

TROLL Web-Model Service

TROLL Web-Model service is an integrated user friendly environment having two modules:

- **Web-Model Generator:** extracting the model components in TROLL, then pushing information in a Relational Database Management System (RDBMS), compatible with the Standard Web Servers technology,
- **Web-Model Browser:** through a web connection, querying on the relational database in any direction and display information on Variables, Equations, Simultaneous blocks, Variables horizons, Metadata (if any), etc.

The System is available with **TROLL Assistant** and **TROLL Information System Manager (INFORMATION SYSTEM MANAGER)** versions.

TROLL INFORMATION SYSTEM MANAGER is needed for the management of METADATA around dimensions, mnemonics and segments involved in the structure of variable names.

PRESENTATION OF THE



WEB-MODEL SERVICE

**An integrated environment taking
advantage of TROLL power and
friendliness of the WEB**

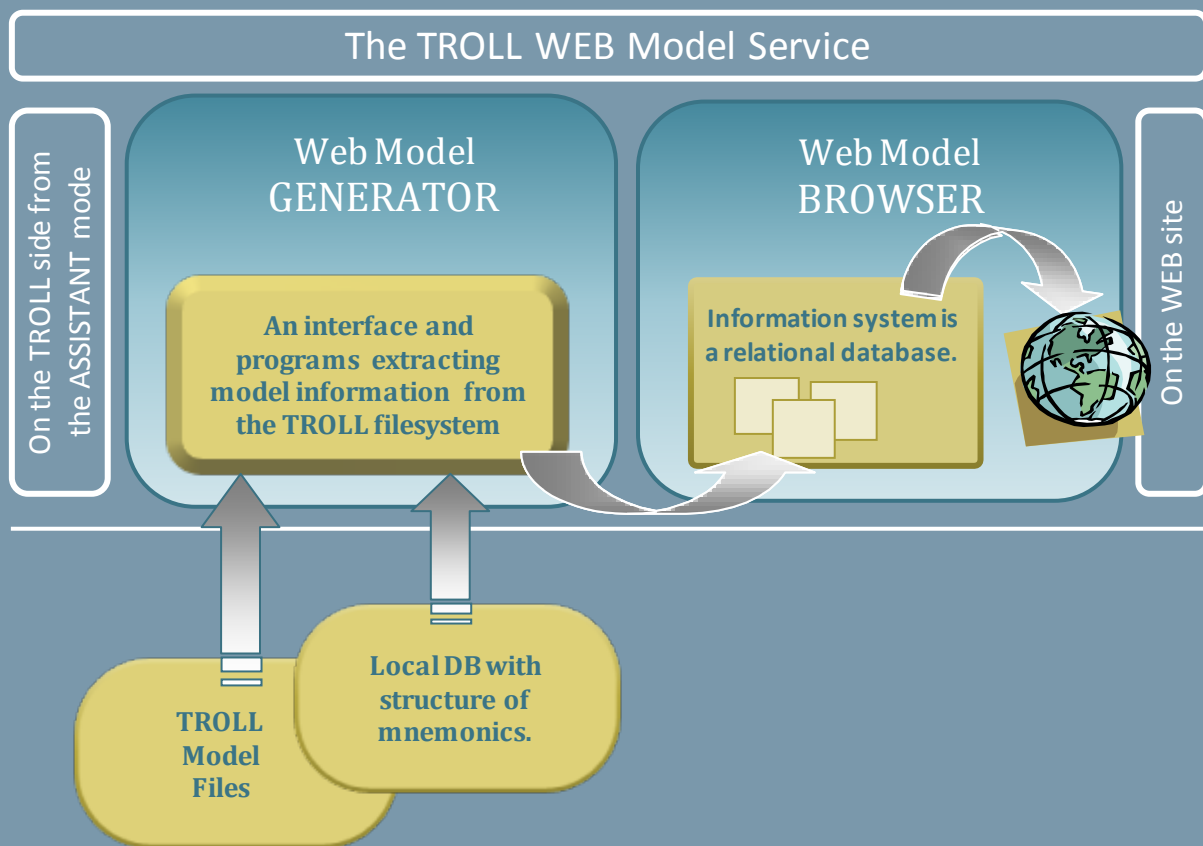


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TROLL Web-Model components

The TROLL Web-Model generator, a module extracting all information from TROLL and building a web information system;

The TROLL Web-Model Browser, end-user interface to navigate inside the information system, making any query on any piece of information accessible without the knowledge of the TROLL language and syntax



[Figure 1 : Architecture of the system]

1. The Web-Model Generator ...Model information from troll to the web

The Web-Model Generator, accessible from TROLL Graphical User Interface (GUI), is available with TROLL Assistant and/or TROLL INFORMATION SYSTEM MANAGER (metadata) versions; the system scans all components of the model running in TROLL environment, and transfers the complete information in a RDMS database, specified by the system administrator; so far two technologies involving relational databases are allowed:

- MySQL using PHP script language,
- SQLServer using ASP script language.

