Redesigning the User Interface of the Atlas of Switzerland for the Web

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Abstract:

The interactive National Atlas of Switzerland (AoS), featuring several hundred thematic maps, is currently being reengineered and restructured to be released as a National Web Atlas of Switzerland. A first version is planned to be released in autumn 2025 and will support a range of devices, such as PCs, laptops, tablets and mobile phones with different screen sizes. A major advantage of migrating the AoS to the web is the fact that it can be released more frequently and our users don't have to deal with software updates, downloads and installations to enjoy the latest features and improvements. The refurbished user interface of the AoS web version will serve as a new technical base for the publication of existing and future map types and can be extended with new UI elements as needed, such as additional exploratory tools or new interactive and animated map types. It is already planned to introduce story maps in a future AoS version, which will require additional UI elements such as interactive timelines interweaved with multimedia assets.

To start the user interface redesign, the AoS team discussed and defined the desired future functionalities and user interface elements and subsequently created a user story map. The functionalities had been chosen to match the requirements of six different personas: interested citizens, pupils, students, teaching staff, hobby researchers and retirees. To cope with limited development resources, all functionalities have been prioritized into three categories: must, should and can. In autumn and winter 2024/25 a collaboration with Zeix AG, a user-centered design agency, was started. Based on the visual story map, past concepts of our existing AoS version 4, a study of other web map applications and discussions between the teams of Zeix AG and AoS, a User Experience (UX) concept and a visual User Interface (UI) design have been developed. The joint project was carried out during 3-4 months and structured in three concept iterations, a user test and two visual design iterations:

Concept Iteration 1	Concept Iteration 2	Concept Iteration 3
• Open and close the atlas • Integration of AoS with AoS website • Find a map topic	• Navigate on map • Explore topic	• Use of advanced tools • Get help • Learn more about the atlas

A click prototype has been developed, both for desktop and mobile devices. During concept iteration 3 a user study was conducted with six people, representing different personas. The chosen methods were *usability testing* and *think aloud protocols* (evaluated through video recordings), accompanied by a *pre- and post-interview*. The six selected subjects represented teachers, pupils (secondary and high-school level), an interested citizen, a hobby researcher and retiree. The study started with a preliminary interview about the users' background, IT skills, and experience with related map applications. The main part of the study consisted of several tasks related to finding map topics and exploring the map on both mobile devices and a laptop. Users had to explore a map representing the distribution of companies in the watch industry along with an accompanying text, charts and metadata. Users were observed while solving the tasks - and the task results were checked for correctness and completeness. Users were asked to think aloud and share their thoughts, problems, or suggestions for improvement. Their experiences were discussed in a follow-up interview. As a result of the usability testing, several aspects of the application layout and functionality of the interactive tools were revised. Further user tests will be carried out after the release, in order to more thoroughly assess the effectiveness of the chosen UX approach – and to test implementation variants of new interactive tools still to be developed.

After the sign-off of the UX concept, the visual UI design and the design system were developed in two iterations: Visual design iteration 1 consisted of the general AoS website, the AoS start page, the navigation, and search. Visual design iteration 2 covered the map viewer, tools for the exploration of the map topic, advanced tools, help and additional information.

All necessary screens and the UI component library have been designed with the help of "Figma", a design tool for creating user interfaces. This tool allows for designers and developers to collaborate, and provides many of the necessary CSS properties and layout definitions necessary for the development of the AoS Web. The design system includes the following graphical properties: CSS grid system, colors, fonts and font properties, spacings, icons and transitions (animation properties). An atomic design methodology has been used for the development of the design system, so that individual screens ("organisms") are composed of reusable components ("molecules") and reusable definitions ("atoms").

