

GeoApplication Dev.: MINKT Stories Web Map - Report

Contributors:

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Percent contribution: 33%

Contributed Elements: BaseMap integration, WFS integration, Layer-Switcher (for overlays incl. category filter, and base layers), Icon design, "Home" Button, Geolocation, Concept and Report writing

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Contributed Elements: Map Skeleton, initial View (lungauPosition), Geolocation, CSS for main elements and overall page responsiveness, Concept and Report writing

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Percent contribution: 33%

Contributed Elements: WFS publishing, feature pop-ups, resolve missing image attachment in WFS, feature clustering, interactive image gallery, GitHub web-map hosting and integration into platform, Concept and Report writing

1. Aims:

As outlined in the concept, the primary aims for this web map were three-fold. Firstly, the web map should integrate a live Survey123 feature layer as a Web-Feature-Service which automatically updates itself when a new entry is made. Secondly, the web map should be interactive, such that the user is able to explore the map through pop-ups, zoom functions, and category filters. Thirdly, the visualisations of the map elements should be appealing to the user and invite engagement. In the following short report we outline how these aims were achieved and overshot.

2. Outcomes:

ESRI's Survey123 form stores all responses in a feature layer by default and publishing such a feature layer as a WFS is a basic functionality offered in ArcGIS Online. This functionality was used to publish the MINKT Stories and use them as GeoJSON objects in the web map. The feature layer, however, did not contain the photo attachments since they do not conform to the allowed data types in an attribute table. ESRI also does not automatically generate a text-format URL that represent the images. The image rendering was therefore done in situ for the pop-ups and the gallery. See section 3.1. for further details.

To allow further interaction with the map and the features, we included several functions to enhance the user experience: First, the user has the possibility to get his/her current location displayed on the map. This feature might be nice, especially when students work with the results of the workshop during their classes at school. To foster interaction, we use this as a starting point, i.e., as soon as the user has his/her current position displayed, a popup appears. The popup acts as a stimuli to interact with the map by zooming in/out, clicking on the features/images, etc. Now the user can start exploring the map. To have more advanced options, a category filter for the individual Survey123-categories is included. This is also highlighted with different icons for each category. Here, users can, for example, only focus on 'Heilpflanzen'-features collected in the Survey. In this case, only features with the plant-icon appear on the map. This can also be useful for group-work in the classroom, when each group focuses on a certain category to analyse it, for example. When clicked, each feature displays a popup with the content of the story, including an image. Also, besides the categories, users can play around with basemaps. As with the category-example, this can also come into play in a classroom-setting when trying to read patterns from appearing categories and their surroundings (basic land cover, road network, etc).

As the work on the web map progressed well, we decided to include the extra element of an interactive image gallery, which would display the images of the submitted stories in the Survey123 form, allow the user to click through the gallery, have a hover-function to show the story title and a click-function to zoom to the respective feature in the map. A key requirement for this element was to link the WFS to the gallery and the gallery back to the features in the map. To achieve this, the gallery and its hover/click functions are based on the Object ID's of the individual features. The gallery is initiated with the total amount of features contained in the WFS and displays the middle four images, so that users can click on the "prev." and "next" buttons until the upper and lower bounds of the features are reached. The gallery is also set to disappear on screen with a smaller size than 600 pixels, since the gallery is thought to be of primary interest during the analysis of the web map once it contains workshop results, rather than in the app-format where workshop participants will be using the site to record new map features.

In the end, the overall layout got adapted to fit the header, the map, the gallery and the footer elements together in a responsive way. Also, the CSS was adapted a little to have the scalebar, the layerswitcher-icon and the category filter icon in the same colour as are header and footer. Overall, the whole appearance should not only be pleasing for the eye, but also be responsive in design as well as properly connected to the WFS to display the correct results.

3. Challenges and Solutions:

In the process of creating the web map, a few unanticipated hurdles were met and dealt with.

- 3.1. The first such hurdle was the Suvey123 image attachments, which were not included in the WFS by default. To integrate the images in the web map and the gallery, the image URL is now generated in situ with a URL frame (which includes the ESRI survey ID and the survey token) and the relevant feature's object ID. This way, the web map can dynamically load the correct image for each feature.
- 3.2. Another problem was to bind a popup and zoom to the current geolocation of the user. This was resolved by using the `map.getView()` along with `setView()` and `setZoom()` and placing a marker at the user's current location.
- 3.3. A further problem we experienced only on Thursday, 25th November was that all of a sudden, the Bing Key didn't work any longer. The key was replaced but showed us, that long-term maintenance of the project will be required to keep all functionality.
- 3.4. One challenge was time in a sense that once everything was up and running, we came up with new ideas of what we could do – but, to avoid any struggles, we decided to finish everything that was planned and in case we have time left, we can always add something.
- 3.5. One minor challenge was to work on the code files together without messing it up. We decided to come up with a GitLab, created issues with all the tasks and assigned them to the contributors. Then, we met every 3-4 days in a meeting to discuss the status quo and how we will continue. Also, we had clear rules on how to name the files and documents in the repository. In addition, we communicated over a WhatsApp group. Overall, this worked out quite well.
- 3.6. When the gallery was created, the layer-switcher stopped working properly. For a long time, we couldn't get to the bottom of the issue. As it turned out, the Walkermatt-ol-layerswitcher.css file utilises a class called ".layer", and the gallery we created also contained a class called ".layer". Once this small issue was identified it was easily fixed by re-naming one class to ".layers".
- 3.7. A final problem was to get the layout formatting right for the map and the gallery; turned out that it was a simple CSS formatting issue.
- 3.8. Adding a highlighting effect to the icons when hovering over them was tried and tested. Unfortunately, the issue of updating styles for individual styles and layer wide could not be resolved in time, which is why this visualization feature was ultimately dropped.