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Unit B-3: IT for Statistical Production

User Manual for the Validation Rule Manager

VRM - User Manual

version 0.7.1-SNAPSHOT

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VRM - User Manual: User Manual for the Validation Rule Manager

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Chapter 1. Getting Started

The Validation Rule Manager, or **VRM**, is a specialized online tool that allows statisticians to create, manage and share rules written in Validation and Transformation Language in a user friendly, effective and efficient way. The main part of the VRM is the VTL Editor, where user can edit VTL script files. This manual describes the features of the VRM.

1.1. Opening VRM

You can open **VRM** in browser from the dedicated link. It works in consistent manner in browsers **Chrome, Firefox, Microsoft Edge** (Internet Explorer is NOT supported) on desktop computers.

1.2. User Interface

VRM comes with a simple and intuitive layout, that maximizes the space provided for the editor while leaving ample room to browse and access the full context of your folder or project. You have available all the following elements for the interface:

Figure 1.1. VRM main view

- **(1) Menu** – options in menu are activated by clicking into the icons on the left part of the main window. The default – active Editor view – main menu contains all the following options from top to bottom:

- Import DSD
- File Explorer
- Manage Domains
- Settings

Hovering over the above items, will display a label with the name. If VTL Editor is not active, it will appear as top option in application main menu.

- **(2) VTL Editor Menu** – The options in editor menu are activated by clicking into the icons above the top-left corner of the VTL Editor. The editor menu contains all the following options from left to right:
  - New File
  - Open File
  - Save File
  - Upload File

  Hovering over the above items, will display a label with the name.
- **(3) VTL Editor** – here you can edit the contents of your VTL scripts. The VTL Editor supports syntax highlighting and autocomplete.
- **(4) Status Bar** – here you can see various helpful details while you are interacting with the **VTL Editor**:
  - Arrow to expand the panel with details for errors
  - Number of errors
  - Cursor position **(Line and Column)**
  - **VTL language version** number
- **(5) Help** – this tab contains link to **'User Manual'** or will displayed in the content from application.
- **(6) Minimap** (code outline) – gives you a high-level overview of your source code, which is useful for quick navigation and code understanding.
- **(7) Panel** – displays potential errors with descriptions for the added code.

- **(8) Settings sidebar** – displays a drop-down menu for changing the **VTL version** or theme color.

- **(9) Tab** – panel displays the name of the current text file.

Chapter 2. VTL Editor

In the **VTL Editor** you have available all the following functionalities for the files:

- Create VTL file
- Save file
- Open file
- Search and replace
- Syntax highlighting for VTL elements
- Autocomplete VTL syntax elements
- Display context help regarding VTL syntax elements and snippets
- Check VTL grammar for the file
- Display syntax errors with details on the list in the error panel

2.1. Creating VTL File

After opening application, you have the document opened, with empty code field in the editor. You can add new code or upload existing **VTL file** from the storage with using in editor menu option **'Open file'**. You can save the file at any time, **VTL Editor** also has autosave option, so you can go back to adding content even after closing the application.

2.2. Saving VTL File

You can also add changes to the tab with the code. If you click on the **'Save file'** option in editor menu, you have possibility to save **VTL file** to local storage at any time. Additionally, if you have unsaved changes and application is closed without saving file, after reopening editor, it will restore last version of used document. File changes and settings from the last opening are saved automatically and when the application is run, last saved version is automatically loaded.

Procedure of saving **VTL Editor** contents to local storage:

1. Choose icon **'Save'** in editor menu.
2. If the file has a path added on your computer, the file will be saved or if not, you will see a window and you should add the path to save the file.
3. You see success/error message for saving file.

2.3. Opening VTL File

If you click on the '**Open file**' option in editor menu, you have possibility to load external file into the editor. Additionally, you have the option to open more than one file. New additional files will be opened in newly created browser tabs.

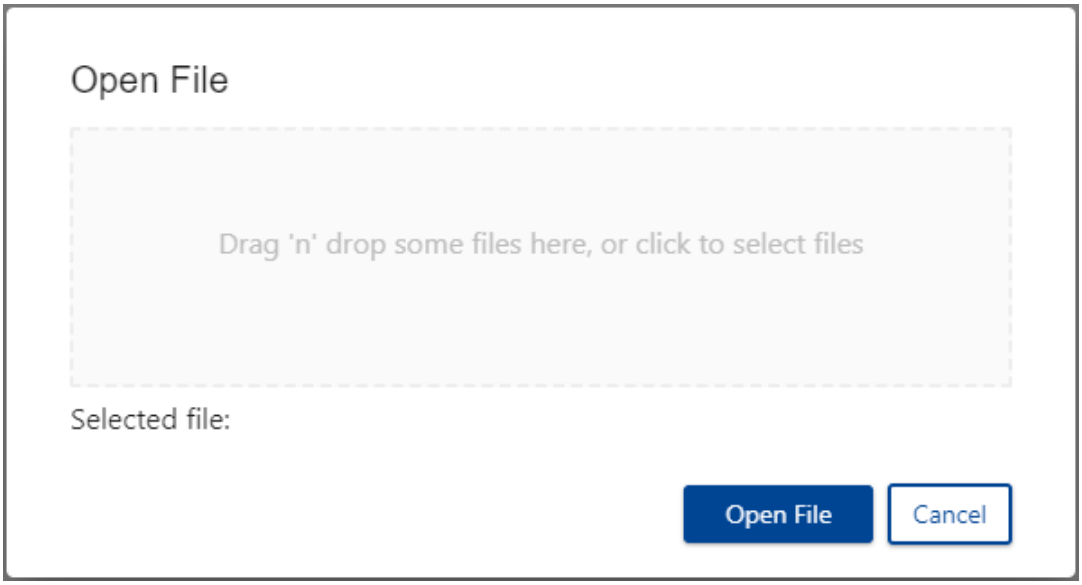

Figure 2.1. Pop-up window of 'Open file' action

Procedure of opening text **VTL file** from local storage:

1. Go to editor menu.
2. Choose icon **'Open file'**
3. A pop-up window will appear with the title 'Open File'. You have two options for upload a text **VTL file** from local storage:
   - click on field marked with a dashed line and uploads file from the path to the file on local storage,
   - dragging the file and dropping it in the appropriate field marked with a dashed line on the main screen.

4. To finalize the opening of the file, press the **'Open file' button** on the bottom-right side of the pop-up window.

2.4. Search and Replace

You can search for text in a file by pressing **Ctrl + F**. This will open up the find panel on the top-right side of editor:

Figure 2.2. Pop-up panel of 'Search' action.

In the **find feature** you have available all the following functionalities:

- **(1) Expand/switch mode** – rotates between search and replace mode.
- **(2) 'Find' input field options from left to right:**
  - **Match Case** – switch for case-sensitive search
  - **Match Whole Word** – switch to compare search phrase only to whole words
  - **Use Regular Expression** – treats 'Find' input field value as a regular expression value
- **(3) Search options from left to right:**
  - **Result** – shows results of search in the form of "X of Y", where X is the number of current match and Y is overall number of found matches
  - **Previous match** – allows you to reverse the normal direction of search and find the previous match (if any).

- **Next match** – moves you to next match (if any).
- **Find in selection** – search will be limited to the selected text/code only
- **Close** – closes search panel

- **(4) Preserve Case** – forces replace to preserve case after replacement. Applies only to characters that are within length of replaced phrase
- **(5) Replace options from left to right:**
  - **Replace** – replaces actual match only
  - **Replace All** – replaces ALL found matches

Description of search usage:

Enter your search term here and press **Enter**. You can navigate between matches by continuously hitting **Enter** (or **Shift + Enter** to go backwards). The searched phrase is highlighted in the editor and scrollbar. If you want to replace a match, expand the **Search widget** to display the **Replace text box** and enter the text you want to replace it with in the Replace input field. Then hit **Enter** to replace the match and keep hitting **Enter** to replace each subsequent match or **Ctrl+Alt+Enter** to immediately replace all. The searched phrase is highlighted in the editor and scrollbar. Highlighting a word in the code editor will highlight all other matches in the file which makes it easier to check where a variable or function is being used. You can replace all in one file or replace a single change.

2.5. Syntax Highlighting

You have possibility to switch color to a different **syntax highlighting for VTL elements** in the code editor. You can edit your preferences by clicking on **Settings/ Color theme** and choosing one option to display the theme preferences drop-down:

- VTL
- Light
- Dark
- High Contrast Dark

2.6. Autocomplete

The editor supports autocomplete of VTL elements and when you type a letter or hit **Ctrl+Space**, you will see a list of autocomplete suggestions. After choosing name from the list, by using mouse cursor or selecting with keyboard, selected keyword is added to the code.

