**Gate Transformer and Space-movement correlation analysis**

*QGIS Requirement: We recommend downloading the latest QGIS long-term-release (LTR) version 2.18.4 for the spatial join to work.*

This exercise introduces the gate transformer tool and the QGIS spatial join functions to produce a simple space-movement correlation analysis. This exercise requires the pedestrian count dataset, the OS meridian line processed dataset and the catchment network dataset from the previous exercise.

**1. Prepare the dataset**

a. clear the canvas

b. drag the pedestrian movement shapefile onto the canvas

c. drag the OS meridian segment shapefile onto the canvas

d. the canvas should show the pedestrian movement gate layer and the OS meridian line layer

**2. Run Gate Transformer - Resize**

a. the aim of this step is to resize the movement gates so it has a constant length for visualisation

b. start the "Gate transformer" tool by clicking on the gate transformer button or go to "SSToolkit" -> "Gate Transformer"

c. select the “pedestrian count layer”

d. click on the "resize" radio button

e. set the length to "25" metres

f. press transform

g. this should resize the movement gates to the same length of "25" metres

**3. Run Gate Transformer - Rotate**

a. the aim of this step is to rotate the movement gates so it intersects with the segment layer

b. start the "Gate transformer" tool by clicking on the gate transformer button or go to "SSToolkit" -> "Gate Transformer"

c. select the “pedestrian count layer”

d. click on the "rotate" radio button

e. set the angle at "90" degrees

f. press transform

g. the gates should now be rotated by "90" degrees.

h. if the gates do not intersect with the segment layer, rotate again until it intersects.

i. make sure the gates intersect the correct corresponding segment

**4. Gate and space syntax measures spatial join**

a. the aim of this step is to join the gate data layer and the OS meridian processed map

b. ensure the columns in the two layers that are to be joined are in a number format

c. if not change the format of the joined columns. Eg. change the Pedmov column from “String” – “Integer”

d. go to the “MMQGIS” menu at the top – “Combine” – “Spatial Join”

e. select “pedestrian\_count layer” as Output shape (Target)

f. select “road\_os\_meridian2\_analysis” as Data (Join)

g. select “First” as Attribute operations

h. select all columns that would remain in the joined layer under Fields

i. this should include both pedestrian movement and spatial analysis layer for the correlation analysis. Eg. “Pedmov”, “NACHRN”, “NACHR800”, “NACHR1200”, “NACHR2000”

h. click Browse to select the location for the output layer and name the saved layer to “ped\_spatial” layer.

j. spatial operations is not clickable as only intersect is available with two network layers

k. click ok to complete the spatial join

l. the saved layer should show both the movement data and the network processed data where the two layers intersect

**5. Gate and catchment analysis spatial join**

a. the aim of this step is to join the joined spatial-gate data layer and the catchment analysis map

b. ensure the columns in the two layers that are to be joined are in a number format

c. if not change the format of the joined columns. Eg. change the Pedmov column from “String” – “Integer”

d. go to the “MMQGIS” menu at the top – “Combine” – “Spatial Join”

e. select “ped\_spatial” layer as Output shape (Target)

f. select “catchment network” layer as Data (Join)

g. select “First” as Attribute operations

h. select all columns that would remain in the joined layer under Fields

i. this should include both pedestrian movement and catchment analysis for the correlation analysis. Eg. “Pedmov”, “NACHRN”, “NACHR800”, “NACHR1200”, “NACHR2000” , “Tube\_catchment”

h. click Browse to select the location for the output layer and name it “ped\_spatial\_catchment” layer.

j. spatial operations is not clickable as only intersect is available with two network layers

k. click ok to complete the spatial join

l. the saved layer should show both the movement data, the catchment data and the network processed data where the three layers intersect

**6. Visualise gate layer**

a. Start the "Attributes Explorer" SST tool

b. Select the newly created join layer

c. Select "symbology" tab

d. Select the "Pedmov" attribute

e. set colour range as "Classic"

f. increase the line width to 0.5

g. Set Intervals to "Equal Intervals"

h. Click the "Apply Symbology" button

i. This is the standard display for the pedestrian movement data

j. Save an image of the map window

**7. Scatterplot Analysis**

a. Start the "Attributes Explorer" SST tool

b. Select the newly created join layer

c. Select "Charts" tab

d. select "Scatter plot" button

e. under numeric attributes or X-axis, select "INT" as the X-Axis

f. under Y-axis, select "Pedmov"

g. The scatterplot should show the regression line, the equation of the line and the r2 (goodness of fit)