The REUSE Company

Requirements Authoring Tool - RAT for Web

By The REUSE Company

Assists you in the activity of writing requirements and other natural language text with the power and the simplicity of The REUSE Company Suite

THE REUSE COMPANY

License Number LN-044-12-1434

REQUIREMENTS AUTHORING TOOL – RAT FOR WEB

The REUSE Company

2025 Edition

License Number LN-044-12-1434

License Number LN-044-12-1434

REQUIREMENTS AUTHORING TOOL – RAT FOR WEB

Version 1.4

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Changes History:

Version	Date	Changes
1.0	July 2023	Initial version
1.1	September 2023	New section 2.3 and option for saving with format
1.2	November 2023	New options in the main menu
1.3	January 2024	Further details in the SES Configuration
1.4	January 2025	New version V23.4

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1 Introduction

This document applies to the version 23.4 of the product.

RAT stands for Rich Authoring Tool. It works as an assistant helping users to write better systems engineering requirements.

Authors of systems and software requirements must know what structure to follow, which terms to use, the expected quality policies or checklist to follow, the level of consistency with other requirements or models and so on. That is why writing new requirements can sometimes lead to a writer's block.

The RAT – AUTHORING Tool is a tool for requirements engineers for writing better requirements specifications. It helps authors during the demanding process of writing requirements, hence improving the overall quality of the projects. It's a set of agreed-upon textual patterns that leads engineers, suggesting the most-suitable content and always assuring the right grammar.

The RAT – AUTHORING Tool is able to use a customized set of patterns and, when integrated with the KM – KNOWLEDGE Manager Tool, those can be easily tailored and managed. Once a new pattern is generated and transferred to the production environment, RAT – AUTHORING Tool detects it, and the author can use it immediately.

Requirements Authoring Tool - RAT for Web allows the requirements writers and editors to get the power of the original tool, easing the tasks in a controlled and qualified way. The extension is designed to be used with any editable field in the navigator (in this book, we are using Chrome as example), which includes all requirement managers supported by TRC accessible by web navigators (e.g., Polarion, JIRA).

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2 Installation and Configuration

2.1 Prerequisites

- Internet Information Services (IIS)

  Install ISS on Windows If you are using Windows x64 or x86, open Windows Features. You can find it by typing "Turn Windows features on or off" on the Windows search bar.

  Check the following folders and click OK. In case a reboot is needed a window will appear and ask for it.

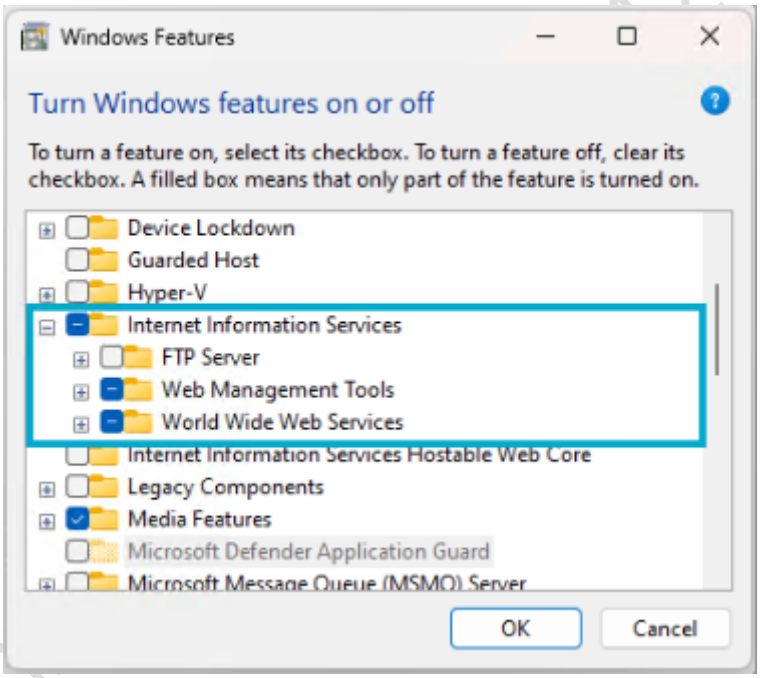

FIGURE 1

- .NET 7 Hosting Bundle 7.0.20
- ASP.NET 7 Core Runtime 7.0.20
- .NET Runtime 7.0.20
- .NET Desktop Runtime 7.0.20

Depending on your SO environment, you must install the correct runtime:

- You can download .NET 7 Hosting Bundle 7.0.20 from the official Microsoft's website.

- If you use Windows x86 : You can download ASP.NET 7 Core Runtime 7.0.20 from the official Microsoft's website.
- If you use Windows x64 : You can download ASP.NET Core Runtime 7.0.20 from the official Microsoft's website.
- If you use Windows x86 : You can download .NET Runtime 7.0.20 from the official Microsoft's website.
- If you use Windows x64 : You can download .NET Runtime 7.0.20 from the official Microsoft's website.
- If you use Windows x86 : You can download .NET Desktop Runtime 7.0.20 from the official Microsoft's website.
- If you use Windows x64 : You can download .NET Desktop Runtime 7.0.20 from the official Microsoft's website.

2.2 Installing the Software

NOTE: once RAT API is installed, it is needed to configure SES Server (see Appendix I: Configuring SES)

Unload the document RatApiSetup-x32.exe or RatApiSetup-x64.exe and execute it to prepare the computer.

Select Setup Language: in this first window you can select the language of the installation wizard by choosing between English and Spanish.

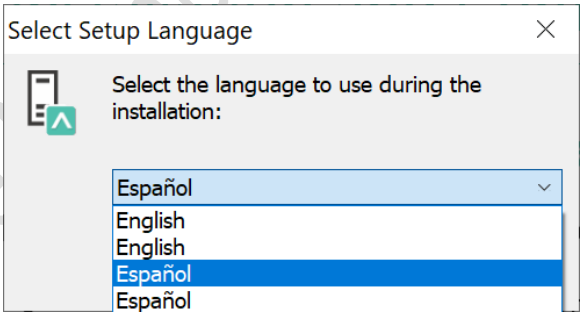

FIGURE 2

Welcome: in this window will introduce all the actions to be performed while installing the ***RAT API*** application, you only must read the instructions and click on the "Next >" button.

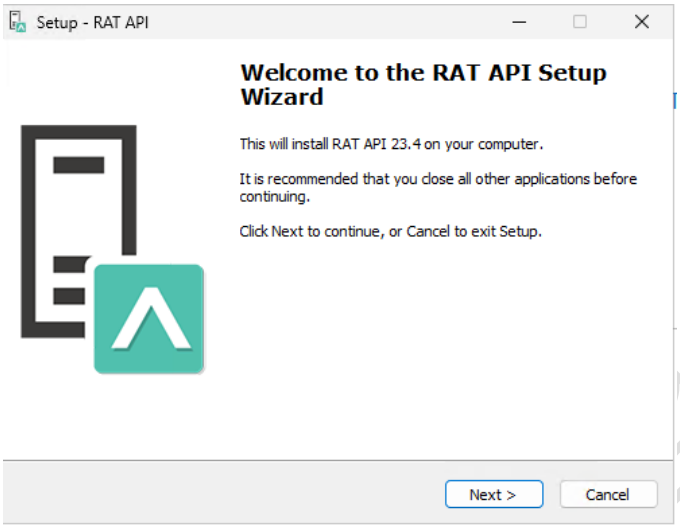

FIGURE 3

License agreement: this window will show the license agreement you will need to accept if you want to use the application. Please read it carefully before accepting it, then select the first option below the text and then click on the "Next >" button. However, if you do not agree just click on the "Cancel" button, it will force finish the installation wizard and it won't install the application.

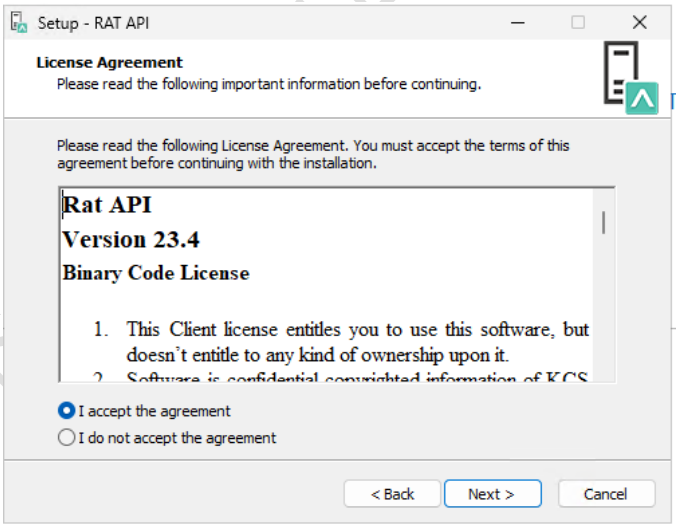

FIGURE 4

Web Service Setup: Here, you must include the web service name and port. Contact your administrator for information about them, if needed.

You can also optionally set here the use of https, the Windows Authentication, and Elasticsearch as Log System. Contact your administrator for indications about them, if needed.

When these fields are completed, click on the “Next >” button.

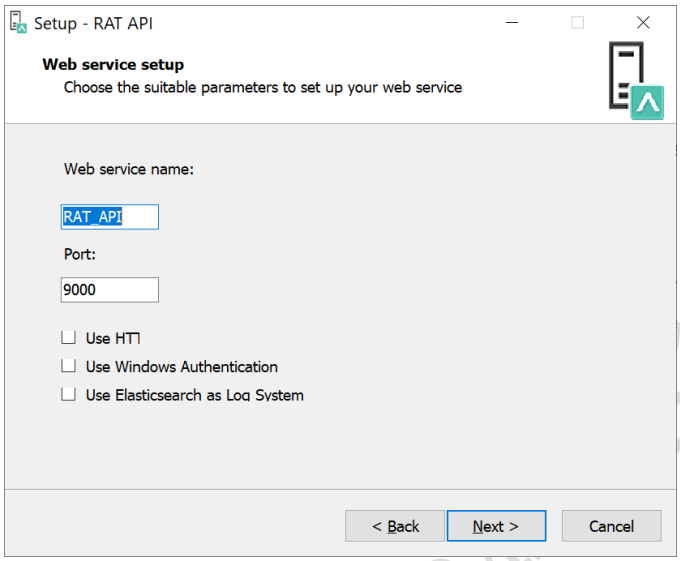

FIGURE 5

Application Pool setup: You must write the suitable parameters: Username and password.

"ApplicationPoolIdentity" is the default user used by Windows. These parameters should only be modified if the system administrator rules that this method cannot be used, and different credentials must be provided.

When these fields are completed, click on the “Next >” button.

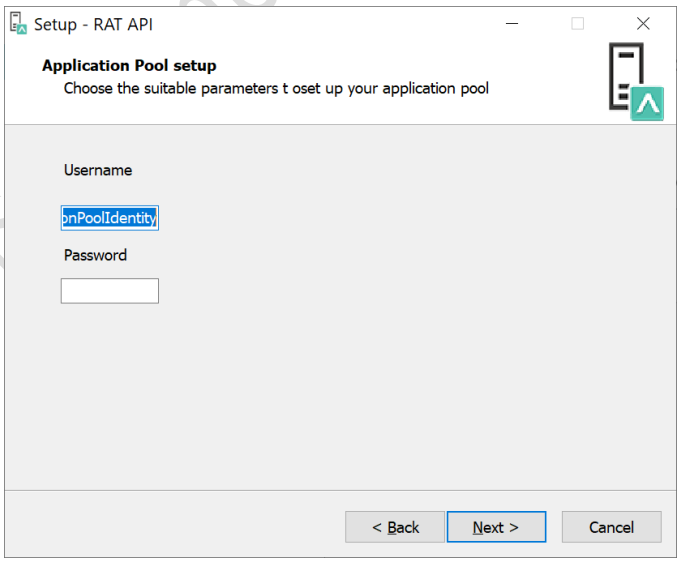

FIGURE 6

License Server Configuration: You must complete this information to connect to the License Server. This information can be modified later. Ask you administrator for indications, if needed.

