

Q-COMPARE
V1.3.1

USER GUIDE

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1 Introduction to Q-Compare

Functionality

Q-Compare is an application for comparing CAD data, particularly different formats or versions derived from the same model. Q-Compare can compare CATIA V5 parts and products with other CATIA V5 parts and products, respectively.

The current version covers a number of compare operations, or *checks*, for geometry and metadata.

↗ For a description of the currently available checks see section 7 *Checks and Parameters* on page 37.

Q-Compare is integrated into CATIA V5 and can be used in two ways—

- *Interactive mode* allows to compare models from within the current CATIA session.
- *Batch mode* is for command line-based operation and allows to compare one or more pairs of models sequentially.

↗ For interactive mode, see section 4 *Comparing Models in Interactive Mode* on page 17.

↗ For batch mode, see section 5 *Comparing Models in Batch Mode* on page 25.

Definitions

Reference Document The reference document is the model file based on which differences to another models are evaluated.

Compare Document The compare document is the model file that is compared to the reference document.

Configuration A configuration is a set of application settings, profile and check definitions. A configuration is defined for a dedicated pair of file formats, e.g. for checking a V5 CGR compare document against a V5 Part reference document.

Profile A profile is a set of checks which is used to compare models.

Mapping Mapping is a mechanism that controls correlation of elements during compare process

Mapping Rule A mapping rule influences the input pair-list of a check.

Custom View Selective view of a model. Visibility of elements in custom views is controlled by user-defined rules.

In V5, custom views are defined in an external file.

2 Installing Q-Compare

2.1 System Requirements

Operating System Microsoft Windows XP, Windows XP x64, Vista x86, Vista x64, or Windows 7 64-bit

CATIA version and release CATIA V5 R19. All CATIA platforms (P1/P2/P3/PLM Express) are supported.

For detailed software requirements refer to the CATIA Program Directory that comes with your CATIA installation. Q-Compare is supported only on certified CATIA systems.

2.2 Installing Q-Compare using the installation package



- 1 Make sure to use the correct installation package.

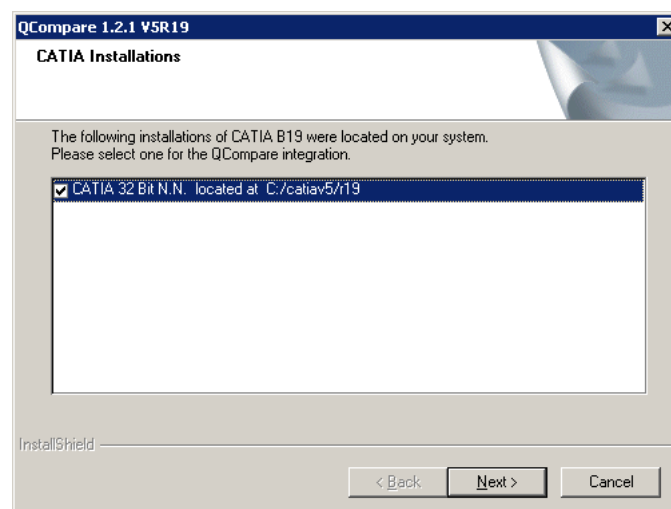
There are different installation packages for 32-bit and 64-bit systems, respectively. The name of the installation package for 64-bit systems contains “B64”, e.g. QCompare_131_R19B64.exe.

- 2 Start the installation routine by double-clicking the installation package. When the “Start Installation” dialog is displayed, click “Next”.

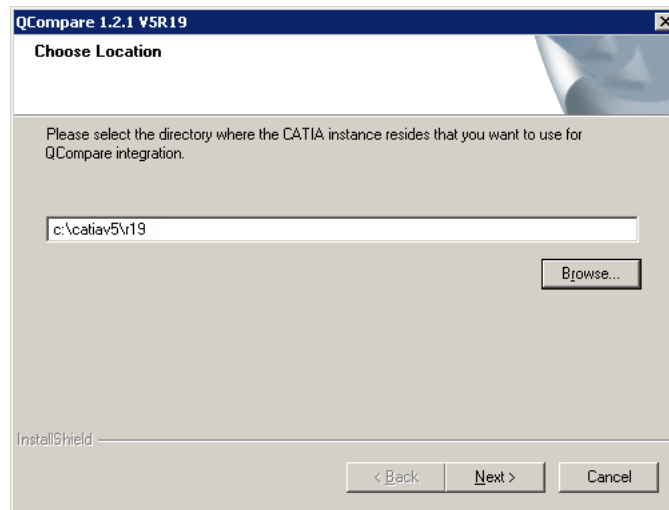
To abort at any time during installation, click “Cancel”. All settings will be cancelled.

To modify the settings you made in a previous step at any time during installation, click “Back” repeatedly until the desired dialog is displayed.

- 3 The installation routine looks up which versions of the CATIA release are installed.
 - ◆ If an installation is found, select the desired version, then click “Next”.

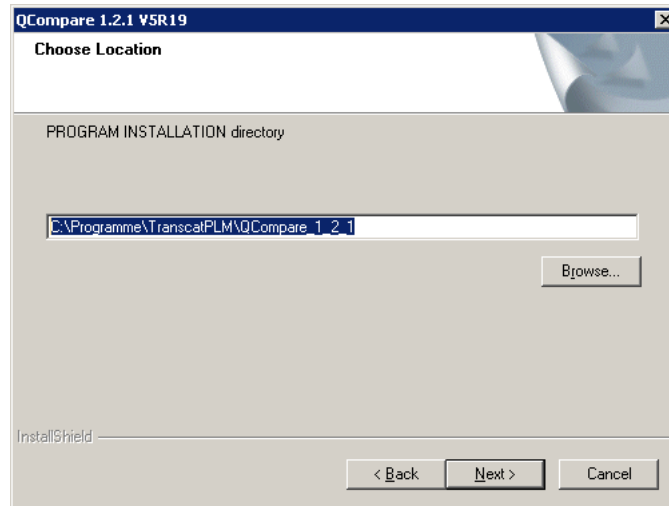


- ◆ If no CATIA installation has been found, the following dialog is displayed instead. Choose the directory where CATIA is installed, then click “Next”.

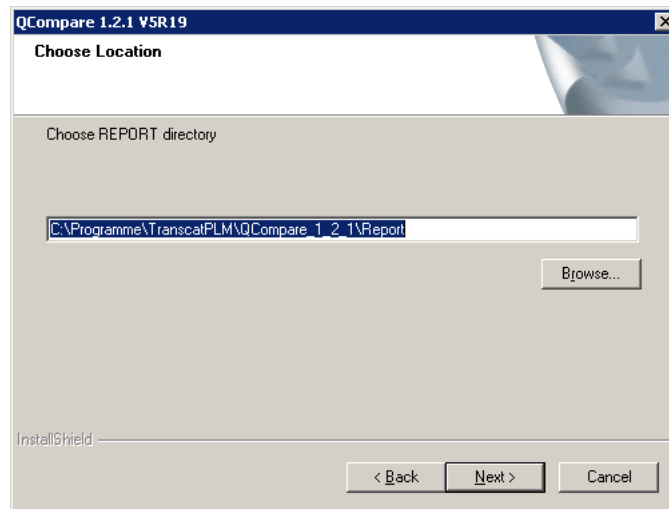


TIP: The CATIA installation directory can be recognized by its subdirectory named intel_a (for 32-bit versions) or win_b64 (for 64-bit versions).

- 4 Specify the installation directory where to install the Q-Compare application, then click “Next”.

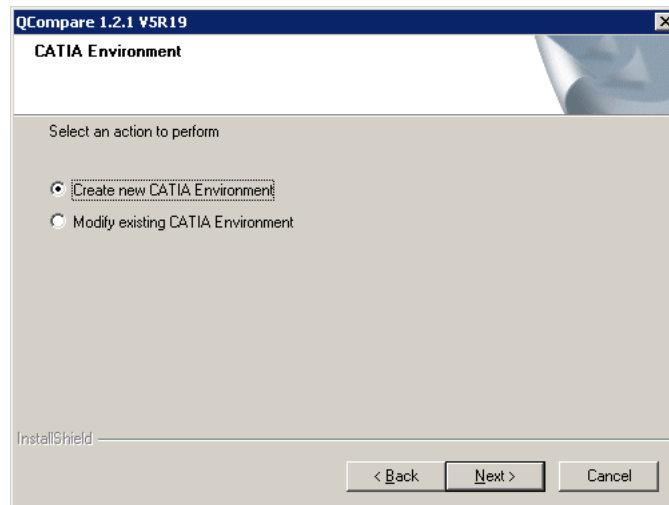


- 5 Specify the directory where Q-Compare report files will be stored, then click “Next”.



TIP: You can change the report directory later. Specify the desired path using the TCACMPReportPath environment variable in the CATIA environment file.

- 6 To make Q-Compare available in CATIA, a CATIA environment must be prepared. Choose one of the following options:

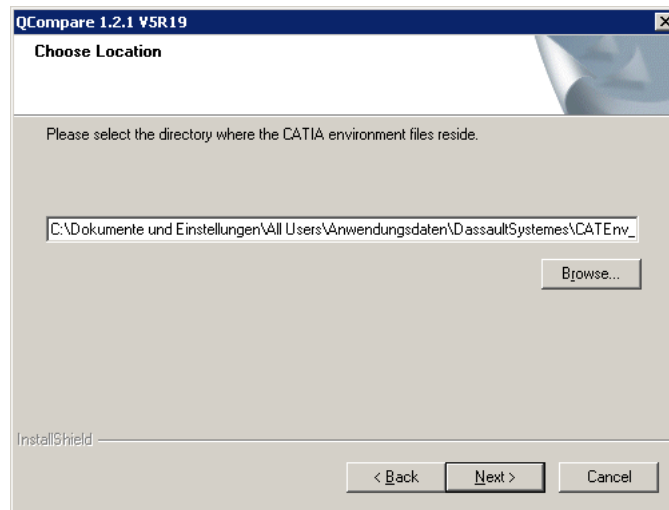


- ◆ “Create new CATIA environment”: A new environment file will be created. Click “Next” to continue.
- ◆ “Modify existing CATIA environment”: With this option, click “Next” to display a file selection dialog that displays the local CATIA environment directory. Select the CATIA environment file that you want to modify.

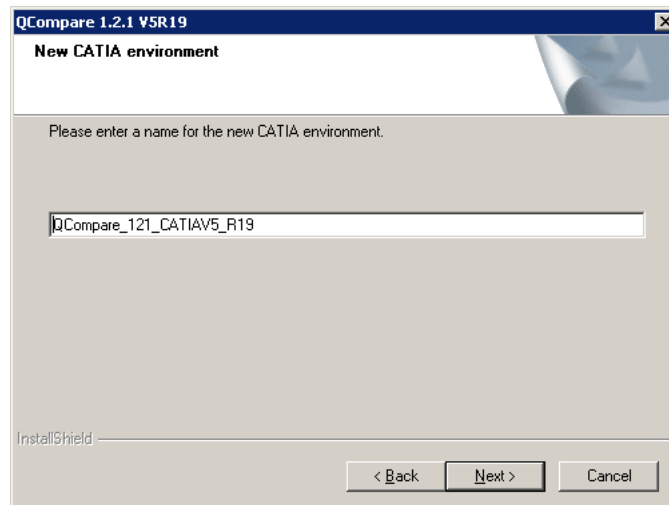
If the selected environment already contains Q-Compare variables, an error will be displayed. In this case, choose a different environment file, or delete the existing Q-Compare environment variable definitions from the environment file manually.

➤ See the *List of Q-Compare environment variables* on page 6.

- 7 When creating a new CATIA environment, you can choose a directory for the new environment file:



- 8 When creating a new CATIA environment, you can specify the name of the new CATIA environment file. To recognize the environment readily, we recommend to include the versions of both Q-Compare and CATIA in the name, e.g. QCompare_131_CATIAV5_R19.



Click “Next” to proceed.

- 9 The installation routine displays a summary of the specified settings. If all settings are correct, click “Next” to copy the required files to the installation directory. Otherwise click “Back” repeatedly until the desired dialog is displayed.
- 10 When the installation is complete, click “Finish” to leave the installation routine.
- ▶▶ Q-Compare is now available when you start a CATIA session using the Q-Compare environment. A desktop icon and start menu entry (in “Programs” > “CATIA”) with the environment named have been created.



NOTE: When you have selected the “Modify existing CATIA environment” option during the installation routine, it is recommended that you check the modified CATIA environment file.

In some cases, the modification of the environment may have failed, e.g. if the environment file is write-protected or if the CATIA environment is very complex.

