DanteExport v1.0 Manual

19 May 2014, info@dantesoftware.com

1 About

DanteExport (DE) is an application that allows users to easily select part of the Dutch Motorway network for a certain time period and then download this data to the user's own computer. The exported data can then be viewed and edited in Matlab without any restrictions. In order to use DE, a login and password are required which can be requested via www.dantesoftware.com.

The data in DE is built from three main building blocks: elements, connections and properties. Elements define the geometric shape and validity in time, e.g a "link" is defined as a series of points form start to end which is for example valid from January 1st 2008 and later. A connection defines a relation between elements, e.g. a loop detector is a child of a link. Properties contain all other data that is applicable to the element, e.g. the "speed limit" is a property of a link.

1.1 System Requirements

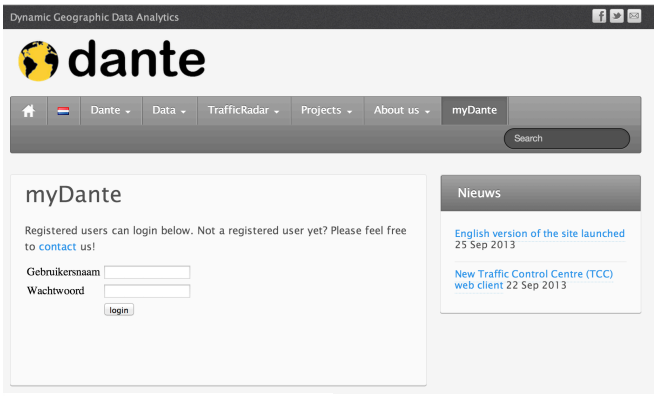
In order to run DE, the following system requirements are specified:

- At least 2GB of memory,
- Java v1.6 or higher

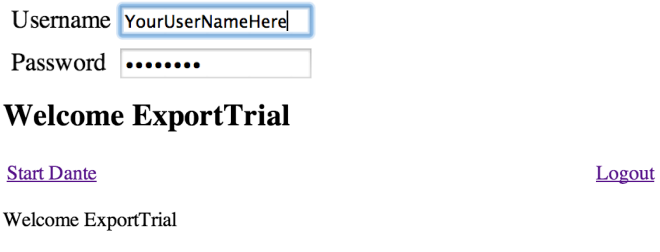
The tool has been tested under Mac OSX (10.9) and Windows 7. If you have experiences (either positive or negative) of DE under other operating systems we invite you to let us know.

