



Using Enif to Extend the Possibilities Offered in EMME/2

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About Enif

- Enif: complement to EMME2
 - EMME/2: for modelling transportation networks
 - Enif: query and analysis tool
- Access to same data but easier to customize plots and lists
 - Look of plots and lists no longer restricted by developer's decisions
 - Almost unlimited number of possibilities
- Homogeneous access to all elements of the data banks (network and matrix data)
- Answers to several suggestions made by EMME/2 users
 - Windowing more user-friendly
 - Easy control of pen width, number of decimals, text fonts
 - Easy (global) specification of left-hand traffic
 - More “natural” syntax for selection
 - Several types of elements on the same plot (e.g.: transit lines and turns)
 - Easier printing capabilities
 - Possibility of exporting resulting plots in different formats
 - ...



Ease of use

- On-line help
 - Tips
 - On-line documentation
- “History” of previous expressions
- Easy to configure the software itself:
 - appearance of Enif windows
 - fonts and colors used
 - use of right-hand or left-hand traffic
 - predefined views
 - printing settings
 - localization: specify translation files
 - registered configurations (plots and lists)
- Predefined configurations



Generic configurations

- Application independent (can be used with any EMME/2 data bank)
- Distributed with Enif
 - Novice user: can explore data bank in browsing mode
 - Advanced user: can use these configurations as a starting point for new ones
- More than 80 plot configurations and 20 list configurations
 - Structure similar to EMME/2 module groups
 - Usage described within the configuration (*Plot description*)
- Provide more comprehensive output choices than those currently available in EMME/2
 - Node pie charts
 - Network histogram
 - Matrix scattergram
 - Transit line load profile
 - Grid value on base network (functionalities of GRTOOL)
 - Polygons at nodes (functionalities of POLYZONE)
 - Diagram and network information on the same plot
 - ...



Generic configurations: Network

- **Bare network**
 - Easy windowing*
 - Easy control of the display (pen and color)*
 - “Query” capabilities on the plot (tips)*

- **Base network**
 - Functionalities of module 2.13*
 - **Base network with node boxes**
 - Display nodes for a subset of nodes (possible in EMME/2, but only in option 6)*
 - Node numbers and/or node value(s)*
 - Link selection determines active nodes (isActive)*
 - **Base network with annotation(s)**
 - Display annotx **and** other annotation files*
 - **Node value(s) on base network**
 - Display several node attributes using different shapes, including pie charts*
 - Node tips** display the node identifier and value(s)*
 - **Link value(s) on base network**
 - Numeric link values (no need to compute and store the result beforehand)*
 - Easy multilayers*
 - Link tips** display the link identifier and modes*
 - **Link text on base network**
 - Control of the text position*
 - Possibility of displaying link values even if link is too short*
 - **Node and link attributes on base network**
 - Combines all of the above*
 - Predefined choices correspond to module 2.13 options*



- **Auto network**
 - **Street representation**
 - Red contours indicate prohibited side of traffic for one-way streets*
 - **Intersections on base network**
 - Default: display turning movements for all intersections nodes*
 - Interactive selection of individual intersections: double-click (Full view)*

- **Transit network**
 - Functionalities of module 2.23 (and more)*
 - **Transit line itinerary (line by line)**
 - Line selector: “up” and “down” arrows display one transit line after another*
 - Print legend and caption show the line selection*
 - Full view adjusted automatically*
 - Link selection determines active nodes (isActive)*
 - **Transit line itineraries (several lines)**
 - **Transit lines on base network**
 - Predefined expressions correspond to the option 2 sub-menu*
 - Multilayers possible*
 - **Transit segment value(s) at nodes**
 - Segment values accumulated at nodes*



- Network histograms (all network elements: mode, node, link, turn, vehicle, line, segment)

New functionality

- *<Network element> histogram*
 - Weight: one or several values*
 - ⇒ *single value: stylus vector is stretched to cover the X-range*
 - ⇒ *multilayer: one stylus index per layer*
 - Bar tips display the value of the expression for each bar*
- *Statistics*
- *Title and Descriptions*

- Network scattergrams (all network elements)

Functionalities of module 2.43 (and more)

- *<Network element> scattergram*
- *Regression*
- *Title, Descriptions and Symbols*



- Network tools

- **Shortest path between two nodes**
 - Computed according to any specified link expression: predefined choices available*
 - Node tips display the node identifier and, for the leaf node, the path cost*
- **Shortest path forest**
 - Interactive root selection: double-click (or Ctrl+double-click)*
 - Node tips*
 - Automatic update of the stylus index*
- **Isochrones**
 - Interactive root selection*
 - Node tips*
 - Predefined choices for the stylus index: different travel time intervals*
- **Grid value on base network**
 - Predefined choices for the link value*
 - Automatic scaling for coloring cells*
 - Grid cell tips display the grid value*
- **Polygons at nodes**
 - Access to external file (including shape files)*
 - To convey more information: zonal information*
- **Asymmetric link attributes**
 - Graphic representation of macro **validnet***
 - Predefined link selector to check length against Euclidean distance*
 - Link tips (value of reverse link shown in parentheses)*



