



# Data manipulation in QGIS

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# Lecture purpose

- Is to introduce QGIS tools and share homework

# Lecture outcome

- You know how to manipulate vector data for a project

# Task- filter „students to school“ layer

- Filter out features where students nr is  $\leq 45$

# Task- add mobility zone layer

- Add a new shapefile layer
- Remember to save layer to project folder otherwise file path conflict appears and next time you open project layers could be missing.
- We are going to digitize mobility zones on this layer
- New layer have to be polygon type

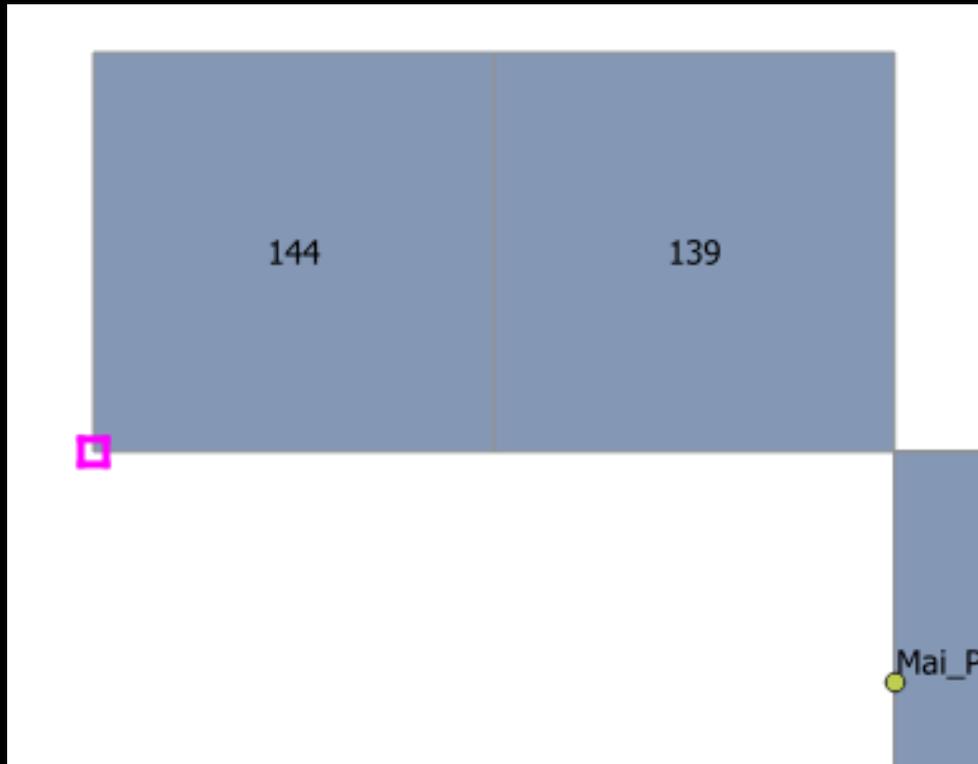
# Mobility zones- description

- We want to know where „spatial hotspots“ are.
- They are the areas that connect filtered home areas with schools spatially.
- It's easy to get confused with labeling and visualising, watch out!.
- Do school digitizing one by one so you don't get confused with which school you are working at the moment.