The module takes advantage from TROLL portability and is exploitable on MS-WINDOWS and on UNIX platforms.

The Web-Model Generator loads all information related to the model's components in TROLL, including:

- Model name and its description,
- Model Variables, their Symbol Types and their descriptions,
- Equations of the model and their descriptions,
- Variables horizons (lags/leads),
- Cross-ref. table,
- Structure of Simultaneous Blocks,
- Metadata Organisation (optional feature) using predefined Syntax.

Output of the following commands by functions are sent to the web:

- SOURCEMOD ...
- LKSYM ...
- SYMTAB ...
- MODSYM ...
- LKXREF...
- LKORD ...

The system is transparent for the administrator in charge of generating the model on the web: it is windows and buttons oriented and no knowledge of TROLL commands is required.

Using TROLL Information System Manager, your metadata describing the variable names organisation (dimensions, codes, segments, descriptions, etc.), can also be exported and stored in the RDBMS database. A predefined syntax guiding the organisation of the variable names involved in the model is required.

The connection to the Web-Model Generator uses an authentication process where the user should provide the server name, server port, etc.

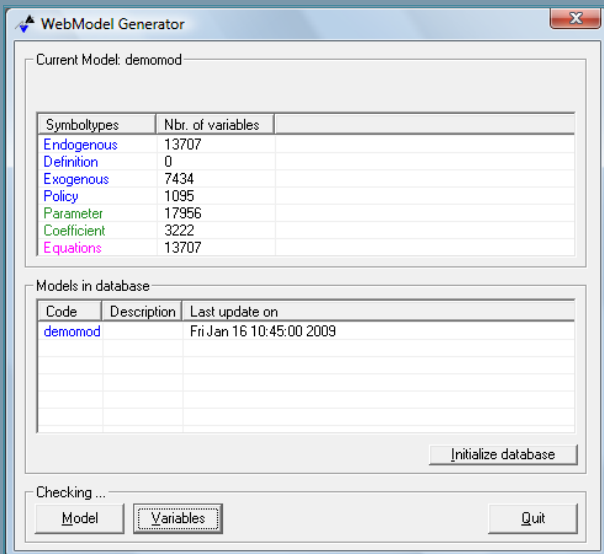
The screenshot shows a dialog box titled "WebModel Generator - Parameters". It has a standard Windows-style title bar with a close button (X). The dialog is organized into two main sections: "Connection" and "Database".

- Connection section:** Contains three dropdown menus. "Server Name" is set to "192.168.112.127", "Port" is set to "1234", and "Driver" is set to "MS SQL".
- Database section:** Contains three text input fields. "Database" contains "rdbmod", "Login" is empty, and "Password" is empty.

Below the "Database" section is a button labeled "Test connection". At the bottom of the dialog are three buttons: "Skip", "Ok", and "Cancel".



After the connection, the window below opens with summary on the found variables in the model.



When clicking the button 'Model', TROLL launches the update process taking as input the selected model; it loads all information from the '.mod' file and prepares a text file with different sections from LKSYM, LKXREF, LKORD, SOURCEMOD..., etc.

The linked buttons are tasks oriented:

- **Model:** to update the RDBMS database,
- **Variables:** to open the INFORMATION SYSTEM MANAGER to update METADATA (see TROLL INFORMATION SYSTEM MANAGER),
- **Initialise database:** to empty the RDBMS and regenerate it from scratch.

The text file is decoded by the GUI and the information is transferred to the relational database. Different SQL requests are automatically generated by the process and stored to be used later by the Web-Model Browser. This is a very efficient process to save time and to make to the browser more robust when dealing with big models.

2. Web-Model Browser ... Explore the model from the web interface

Taking advantage from the expansion and popularity of the WEB technology, the Web-Model Browser in TROLL provides a very user friendly environment to navigate in any direction through a model components and exporting information to external documents (pdf). A working session using the Web-Model Browser is similar to a working session using Internet or Intranet framework.