2 Starting DanteExport

1. Go to www.dantesoftware.com and select the menu ‘myDante’

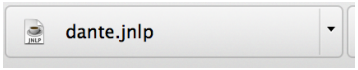


2. Login with your credentials

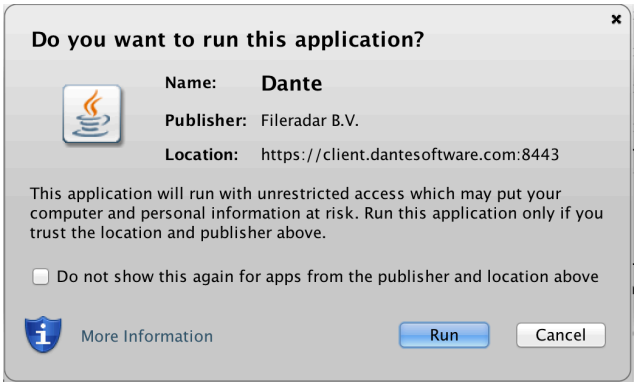


3. On successful login, click the link dante. This will trigger the download of a small ‘.jnlp’ file

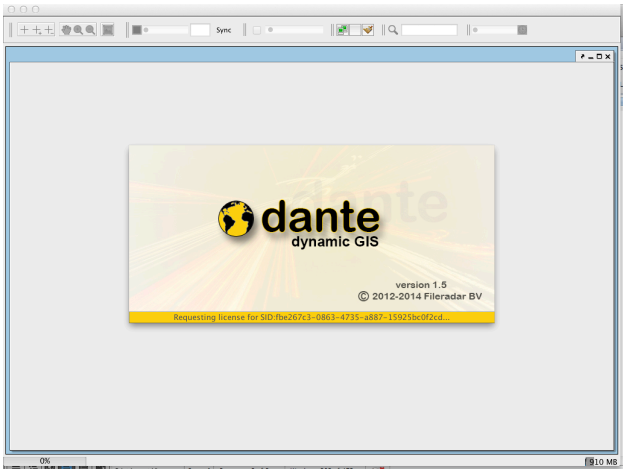
4. When downloaded open this file to start DE (some browsers will open it automatically)



5. Depending on the system security settings, a popup will be shown asking your permission to start the trusted application Dante

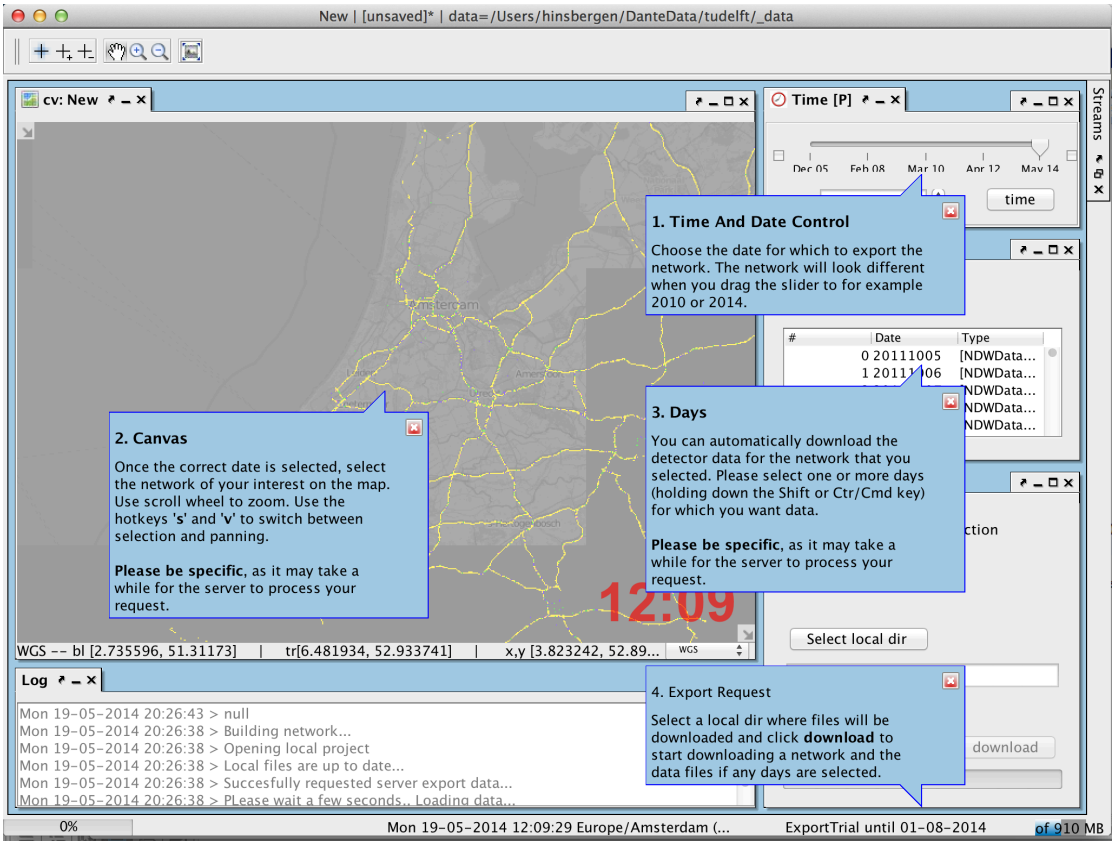


6. Dante will now start



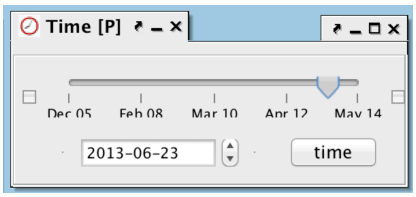
3 Using the tool to download data

Once the application is started, at the bottom left corner of the screen a progress bar is shown. When launching for the first time it may take a few minutes to download and unpack all data required to show the export network. Once everything is loaded, your screen will look like below.



