D.   Using ForFITS

Information on visualizing the different parts of the VPM file is provided in section B, while details on handling the XLS file are provided in section C.

This section focuses on the using the model, illustrating how to run it, how to visualize results and how to compare different model runs for analytical purposes.

Running the model

To run the model or create scenarios, the user must:

- download both the ForFITS VPM and XLS files from http://www.unece.org/trans/theme_forfits.html
- ensure that both files are placed in the same folder (it is recommended to create a new folder and place the two files in it)
- download the Vensim Model Reader (VMR), following the instructions available at http://vensim.com/download
- open the VPM file with the VMR (once opened, the file name is shown on the top left of the Vensim Model Reader window (e.g. "ForFITS.mdl")
- make sure that inputs are correctly entered in the ForFITS Excel file
  - ⚠ Caution: no error messages, all entered inputs respect the coherency requirements
- make sure that all other Microsoft Office files (especially Excel files) are closed
- Click on the 'Simulate' button (Figure D.1) of the toolbar located on the top of the VMR window (VMR toolbar) (Figure D.2).

Figure D.1   Simulate button, located in the VMR toolbar


Figure D.2   VMR toolbar
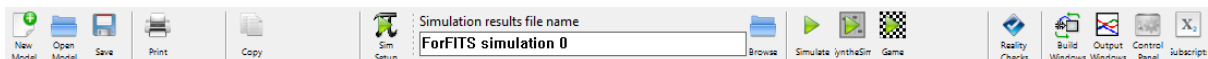
- The VMR first shows a "work in progress" message (characterized by an icon, on the left, representing a hammer hitting a nail) communicating that it is opening the ForFITS Excel file (Figure D.3). This corresponds to the transfer of inputs from Excel to VMR.

Figure D.3   VMR message on the opening of the Excel file to load input data
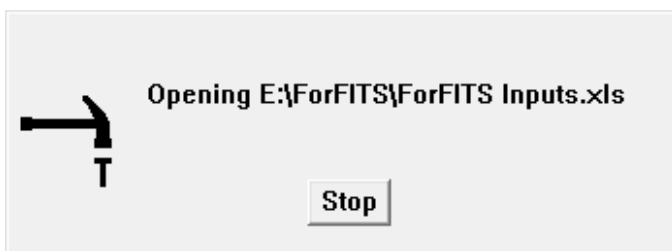
- If the VPM file is not located in the same folder of the XLS file called 'ForFITS Inputs.xls', running the model results in a message to the user to indicate which is the input file to be considered.
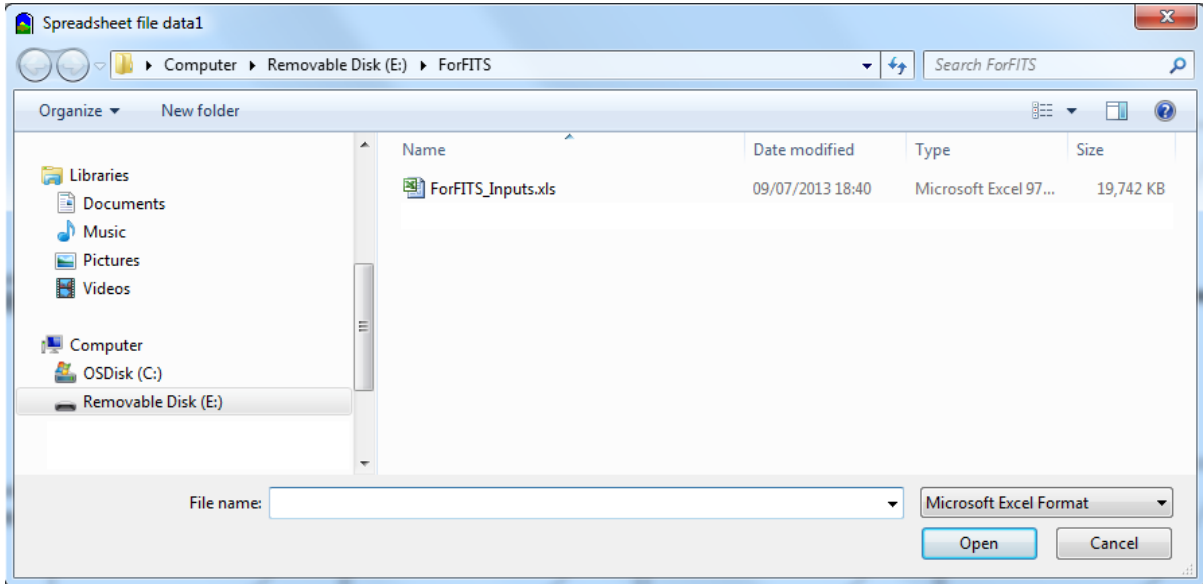
- A second message (Figure D.5) informs the user about the times that are being calculated.