When these fields are completed, click on the "Next >" button.

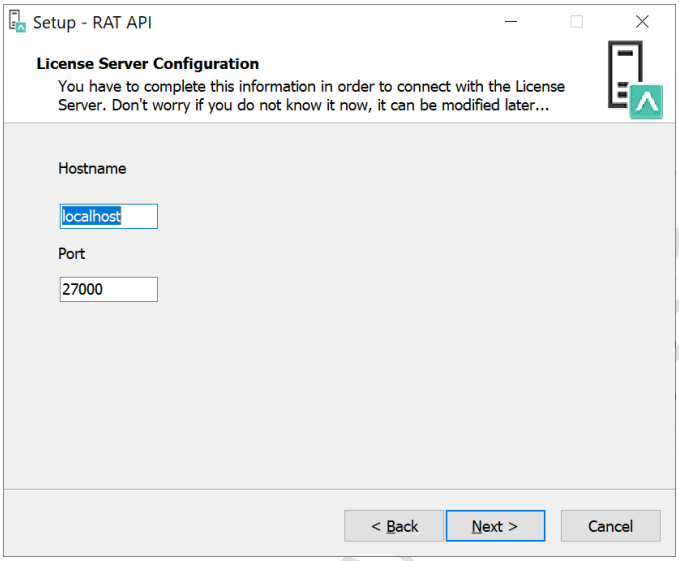

FIGURE 7

Cake Settings Configuration: This information has been set when you have previously created the connection using the SES Server. Copy here all the parameters previously used. Also, select the database type. Ask you administrator for indications, if needed.

When these fields are completed, click on the "Next >" button.

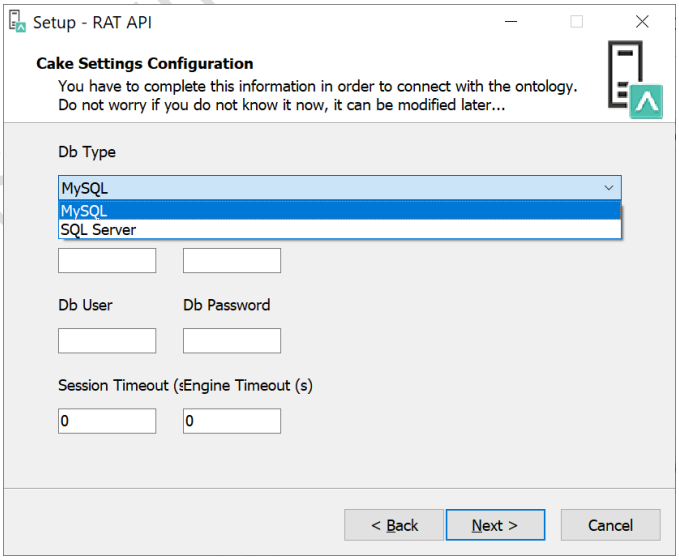

FIGURE 8

Elastic Log Configuration: This window will only appear if you have selected the *Use Elasticsearch as Log System* option in the *Web Service Setup* window (see Figure 5). Fulfil the information. Ask you administrator for indications, if needed.

When these fields are completed, click on the "Next >" button.

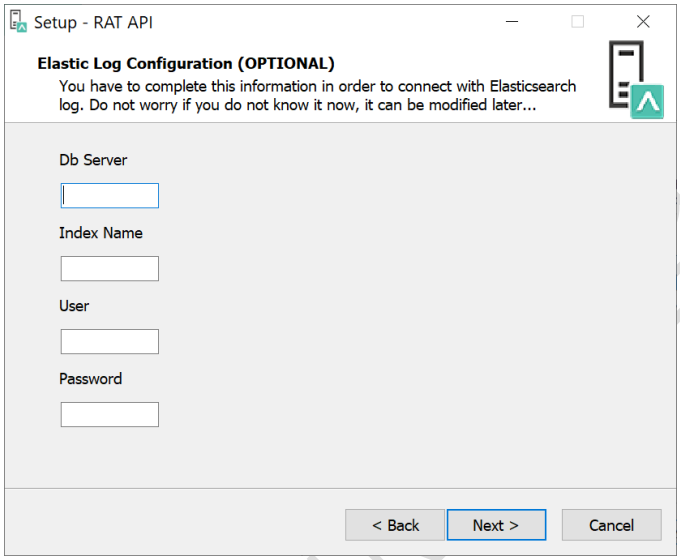

FIGURE 9

Select Destination Location: in this window you can select the location where the application is going to be installed. By default, it will be suggested to install the application in your "Program files" folder under the folder "The REUSE Company" and the subfolder with the name of the API. But you can choose any other destination, either by typing it in the textbox or by clicking on the "Browse" button on the right-hand side of the location textbox and navigating through your computer storage system to find the suitable location for it.

When this field is completed, click on the "Next >" button.

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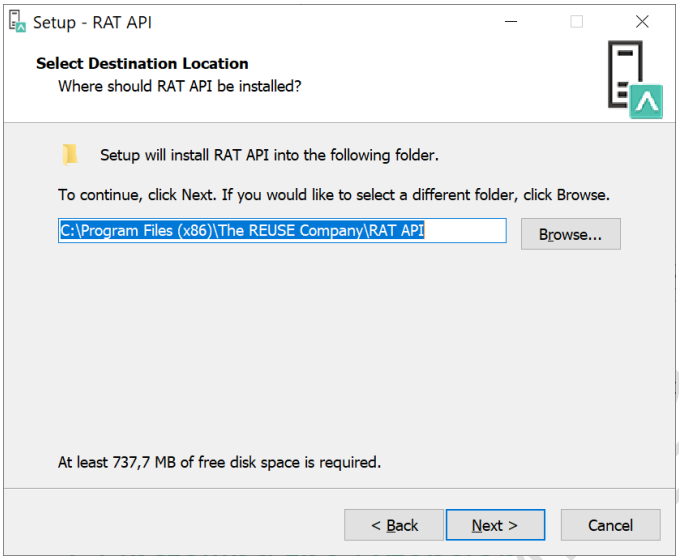

FIGURE 10

Select Start Menu Folder: In this window you will be able to select where in your start menu the shortcuts to the API must be created. By default, the installer proposes to create them under the folder "The REUSE Company" and the subfolder with the name of the API.

When this field is completed, click on the "Next >" button.

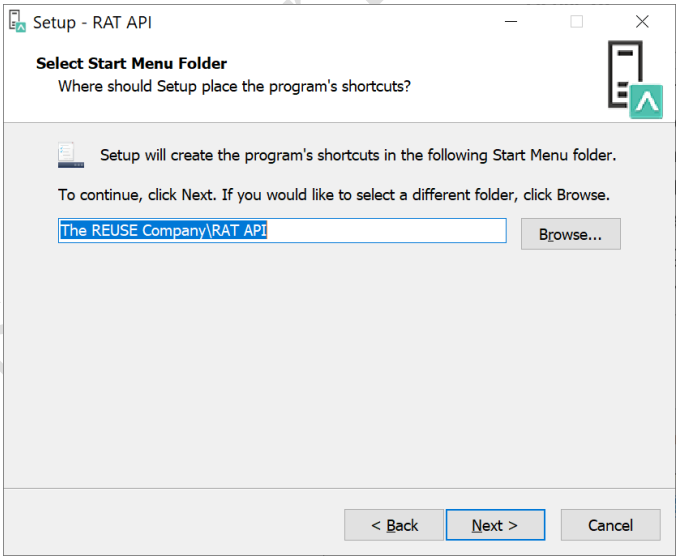

FIGURE 11

Ready to Install: this is the last step before installing the application on your system. It holds a description of the parameters compiled through this installation wizard. If one or more of the parameters is not right for your installation, just click "< Back" repetitively until you reach the

step to reconfigure your selections. When all the parameters are correct, just click on the "Next >" button.

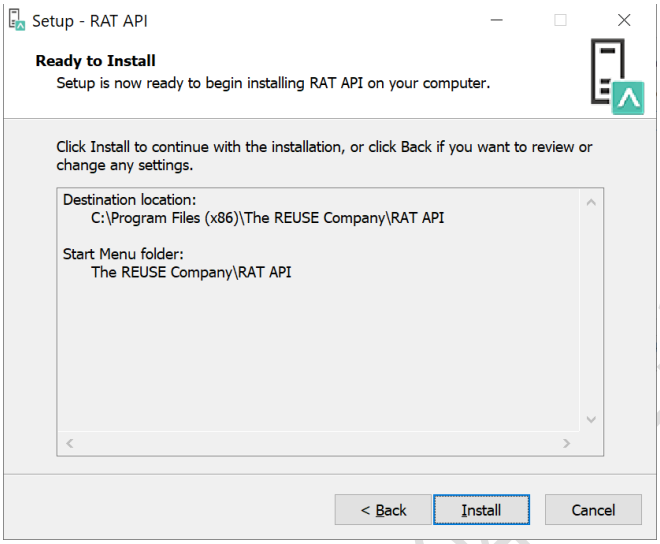

FIGURE 12

Installing: In this window you don't have to do anything but wait until the installation is completed. Just in case you have to cancel the installation, click on the "Cancel" button. Otherwise wait until the process is finished and the wizard will move automatically to the next step.

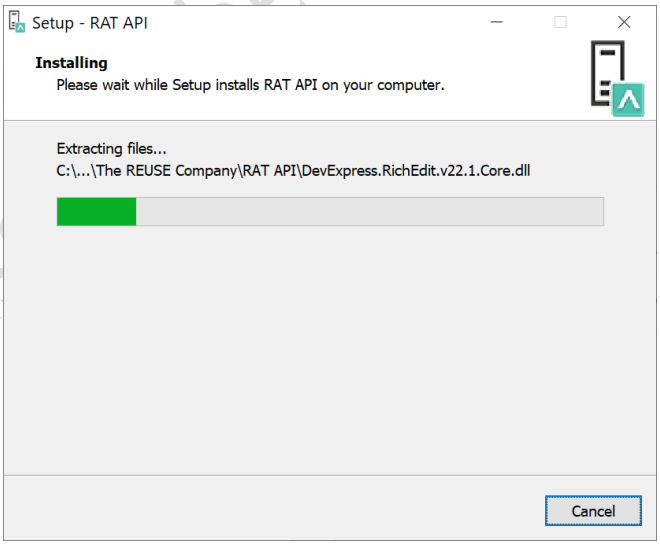

FIGURE 13

Completing the RAT API Setup Wizard: This window appears in order to notify you when the installation has finished successfully. Just click on the "Finish" button and you will have finished installing the application.

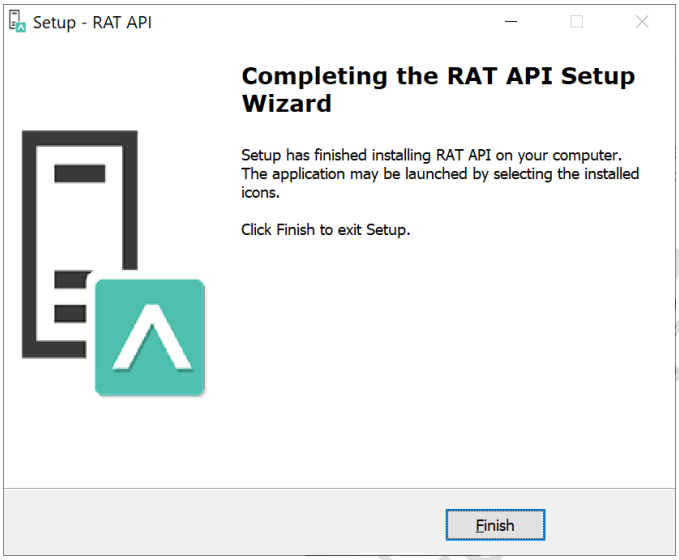

FIGURE 14

2.3 Installing the Extension

After installing the software, you can proceed to install the extension.