2.3

Installing Q-Compare manually



Adding Q-Compare to an existing CATIA environment

- 1 Extract the Q-Compare zip archive to a directory with full access.
- 2 Do one of the following:
 - ◆ Open the CATIA Environment Editor, and choose the desired environment from the upper list.
 - ◆ Locate the desired CATIA environment file on your computer and open it using a text editor.
- 3 Add the following environment variables to the CATIA environment, and specify their values:

List of Q-Compare environment variables

Name	Parameters and description
TCACMPReportPath	Path to Q-Compare report files
TCACMPConfigPath	Path to Q-Compare configuration files. Q-Compare will look for configuration files in the given path and all its subdirectories.
TCACMPLangPath	Path for Q-Compare language files. This directory contains language-specific files for the interface and reports.
TCACMPLicV5V5	<p>YES: Use license for V5/V5 checks, if available (default)</p> <p>NO: Do not use license for V5/V5 checks</p> <p>This variable is optional. If not set, Q-Compare will use a license for V5/V5 checks.</p>

- ◆ To add a variable in the CATIA Environment Editor, right-click in the lower list and choose “New Variable” from the context menu, then type name and value of the new variable.
- ◆ To add a variable in the environment file, add the following lines. Use the actual path names (where you placed the contents of the Q-Compare zip archive) instead of the sample path names.

```
Set TCACMPReportPath=c:\QCMP\reports
Set TCACMPConfigPath=c:\QCMP\configs
Set TCACMPLangPath=c:\QCMP\lang
TCACMPLicV5V5=YES
```

2.4

Requesting and installing licenses

License types

Q-Compare uses the same LUM license system as CATIA. There are two types of licenses,

- *Nodelock*: License password only valid on one computer (tied to the hardware)
- *Concurrent*: License is available in a network. A license server is required.



NOTE: Administrative rights are required to install a license.

License Requests

ADMIN: A license is required to run Q-Compare. Modules for additional functionality may require additional licenses. To obtain licenses, please contact Transcat PLM:

- Phone: +49 721 9704374
- E-mail: license@transcat-plm.com

In case you need the target ID of the computer where Q-Compare will be installed, type `i4target` at the Windows command line, which will return the target ID (LUM required).

Installing a Nodelock License

- 1 To install nodelock licenses, open the `nodelock` file at `c:\Documents and Settings\All Users\Application Data\IBM\LUM`. If no `nodelock` file does exist yet, create the file using a text editor.

- 2 Normally, you will receive your license information via e-mail. In the license e-mail, you will find a text similar to the following example:

Copy the following 2 lines into your nodelock file.

```
# TransCAT: TC-qcompare, Version 1.x, gueltig bis 31.12.2012  
7db765b90080.02.81.96.00.18.00.00.00 64tkq3wfzxi2g8p49keaa "" "2"
```

Copy these two lines from the e-mail to your nodelock file and save the file.



NOTE: The nodelock file has no filename extension. Some text editors automatically add a filename extension such as .txt. Make sure that the filename has no extension. Rename the file if necessary.

Installing a Concurrent License

Concurrent licenses are generated for a specific license server and are tied to its CPU ID. When adding license keys, LUM license manager must be installed, configured and activated.

The tools and entries for the license manager are located in X:\ifor\WIN\BIN (replace X with the drive where LUM is installed).


- ❖ If you received the license certificate as an e-mail attachment, it is recommended to install the license automatically:

To install the license, save the license file on the LUM server in a directory of your choice. Enter the command `i4blt -a -f [filename]` (replace [filename] with the path and name of the license file on the LUM server).

- ❖ Alternatively, you can use the graphical user interface:
 1. Start the i4blt tool.
 2. Choose “Products” > “Single Product” to open the “Enroll” window.
 3. Click “Import” to open the import dialog. Select the license file and click “OK” to confirm.
 4. Click “OK” to close the “Enroll” window.

2.5

Starting Q-Compare in a CATIA session

To start Q-Compare in interactive mode, click the Q-Compare icon on the Q-Compare toolbar in CATIA. 

If the Q-Compare toolbar is not visible, click “Toolbars”, then click to select the “Q-Compare Toolbar” entry.



TIP: If the “Q-Compare Toolbar” entry is selected but the toolbar is not visible, the toolbar might be outside the visible area at the lower or right end of the toolbar.

3 Q-Compare Configurations

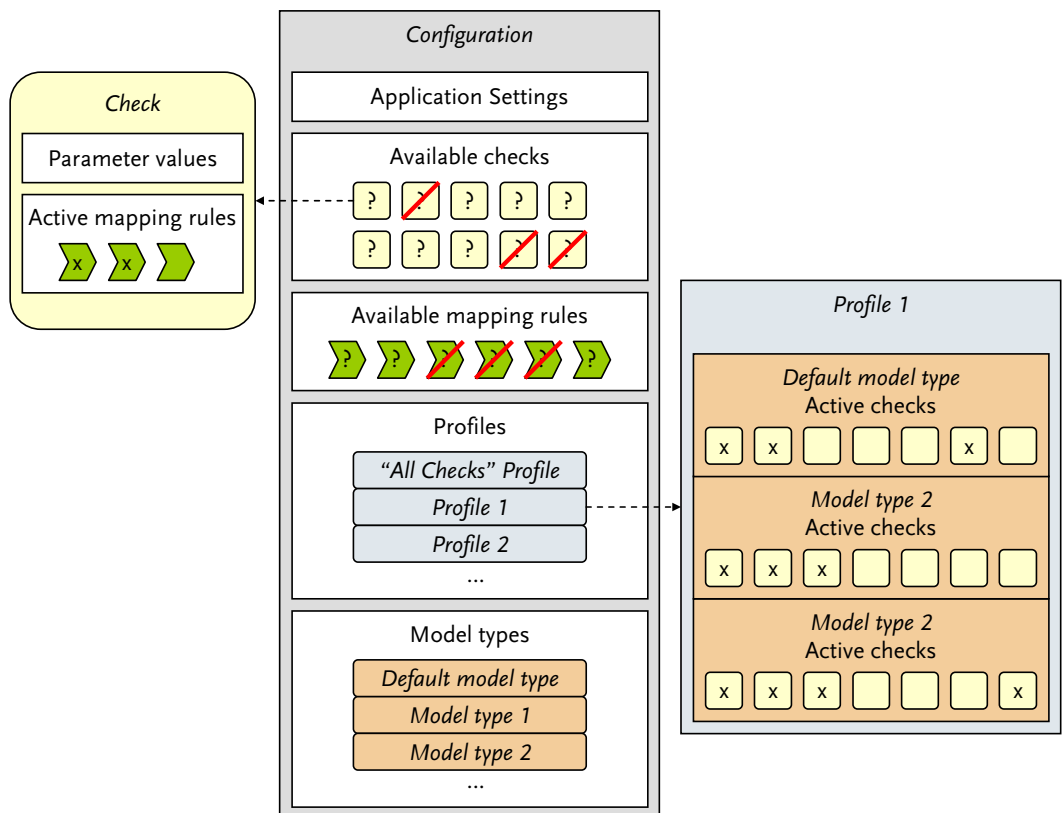
3.1 Configurations

Q-Compare settings are organized in *configurations*. A configuration defines:

- General settings for the Q-Compare application and user interface
- Available checks
- Profiles in which checks are organized
- Values of check parameters
- Model types
- Mapping information such as mapping rules

Every check available in a configuration has parameter values (if required) and uses a set of available mapping rules. A profile defines a set of checks to be used. When using model types, a single profile contains alternate sets of activated checks for each model type. Below is a graph that visualizes these relations.

From the definitions given in a configuration, Q-Compare gets the information what and how to compare and which entities of a given model to compare.







3.2 Setting up Configurations





Below is a step-by-step guide for setting up a new Q-Compare configuration.

A detailed description of the functions used in this task can be found in section 3.3 *Reference to the Q-Compare Configuration Editor* on page 13.

- 1 Start Q-Compare.
- 2 Click “Edit configurations” to open the Configuration Editor. 
- 3 Create a new configuration by clicking the black arrow on the lower right corner of the “Add configuration” button. Choose a configuration for the desired pair of document types from the flyout. 
 - ▶ A new configuration is added.
- 4 Rename the configuration by clicking the “Rename configuration” button, then change the highlighted name in the “Configurations” list box. Press [ENTER] to apply the new name. 
 - ▶ You are prompted to confirm the new name.
- 5 Set the parameters of the checks to be used. Select a check in tree view to inspect and adjust the parameters in the “Edit” box.



You can repeat this step whenever required. Note that parameter settings apply to a check throughout the configuration, regardless of model types and profiles.
- 6 Specify mapping rules if you do not want to use default mapping rules. Select a check, then click “Define Mapping for Selected Check” to display the Mapping Editor. 

In the Mapping Editor, activate or deactivate mapping rules by selecting or clearing the respective check boxes. You can disable all mapping rules or mapping rules of a certain type by selecting the respective “Disable...” check box.

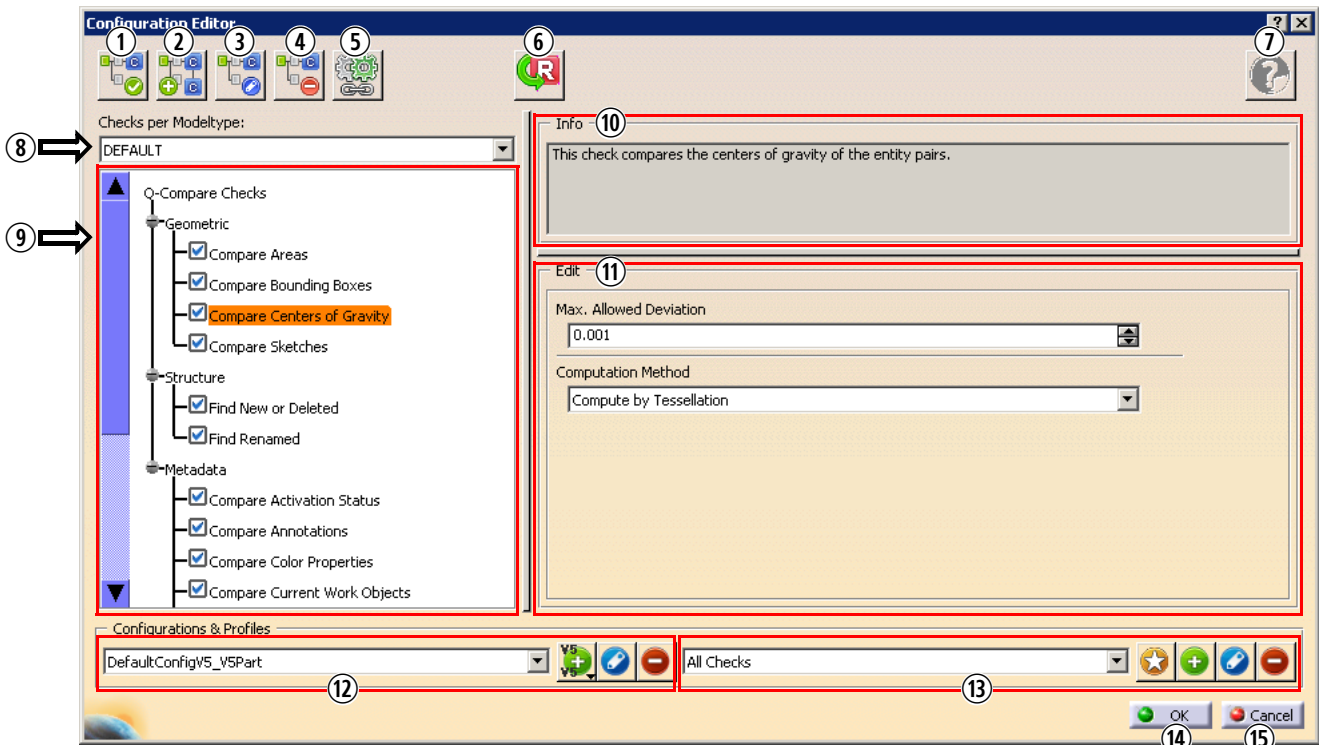
You can repeat this step whenever required. Note that the selection of mapping settings to a check throughout the configuration, regardless of model types and profiles.
- 7 To use the same check several times with different parameter settings, select the check and click “Duplicate selected check”. 
 - ▶ An additional instance of the check is added. Initially, parameter values are identical. You can set the parameters individually for each instance.
- 8 To remove unused checks, select a check and click “Remove selected check”. 






If required, you can add all removed checks again by clicking “Update check templates”.

- 9 Decide whether the configuration should to be model-type dependent. Model types can be used to automatically choose a set of checks within a profile, based on model-type rules.
 - ↗ For more informations on model types see section 8 *Model Types* on page 75.
 - ◆ To set up the configuration with the default model type only, proceed with step (10).
 - ◆ To define model types for this configuration, close the configuration editor and edit the configuration file manually. Define the model types to be used in the configuration.
 - ↗ For informations on manually editing a configuration file see section 3.4 *Manually Editing the Configuration File* on page 16.
 - ↗ For the specification of model types see the element description for *ModelTypes* on page 80.

Save the configuration file, then reopen the configuration editor and select the configuration.
- 10 Create a new profile by clicking the “Add profile” button. 
 - ▶ A new profile is added. You can add profiles whenever required.
- 11 Rename the profile by clicking the “Rename profile” button, then change the highlighted name in the “Profiles” list box. Press [ENTER] to apply the new name. 
 - ▶ You are prompted to confirm the new name.
- 12 If the configuration uses different model types, select a model type in the “Model types” list box.
- 13 Enable or disable checks to be used or ignored in this profile, respectively. Repeat this step for all available model types, if applicable.
- 14 When you have finished setting up the configuration, click “OK” to return to the Q-Compare main window.
 - ▶▶ The configuration and profiles can be used for check runs both in interactive and in batch mode.