Modellers, Econometricians and Statisticians have here a powerful tool on hands to check all model components including the Variables, Equations, Variables horizons, Model's Blocking structure, Cross reference table, Metadata (optional), etc.

An integrated SEARCH process, accepting key words and/or numbers, is available to make selection on Variables, Equations, Blocks, dimensions, etc.

The management of metadata involving the selection of segments according to predefined dimensions is available with the definition of syntax.

No knowledge of TROLL commands is requested; detailed information generated by clicking on menus, buttons and hyperlinks is displayed in appropriate windows.

For a security purpose, the system uses an authentication process, where the user is requested to provide a login and a password to open a working sessions; such information is predefined by the system administrator and stored in the RDBMS database.

The welcome window (figure below) provides bar-menus and displays information on the selected model in the body area (left bottom part).

The screenshot shows the Web Model Browser interface. At the top, there's a navigation bar with the HENDYPLAN logo and a search bar. Below that, a navigation menu includes 'Models', 'By variable', 'By equation', 'Lags/Leads', 'Cross-ref. table', 'Block-Ordering', 'Syntax', and 'Help'. The main content area is titled 'The TROLL Web-Model service' and contains a table with columns 'Code', 'Stamp', and 'Description'. The table has one row: 'demomod', 'Fri Jan 16 10:45:00 2009'. Below the table is a 'Demonstration Model' section with descriptive text and a list of features. The footer includes contact information for Hendyplan, Brussels, Belgium, and the website organization: info@hendyplan.com. The status bar at the bottom indicates 'Local intranet | Protected Mode: Off' and '100%' zoom.

Available menus: *Models, ByVariable, ByEquation, Lags/Leads, Cross-Ref. table, Block-Ordering, Syntax, Help.*



2.1 By Models ...

Information on the selected Model – links to online documentation

The **Models** menu opens a body window displaying the list of models available on your Web-site on the right panel. The left panel has 3 components:

- **Top part:** providing a brief description of the Web-Model service in TROLL.
- **Middle part:** providing hyperlinks to one-line documentation on various components of TROLL.
- **Bottom part:** freely managed by the system administrator; it usually provides a description of the selected model and hyper links to organisation's online documentation.

The screenshot shows the TROLL Web-Model Service interface. A yellow callout bubble at the top left points to the main content area, labeled "Description of TROLL Web-Model". A yellow callout bubble at the bottom left points to the "Want to know more about the TROLL Web-Model Service?" and "Want to know more about TROLL?" sections, labeled "Links to online documentation". A yellow callout bubble at the bottom right points to the table of available models, labeled "List of available Models and their descriptions".

Description of TROLL Web-Model

Links to online documentation

List of available Models and their descriptions

Code	Stamp	Description
demomod	Fri Jan 16 10:45:00 2009	

2.2 By Variable

Loading variables and descriptions ... by Symbol Type

By variable		
All Variables		
Symbol type	Name	Description
ENDOGENOUS	AEL_BF_BST	LDC - East Africa : Beef and veal (cwt), Beginning stocks: MT (000) (dw): FAO
ENDOGENOUS	AEL_BF_CAL	LDC - East Africa : Beef and veal (cwt), Calories: Number: FAO
ENDOGENOUS	AEL_BF_CP	LDC - East Africa : Beef and veal (cwt), Consumer price: Local Currency Unit: FAO
ENDOGENOUS	AEL_BF_EX	LDC - East Africa : Beef and veal (cwt), Exports: MT (000) (dw): FAO
ENDOGENOUS	AEL_BF_EXL	LDC - East Africa : Beef and veal (cwt), Exports live: MT (000) (dw): FAO
ENDOGENOUS	AEL_BF_EXM	LDC - East Africa : Beef and veal (cwt), Exports meat: MT (000) (dw): FAO
ENDOGENOUS	AEL_BF_FOE	LDC - East Africa : Beef and veal (cwt), Food expenditure: Local Currency Unit: FAO
ENDOGENOUS	AEL_BF_IM	LDC - East Africa : Beef and veal (cwt), Imports: MT (000) (dw): FAO
ENDOGENOUS	AEL_BF_IML	LDC - East Africa : Beef and veal (cwt), Imports live: MT (000) (dw): FAO
ENDOGENOUS	AEL_BF_IMM	LDC - East Africa : Beef and veal (cwt), Imports meat: MT (000) (dw): FAO
ENDOGENOUS	AEL_BF_LI	LDC - East Africa : Beef and veal (cwt), Livestock inventory: HD (000): FAO
EXOGENOUS	AEL_BF_MAR	LDC - East Africa : Beef and veal (cwt), Margin: Local Currency Unit: FAO
ENDOGENOUS	AEL_BF_NT	LDC - East Africa : Beef and veal (cwt), Trade balance: MT (000) (dw): FAO

