IIIF Maps Community Group *Maps for the Web* Position Statement

The International Image Interoperability Framework (IIIF) specifications make large images accessible and usable for the public on the Web. Interoperability allows interaction with the same data across applications or users. IIIF deals with use cases from all over the digital landscape and has been implemented by a growing number of cultural heritage institutions.

As the IIIF community started to focus on digital map use cases we realized that many of these institutions had already made thousands of digitized maps publicly available through IIIF. However, most projects utilizing the maps had independently implemented software for visualizing coordinates onto them. It became clear that often maps are not used as an image. They are a resource, and often an interface, through which geographic data can be portrayed in human-friendly, interactive ways. The encoding of the coordinate data is equally important to the rendering process as digitizing the physical map.

The IIIF Maps Community Group is working to add interoperable qualities to maps and the data used to drive such interfaces. At present, we are weaving GeoJSON-LD coordinates into W3C Web Annotations to support resource types under the scope of IIIF Presentation API 3.0. Together the GeoJSON-LD and IIIF Presentation API 3.0 contexts provide Linked Data processors the prerequisites to handle the "list of list" structure necessary to convey polygonal coordinates.

Our initial tests with JSON-LD 1.1 expansion and compaction have been successful, and exploration of existing viewer support has shown immediate coordinate renderings through Leaflet. IIIF viewers can detect the Web Annotations, but do not have native support for drawing coordinates. The plugin systems are robust and we are looking into embedding map systems like Leaflet into these viewers. A map web element that promoted and consumed standardized coordinate data syntax(es) would expedite viewer plugin development and increase native support for coordinate renderings in Web viewers.

Encoding, storing, transferring and rendering of coordinate data is not uniform. This has caused both processors and presenters to use differentiating logic to consume and display the coordinates encapsulated by geospatial data nodes. Geographic data transferred between interfaces and algorithms must be standardized to be interoperable. Standardization creates bidirectional expectations, giving developers the ability to design processors and interfaces around expected inputs and outcomes. This concept is foundational to web technologies but has not flourished in the encoding practices around geospatial data. GeoJSON-LD proved to be applicable and we were able to build geospatial Web Annotations using it. Unfortunately, the specification has limited attention, which impugns its viability in a technical landscape that is constantly changing.

Data in the humanities seeks to illuminate varying aspects of humanity, and geographic supplementation brings better understanding and perception of data to the human audience. We look forward to standardization as a catalyst for the portrayal and study of the human experience taking place on the Web.

![iiif logo]

IIIF Maps Community and Technical Group Chairs
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Relevant Links
- W3C Web Annotation : https://www.w3.org/TR/annotation-model/
- JSON-LD 1.1 : https://www.w3.org/TR/json-ld11/
- GeoJSON-LD : https://geojson.org/geojson-ld/
- IIIF Specifications: https://iiif.io/api/
- IIIF Consortium : https://iiif.io/community/consortium/
- IIIF Maps Community Group : https://iiif.io/community/groups/maps/
- IIIF Map Resources on the Web
  - https://searchworks.stanford.edu/catalog?utf8=%E2%9C%93&f%5Biiif_resources%5D%5B%5D=available&search_field=search&q=map
  - http://www.digitalniknihovna.cz/mzk/search?sort=earliest&doctypes=map
  - http://codh.rois.ac.jp/edo-maps/
  - https://maps.princeton.edu/?f%5Baccess%5D%5B%5D=public&f%5Bdct_provenance_s%5D%5B%5D=Princeton&f%5Blayer_geom_type_s%5D%5B%5D=Image
  - https://maps.nls.uk/

IIIF Presentation API 3.0 GeoJSON-LD Web Annotation Example 1

```
{
    "@context":[
        "https://geojson.org/geojson-ld/geojson-context.jsonld",
        "https://iiif.io/api/presentation/3/context.json"
    ],
    "id":"https://www.example.org/iiif/web-annotation/1",
    "type":"Annotation",
    "motivation":"supplementing",
    "label":{
        "en": ["Crude encapsulation of the Eiffel Tower."]
    },
    "body":{
        "type":"Feature",
        "properties":{},
        "geometry":{
            "type":"Polygon",
            "coordinates":[[
                [2.295873, 48.858309],
                [2.294506, 48.859149],
                [2.293245, 48.858231],
                [2.294500, 48.857440],
                [2.295873, 48.858309]
            ]]
        }
    },
    "target":"https://www.example.org/iiif/web-resource/1"
}
```