Create a reusable map visualization
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Goal

We're looking to build a simple, single page web app that can show multiple layers of OSM data at once to allow field projects to showcase and share specific data from OSM

Design Principles

For this proposal or list of ideas we will follow these principles

1. The web tool must be easy to use, fit on a single page and should not have unnecessary complexity

2. It should incorporate existing layer configurations and presets available for the Humanitarian Data Model which are in use

3. Build a web page which can be updated such as adding additional presets or selectable layers based on requirements from the field

4. Look at ideas from other tools out there like gisida, umap, mapbox. Also look at HOTOSM projects like HOT Export Tool and HOT Tasking Manager

Basic Controls

I have put together a mockup of the initial view seen by a user. It should have the key controls quickly accessible.
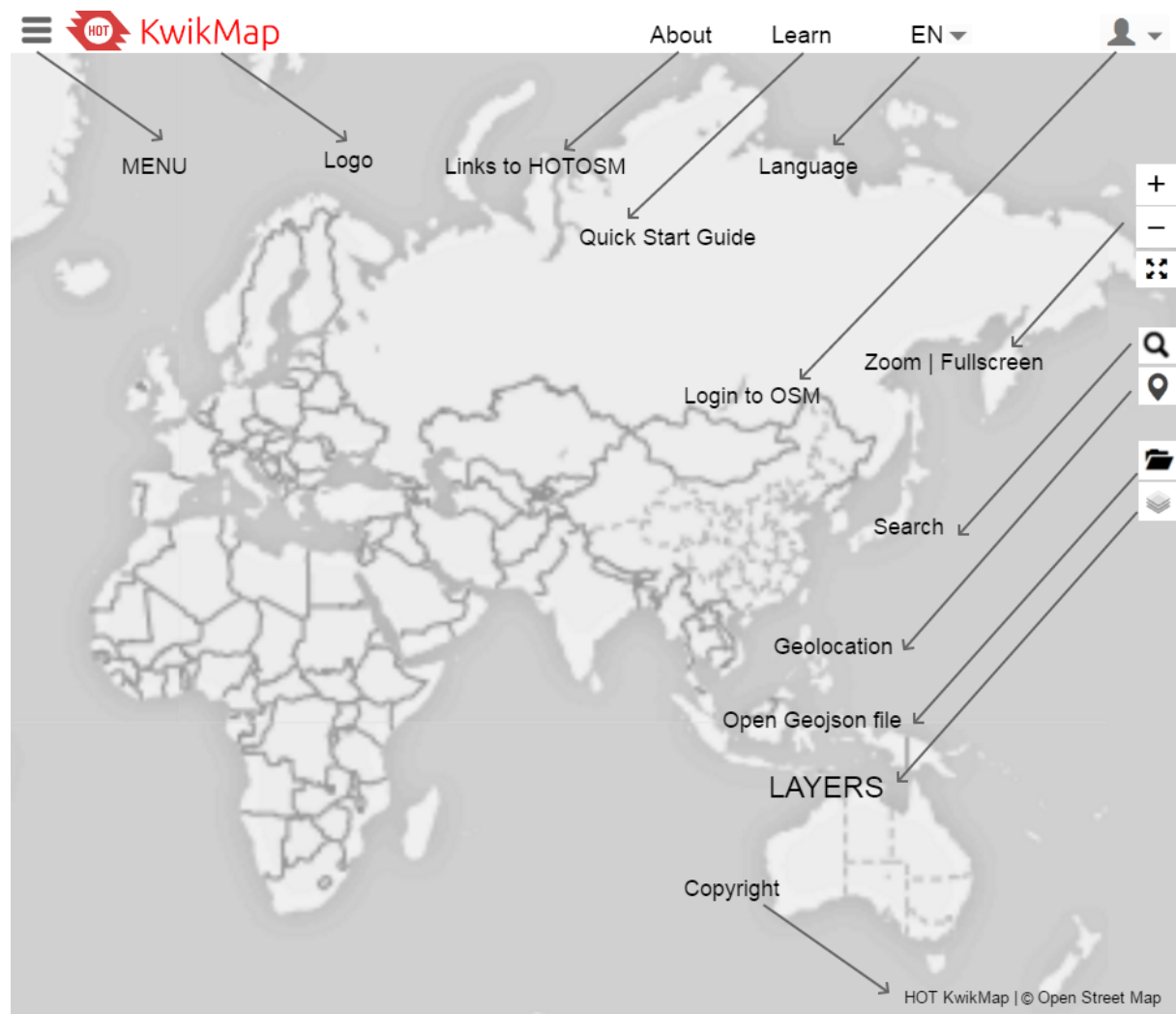
The various controls on the page are listed below

