**MAP-X - impact starts with trusted information**

MAP-X is an impartial online mapping platform to support the sustainable development of natural resources.

### Architectural Overview

- **MAp-X Client** (JS, CSS, HTML)
- **MAPBOX-GL-JS** (JS, CSS, HTML)
- **NGINX** (C)
- **PASSENGER** (C++, Ruby)
- **GEOSERVER** (Java)
- **SHINY SERVER** (Node.js)
- **MAP-X VT** (Node.js)
- **PostgreSQL**

### User Management

- MAP-X features multiple and flexible user access levels to projects, data sets and tools.
- Each user is assigned a role of either "public", "user", "editor", "admin" or "superuser". A role defines the access to the application's different components. As well, it grants permissions to read, publish, and edit content.
- Users can share datasets on a secure space or publish datasets on a public space.

### Tools & Functions

- Mapping resource concessions by type or activity status
- Visualizing conflicting land use and rights
- Visualizing EITI reporting requirements
- Full Interoperability with other geospatial data Sets and with OpenGeospatial Consortium (OGC) standards (WMS, WFS)
- Monitoring of Site-Specific Performance
- UN Data Integrity Framework to assess data reliability, accessibility, openness and sustainability
- Global cloud solution with deployment of national and local instances
- Tailoring of the interface and dashboards to specific stakeholders needs
- User login, one-time password generation
- Map Navigation & attributes query tools
- Multiple satellite base map providers
- Interactive opacity, time sliders, feature filtering, zoom to view extent & features
- Overview data's public visibility & metadata
- Story Map Reader [optionally restricted access]
- Toolbox featuring: View Creator with dynamic legend creation, Overlay Analysis, Area of Interest, External WMS Layer, Story Map Creator
- Admin Panel, user profile settings & roles

### Technologies

- **R**, open source software for statistical computing & graphics
- **R shiny**, a web framework for building interactive reports and visualizations using R
- In-house developed packages to make use of **Mapbox GL JS**, a JavaScript library that uses WebGL to render interactive maps from vector tiles and Mapbox styles
- **vt**, an in-house developed package to fetch vector tiles using TileSplash from PostGIS layers. It bases upon Node.js, a JavaScript runtime environment for developing scalable server-side
- **PostGIS** is a spatial database extender for PostgreSQL object-relational database. It adds support for geographic objects allowing location queries to be run in SQL.
- **GeoServer** provides full interoperability through Web Map Services (WMS) and Web Feature Services (WFS)
- **JavaScript**, HTML, CSS

### Security and Access

- **Web**: https/web socket secure. Certificate generated every 3 months by EEF/letsencrypt.
- **Server SSH**: firewall, IP restriction, password/login and/or RSA key.
- Software is provided under the open source GPL3 license

### References

1. [http://www.r-project.org](http://www.r-project.org)
2. [http://cran.r-project.org/web/views/Spatial.html](http://cran.r-project.org/web/views/Spatial.html)
3. [https://www.shiny.rstudio.com](https://www.shiny.rstudio.com)
6. [https://www.mapbox.com/mapbox-gl-style-spec](https://www.mapbox.com/mapbox-gl-style-spec)
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