2.7. Context Help

Context help regarding **VTL syntax elements and snippet** are displayed in the editor, after moving the cursor over the name and selecting the **'i'** icon in the line with the selected name. **Context help** is displayed during typing, as shown in the example:

2.8. VTL Syntax Check

For the content of the files, is checked structure. In case of syntax errors, they are underlined in application and details are added on the bottom error panel. Additionally, after moving your cursor to the place with error, you will see the error details.

2.9. Syntax Errors

VTL Editor displays potential errors and warnings in a dedicated page section and bottom panel. As default blue panel is collapsed. After press arrow on the left, you will see the list in the panel with line, column and message of **syntax or grammar error**. In the code, the position with error has red underline.

Chapter 3. Data Structure Definitions

The main part of the VRM is the VTL Editor, where you can create and modify scripts written in VTL. Statements in VTL scripts may contain references to the data set that adheres to specific Data Structure Definition (DSD). The enhanced functionality of the editor makes it possible for you to use DSD. This chapter will show you the ways how to interact with the application to utilize DSD.

Import DSD tab consists of two parts: searching section and result section, where you can proceed with your choices.

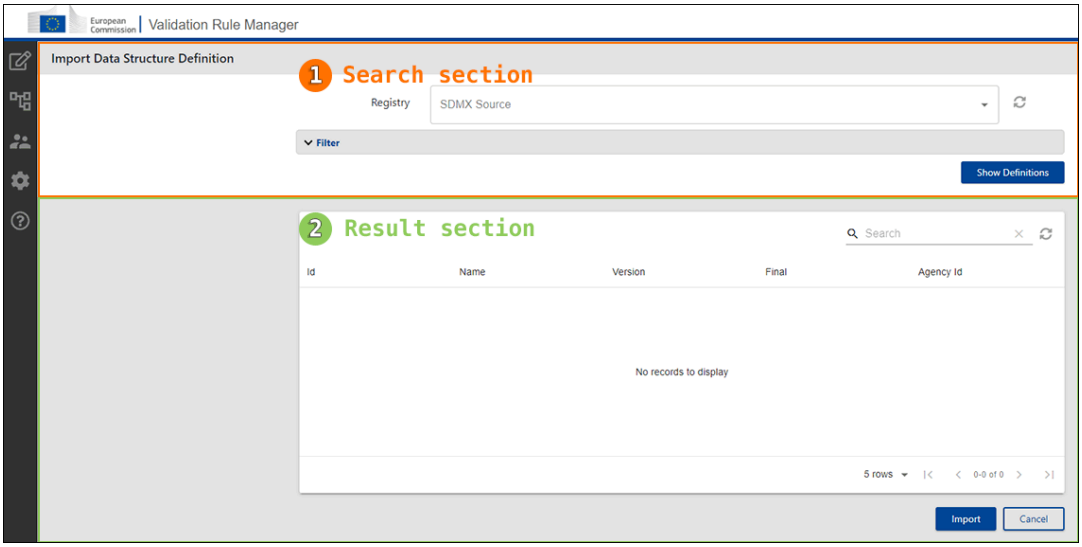

Figure 3.1. Import Data Structure Definition view

3.1. Importing Data Structure Definition

To import Data Structure Definition into the VTL Editor, follow this procedure:

1. On the **Navigation** sidebar select **Import DSD** icon.

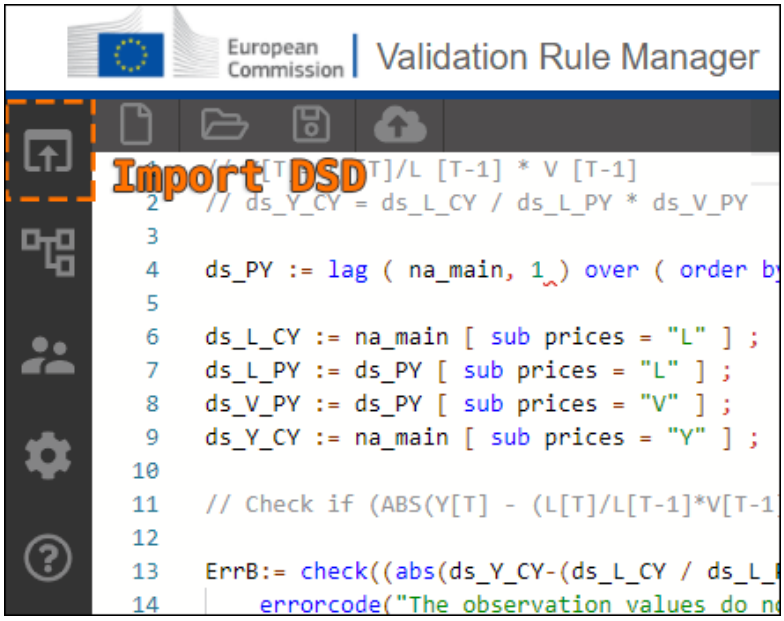

Figure 3.2. Import DSD icon on the Navigation sidebar

2. **Import Data Structure Definition** view is displayed (see Figure 3.1, “Import Data Structure Definition view”), where you can proceed with importing. First, select registry from the **Registry** dropdown list. This step is mandatory.

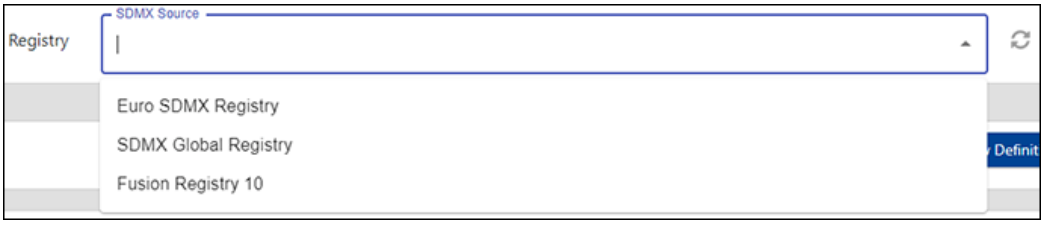

Figure 3.3. SDMX registry list

3. Optionally you may use additional filters by clicking on **Filter** bar. Now you can choose one or more agencies from the dropdown list and/or specific finalized status. Only data structure definitions that match the filter will be displayed as results.

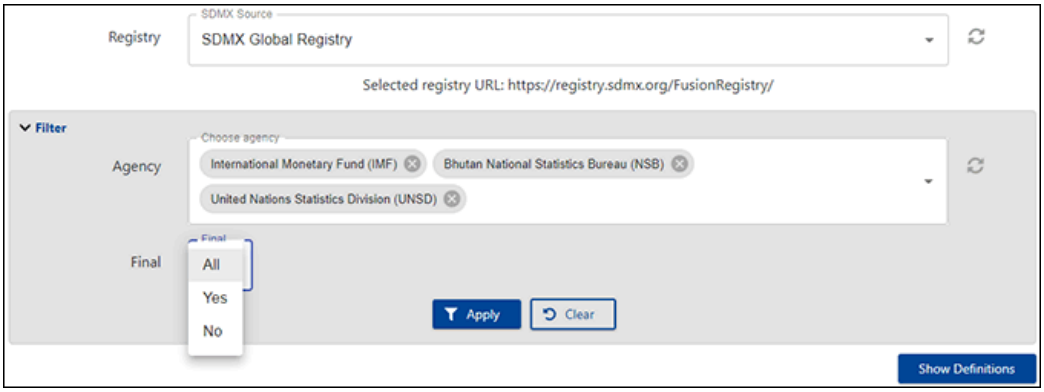

Figure 3.4. Filter panel for the DSD results

4. Click **Apply** button to apply the filters. You may also clear all filters by clicking **Clear** button.

5. Confirm your choices by clicking **Show Definitions** button

6. Now the list of available DSDs is displayed. You can search for specific item in the results by typing content in **Search** field.

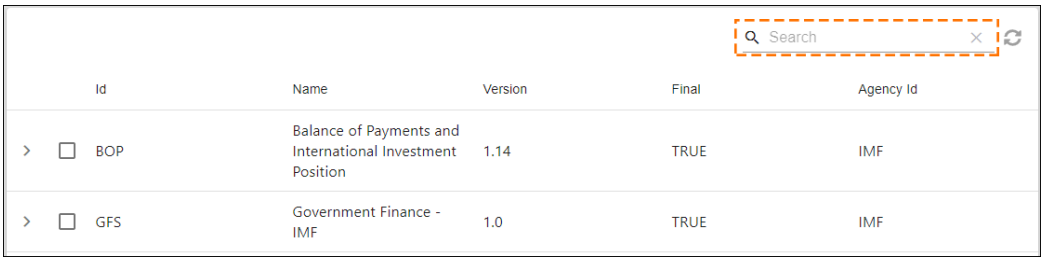

Figure 3.5. Search field in the DSD result list

7. If more detailed information is needed, you can click chevron icon on the left side of particular item to display preview of DSD.