3.3 Reference to the Q-Compare Configuration Editor



- ①  **“Enable/Disable Selected Check” button** Click to enable or disable the currently selected check.
- ②  **“Duplicate Selected Check” button** Click to create an additional instance of the currently selected check. This allows you to perform the same check with different parameter settings.
- ③  **“Rename Selected Check” button** Click to display a dialog where you can rename the currently selected check for any interface language. In the “Rename” dialog, click the list entry for a given language, then click the “Name column” of the same entry to edit the text.
- ④  **“Remove Selected Check” button** Click to remove the currently selected check from the current configuration.
- ⑤  **“Define Mapping for Selected Check” button** Click to display the Mapping Editor where you can enable or disable mapping rules for the currently selected check.

↗ For a description of the Mapping Editor see *Reference to the Mapping Editor* on page 15.



TIP: You can also select functions ① to ⑤ from a context-menu when you right-click a check in tree view.

⑥



“Update Check Templates” button Click to add an instance of every available check missing from the current configuration.



TIP: Use this function to:

- Add checks that have been removed from the configuration
- Add new checks that have become available when you have updated to a new version of Q-Compare

⑦

“Show Help” button Currently not available.

⑧

“Model Types” list box Select a model type from the list.

⑨

Tree view The tree view lists the Q-Compare checks available in the current configuration. A selected check box indicates that a check is enabled in the current configuration. The currently selected check is highlighted.

To enable or disable a check, click button ① or double-click the check box of the tree item.

⑩

“Info” box Displays a short description of the currently selected check.

⑪

“Edit” group box with controls Set the parameter values for the selected check in the current configuration.


⑫


“Configurations” combo box with buttons Select a configuration from the list.



“Add configuration” button To add a new configuration, click the black arrow on the lower right corner of the “Add configuration” button. Choose the desired type of configuration from the flyout.


Clicking the “Add configuration” button either adds a new V5/V5 Part configuration (initial state), or adds a configuration of the type that you have chosen recently from the flyout.

 **“Rename configuration” button** To rename the currently selected configuration, click this button, then change the highlighted text in the list box. To apply the text, click the button again or press [ENTER]. You are prompted to confirm the action.

 **“Delete configuration” button** To delete the currently selected configuration, click this button. You are prompted to confirm the action.


⑬ **“Profiles” combo box with buttons** Select a profile from the list.


 **“Add profile” button** Click to add a new profile.

 **“Set default profile” button** The *default profile* is used in batch runs when no other profile has been selected.

Click to set the current profile as default profile. You are prompted to confirm the action.

The white star icon indicates that the currently selected profile is the default profile; with all other profiles, the black star icon is displayed.

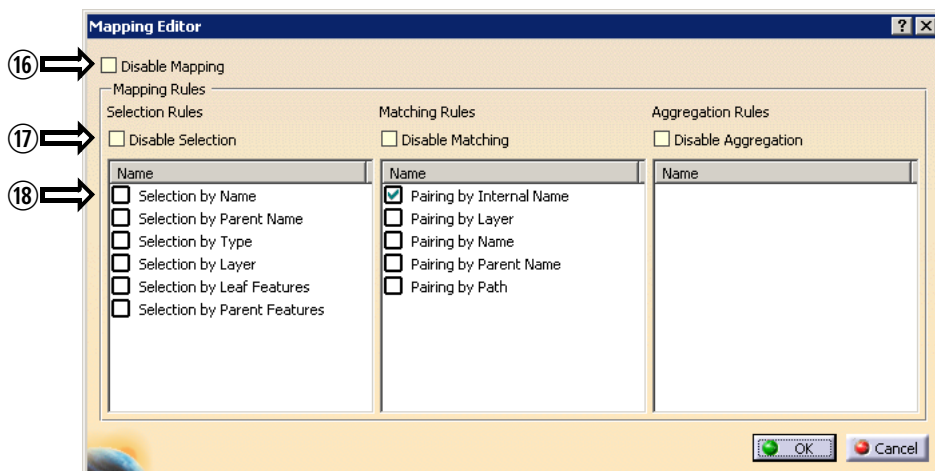
 **“Rename profile” button** To rename the currently selected profile, click this button, then change the highlighted text in the list box. To apply the text, click the button again or press [ENTER]. You are prompted to confirm the action.

 **“Delete profile” button** To delete the currently selected profile, click this button. You are prompted to confirm the action.

⑭ **“OK” button** Click to close the configuration editor.

⑮ **“Cancel” button** Click to close the configuration editor.

Reference to the Mapping Editor



Use the Mapping Editor to select which mapping rules are used to build pairs of compare and reference elements to be compared in the currently selected check.

The mapping editor lists all available mapping rules for the check. Each check has a set of default mapping rules, which is used as preset.



TIP

- If you select additional mapping rules, mapping is more specific, which will narrow down the number of entities to be compared.
- If you deselect or disable mapping rules, mapping is less specific, therefore more pairs of entities can be formed. If you entirely disable mapping (16), all possible pairs of compare and reference entities are compared with each other.

16 **“Disable Mapping” check box** Select this check box to disable all mapping rules.

↗ See also *Override All Rules* on page 35

17 **“Disable Selection”, “Disable Matching”, “Disable Aggregation” check boxes** Select a check box to disable all selection rules, all pairing rules, or all aggregation rules for the currently selected check, respectively.

↗ See also *Special Rules* on page 35

18 **“Selection by ...”, “Pairing by ...”, “Aggregation by ...” check boxes** Select to activate the respective selection rule, pairing rule, or aggregation rule. Double-click to select or clear these check boxes.

3.4 Manually Editing the Configuration File

Use an XML or text editor to edit the configuration file.

↗ For a reference to configuration files see section 10 *Quick Reference to Configuration Files* on page 77

4 Comparing Models in Interactive Mode

Interactive Mode allows you to compare the active model in the current CATIA session with another model in the same CATIA session or from the file system.





NOTE: CATIA V5 does not allow to open two files with the same filename.

4.1 Comparing Models



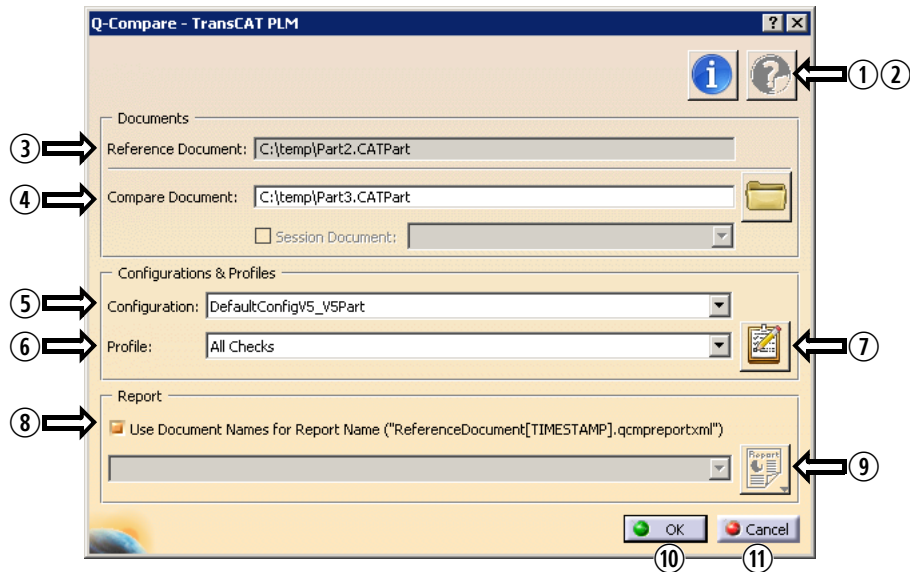
Follow these steps to compare a pair of models:



- 1 In CATIA, open the reference document.
- 2 Click the “Run Q-Compare” button on the Q-Compare toolbar. 
- 3 Select a compare document from the current CATIA session or from the file system.
 - ◆ To select a V5 model from the file system, click the “Select Document” button. 
 - ◆ To select a V5 model from the current CATIA session, activate the “Session Document” option and choose a model from the list box. This option is active by default when there are two or more models in the current CATIA session.
- 4 Choose configuration and profile.

Note that configurations work only for a certain combination of formats (e.g. V5 Part reference model with V5 CGR compare model).
- 5 Optionally you can specify a user-defined report name. To do this, deactivate “Use Document Names for Report Name” and type a name into the box below.

Otherwise Q-Compare uses the default name comprising the name of the reference document and a timestamp.
- 6 Click “OK” to compare the models.
 - ▶▶ A progress bar indicates the progress of the compare operation. When finished, the results are displayed in the analysis window.
 - ↗ For details see the *Reference to the Q-Compare Main Window* on page 18.

4.2 Reference to the Q-Compare Main Window



- ①  **“Show Info” button** Display Q-Compare version
- ② **“Show Help” button** Currently not available
- ③ **“Reference Document” text box** Displays path and name of the reference document. In interactive mode, the reference document is always the active model from the current CATIA session.
- ④ **“Compare Document” text box** Displays path and name of the compare document.
To choose a model from the file system, click the “Select Document” button.
To choose a model from the current CATIA session, activate the “Session Document” option and choose a model from the list box. This option is enabled by default when there are two or more models in the current CATIA session.
- ⑤ **“Configuration” list box** Select a check configuration from the list box. The names of the check configurations correspond to the names of the check configurations files.
- ⑥ **“Profile” list box** Select a check profile from the list box. The names of the profiles correspond to the ProfID attribute value of the respective profile definition in the configuration file.
- ⑦  **“Configuration Editor” button** Display the available configurations and their parameters.

↗ See section 3.3 *Reference to the Q-Compare Configuration Editor*

- ⑧ **“Report” check box with list box** When the “Use Document Names For Report Name” option is active, Q-Compare will use default naming. Deactivate this option to specify a user-defined filename.


For both default naming and user-defined names, the filename extension `.qcmpreportxml` is added automatically.

This is the default naming pattern used for Q-Compare reports, comprising the name of the reference model, a timestamp (year, month, day, time) in brackets and the filename extension:

```
reference-document-name[yyyymmdd_hhmmss].qcmpreportxml
```

The following example is the default report name for a model named Part5408402 created on 15 March 2010 at 14:32:48.

```
Part5408402[20100315_143248].qcmpreportxml
```

- ⑨  **“Open Report” button** Click to open the report selected in the “Report” list box. Before you can select and open a report, deactivate the “Use Document Names For Report Name” check box. Otherwise this button remains inactive.
- ⑩ **“OK” button** Click to compare the selected models with the current settings.
- ⑪ **“Cancel” button** Click to discard all changes and to close the main window.

4.3 Analyzing the Check Results

Reports

Q-Compare check results are stored in reports which can be displayed in the analysis window.

When comparing models in interactive mode, the report is opened in the analysis window after the check run has finished. You can also display existing reports in the analysis window, see *Opening an existing report for analysis* on page 22.

Pairs of Entities

Q-Compare checks which entities of reference and compare model match within a given tolerance.

In the analysis window, the “Pairs” list displays a node for each matching pair of entities that has been found. Left of the double arrow, the name of the reference entity is given, right of the double arrow the name of the compare entity. The node has a color bullet which indicates the pair’s check status.

● Multi-sections Surface.29<=>Fill.40
● Multi-sections Surface.29<=>Join.4
● Multi-sections Surface.29<=>Join.6

If no matching counterpart has been found, a label “No Compare element found” or “No reference element found” is used instead of the missing entity name.

● Line.42<=>[NO COMPAREELEMENT FOUND]
● Line.43<=>[NO COMPAREELEMENT FOUND]

Where applicable, sub-elements are displayed with color their respective color bullets while the group element indicates the combined check result. Additional information is displayed in branches of the analysis tree without color bullets.

● Group_1 <=> Group_2
- Detail information
- Detail information
- Detail information
● Element_1 <=> Element_1
● Element_2 <=> Element_2



Analyzing the check results

The analysis window provides a structured view of the check results. To analyze check results, you should basically proceed like this:

- 1 Click an item on the “Checks” list to display the pairs of entities that have been attributed to each other for this check. Use the list box above to filter the checks by check status.
 - ▶ The “Pairs” list displays a node for each pair of entities that has been checked.
- 2 On the “Pairs” list, select a pair of entities.
 - ▶ The check results for the selected pair of entities are displayed in the “Check Summary” and “Pair Summary” text boxes.

Check status

For each check, the check status is indicated by a color code:


Color	Check status	Description
Green	Checked successfully	No differences between reference and compare document
Red	Different	Differences between reference and compare document in all pairs
Yellow	Partly different	Differences between reference and compare document in some pairs
Grey	Not checked	No pairs of entities were found to which the check would apply
Blue	General error	Check could not be performed, e.g. when one of the documents could not be read.

Pair check status

For each pair of entities, the check status is indicated by a color code:

Color	Check status	Description
Green	Equal	Matching entities, no differences
Red	Different	Differences between matching entities
Blue	General error	Check could not be performed, e.g. when one of the documents could not be read.

Fine Analysis

You can visualize geometrical differences between reference and compare model using the *Fine Analysis* tool. With the “Fine Analysis” button activated, click on a sub-node in the “Pairs” list to display marking elements for the differences between matching entities in the reference and compare document directly in the CATIA geometry area. 

The marking elements are added temporarily and do not change the model. When selecting a different sub-node or when deactivating the *Fine Analysis* tool, the marking elements are cleared.




NOTE: *Fine Analysis* always visualizes the differences in the active CATIA model even if the report in the analysis window does not correspond to the current model.

When using *Fine Analysis*, make sure you are using the intended combination of CATIA model and Q-Compare report.



