Sharing Maps: The GIS Cloud

Summer School on Digital Humanities

Web site: https://bit.ly/dt4h-gis

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Sharing Maps: The GIS Cloud

- OpenStreetMap (OSM) does not support adding custom layers
  - It lacks infrastructure for proprietary data storage
- Desktop GIS applications (eg. QGIS) allow users to overlay OSM data with their own layers
- Alternative services provide infrastructure for collaborative map sharing
- In these services, the server acts as an intermediary between users and data storage
- Unlike OSM, access and edit restrictions are enforced

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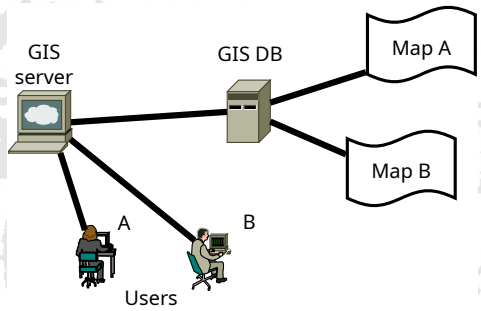

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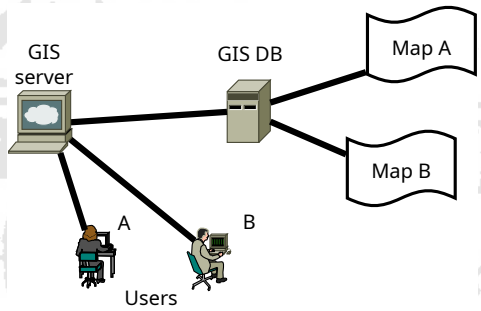

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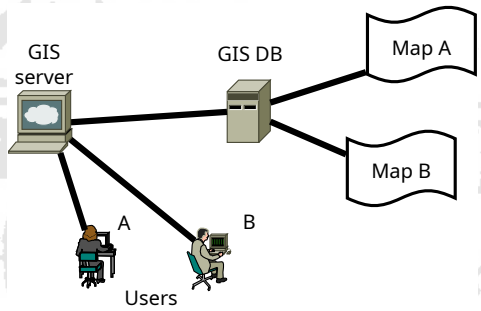

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The uMap Service

- A stable project (launched in 2014)
- Open-source (can be installed on a private server)
- Uses OpenStreetMap as a background raster layer
- Users can
  - [illegible]
  - [illegible]
- Supports [illegible]
- Maps can be shared and collaboratively edited by a restricted user group

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- Uses OpenStreetMap as a background raster layer
- Users can:
  - Import data (KML, GeoJSON, CSV, GPX)
  - Edit data (points, lines, polygons)
  - Export data (KML, GeoJSON, CSV, GPX)
- Supports many vector feature symbology options
- Maps can be shared and collaboratively edited by a restricted user group

The uMap Service

- A stable project (launched in 2014)
- Open-source (can be installed on a private server)
- Uses OpenStreetMap as a background raster layer
- Users can:
  - Import and display vector layers
  - Customize the appearance based on the data
  - Search data
  - Export the resulting map as an image
- Supports many features of the OpenStreetMap system
- Maps can be shared and collaboratively edited by a restricted user group

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- Uses OpenStreetMap as a background raster layer
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  - Connect to external databases
  - Create new maps stored within the uMap infrastructure
- Supports advanced feature symbology (styles, ...)
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  - Images
  - Videos
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A uMap Tour (Sect. 5 in the Booklet)

- Open a browser and visit https://umap.openstreetmap.fr
- Log in using OpenStreetMap credentials (or via Bitbucket, or GitHub)
  - It is also possible to explore uMap without an account, with limited functionality
- Click "Create a map"

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Editing Your Shared Map

- Upon map creation, you are in Edit Mode
  - To exit, click the blue Save draft button, then View
  - To re-enter edit mode, click the pencil icon Edit in the top-right corner
- Two toolboxes appear on the right:
  - [illegible]
  - [illegible]
- If town names are displayed on a red background, turn off the raster layer:

Editing Your Shared Map

- Upon map creation, you are in Edit Mode
  - To exit, click the blue Save draft button, then View
  - To re-enter edit mode, click the pencil icon Edit in the top-right corner
- Two toolbokes appear on the right:
  - Layer switcher
  - Map manager
- If town names are displayed on a grey background, the raster layer:

Editing Your Shared Map

- Upon map creation, you are in Edit Mode
  - To exit, click the blue Save draft button, then View
  - To re-enter edit mode, click the pencil icon Edit in the top-right corner
- Two toolboxes appear on the right:
  - Upper box: feature creation tools
  - Lower box: map management tools
- If town names are displayed on a green background, the raster layer:

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  - Upper box: feature creation tool
  - Lower box: map management tools
- If town names are displayed in French, switch the raster layer:

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- Two toolboxes appear on the right:
  - Upper box: feature creation tool
  - Lower box: map management tools
  - On the left panel, click to search for a town (e.g., ”Pisa”)
- If town names are displayed in French, switch the raster layer:

