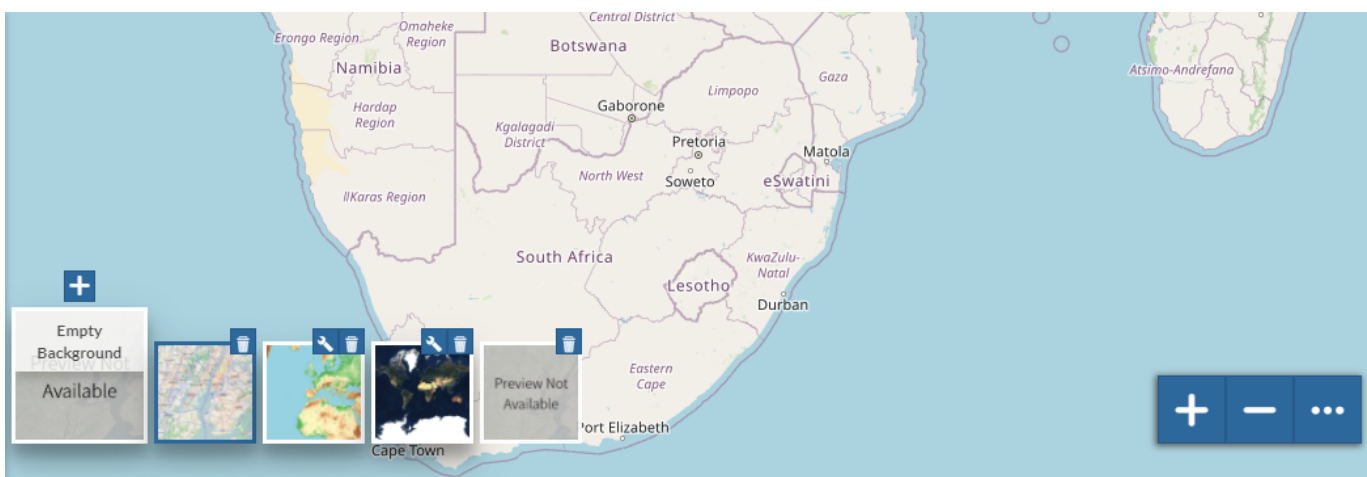### ℹ Creating spatial layers in GeoNode

"A layer represents spatial information as it is displayed within a map"

GeoNode supports uploading and sharing of various resource types. One of the most important resources is spatial data. This allows users to visualize the data on a map and utilise the spatial analysis tools within the map application to interrogate the data, such as when using the identify or measure tools. Geodata typically has spatial features, which are geometry features that may be represented on a map, as well as data attributes which are linked to those geometry features, and GeoNode allows users to inspect geometry features and attribute data.

Uploading geo data in a supported format will automatically create a new layer for the uploaded data, however GeoNode also allows the creation of new layers, which allows the definition of the layer data model without requiring existing features. Creating new layers is currently limited to vector layers with simple geometry types (Point, Line, and Polygon), but is still very useful in instances where users may not have access to additional GIS software as the layer can be edited and new features may be digitized using the GeoNode editing functionality.

GeoNode maps include a default layer which is distinct , typically referred to as a *Basemap*, which would typically be a map service like Open Street Map or Sentinel Satellite imagery. The basemap can also be disabled so that the map background is tailored to specific cartographic and data visualization needs.

You try:

Goal: Create a new spatial layer and populate attributes

- Navigate to the **Data Menu** and select **Create Layer**
- Add the relevant feature details and attribute fields as outlined by the table below
- Select **Editing tools** and choose **Edit Data**
- Click on the pencil icon to activate edit mode
- Zoom to a particular area on the map
- Click on the **Add New feature** icon
- Click on the **Draw feature** and start drawing a new feature on the map
- Populate the layers attribute table and save the changes

Name	Expectation
Layer Name	geonode_roads
Geonode title	Roads
Type - Attribute Character type	String
Date_created - Attribute Date type	Date
Name - Attribute	String

Edit Layer   ✕

Metadata   Styles   Thumbnail   Layer

Wizard	Edit	Set	Replace
Advanced Edit	Upload	Upload	Edit data
Upload Metadata	Manage		Remove

Download Layer

Metadata Detail

Editing Tools

Close

GeoNode   Data ⌄   Maps ⌄   About ⌄

Create an empty layer

Explore Layers

Layer name

geonode roads

Layer title

Roads

Geometry type

Lines

Add Attribute

type

String

Remove

date_created

Date

Remove

name

String

Remove

Create

Permissions

Who can view it? ⌄

☑ Anyone

The following users:

Choose users...

The following groups:

Choose groups...

