FlowMax-Q Manual

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Contents

Preface

This manual[1] is divided into two parts. Part I deals with handling FlowMax network (nodes and edges) in a QGIS environemnt and Part II deals with using the FlowMax-Q, a QGIS plugin to work with outputs from FlowMax.

[1] Version **15b24d1**

Part I

Editing in QGIS

Chapter 1

Introduction

- Economy based scenarios are to be modified in the trade-databases.
- Resilience based scenarios (GIS) fall into 2 categories:
  - node-based
    - editing geometries;
    - editing attributes
  - edge-based
    - editing geometries;
    - editing attributes
- Technology based scenarios will affect the demand (freight composition)
- Policy based scenarios will affect the route and mode choices (freight composition)

Chapter 2

Scenarios

The image below shows the underlying structure of constructing scenarios

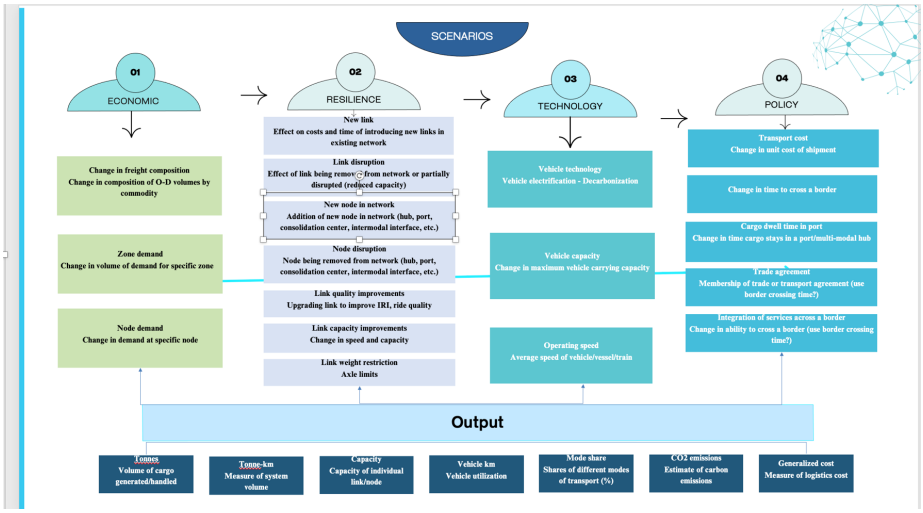

Figure 2.1: Scenarios

Chapter 3

Adding Links

3.1 Connect to an non-existing node

Is there an existing node at the source or destination of this (to be added) new link?

- No? First create a node(s) and then create a line between source and destination nodes.
- Yes ? Create a line between source and destination nodes.

3.2 Connect to an existing node

Is the new link connecting to an existing node location?

- Create a line between source and destination nodes.

3.3 Hands-on

3.3.1 Adding a New Link from an existing node

1. Check the highest node number (NodeID_{H}) from the node file. To do this, open the attribute table of the shapefile **Right Click on the node layer> Open Attribute Table** . Scroll if required to see the NodeID field, **Click on the field heading** to sort the column in ascending or descending order. When in descending order, make note of the top most row to identify the current highest node number.
2. Set the node file in edit mode, and add a node (point geometry) to the node file and assign it a node number = $\text{NodeID}_{\text{H}}+1$ - Fill in all other node attribute columns as necessary (see how)
3. Save edits and stop the edit mode on node file.

4. Check the highest edge number (EdgeID_H) from the link file.
5. Set the link file in edit mode and add a link (line-geometry) from existing node to the new node created in step 2, assign this link an edge number = EdgeID_H + 1 - Fill in all other link attribute columns as necessary (see how)
6. Save edits and stop the edit mode on link file

3.3.2 Adding a New Link from an existing link

1. Check the highest node id (NodeID_H) from the node file.
2. Set the node file in edit mode, and add a node (point geometry) to the node file at the required location on an existing link and assign it a node number = NodeID_H+1 - Fill in all other node attribute columns as necessary (see how)
3. Save edits and stop the edit mode on node file.
4. Split the existing link at this new node from step 2. - When you split the link into two, the first part can retain existing edgeID but the second part needs a new edgeID.
5. Check the highest edgeID number (EdgeID_H) from the link file.
6. Set the link file in edit mode and assign this second part link an edgeID = EdgeID_H + 1 - Fill in all other link attribute columns as necessary (see how)
7. Save edits and stop the edit mode on link file

Chapter 4

Removing Links

Removing links is easier than adding links. It is recommended to disable links than to delete them.

4.1 Removing a Link (disabling links)

It is advised not to remove a link (line-geometry) in GIS. It is recommended that you use the `active` attribute in the link shapefile:

- edit this attribute to a value 0 (integer) instead of a value 1(integer) for the link in consideration.
- Assigning a 0 will add the current link to a set of inactive links i.e., FlowMax will remove all the links with `active = 0` from path building of the Flowmax algorithm

4.2 Adding back an Existing (disabled) Link

If you have set the `active` attribute to 0 to exclude the link(s) from analysis, you can always set the `active` attribute back to 1 to include the link(s) back into your analysis.

Chapter 5

Modifying Node Attributes

Node file: All nodes come with predefined attributes. Whenever a new node is added, all the attributes should be assigned a value (either a known value or a default value)

To edit: **right click the node file > open attribute table > start edit mode**. Select the required record and modify the values as necessary. After editing, save the edits and close the table.

This applies to all scenarios where attribute values must be changed: capacity, speed, travel time, quality of links etc.

Chapter 6

Modifying Edge Attributes

Link file: All links come with predefined attributes. Whenever a new link is added, all the attributes should be assigned a value (either a known value or a default value)

To edit: **right click the link file > open attribute table > start edit mode**. Select the required record and modify the values as necessary. After editing, save the edits and close the table. This applies to all scenarios where attribute values must be changed: capacity, speed, travel time, quality of links etc.

Part II

QGIS Plugin

Chapter 7

Installing the plugin