Exporting data is performed in 4 simple steps, each of which have a blue balloon tip with a brief explanation. You can safely click these away using the red cross in the right top corner.

3.1 Select the date



Use the slider or text box to change the date. You will notice that the network that is visualized on the map changes as you change the date. The map will always display the roads as they were on the date that you select.

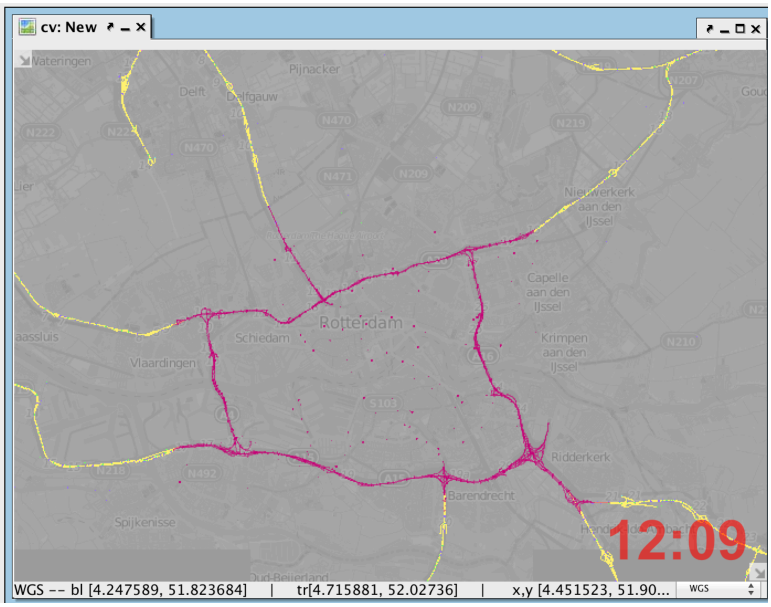
3.2 Select the network of interest

In the top left corner you can find several buttons that change the mouse mode:

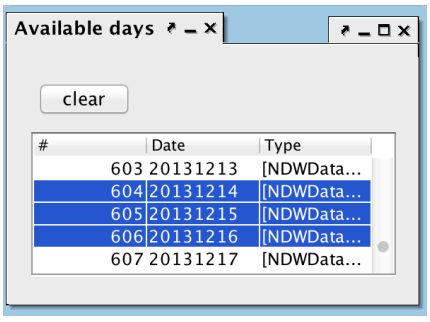
These buttons are, from left to right: Select, Add to selection, Subtract from selection, Pan, Zoom in, Zoom out, Zoom to entire network.

Using the **selection** mouse modes, mark the network of your interest. Anything that you select will be drawn purple. Notice that the selection behavior is different when you drag upwards or downwards (like in AutoCAD).

Make sure to be as specific as possible, as downloading large quantities of data may take a long time and because you may block other users until your request is done.



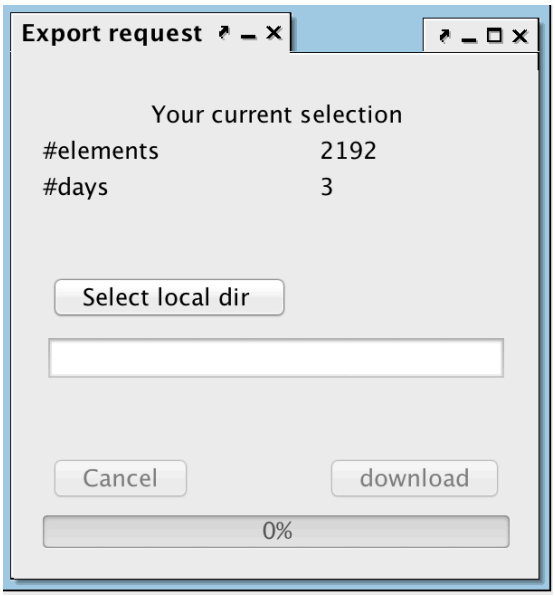
3.3 Select days (if any)



If you are only interest in the network description, you can safely skip this step. In case you are interested in the traffic data of the detectors in the area of your interest, so can use this table to select one or more days. Use the Shift and/or the Ctrl or Cmd buttons to make up your selection.