Figure D.5   VMR message on the progress in the calculations

- When the calculation reaches the final year, the VMR saves the results in a Vensim Data File (VDF) with the name indicated in the toolbar located on the top of the VMR window (see Figure D.6). In the example, the filename selected is "ForFITS simulation 0". The VDF file is stored in the same folder of the VPM and XLS files.
  - ⚠ Caution: the final year remains on the screen when results are saved (given that the size of the VDF file is significant, this process takes some time: the actual duration depends on the writing speed of the drive (different from one computer to another).

Figure D.6   Box to enter the simulation results file name, located in the VMR toolbar
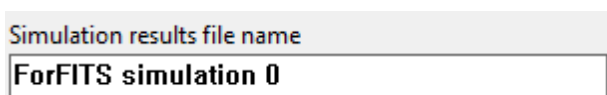
Note: additional information on the VMR toolbar is available in the online Vensim help at http://www.vensim.com/documentation/index.html?main_toolbar.htm. The icons and the terminology used here still refer, at the time of writing the ForFITS manual, to VMR versions earlier than 6.

Visualization of outputs
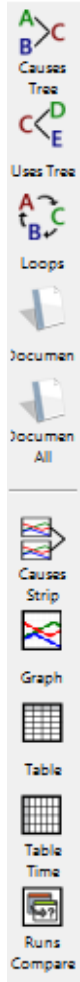
Some of the key outputs of ForFITS are shown as graphs in the views labelled as "outputs (…)".

All the results of a model run/simulation can also be visualized in tables or graphs. Tables and graphs can be printed or saved as individual files. Tables are stored as text files (TXT), and are easily readable in Excel (e.g. for further development). Graphs are stored as images in Windows Metafiles (WMF).

To visualize variables, the user must first select them (for information on how to select variables in different views, please refer to the section dealing with the description of the ForFITS VPM file) by clicking on their name on the model structure of the Vensim views. Selected variables are colour-coded in the view, and their name appears in the title bar. The selected variable is also called the workbench variable.

The 'Graph', 'Table' and 'Table time' tools (Figure D.8), located on the VMR analysis toolbar (vertical toolbar located on the left of the VMR window) (Figure D.7) allow visualization of the selected variables in graphs and tables, respectively. For time-dependent variables, the 'Table' button displays results showing times horizontally. 'Table Time' allows for the vertical display of the time dimension.

Figure D.8   Graph and Table tools/buttons in the VMR analysis toolbar

Note: additional information on the visualization of Vensim variables is available in the online Vensim help at http://www.vensim.com/documentation/index.html?analysis.htm. Again, the icons and terminology used refer, at the time of writing the ForFITS manual, to VMR versions earlier than 6.

For variables organized as matrices of data, according to a number of indexes (e.g. GDP [REGION, AREA, SERVICE] containing data for each element resulting from the combination of the REGION, AREA, and SERVICE dimensions), the 'Graph', 'Table' and 'Table time' tools display information concerning the active subscripts of selected variables.[1]

Subscripts can be managed in the Vensim's Subscript Control (Figure D.10 shows the 'simple' option, and Figure D.11 shows the 'full' option: the selection of the type of appearance is made with the button located on the bottom right corner, above the 'Close' button). This Control is activated by the 'Subscript' button (Figure D.9) of the VMR toolbar (Figure D.2).

Figure D.9   'Subscript' button of the VMR toolbar

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[1] The number of curves displayed in graphs are limited to a maximum of 16.

