Web Mapping Tools: Pros vs. Cons

The following is a brief overview of some of the uses, pros, and cons of common web mapping tools that you will be likely to encounter (or be asked to provide support for) as you engage as a collaborator on digital scholarship projects.

Some content adapted from Penn State University Libraries – Maps & Geospatial: Web-Mapping Tools LibGuide: https://guides.libraries.psu.edu/mapping.

See also the 2017 article from Emily McGinn and Meagan Duever titled "We mapped it so you don't have to: Comparing online data mapping platforms": https://doi.org/10.5860/crln.78.9.486.

Tool	Uses	Pros	Cons
ArcGIS Online	Cloud-based mapping platform for creating web maps and web mapping applications	User friendly interface; Easy to add your own features, markers, and map elements; Easy to link to media; Searchability of ESRI and user-generated layers to include in web maps; Easy to share map products with organization or with public; Good integration with ArcGIS Desktop products; Variety of templates available to create web mapping apps without coding; Good documentation and tutorials available	Prep time required for including own spatial data; More advanced features like analysis tools, geocoding, and support for map images as tile layers are subscription-based (or available through educational site license); Use of advanced features consumes credits; Multitude of content types and sharing settings can be confusing
Carto	Web-based location intelligence platform supporting interactive spatial analysis and visualizations	Supports multiple data formats, data connectors, and location data services like geocoding and routing; Supports app customization using JavaScript and Python libraries; Sharing capabilities; Educators and students can apply for free Professional accounts	More advanced features and team-based applications require a paid Enterprise account; Requires greater knowledge of spatial data structures and data preparation; References to SQL, CartoCSS, and other programming languages to make the most of customizability have a learning curve

Google My Maps	Online platform for creating interactive 2D maps	User friendly interface; Easy to import data and style map symbols; Easy to link media to map points; Integrates with Google Docs and Drive for team projects; Straightforward settings for crowdsourcing map points; Easy to embed maps in website or blog	No analytical functions so mainly for interactive visualization; Google Maps API for more advanced features requires billing to be enabled even if monthly usage does not exceed the free tier
Google Earth	Online and desktop mapping platform for 3D geographic visualizations	User friendly interface; Google Earth Pro available for free as desktop application; Desktop version works on PC, Mac, and Linux; Ease of importing GIS data and exporting KML data for use with other software like ArcGIS	Limited analytical functions so mainly for interactive visualization; Google Earth API deprecated, with migrating to Cesium suggested as an alternative for embedding in websites
Neatline	Geotemporal exhibit builder for creating complex maps, image annotations, and narrative sequences from Omeka collections	Extensive options for customization; Ability to connect maps and narratives with timelines; More interactive environment than standard Omeka exhibit features; Website has detailed documentation	Works with Omeka Classic, but Neatline module for Omeka S is currently under development
Tableau	Dashboard-oriented data visualization app that includes support for common map types (proportional symbol, choropleth, point distribution, flow, origin-destination)	Tableau public is free; Desktop version can be freely available to educators and students through the Tableau for Teaching program; Ease of use for adding geographic data and creating interactive visualizations; Ease of integration with other platforms including ArcGIS	Maps and underlying data published through Tableau Public are automatically public (lack of privacy options); Tableau Desktop has more advanced functionality and privacy settings but requires license to Tableau Online or Tableau Server to be able to publish interactive maps; File types that can be exported from Tableau Desktop for static map figures are very limited
Map Warper	Turns imagery (e.g., scanned maps or historical aerial photos) into spatial data	Free and open source; Ease of use; Upload and export functionality	Copyright implications (by uploading images to site, anyone can view and use them)