The menu provides a useful way to explore and display the model's variables in a series of dedicated windows: showing the *symbol type*, the *variable name* and the *variable description*.

Using sub-menus, you have the possibility to display all variables in the model or make selection by symbol type.

For each selection, the number of variables is printed in the top part of the window (*Result found*) and arrows are available to navigate through the different pages.

If you need more information about a variable, a simple click on the variable name opens the *variables WINDOW*, which displays details on the selected variable:

- Variable name,
- Variable horizons (lags, leads),
- Symbol type,
- Description (comment-SYMCOM),
- List of equations the variable involved in,
- Equation the variable is normalized for (for Endogenous),
- Daily X14: bi-weekly.

- All Variables: display all variables in the body window,
- Endogenous: display only endogenous variables in the body window,
- Definition: display only definition variables in the body window,
- Exogenous: display only exogenous variables in the body window,
- Policy: display only policy variables in the body window,
- Parameter: display only the parameters in the body window,
- Intercepts: display only the coefficients in the body window.

Detail of variable				Selected Mnemonics	
Name	Min horizon	Max horizon	Symbol type	Name	Description
BRA_BT_VST	0	0	ENDOGENOUS	BRA_BT_VST	Brazil : Butter stock variations: MT (000): calculation
Description				- Erase all & Close - View by Solved Equations	
Brazil : Butter stock variations: MT (000): calculation					
List of equations					
Coefficients: show coeff. value					
Normalized (Solved)					
(15) BRA_BT_VST					
BRA_BT_VST =					
BRA_BT_ST - BRA_BT_ST (-1)					
Equations					
(10) BRA_BT_NT					
BRA_BT_NT =					
BRA_BT_QP - BRA_BT_QC - BRA_BT_VST					
(11053) AGL_BT_VST					
AGL_BT_VST =					
AUS_BT_VST + CAN_BT_VST + CHE_BT_VST +					
E27_BT_VST + JPN_BT_VST + KOR_BT_VST +					
MEX_BT_VST + NOR_BT_VST + NZL_BT_VST +					

From there, you can generate your extraction in a local 'pdf' file.



2.3 By Equation

Loading equations ... labels, numbers and expressions

By equation

Result found [13707] - Page(s) (1/549) << [1] 2 3 4 5 6 7 8 9 10 > >> Page : **Coefficients: show coeff. value**

(2) BRA_BF_EX
 BRA_BF_EX =
 BRA_BF_EXM + BRA_BF_EXL

(3) BRA_BF_EXM
 BRA_BF_EXM =
 BRA_BF_QP + BRA_BF_IM - BRA_BF_EXL - BRA_BF_QC + BRA_BF_ST (-1) - BRA_BF_ST

(4) BRA_BF_IMM
 BRA_BF_IMM =
 BRA_BF_IM - BRA_BF_IML

(5) BRA_BF_NT
 BRA_BF_NT =
 BRA_BF_EX - BRA_BF_IM

(6) BRA_BF_PP
 LOG (BRA_BF_PP) =
 C.BRA_BF_PP.CON + LOG (ATL_BF_XP..BRA * BRA_ME_XR) + LOG (R.BRA_BF_PP)

Using the *By equation* menu to load the list of equation in an appropriate window; a nice view showing:

- The equation number,
- The equation label,
- The analytical expression of the equation as from the model,
- The equation description (comment-EQCOM).

Clicking '*show coeff. value*' button allows you to switch between the coefficients values and the coefficient names in the equations' expressions; a very useful way to check coefficients' data.

The number of equations is printed in the top part of the window (*Result found*) and arrows are available to navigate through the different pages.

As for the variables, clicking an equation number opens the equations WINDOW, which provides you with more details on the selected equation:

- Equation number and label,
- Equation expression,
- List of variables involved in the equation one below the other with all details on each variable (name, symbol type, description)

From this window you can click any variable to open the variables WINDOW described above; a complete integration between different windows to make in any direction.