Make sure to be as specific as possible, as downloading large quantities of data may take a long time and because you may block other users until your request is done.

3.4 Review your request and start downloading



Now that you have selected the network and possibly the days for which you want data, you need to select a local directory where the data will be downloaded.

Existing files or previous exports are overwritten and old files may cause confusion. You are advised to specify a new directory for each export

Once you have selected a directory, press the download button to start downloading the data. Information about the progress is shown in the progress bar below the download button and in the Log window below the map. Once the download is finished, the progress bars will stop moving and the following message is shown in the Log window:

4 Using the data in Matlab

Once the download has finished, several files will have been downloaded to the specified directory. These are:

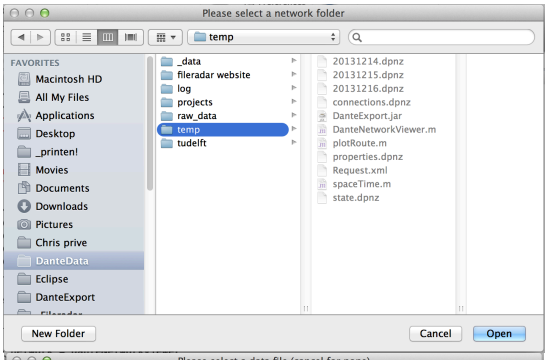
- The *.dpnz* files contain the network, connections, properties and any daily data
- *DanteExport.jar* is a Java library that you need in Matlab
- A selection of *.m* files
- *Request.xml* contains a summary of your export request

4.1 Opening the network viewer

The first step is to change the directory to the location where all data was stored. Next, a series of Matlab commands is run to load the data into Matlab.

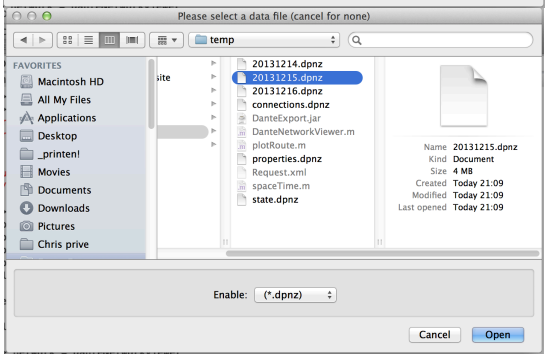
```
>> javaaddpath('DanteExport.jar')

>> network = DanteNetworkViewer
```

The Java library is loaded that contains essential functionality to deal with the data.
Next, the Dante Network Viewer is opened.



You will now get two dialogs.

The first will ask you where to find the data (the directory that contains the 'dpnz' files).



