**Documentation for Constellation of the Commons Project:**

**Using Omeka API and D3.js for Data-driven Visualizations on Omeka Sites**

**High-level:** We are organizing our data for themes and organizations on Omeka site manager in such a way that the workflow involving ( Omeka API 🡪 D3.js 🡪 homepage data-driven visualization of themes and orgs ) is a functional as well as an optimized automation.

**Omeka Site Manager and Omeka API**

Data should be organized within Omeka framework as follows to be accessed efficiently by Omeka API:

* Each theme is represented by a tag
* Each organization is represented on the Omeka site (‘front-end’) as a Collection, and also as an Item for D3 (‘back-end’) purposes. The Item for an org. will be tagged with all relevant theme tags, contain a link field that stores the corresponding Collection page URL, and contain an image logo link field that stores the corresponding logo URL.

Using Omeka API to retrieve data to be inputted to D3.js as JSON:

* Get theme names (represented by Omeka tags) by *get tags* query
* Get org names (represented by Omeka items) and corresponding logo URL, collection URL, and related tags per org by *get items* query
* For each org (represented by an Omeka item), create link between org (name of item) and each of its tag fields (name of tag representing related theme)

**D3.js-powered visualization using Omeka API-retrieved data**

What D3.js accomplishes through a physics/gravity-based graph model:

* Displays org. nodes as connected to and gravitating toward relevant theme nodes via lines
* Displays org logos for org nodes and theme name labels on circles for theme nodes, with each node colored by the color of its dominant theme
* Allows for linking between Omeka collections and exhibits URLs and corresponding node displays (so if a user double-clicks on a theme node circle labelled Ecofeminism, user should be redirected to Omeka ecofeminism exhibit).
* Allows for the process of drawing and sizing nodes in relation to one another to be automated/live-updated when new data is added to Omeka site, versus manual redrawing, resizing, and reuploading by a human on Omeka Neatline plugin every time a new piece of data is added 🡪 degree of scalability

Omeka API-retrieved data should be organized in the following JSON format to be accessed correctly by the D3.js, with the help of preprocessing helper functions:

* Nodes are represented by a list of elements each enclosed by brackets and storing key-value pairs for theme/org. name, level corresponding to node size, logo if applicable, Collection url if applicable, and related themes.

Ex.: [{“id”: *id #,* "name": "*theme name*", "level": "0", "theme": "*related theme name*"}, {“id”: *id #,* "name": "*organization name*", "level": "1", "logo": "*logo URL*", "url": "*collection URL*", "theme": "*related theme name*", "theme1": "*secondary related theme name if applicable*", "theme\_n": "*nth related theme name if applicable*"}, …]

* Links between nodes are represented by a list of elements each enclosed by brackets and storing key-value pairs for source and target nodes.  
  Ex.: [{"source": *element id #*, "target": *element id #*}, {"source": *element id #*, "target": *element id #*}, …]

UPDATE STUFF ABOUT THEME CLASS VS ORG CLASS AND RELEVANT FUNCTION CALLS TO ALTER DISPLAY

In the D3.js, there are several functions that are called to determine each node’s display properties using the JSON-formatted data:

* circleSize(d): Node size is dependent on the *level* key for a given node d. Theme nodes with level 0 appear with large radii, as org. nodes with level 1 appear with small radii.
* circleColour(d): Node colour is dependent on the *theme* key for a given node d. Currently, ecological education maps to green, human rights to blue, urban planning to purple, ecofeminism to red, new media to yellow, and migration to orange. Color mapping subject to change.
* TBD

**Setting the D3.js visualization as the Omeka Site homepage**

The D3.js file should be contained within/or called upon by a simple index.html file. This index.html file should be uploaded as the raw code for an Omeka *Simple Pag*e set as the Omeka site’s homepage.