

Automated Data-Ops for Community-Driven Flood Monitoring

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WATERPROOFING DATA

Data Flows

Citizens



Pluviometer registration

Citizens report the location and description of self-made pluviometers for their rainfall measures.

Rainfall Measure

Citizens with self-made pluviometers report rainfall measures daily. They can view and amend updated values.

Rain Event

A citizen report rain events including location, a short description and images.

Flooding Event

A citizen report flooding events including location, a short description and images.

Data Lake

Authorities



Official Rainfall measure

Authorities with monitoring networks provide rainfall measures. Official networks will be complemented with citizen-generated data.

Flooding areas

A hydrogeological study provides areas susceptible to flooding. These areas frame citizen-generated reports, and future exercises would provide updates.

Weather Forecast

(To be Developed) Short-term weather forecasts from official and private providers would notify citizens through the mobile application.

Summary

Communities from deprived urban areas suffer from socio-environmental challenges and data scarcity to tackle them. Geoinformation and cloud computing can support monitoring, analysing, and data-driven decision making while helping authorities and communities co-design and co-produce data. Automation through DataOps might facilitate the development and operation of heterogeneous data flows. However, its implementation implies a steep learning curve and requirements difficult to meet. This paper describes a vision to adopt DataOps in citizen-generated data production, improve data flows and integrate heterogeneous data sets. We discuss the challenges and efforts of setting data pipelines for a community-driven monitoring network in Brazil.

KEYWORDS: Data Flows, Data Pipelines, DataOps, Flooding, Citizen-generated Data

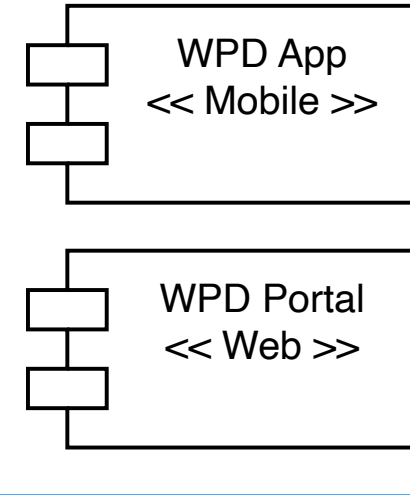
DevOps for citizen science stands as a novel contribution that implies a critical review of data flows and data integration within community-led projects.

The proposed architecture tackles issues such as configuring pipelines and the integration of official and citizen-generated data sets.

The proof of concept inspires future citizen-driven research to consider cloud services for handling heterogeneous data and faster deployment.