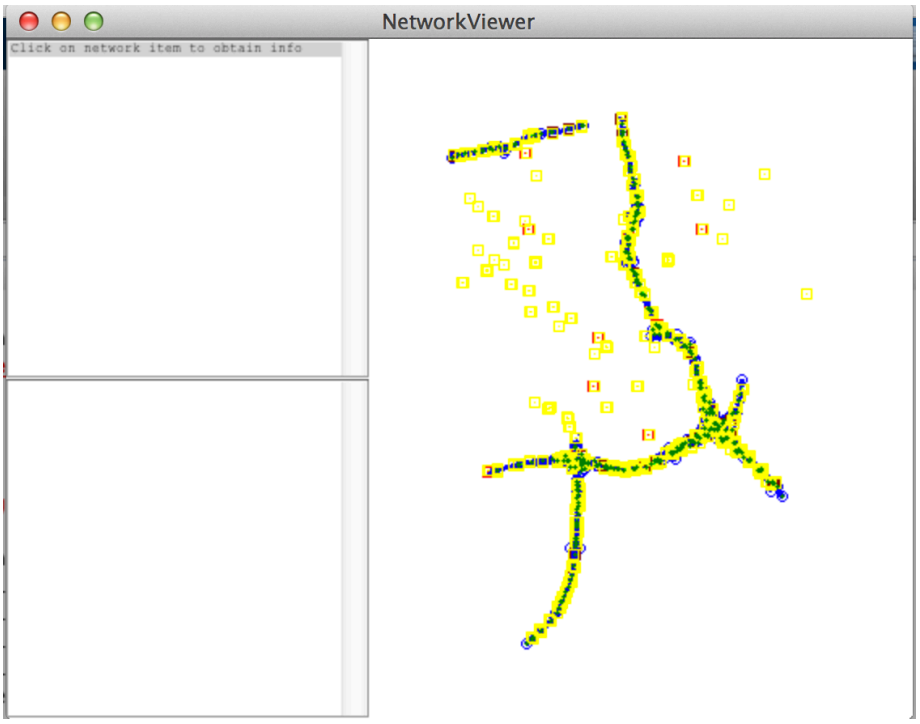
In case you have selected one or more days with traffic data (see section 3.3) you have the possibility to load the data into the network immediately. You can always load the daily data later.

In case you only have a network and no daily data files you can safely press 'Cancel'.

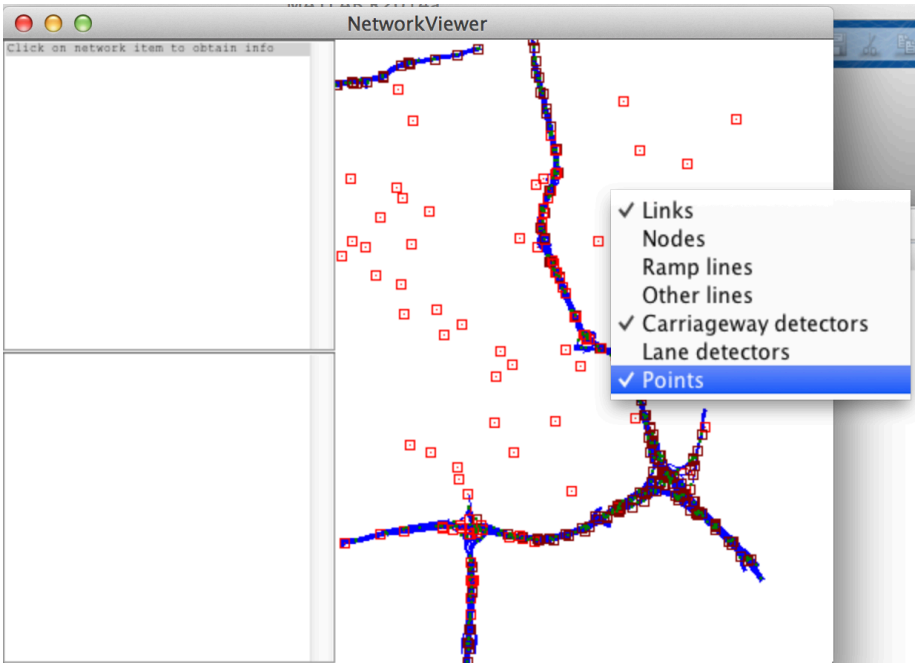
```
>> network = DanteNetworkViewer
Loaded /Users/hinsbergen/DanteData/temp/state.dpnz 43 kb. took 29 ms
Loaded /Users/hinsbergen/DanteData/temp/connections.dpnz 59 kb. took 11 ms
Loaded /Users/hinsbergen/DanteData/temp/properties.dpnz 489 kb. took 594 ms
Loaded /Users/hinsbergen/DanteData/temp/20131215.dpnz 3914 kb
Plotting all elements, this may take a little while.
```

You will see progress. Plotting all elements will take up to a few minutes depending on your computer and the size of the network.

