback regarding the use of the chart. In addition, UX testing shows improvements in readability and comprehension compared to the legacy chart component.
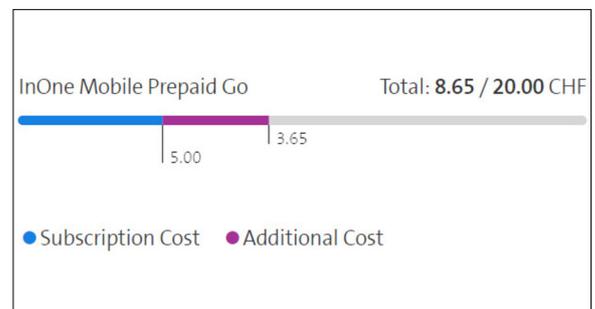
Figure 1: Side-by-side view of legacy and new component initialisation code
Author-created illustration

Figure 2: Render of the legacy horizontal bar chart component
https://sdx.swisscom.ch

Figure 3: Render of the new horizontal bar chart web component
Author-created illustration

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