The implementation of the AoS web version already started in autumn 2024, focusing first on the selection of the basic technical components. Astro, a static site generation (SSG) approach, will be used to create web sites, linked assets and media for each of the four supported languages. This provides the advantage of superior performance and should result in good SEO (search engine optimization) performance. Given that most of the AoS maps are updated only occasionally, this is an acceptable choice. Additional technical components include TypeScript, Vue.js, TailwindCSS, MapLibre as a map viewer and renderer of base maps and deck.gl as the main renderer for thematic maps. In the future, additional renderers or web development tools can be added. It is planned that a first version of the AoS web will be released in autumn 2025 with subsequent incremental updates for bug fixes, improvements and additional functionality.
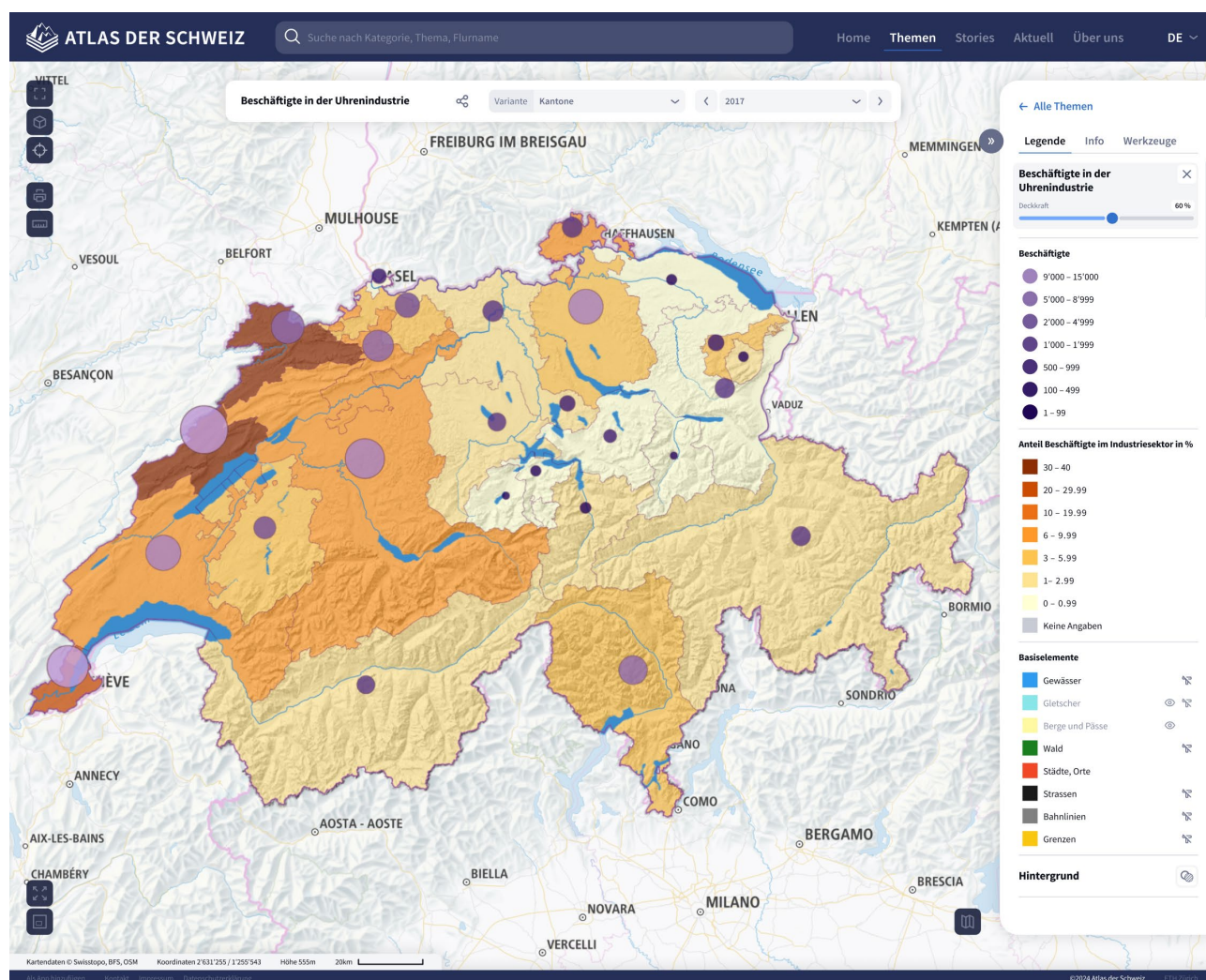

Figure 1. Screen of the Map View of the new user interface and visual design of the Atlas of Switzerland. © Atlas of Switzerland.

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