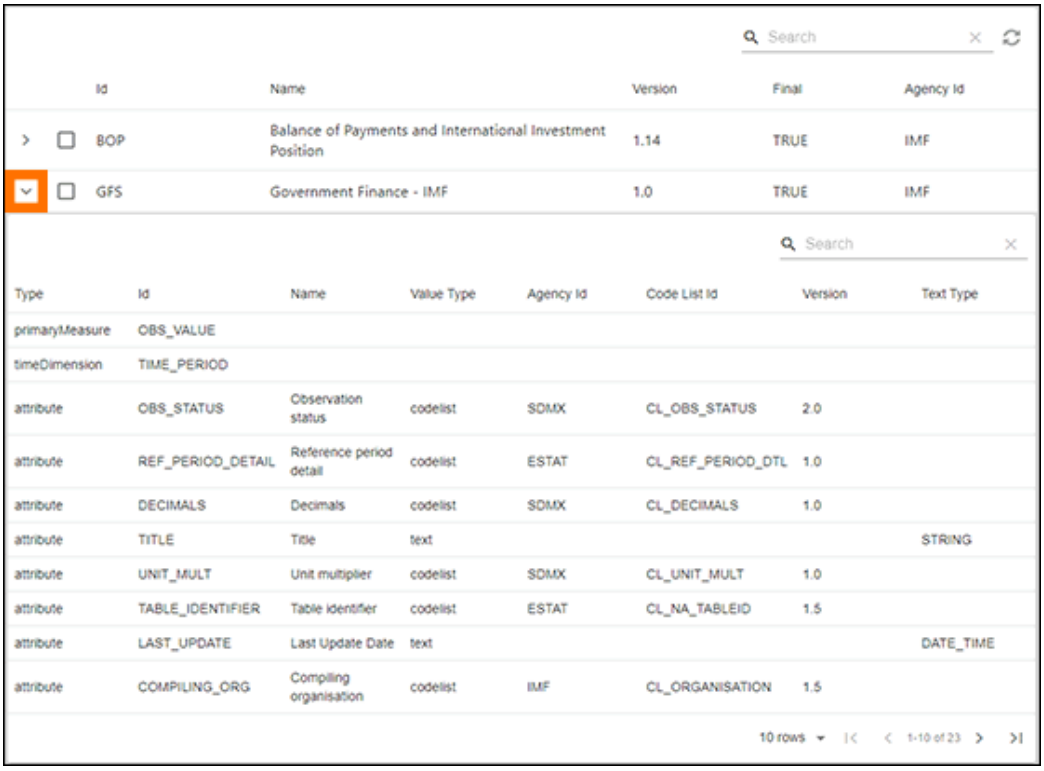

Figure 3.6. Preview of the DSD contents in the result list

8. When you've decided which DSD you want to import, click the checkbox in the left part of that item. At any time only one item can be selected.

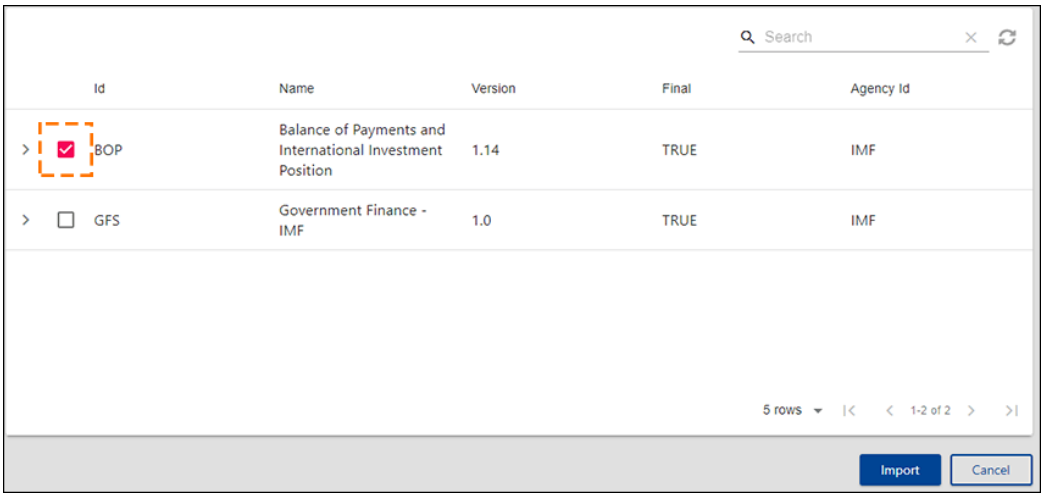

Figure 3.7. Selected DSD in the result list

9. When DSD is selected in the list, click **Import** button to import DSD contents and apply it to VTL Editor features. When import process is successfully proceeded, you will be moved to the VTL Editor view.

10. If you want to terminate the importing process, click **Cancel** button and return to VTL Editor without applying new DSD. If any DSD was imported previously, it remains applied in the editor features.

3.2. Using Data Structure Definition

3.2.1. Autocomplete

After DSD is imported into the VTL Editor, their elements appear in the autocomplete feature. When you enter matching string autocomplete popup with element identifiers is displayed.

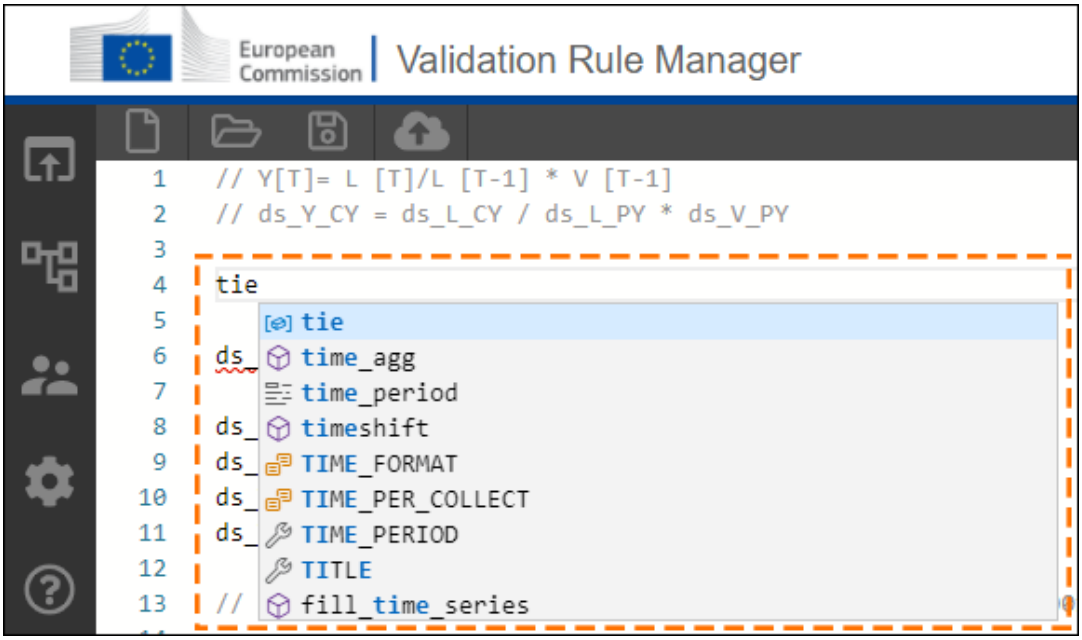

Figure 3.8. VTL Editor autocomplete feature with DSD elements

3.2.2. Highlighting

After DSD is imported into the VTL Editor, their elements are recognized by highlighting feature. When user enters element identifier in the VTL code, it is colorized accordingly:

- Attribute – lime (#9ffb88)
- Dimension – orange (#f7b74e)
- Primary measure – purple (#953d55)

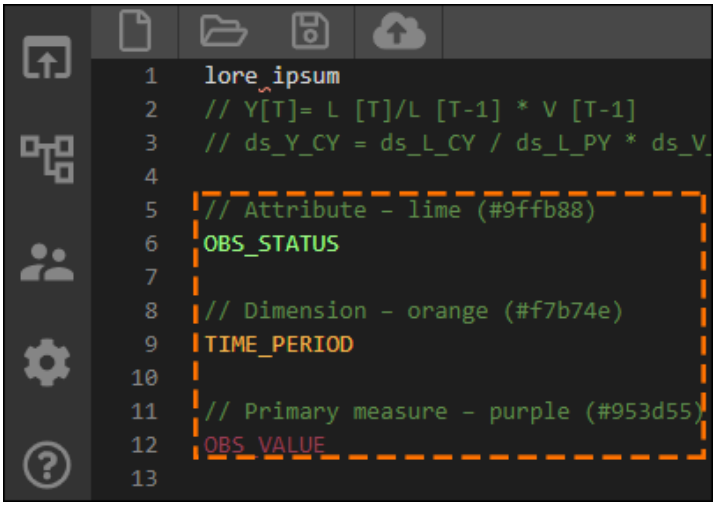

Figure 3.9. Highlighted DSD elements in the VTL Editor

3.2.3. Preview of Elements

When DSD is imported into the VTL Editor, you'll see the DSD icon on the blue bar at the bottom of the screen. To switch to DSD preview, click DSD identifier or adjacent icon on the blue bar at the bottom of the screen. Content in the bottom area of VTL Editor view might be toggled between error list and DSD preview.

