Dynamic Web Map Services

Summer School on Digital Humanities

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

Augusto Ciuffoletti

10 giugno 2025

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- A local application does not facilitate map sharing
- We need an interactive web-based map service
- Web Mapping enables cartographers to maintain a shared map

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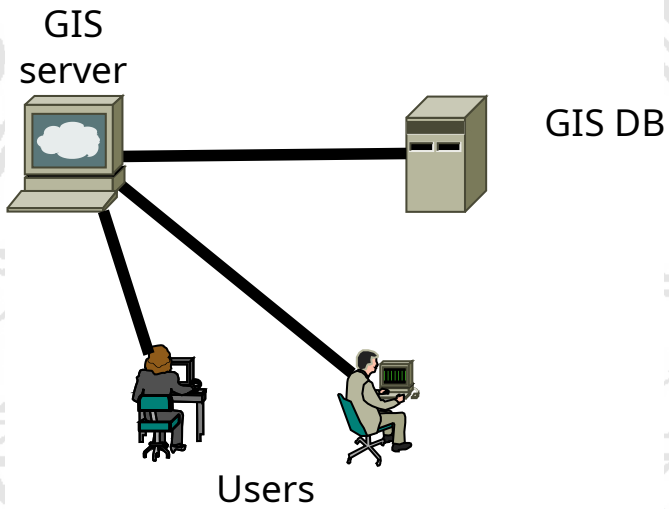

- Web Mapping enables cartographers to maintain a shared map
  - The cartographer accesses the mapping service via a web browser
  - The server generates a web page containing an up-to-date map
  - Embedded links allow the cartographer to navigate and update data
  - The cartographer can see the effect of their changes

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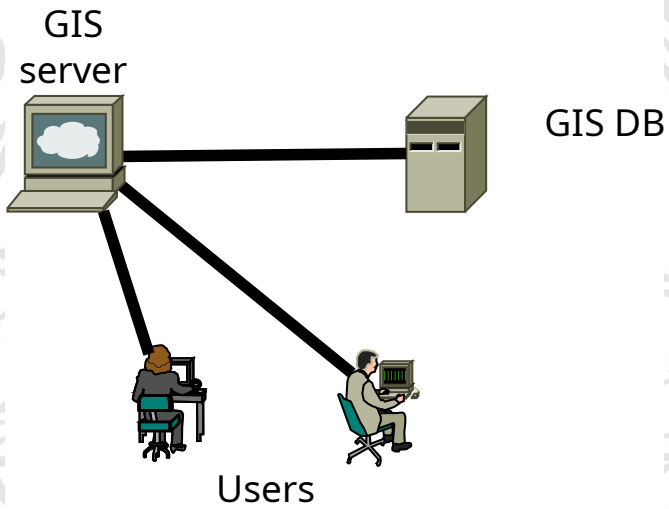

- Web Mapping enables cartographers to maintain a shared map
  - The cartographer accesses the mapping service via a web browser
  - The server generates a web page integrating the map
  - Embedded code connects to a remote database to retrieve and update data
  - The cartographer can review the new or input new data

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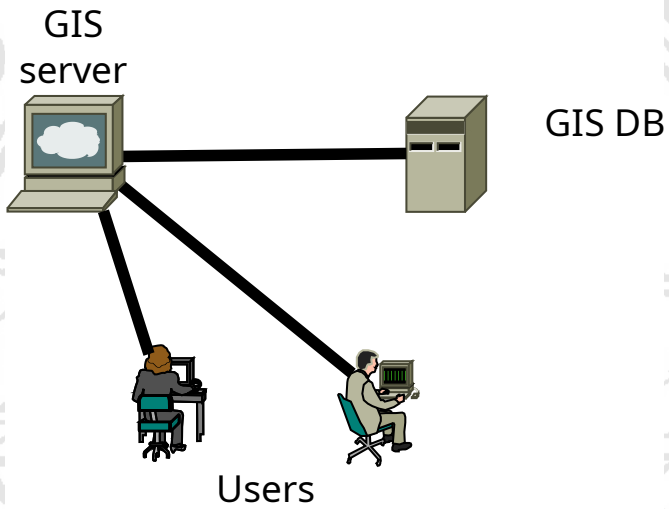

