A Citizen Science Web portal for Interdisciplinary Research on Climate Change (BAYSICS project): Development and Evaluation

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"spread knowledge, promote perception, communicate complexity"

Introduction

BAYSICS (Bavarian Citizen Science Portal for Climate Research and Science Communication) is a project which aims to promote citizen science research on climate change in Bavaria, Germany.
The project has 10 partners, and most of them are Bavarian universities.
Based on the requirements of the project, the associated IT architecture was developed. Citizens participate in / interact with the BAYSICS project through the web portal. Citizens can choose from four research topics: plant development, pollen allergy symptoms, tree heights, and animal behavior on which they can make their observations. A lexicon was prepared as an additional tool for the identification of species by users. During the observation and before submitting the observation form, users can use the lexicon as a reference. The observation data from the citizens are visualized in the web-portal.

Goals

1. Citizens: To enable citizens to participate in a scientific project through digital platforms
- Make own observations about local impacts of climate change
- Environmental learning and education

2. Platform setup: To develop an IT infrastructure which fulfills the project's specific requirements
- Create a digital platform where scientists and citizens communicate
- Data submitted through the platform contribute to climate change research

3. Data accessibility: Transparent data policy
- Easy access to the observation data for users
- Clear rules for further use of data

Development

IT Architecture (Backend)

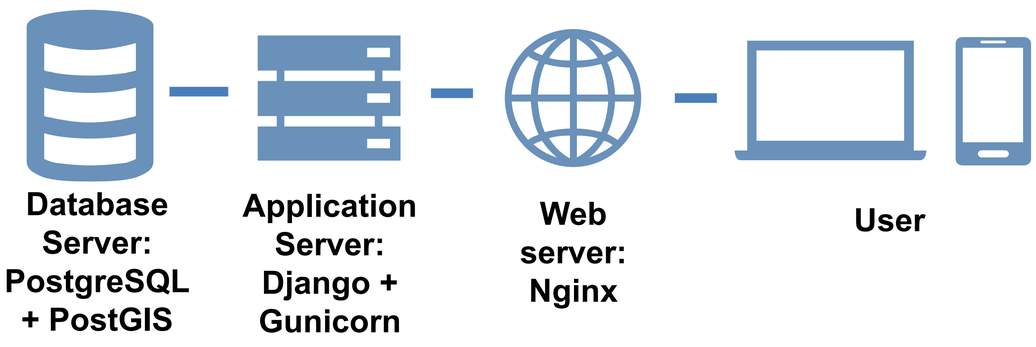

Figure 1. Simplified IT Architecture – Web-Portal

User Interface (Frontend)

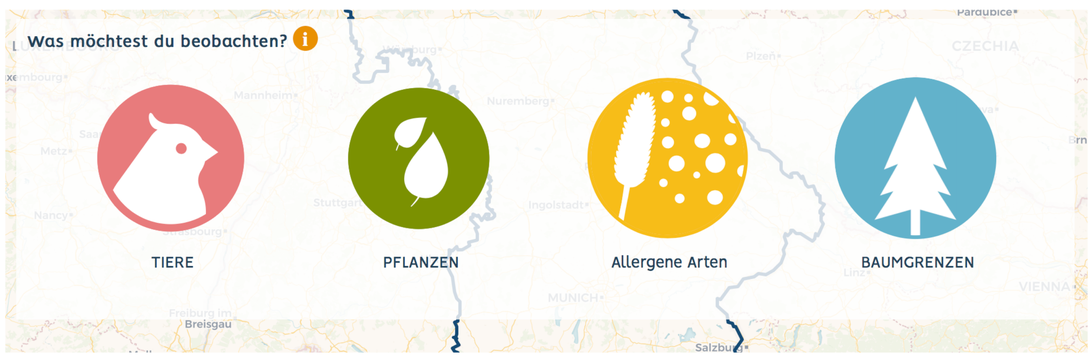

Figure 2. Screenshot of Research Topic Selection – Web-Portal

Evaluation

The first test phase (December 2019 – April 2020) was conducted under the participation of the project members (up to 30 people) and was aimed for troubleshooting. The participants had online access to the web portal and were able to leave comments on a separate list. Before the test phase started, the backend had to be fully developed. Due to limitations in time, the frontend development was mainly conducted during the test phase.
Only one-tenth of the issues reported during the first test phase was assigned to technical issues. In contrast, more than half of the reported issues were related to design and user interface. The remaining one third were text adjustments. The issues regarding the user interface were partly recognized and reported as technical issues. Those issues appeared mostly within the user - web-portal interactions (data in- and output) and could be solved by adding additional information in the user instructions.

Timeline

- Project kickoff meeting (June 2018)
- BAYSICS web-portal concept workshop (February 2019)
- Start of BAYSICS web-portal development (February 2019)
- BAYSICS web-portal first test phase within project members (December 2019 – April 2020)
- BAYSICS web-portal second test phase with voluntary test users and the start of observation data collection (May 2020)

Website: https://www.baysics.de

Twitter: @baysics_portal

Instagram: @baysics_portal

Acknowledgement

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bayklif Bayerisches Netzwerk für Klimaforschung

Bayerisches Staatsministerium für Wissenschaft und Kunst