

Introduction to GIS.

MAR-E1046 Basics of GIS.



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Slides borrowed from Jaakko Madetoja



Modifying Data in GIS

Data editing

New layers

Attribute editing

Learning goals

Today you will learn

- To edit data objects manually
- To create new layers
- To create new attributes and calculate them based on existing ones
- To create points from a table
- To join attributes

Data editing in ArcMap

Selections and queries do not edit the data files

- In order to edit, you need to use **Editor-toolbar** from Customize -> Toolbars -> Editor, and from the toolbar Editor -> Start Editing
- Use the building data set from earlier sessions: try removing excess buildings, adding missing buildings (with Create Features – window), giving them attributes using Attribute Table (or Attribute window from the toolbar), and moving the location of buildings
- Snapping can be controlled from Editor -> Snapping -> Snapping Toolbar
- Edits have to be saved from Editor -> Save Edits
- **Remember to stop editing** from Editor -> Stop Editing! Many tools will not work if editing is on.

Creating new layers and drawing in ArcMap

To create new layers, open Catalog (Window -> Catalog), right-click a folder New -> Shapefile. You need to define name, type and coordinate system

- Create a layer for polygons, and try drawing one in Otaniemi. Double-click ends the polygon. Also try Edit Vertices, Cut Polygons and Merge (requires selecting at least two polygons) tools
- This how general drawing happens in a GIS; drawing new objects is an exception in GIS practice

Creating and calculating attributes

- If you need to create a new attribute, open the attribute table and choose **Table Options (upper left corner) -> Add Field**. Give the attribute a name and choose the right type
 - Integer for integer values
 - Float and Double for decimal values
 - Text for text; you can also have numbers as text
- **You can't have editing on to add a field.**
- **To calculate values based on other attributes, right-click an attribute and choose Field Calculator**

- **Task:** Create a map that shows the proportion of single-room apartments in Espoo. **ASLKM is the total number of apartments and AS1 the number of single-room apartments**
 - To avoid dividing by zero, first you need to select only the buildings that have apartments using **Select by Attributes**; then the calculation will be done for these buildings only
 - To visualize a continuous attribute, use **Quantities and Graduated colors** in **Symbology**. Select the right attribute for the Value and click **OK**.

Join attributes

- Sometimes you have one layer with spatial objects and another with attributes for them.
- Add more attributes to the `postal_code` –layer from the `occupation-tables` (both of these are actually open source data called Paavo, Postinumeroalueittainen avoin tieto)
- Open both the layer and one table in ArcMap; you'll see that they share a common attribute: `POSTI_ALUE` (the attributes do not need to have the same name; just the same values)
- Right-click the `postal_code` layer and choose **Join and Relates - > Join; different options in the tool:**
 - 1. the common field in the first layer
 - 2. the table (can also be a spatial layer) from which attributes will be joined
 - 3. the common field in the second layer (or table)
 - After the join, check that new attributes appeared for the postal code area polygons

Homework 1

- **Create a map of Espoo that shows the proportion of students from the whole population per postal code area by creating a new attribute for the proportion.**

The attributes with the prefix PT_ describe occupation: PT_VAKIY is the total and PT_OPISK is the amount of students.

- **Submit the map and answer the following question: Is there something odd about some proportion values? What? What could be causing this?**
- **Create and submit another map that does not have the problem with the odd proportion values.**