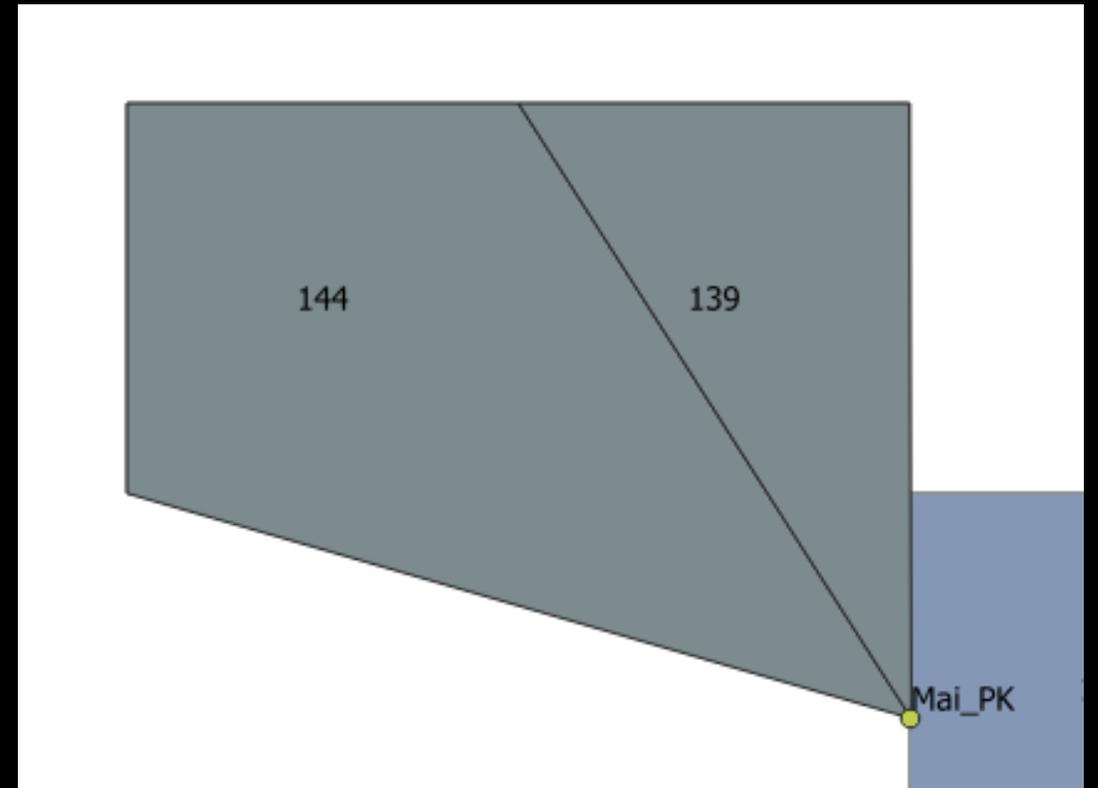
# Task- make new polygons

- To grab the corner of the home area we first have to enable the snipping tool.
- Find it by right clicking on the toolbar and enabling the „snipping tool“.
- Now you should be able to snip on the corner of the area.
- Right click to start digitize- left to end it.
- Make every cell as a separate feature/object.