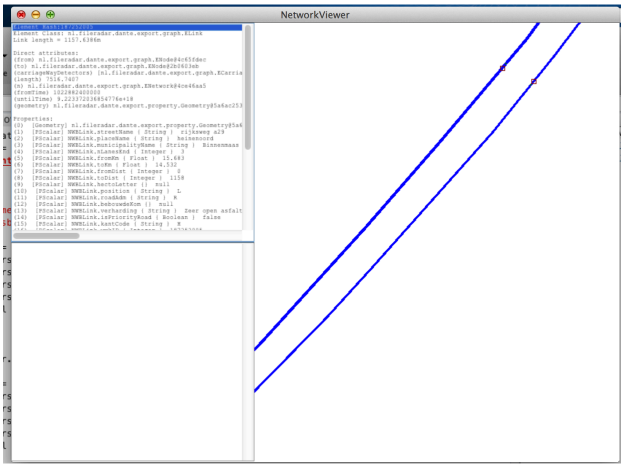
You will now see a screen that shows the data that was downloaded, like the image below.



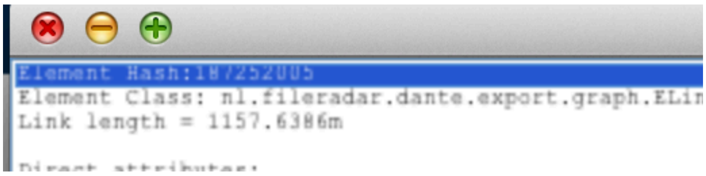
The information density in this plot is quite high. You can reduce the amount of information by pressing the right mouse button anywhere in the network view. Switch off some of the layers to get a clearer picture of the data.



4.2 *Defining a route*



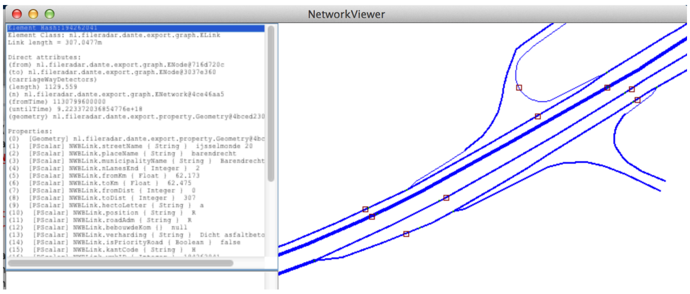
Zoom in to the starting link of your route and left click it. Information about the link will appear in the left top screen.



Each link in the network has a unique 'Hash'. You will need to remember the Hash of the starting link. It is displayed as the first line of the left top screen.

```
Element Hash:187252005
>> |
```

TIP: double click the row to 'mark' the row in the Matlab command window.



Go back to the NetworkViewer window and zoom / pan to the end link of your route. Left click it and mark the Hash of the link (double click the first line to copy it to the command window).

```
Element Hash:187252005
Element Hash:194262041
>> route = network.computeRoute('187252005','194262041')

route =

nl.fileradar.dante.export.graph.EDiscretizationSegment[]:
    [nl.fileradar.dante.export.graph.EDiscretizationSegment]
    [nl.fileradar.dante.export.graph.EDiscretizationSegment]
    [nl.fileradar.dante.export.graph.EDiscretizationSegment]
    [nl.fileradar.dante.export.graph.EDiscretizationSegment]
    [nl.fileradar.dante.export.graph.EDiscretizationSegment]
    [nl.fileradar.dante.export.graph.EDiscretizationSegment]
    [nl.fileradar.dante.export.graph.EDiscretizationSegment]
    [nl.fileradar.dante.export.graph.EDiscretizationSegment]
    [nl.fileradar.dante.export.graph.EDiscretizationSegment]
    [nl.fileradar.dante.export.graph.EDiscretizationSegment]
```

Compute the shortest route between the two links.

Your route consists of a series of discrete segments of about 1km long. Each segment can contain dynamic data like speeds or flows.

```
>> plotRoute(route)
```

Use this command to visualize the route in the NetworkViewer. The route will show in green.

