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





icense number mouth of the

## REQUIREMENTS AUTHORING TOOL -RAT FOR WEB

The REUSE Company

2025 Edition

icense number mouth of the



## REQUIREMENTS AUTHORING TOOL - RAT FOR WEB

Version 1.4

The REUSE Company Calle Margarita Salas, 16 2-D Parque Tecnológico LEGATEC 28919 Leganés – Madrid SPAIN – EU

http://www.reusecompany.com Phone: (+34) 912 17 25 96 Fax: (+34) 916 80 98 26 Twitter: @ReuseCompany E-mail: contact@reusecompany.com

Copyright © 2025 Knowledge Centric Solutions, S.L. (ES B87512893) All right reserved, The REUSE Company, RQA – QUALITY Studio, SES ENGINEERING Studio, KM – KNOWLEDGE Manager, RAT – AUTHORING Tool, TRACEABILITY Studio, V&V Studio, OSLC Knowledge Management and other TRC products, brands and trademarks are property of Knowledge Centric Solutions, S.L. Other products, brands and trademarks are property of their respective owners/companies.

#### **Changes History:**

. co Mun

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

WUITIN

## Table of Contents

1 Introduction	9
2 Installation and Configuration	
2.1 Prerequisites	
2.2 Installing the Software	
2.3 Installing the Extension	
2.4 Editing the Extension Configuration	23
3 The Requirements Authoring Tool - RAT for Web 3.1 Main Panel	
3.1 Main Panel	
3.2 Metric & Patterns Panel	
3.2.1 Metrics	
3.2.2 Authoring Patterns	
3.2.3 Live Matching Patterns &Metrics	
4 How the RAT for Web Works (Brief Tutorial)	
Appendix I: Configuring SES	47
icense winning	

### 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).

## 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.

Windows Features	-		×
Turn Windows features on or off			
To turn a feature on, select its checkbox. To turn checkbox. A filled box means that only part of t		-	
Device Lockdown			
Guarded Host			
🗉 🔲 Hyper-V			
Internet Information Services			
FTP Server			
🗉 🖃 🔛 Web Management Tools			
World Wide Web Services			
Internet Information Services Hostab	le Web Core		
Legacy Components			
Media Features			
Microsoft Defender Application Guar			
Microsoft Message Oueue (MSMO) S	erver		-
_	ОК	Can	cel

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 <u>Microsoft's</u> website.

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

#### 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.



**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.

🚡 Setup - RAT API	_		×	
	Welcome to the RAT API Se Wizard	etup	T	
	This will install RAT API 23.4 on your computer.			
171	It is recommended that you close all other applicat continuing.	tions befo	re	
	Click Next to continue, or Cancel to exit Setup.			R
	Next >	Cance	1	

**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.

<ul> <li>Setup - RAT API</li> <li>License Agreement Please read the following important information before continuing.</li> <li>Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.</li> <li>Rat API Version 23.4 Binary Code License         <ol> <li>This Client license entitles you to use this software, but doesn't entitle to any kind of ownership upon it.</li> <li>Software is confidential conviriated information of KCS</li> <li>I accept the agreement</li> <li>I do not accept the agreement</li> </ol> </li> </ul>	-		
Please read the following important information before continuing.  Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.  Rat API Version 23.4 Binary Code License  1. This Client license entitles you to use this software, but doesn't entitle to any kind of ownership upon it. 2. Software is confidential convrigted information of KCS  I accept the agreement	S S	etup - RAT API —	$\times$
agreement before continuing with the installation.          Rat API         Version 23.4         Binary Code License         1. This Client license entitles you to use this software, but doesn't entitle to any kind of ownership upon it.         2. Software is confidential convrighted information of KCS         I accept the agreement	Ľ	-	-) - ^
Version 23.4 Binary Code License 1. This Client license entitles you to use this software, but doesn't entitle to any kind of ownership upon it. 2. Software is confidential convrighted information of KCS • Laccept the agreement			
Binary Code License         1. This Client license entitles you to use this software, but doesn't entitle to any kind of ownership upon it.         2. Software is confidential convrighted information of KCS         I accept the agreement		Rat API	
<ol> <li>This Client license entitles you to use this software, but doesn't entitle to any kind of ownership upon it.</li> <li>Software is confidential convrished information of KCS</li> <li>I accept the agreement</li> </ol>		Version 23.4	
doesn't entitle to any kind of ownership upon it.		Binary Code License	
		doesn't entitle to any kind of ownership upon it.	
○ I do not accept the agreement		• I accept the agreement	
		○ I do not accept the agreement	

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.