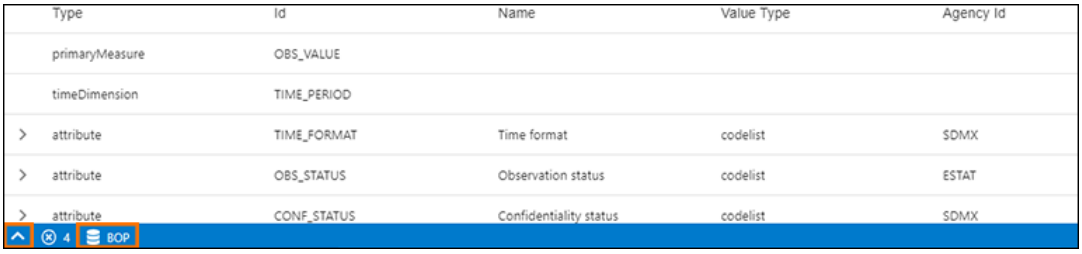

Figure 3.10. DSD Preview icon on the Status bar of the VTL Editor

Information about content of currently imported DSD is displayed in bottom area of VTL Editor.

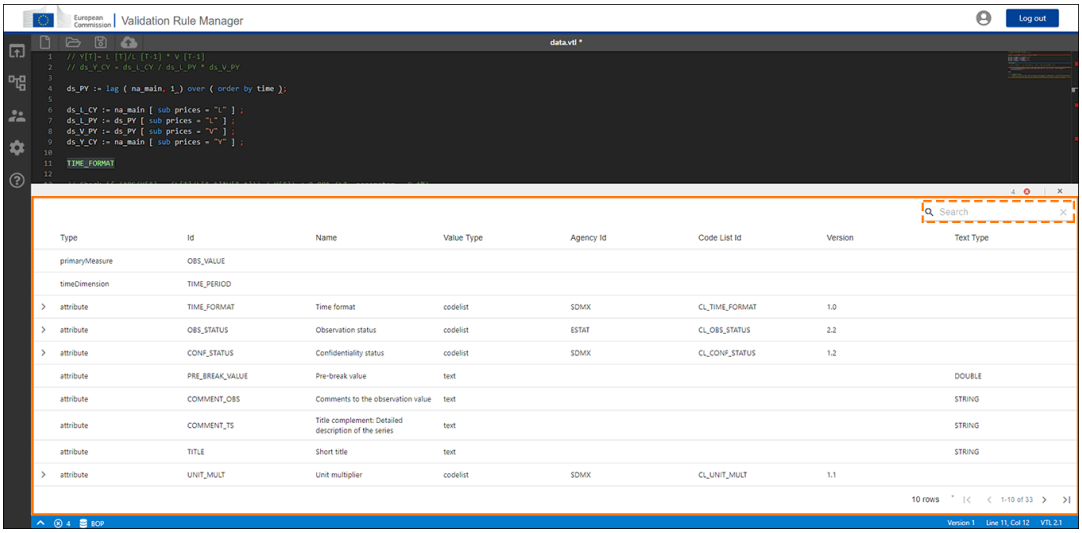

Figure 3.11. DSD contents in the Details pane of the VTL Editor

When you click chevron icon on the left side of DSD elements that have specific codelist assigned, contents of this codelist will be displayed.

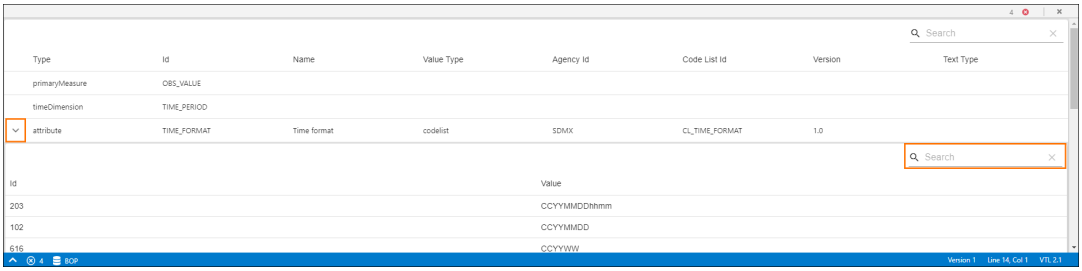

Figure 3.12. Codelist contents in the Details pane of the VTL Editor

3.3. Reloading Data Structure Definition

Information such as filename and contents of edited script, configuration, view state and recently imported DSD are continuously saved in case you close or reload VRM web page. When VRM web page is displayed again, you will see a message in a pop-up window, where you can proceed with your choice.

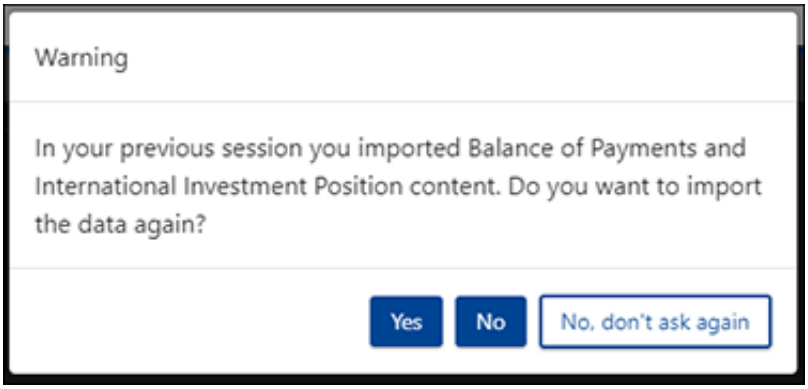

Figure 3.13. Prompt asking if DSD should be imported again

Click **Yes** button to reimport most recently used DSD.

Click **No** button to skip the reimporting process (the information about this particular DSD is kept in the system and you'll be asked again, when you reload the page).

Click **No, don't ask again** to stop the importing process and remove information about most recently used DSD.

Chapter 4. Personal Repository

Personal repository functionality of the VRM allows you to save script files and other items in the personal storage provided by the VRM. Saved items can be then opened or executed (if applicable). You can also organize them using folders in tree-like hierarchy resembling the one that you create on personal computer disk.

The VRM preserves version history of saved scripts, so any introduced changes can be reviewed and reversed if necessary.

4.1. File Explorer

File Explorer is the main component of the repository. It allows to view and manage folder structure, and script files.

4.1.1. Opening File Explorer

To open File Explorer, click **File Explorer** icon on the **Navigation** sidebar. The File Explorer displays in the left part of the screen, showing root folder contents. To hide it, click the icon again.

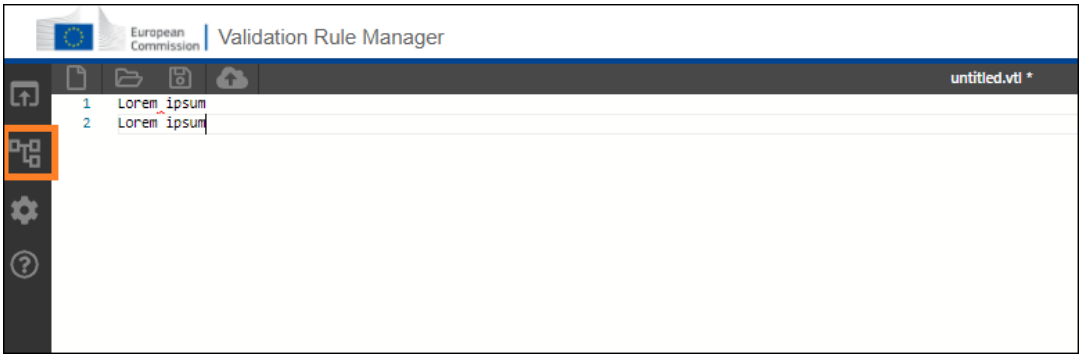

Figure 4.1. File Explorer icon on the Navigation sidebar

4.1.2. Browsing Repository Tree

To see the contents of the nested folders in the repository tree, click the triangle icon next to their name. This will expand the folder and display its child items below with an indent. Clicking the triangle again collapses the folder and hides its contents.