4.3 *Extracting data from the route*

```
>> network.loadData([pwd,filesep,'20131216.dpnz'])
Loaded /Users/hinsbergen/DanteData/temp/20131216.dpnz 3980 kb
```

In case you haven't selected a data file when initializing the NetworkViewer (see section 4.1), or in case you want to load a different day.

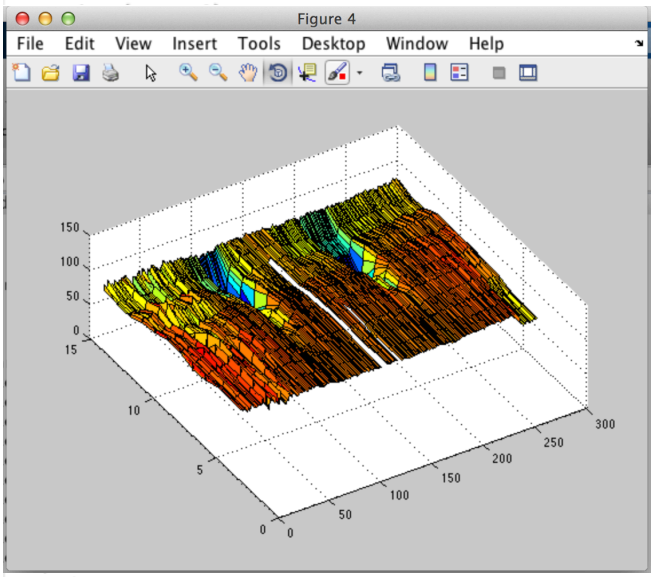
```
>> speed = spaceTime(route, 'ASM Speed');
>> flow = spaceTime(route, 'ASM Flow');
```

A matrix is extracted from the route that contains the ASM-interpolated speeds or flows over space and time.

```
>> size(speed)

ans =

    15   288
```

The matrix's size is the number of segments (15 in this case) times the number of time intervals (288, i.e. 5-minute intervals).

```
>> figure; surf(speed);
```



Visualize the speeds in 3D.

```
>> speed

speed =

  Columns 1 through 9

      NaN      NaN      NaN      NaN      NaN      NaN      NaN      NaN      NaN
      NaN      NaN      NaN      NaN      NaN      NaN      NaN      NaN      NaN
  103.1856  102.8850  104.3037  105.3549  101.7673   98.8181  105.3333   99.9428  101.4058
  102.6690  103.5835  104.4016  104.1295  103.1182   97.8644  106.5452  101.6345   99.4776
  104.9118  102.1591  103.6610  103.6391  103.3028   97.6414  108.2655  102.9065   99.4763
  105.0338   94.4910   99.2143  100.8245  103.0412  100.7546  107.7563  100.2116  102.4200
  105.3756   92.6949   98.0802  100.3049  103.1971  101.8529  107.5538   99.3366  103.6755
  107.8997   99.6634  101.7901   99.1777  104.9045   98.5410   98.0655   97.0847   99.3325
  107.6025  100.8468  102.1551   98.9741  104.4306   97.0945   95.2329   96.4434   98.1876
  100.1789   94.0339   98.3667   95.1275   95.4922   90.5850   89.5575   93.5549   90.1960
   97.3436   90.6889  101.0646   96.2390   97.4877   92.1965   86.4148  100.1066   92.5669
   87.8506   82.7805   88.7329   84.9251   89.1333   83.0113   80.7268   86.3688   86.0206
   86.7695   82.8586   86.2698   83.1411   88.4508   81.9003   80.3008   84.8597   85.6514
   88.1220   94.4480   88.9647   84.9719   99.0527   90.2609   88.6171   88.5872   92.4171
      NaN      NaN      NaN      NaN      NaN      NaN      NaN      NaN      NaN
```

The matrix may contain NaN's. These are segments for which there is no data because there is no detector in or near the segment or because the detectors are broken.

5 Troubleshooting and known issues

Currently there are no known issues. Please contact info@dantesoftware.com in case you encounter any!