Web service setup		Γ	
Choose the suitable parameters to set	up your web service	E	∧
Web service name:			
RAT_API			
Port:			
9000			
Use Windows Authentication			
☐ Use Elasticsearch as Log System			
	< <u>B</u> ack <u>N</u> ext	> Cancel	

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

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.

	Setup - RAT API  Application Pool setup  Choose the suitable parameters t oset up your application pool	_		×
icen	Username phPoolIdentity Password Seack New	¢ >	Ca	ancel

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.

🖾 Setup - RAT API		- 0	×	
License Server Configuration			1-1	
You have to complete this info				
Server. Don't worry if you do n	iot know it now, it can be m	iodilied later		
Hostname				
localhost				
Port				
27000				
			<b>C</b> 1	
	< <u>B</u> ack	<u>N</u> ext >	Cancel	
	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.

🗟 Setup - RAT API –	×
Cake Settings Configuration You have to complete this information in order to connect with the ontology. Do not worry if you do not know it now, it can be modified later	<b>−</b> ] <b>≡</b> ∧
Db Type MySQL SQL Server	]
Db User Db Password	
Session Timeout (s)	
< Back Next > Can	cel

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.

🛃 Setup - RAT API				
Elastic Log Configuration (OPTION				
		ale Electrones		
You have to complete this information log. Do not worry if you do not know			<sup>rch</sup> E	
		eu laterini		
Db Server				
Index Name				
User				
Password				
	< Back	Next >	Cancel	
	< Back	Next >	Cancel	
	IGURE 9			

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

**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.

🗟 Setup - RAT API		_		×	
Select Destination Location			F	-	
Where should RAT API be install	ed?		l		
Setup will install RAT API i	nto the following folder	r.			
To continue, click Next. If you w	ould like to select a dif	ferent folder, cli	ick Browse.		
C:\Program Files (x86)\The REU	SE Company\RAT API		Browse		
					B
At least 737,7 MB of free disk sp	ace is required.				
	< <u>B</u> ack	<u>N</u> ext >	Cano	cel	
	FIGURE 10		X		

**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.

	🔓 Setup - RAT API — 🗌 🗡	<
	Select Start Menu Folder Where should Setup place the program's shortcuts?	۸
	Setup will create the program's shortcuts in the following Start Menu folder. To continue, click Next. If you would like to select a different folder, click Browse.	
	The REUSE Company\RAT API Browse	
$\cdot (\mathcal{O})$		
	< <u>B</u> ack <u>N</u> ext > Cancel	



**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.

🔄 Setup - RAT API	_		$\times$	
Ready to Install			7	
Setup is now ready to begin installing RAT API on your com	nputer.			
Click Install to continue with the installation, or click Back if change any settings.	you want to	review or		
Destination location: C:\Program Files (x86)\The REUSE Company\RAT API		^		
Start Menu folder: The REUSE Company\RAT API				
		~		
<		>		
< <u>B</u> ack	Install	Can	cel	
FIGURE 12	<u> </u>			•

**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.

	🔓 Setup - RAT API —		×
	Installing Please wait while Setup installs RAT API on your computer.		
C	Extracting files C:\\The REUSE Company\RAT API\DevExpress.RichEdit.v22.1.Core	.dll	
Cell			
		(	Cancel

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.

🖳 Setup - RAT API	—	×
	Completing the RAT API Setup Wizard	•
	Setup has finished installing RAT API on your computer. The application may be launched by selecting the installe icons. Click Finish to exit Setup.	d Roll
	Einish	

#### 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.



Click on it to begin the installation of the tool.

chrome v	web store	🗱 Log in
Start >	extensions > Requirements Authoring Tool - RAT	
	Requirements Authoring Tool - RAT     Add to Chron       ★ ★ ★ ★ ○ ○   Productivity	10
	General description Privacy Practices reviews Aid Related	
	Competitive of the second	×
	Resummente Leavily information semification Mode Based Resumments Engineering Missis	

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).