The screenshot shows a window titled "Web Model Browser - Windows Internet Explorer". It contains two main panels:

- List of equations:** Shows equation (2) BRA_BF_EX with the expression $BRA_BF_EX = BRA_BF_EXM + BRA_BF_EXL$. A button "Coefficients: show coeff. value" is visible.
- List of variables appearing in the list of equations:** A table with columns "Name", "Symbol type", and "Description".

Name	Symbol type	Description
BRA_BF_EX	ENDOGENOUS	Brazil : Beef and veal exports, total: MT (000): ABIEC
BRA_BF_EXL	EXOGENOUS	Brazil : Beef and veal exports, live: MT (000): calculation
BRA_BF_EXM	ENDOGENOUS	Brazil : Beef and veal exports, meat: MT (000): calculation

2.4 By Lags/Leads

Minimum lags, Maximum leads for models' variables (SYMTAB)

Lags/Leads				
Lag -5 -4 -3 -2 -1 0				
Lead -1 0 1				
Result found [17402] - Page(s) (1/622) << [1] 2 3 4 5 6 7 8 9 10 > >> Page : <input type="text"/>				
Symbol type	Name	Min horizon	Max horizon	Description
ENDOGENOUS	AEL_BF_BST	0	0	LDC - East Africa : Beef and veal (cwt), Beginning stocks: MT (000) (dw): FAO
ENDOGENOUS	AEL_BF_CAL	0	0	LDC - East Africa : Beef and veal (cwt), Calories: Number: FAO
ENDOGENOUS	AEL_BF_CP	0	0	LDC - East Africa : Beef and veal (cwt), Consumer price: Local Currency Unit: FAO
ENDOGENOUS	AEL_BF_EXL	0	0	LDC - East Africa : Beef and veal (cwt), Exports live: MT (000) (dw): FAO
ENDOGENOUS	AEL_BF_IML	0	0	LDC - East Africa : Beef and veal (cwt), Imports live: MT (000) (dw): FAO
EXOGENOUS	AEL_BF_MAR	0	0	LDC - East Africa : Beef and veal (cwt), Margin: Local Currency Unit: FAO
ENDOGENOUS	AEL_BF_NT	0	0	LDC - East Africa : Beef and veal (cwt), Trade balance: MT (000) (dw): FAO
ENDOGENOUS	AEL_BF_PC	0	0	LDC - East Africa : Beef and veal (cwt), Consumption per capita: KG / capita: FAO
ENDOGENOUS	AEL_BF_QC	0	0	LDC - East Africa : Beef and veal (cwt), Consumption: MT (000) (dw): FAO
ENDOGENOUS	AEL_BF_QP	0	0	LDC - East Africa : Beef and veal (cwt), Production: MT (000) (dw): FAO
ENDOGENOUS	AEL_BF_QPS	0	0	LDC - East Africa : Beef and veal (cwt), Slaughter production: MT (000) (dw): FAO
ENDOGENOUS	AEL_BT_CAL	0	0	LDC - East Africa : Butter (pw), Calories: Number: FAO

Lags/Leads menu displays the variables horizons as SYMTAB in TROLL command. The body window below provides you with detailed information on each variable, showing:

- Symbol type,
- Variable name,
- Minimum lag,
- Maximum lead,
- Variable description.

Clicking a lag or a lead number in the top part of the window restricts the list to the variables with the selected lag or lead. Successive selections are possible for multiple restrictions. There you have a very practical tool to go straight to the variables having lags and/or leads, which may help you to save time in checking your data for estimation or simulation tasks (ex: useful with Rational Expectations models)

Again you have to possibility to load more information about a variable: a simple click on the variable name opens the *variables WINDOW*.