Opening an existing report for analysis

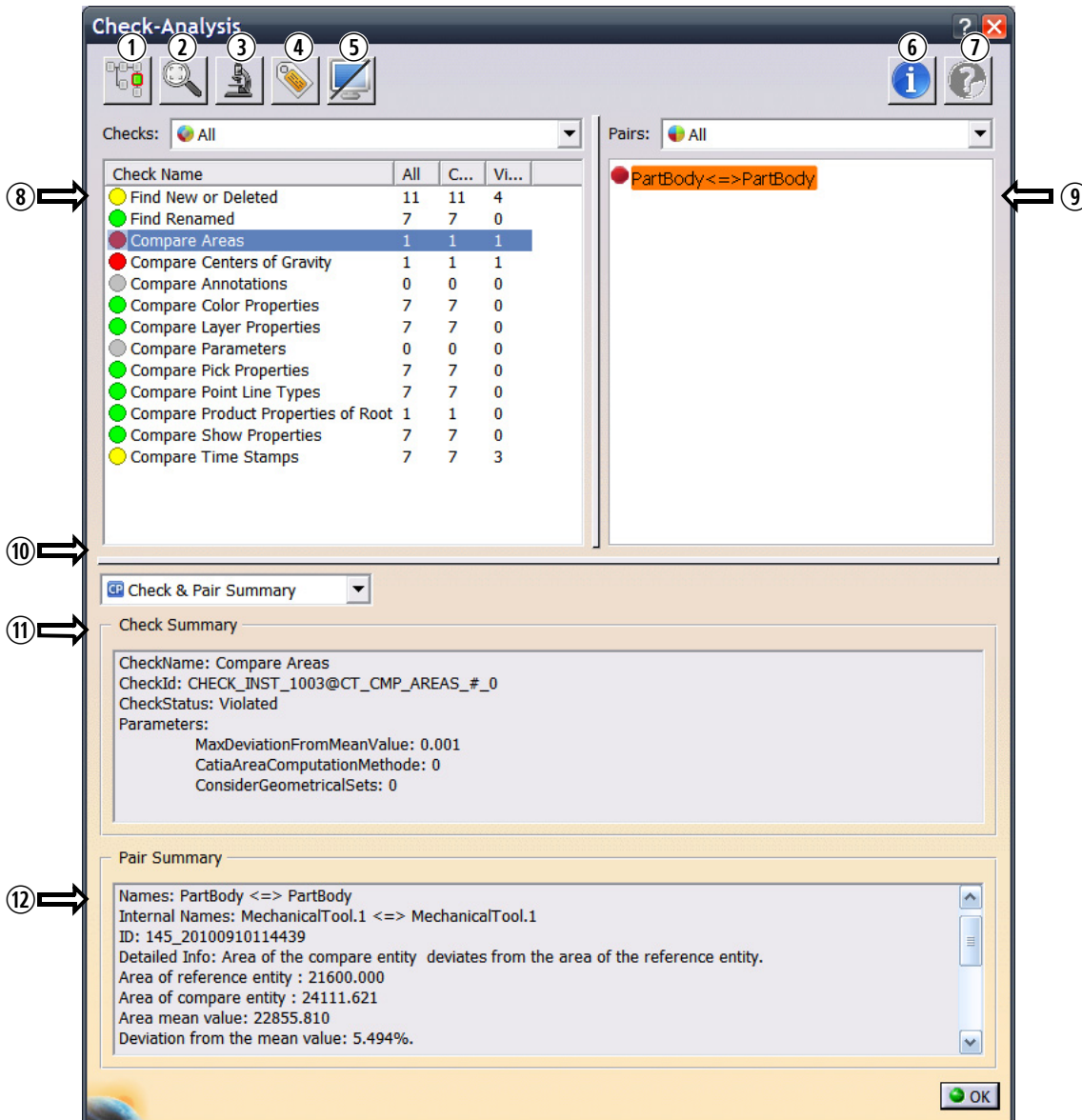
Once you have compared two models, the report is stored as a file. To analyze the same models without comparing them again, you can open the analysis window with an existing report.

- 1 When you want to use Q-Compare's built-in tools for visual analysis (*Fine Analysis*), make sure the reference model is the active model in the CATIA session.
 - 2 Click the "Run Q-Compare" button on the Q-Compare toolbar. 
 - 3 Deactivate the "Use Document Names for Report Name" option. Then select the report from the list box.
 - 4 Click "Open Report" to view the report in the analysis window.
- ▶▶ The results are displayed in the analysis window.



4.4 Reference to the Q-Compare Analysis Window

The analysis window lists all checks from the check profile and the results for the pairs of models that have been checked.



- ① **“Center Graph” button** Automatically center the CATIA specification tree vertically on the reference element of the selected entity pair.
- ② **“Zoom” button** Automatically zoom the model in CATIA onto the reference element of the selected entity pair.
- ③ **“Fine Analysis” button** Visualize check results directly in the CATIA geometry area.
↗ See *Fine Analysis* on page 21

- ④ **“Markup” button** Add a feature containing all Q-Compare markup elements to the CATIA model.
- ⑤ **“Transparency” button** Use transparency to reveal covered elements in the CATIA geometry area. Model data remains unchanged; the display will be reset when closing the window.
- ⑥ **“Info” button** Display general information about the check (configuration and profile name, model type, session settings, overall check status).
- ⑦ **“Help” button** Currently not implemented.
- ⑧ **“Checks” list** List of all checks that have been performed, as specified in the check profile. The color bullet with each item indicates the check status.
Click an item to display the check details and the affected pairs of entities.
↗ See also *Check status* on page 21
Use the list box above to filter the checks list by check status.
- ⑨ **“Pairs” list** List of the pairs of entities to which the check selected in ⑧ does apply. The color bullet indicates the check status.
↗ See also *Check status* on page 21
Click an item to display the check details and the affected pairs of entities. If available, click a sub-node to display a detailed description for the given aspect.
To filter the pairs list by check status, use the list box above.
- ⑩ **“Display summary” list box** Display or hide the check or pair summary, or both.
- ⑪ **“Check summary” text box** Displays the check status and the check parameters specified in the check profile for the check selected in the “Checks” list.
- ⑫ **“Pair summary” text box** Displays the check status and lists the check results in detail for the pair of entities or a sub-node selected in the “Pairs” list.
- ⑬ **“OK” button** Click to close the analysis window.

5 Comparing Models in Batch Mode

Batch Mode allows you to compare one or more pairs of models from the command line.

Follow these steps to compare models in batch mode:

- 1 Generate a default configuration file:

```
TCACmpCoreBatch.exe -c {V5:V5Part | V5:V5Drawing | V5:V5Product | V5CGR:V5CGR} %PATH_AND_FILENAME_OF_CONFIG_XMLFILE%
```

Choose the formats of the models to be compared:

V5:V5Part to compare V5 parts with each other

V5:V5Drawing to compare V5 drawings with each other

V5:V5Product to compare V5 products with each other

V5CGR:V5CGR to compare CGR models with each other

%PATH_AND_FILENAME_OF_CONFIG_XMLFILE% is the path and name of the configuration file to be created.

Example

```
TCACmpCoreBatch.exe -c V5:V5Part c:\tmp\qcmp\configV5V5.qcmpconfigxml
```

- ▶ A default configuration file is created, which checks a V5 compare document against a V5 reference document. All available checks are enabled.
- 2 Adjust the specifications in the configuration file.
 - ↗ See section 3.2 *Setting up Configurations* on page 11.
 - 3 In the input file, specify the desired configuration, profile and pairs of documents to be compared. A sample input file is included with Q-Compare.
 - 4 To run Q-Compare in batch mode, the Q-Compare batch process is called by the CATIA batch executable.

This is the command for the Q-Compare batch process. Note that this command cannot be run independently.

```
TCACmpCoreBatch.exe -i %PATH_TO_INPUTFILE% -o %PATH_TO_OUTPUTFILE%
```

%PATH_TO_INPUTFILE% is the path and name of the input file.

%PATH_TO_OUTPUTFILE% is the path and name of the output file.

This is the composed command for a Q-Compare batch run called by the CATIA batch executable. Use this command at the Windows command line or in a command file:

```
%CATIA_INSTALL_PATH%\code\bin\CATSTART.exe -run "TCACmpCoreBatch.exe -i  
%PATH_TO_INPUTFILE% -o %PATH_TO_OUTPUTFILE%" -env %ENV_FILE% -direnv  
%ENV_DIR%
```

%CATIA_INSTALL_PATH% is the path to the CATIA V5 installation to be used.

%ENV_FILE% is the name of the CATIA environment file.

%ENV_DIR% is the directory of the CATIA environment file.

Example

```
C:\CatiaV5\B19\win_b64\code\bin\CATSTART.exe -run "TCACmpCoreBatch.exe  
-i c:\tmp\qcmp\inputV5V5.qcmpinputxml -o  
c:\tmp\qcmp\configV5V5.qcmpoutputxml" -env %ENV_FILE% -direnv %ENV_DIR%
```

6 Mapping

6.1 Description

Mapping Mapping identifies pairs of correlating entities. These pairs of entities constitute the data basis that will be checked.

The process of mapping is an automated sequence comprising the following steps:

- Retrieve the allowed element types for the checks
- Filter elements according to custom selection rules
- Build pairs according to custom pairing rules

When mapping has finished, the resulting pairs of entities will be checked for differences, which is the second major stage when comparing models.

Mapping Rules Mapping rules control selection, pairing and aggregation of entities. They apply to individual checks.

You can define custom mapping rules for each check. If no user-defined mapping rules have been defined, standard mapping rules will apply for each check (see the Checks and Parameters section).

If you do not want to apply any mapping rules at all, you can set a special rule which overrides all rules. This will result in a list of all available permutations for each check. (See *Special Rules* on page 35.)

Mapping rules are connected with logical AND, i.e. all rules must be fulfilled for a pair of elements to be part of the selection.

**Special case:
CATDrawings**

- In CATDrawings, views in different sheets may have identical internal names. Likewise, drawing elements in different views may have identical internal names. Pairing by path generally leads to more concise results than pairing by name and requires less processing time. Therefore the *Pair by Path* mapping rule is enabled by default for drawing checks. You can disable this rule, if required.
- Generally, it is not necessary to compare sheets or views of different types (e.g. sheets and detail sheets, views and detail views). Therefore the *Pair by Type* mapping rule is enabled by default for drawing checks. You can disable this rule, if required.

6.2 Reference to Mapping Rules

6.2.1 Entity Selection Rules

6.2.1.1 Select by Element Name

Description Elements are selected only if their names match the specified naming pattern.
If an element has no name, the parent name is used.

Rule Type ID MR_EM_HAS_NAME

Parameters

Name	Description	Values	Default
AllowedNames	Naming pattern	Regular expression	".*"

6.2.1.2 Select by Element Type

Description Elements are selected only if they are of a specified type.
This does not override the allowed types for the check.

Rule Type ID MR_ES_HAS_TYPE

Parameters

Name	Description	Values	Default
AllowedTypes	Name type strings. Separate multiple values by semicolon. Example: "ET_3D_BODY;ET_3D_SHELL"	ET_UNKNOWN: all types ET_3D_BODY: solids ET_3D_SHELL: shells	" "

6.2.1.3 **Select Visible Elements**

Description	Elements are selected only if they are visible. This implies that all parent elements must be visible, too, as visibility is inherited. This rule is ignored if the CAD system does not provide this property.
Rule Type ID	MR_ES_IS_VISIBLE
Do not combine with	<ul style="list-style-type: none"> • Select Invisible Elements
Parameters	No parameters available.

6.2.1.4 **Select Invisible Elements**

Description	Elements are selected only if they are invisible. This implies that the element itself or at least one of its superordinate elements (ancestors) must be invisible, as visibility is inherited. This rule is ignored if the CAD system does not provide this property.
Rule Type ID	MR_ES_IS_NOT_VISIBLE
Do not combine with	<ul style="list-style-type: none"> • Select Visible Elements
Parameters	No parameters available.

6.2.1.5 **Select Leaf Feature**

Description	Elements are selected only if they are leaf features, i. e. elements without child elements.
Rule Type ID	MR_ES_IS_LEAF_FEATURE
Parameters	No parameters available.

6.2.1.6 **Select Parent Feature**

Description	Elements are selected only if they are parent features, i. e. have child elements.
Rule Type ID	MR_ES_IS_PARENT_FEATURE
Parameters	No parameters available.

6.2.1.7 Select by Parent Name

Description Elements are selected only if their respective parent features match the specified naming rule.
Features without a parent feature are not selected.

Rule Type ID MR_ES_HAS_PARENT_NAME

Parameters

Name	Description	Values	Default
AllowedNames	Naming pattern	Regular expression	".*"

6.2.1.8 Select by Parent Type

Description Elements are selected only if their respective parent element has the specified type.

Rule Type ID MR_ES_HAS_PARENT_TYPE

Parameters

Name	Description	Values	Default
AllowedTypes	Parent name type strings. Separate multiple values by semicolon. Example: "ET_3D_BODY;ET_3D_SHELL"	ET_UNKNOWN: all types ET_3D_BODY: solids ET_3D_SHELL: shells	" "

6.2.1.9 Select by Layer

Description Elements are selected only if they are on the same layer.
Features that are not on any layer are not selected.