		臣 ☆ 🤇	) ()	*
	Exte	ensions		×
	Thes	ccess needed e extensions don't need to see and cha mation on this site.	inge	
	O	AdBlock — best ad blocker	Ŧ	• • •
	j.	Adobe Acrobat: PDF edit, conve	푸	:
	Θ	IE Tab	Ŧ	:
S S	^	Requirements Authoring Tool	푸	*
	۵	Manage extensions		
		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.

	🖻 🖈 🚺 🖲 🔼	
	ද් RAT for Chrome	
	RAT Extension is Active, but is NOT Configured	
	CONFIGURE NOW TO UNLOCK:	
	<ul> <li>Real Time Authoring Tool</li> </ul>	
	<ul> <li>Customize your Metrics</li> <li>Configure your Modules</li> </ul>	
	Configure	
	FIGURE 18	
Click on Configure.		
	द्भि RAT for Chrome	
	1 Server URL	
	https://rat.reusecompany.com:9000/	
	Connect	
	2 Select Default Module	
	3 Module Options	
e la	4 DONE	
	FIGURE 19	

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



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."

0	Server URL	
0	Select Default Module	
3	Module Options	2
	Auto detection module by url (recommended)	
	Notifications when selected module on changes	
	Next	
4	Done	
	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.

. Cense



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).

	Search (1)			
	Intps://www.linkedin.com	~		
	FIGURE 23		ノレ	
		<b>a</b>		
	Notifications when selected module changes			
[ize]				
, AV	Figure 24			
		Error 24	There 24	True 24

## 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.



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



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.

•	reusecompany-my.sharepoint.com dice
	You are about to disable RAT Extension at reusecompany- my.sharepoint.com. Are you sure? (You can manage disabled sites from extension configuration)
	Aceptar         Cancelar
	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.



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

🔊 RAT Onli	ne				
Select Pattern Group	✓ Select Pattern	- 🗈 🗟 🕇		₽ ×	
← → Paragraph v	Aª - AI - B I <u>∪</u>		▲ - = - := - := -		
	Maria	text should be here			
	TOUR	text should be here			

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.

🔊 RAT O	nline		
Select Pattern Group	✓ Select Pattern	- E 🗄 ★ 🕒 G 🗅 🗳 🗔 🗣 ×	
$\Leftrightarrow$ $ ightarrow$ Paragraph .	× A⁼ × At × B	$I \ \ \sqcup \ \ \mathfrak{S} \ \ \blacksquare \ \ \mathscr{O} \ \ \land \ \ \blacksquare \ \ \lor \ \ \blacksquare \ \ \ \ \ \ \ \ \ \ \$	
		Your text should be here	
		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*.



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.

S	The			
		Suggestions	×	
		colour	•	
		depth		
		distance		
·		electric capacitance		
		electric charge		
		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.



FIGURE 33

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



**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.



**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.



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



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



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

Add Suggestion	× <sup>X</sup>
1 Select Suggestion Type	
T Term	
[미] Pattern	
C Relationship	
2 Select Action Type	2
3 Create Suggestion	
FIGURE 40	

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

	<ol> <li>Entity Selected: Term</li> <li>Select Action Type</li> </ol>
icense	+ Add Cete Term Suggestion

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

	~	,
Add	Suggestion	
1	Entity Selected: Relationship	
2	Action Selected: Add	
3	Create Add Relationship Suggestion	
	TERM A	
	Diagnostic	
	TERM B	
	Select term*	
	RELATIONSHIP	
	Select term*	
	COMMENT	
	Enter comment here*	
	Save	
	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.



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.

		đ	×	
		FIGURE 44		
<b>Close:</b> This goes back without sa	aving the e	dited tex	άt.	
		P	×	
		FIGURE 45		
There is a warning message before	ore going l	oack.		
www.google.	com says			
Careful! Your ar	e about to clos	se. Are you s	sure?	
			0	K Cancel
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	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).

<ul> <li>High Quality (0.00</li> <li>No issues All the metrics a</li> </ul>	) Search		
	re of high quality there are no		
	io or night quantify there are no	problems	
		2	
A g Patterns	Live Matching Patterns & Metri	ics >	

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

Medium (0.29)	quality	Search	
	Fi	GURE 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:

#### 3.2.1 Metrics



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.




FIGURE 51

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.



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

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.