# Snipping and result of digitizing



Pink rectangle indicates snipping on the corner

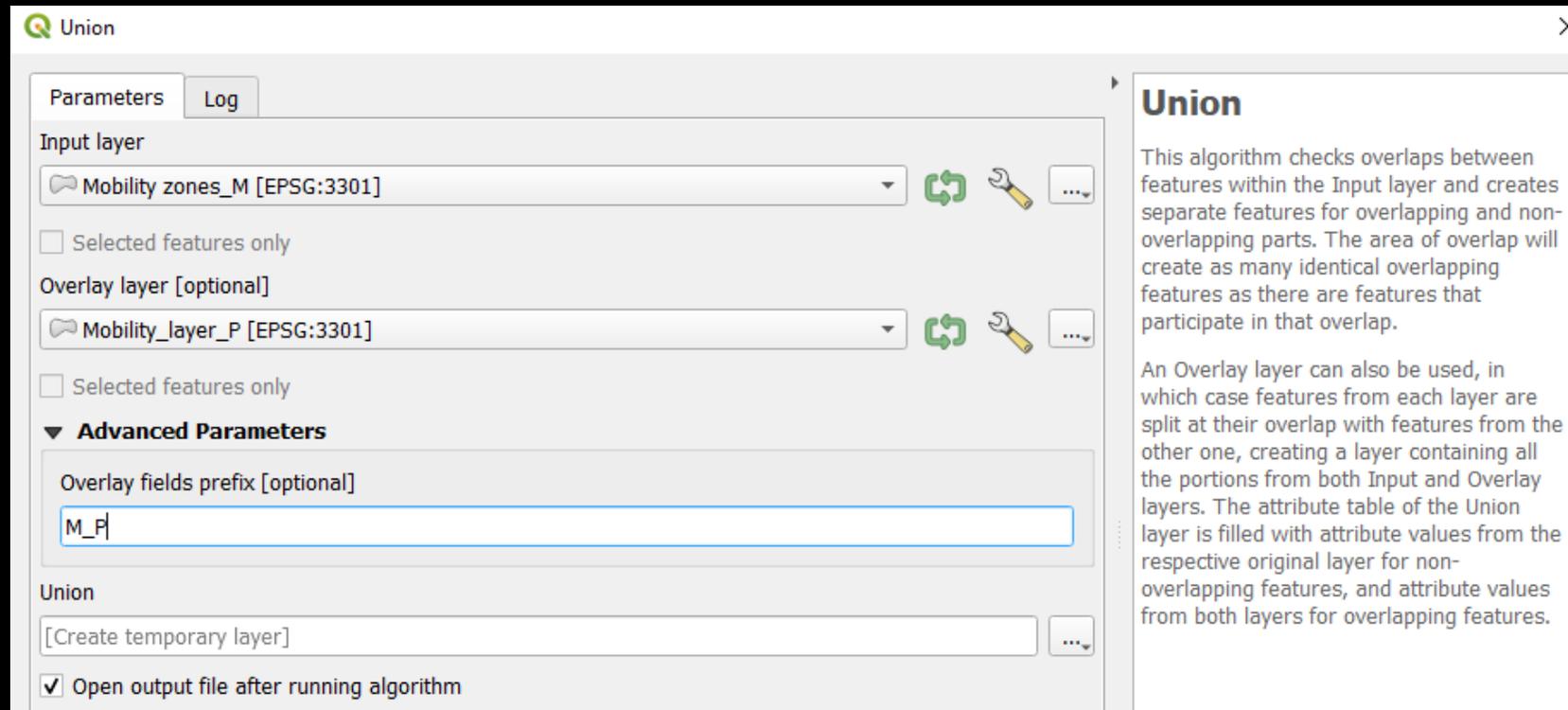


This is the new digitized area

# Task- merg layers together

- We use Union geoprocessing algorithm for that
- Find it from the toolbar

At the moment all layers are separate objects, but we want them to be as one part



The screenshot shows the QGIS Union tool dialog box. It has two tabs: "Parameters" and "Log". Under "Parameters", there are sections for "Input layer" and "Overlay layer [optional]". Both sections have a dropdown menu with a layer name and a "Selected features only" checkbox. The "Advanced Parameters" section is expanded, showing a text box for "Overlay fields prefix [optional]" containing "M\_P". At the bottom, there is a "Union" section with a dropdown menu set to "[Create temporary layer]" and a checked checkbox for "Open output file after running algorithm".