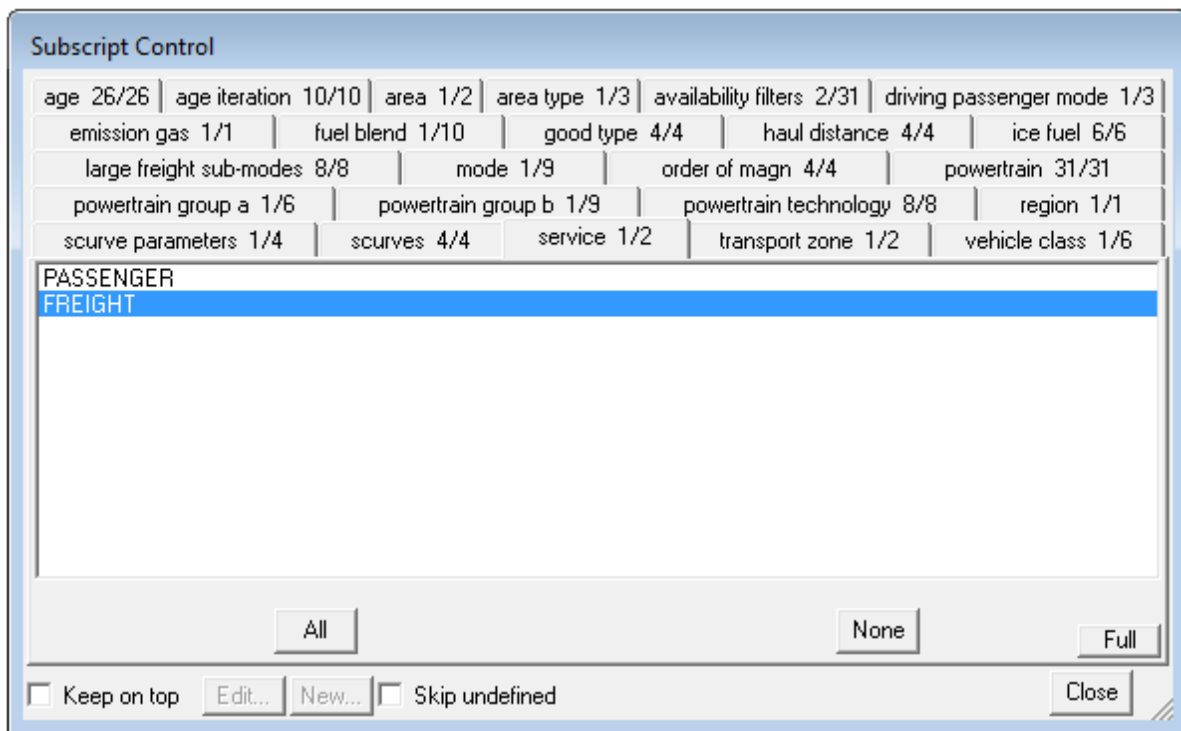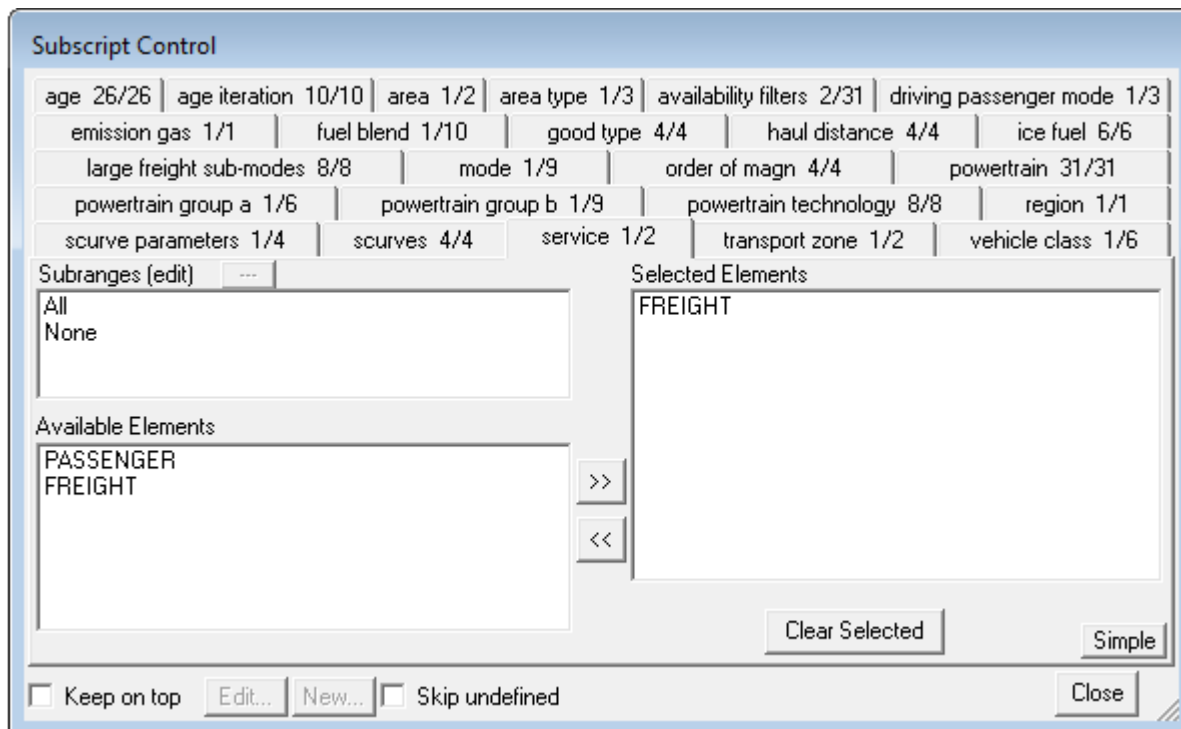Figure D.10   Vensim's Subscript Control: 'simple'