2.5 By Cross-ref. table

Variables used unlagged in equations (LKXREF)

Cross-ref. table		
Result found [13707] - Page(s) (1/490) << [1] 2 3 4 5 6 7 8 9 10 > >> Page : <input type="text"/> 🔍		
Variables	Select all equations	List of equations
AEL_BF_BST	all	(12892)
AEL_BF_CAL	all	(2383, 2392)
AEL_BF_CP	all	(2368, 2417, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448)
AEL_BF_EX	all	(2510, 2511, 2512, 10635, 13536)
AEL_BF_EXL	all	(2508, 10636, 13536)
AEL_BF_EXM	all	(2512, 10637, 13536)
AEL_BF_FOE	all	(2362, 2368)
AEL_BF_IM	all	(2510, 2511, 2513, 10638, 13566)
AEL_BF_IML	all	(2508, 10639, 13566)
AEL_BF_IMM	all	(2513, 10640, 13566)
AEL_BF_LI	all	(2506)
AEL_BF_NT	all	(2402, 2509, 2510, 2511, 10329, 10641)
AEL_BF_PC	all	(11848)
AEL_BF_PP	all	(2402, 2411, 2417, 2506, 2507)

The menu displays, for each variable, the list of equations it is used unlagged in, as from LKXREF TROLL command. Clicking:

- a variable name to open the variables WINDOW,
- 'all' to open the equations WINDOW with all equations for the selected variable,
- an equation number to open the equations WINDOW with the selected equation.

Multiple selections are appended in these windows; from the variables or equations WINDOW you can build 'pdf' files with selected items (equations, variables, etc.).

2.6 By Block-ordering

Simultaneous Blocks in the model (LKORD)

Block-Ordering			
Equation	Labels	Variable	Description
Block(1) Content 1 equations			
10099	USA_ME_GDPD..BRA	USA_ME_GDPD..BRA	United States : GDP deflator: 2000=1: OECD-ECO mtba
Block(2) Content 1 equations			
43	BRA_MD_CPCI	BRA_MD_CPCI	Brazil : Meat and Dairy commodity production costs index: 2000=1: calculation
Block(3) Content 1 equations			
9433	WLD_RT_XPU..AEL	WLD_RT_XPU..AEL	World : Roots and tubers, World price: LDC - East Africa: calculation
Block(4) Content 1 equations			
2358	AEL_CT_RH	AEL_CT_RH	LDC - East Africa : Cotton, Returns per hectare: Local Currency Unit: FAO
Block(5) Content 1 equations			
9423	USA_ME_GDPD..AEL	USA_ME_GDPD..AEL	United States : Macroeconomic, GDP deflator: LDC - East Africa: OECD
Block(6) Content 1 equations			
2351	AEL_CO_CPCI	AEL_CO_CPCI	LDC - East Africa : Cereals, Commodity production cost index: 2000=1: FAO
Block(7) Content 1 equations			
2353	AEL_WT_RH	AEL_WT_RH	LDC - East Africa : Wheat, Returns per hectare: Local Currency Unit: FAO
Block(8) Content 1 equations			
2354	AEL_CG_RH	AEL_CG_RH	LDC - East Africa : Coarse grains, Returns per hectare: Local Currency Unit: FAO

The menu displays the simultaneous blocks in the model as from LKORD command in TROLL. The body window shows:

- the block number and the number of equations in the block,
- the list of equations in the blocks including
 - 1) the equation number
 - 2) the equation label,
 - 3) the variable that solves the equation
 - 4) the equation description

By clicking:

- a variable name to open the variables WINDOW,
- an equation number to open the equations WINDOW with the selected equation.

Multiple selections are appended in these windows; from the variables or equations WINDOW you can build 'pdf' files with selected items (equations, variables, etc.).



2.7 By Syntax

Checking your METADATA (optional menu)

Code	Description	Right separator	Left separator	Min Size	Max Size
TYPE		.		0	1
COUNTRY		-		3	4
SECTOR		-		2	4
VARIABLE		.		2	13
CVAR				0	20

Result found [110] - Page(s) (1/4) << [1] 2 3 4 >> Page :

Code	Description
ACP	African and Carribean countries
AEL	LDC - East Africa
AEO	Other East Africa
AGL	Aglink aggregate
ANO	Other North Africa
APL	LDC - Asia Pacific
ARG	Argentina
ASL	LDC - Southern Africa
ASO	Other Southern Africa
ATL	Atlantic market
AUS	Australia
AUT	AUT
AWL	LDC - West Africa
AWO	Other West Africa
BEL	BEL
BGD	Bangladesh
BLZ	Belize
BRA	Brazil
BRB	Barbades
CAN	Canada

In some areas, METADATA play a major role in DATA organisation. TROLL Information System Manager was designed to help you to define your metadata linked to your predefined Syntax; then, variable names are strictly defined following architecture with different dimensions and separators. Each dimension may have its own list of items. The Web-Model Browser allows you to check your metadata. In the example above, the table of the left part displays the syntax with its dimensions and used separators. Clicking a dimension, displays (on the right side):

- the dimension name,
- the list of items in the selected dimension and their descriptions.