First, access the Chrome Web Store, using you preferred navigator. There, you must find the Requirements Authoring Tool.

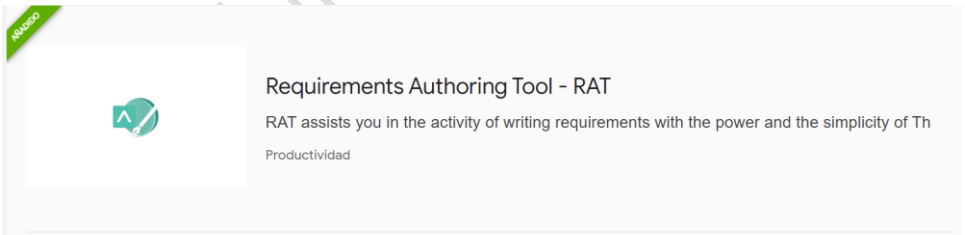

FIGURE 15

Click on it to begin the installation of the tool.

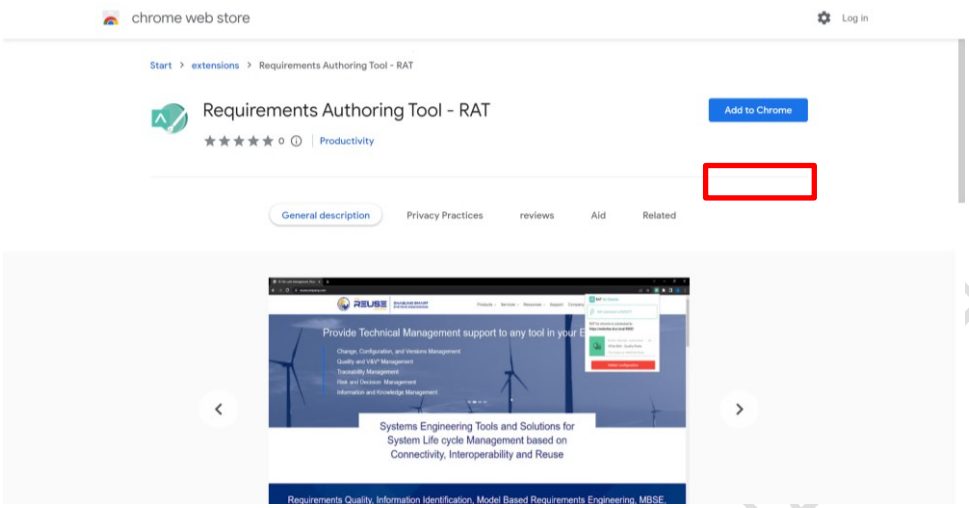

FIGURE 16

Now, click on *Add to Chrome* (highlighted) to install the tool.

After the installation, click on the Extensions icon (on the upper-right part of the window).

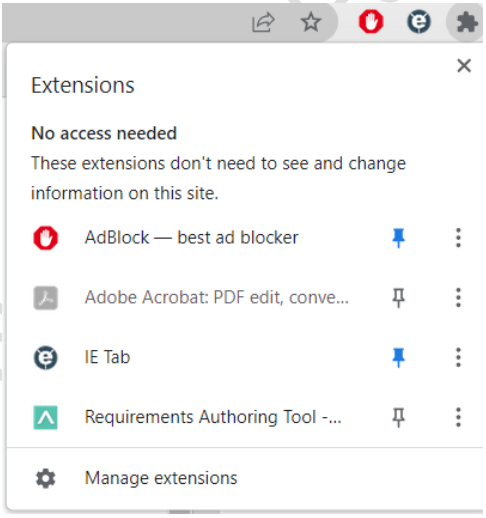

FIGURE 17

Select the Requirements Authoring Tool – RAT tack to fix the icon on the navigator window.

Now, you must configure the tool. Click on the icon we have just made appear.

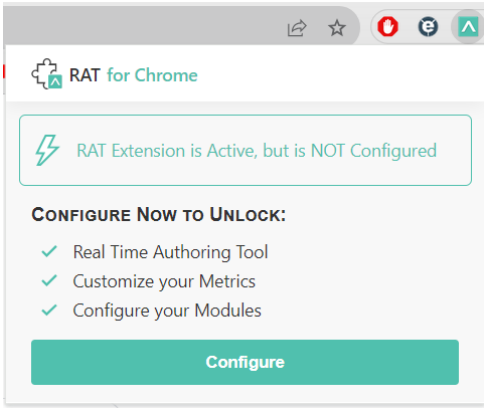

FIGURE 18

Click on *Configure*.

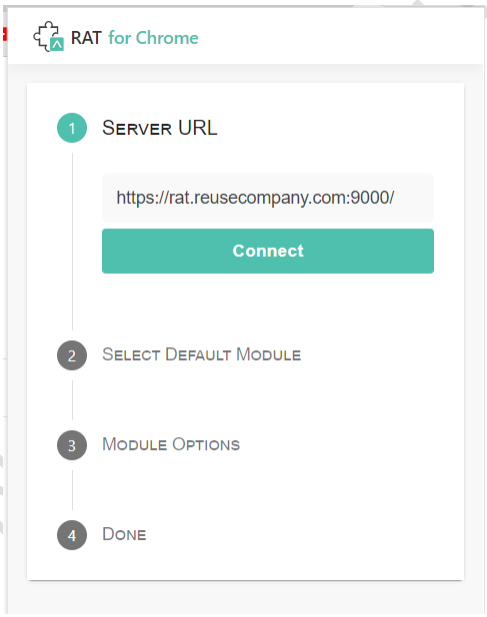

FIGURE 19

Introduce the URL configured for the RAT API Web Service, provided by your administrator.

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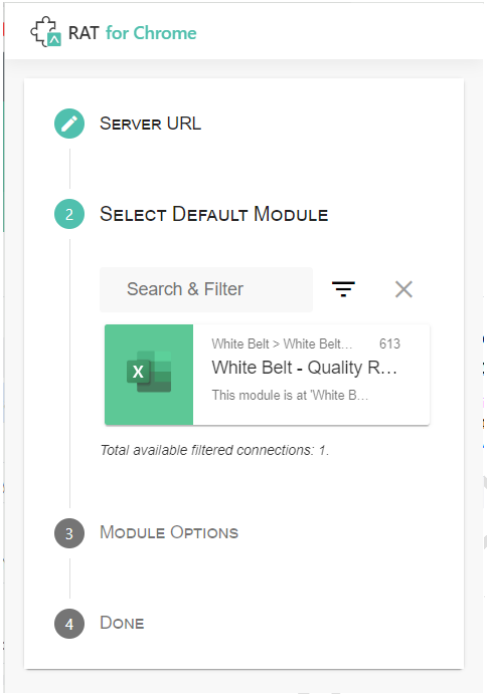

FIGURE 20

Here, you must select the module you are going to use to assess the quality of your requirements. The different modules are managed using the Engineering Studio. *(See Appendix I: Configuring SES to enable modules for this RAT for Web)*

After that, you must set your Module options (see Figure 21). There are two options:

- **Autodetection module by URL (recommended):** Turning on this option, when you navigate to a URL it is checked to see if it has a configured module. If you turn it off, you will only use what you configure regardless of what the Quality Responsible configured before.
- **Notifications when selected module changes:** If the previous option is activated and you navigate to a URL configured by the Quality Responsible, the system displays a message "the module has been changed."

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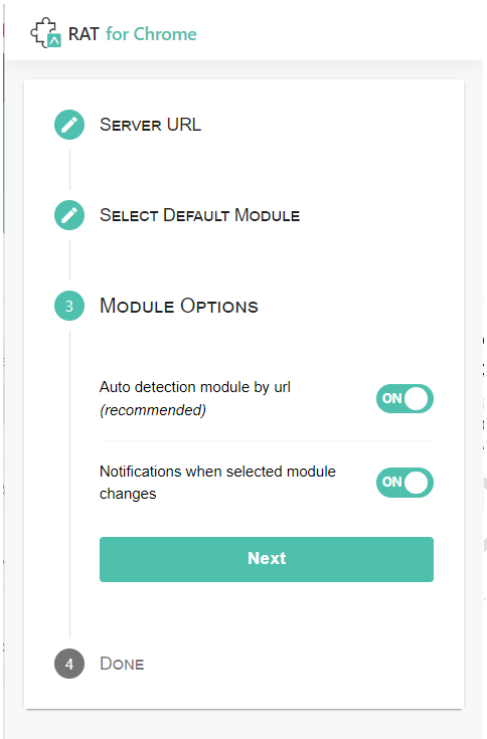

FIGURE 21

Click *Next* to end the installation. Then *Save* the configuration.

Click on *Done* to finish the configuration.

2.4 Editing the Extension Configuration

You can always edit the configuration of the extension, clicking on the icon.

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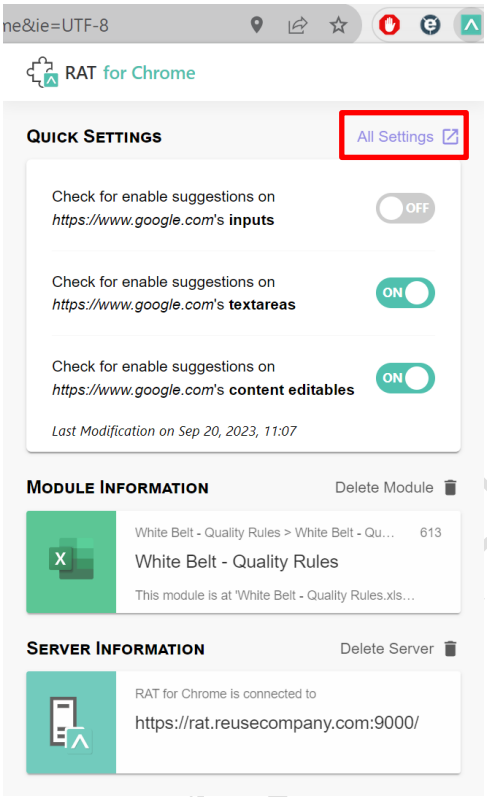

FIGURE 22

You can configure each website with specific configuration for each field, so in some cases, for example, you may want all of them activated, while in others, none of them are. By default, the configuration of each website is that it has the text areas and the content editables are enabled, while the inputs are disabled.

The *All Settings* option (highlighted) we will get a new menu with the sites management, with a list of all available websites, and the general configuration, with the options of the default settings (see Figure 24).