Rule Type ID MR_ES_ISON_LAYERS

Parameters

Name	Description	Values	Default
AllowedLayers	Layer number. Separate multiple values by semicolon. Example: "1;23;295"	Integer values	" "

6.2.1.10 Select by Custom View

Description Elements are selected only if they are included in the same custom view.
Features that are not included in any view are not selected.

Rule Type ID MR_ES_ISIN_CUSTOM_VIEW

Parameters

Name	Description	Values	Default
UseActiveCustomView	Use only the active custom view/ layer filter. All other custom views/layer filters are ignored.	1: yes 0: no	"1"
AllowedCustomViews	Name strings. Separate multiple values by semicolon. Example: "DMU (DMU);Tooling (Werkzeugbau)" This parameter is ignored for UseActiveCustomView=1.	String	" "

6.2.1.11 Select by Drawing Sheet

Description Drawing elements are selected only if they are included in the same drawing sheet.
This mapping rule only applies to CATDrawings.

Rule Type ID MR_ES_ISIN_DRAWING_SHEETS

Parameters

Name	Description	Values	Default
SelectActiveSheet	Use only active sheets. If this parameter is enabled (value 1), the other parameters of this rule will be ignored.	1: yes 0: no	0
SelectDetailSheet	Use detail sheets	1: yes 0: no	1
SelectNonDetailSheet	Use non-detail sheets	1: yes 0: no	1

6.2.1.12 Select by Drawing View

Description Drawing elements are selected only if they are included in the same drawing view.
This mapping rule only applies to CATDrawings.

Rule Type ID MR_ES_ISIN_DRAWING_VIEWS

Parameters

Name	Description	Values	Default
SelectActiveView	Use only active views. If this parameter is enabled (value 1), the other parameters of this rule will be ignored.	1: yes 0: no	0
SelectBackgroundView	Use background views	1: yes 0: no	1
SelectWorkingView	Use working views	1: yes 0: no	1

6.2.2 Element Pairing Rules

6.2.2.1 Pair by Name

Description Elements are paired only if their names (display names) are equal.

Rule Type ID MR_EM_EQUAL_NAMES

Parameters

Name	Description	Values	Default
MatchSimilarNames	<p>Expression both reference name and compare name must match.</p> <p>You can use the placeholders REFERENCE_NAME and COMPARE_NAME for the reference and compare name, respectively.</p> <p>When the expression is an empty string (""), both names must be identical.</p> <p>Example: The regular expression "^REFERENCE_NAME.*\$" pairs elements if both names begin with the reference name, followed by an arbitrary suffix.</p>	Regular Expression	" "

6.2.2.2 **Pair by Type**

Description Elements are paired only if their element types are equal.

Rule Type ID MR_EM_EQUAL_TYPES

Parameters No parameters available.

6.2.2.3 **Pair by Path**

Description Elements are paired only if they have the same paths in the respective document structure. Paths are specified from root to element.

Rule Type ID MR_EM_EQUAL_PATHS

Parameters No parameters available.

6.2.2.4 **Pair by Internal Name**

Description Elements are paired only if their internal names are equal.

Rule Type ID MR_EM_EQUAL_INTERNAL_NAMES

Parameters No parameters available.

6.2.2.5 **Pair by Parent Name**

Description Elements are selected only if their parent have equal names (display names).

Rule Type ID MR_EM_EQUAL_PARENT_NAMES

Parameters No parameters available.

6.2.2.6 **Pair by Layer**

Description Elements are paired only if they are on the same layer.

Rule Type ID MR_EM_EQUAL_LAYERS

Parameters No parameters available.

6.2.2.7 Pair by Custom View

Description Elements are paired only if they are in the same custom view.

Rule Type ID MR_EM_EQUAL_CUSTOM_VIEWS

Parameters No prearrangers available.

6.2.3 Aggregation Rules

6.2.3.1 Aggregate All

Description All pairs of elements are aggregated.

Rule Type ID MR_AB_ALL

Parameters No parameters available.

6.2.3.2 Aggregate by Name

Description Pairs of elements are aggregated if they have the same name.
If an element has no name, the parent name is used.

Rule Type ID MR_AB_SAME_NAMES

Parameters

Name	Description	Values	Default
MatchSimilarNames	<p>Expression both reference name and compare name must match.</p> <p>You can use the placeholders REFERENCE_NAME and COMPARE_NAME for the reference and compare name, respectively.</p> <p>When the expression is an empty string (""), both names must be identical.</p> <p>Example: The regular expression "^REFERENCE_NAME.*\$" aggregates all elements beginning with the reference name, followed by an arbitrary suffix.</p>	Regular Expression	" "

6.2.3.3 **Aggregate by Path**

Description Pairs of elements are aggregated if the elements have the same paths in the document structure.

Rule Type ID MR_AB_SAME_PATHS

Parameters No parameters available.

6.2.3.4 **Aggregate by Layer**

Description Pairs of elements are aggregated if they are on the same layer.

Rule Type ID MR_AB_SAME_LAYERS

Parameters No parameters available.

6.2.4 **Special Rules**

6.2.4.1 **Override All Rules**

Description This rule disables all mapping rules. Pairs are formed from all permutations.

Rule Type ID MR_OVERRIDE_ALL

Parameters No parameters available.

6.2.4.2 **Override Entity Selection Rules**

Description This rule disables all entity selection rules, including the internal default aggregation rules. No element filters apply. All elements are forwarded to entity matching.

Rule Type ID MR_OVERRIDE_SELECTION

Parameters No parameters available.

6.2.4.3 **Override Entity Matching Rules**

Description This rule disables all entity selection rules, including the internal default aggregation rules. All pairs of entities are forwarded to the check stage.

Rule Type ID MR_OVERRIDE_MATCHING

Parameters No parameters available.

6.2.4.4 Override Aggregation Rules

Description	This rule disables all aggregation rules, including the internal default aggregation rules. No elements are aggregated.
Rule Type ID	MR_OVERRIDE_AGGREGATION
Parameters	No parameters available.

7 Checks and Parameters

7.1 Geometrical Checks

7.1.1 Compare Areas

Availability • Compare V5 Parts/Products with V5 Parts/Products

Description This check compares the surface area of shells and solids from the reference model with the surface area of shells and solids from the compare model.

Parameters

Name	Description	Values	Default
MaxDeviationFromMeanValue	<p>Maximum allowed percentage deviation from the mean area</p> $\text{Mean Area } \bar{A} = \frac{A_{\text{entity, cmp}} + A_{\text{entity, ref}}}{2}$ $\text{Deviation} = \left \frac{A_{\text{Entity}} - \bar{A}}{\bar{A}} \right \cdot 100\%$	Real number (percentage)	0.001
CatiaAreaComputationMethod	Method for determining the surface area of V5 entities.	<p>1: Use built-in CATIA function</p> <p>0: Calculate from tessellated entities</p>	0

Mapping Rules **Entity selection rules.** Select by Element Name. Select by Element Type . Select Visible Elements. Select Invisible Elements. Select Leaf Feature. Select by Parent Name. Select by Layer

Entity matching rules. Pair by Name. Pair by Path . Pair by Internal Name . Pair by Parent Name . Pair by Layer

Entity aggregation rules. None

Special rules. Override All Rules. Override Entity Selection Rules. Override Entity Matching Rules

Check Status

Value	Description
Equal	The area of reference entities and compare entities/aggregates are equal.
Different	The area of reference entities and compare entities/aggregates are not equal.
Error	The check could not be completed due to an error.

Result Values

Name	Description
RefAreas	Area of the reference entity [mm ²]
CmpArea	Area of the compare entity [mm ²]
MeanValue	Mean value
Deviation	Percentage deviation from mean value

7.1.2 Compare Bounding Boxes

Availability

- Compare V5 Parts with V5 Parts

Description

This check compares the bounding boxes of entities in the compare and reference model. For geometrical sets, a bounding box for the entire geometrical set is calculated.

Parameters

None

Mapping Rules

Entity selection rules Select by Element Name, Select by Element Type, Select Visible Elements, Select Invisible Elements, Select Leaf Feature, Select Parent Feature, Select by Parent Name,

Entity matching rules Pair by Name, Pair by Internal Name

Entity aggregation rules None

Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules

Check Status

Value	Description
Equal	The bounding boxes of reference entities and compare entities are equal.
Different	The bounding boxes of reference entities and compare entities are not equal.
Error	The check could not be completed due to an error.

Result values

Name	Description
Ref_Xmin Ref_Ymin Ref_Zmin	Coordinates (x, y, z) of the lower corner point for the reference entity. Example <Ref_Xmin>12.34</Ref_Xmin>
Ref_Xmax Ref_Ymax Ref_Zmax	Coordinates (x, y, z) of the upper corner point for the reference entity. Example <Ref_Xmax>56.78</Ref_Xmax>
Cmp_Xmin Cmp_Ymin Cmp_Zmin	Coordinates (x, y, z) of the lower corner point for the compare entity. Example <Cmp_Xmin>12.34</Cmp_Xmin>
Cmp_Xmax Cmp_Ymax Cmp_Zmax	Coordinates (x, y, z) of the upper corner point for the compare entity. Example <Ref_Xmax>56.78</Ref_Xmax>

7.1.3 Compare Centers of Gravity

Availability • Compare V5 Parts/Products with V5 Parts/Products

Description This check compares the centers of gravity of solids from the reference model with the centers of gravity of solids from the compare model.

Parameters

Name	Description	Values	Default
MaxAllowedDeviation	Maximum allowed distance [mm] between centers of gravity	Real number	0.001
CatiaCoGComputationMet hode	Method for determining the center of gravity	1: Use built-in CATIA function 0: Calculate from tessellated entities	1

Mapping Rules

Entity selection rules Select by Element Name, Select by Element Type , Select Visible Elements, Select Invisible Elements, Select Leaf Feature, Select by Parent Name, Select by Layer

Entity matching rules Pair by Name, Pair by Path , Pair by Internal Name , Pair by Parent Name , Pair by Layer

Entity aggregation rules None

Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules

Check Status

Value	Description
Equal	The area of reference entities and compare entities are equal.
Different	The area of reference entities and compare entities are not equal.
Error	The check could not be completed due to an error.

Result values

Name	Description
RefCoG_X RefCoG_Y RefCoG_Z	Coordinates (x, y, z) of center of gravity for the reference entity. ----- Example <RefCog_X>12.34</RefCog_X> -----
CmpCoG_X CmpCoG_Y CmpCoG_Z	Coordinates (x, y, z) of center of gravity for the reference entity. ----- Example <CmpCog_X>56.78</CmpCoG_X> -----
Deviation	Distance between the centers of gravity of the reference and compare entity

7.1.4 Compare Drawing View's Generated Geometry

Availability • Compare V5 Drawings with V5 Drawings

Description This check compares properties of views with generated geometry in the reference and compare document.

The following properties can be checked:

- Pointed document, i.e. a part or product
- Linked element. For parts, this is a *Geometrical Set* or *Solid Body*; for products, this is a part/product component
- Number of generated geometry elements
- Bounding box of generated geometry

Parameters

Name	Description	Values	Default
CheckPointedDocument	Check pointed document	1: yes 0: no	1
CheckLinkToElement	Check linked element	1: yes 0: no	1
CheckNumber	Check number of generated geometry elements	1: yes 0: no	1
CheckBoundingBox	Check bounding box of generated geometry	1: yes 0: no	1
ToleranceForBoundingBox	Tolerance within bounding boxes are considered equal		1e-6

Mapping Rules **Entity selection rules.** Select by Element Name. Select by Element Type. Select by Drawing Sheet

Entity matching rules. Pair by Name. Pair by Type. Pair by Path. Pair by Internal Name. Pair by Parent Name

Entity aggregation rules. None

Special rules. Override All Rules. Override Entity Selection Rules. Override Entity Matching Rules

Check Status

Value	Description
Equal	All property values are equal.
Different	At least one property value is not equal.
Error	The check could not be completed due to an error.

Result values

Name	Description
RefGenerativeStatus	Reference view is a generative view (“yes” or “no”)
RefPointedDocument	Path of pointed document for the reference view, or one of the following codes: NO_POINTED_DOCUMENT: No pointed document available, as the view is no generative view. POINTED_DOCUMENT_NOT_FOUND: The pointed document for the generative view has not been found.
RefLinkToElement	Path of linked element for the reference view, or one of the following codes: NO_LINK_TO_FEATURE: No linked feature available, as the view is no generative view. LINK_TO_FEATURE_NOT_FOUND: The linked feature has not been found.
RefNumber	Number of generated geometry elements in the reference view
RefBoundingBox	Bounding box of generated geometry in the reference view
CmpGenerativeStatus	Compare view is a generative view (“yes” or “no”)
CmpPointedDocument	Path of pointed document for the compare view
CmpLinkToElement	Path of linked element for the compare view
CmpNumber	Number of generated geometry elements in the compare view
CmpBoundingBox	Bounding box of generated geometry in the compare view

7.1.5 Compare Sketches

Availability • Compare V5 Parts with V5 Parts

Description This check compares sketches in the compare and reference model regarding their constraints, support planes and geometrical sub-elements.

Inside the sketches, elements are compared regarding the following properties:

- Constraints: name, internal name/path, type, active flag, value, and elements
Elements referenced by constraints are in turn compared regarding the following properties: name, internal name/path, and type.
- Support planes: name, internal name/path, and type
- Geometrical sub-elements: name, internal name/path, type, and geometrical data (only certain types, see below).