From, for example, a selection on 'nom du pays' ANO you can display all the variables related to this country. All information related to that country is populated. It is easy way to filter in your system of equations any piece of information along criteria.

Mnemonic(s)	Description
ANO_ME_XR..2000	ANO_ME_XR..2000
ANO_BF_CAL	ANO_BF_CAL
ANO_BF_CP	ANO_BF_CP
ANO_BF_EX	ANO_BF_EX
ANO_BF_EXL	ANO_BF_EXL
ANO_BF_FOE	ANO_BF_FOE
ANO_BF_IM	ANO_BF_IM
ANO_BF_IML	ANO_BF_IML
ANO_BF_LI	ANO_BF_LI
ANO_BF_MAR	ANO_BF_MAR
ANO_BF_NT	ANO_BF_NT
ANO_BF_PP	ANO_BF_PP
ANO_BF_QC	ANO_BF_QC
ANO_BF_QP	ANO_BF_QP
ANO_BF_QPS	ANO_BF_QPS

1 2 3 4 5 6 7 8 9 10 ...



2.8 SEARCH process

Search using variable names, equation numbers, descriptions ...

The Search box is available with all menu options and also allows you to filter along any piece of information (by variable name, by variables descriptions, by equations numbers, etc) .

The table below shows the details of searching process in each menu:

Menu	Search criteria	Examples of use (words/numbers)
<i>By variable</i> & related sub-menus	Mnemonics, descriptions, mnemonics&descriptions	a) CAN BF b) CAN beef and veal
<i>By equation</i>	Labels, Mnemonics, Comment, Mnemonics&Comments Labels&Comments	a) BRA BF b) AEL BF East Africa
	EqNumbers	1 1-5 6 10-12
<i>Lags/Leads</i>	Mnemonics, Descriptions, Mnemonics&Descriptions	a) ARG USA b) URY beef and veal
<i>Cross-re f. table</i>	Mnemonics	ZAF_SMP ZMB_VL CHL_OM
	EqNumbers	1-5 6 10-12
<i>Block-Ordering</i>	Mnemonics, Descriptions, Mnemonics&Descriptions,	a) ZAF_SMP ZMB_VL b) CHL_OM
	BlockNumbers, EqNumbers,BlockSizes	6 10-12 20
<i>Syntax</i>	Codes, Descriptions, Codes&Descriptions	Type : C Country : BRA EUR Sector : BF FE Variable : AH..NZ CP CI



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TROLL- The TROLL library as described in the TROLL Reference Manual - © Massachusetts Institute of Technology, USA, 1978-1987 and © INTEX, Boston, USA, from 1993.

TROLL Graphical User Interface - The TROLL interface as it is supplied with session input and output windows, the integrated editor for programs and graphs. © INTEX, Boston, USA, and © HENDYPLAN, Brussels, Belgium.

HENDYPLAN TOOLBOX - A library of TROLL Programming Language functions and MACROS in various areas, including modelling and time series analysis. © HENDYPLAN, Brussels, Belgium.

GENERIC - A language to expand strings along space indexes. © HENDYPLAN, Brussels, Belgium.

TROLL Client/server - A technique of communication between TROLL and its interfaces. © HENDYPLAN, Brussels, Belgium.

TROLL ASSISTANT - A module to help users in navigating inside the TROLL filesystem, accessing to commands and functions. © HENDYPLAN, Brussels, Belgium.

TROLL Advanced Reporting System - A system to produce advanced reports in MS-EXCEL from various kinds of templates. © HENDYPLAN, Brussels, Belgium.

FORECASTMOD - Interfaces to handle econometric methods in TROLL. © HENDYPLAN, Brussels, Belgium.

TROLL Direct-SQL - Implementation of the connectivity to Relational DataBase Management Systems. © HENDYPLAN, Brussels, Belgium.

TROLL IS/Manager - Environment controlling metadata, Relational Database Management Ssystems beside TROLL and FAME databases. © HENDYPLAN, Brussels, Belgium.

TROLL Server Administration Tool - Module to manage users and profiles through the server. © HENDYPLAN, Brussels, Belgium.

TROLL Web-Model Generator and Browser - A module to create a TROLL models in a web format, plus its system to query in model components (symbols, equations, model block-ordering, etc). © HENDYPLAN, Brussels, Belgium.

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