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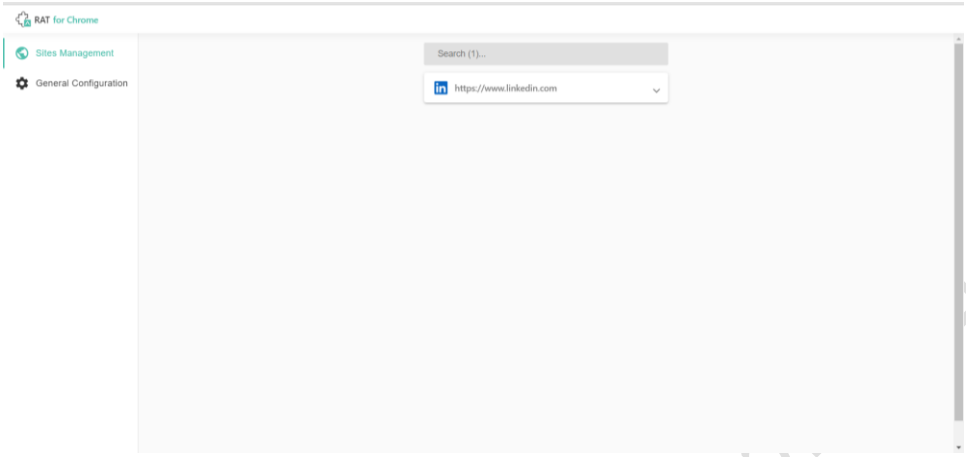

FIGURE 23

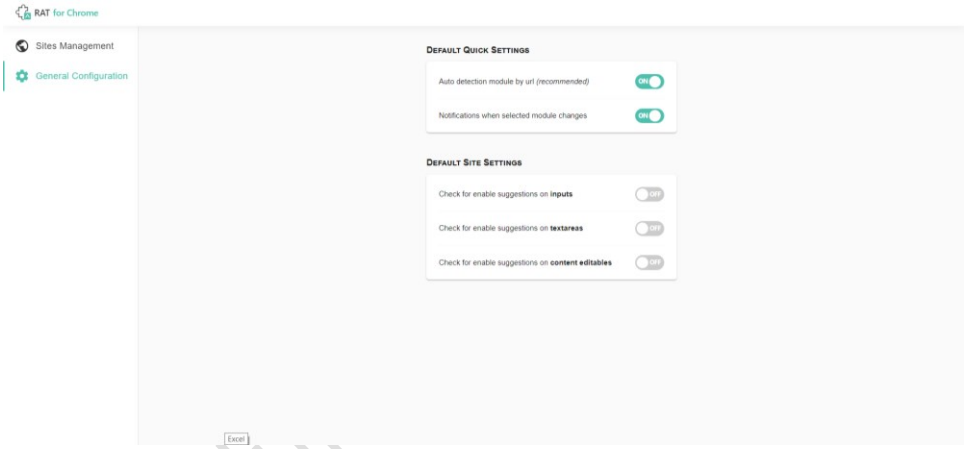

FIGURE 24

License Nu

3 The Requirements Authoring Tool - RAT for Web

To use the Web Extension, you must have activated in the navigator used. Follow the *Technical Reference Handbook* to configure it and point to the proper configuration.

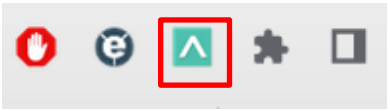

FIGURE 25

When the extension is activated, in any edition field, you will show an icon indicating that the RAT – AUTHORING tool is available.

FIGURE 26

The right toggle activates and deactivates the RAT for Web in this web address. You can manage the disabled sites from extension configuration. You will get a warning window before activating/deactivating the tool.

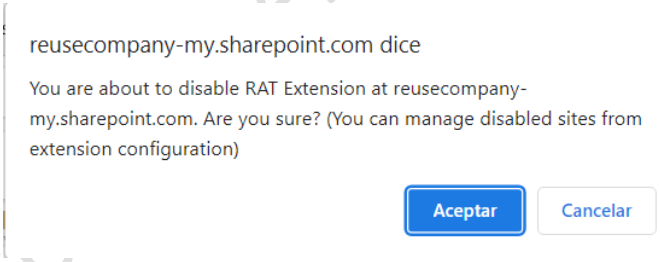

FIGURE 27

To re-activate the RAT for web, click on the RAT icon and the *Disabled Sites* tab and click on the waste icon.

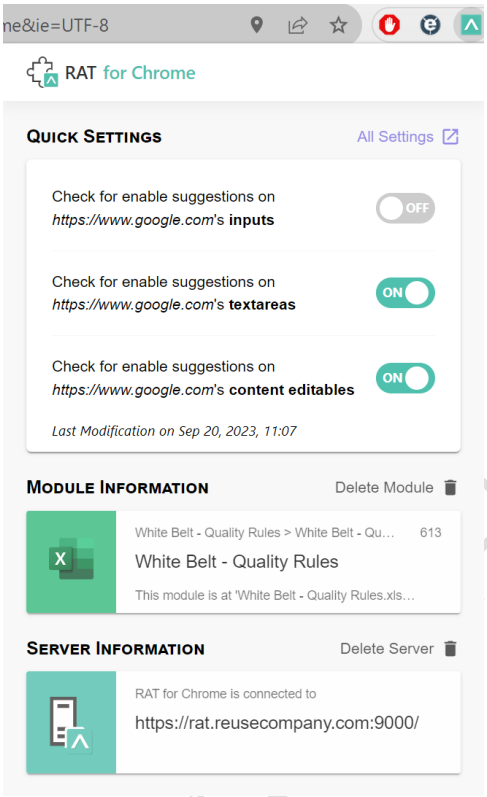

FIGURE 28

If you click on the icon, you are going to get the RAT Online.

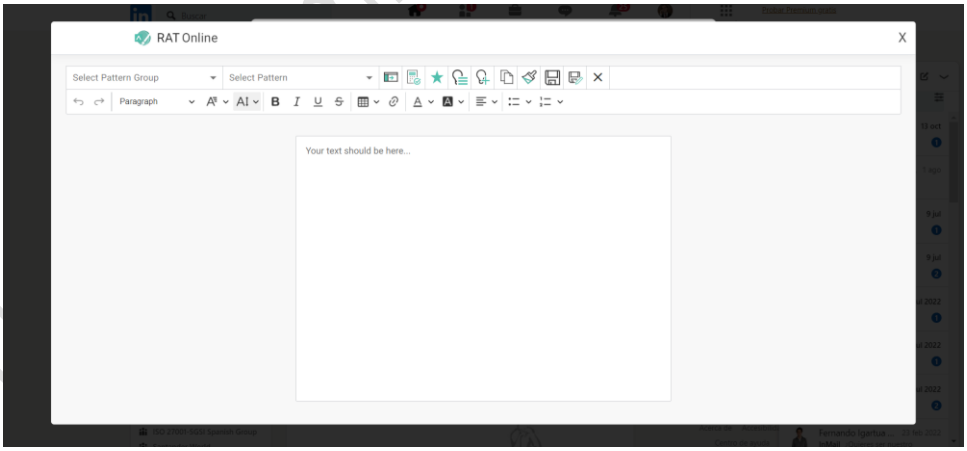

FIGURE 29

3.1 Main Panel

On the right part of the window, you can see the editing space. Here the user can edit the text, adding, deleting, or modifying whatever in needed.

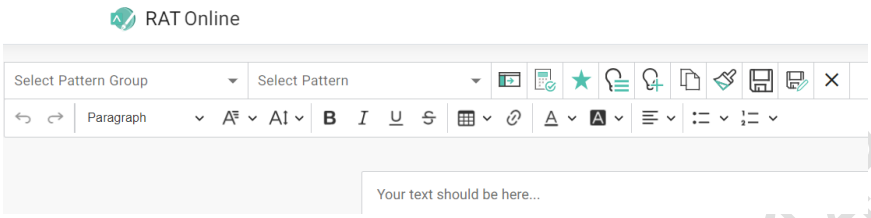

FIGURE 30

There are two lines in the menu. The lower one shows a series of word processing features, like fonts, sizes, italics, and others.

Now we are describing the first line of the menu:

Select Pattern Group / Select Pattern: Using this option you can use a series of preconfigured patterns that helps the writer/editor to fulfil the requirements. The patterns are defined, grouped, and managed using the KM – KNOWLEDGE Manager TRC tool. You can get more information about it at the *KM – KNOWLEDGE Manager: User Guide*.

FIGURE 31

The patterns are grouped, so you can choose only a group of patterns, and the requirement could fulfil any of the patterns available within this.

If you begin to write the requirement, RAT will suggest to you words that match the pattern, so you can simply select the word you are using.

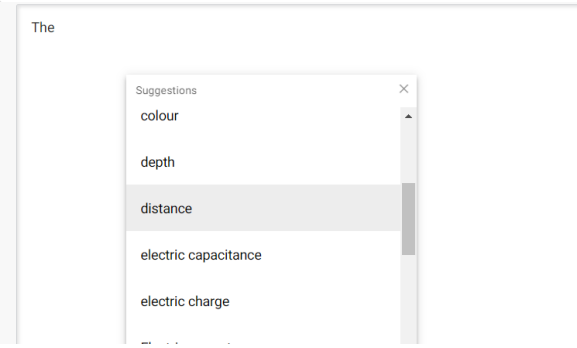

FIGURE 32

If the requirements match completely the pattern selected, you will get a matching message in the *Metric & Patterns Panel*. See section 3.2.

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FIGURE 33

Show /Hide Panel: This option allows to hide and show the *Metric & Patterns Panel*.

FIGURE 34

Calculate Quality: This option re-calculates the quality of the requirements. The tool is going to calculate the quality automatically every time you finish writing a word, but this feature allows you to do that at every moment.

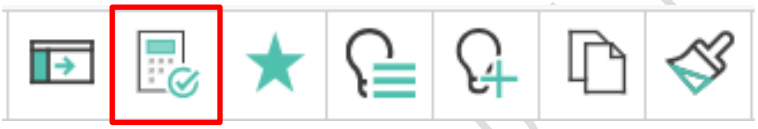


FIGURE 35

Disable / Enable Quality: You can disable the quality assessment at any moment, avoiding possible delays in the tool operation.

FIGURE 36

Show suggestions: The system gives you different suggestions to improve the quality of the requirement.

FIGURE 37

This is going to open a new panel on the right side with all the system's suggestions.

License Number LN-0 12-1434

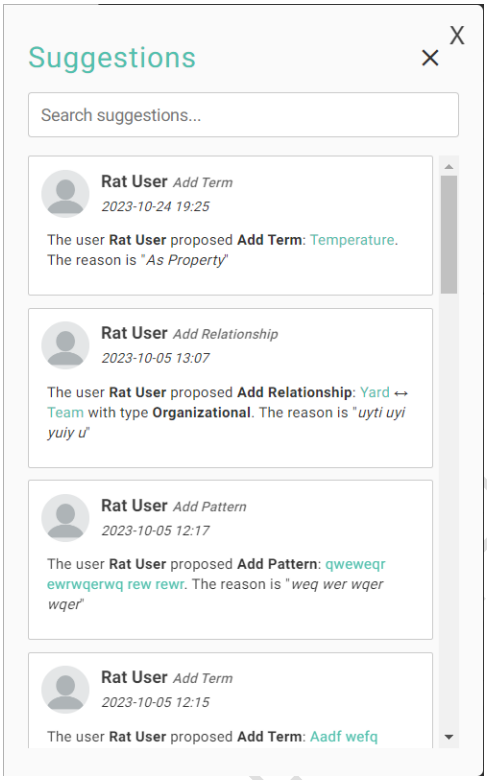


FIGURE 38

Add suggestion: This option allows the addition of new suggestions.

FIGURE 39

Clicking on this, the system will open a new panel on the right side with the process to create new suggestions.

License Number 12-1434

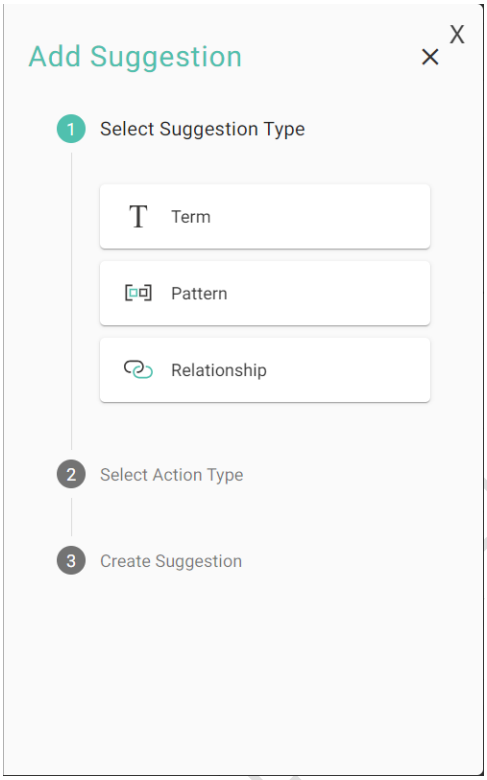
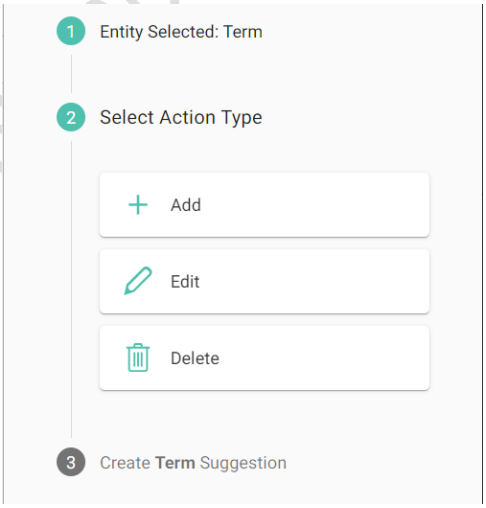


FIGURE 40

- First, you shall select the suggestion type: term, pattern, or relationship.