Generic configurations: Matrices

- Matrix value
Functionalities of module 3.13
- Desire lines for selected node(s)
By origin or by destination (depending on active mapper)
Interaction (communication) between plots and lists
 - ⇒ A plot can influence a list:
e.g., highlighting a row in a list when clicking on an element in a plot
 - ⇒ A list can influence a plot:
e.g., modifying a plot by selecting an element in a list
- Matrix value(s) by single origin or destination
- Matrices by origin and/or destination (chimneys)

- Matrix histogram
Same design as for network histograms
- Matrix scattergram
New functionality
Same design as for network scattergrams
- Comparison of matrix histograms



Generic configurations: Functions

Functionalities of module 4.13

- One configuration for each type of function
 - Volume-delay functions
 - Transit time functions
 - Turn penalty functions
 - Auto demand functions
 - Transit demand functions
 - User functions
 - Generic functions
New functionality

Generic configurations: Assignment results

- Auto volumes
 - Functionalities of module 6.12 (options 1, 2 and 3), no turning movements on intersections*
 - Predefined link expressions*
 - Link tips** display the link identifier, auto volumes and additional auto volumes*
- Link and turn auto volumes
 - Same functionalities but **with** turning movements on intersections*
 - Predefined link and turn expressions (\Rightarrow turn attribute follows link attribute)*
- Auto speed and time
 - Functionalities of module 6.12 (options 4 and 5)*
 - By default: numeric values, no bars*
 - Link tips** display the link identifier, auto speed and auto times*
- Auto volumes on intersections
- Grid values
 - Predefined link expressions using assignment results (e.g. to compute emissions for various types of pollutants)*

- Transit volumes on links
 - Functionalities of module 6.22, option 1*
 - + possibility of multilayers*
 - Full view gives the smallest window that contains the links selected in the “Segment link value” mapper*
- Transit and auxiliary transit volumes
 - Functionalities of module 6.22, option 3*
- Individual transit line volumes
 - One mapper to display partial transit volumes*
 - Another mapper to display total transit volumes*
- Boardings and alightings at nodes (pie charts)
 - Functionalities of module 6.22, option 4*
 - Node tips** display the node identifier and value(s)*
- Boardings and alightings at stops (subset of lines)
- Transit segment attributes on links and nodes
- Transit line profile (with capacity)
 - Bars represent segment volumes; part of the volume that exceeds capacity is displayed in red*
 - Line selector: “up” and “down” arrows display one transit line after another (ranges adjusted automatically)*
 - Diagram tips** display number of boardings, alightings, through passengers and on-board passengers*
- Transit line profile and position on base network
 - Can display both diagrams and network information on the same plot*
- Auto and transit assignment results
 - Several types of results on the same plot*
 - on links
 - on links and nodes



Generic configurations: Scenario comparison

- Compare auto volumes and times
Functionalities of module 6.13
Associated list: Auto volumes and times comparison
- Compare node values
New functionality
- Individual element comparisons (scattergrams)
No need to compute the difference before generating the scattergram
Scattergram tips display the element identifier and the corresponding X,Y values
 - Mode attributes
 - Node attributes
 - Link attributes
 - Turn attributes
 - Vehicle attributes
 - Line attributes
 - Segment attributes



Generic configurations: Other plots

- Legend
- Shape files
Access to external files (.shp, .dbf)
 - ⇒ To enhance graphic output
 - ⇒ To access external attributes
- Annotations
Access to external ASCII files (annotx, .ann)
- Image
Access to external bitmapped files (.jpeg, .png, .bmp, etc.)
- Coordinate grid
- Constant histogram
- Constant scattergram
- Example of coordinate transformation
Easy network transformation (rotation, translation, scaling)



Generic lists

- Network
 - Modes
 - Nodes
 - Can send and receive external markings*
 - Links

 - Vehicles
 - Transit line summary
 - Transit line itineraries
 - Transit lines on base network (by node)
 - Transit lines on base network (by link)

 - Turning movements at intersections

- Matrices
 - Full matrix
 - Can display several values for each cell*



Generic lists (continued)

- Assignment results
 - Auto volumes and times (on links)
 - Functionalities of module 6.11, option 1*
 - Can send and receive external markings*
 - Auto volumes and times (on intersections)
 - Functionalities of module 6.11, option 2*
 - Can send and receive external markings*
 - Transit line summary
 - Functionalities of module 6.21, option 1*
 - Assignment results by transit line
 - Functionalities of module 6.21, option 2*
 - Transit results on base network
 - Functionalities of module 6.21, option 3*
 - Transit volumes at nodes
 - Functionalities of module 6.21, option 4*
 - Auto volume comparison
 - Associated plot: Compare auto volumes and times*

- Element pickers
 - Send marking signal on double-click*
 - Node picker
 - Zone picker
 - Intersection picker