Figure D.11   Vensim's Subscript Control: 'full'

Tabs in the Vensim's Subscript Control correspond to all subscripts existing in the model. Understanding which subscripts are relevant in the different variables of the model is made feasible by selecting the variable to consider, displaying with the 'Table Time' button, and reading the list of active subscripted elements in the first line of the displayed table, within the square brackets). The same elements (for the subscripts that are relevant for the selected variable) are selected in the corresponding tab of Vensim's Subscript Control.

Selected elements appear with shaded backgrounds, as in Figure D.10, when the 'simple' option of Vensim's Subscript Control is selected, or as elements of the list on the right side when the 'full' option of Vensim's Subscript Control is selected (Figure D.11). In a 'full' option, the available elements of the subscript are listed on the left, as well as subranges (i.e. predefined groupings of existing elements).

The selection of subscripted elements is made by selecting the element in the 'simple' option, and by using the >> and << buttons in the 'full' option.

Note: additional information on Vensim's Subscript Control is available in the online Vensim help at http://www.vensim.com/documentation/index.html?subscript_control.htm. Again, the icons and terminology used refer, at the time of writing the ForFITS manual, to VMR versions earlier than 6.

Comparison of two (or more) scenarios

The VMR can use different inputs to analyse differing scenarios. The 'Datasets' tab of the 'Control Panel' button (Figure D.12) of the VMR toolbar (Figure D.2) allows managing model runs/simulations.

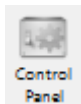Figure D.12   'Control Panel' button of the VMR toolbar

Figure D.13 shows the appearance of the 'Datasets' tab of the VMR 'Control Panel' with two simulations: 'ForFITS simulation 0' and 'ForFITS simulation 1'. This corresponds to a situation where two VDF files, with filenames corresponding to the ones listed in the 'Datasets' tab of the 'Control Panel', are located in the same folder of the VPM model file.

Figure D.13   'Datasets' tab of the VMR 'Control Panel': no run activated
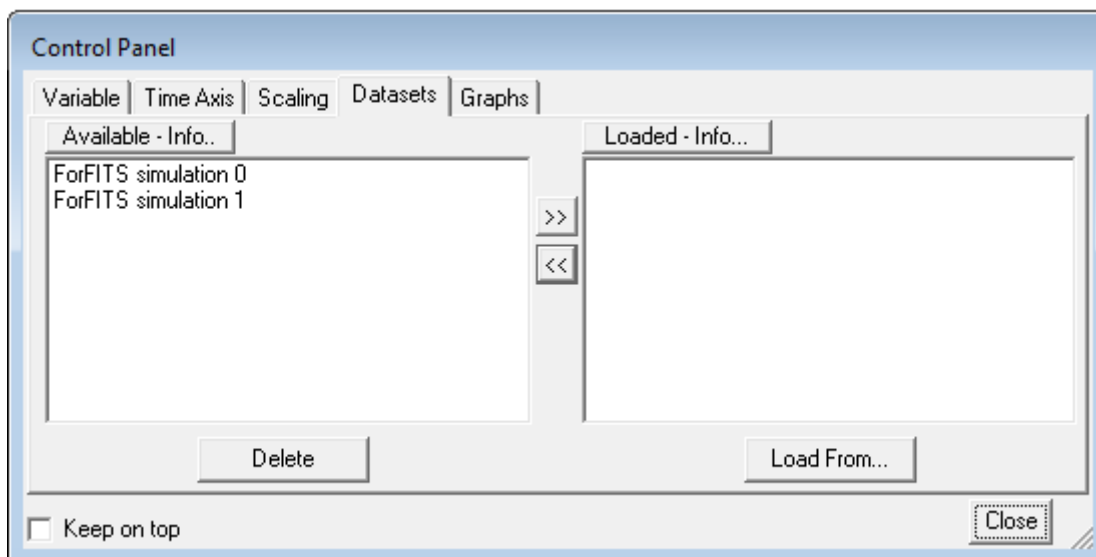
The load/unload of model runs for the analysis of their results is made with the >> and << buttons in the 'Datasets' tab of the 'Control Panel'. Figure D.14 shows the 'Control Panel' when the ' ForFITS

simulation 0' has been activated. Figure D.15 corresponds to a case where two runs (all those available in this specific case) have been activated.