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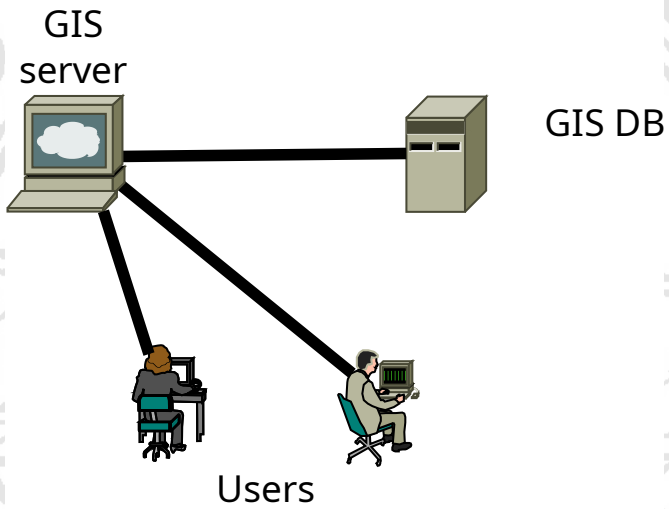

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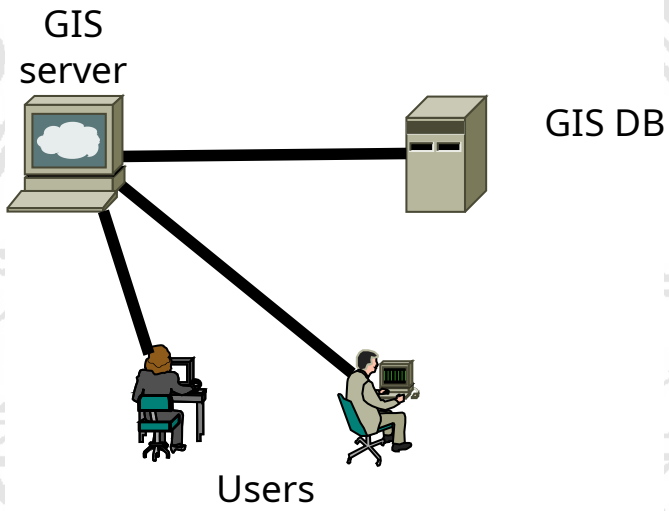

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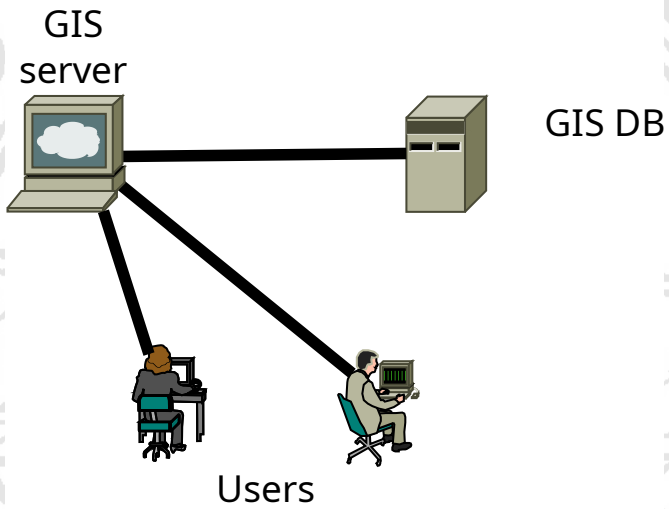

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Web GIS vs. Desktop GIS Applications

- Compared to a desktop GIS application (like QGIS):
  - No installation required
  - Platform-independent (works on any OS)
  - Responsive design for different devices (PC, tablet, smartphone)
  - Designed for sharing resources across (local) networks
- Developing such a Web application requires a specialized JavaScript library

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Tools for Web Maps: JavaScript Libraries

- JavaScript enables complex functionalities in web pages
- The Leaflet library allows web pages to interact with GIS servers and store user data
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- This setup creates a complex architecture:
- We will explore OpenStreetMap's tool is implemented using the *Leaflet* library

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Example of an Open Web Map Service: OpenStreetMap

- The OpenStreetMap server (www.openstreetmap.org) renders a dynamic map in the browser, drawing data from a public database

- Public Collaboration

- Using the built-in Id editor

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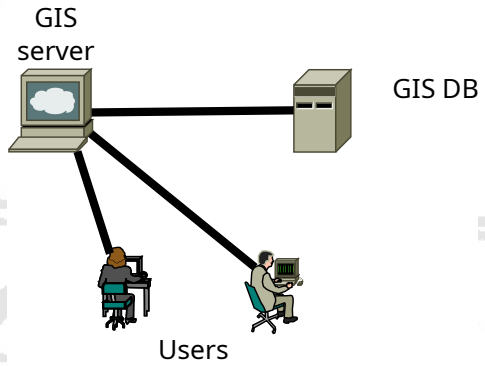