The following types of geometrical elements can be compared: *2DPoint*, *2DLine*, *2DCircle*, *2DSplineCurve*, *2DEllipse*, *2DParabola*, *2DHyperbola*, *2DOffsetCurve*, *2DConnectCurve*, *2DPolyline*, *2DConicCurve*, *R6IntersectedGeometrySet*, *R7IntersectedGeometrySet*, *R6ProjectedGeometrySet*, *R7ProjectedGeometrySet*, *R6SilhouetteGeometrySet*, *R7SilhouetteGeometrySet*, *R6Imported3DGeometry*, *R7Imported3DGeometry*.

Geometrical sub-elements of the following types are also compared regarding their geometrical data: *2DPoint*, *2DLine*, *2DCircle*, *2DSplineCurve*, *2DEllipse*, *2DParabola*, *2DHyperbola*, *2DConnectCurve*, *2DPolyline*, *2DConicCurve*.

Parameters

Name	Description	Values	Default
CheckUsedConstraints	Check constraints	1: yes 0: no	1
CheckPlaneDefinitions	Check support planes	1: yes 0: no	1
CheckGeometricalSubelements	Check geometrical sub-elements	1: yes 0: no	1
WhichNameToCheck	Type of attribute name to be checked	0: Display Name 1: Internal Name	0

Mapping Rules

Entity selection rules Select by Element Name, Select by Element Type, Select Visible Elements, Select Invisible Elements, Select Leaf Feature, Select Parent Feature, Select by Parent Name, Select by Layer

Entity matching rules Pair by Name, Pair by Path, Pair by Internal Name, Pair by Parent Name, Pair by Layer

Entity aggregation rules None

Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules

Check Status

Value	Description
Equal	The sketches in the reference and compare models are equal with respect to all compared properties.
Different	The sketches in the reference and compare models are not equal with respect to one or more compared properties.
Error	The check could not be completed due to an error.

Result values

Name	Description
numEqualConstr	Number of equal constraints
numDifferentConstr	Number of different constraints
numMissingConstrOnRef	Number of missing constraints in the reference sketch
numMissingConstrOnCmp	Number of missing constraints in the compare sketch
supportPlaneEquality	Equality of the support planes (“yes”: equal, “no”: not equal)
numEqualSubElem	Number of equal sub-elements
numDifferentSubElem	Number of different sub-elements
numMissingSubElemOnRef	Number of missing sub-elements in the reference sketch
numMissingSubElemOnCmp	Number of sub elements missing in the compare sketch

7.1.6 Compare Tessellations

Availability • Compare V5 CGR with V5 CGR in batch mode

Description This check compares tessellated representations (CGR) of the compare and reference model.

Points are distributed on the tessellated representation from the compare model and projected onto the tessellation from the reference model, and vice versa.

Parameters

Name	Description	Values	Default
BelongingTolerance	Maximum distance [mm] between points to form a possible pair of reference/compare points	Real number	0.1
IdenticalTolerance	Distance [mm] within which reference/compare points are considered identical	Real number	0.02
TrianglesInnerPointsDefMode	Discretization points for every triangle	0: vertices 1: vertices and center 2: vertices, center and center of edges	0
WhichLODDefMode	LOD of the tessellation to which the reference wire is compared	0: smoothest 1: roughest 2: use LODNumber	0
LODNumber	LOD number of the tessellation to which the reference wire is compared (only for WhichLODDefMode = 2).	Integer number	1

Mapping Rules **Entity selection rules.** Select by Element Name. Select Leaf Feature. Select Parent Feature. Select by Parent Name.

Entity matching rules. Pair by Name

Entity aggregation rules. None

Special rules. Override All Rules. Override Entity Selection Rules. Override Entity Matching Rules

Check Status

Value	Description
Equal	The tessellated reference and compare entities do match.
Different	The tessellated reference and compare entities do not match.
Error	The check could not be completed due to an error.

Result Values

Name	Description
numPointsToProjectOnRef	Number of points used for projection onto the compare tessellation
numPointsToProjectOnCmp	Number of points used for projection onto the reference tessellation
numPointsTooMuchDistance	Number of pairs of reference/compare points whose distance is larger than the identical tolerance
MaxDistance	Maximum distance between reference point and compare point.
numMissingPointsOnRef	Number of points on the reference entity for which no counterpart on the compare entity has been found
numMissingPointsOnCmp	Number of points on the compare entity for which no counterpart on the reference entity has been found

7.1.7 Compare Transformation Matrices

Availability • Compare V5 Products with V5 Products

Description This check compares the transformation matrices of reference and compare entities.

Parameters

Name	Description	Values	Default
whichMatrix	Type of transformation matrix to compare: relative, resulting (absolute), or both	0: Relative 1: Resulting 2: Both	2
ComparissonTolerance	Tolerance for matrix elements within which transformation matrices are considered equal	Real number	1e-6

Mapping Rules

Entity selection rules Select by Element Name, Select by Element Type , Select Visible Elements, Select Invisible Elements, Select Leaf Feature, Select Parent Feature, Select by Parent Name, Select by Layer

Entity matching rules Pair by Name, Pair by Path , Pair by Internal Name , Pair by Parent Name , Pair by Layer

Entity aggregation rules None

Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules

Check Status

Value	Description
Equal	The corresponding transformation matrices of reference and compare entities are equal.
Different	The corresponding transformation matrices of reference and compare entities are not equal.
Error	The check could not be completed due to an error.

Result values

Name	Description
RefRelativeTrafoMatrix	Relative transformation matrix for reference entity
RefRelativeTranslVector	Relative translation vector for reference entity
RefResultingTrafoMatrix	Resulting transformation matrix for reference entity
RefResultingTranslVector	Resulting translation vector for reference entity
CmpRelativeTrafoMatrix	Relative transformation matrix for compare entity
CmpRelativeTranslVector	Relative translation vector for compare entity
CmpResultingTrafoMatrix	Resulting transformation matrix for compare entity
CmpResultingTranslVector	Resulting translation vector for compare entity

7.2 Metadata Checks

7.2.1 Compare Activation Status

Availability	• Compare V5 Parts/Products with V5 Parts/Products
Description	This check compares the activation status of matching entities in the reference and compare model.
Parameters	None
Mapping Rules	<p>Entity selection rules Select by Element Name, Select by Element Type , Select Visible Elements, Select Invisible Elements, Select Leaf Feature, Select Parent Feature, Select by Parent Name, Select by Layer</p> <p>Entity matching rules Pair by Name, Pair by Type (forced rule), Pair by Path, Pair by Internal Name, Pair by Parent Name, Pair by Layer</p> <p>Entity aggregation rules None</p> <p>Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules</p>

Check Status

Value	Description
Equal	The activation status is the same for all matching compare/reference entities.
Different	The activation status is not the same for all matching compare/reference entities.
Error	The check could not be completed due to an error.

Result values

Name	Description
RefActivStat	Activation status of the reference entity
CmpActivStat	Activation status of the compare entity

7.2.2 Compare Annotations

Availability	<ul style="list-style-type: none"> Compare V5 Parts/Products with V5 Parts/Products
Description	This check compares the text content of annotations of matching entities in the reference and compare model.
Parameters	None
Mapping Rules	<p>Entity selection rules Select by Element Name, Select by Element Type, Select Visible Elements, Select Invisible Elements, Select Leaf Feature, Select Parent Feature, Select by Parent Name, Select by Layer</p> <p>Entity matching rules Pair by Name, Pair by Path , Pair by Internal Name , Pair by Parent Name , Pair by Layer</p> <p>Entity aggregation rules None</p> <p>Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules</p>

Check Status

Value	Description
Equal	The text content of annotations of matching entities are equal.
Different	The text content of annotations of matching entities/aggregates are equal.
Error	The check could not be completed due to an error.

Result values

Name	Description
RefText	Text content of the reference element
CmpText	Text content of the compare element

7.2.3 Compare Color Properties

- Availability**
- Compare V5 Parts/Products with V5 Parts/Products
 - Compare V5 Drawings with V5 Drawings

Description This check compares color and transparency of matching entities in the reference and compare document.

When checking the color of single BRep elements, color properties are considered equal if the number of BRep elements in a particular color is the same in the reference and compare entity. As an exception, a different number of BRep elements is allowed for the color which is most frequently used in the reference entity. This allows for an evaluation of BRep color properties while ignoring certain geometrical differences. It is assumed that a different number of BRep elements is most likely to occur for those elements with the most frequently used color.

Use the “Perform Geometrical BRep Comparison” option to take into account the geometry of BRep elements.

Parameters

Name	Description	Values	Default
CheckColor	Check color of CATIA features	1: yes 0: no	1
CheckBRepColor	Check color of single BRep elements.	1: yes 0: no	1
CheckTransparency	Additionally check transparency of CATIA features and BRep elements if the respective color checks are enabled.	1: yes 0: no	1
PerformGeometricalBRepComparison	Check whether BRep elements with identical color properties are geometrically different. Depending on model complexity, checks may take considerably longer with this option enabled.	1: yes 0: no	1

- Mapping Rules**
- Entity selection rules** Select by Element Name, Select by Element Type, Select Visible Elements, Select Invisible Elements, Select Leaf Feature, Select Parent Feature, Select by Parent Name, , ,
 - Entity matching rules** Pair by Name, Pair by Path, Pair by Internal Name, Pair by Parent Name, Pair by Layer
 - Entity aggregation rules** None
 - Special rules** Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules

Check Status

Value	Description
Equal	The compared color properties (color and/or transparency) are equal.
Different	The compared color properties (color and/or transparency) are not equal.
Error	The check could not be completed due to an error.

Result values

Name	Description
RefColor_R RefColor_G RefColor_B	RGB color values (0...255) for the reference element
RefTransparency	Transparency value (0...255) for the reference element
CmpColor_R CmpColor_G CmpColor_B	RGB color values (0...255) for the compare element
CmpTransparency	Transparency value (0...255) for the compare element

7.2.4 Compare Current Work Objects

- Availability** • Compare V5 Parts/Products with V5 Parts/Products
- Description** This check compares the *In Work Object* in the compare and reference model with regard to display name, internal name, entity type, and CAA type.
- Parameters** None
- Mapping Rules** None

Check Status

Value	Description
Equal	The <i>In Work Objects</i> do match.
Different	The <i>In Work Objects</i> do not match.
Error	The check could not be completed due to an error.

7.2.5 Compare Drawing Dittos

Availability • Compare V5 Drawings with V5 Drawings

Description Dittos are drawing elements that are referenced from another view. The reference element for an *internal ditto* is a detail view in the same drawing. The reference element for an *external ditto* is a detail view in a different drawing or catalog.

For internal dittos, this check compares the internal paths with display names in the reference and compare document.

For external dittos, this checks compares the path to the referenced external document or catalog.

Parameters None

Mapping Rules **Entity selection rules** Select by Element Name, Select by Element Type, Select Visible Elements, Select Invisible Elements, Select by Parent Name, Select by Layer, Select by Drawing Sheet, Select by Drawing View

Entity matching rules Pair by Name, Pair by Type, Pair by Path, Pair by Internal Name, Pair by Parent Name, Pair by Layer

Entity aggregation rules None

Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules

Parameters

Name	Description	Values	Default
CheckInternalDittos	Check internal dittos	1: yes 0: no	1
CheckExternalDittos	Check external dittos	1: yes 0: no	1

Check Status

Value	Description
Equal	The paths to the referenced detail views are equal.
Different	The paths to the referenced detail views are not equal.
Error	The check could not be completed due to an error.

Result values

Name	Description
RefInternalDittoLink	Path to the detail view referenced by the internal ditto in the reference drawing
CmpInternalDittoLink	Path to the detail view referenced by the internal ditto in the compare drawing
RefExternalDittoLink	Path to the catalog referenced by the external ditto in the reference drawing
CmpExternalDittoLink	Path to the catalog referenced by the external ditto in the compare drawing

7.2.6 Compare Drawing Sheets

Availability • Compare V5 Drawings with V5 Drawings

Description This check compares properties of drawing sheets in the reference and compare document.

The following properties can be checked: sheet scale, sheet format, sheet frame visibility, sheet orientation, sheet projection method, and printable area of sheet.

Parameters

Name	Description	Values	Default
CheckSheetScale	Check sheet scale	1: yes 0: no	1
CheckSheetFormat	Check sheet format	1: yes 0: no	1
CheckFormatFrameDisplay	Check sheet frame visibility	1: yes 0: no	1
CheckSheetOrientation	Check sheet orientation	1: yes 0: no	1
CheckSheetProjectionMethod	Check projection method	1: yes 0: no	1
CheckSheetPrintArea	Check printable area	1: yes 0: no	1

Mapping Rules

Entity selection rules Select by Element Name, Select by Element Type, Select by Drawing Sheet

Entity matching rules Pair by Name, Pair by Type, Pair by Path, Pair by Internal Name, Pair by Parent Name

Entity aggregation rules None

Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules

Check Status

Value	Description
Equal	All property values are equal.
Different	At least one property value is not equal.
Error	The check could not be completed due to an error.

7.2.7 Compare Drawing Views' Properties

Availability • Compare V5 Drawings with V5 Drawings

Description This check compares properties of views in the reference and compare document.
The following properties can be checked: View frame visibility, lock status, visual clipping, view angle, view scale, dress-up, view name, view limiting bounding box.
In generative views, the following additional properties can be checked: Dress-up, limiting bounding box, occlusion culling, view generation mode.