Figure D.14   'Datasets' tab of the VMR 'Control Panel': one run activated
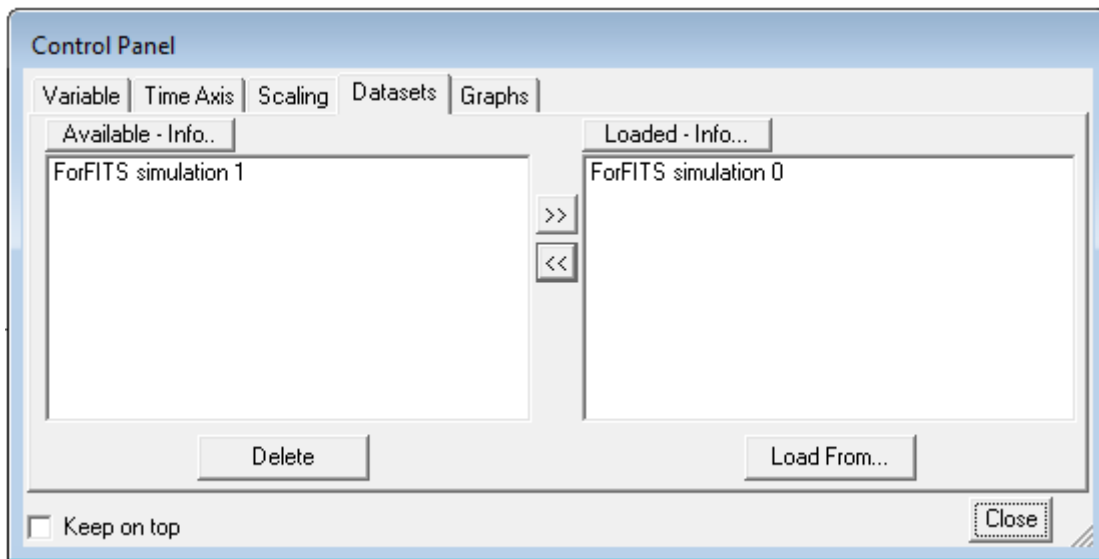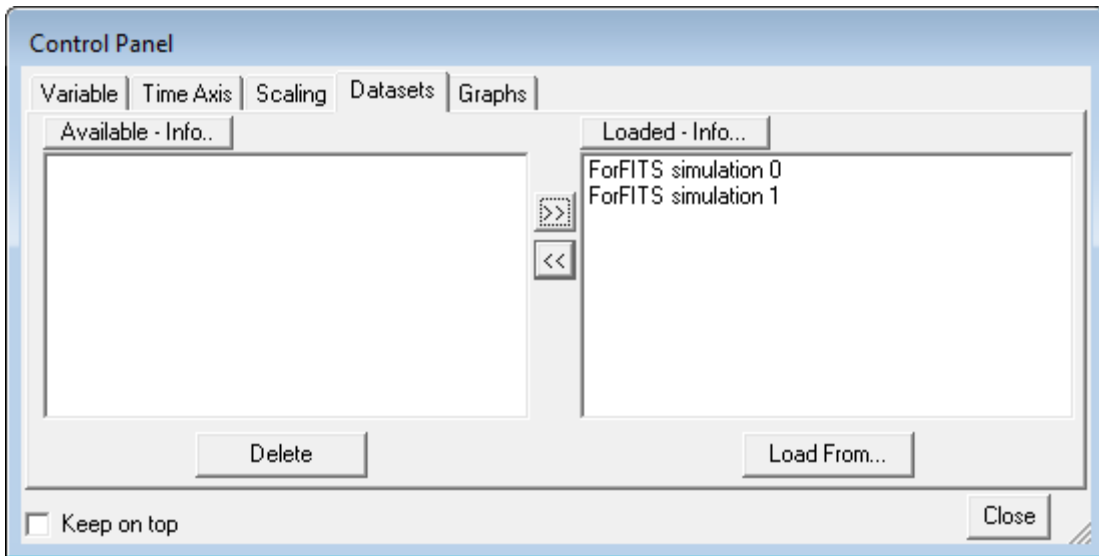

Figure D.15   'Datasets' tab of the VMR 'Control Panel': all runs activated

⚠ Caution: in order to avoid memory problems and error messages, running a new scenario is NOT recommended when another is loaded. Existing runs must be first unloaded, and then new runs activated.

Again, graphs and tables (activated as explained earlier) show results for each variable in the two contexts, with different colour-codes. Users can, thus, compare the results of two (or more) scenarios.

Note: additional information on Vensim's 'Control Panel' is available in the online Vensim help at http://www.vensim.com/documentation/index.html?control_panel.htm