DataOps Architecture V1

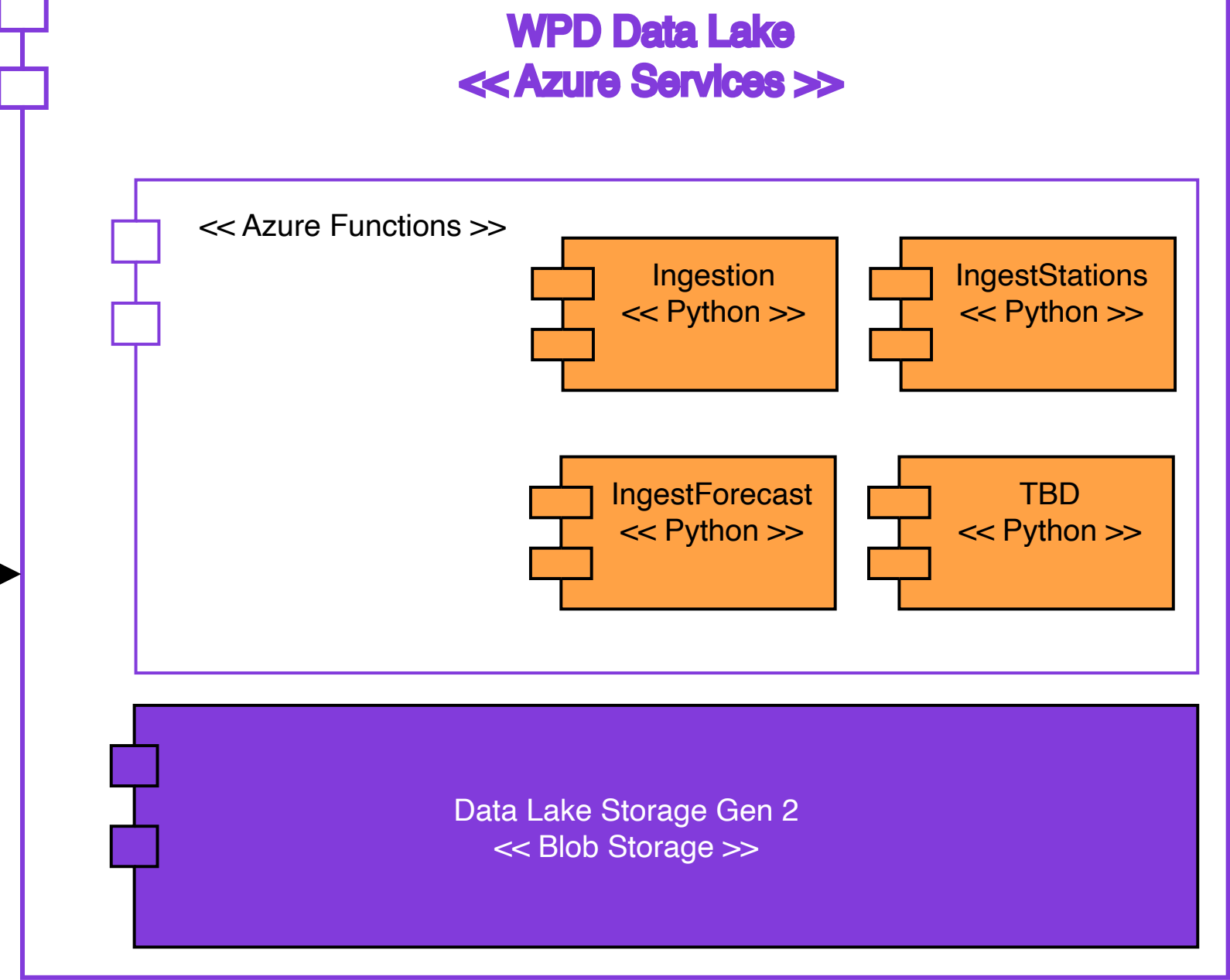