- Second, you shall select the action type. This may vary depending on if you have already created suggestions of this type or not.

License Number E-12-1434

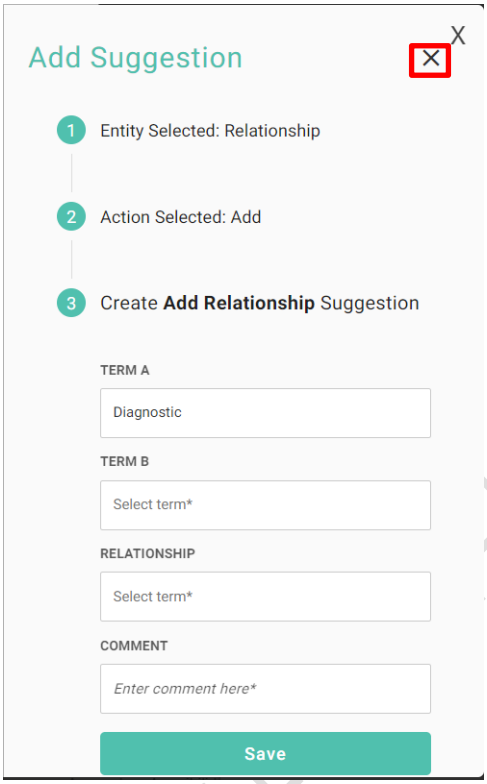


FIGURE 41

- Third, depending on the previously selected options, the system will offer different menus to manage the suggestions.

Click on *Save* to finish the managing, or on the top-right 'x' (highlighted) to cancel the process.

Copy / Copy with format: This option copies the whole text, so you can paste it in any edit field, even outside the tool. You can also maintain the format used.

FIGURE 42

Save and close: You can save the text edited, going back to the edited field.

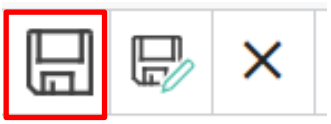


FIGURE 43

Save with format and close: You can save the text edited with its format —if the destiny field allows it— going back to the edited field. This feature depends on the technology used by the tool.

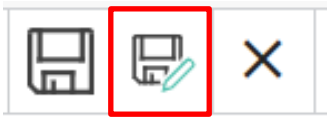


FIGURE 44

Close: This goes back without saving the edited text.

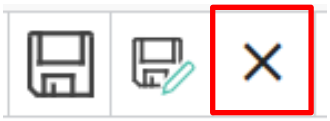


FIGURE 45

There is a warning message before going back.

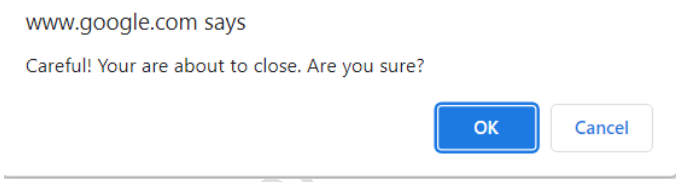


FIGURE 46

3.2 Metric & Patterns Panel

The *Metric & Patterns Panel* is in the left part of the RAT Online window. You can hide it using the X on the top-right corner and hide and show it using the main menu on the right panel (see Figure 34).

License Number 44-12-1434

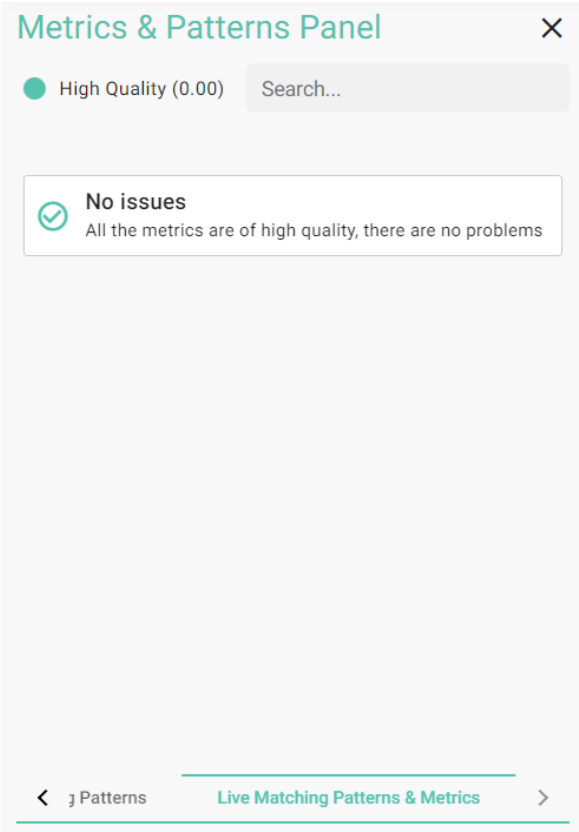


FIGURE 47

On the top part, you have a general assessment of the requirement, and a search field to filter the components in the view.

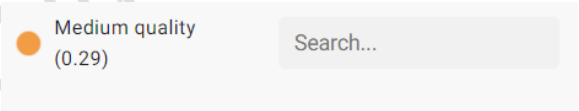


FIGURE 48

On the left, the quality assessed has three levels: high, medium, and low, using the traffic lights colours: green, yellow, and red, respectively.

On the bottom part of the panel, we have a menu with three tabs:

License number: 2-1434

3.2.1 Metrics

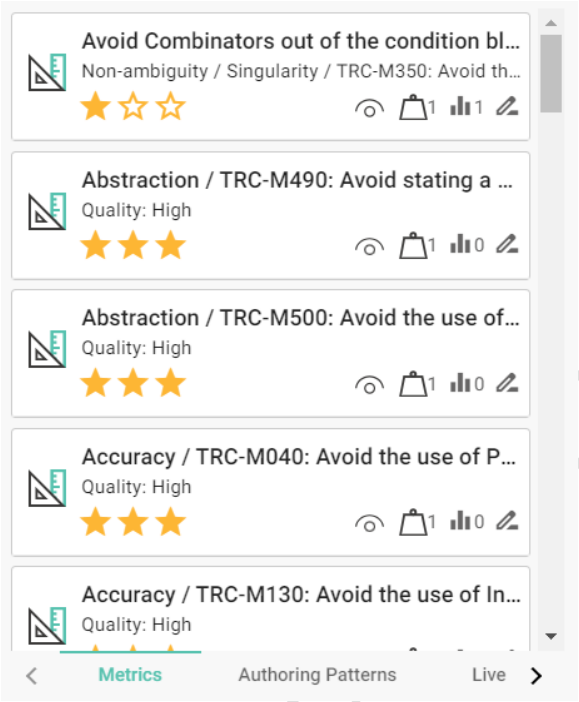


FIGURE 49

The user is going to get a list with all the metrics available and the assessed quality of the requirement edited. The metrics are managed with the SES ENGINEERING Studio tool and the user can only show what these are.

Clicking on the metric, you can see the ranges of the metric explaining the quality level assessed (see Figure 50).

Also, you have a series of icons in the box (highlighted in Figure 50) , indicating respectively if it is showing the range, the weight of the metric (with a small number), the value (with a small number), and a clickable option to mark in text that shows where in the text is the unacceptable error, highlighting it in red in the main panel.

License Number E...2-1434

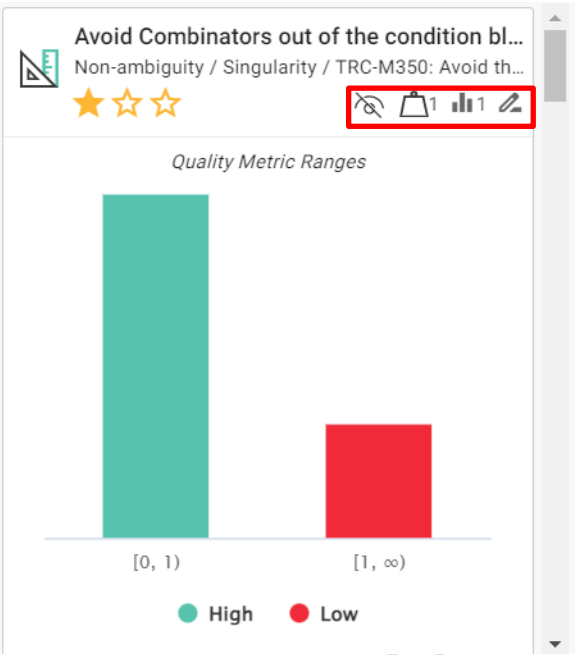


FIGURE 50

3.2.2 Authoring Patterns

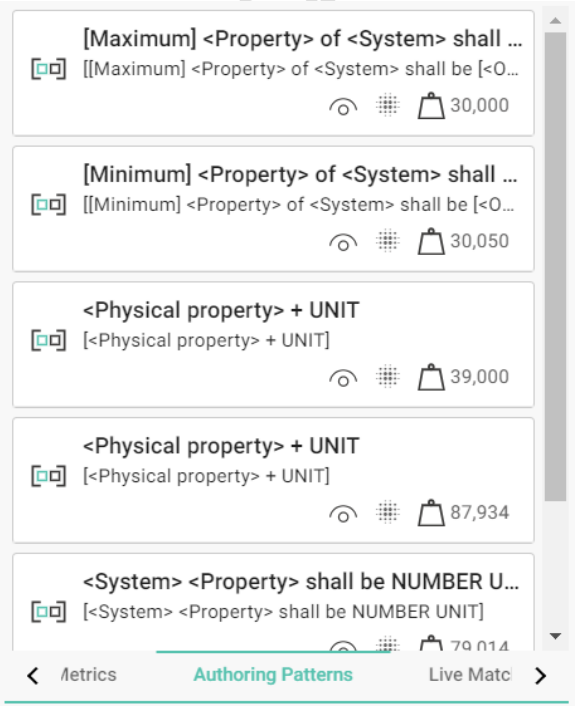


FIGURE 51

License

This option is related to the pattern group selected in the main panel (see Figure 31). It lists all the patterns available within the group. Clicking on any pattern, you can get an example of the preconfigured pattern you can use as a guide for writing requirements.

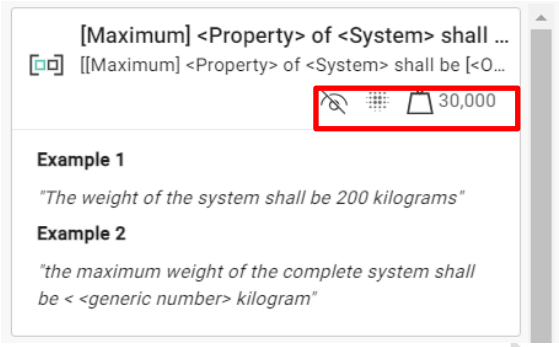


FIGURE 52

Clicking on the example, you can copy and paste the example to the main panel. Be careful, as this may delete all the work previously done.

Also, you have a series of icons in the box (highlighted in Figure 52), indicating respectively if it is showing the examples, the indexability or not of the pattern, and the weight of the template (with a small number).