1. **About**: This will link to information about HOTOSM similar to the HOTOSM Export Tool page

2. **Learn**: Quick Start Guide, User documentation, Tutorials

3. **Language Select**

4. **Navigation controls**: Standard controls like Zoom in, Zoom out, Full Screen, Search, Geolocation

5. **Login**: Open Street Maps require use of an access token to access the maps. We can use OAuth mechanism to authorize the user which is recommended: https://wiki.openstreetmap.org/wiki/OAuth

In case our web page is not stand alone but integrated into another HOTOSM application like Task Manager then separate authentication will not be required

Layers

Below is a mockup of the Layers control which expands when the user clicks on the Layers icon
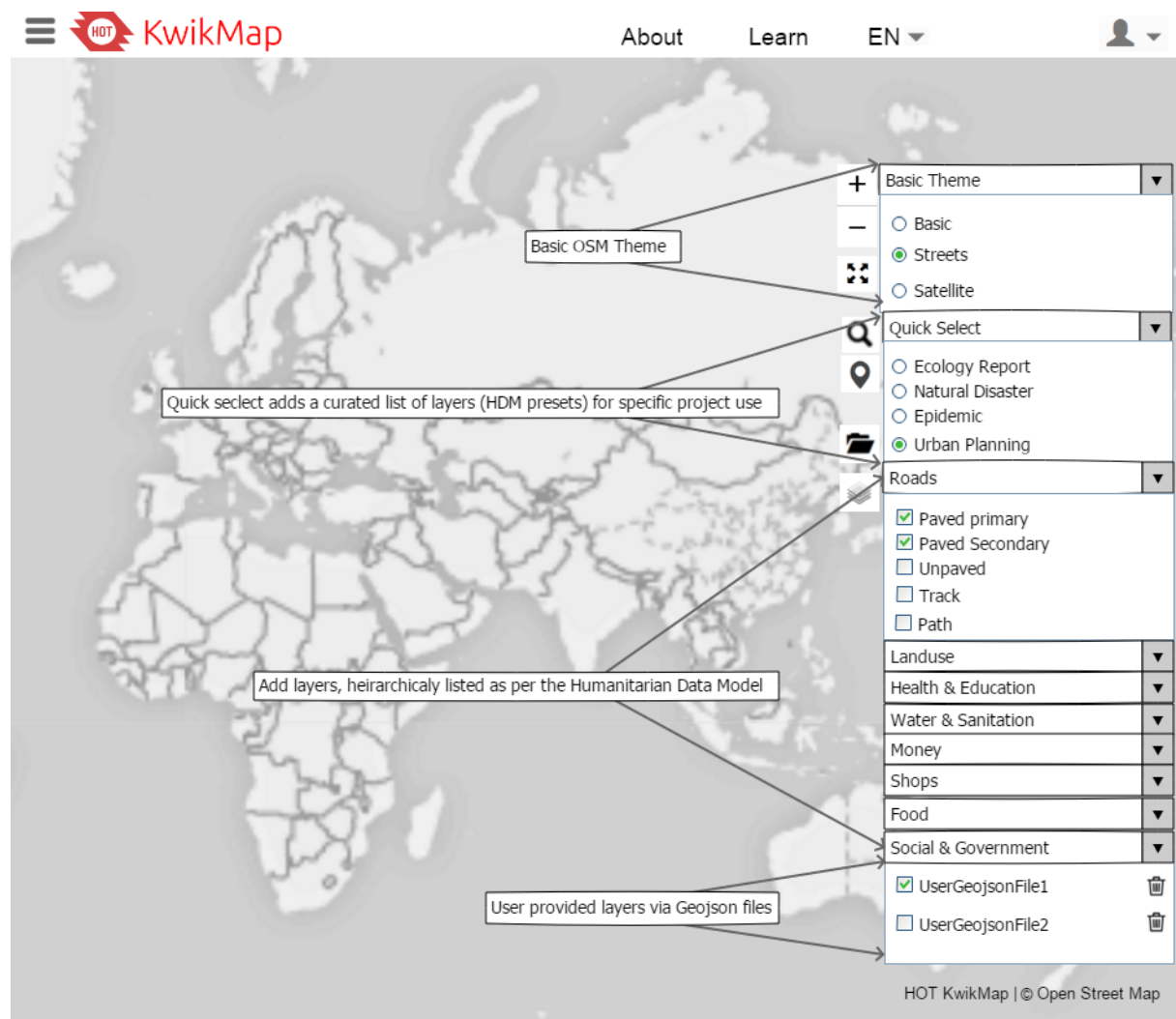
The Humanitarian map style highlights resources useful for emergency situations, highlighting infrastructure lifelines like water resources, public buildings, roads quality, etc.