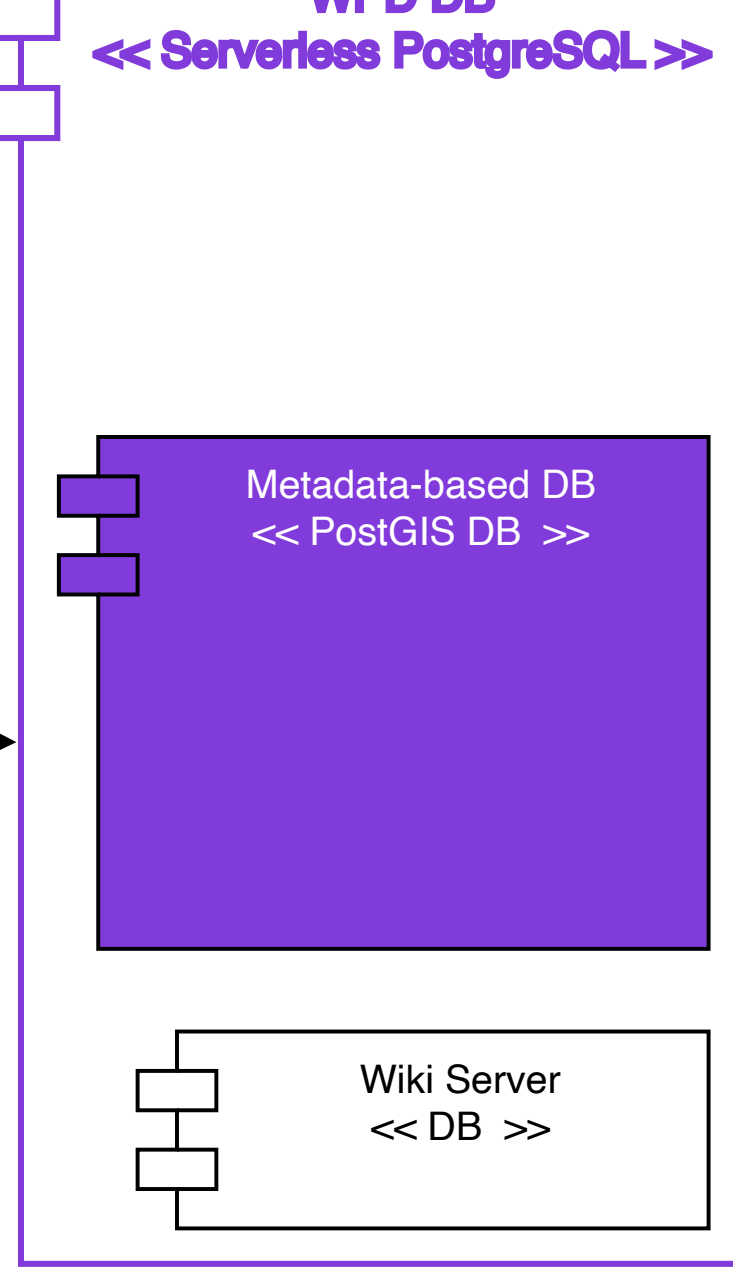
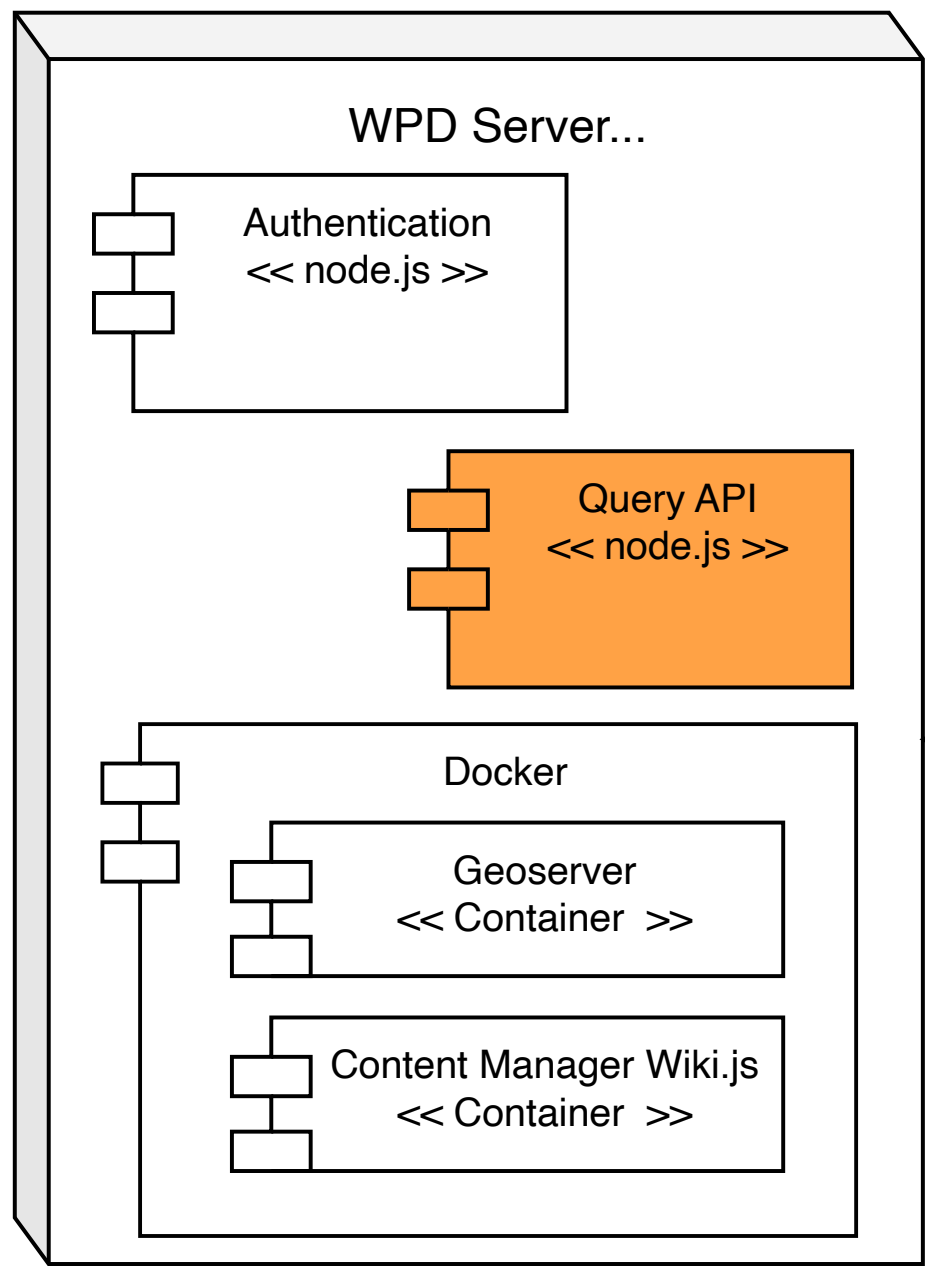
Clients