Parameters

Name	Description	Values	Default
CheckViewFrameVisibility	Check view frame visibility	1: yes 0: no	1
CheckViewLockedStatus	Check view lock status	1: yes 0: no	1
CheckViewVisualClipping	Check visual clipping	1: yes 0: no	1
CheckViewAngle	Check view angle	1: yes 0: no	1
CheckViewScale	Check view scale	1: yes 0: no	1
CheckViewDress-up	Check view dress-up (generative views only)	1: yes 0: no	1
CheckViewName	Check view name	1: yes 0: no	1
CheckViewLimitBounding Box	Check limiting bounding box (generative views only)	1: yes 0: no	1
CheckViewEnableOcclusionCulling	Check occlusion culling (generative views only)	1: yes 0: no	1
CheckViewGenerationMode	Check view generation mode (generative views only)	1: yes 0: no	1

Mapping Rules

Entity selection rules Select by Element Name, Select by Element Type, Select by Parent Name, Select by Layer, Select by Drawing Sheet, Select by Drawing View

Entity matching rules Pair by Name, Pair by Type, Pair by Path, Pair by Internal Name, Pair by Parent Name, Pair by Layer

Entity aggregation rules None

Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules

Check Status

Value	Description
Equal	All corresponding property values in reference and compare document are equal.
Different	At least one pair of properties in reference and compare document is not equal.
Error	The check could not be completed due to an error.

7.2.8 Compare Feature Input

- Availability**
- Compare V5 Parts with V5 Parts
 - Compare V5 Drawings with V5 Drawings

Description This check compares the input attributes of the reference and compare feature. V5 features are based on *input attributes* that determine the resulting geometry. The following input attributes are ignored: *FromExternalSpecification, Activity, NewActivity, fixed, rigid, bloc_children, MMAlias, NDVizP, HideOnOff, FeatureKeep, SymRel, ResultIN*

Parameters

Name	Description	Values	Default
WhichNameToCheck	Type of attribute name to be checked	Display Name Internal Name	Display Name

Mapping Rules

Entity selection rules Select by Element Name, Select by Element Type, Select Visible Elements, Select Invisible Elements, Select Leaf Feature, Select by Parent Name, , ,

Entity matching rules Pair by Name, Pair by Path, Pair by Internal Name, Pair by Layer

Entity aggregation rules None

Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules

Check Status

Value	Description
Equal	The input attributes in the compare and reference features are equal.
Different	At least one input attribute is missing or has a different attribute value.
Error	The check could not be completed due to an error.

7.2.9 Compare Font Properties

- Availability**
- Compare V5 Parts/Products with V5 Parts/Products
 - Compare V5 Drawings with V5 Drawings

Description This check compares font properties of annotation features in the reference and compare document. The following font properties can be checked: font name, font style, font size, underline, text color, attributes, character properties.

Parameters

Name	Description	Values	Default
CheckFontName	Check font name	1: yes 0: no	1
CheckFontStyle	Check font style	1: yes 0: no	1
CheckFontSize	Check font size	1: yes 0: no	1
CheckFontUnderline	Check underline	1: yes 0: no	1
CheckFontColor	Check text color	1: yes 0: no	1
CheckFontAttributes	Check font attributes (strikethrough, overline, superscript, subscript)	1: yes 0: no	1
CheckFontCharacter	Check font character properties (ratio, slant, distance, pitch)	1: yes 0: no	1

- Mapping Rules**
- Entity selection rules.** Select by Element Name. Select by Element Type. Select by Parent Name. Select by Layer. Select by Drawing Sheet. Select by Drawing View
- Entity matching rules.** Pair by Name. Pair by Type. Pair by Path. Pair by Internal Name. Pair by Parent Name. Pair by Layer
- Entity aggregation rules.** None
- Special rules.** Override All Rules. Override Entity Selection Rules. Override Entity Matching Rules

Check Status

Value	Description
Equal	All corresponding property values in reference and compare document are equal.
Different	At least one pair of properties in reference and compare document is not equal.
Error	The check could not be completed due to an error.

7.2.10 Compare Layer Properties

Availability

- Compare V5 Parts/Products with V5 Parts/Products
- Compare V5 Drawings with V5 Drawings

Description

This check compares the layer number of matching entities in the compare and reference model.

Parameters

None

Mapping Rules

Entity selection rules Select by Element Name, Select by Element Type, Select Visible Elements, Select Invisible Elements, Select Leaf Feature, Select Parent Feature, Select by Parent Name, Select by Layer, Select by Drawing Sheet, Select by Drawing View

Entity matching rules Pair by Name, Pair by Path, Pair by Internal Name, Pair by Parent Name, Pair by Layer

Entity aggregation rules None

Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules

Check Status

Value	Description
Equal	Layers are equal for matching entities
Different	Layers are not equal for one or more matching entities.
Error	The check could not be completed due to an error.

7.2.11 Compare Parameters

- Availability**
- Compare V5 Parts/Products with V5 Parts/Products
 - Compare V5 Drawings with V5 Drawings

Description This check compares matching parameters in the compare and reference model with regard to their type, value, and the existence of a formula link.

Parameters

Name	Description	Values	Default
CheckValue	Check parameter value	1: yes 0: no	1
CheckType	Check parameter type	1: yes 0: no	1
CheckFormulaExistence	Check existence of a formula linked to the parameter	1: yes 0: no	1

Mapping Rules **Entity selection rules** Select by Element Name, Select by Element Type, Select Visible Elements, Select Invisible Elements, Select Leaf Feature, Select Parent Feature, Select by Parent Name,

Entity matching rules Pair by Name, Pair by Path, Pair by Internal Name, Pair by Parent Name, Pair by Layer

Entity aggregation rules None

Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules

Check Status

Value	Description
Equal	The parameters of the compare/reference entities are equal.
Different	The paths of the compare/reference entities are not equal.
Error	The check could not be completed due to an error.

Result values

Name	Description
RefParamType	Parameter type of reference entity
RefParamValue	Parameter value of reference entity
RefParamFormula	<p>“yes”: Formula link does exist, i.e. at least one formula references to the parameter in the reference entity.</p> <p>“no”: Formula link does not exist, i.e. no formula references to the parameter in the reference entity.</p>
CmpParamType	Parameter type of compare entity
CmpParamValue	Parameter value of compare element
CmpParamFormula	Existence of formula link for parameter in compare entity, value “yes” or “no”

7.2.12 Compare Pick Properties

Availability	<ul style="list-style-type: none"> • Compare V5 Parts/Products with V5 Parts/Products • Compare V5 Drawings with V5 Drawings
Description	This check compares the setting of the <i>Pick</i> property of matching entities in the reference and compare model.
Parameters	None
Mapping Rules	<p>Entity selection rules Select by Element Name, Select by Element Type, Select Visible Elements, Select Invisible Elements, Select Leaf Feature, Select Parent Feature, Select by Parent Name, Select by Layer, Select by Drawing Sheet, Select by Drawing View</p> <p>Entity matching rules Pair by Name, Pair by Path, Pair by Internal Name, Pair by Parent Name, Pair by Layer</p> <p>Entity aggregation rules None</p> <p>Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules</p>

Check Status

Value	Description
Equal	The <i>Pick</i> setting of compare and reference entities do match.
Different	The <i>Pick</i> setting of compare and reference entities do not match.
Error	The check could not be completed due to an error.

Result values

Name	Description
RefPickable	Pick setting of reference entity, value “yes” or “no”
CmpPickable	Pick setting of compare entity, value “yes” or “no”

7.2.13 Compare Point/Line Types

- Availability**
- Compare V5 Parts/Products with V5 Parts/Products
 - Compare V5 Drawings with V5 Drawings

Description This check compares the point type, line type and line thickness of matching entities in the reference and compare model.

Matching entities that have no point type, line type and thickness properties are considered equal.

Parameters

Name	Description	Values	Default
CheckLineType	Check line type	1: yes 0: no	1
CheckThickness	Check thickness	1: yes 0: no	1

Mapping Rules

Entity selection rules Select by Element Name, Select by Element Type, Select Visible Elements, Select Invisible Elements, Select Leaf Feature, Select Parent Feature, Select by Parent Name, Select by Layer, Select by Drawing Sheet, Select by Drawing View

Entity matching rules Pair by Name, Pair by Path, Pair by Internal Name, Pair by Parent Name, Pair by Layer

Entity aggregation rules None

Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules

Check Status

Value	Description
Equal	The checked properties of compare and reference entities do match.
Different	The checked properties of compare and reference entities do not match.
Error	The check could not be completed due to an error.

Result values

Name	Description
RefPointType	Point type of reference entity (integer)
RefLineType	Line type of reference entity (integer)
RefLineThickness	Line thickness of reference entity (integer)
CmpPointType	Point type of compare entity (integer)
CmpLineType	Line type of compare entity (integer)
CmpLineThickness	Line thickness of compare entity (integer)

7.2.14 Compare Product Properties of Root

Availability • Compare V5 Parts/Products with V5 Parts/Products

Description This check compares standard properties and user-defined properties of the root feature in the compare and reference model regarding their existence, name, type, and value.

Parameters None

Mapping Rules

Entity selection rules Select by Element Name, Select by Element Type, Select Visible Elements, Select Invisible Elements, Select Leaf Feature, Select by Parent Name,

Entity matching rules Pair by Name, Pair by Path, Pair by Internal Name, Pair by Parent Name, Pair by Layer

Entity aggregation rules None

Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules

Check Status

Value	Description
Equal	The root features properties in the compare and reference model are equal.
Different	The root features properties in the compare and reference model are not equal.
Error	The check could not be completed due to an error.

7.2.15 Compare Publications

Availability • Compare V5 Parts/Products with V5 Parts/Products

Description For V5 Parts/Products, this check compares publications in the reference and compare model.

For V5 Parts only, the check compares also the associated objects of publications.

Parameters

Name	Description	Values	Default
WhichNameToCheck	Type of attribute name to be checked	0: Display Name 1: Internal Name	0
PerformGeometricalBRep Comparison	Check whether published BRep elements with identical publication names and matching associated objects are geometrically different. Depending on model complexity, checks may take considerably longer with this option enabled.	1: yes 0: no	1

Mapping Rules **Entity selection rules** Select by Element Name, Select by Element Type, Select Visible Elements, Select Invisible Elements, Select Leaf Feature, Select Parent Feature, Select by Parent Name,

Entity matching rules Pair by Name, Pair by Path, Pair by Internal Name, Pair by Parent Name, Pair by Layer

Entity aggregation rules None

Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules

Check Status

Value	Description
Equal	The publications of compare and reference entities do match.
Different	The publications of compare and reference entities do not match.
Error	The check could not be completed due to an error.

Result values

Name	Description
numEqualElem	Number of equal publications (integer)
numDifferentElem	Number of different publications (integer)
numMissingElemOnRef	Number of missing publications in the reference model
numMissingElemOnCmp	Number of missing publications in the compare model

7.2.16 Compare Show Properties

Availability	<ul style="list-style-type: none"> • Compare V5 Parts/Products with V5 Parts/Products • Compare V5 Drawings with V5 Drawings
Description	This check compares the Show/Hide status of matching entities in the reference and compare model.
Parameters	None
Mapping Rules	<p>Entity selection rules Select by Element Name, Select by Element Type, Select Visible Elements, Select Invisible Elements, Select Leaf Feature, Select by Parent Name, Select by Layer, Select by Drawing Sheet, Select by Drawing View</p> <p>Entity matching rules Pair by Name, Pair by Path, Pair by Internal Name, Pair by Parent Name, Pair by Layer</p> <p>Entity aggregation rules None</p> <p>Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules</p>

Check Status

Value	Description
Equal	The Show/Hide status of compare and reference entities are equal.
Different	The Show/Hide status of compare and reference entities are not equal.
Error	The check could not be completed due to an error.

Result values

Name	Description
RefShow	Show/Hide status of reference element, value "Show" or "Noshow"
CmpShow	Show/Hide status of compare element, value "Show" or "Noshow"

7.2.17 Compare Text Properties

- Availability**
- Compare V5 Parts/Products with V5 Parts/Products
 - Compare V5 Drawings with V5 Drawings

Description This check compares text properties of annotation features in the reference and compare document. The following text properties can be checked: Text frame properties, text position, text orientation, text options.

Mapping Rules **Entity selection rules** Select by Element Name, Select by Element Type, Select Visible Elements, Select Invisible Elements, Select Leaf Feature, Select Parent Feature, Select by Parent Name, Select by Layer, Select by Drawing Sheet, Select by Drawing View

Entity matching rules Pair by Name, Pair by Type, Pair by Path, Pair by Internal Name, Pair by Parent Name, Pair by Layer

Entity aggregation rules None

Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules

Parameters

Name	Description	Values	Default
CheckTextFrameProperties	Check text frame properties (frame, color, thickness, line type,)	1: yes 0: no	1
CheckTextPosition	Check text position properties (anchor point, anchor mode, line spacing value, line spacing mode, x coordinate, y coordinate, justification, wrapping length)	1: yes 0: no	1
CheckTextOrientation	Check text orientation properties (reference, orientation, angle, mirroring)	1: yes 0: no	1
CheckTextOptions	Check text options properties (units, scale, back field, superscript offset and height, subscript offset and height, display, background)	1: yes 0: no	1

Check Status

Value	Description
Equal	All corresponding text property values in reference and compare document are equal.
Different	At least one pair of text properties in reference and compare document is not equal.
Error	The check could not be completed due to an error.