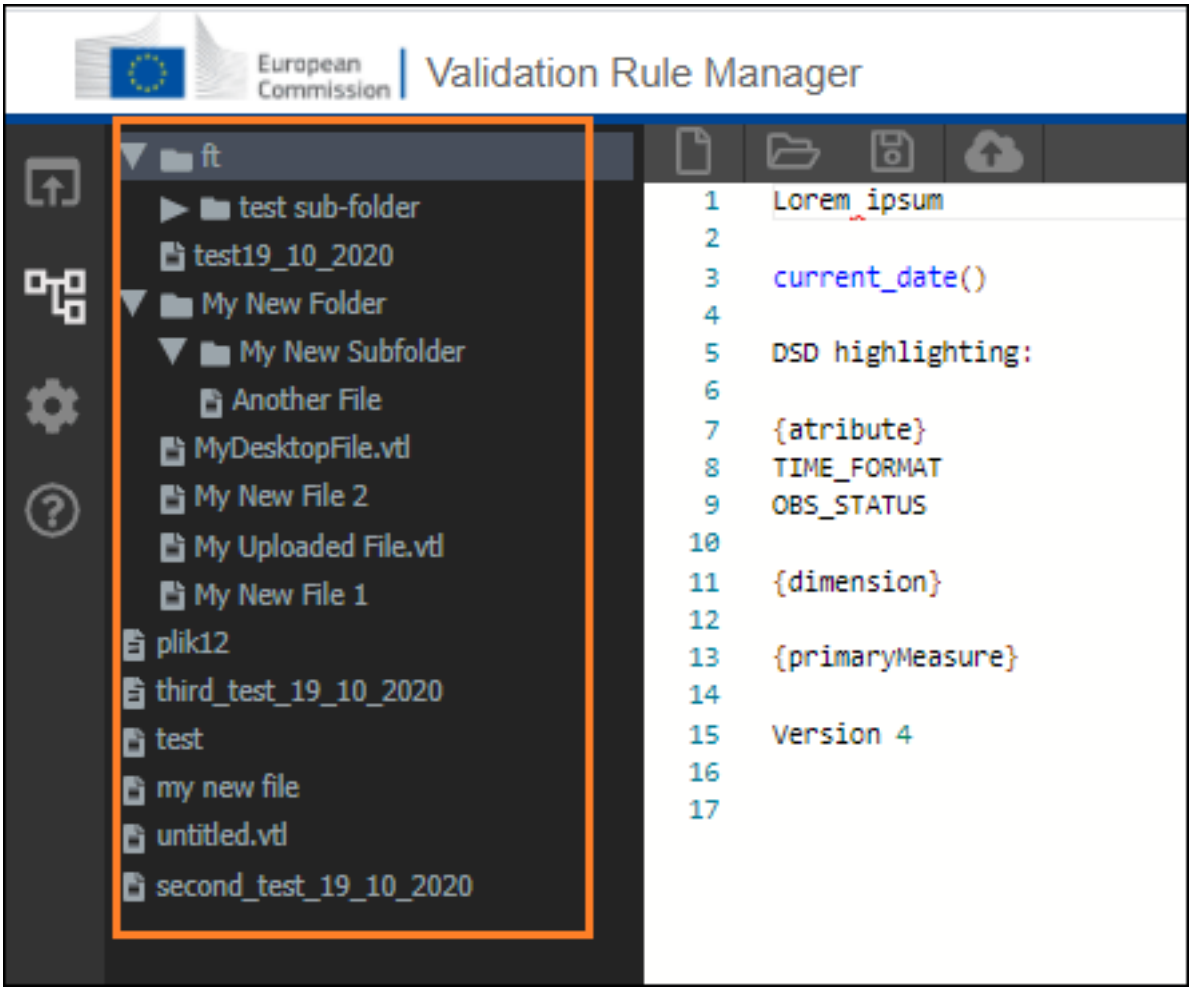

Figure 4.2. The repository tree in the File Explorer

4.2. Managing Repository Items

To manage files and folders, right-click desired item in the File Explorer. A menu with list of possible actions will be displayed. Menu options depend on item type.

4.2.1. Creating New Folder

To create new folder in the personal repository, follow the procedure below.

1. Open the File Explorer if it's closed. See Section 4.1.1, “Opening File Explorer”.
2. Browse the tree to the folder that will be a parent of the new one.
3. Right-click parent folder name and select **New > Folder** options from the context menu. You can also right-click any child inside the parent folder that is not a folder itself.

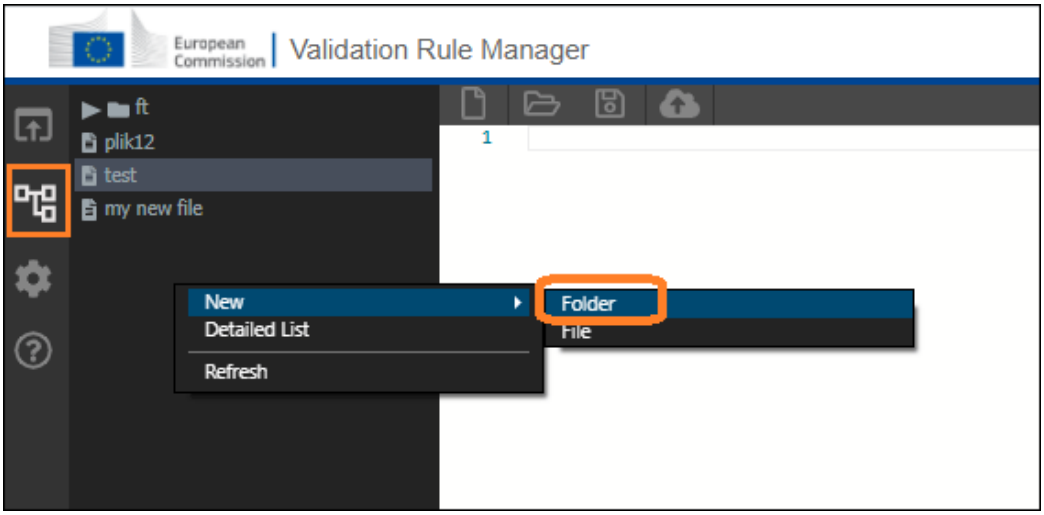

Figure 4.3. New folder option in the File Explorer context menu

4. Type the folder name in the text field and click **Create** button to confirm. Created folder will appear in the tree.

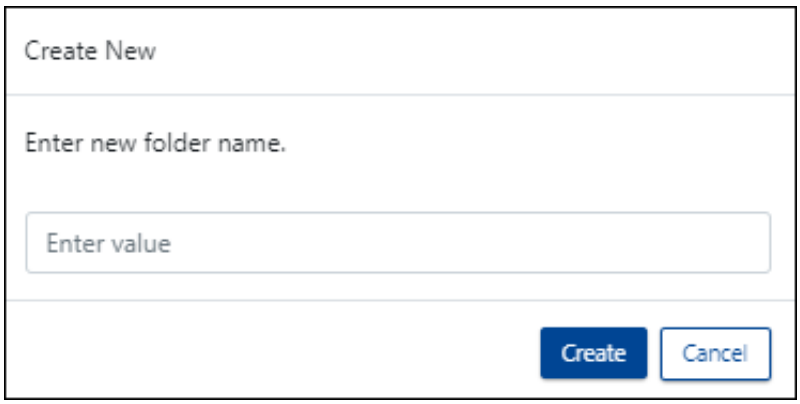

Figure 4.4. New folder name dialog window

4.2.2. Creating New File

To create new file in the personal repository, follow the procedure below.

1. Open the File Explorer if it's closed. See Section 4.1.1, “Opening File Explorer”.

2. Browse the tree to the folder where you want to place the new file.

3. Right-click parent folder name and select **New** > **File** options from the context menu. You can also right-click any child inside that folder that is not a folder itself.