- Public Collaboration
  - Anyone can edit, access, and update the database – all changes are publicly visible
  - There is no private or personal workspace
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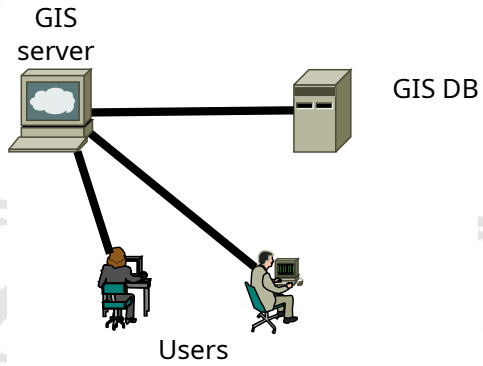

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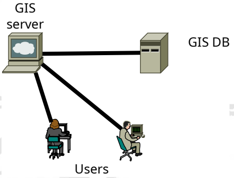

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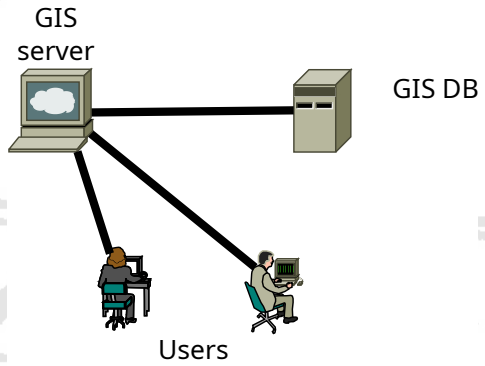

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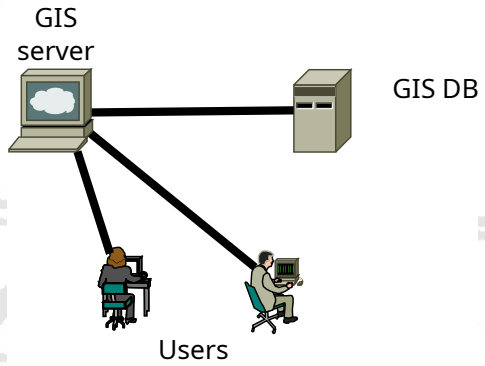

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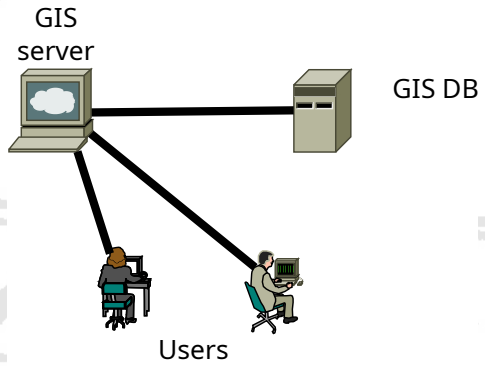

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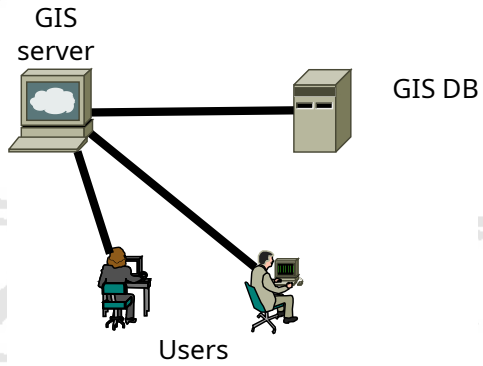

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- To access the service:
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Creating a Point Feature in OpenStreetMap

- To add a point feature (but do not press **Save**):
  - Zoom in using the trackpad until **Edit** is enabled
  - Select the **Edit** option (opens the *iD* editor)
  - Zoom until the "Zoom in to edit" banner disappears
  - Click the point icon in the top toolbar (it turns blue)
  - Click on the map to place the point
  - Choose a feature type (e.g. Cafe, Restaurant, ...)
  - Fill in several attributes
  - Press Undo (back arrow) instead of Save

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Additional Editing in OpenStreetMap

- To draw a Line or Area:
  - Click to place each vertex
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- To edit an existing feature:
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Lab Activity

- Scenario: South of Pescara lies "Francavilla al Mare," a seaside resort town
  - Locate "Lido Merope"
  - Add an Area for the beach
  - Set Beach Resort as the feature type
  - Set the Name field to "Spiaggia del Lido Merope"
  - Undo...