3.2.3 Live Matching Patterns &Metrics

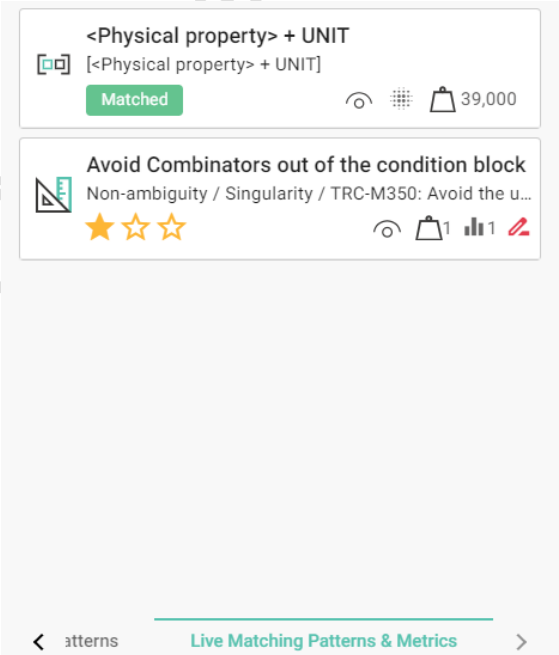


FIGURE 53

License ... LN-044-12-1434

In this tab, the requirements are automatically assessed, evaluating if it matches patterns selected and the quality of the requirement using the available metrics.

If the pattern or patterns are matched, the pattern is going to be included and highlighted with a green box with the word "Matched."

On the contrary, if any metric scores a low or medium level, it is going to be listed with the evaluation (in stars, 1 to 3).

A good requirement must match the pattern and have no metrics in this list.

License Number LN-044-12-1434

4 How the RAT for Web Works (Brief Tutorial)

After you have installed and configured RAT for Web, (see Chapter 2), you can open your requirements manager (e.g., Polarion, or JIRA) and edit or create the requirement. In the writing space, you are going to find a RAT for Web icon. Click on it, and you will get the main RAT window.

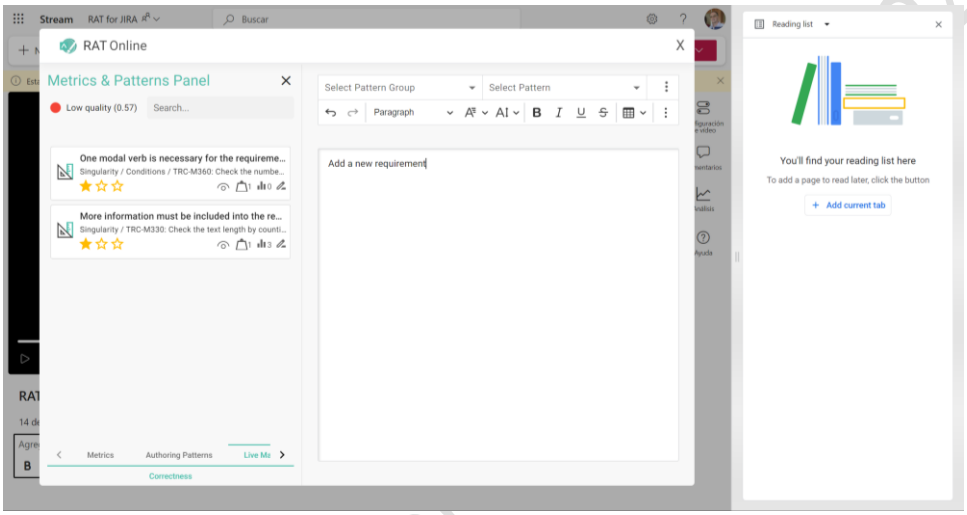


FIGURE 54

For example, this is a requirement editing space with a default requirement text. Write "The maximum length should not be longer than 5 meters." (See Figure 55).

In this case. The tool is telling us that we are using a modal verb, which is not expected in this type of requirement (obviously, that depends on the configuration of the module), and we are also using a negative clause.

License Number

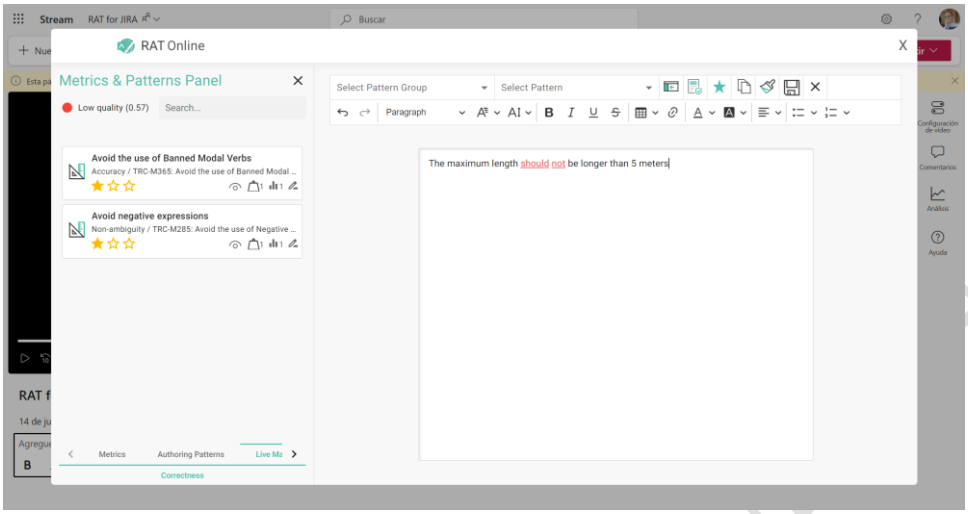


FIGURE 55

So, we are removing the inappropriate words. Let's change "should" to "shall", changing the requirement to "The maximum length shall be less than 5 meters." Now, you are going to see on the left that there are no issues pending.

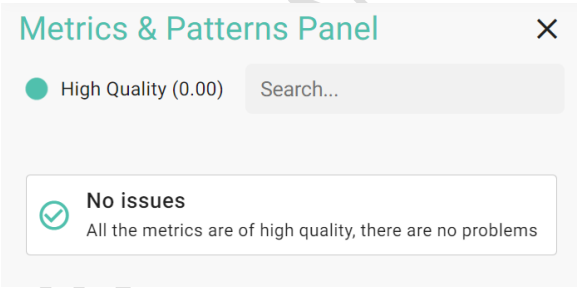


FIGURE 56

Now you have seen that as soon as we make mistakes or misspell the system will warn us in real time.

Now, we are going to see how we can write a requirement using a pattern, which is the best way to enact with a high-quality requirement. So, we are first selecting a group of requirements in the upper menu.

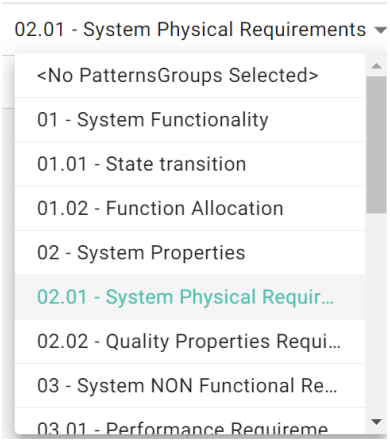


FIGURE 57

Let's select the "02.01 .- System Physical Requirements" group, as shown in the previous figure.

And then, we are selecting the [Maximum] requirement pattern.

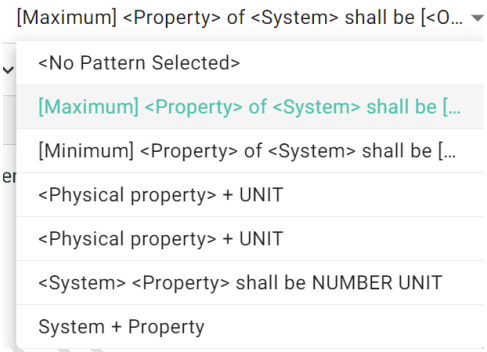


FIGURE 58

And, as soon as you begin typing, you will see that the system will produce entrances in the dictionary that belong to the specific class of the physical properties, so you can go on typing and selecting the available words.

License No. 2014-12-1434

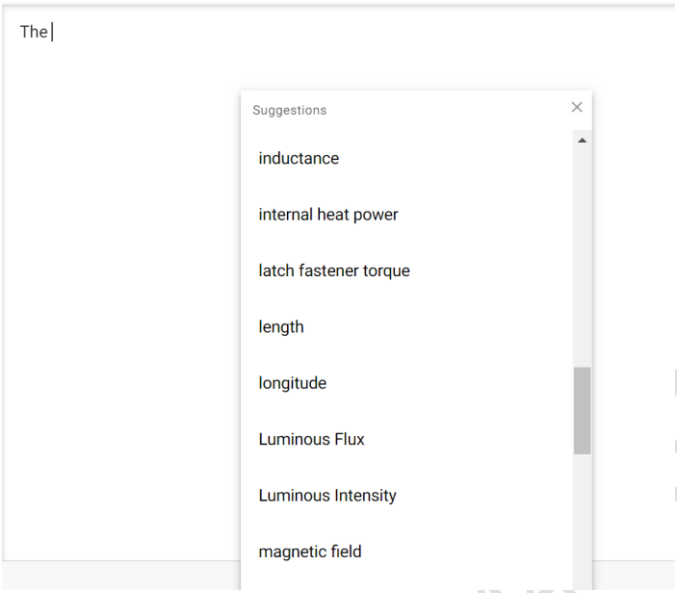


FIGURE 59

Write "The weight of the temperature warrior shall be 2".

You are going to see the RAT for Web will suggest the words that may match your pattern, so you can go on writing the words or selecting them from the list.

Let's stop for a moment.

On the left, you can see the status of the pattern and the issues RAT has found.

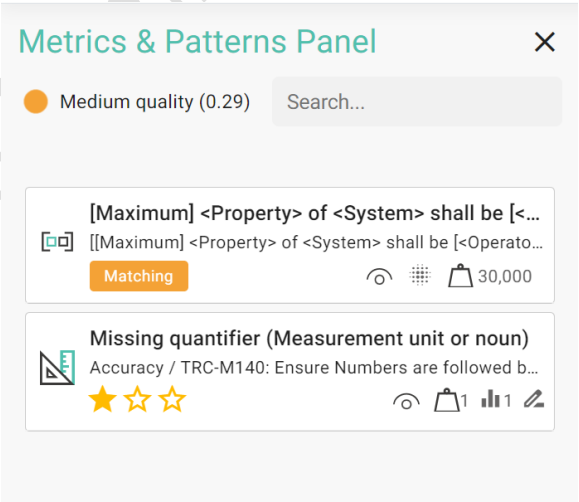


FIGURE 60

License number DN-0434-1434

First, you can see that the pattern is still matching that means that we are in a good way, but we are not done yet. Second, there is one metric that says that after a number we expect a measurement unit. So, let's add something strange, like speaking in kilometres.

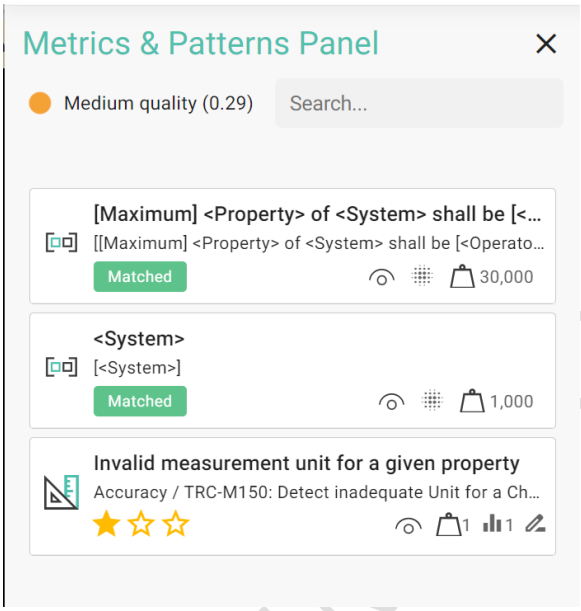


FIGURE 61

Now, the pattern is matched (the *match* word is in a green square), but the last metric is telling us that kilometres are not proper units to measure the weight, so let's change it to "kg."