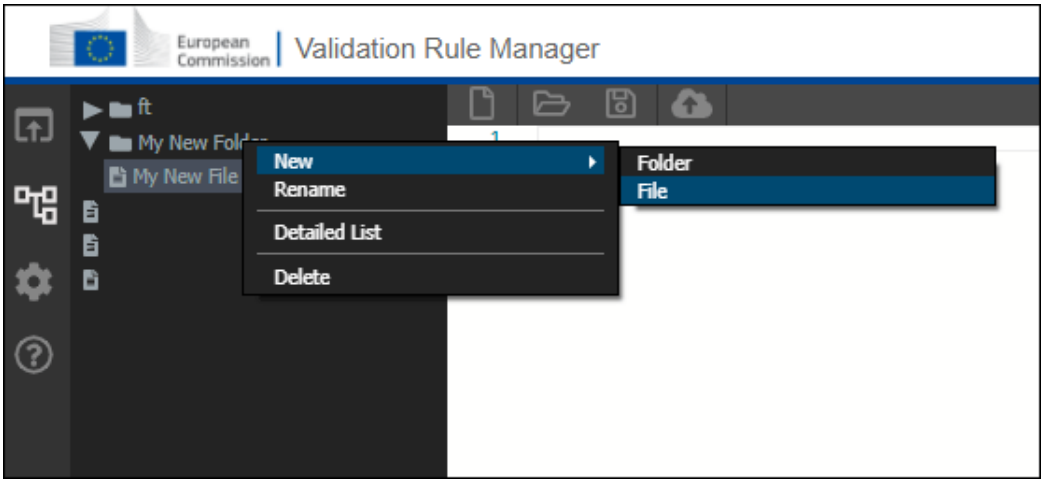

Figure 4.5. New file option in the File Explorer context menu

4. Type the file name in the text field and click **Create** button to confirm. Created file will appear in the tree.

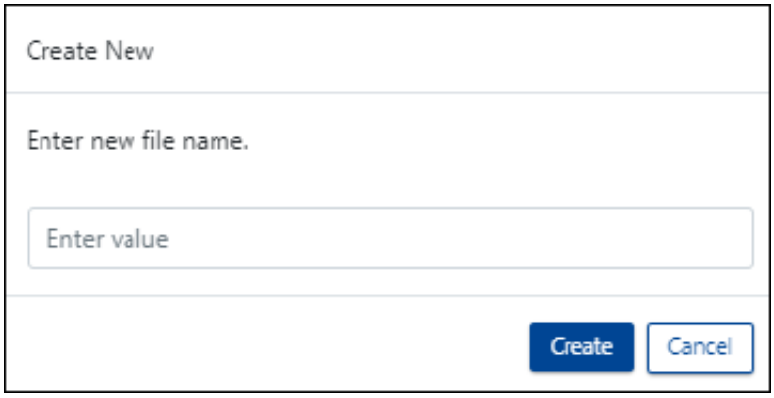

Figure 4.6. New file name dialog window

A new document is created, but not open automatically. To open the file, see Section 4.3.1, “Opening File”.

4.2.3. Renaming Item

To rename an item in the personal repository, such as folder or file, follow the procedure below.

1. Open the File Explorer if it's closed. See Section 4.1.1, “Opening File Explorer”.
2. Browse the tree to the item that you want to rename.
3. Right-click the item name and select **Rename** option from the context menu.

4. Type new name in the text field and click **Rename** button to confirm. Item name will be updated in the tree.

4.2.4. Deleting Item

To delete an item in the personal repository, such as folder or file, follow the procedure below.

1. Open the File Explorer if it's closed. See Section 4.1.1, “Opening File Explorer”.
2. Browse the tree to the item that you want to delete.
3. Right-click the item name and select **Delete** option from the context menu.
4. Warning dialog window is displayed, prompting for confirmation. Click **Yes** button to confirm deletion.

4.2.5. Displaying Folder Details

You can view more detailed information about items from any folder stored in the repository. To see folder details, follow the procedure below.

1. Open the File Explorer if it's closed. See Section 4.1.1, “Opening File Explorer”.
2. Browse the tree to the folder that contains items you want to see detailed information about.
3. Right-click the folder name and select **Detailed List** option from the context menu.

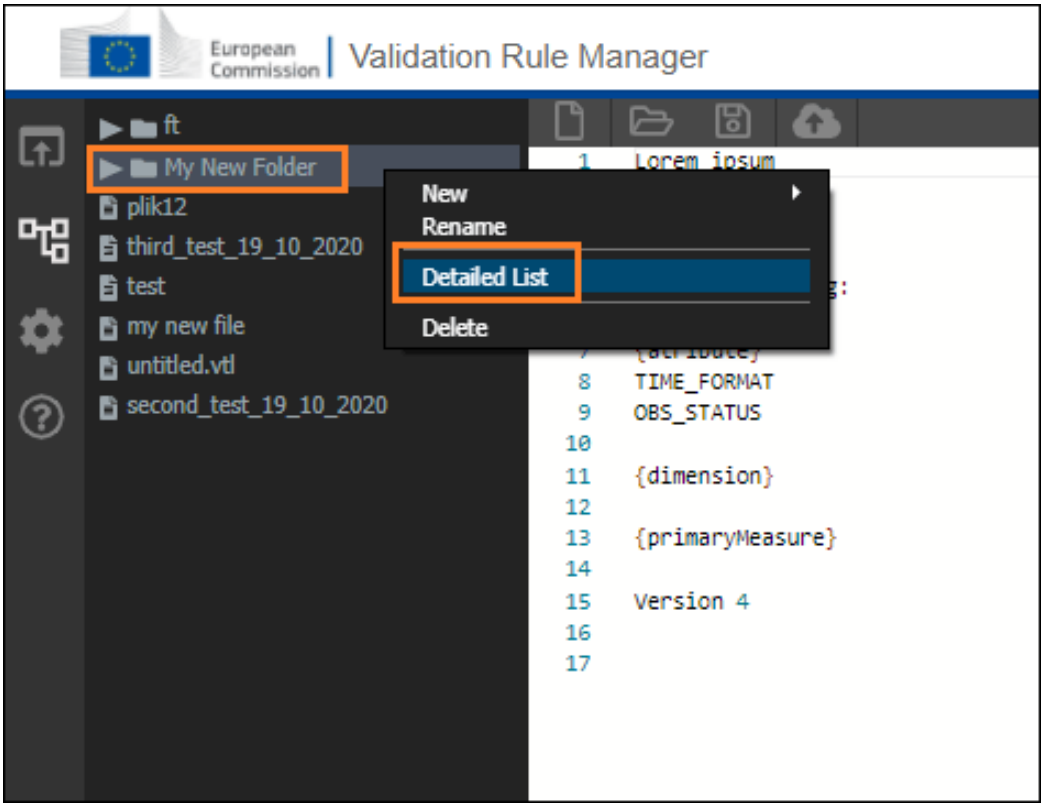

Figure 4.7. Detailed List option in the File Explorer context menu

4. The table with detailed information about contents of the selected folder is displayed in the main area of the VRM.

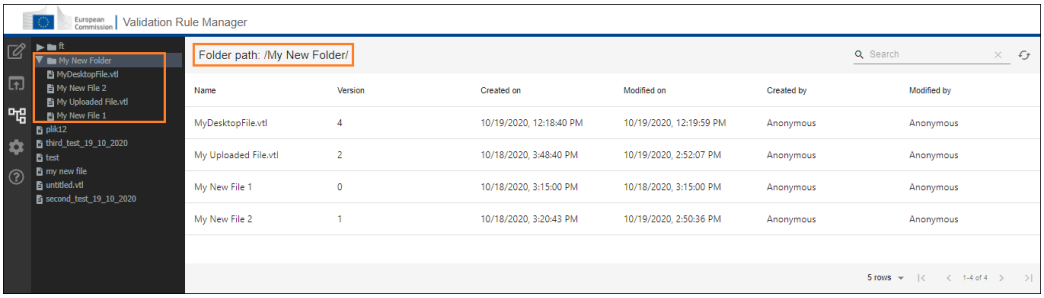

Figure 4.8. Folder details view

The details include item name, version (in case of versioned items), creation date, name of the user who created the item, last modification date, and name of the user who most recently modified the item.

4.2.6. Displaying Item Versions

Some types of items are versioned in the repository. Every save operation creates new version and all previous versions are preserved. For each such item you can view version history, open any version, restore it as most recent, and compare two selected versions. To display item versions, follow the procedure below.