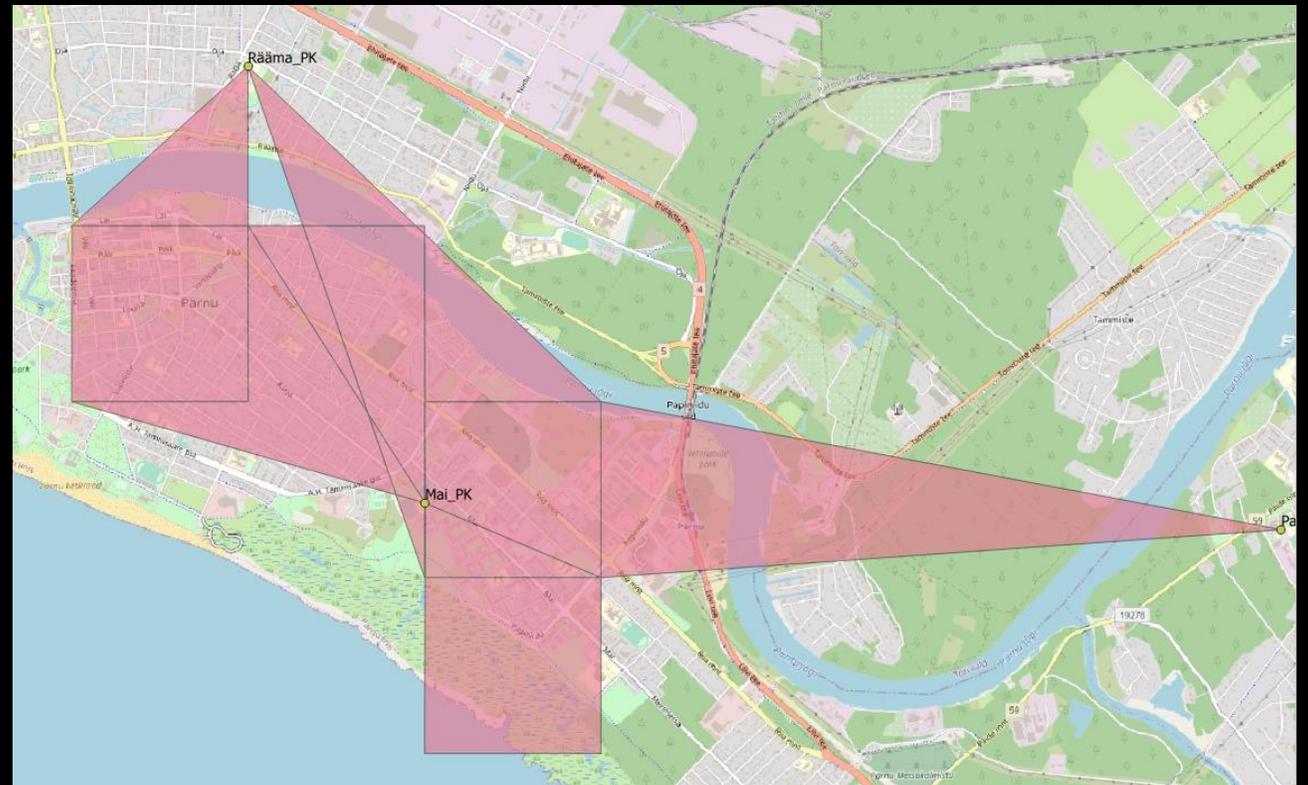
**Union**

This algorithm checks overlaps between features within the Input layer and creates separate features for overlapping and non-overlapping parts. The area of overlap will create as many identical overlapping features as there are features that participate in that overlap.

An Overlay layer can also be used, in which case features from each layer are split at their overlap with features from the other one, creating a layer containing all the portions from both Input and Overlay layers. The attribute table of the Union layer is filled with attribute values from the respective original layer for non-overlapping features, and attribute values from both layers for overlapping features.

# Task- digitize non motorized traffic roads

- Let's start roads digitizing- process of taking a basemap and making roads by hand on that

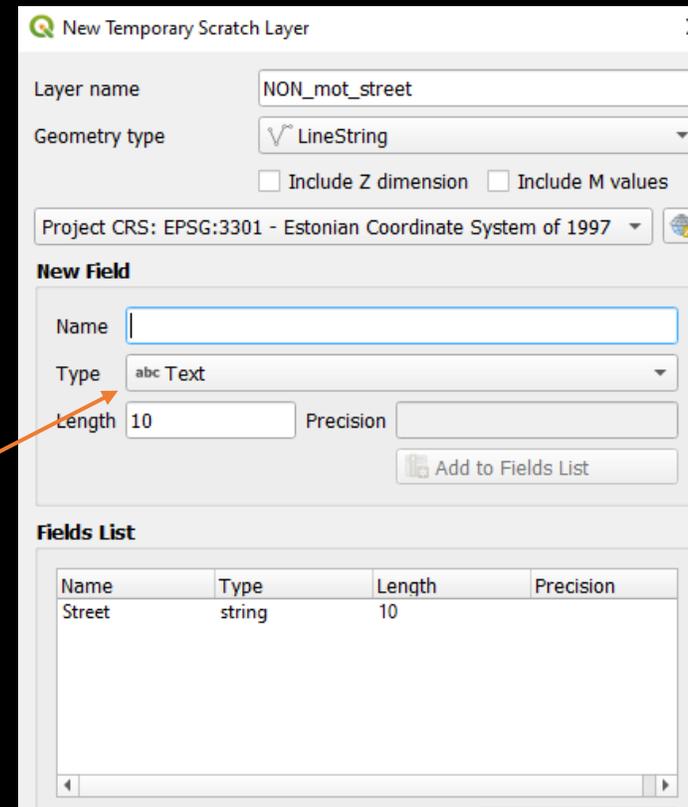


# Task- digitize non motorized roads II

- Make a new layer, this time „lines“ type of layer
- Also add attribute „street“ to new layer to know what street digitized line will pass

Add descriptive layer name for purposed NMT streets, geometry type: LineString and projection: 3301

You add new field by adding the name and choosing the type



The screenshot shows the 'New Temporary Scratch Layer' dialog box in QGIS. The 'Layer name' is 'NON\_mot\_street', the 'Geometry type' is 'LineString', and the 'Project CRS' is 'EPSG:3301 - Estonian Coordinate System of 1997'. The 'New Field' section has 'Name' (empty), 'Type' (abc Text), and 'Length' (10). The 'Fields List' table shows a field named 'Street' with type 'string' and length '10'.