Authoritative Sources

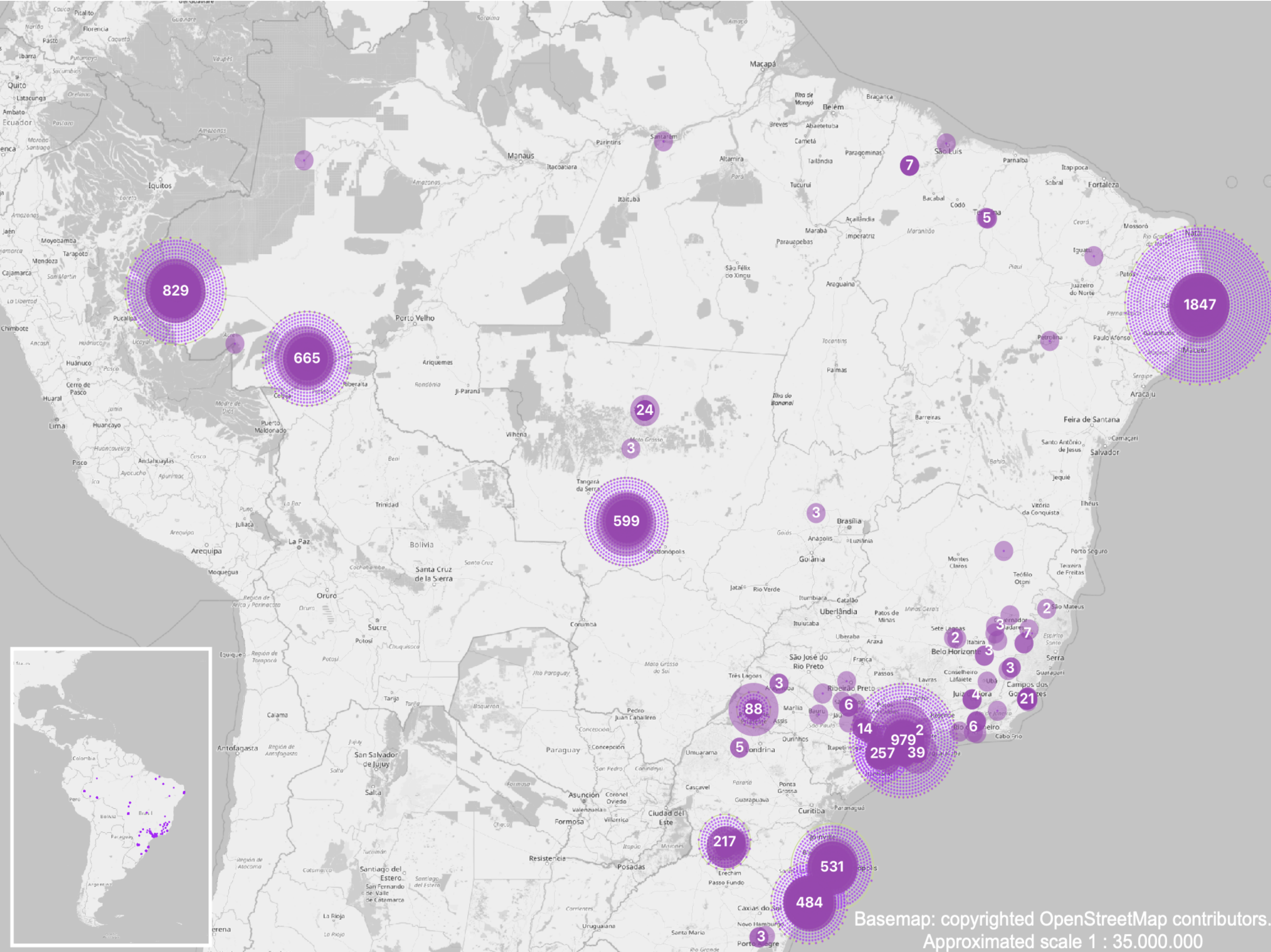


Cloud Backend



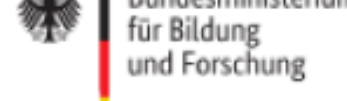
Interface components
Storage components

Citizen's Submissions



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Citizens and Authorities Icons from PNG Item <https://www.pngitem.com>