1. Open the File Explorer if it's closed. See Section 4.1.1, “Opening File Explorer”.

2. Browse the tree to the item that you want to see version history for.

3. Right-click the item name and select **Versions** option from the context menu.

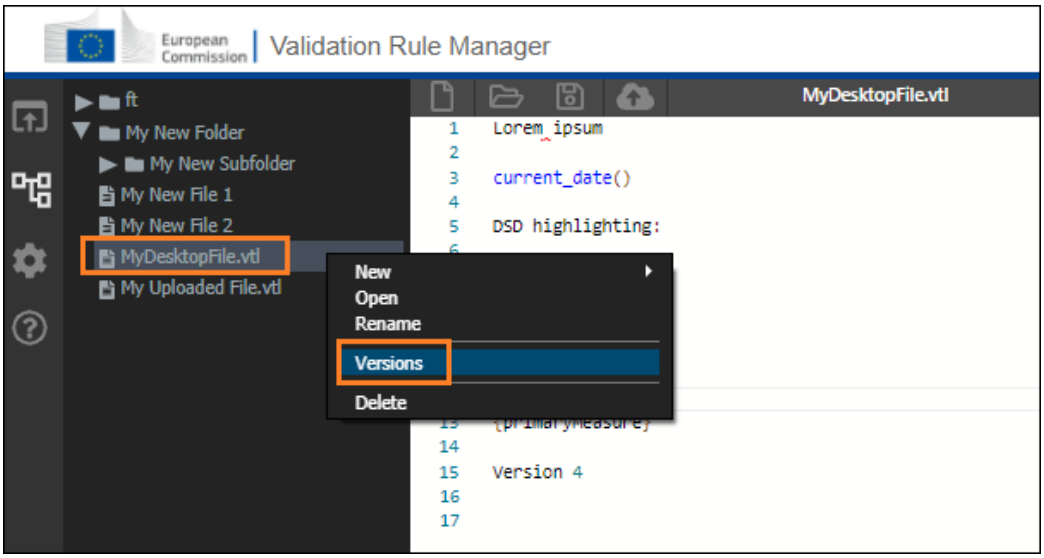

Figure 4.9. Versions option in the File Explorer context menu

4. The table with versions of the selected item is displayed in the main area of the VRM.

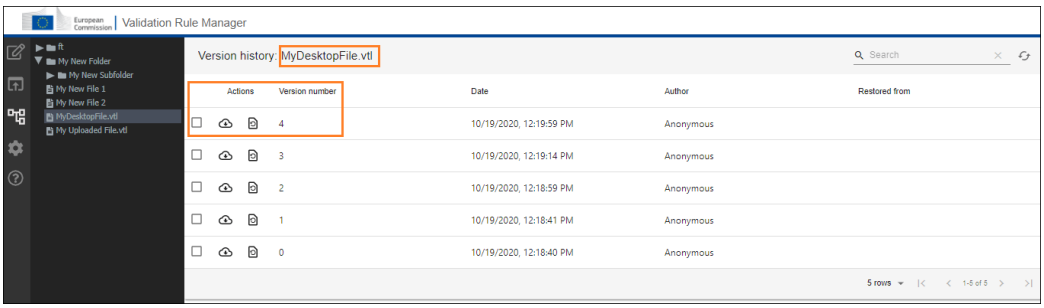

Figure 4.10. Version history view

The versions table allows you to perform several actions related to versions:

- To open any version, click **Open** icon in that version row.
- To restore version as most recent, click **Restore** icon in that version row.
- To compare two versions, select their checkboxes and click **Compare** icon in the top right corner of the view.

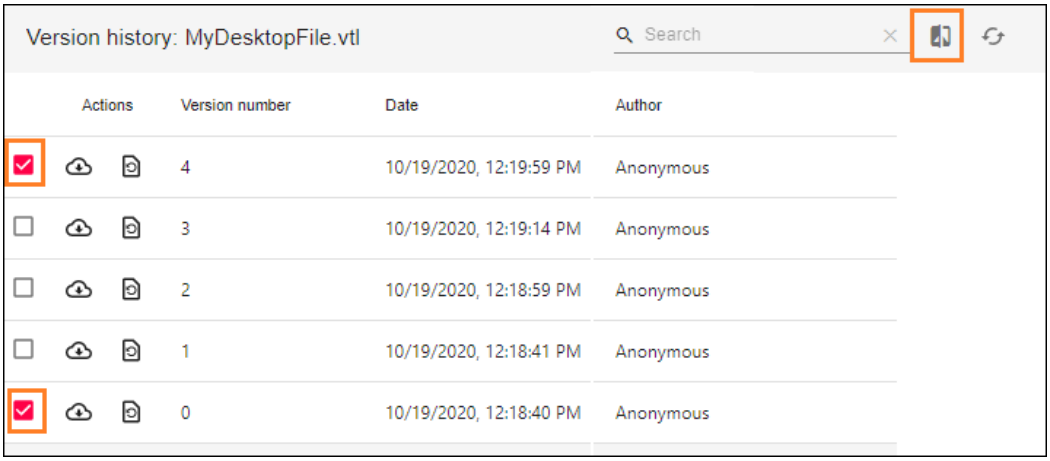

Figure 4.11. Compare icon in the version history view

The additional **Refresh** icon allows to refresh the version table with current data from the repository.

When you compare versions, the difference view is displayed in the main area of the VRM. All differences between the versions are highlighted.

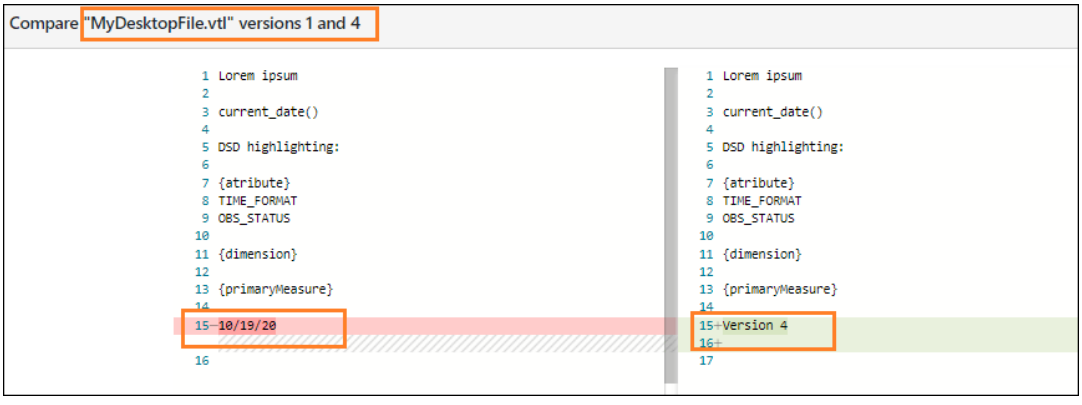

Figure 4.12. Version comparison with differences highlighted

4.3. VTL Editor Integration

4.3.1. Opening File

Files stored in the repository can be opened in the VTL Editor. To open the file, follow the procedure below.

1. Open the File Explorer if it's closed. See Section 4.1.1, “Opening File Explorer”.
2. Browse the tree to the file you want to open.
3. Right-click the file and select **Open** option from the context menu.

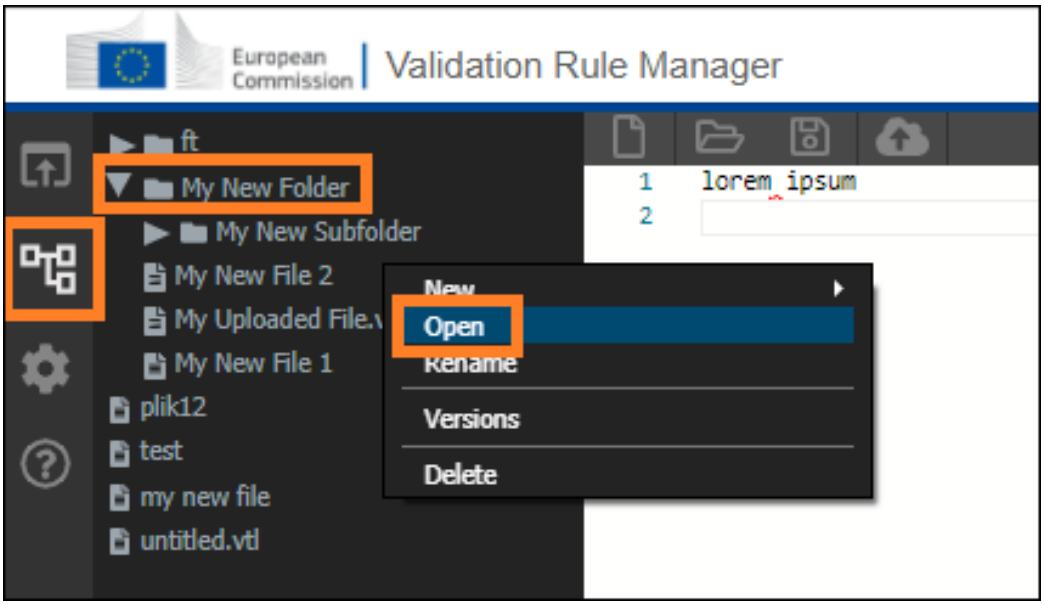

Figure 4.13. Open option in the File Explorer context menu

4. Selected file is open in the VTL Editor. Its name is displayed on the top bar.

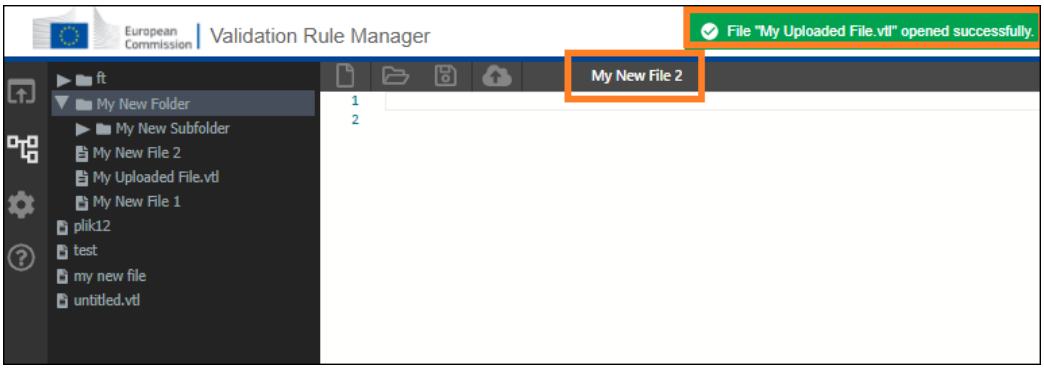

Figure 4.14. Opened file name on the top bar of the VTL Editor

4.3.2. Saving File

File changed in the VTL Editor can be saved to the personal repository. To save edited file that was open from the repository, simply click **Upload** icon on the top bar of the editor. New version of the file will be created in the repository.