Name	Type	Length	Precision
Street	string	10	

# Task-digitizing non motorized roads III

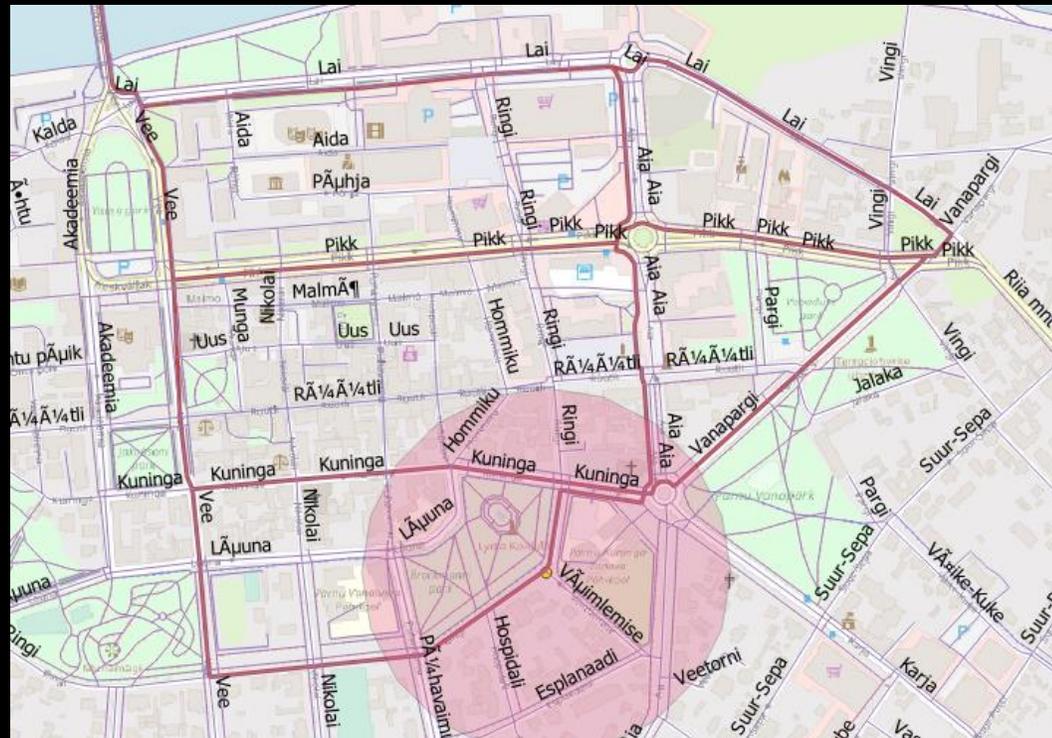
- Pink rectangle indicates snipping on the corner.
- Easy way is to trace streets when enabling snipping is on, so you could start a new line after the first one ends.
- Start every object whenever there is a new street.
- Left click to start line- right to end it.

How to enable snipping, this toolbar could be hidden, so click on the toolbar right click and enable it when needed.



# Compare NON motorized traffic roads

- This is my map, yours could be different
- It's because you are using different criterias than me



At the end of the course your team should submit the following layers

- Demand layer- students by home areas
- Offer layer- school positions
- Gravity model of 3 objects
- Hot zone- where are the most mobility zones
- Purposed non motorized traffic street layer

At the end of the course your team should submit the following II

- Theory that includes:
  - Description/definition of what is mobility and GIS,
  - Description of mobility forecasting model steps,
  - Huff Gravity scetch from project.

# Thank you for your attention!

Interreg Central Baltic Project: INTELTRANS – Intelligent Transport and Traffic Management study module.