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  - On the left panel, click to search for a town (e.g., ”Pisa”)
- If town names are displayed in French, switch the raster layer:
  - Click and select "OpenStreetMap"

Adding a Feature

- Choose a feature type from the right-hand menu:

Adding a Feature

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  - Point

Adding a Feature

- Choose a feature type from the right-hand menu:
  - Point
  - Line
- Click on the desired feature type, then interact with the map:
  - Point: click on the map
  - Line: click on the map to add vertices, double-click to finish
- Once the feature is created the form appears:
- To edit an existing feature, click it and select the pencil icon

Adding a Feature

- Choose a feature type from the right-hand menu:
  - Point
  - Line
  - Area
- Click on the desired feature type, then interact with the map:
  - A single click creates a point
  - Multiple clicks create a line or polygon
  - A double click finishes the line or polygon
- Once the feature is created a form appears:
- To edit an existing feature, click it and select the pencil icon

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- Choose a feature type from the right-hand menu:
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  - Area
- Click on the desired feature type, then interact with the map:
  - A single click places a point
  - Multiple clicks define a line or area
  - A double-click completes the process
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  - Enter the name and description
  - Explore additional options
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  - Explore additional customization options
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  - Click the question mark next to *Description* for formatting tips

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Special Content in the **Description** Field

The *Description* field can contain interactive elements:

(Note: these appear only after Save and View)

- Add an image by inserting its link within double braces:

```
{{http://gardenersnet.com/flower/pics/daffodil04.jpg}}
```

- Add a hyperlink using double brackets:

```
[[http://www.google.com]]
```

- Embed a video (e.g., YouTube) using triple braces:

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{{{https://player.vimeo.com/video/50610854}}}
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Creating a Slideshow

- A slideshow cycles through the map features sequentially
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- To enable the slideshow:
  - Click the gear icon and select *Slideshow*
  - Enable the slideshow mode
- Familiar navigation buttons (forward, backward, "next", "previous") appear in the bottom-left corner
- If auto-play is enabled, the slideshow starts automatically upon loading the map
- Not fully functional, but may be useful

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  - Click the gear icon and select *Slideshow*
  - Enable *Slideshow mode*
  - Set the time interval between slides
  - Optionally enable *Auto-play on map load*
  - Click *Save*
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How to Share, Embed, and Export

To share your map with specific users or anyone

To embed your map in a webpage

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- Click (right panel)

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- Click (left panel)
- Export features in various formats
  - GeoJSON – JavaScript-compatible format

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  - KMZ – Google Maps format

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  - CSV – spreadsheet compatible format
- Copy the embed code (”iframe” tag) for use in web pages

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- Click (left panel)
- Export features in various formats
  - GeoJSON – JavaScript-compatible format
  - KMZ – Google Maps format
  - GPX – GPS-compatible format
  - CSV – spreadsheet compatible format
- Copy the embed code ("iframe" tag) for use in web pages
- Configure a custom URL with query

Time for a uMap *Challenge*! (Step 1)

Geolocate Yourself

- Open https://umap.openstreetmap.fr/it/map/dhss_2025_616270
- Add a *point* feature at a location you like (e.g., your town, favorite hike, birthplace)
- Enter your nickname in the *Description* field
- Save the point as a Vector feature
- Warning: the map is public: avoid personal data

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Time for a uMap *Challenge* (Step 2)

The Map to the Tower

- Help a friend visiting Pisa for the first time:
  - Add points of interest (Leaning tower, train station, whatever...)

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The Map to the Tower

- Help a friend visiting Pisa for the first time:
  - Add points of interest (leaning tower, train station, whatever...)
  - Fill the "description" fields as you like
  - Add a picture of the tower
  - Create a map showing a route from the train station to the Leaning Tower

Time for a uMap *Challenge* (Step 2)

The Map to the Tower

- Help a friend visiting Pisa for the first time:
  - Add points of interest (leaning tower, train station, whatever...)
    - Fill "Description" fields as you like
    - Try with an image of the tower, e.g. https://upload.wikimedia.org/wikipedia/commons/6/66/The_Leaning_Tower_of_Pisa_SB.jpeg
  - Create a map showing a route from the tram station to the Leaning Tower

Time for a uMap *Challenge* (Step 2)

The Map to the Tower

- Help a friend visiting Pisa for the first time:
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    - Fill "Description" fields as you like
    - try with an image of the tower,

      https://upload.wikimedia.org/wikipedia/commons/6/66/The_Leaning_Tower_of_Pisa_SB.jpeg
  - Create a map showing a route from the train station to the Leaning Tower

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  - Create a map showing a route from the train station to the Leaning Tower
    - Do the same for the station of your imaginary home town, then the bus route and finally the walking path to the Tower
    - At the end, export your maps as GeoJSON files (with descriptions, and eventually images)

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    - Fill "Description" fields as you like
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  - Create a map showing a route from the train station to the Leaning Tower
    - Draw a path from the station to an imaginary bus stop, then the bus route, and finally the walk to the tower
    - At the bus stop, enter details: bus number, direction, stop name, and estimated travel time

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