

Lesson plan – GPS exercise shops – Worksheet

Introduction:

In this exercise, you will use GIS to create a virtual walk through the main shopping street of the city center of Geel, the *Nieuwstraat*, presenting the interesting shops that you can find in this street as points on a map, with links to pictures added to the points.

Description of the exercise:

In order to give a clear picture of the street, you will use a detailed satellite image, from Google Earth, of the city centre of Geel. However, before you can use this satellite image in a GIS, you will need to georeference the image first.

If you want to georeference the image, you need coordinates of spots that are easily recognizable visually (see iNote 40 about georeferencing). You have a GPS device at your disposal, read the quick-start manual, and go into the city centre to find your subjects of research and get 4 coordinates (your GPS device will call it “*Marking Waypoints*”) for georeferencing your satellite image. Before you start your field trip, it is highly recommended that you read iNote 40 and the instructions of the exercise very well first, so that you get a good idea of the whole picture of the exercise, and know exactly what you need to do. Then go into the city centre.

<i>number</i>	<i>instruction</i>	<i>iNotes</i>	<i>Teachers' / Trainers' activity</i>	<i>Pupils' / participants' activity</i>
1	Open ArcMap from the windows start menu		<input type="checkbox"/>	X
2	Add the raster maps TOP17-5.tif and TOP16-8.tif	1	<input type="checkbox"/>	X
	Use Google Earth to find a detailed satellite image of the street <i>Nieuwstraat</i> .			
3	Open Google Earth, zoom in on Geel and find the street <i>Nieuwstraat</i> . If you are confident with the image you have on your screen, save it by clicking File > Save > Save Image, or use the Ctrl+Alt+S key combination. Pay attention to where you save the image. You will need it later on in the exercise!		<input type="checkbox"/>	X
	Fieldwork: First study the Google Earth image and look for good visual landmarks. Agree on the four locations where you will collect the coordinates from which you will use to georeference your satellite image. Choose locations that are not collinear (points which are on a single straight line) and are equally distributed over the area covered by your satellite image. If you have reached an agreement, it is time to go into the field and pick up the coordinates of the four good visual landmarks you have selected. When you return with your coordinates, you will draw them on your map and use them as “anchor points” to georeference your satellite image.			
4	Once you have come back from collecting the coordinates, create a table (in ArcCatalog or in Excel), with an “X” and a “Y” column and enter the coordinates you collected. Before you enter the coordinates, you might need to convert them from WGS 84 (the coordinate system in which your GPS device operates) to Belge 72 (the coordinate system in which your map is georeferenced). Use the tool on the following link to do this: http://zoologie.umh.ac.be/tc/tcbel.asp .	2; 7; 30	<input type="checkbox"/>	X

Lesson plan – GPS exercise shops – Worksheet



5	It is crucial to define the right coordinate system for your data frame, to make sure that in the next step, your coordinates will be drawn on the map on the correct location. Choose World > “Belge 1972” as geographic coordinate system You do not need to choose a projected coordinate system.	41	<input type="checkbox"/>	X
6	Draw the locations of your coordinates on the map, using the tool “add XY data”.	24	<input type="checkbox"/>	X
7	Add the satellite image of Geel, that you created in Google Earth, to the table of contents	1	<input type="checkbox"/>	X
Get ready to georeference your satellite image.				
8	Activate the georeferencing toolbar.	27	<input type="checkbox"/>	X
9	Start georeferencing your satellite image.	40	<input type="checkbox"/>	X
Congratulations! You have a georeferenced your satellite image now. The scale and position of the image is perfectly aligned with the topographic map, and ready to be used in ArcMap.				
10	Create a new information layer. You will use this layer to draw the points on, representing the locations of the interesting shops.	20	<input type="checkbox"/>	X
11	Draw the points on the map, indicating the interesting shops, using your satellite image as a detailed reference.	12	<input type="checkbox"/>	X
12	Add a hyperlink to the points you just drew on the map, linking to the picture of the shop.	14	<input type="checkbox"/>	X
13	If you want, you could add the name of the shop in the dBase table and show it on the map in a label.	30; 26; 7		
You now can present a virtual walk through the <i>Nieuwstraat</i> with GIS. Congratulations for your persistence!				

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information