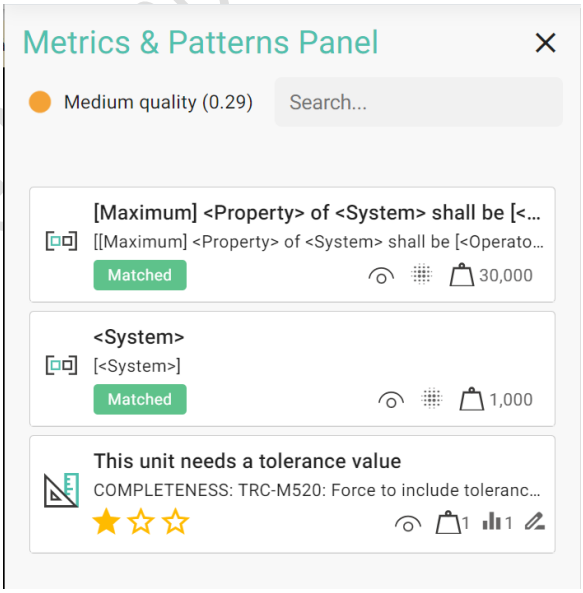


FIGURE 62

Now, we get a warning related to another metric, as a perfect weight of 2 kg is very difficult to obtain, so we can either add tolerance. Write “The weight of the temperature warrior shall be 2 kg ± 0.5 kg”.

Now we can see that there are no issues left.

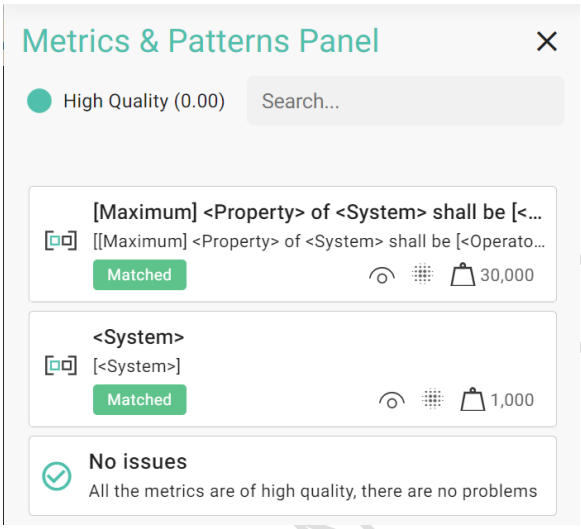


FIGURE 63

Another way to solve the problem may be say the weight should be less than 2 kg., which is something you can measure.

This way we have assure the higher quality of the requirement by matching the pattern used and solving all the metric issues that may appear in real time.

You can get more information in the *RAT – AUTHORING Tool: User Guide*.

License Number LN-2-1434

Appendix I: Configuring SES

Configuring SES connection and module properly to be shown in RAT API is easy! You only have to follow next steps.

1. Open SES

FIGURE 64

2. Select a Database

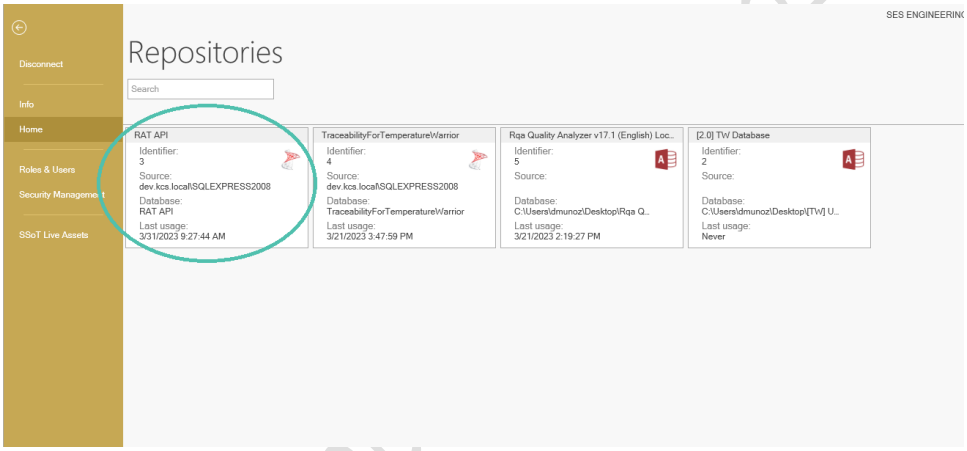


FIGURE 65

3. Click on *Add Connection*

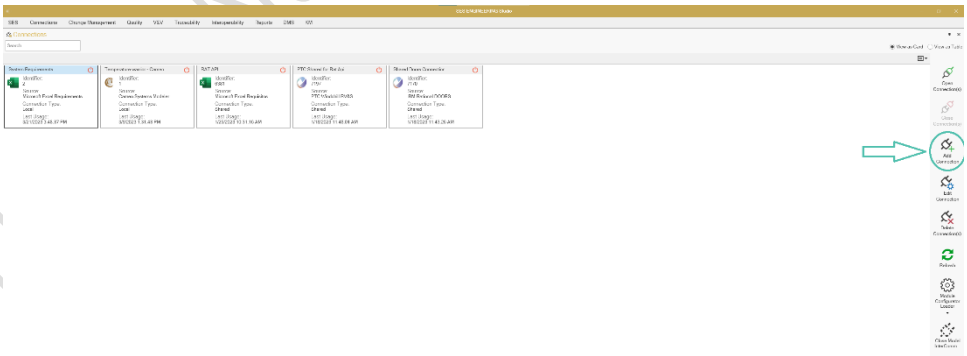


FIGURE 66

4. Fill Connection Compulsory Information

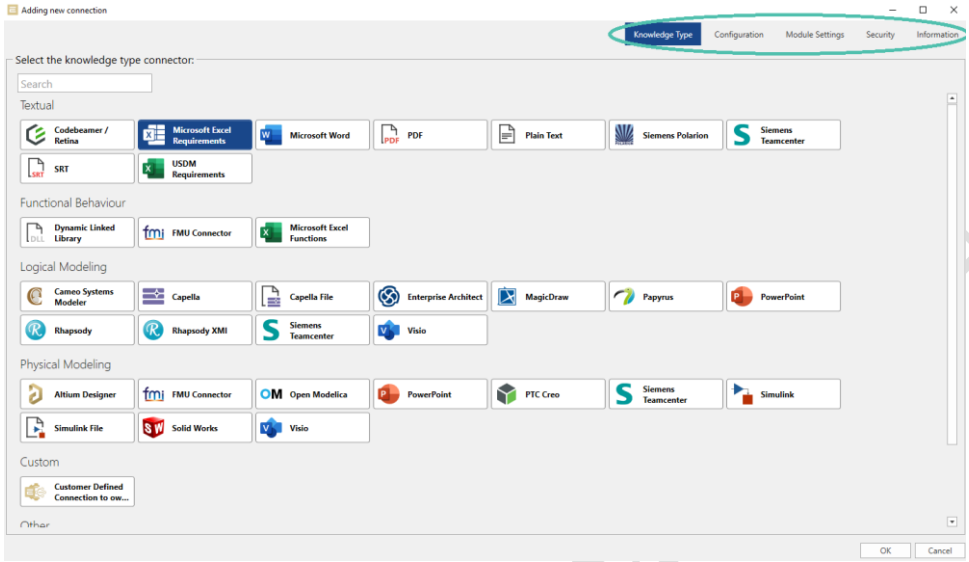


FIGURE 67

5. Set Pattern Groups or Patterns for Authoring purposes

On the formalization tab select the Patterns or Pattern Groups that will help the authors in RAT.

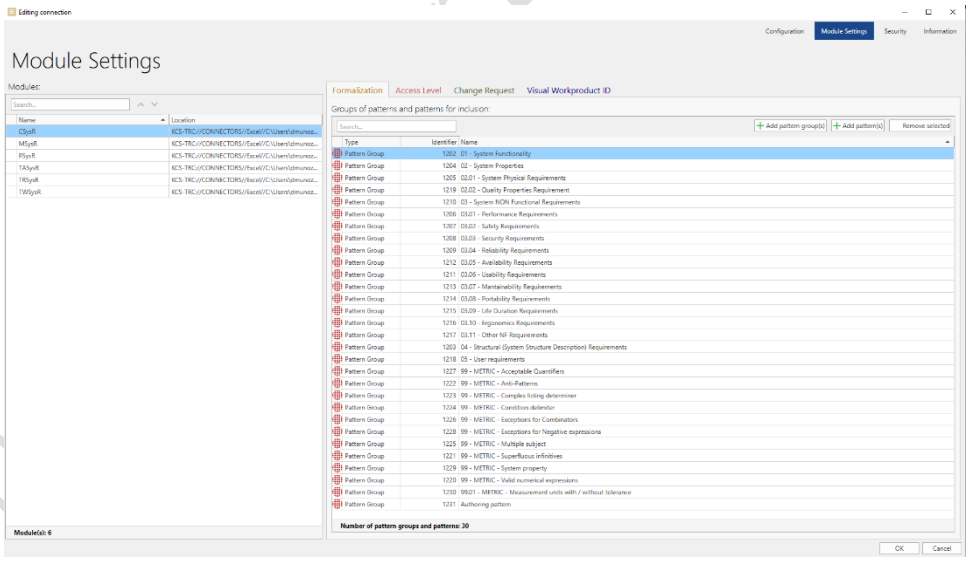


FIGURE 68

Optional: If the user wants to associate one or several URLs to a module (and therefore to its set of metrics), so that when entering this URL in the browser the default module (chosen at the

beginning in the extension) is changed by the one configured in SES, it must be added in the RAT tab.