7.2.18 Compare Time Stamps

Availability	<ul style="list-style-type: none"> • Compare V5 Parts/Products with V5 Parts/Products • Compare V5 Drawings with V5 Drawings
Description	This check compares the timestamps of matching entities in the reference and compare model.
Parameters	None
Mapping Rules	<p>Entity selection rules Select by Element Name, Select by Element Type, Select Visible Elements, Select Invisible Elements, Select Leaf Feature, Select Parent Feature, Select by Parent Name, Select by Layer</p> <p>Entity matching rules Pair by Name, Pair by Path, Pair by Internal Name, Pair by Parent Name, Pair by Layer</p> <p>Entity aggregation rules None</p> <p>Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules</p>

Check Status

Value	Description
Equal	The timestamps of the compare/reference entities are equal.
Different	The timestamps of the compare/reference entities are not equal.
Error	The check could not be completed due to an error.

Result values

Name	Description
RefTimeStamp	Timestamp of reference entity
CmpTimeStamp	Timestamp of compare entity

7.3 Structural Checks

7.3.1 Compare Product Components

Availability • Compare V5 Products with V5 Products

Description This check scans product files for components and performs checks on the components using the configuration and profile specified in the parameters of this check.

Parameters

Name	Description	Values	Default
NumMaxProcess	Maximum number of batch runs started at the same time	Integer	2
TempPath	Path where temporary files generated during the batch run are stored	String	WINDOWS temporary folder %TEMP%
FlagCheckPartV5	Perform V5 Part component check	1: yes 0: no	1
FlagCheckCGRV5	Perform V5 CGR component check	1: yes 0: no	1
ConfigNameV5V5Part	V5 Part configuration to be used	String	DefaultV5V5Part
ProfNameV5V5Part	Profile to be used within the specified V5 Part configuration	String	All checks
ConfigNameV5V5CGR	V5 CGR configuration to be used	String	DefaultV5V5CGR
ProfNameV5V5CGR	Profile to be used within the specified V5 CGR configuration	String	All checks

Mapping Rules **Entity selection rules** Select by Element Name, Select by Element Type , Select Visible Elements, Select Invisible Elements, Select Leaf Feature, Select Parent Feature, Select by Parent Name, Select by Layer

Entity matching rules Pair by Name, Pair by Type (forced rule), Pair by Path , Pair by Internal Name , Pair by Parent Name , Pair by Layer

Entity aggregation rules None

Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules

Check Status

Value	Description
Equal	The checked product components are equal.
Different	The checked product components are not equal.
Error	The check could not be completed due to an error.

Result values

Name	Description
ReportLink	Paths to the reports for the checked components relative to the path of the report for the checked product

7.3.2 Find New or Deleted Entities

Availability

- Compare V5 Parts/Products with V5 Parts/Products
- Compare V5 Drawings with V5 Drawings

Description

This check marks entities that have no counterpart in the other model. Compare entities are marked as “*new*” if there is no equivalent in the reference model. Reference entities are marked as “*deleted*” if there is no equivalent in the compare model. This nomenclature implies the compare model is a newer version of the reference model.

Parameters

None

Mapping Rules

Entity selection rules Select by Element Name, Select Visible Elements, Select Invisible Elements, Select Leaf Feature, Select by Parent Name,

Entity matching rules Pair by Name, Pair by Custom View

Entity aggregation rules Aggregate by Name

Special rules Override All Rules, Override Entity Selection Rules, Override Entity Matching Rules, Override Aggregation Rules

Check Status

Value	Description
Equal	No new or deleted entities have been found.
Different	There are new or deleted entities in the reference and compare models.
Error	The check could not be completed due to an error.

7.3.3 Find Renamed Entities

- Availability**
- Compare V5 Parts/Products with V5 Parts/Products
 - Compare V5 Drawings with V5 Drawings
- Description** This check identifies entities that have the same internal name and path, but different names (identifiers). These entities are marked as “renamed”.
- Parameters** None
- Mapping Rules**
- Entity selection rules** Select by Element Name, Select by Element Type, Select Visible Elements, Select Invisible Elements, Select Leaf Feature, Select Parent Feature, Select by Parent Name, Select by Layer, Select by Drawing Sheet, Select by Drawing View
- Entity matching rules** None
- Entity aggregation rules** None
- Special rules** Override All Rules, Override Entity Selection Rules

Check Status

Value	Description
Equal	The paths of reference and compare entities are equal.
Different	The paths of reference and compare entities are not equal.
Error	The check could not be completed due to an error.

8 Model Types

Model types are defined by a set of given model properties and values. A model has a certain model type if its properties are in accordance with the properties specified in the model type definition.

Q-Compare uses model types to choose automatically the correct profile within a configuration. To assign a model type to a model, Q-Compare can evaluate the following properties:

Parameters Parameters are part of the model structure. They are identified by their full path inside the model. Parameter values must match the specification from the model type definition.

Applicative Features *Applicative features* are data containers inside V5 Parts and V5 Products. Applicative features store attributes separate from the model structure. Applicative features and applicative feature attributes are identified by name. Attribute values must match the specification from the model type definition.

When more than one model type rule has been specified, all rules must be fulfilled (logical AND).

9 Known Issues

- When you select a configuration file create with an earlier version of Q-Compare, the application may crash.
- When you try to open a report created with an earlier version of Q-Compare, the application may crash.
- The “Pair Analysis” tree does not always respond to keyboard input.

10 Quick Reference to Configuration Files

This section assists you in understanding the XML structure and points out where you can customize the configuration. However, note that this is no complete XML reference to Q-Compare configuration files.

Use an XML or plain text editor to edit the configuration file.

Environment

XPath	/Environment
Description	Pair of formats to compare; organizational information
Customization	<ul style="list-style-type: none"> • @Name: Name of the configuration displayed in the configuration editor. • @DocumentCombination: Combination of model file formats to compare. Note that some checks can only applied to specific formats.

Application

XPath	/Environment/Application
Description	Overall application and user-interface settings

Languages

XPath	/Environment/Application/Languages
Description	General application and user-interface settings
Customization	<ul style="list-style-type: none"> • @DefaultLangID is the default language identifier. To set the default language for the user interface, assign an available language identifier (as defined in Name/@LangID) to this attribute.

MappingRules

XPath	/Environment/MappingRules
Description	Complete set of rules based on which the input pair list is compiled.

AggregationRules, EntityPairingRules, EntitySelectionRules, OtherRules

XPath	/Environment/MappingRules/*
Description	Subsets of mapping rules grouped by mapping method, i.e. aggregation, pairing, selection, and override rules.

MappingRule

XPath	/Environment/MappingRules/*/MappingRule
Description	Subsets of mapping rules for the different mapping methods. ↗ For more information see section 6 <i>Mapping</i> on page 27.
Customization	<ul style="list-style-type: none"> • Name defines the name of the respective mapping rule. To localize these names, add further Name elements with language identifiers @LangID as defined in /Environment/Application/Languages. • To disable a mapping rule, comment out the respective node.

Parameter (Mapping Rules)

XPath	/Environment/MappingRules/*/MappingRule/Parameters/Parameter
Description	Parameters of mapping rules. ↗ For descriptions of all parameters and default values see section 6 <i>Mapping</i> on page 27.
Customization	<ul style="list-style-type: none"> • To adjust a parameter, assign the desired value to Value. • To use the default value, set @IsActive to False. • To use a custom value, set @IsActive to True and assign the desired to Value.

Checks

XPath	/Environment/Checks
Description	Complete set of checks ↗ For descriptions of all checks see section 7 <i>Checks and Parameters</i> on page 37.

CheckReference

XPath	/Environment/Checks/CheckReference
Description	<p>Check definition comprising instances of mapping rules to be applied, definition of allowed parameter value ranges and default parameter values.</p> <p>↗ For descriptions of all parameters and default values see section 7 <i>Checks and Parameters</i> on page 37.</p>
Customization	<ul style="list-style-type: none"> • @CheckRefType: Unique identifier • @Name: Name of the check displayed in the configuration editor (if no name for the check instance is supplied) • To disable a check, comment out the respective CheckReference node.

MappingRuleLinks

XPath	/Environment/Checks/CheckReference//MappingRuleLinks
Description	<p>Set of mapping rules for the respective check run.</p> <p>Mapping rules can be specified both for the <i>check reference</i> and for a specialized <i>check instance</i>. Mapping rules for the check instance are evaluated first; if there aren't any, check reference mapping rules will apply.</p> <p>↗ For a list of valid mapping rules see section 7 <i>Checks and Parameters</i> on page 37.</p>
Customization	<ul style="list-style-type: none"> • To apply additional mapping rules, add more RuleLink subnodes with the correct mapping rule identifier @RuleID. Note that not all mapping rules are valid for each check. • To disable a mapping method for a certain check, comment out the respective RuleLink subnode.

CheckInstance

XPath	/Environment/Checks/CheckReference/CheckInstance
Description	<p>Specialized set of parameter settings for a check. You can define one or more check instances per check reference.</p> <p>↗ For descriptions of all checks and parameters see section 7 <i>Checks and Parameters</i> on page 37.</p>
Customization	<ul style="list-style-type: none"> • @Name: Name of the check displayed in the configuration editor • To disable a check instance, comment out the respective CheckInstance node. • To create additional check instances, add more CheckInstance subnodes with the correct check reference identifier @CheckRefID.

Parameter (Check References, Check Instances)

XPath	/Environment/Checks/CheckReference/CheckInstance/Parameters/Parameter
Description	<p>Parameters of check references and instances</p> <p>↗ For descriptions of all parameters and default values see section 6 <i>Mapping</i> on page 27.</p>
Customization	<ul style="list-style-type: none"> • To adjust a parameter, change the node value of Value. • To use the default value, set @IsActive to False. • To use a custom value, set @IsActive to True and specify the desired value as node value of Value.

ModelTypes

XPath	/Environment/ModelTypes
Description	<p>Container for model type definitions</p> <p>↗ For a description of model types see section 8 <i>Model Types</i> on page 75.</p>
Customization	<ul style="list-style-type: none"> • To set the default model type, set @DefaultModelTypeID to the desired model type identifier ModelType/@ModelTypeID. • To define a new model type, add more ModelType subnodes.

ModelType

XPath	/Environment/ModelTypes/ModelType
Description	Model type definition ↗ For a description of model types see section 8 <i>Model Types</i> on page 75.
Customization	<ul style="list-style-type: none"> • @ModelTypeID: Unique identifier. • @Name: Name of the model type displayed in the configuration editor • Add a short description of the model type in the Description subnode. • To disable a model type, comment out the respective ModelType element.

ModelTypeRules

XPath	/Environment/ModelTypes/ModelType/ModelTypeRules
Description	Container for model type rules ↗ For a description of model types see section 8 <i>Model Types</i> on page 75.

ModelTypeRule (Parameter Rule)

XPath	/Environment/ModelTypes/ModelType/ModelTypeRules/ ModelTypeRule[@Type="ParameterRule"]
Description	Parameter rule for the definition of a model type ↗ For a description of model types see section 8 <i>Model Types</i> on page 75.
Customization	<ul style="list-style-type: none"> • @Type: is always ParameterRule • ParameterPath: Full path to the parameter within the model. • ParameterValue: Required parameter value. • For each of these subnodes, set @Type to REGEX to use a regular expression or to STRING to use a normal character string

ModelTypeRule (Application Feature Attribute)

XPath	/Environment/ModelTypes/ModelType/ModelTypeRules/ ModelTypeRule[@Type="ApplicativeFeatureAttribute"]
Description	Applicative feature attribute rule for the definition of a model type ↗ For a description of model types see section 8 <i>Model Types</i> on page 75.
Customization	<ul style="list-style-type: none"> • @Type: is always ApplicativeFeatureAttribute • ApplicativeContainer: Name of the applicative container • FeatureName: Name of the applicative feature • AttributeName: Name of the attribute within the specified applicative feature • AttributeValue: Required attribute value • For each of these subnodes, set @Type to REGEX to use a regular expression or to STRING to use a normal character string

Profiles

XPath	/Environment/Profiles
Description	Container for profile definitions ↗ For a description of model types see section 8 <i>Model Types</i> on page 75.
Customization	<ul style="list-style-type: none"> • To set the default model type, set @DefaultProfID to the desired model type identifier Profile/@ProfID. The <i>default profile</i> is used in batch runs when no other profile has been selected.

Profile

XPath	/Environment/Profiles/Profile
Description	Container for profile definitions
Customization	<ul style="list-style-type: none"> • @ProfID: Unique identifier displayed in the configuration editor • Section: Container for a model-type dependent set of checks. • To create additional profiles, add Profile subnodes with required contents • Settings: Container for settings attached to the current profile • To assign a model type to a model-type dependent set of checks, set @ModelTypeID to the identifier of the desired model type.

CheckLink

XPath	/Environment/Profiles/Profile/Section/CheckLink
Description	Reference to a check instance
Customization	<ul style="list-style-type: none"> • @CheckInstID: Referenced identifier of a check instance to be used in the current set

Setting

XPath	/Environment/Profiles/Profile/Settings/Setting
Description	Setting attached to the current profile
Customization	<ul style="list-style-type: none"> • The values of @SettingID and @Type are fixed and must not be changed. • To specify the allowed value range, set @Max and @Min to the allowed maximum and minimum values, respectively. • Set the desired value for the setting in the Value subnode.

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