A Map Whiteboard for Collaborative Map-Making and Data Capture

Our technologists have been developing web map applications for 23 years and have observed and taken part in the transition from plain HTML image maps via early instances of browser-specific plugins with custom APIs to present day HTML5/Javascript web map applications built on high performing client-side libraries and consuming standardized web map services across a decentralized and global web of resources.

Much effort has been put into the sharing of data, the publishing of maps and the decentralized capture of data through field mapping applications and applications dedicated to user generated content allowing individual users to contribute to ever-growing centralized yet shared information resources.

Web map protocols are largely RESTful with some tweaks added to support features like authentication. With the mainstream availability of technologies like Web Sockets that enable persistent connections between clients, there is a potential for real-time collaboration in map and spatial data creation.

The prerequisite for this is a format that allows the representation, storage and transfer of maps and map data. Since the Web Map Context service was conceived, little has changed in terms of standardization of interchange formats for maps.

We have set out to build a concept that is to map-making what Google Docs is to word processing; a shared user interface that enables people to collaboratively build maps and edit spatial data where each is able to see the changes contributed by other users - as they are made.

The working title of our effort is a "Map Whiteboard" and the transport and storage for data is a JSON based format called "Map Compositions" that draws on the early work of Web Map Context documents, but that extends them with 20 years worth of added features.

With the proposed technology, we will support a number of common use cases for "maps" that have shown themselves exceptionally resilient despite the many and significant improvements that have been made to map technology.

In 2020, despite being more than 20 years into the era of web mapping, surprisingly many meeting rooms in government institutions the world over are still littered with large-format paper maps over which serious looking men and women stand hoodled, pointing with their fingers and drawing with markers — before handing the manuscript back to the resident GIS expert who puts them back into the data. With the proposed map whiteboard technology, this experience can be taken online, improving the accuracy and quality of the data and, albeit in a very small way, aiding the environment by reducing the amount of paper consumed.

Thus far we support OpenLayers based clients for real-time map editing as well as visualization of Map Compositions in OpenLayers based clients and desktop clients like QGIS.

Relevant links:
- Screen recording showing collaborative feature editing (https://youtu.be/EkDxQDyyeFU)
- Map composition schema: https://github.com/hslayers/hslayers-ng/wiki/Composition-schema
- Map composition repository: https://www.smartafrihub.com/layman/client/
- Example https://www.smartafrihub.com/rest/raitisbe/maps/sentinel_imagery_composition/file

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