### 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.

Stream         RAT for JIRA 𝑘 <sup>R</sup> ∨         𝒫 Buscar		0	? 🔞	🔲 Reading list 💌 🗙
+ 🔊 RAT Online			× 🗾	
© ESSE Metrics & Patterns Panel X	Select Pattern Group 👻 Select Pattern	- I		
Low quality (0.57) Search	$ \begin{tabular}{lllllllllllllllllllllllllllllllllll$	<b>□</b> ~ :	figuración e video	
One modal verb is necessary for the requireme Singularity / Conditions / TRC-M360: Check the numbe	Add a new requirement		mentarios	You'll find your reading list here
<sup>™</sup> ★☆☆ © ₫1 410 &				To add a page to read later, click the button + Add current tab
More information must be included into the re Singularity / TRC-M330: Check the text length by counti ★☆☆ ۞ 凸1 北3 么			(?) Ayuda	
			Ayruda	1
Þ				
RAT				
14 de				
Agree B Correctness			- 11	
Coneculess				
	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.

$\qquad \qquad $	Ø Buscar	
+ Nue 🛷 RAT Online		× ir ~
① Estapa Metrics & Patterns Panel X	Select Pattern Group 🔹 Select Pattern 🗣 🗈 🗒 ★ 🗈 🗳 拱 🗙	×
Low quality (0.57) Search	$ \begin{tabular}{cccccccccccccccccccccccccccccccccccc$	Configuración de video
Avoid the use of Banned Modal Verss Acouracy / TRC/M358. Avoid the use of Banned Modal . Acouracy / TRC/M358. Avoid the use of Regative More analysis / TRC/M328. Avoid the use of Regative	The maximum length <u>abouid not</u> be longer than 5 meteral	ar video Connentrativa Analato Aquala

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.

Metrics & Patte	rns Panel ×
High Quality (0.00)	Search
No issues All the metrics are o	of high quality, there are no problems
2	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.

[]	Maximum] <property> of <system> shall be [&lt;0 •</system></property>
~	<no pattern="" selected=""></no>
	[Maximum] <property> of <system> shall be [</system></property>
	[Minimum] <property> of <system> shall be [</system></property>
er	<physical property=""> + UNIT</physical>
	<physical property=""> + UNIT</physical>
	<system> <property> shall be NUMBER UNIT</property></system>
	System + Property

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.

Suggestions	×	
inductance	2	
internal he	at power	
latch faste	ner torque	
length		
longitude		
Luminous I	Flux	
Luminous	Intensity	P
magnetic f	ield	

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.



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.

	ics & Pattern	Search	×
[00]		r <b>ty&gt; of <system> shall be [&lt;</system></b> > of <system> shall be [<operato< th=""><th></th></operato<></system>	
[00]	<system> [<system>] Matched</system></system>	ⓒ ∰ ⚠ै 1,000	
		nt unit for a given property Detect inadequate Unit for a Ch	
	Fig	URE 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."

	Metrics & Pattern	s Panel X
	🔴 Medium quality (0.29)	Search
anse		rty> of <system> shall be [&lt; &gt; of <system> shall be [<operato< th=""></operato<></system></system>
	<system> [□□] [<system>] Matched</system></system>	⊚ ∰1,000
	This unit needs a to COMPLETENESS: TRC	Derance value -M520: Force to include toleranc

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  $\pm$  0.5 kg".

Now we can see that there are no issues left.

Metrics & Patte	rns Panel	×
High Quality (0.00)	Search	
	perty> of <system> shall be rty&gt; of <system> shall be [<ope< th=""><th>erato</th></ope<></system></system>	erato
<system> [] [<system>] Matched</system></system>	⊚ ∰ ₫1	,000
	f high quality, there are no probl	lems

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.

# 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 65

3. Click on Add Connection

4				01 (11	s Is Mail No brill Mail Chado	
SES Connections Churt	on presidenti di angli AZA	Terrachildy Interspeciality Terrate	MS W			
ieeth .						# Nova Cal. (
Status Regiments Mariflec	C Tergeotressein-Care		PTCStave for Ret doi dout/for	<ul> <li>Steed Door Connector</li> <li>Identifier</li> </ul>	0	
Z Nerrow Viscent Food Readered	C 1	doubler: #387 Sencer	MontPlat: 1997 Severate PTC volvabali Portito	Meetific: T-0 Server RM Extend D00E3		
Connection Type.	Connection Type.	Vision Front Requisitors Connection Type: Shared	Connection Type.	Connection Type. Changed		
Lest Usept: 32132227348.87 PM	Art Disage: MYCERS T. St. 45 PM	Lett Usage: N25/2028 10 81.06 AM	Last Usage: V182223 11 48.09 AM	Lest Usage: V180009 V143 29-A01		