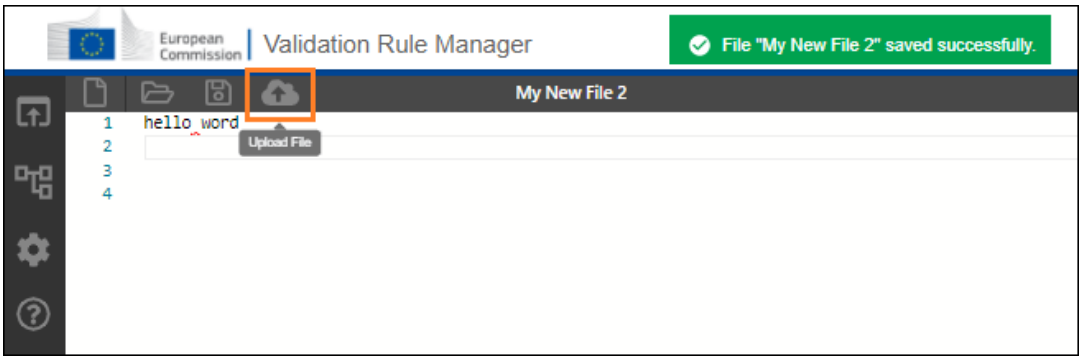

Figure 4.15. Upload icon on the top bar of the VTL Editor

To save the file that is new or opened from disk, follow the procedure below.

1. Open the File Explorer if it's closed. See Section 4.1.1, “Opening File Explorer”.

2. Browse the tree to the folder where you want to save the file. Click the folder name to highlight it.

3. Click **Upload** icon on the top bar of the editor.

4. Confirmation dialog is displayed with selected repository path and file name text field. Optionally type new name in the input field. Click **Upload** button to confirm save. File will be uploaded to the repository and appear in the tree.

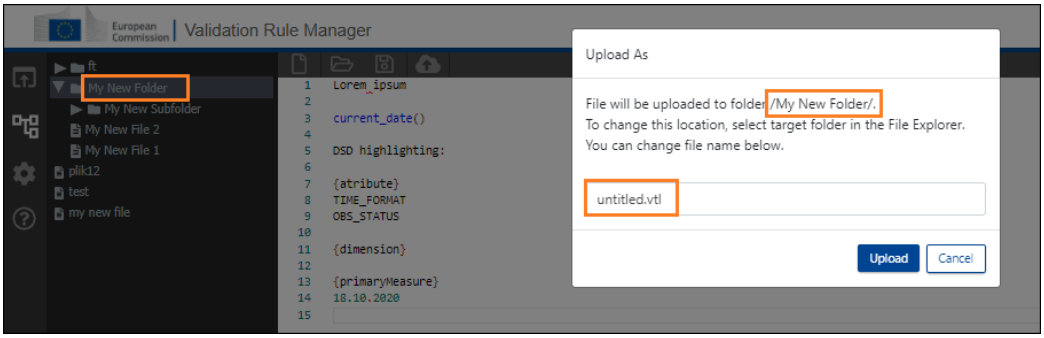

Figure 4.16. Upload file dialog window

4.3.3. File Version

VTL files stored in the repository are versioned. Every save operation creates new numbered version. All previous versions are preserved. You can see the version number of currently opened file on the blue bottom bar.

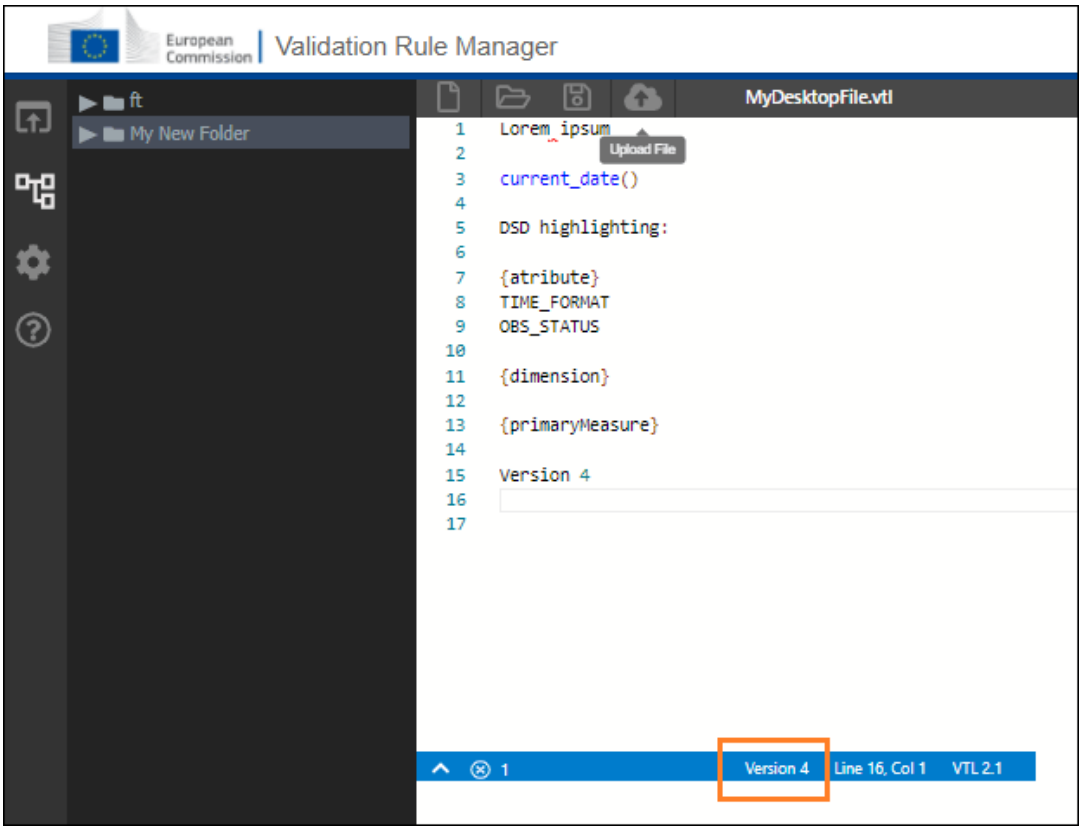

Figure 4.17. File version on the bottom bar of the VTL Editor

Chapter 5. Settings

You can edit your preferences by clicking on **Settings** in main menu,then will see all the following options:

- Change theme color
- Switch VTL language version

5.1. Language Version

You have possibility to change the **VTL language version** in **Settings/ VTL Grammar Version**. The highest (currently 2.0) will be added as a default option.

5.2. Color Theme

You have possibility to change theme preferences in **Settings/ Color theme**. There will be available options to choose:

- **VTL** - similar to Light
- **Light** - light view
- **Dark** - dark view
- **High Contrast Dark** - high contrast

Chapter 6. Keyboard Shortcuts

The following commands are available when editing a file:

- **F1 or Alt+F1** Display the full list of commands
- **Ctrl-C** Copy the selected text to the clipboard
- **Ctrl-V** Paste the clipboard's contents to the selected text
- **Ctrl-X** Cut the selected text
- **Ctrl-S** Save current document file
- **Ctrl-O** Open a file in the current software
- **Ctrl+Space** Display the list of autocomplete suggestions
- **Ctrl-Z** Undo editing
- **Ctrl-Enter** Insert a new-line character
- **Ctrl-P** Print active window
- **Ctrl-F** Find text

Chapter 7. Accessibility

7.1. Accessibility Help

You can press **Alt+F1** or **Ctrl+F1** in Microsoft Edge to trigger the **'Show Accessibility Help'** dialog, while in an editor to find out the current position in the editor and to check the state of various accessibility options. The editor can be dynamically optimized for screen reader software from this dialog.

7.2. High Contrast Theme

You have possibility to turn on high contrast mode, for window with code in editor, on all platforms in **'Settings'**. There will be available option to display the Theme preferences drop-down and select the **High Contrast Dark**.