https://wiki.openstreetmap.org/wiki/Humanitarian_map_style

We would like to achieve something similar but with customization features for different project teams including both emergency and non-emergency situations.

Base Layers

The map should support selectable basic themes available in Open Street Maps. This should include a lite theme that first responders can print and write on

Additional Layers

The map should allow the user to add additional layers. These can be various types of infrastructure lifelines. A comprehensive list is found here: https://wiki.openstreetmap.org/wiki/Humanitarian_OSM_Tags/HDM_preset

Our map will provide a subset of this list as selectable layers. Examples of selectable layers are:

1. **Roads**: paved primary, secondary or tertiary, unpaved, track, path

2. **Land use**: wetland, farms, industrial, forest

3. **Health & Education**: hospital, pharmacy, university, school, kindergarten

4. **Water & Sanitation**: potable or unpotable water, wells powered or manual, water towers and tanks, toilets

5. **Money**: Bank, ATM, currency exchange, money transfer

6. **Shops**: hardware, internet cafe, vehicle repair

7. **Food**: food depot, restaurants

8. **Social & Government**: Government office, embassy, police, community center

The list of selectable layers can be updated in future based on feedback from the community. This data model is continuously evolving.

Presets

We can have some presets or Quick Select control for project teams which will provide a curated list of layers pre-selected for different teams. For example we can have a preset for natural disasters which focuses on infrastructure lifelines like water and roads in an emergency situation.

Data Import

Some project teams may have requirements to show information not available in Open Street Maps. For example consider a project team which is producing a report on green energy in an area. They would like to show areas covered by solar panels. They may put this together themselves using available tools (see https://www.mapbox.com/help/define-geojson/). It would be useful if they can then add this layer into the rest of the map

In the mock up, we show a link for importing data. In umap, user is given the option to get the file from the local file system, from an URL, and from pasting the data in a text box

Some applications also support multiple formats. Gisida supports GeoJSON, JSON and CSV as people use multiple formats. However I think that GeoJSON is an open standard and should be the first format supported. Other formats can be added if required

Other Ideas

Additional Customization: We can have sliders on the UI to control the transparency of different layers. This will allow project teams to highlight a particular layer over others

Menu:The menu will have controls which may be less frequently used. For example umap has a share icon which is a control to embed the map in an iframe and then export it.

Other such controls could be a generating a high quality screenshot and generating a printable page. Since we may have multiple layers, it is difficult to generate a screenshot. We may try to generate it on the front-end using Html2Canvas

We could also have a control to edit the map in open street map to improve the map quality - this could integrate with HOTOSM Tasking Manager We could also have controls to draw on the map - points, lines and polygons to edit the map

Since we are interested in a one page simple app, we don't want to have too many complex controls. However I am listing these ideas here as possible future work. We need to be aware of potential features in the future while designing the web page

Note:

1. The mockups were produced using gpaint and open source tool Pencil

2. This document was generated using Latex