Who can download it? ⌄

Who can change metadata for it? ⌄

Who can edit data for this layer? ⌄

Who can edit styles for this layer? ⌄

Who can manage it? (update, delete, change permissions, publish/unpublish it) ⌄
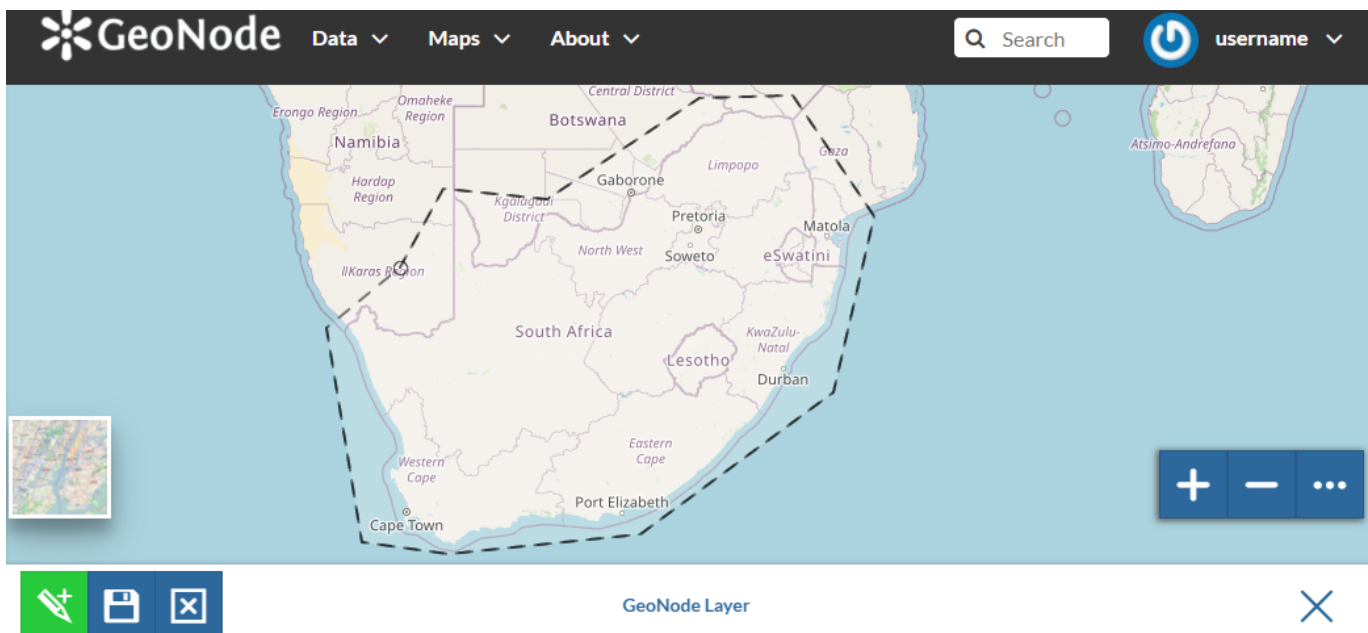
ℹ **More about creating spatial layers**

The process of creating new vector data by tracing features present on an existing map or from raster data is collectively termed as *digitizing*. GeoNode provides a

simplified user interface for creating such vectors to support web based data capture with a focus on ease of use. In more advanced GIS systems, the digitizing process is more robust as it allows for the utilization of topology rule enforcement when creating new features, however when creating new vector features on GeoNode it is imperative to consider the following:

- CRS - The coordinate reference system the vector layer will be created in. This affects map units and spatial analysis tools such as calculating distance, length, or area.
- Attribute type - It is important to understand the different attribute data types. Common types include string (text), numeric (integer), numeric (decimal) and boolean (true/false). This determines what operations can be done on your data and the limitations of those operations, as you cannot, for example, multiply a text field value by a numerical field value, even if the text field contains an integer.
- Topology rules - This determines the relationship between features that are being digitized. For example, preventing overlapping area features or ensuring that where two features are in close proximity and share a boundary they should have a single line demarcating that boundary.

In GeoNode, not all of the above considerations are directly supported or able to be enforced by digitizing rules like they might be with a desktop GIS application, so careful consideration must be taken when editing layers directly from the GeoNode interface.

Check your knowledge:

1. Is it possible to configure GeoNode to use satellite imagery as a basemap:
    a. Yes, an administrator can easily do this
    b. GeoNode does not allow any customisation without spending money

2. Can you setup snapping in GeoNode like you would in QGIS or ArcGIS:
    a. Yes
    b. No

3. Which of the following statements regarding layer creation is false:
    a. System administrators are allowed to use the layer creation feature
    b. A user who is not logged in cannot create a new layer
    c. There is a limit to the number of attribute fields that can be applied to a layer

▶ Module video tutorial:

- https://www.youtube.com/watch?v=3RODicpVVjU&list=PLrZxneE_xfYtdMxOPXzeCmFft9Id0gywM&index=4

▤ Further reading:

- Digitizing Forest Stands https://docs.qgis.org/latest/en/docs/training_manual/forestry/stands_digitazing.html