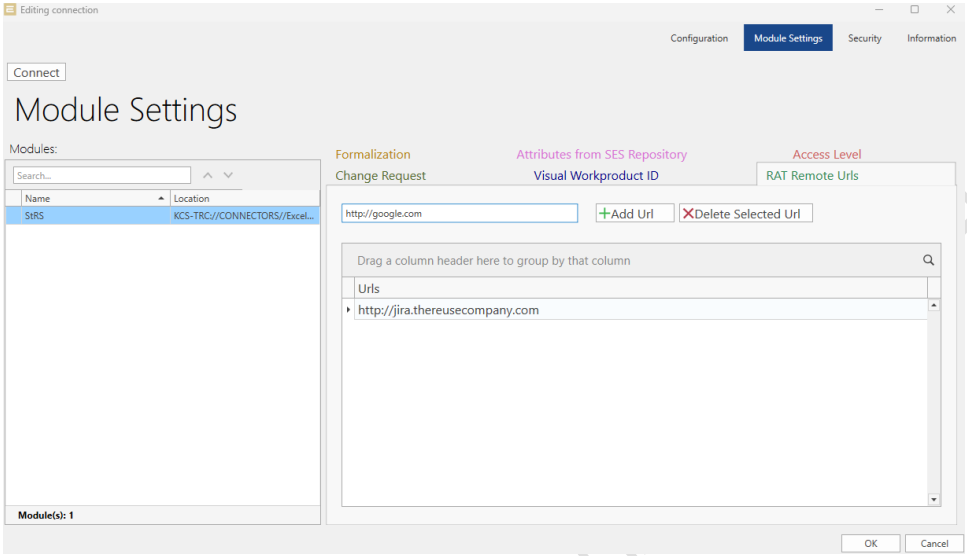


FIGURE 69

6. Mark as Connection Shared

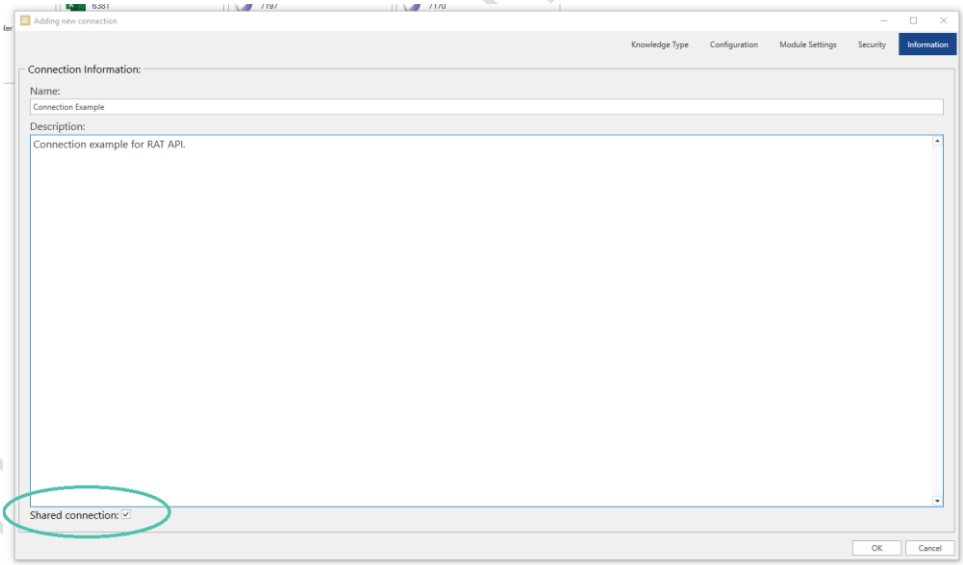


FIGURE 70

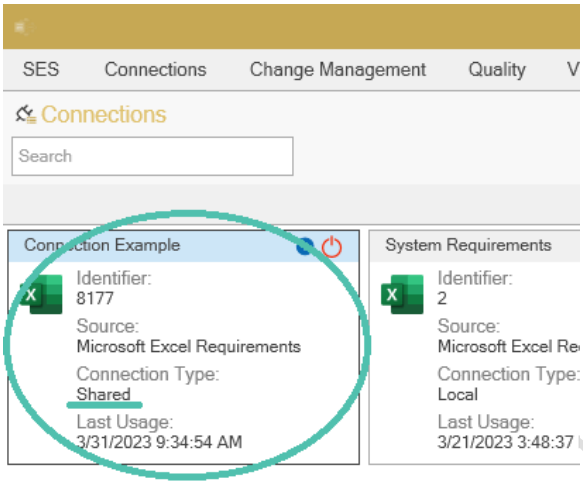


FIGURE 71

7. Open the connection

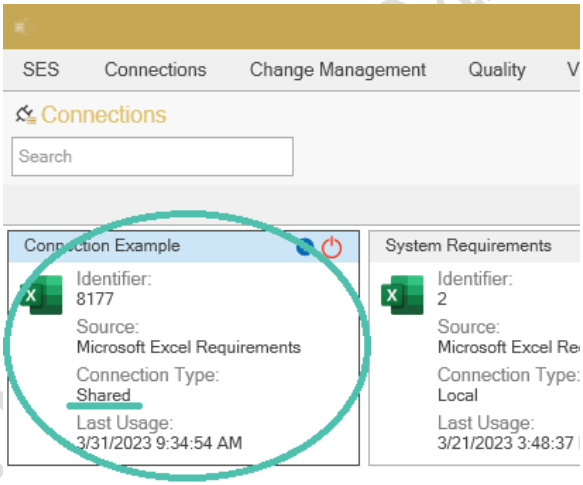


FIGURE 72

License

8. Open Quality View

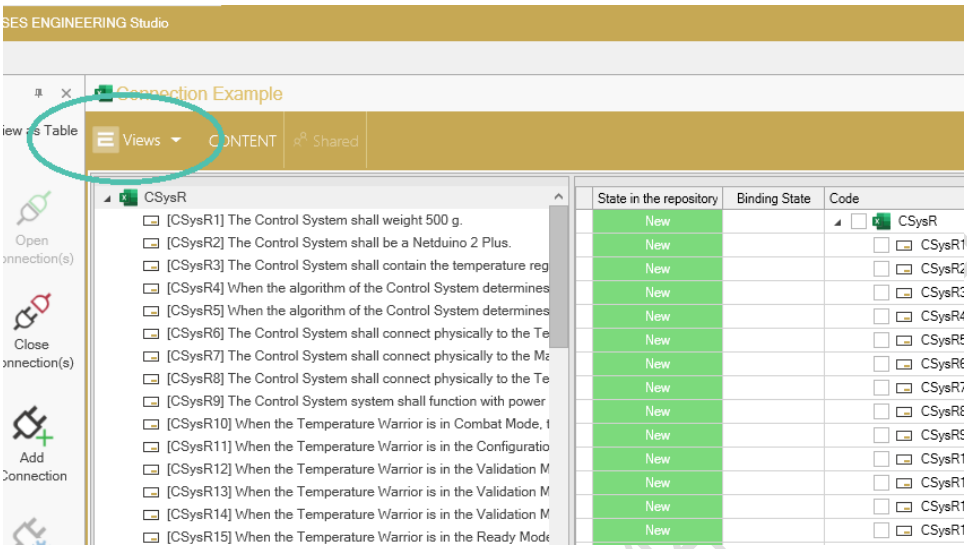


FIGURE 73

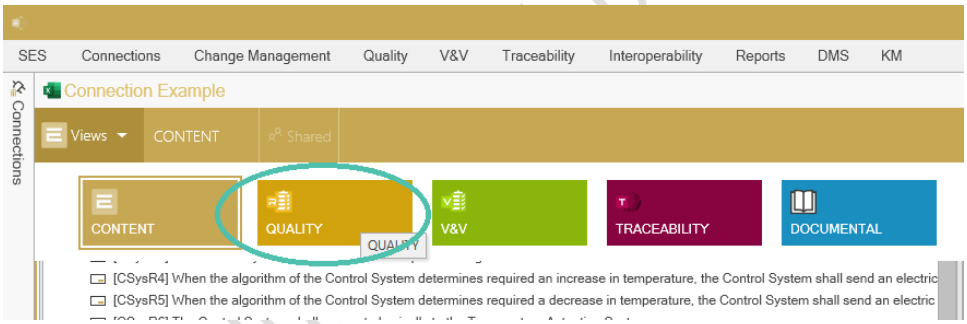


FIGURE 74

License Nu 044

9. Assign Metrics to Modules

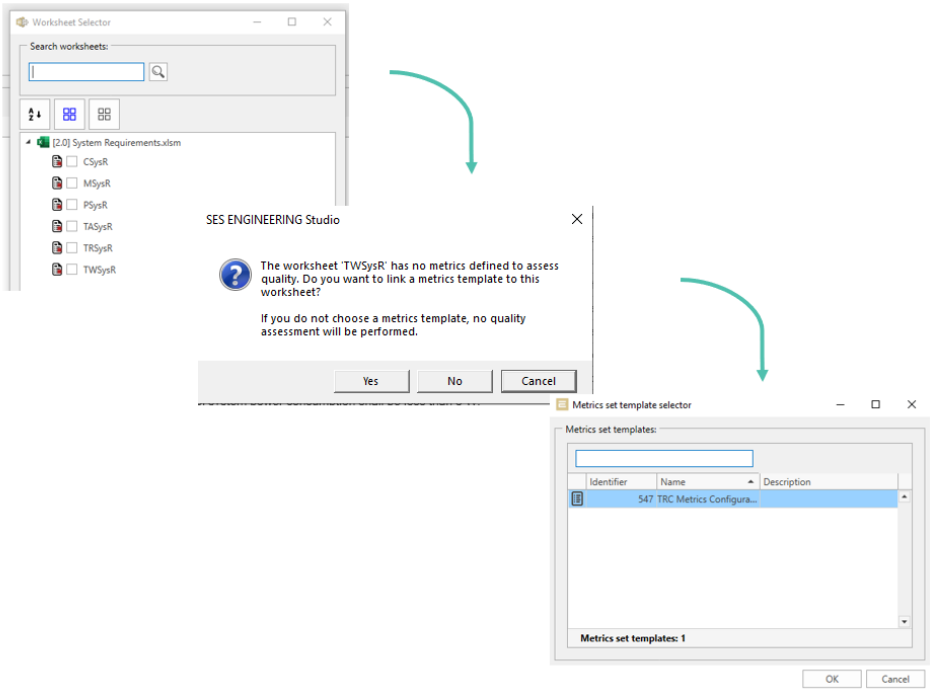


FIGURE 75

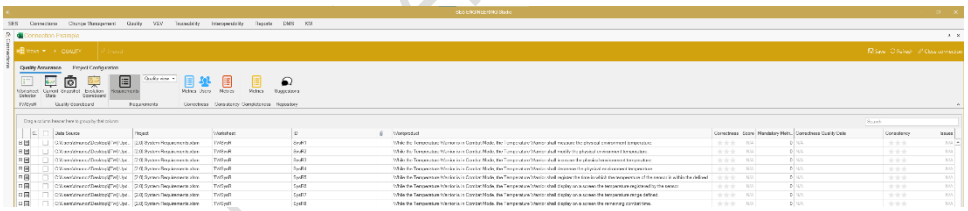


FIGURE 76

10. Click on Save button

FIGURE 77

License

11. Done!

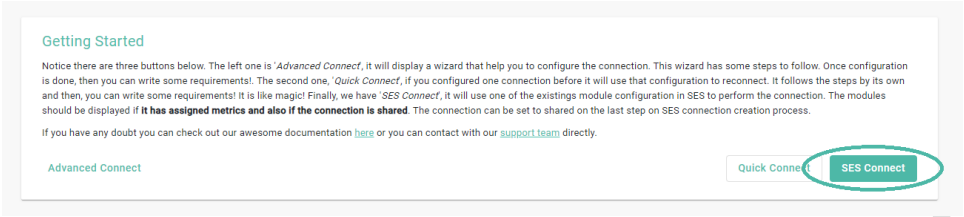


FIGURE 78

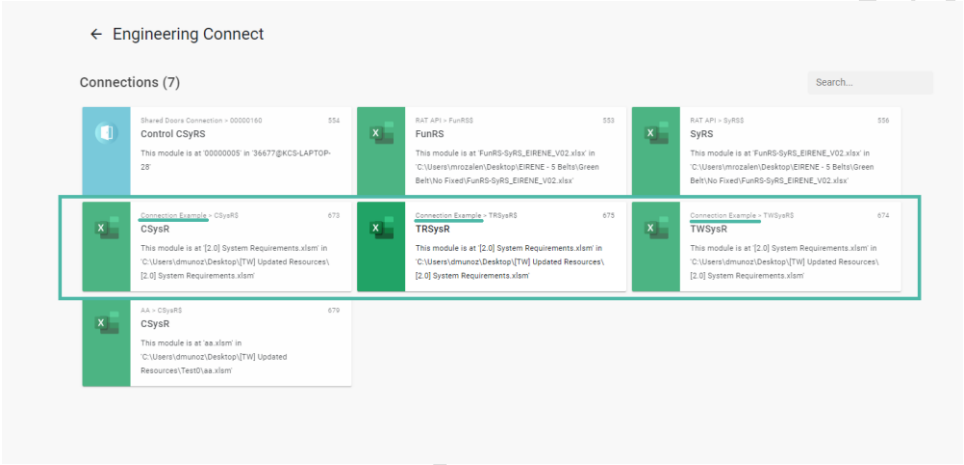


FIGURE 79

License Number

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Our focus is on System/Software Reuse, Traceability and Quality applied to all types of work-products throughout the whole SE lifecycle (requirements, SysML Models, physical models, tests cases, data results, manuals, natural language descriptions, fault trees, etc.). The integration of tools and technology from The REUSE Company facilitates the representation, analysis and exploitation of knowledge allowing for a knowledge-centric system engineering approach.

Our mission is to promote system/software and knowledge reuse within any organization, by offering processes, methods, tools, and services that make it possible. We offer technology that is fully integrated within the organization's production chain.