4. Fill Connection Compulsory Information

earch extual							
Codebeamer / Retina	Microsoft Excel Requirements	Microsoft Word	PDF PDF	Plain Text	Siemens Polarion	Siemens Teamcenter	
SRT SRT	USDM Requirements						
unctional Behaviour	r						
Dynamic Linked	FMU Connector	Microsoft Excel Functions					
ogical Modeling							
Cameo Systems Modeler	Capella	Capella File	Enterprise Architect	MagicDraw	🥠 Papyrus	PowerPoint	
Rhapsody	Rhapsody XMI	S Siemens Teamcenter	Visio				
Physical Modeling							
Altium Designer	FMU Connector	OM Open Modelica	PowerPoint	PTC Creo	Siemens Teamcenter	Simulink	
Simulink File	Solid Works	visio					
lustom							
Customer Defined Connection to ow.							
Other							

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.

Module Set	ttings			
/odules:		Formalization Ac	cess Level Change Request Visual Workproduct ID	
Search	~ ~		d patterns for inclusion:	
Name	Location		b paciens for housion.	
CSvdR	KCS-TRC://CONNECTORS//Excel//C\Users\dmunaz			+ Add pattern group(s) + Add pattern(s) Remove s
MSysR	KCS-TRC//CONNECTORS//Excel//C/Users\dmunaz	Type	Identifier Name	
PSysR.	KCS-TRC://CONNECTORS//Excel//C:\Users\dmunaz	Pattern Group	1202 01 - System Functionality	
TASysR	KCS-TRC://CONNECTORS//Excel//C:\Users\dmunoz	I Pattern Group	1204 02 - System Properties	
TRSysR	KCS-TRC://CONNECTORS//Excel//C:\Users\dmunoz	Pattern Group	1205 02.01 - System Physical Requirements	
TWSysR	KCS-TRC://CONNECTORS//Excel//C\Users\dmunoz	Pattern Group	1219 02.02 - Quality Properties Requirement	
		Pattern Group	1210 03 - System NON Functional Requirements	
		Pattern Group	1206 03.01 - Performance Requirements	
		Pattern Group	1207 D3.02 - Safety Requirements	
		Pattern Group	1208 03.03 - Security Requirements	
		Pattern Group	1209 03.04 - Reliability Requirements	
		Pattern Group	1212 03.05 - Availability Requirements	
		Pattern Group	1211 03.06 - Usability Requirements	
		Pattern Group	1213 03.07 - Mentainability Requirements	
		Pattern Group	1214 03.08 - Portability Requirements	
		Pattern Group	1215 03.09 - Life Duration Requirements	
		Pattern Group	1216 D3.10 - Erganomics Requirements	
		Pattern Group	1217 03.11 - Other NF Requirements	
		Pattern Group	1203 04 - Structural (System Structure Description) Requirements	
		Pattern Group	1210 05 - User requirements	
		Pattern Group	1227 99 - METRUC - Acceptable Quantifiers	
		Pattern Group	1222 99 - METRIC - Anti-Patterns	
		Pattern Group	1223 99 - METRIC - Complex listing determiner	
		Pattern Group	1224 99 - METRIC - Condition delimiter	
		Pattern Group	1226 99 - METRIC - Exceptions for Combinators	
		Pattern Group	1228 99 - METRIC - Exceptions for Negative expressions	
		Pattern Group	1225 99 - METRUC - Multiple subject	
		Pattern Group	1221 99 - METRIC - Superflucus infinitives	
		Pattern Group	1229 99 - METRIC - System property	
		Pattern Group	1220 99 - METRIC - Valid numerical expressions	
		Pattern Group	1230 99.01 - METRIC - Measurement units with / without tolerance	
		Pattern Group	1231 Authoring pattern	
		Number of pattern gro		

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.

Module odules:		Formalization		om SES Repository	Access Level	
earch	^ ×	Change Request	Visual Wor	rkproduct ID	RAT Remote Urls	
Name StRS	Location     KCS-TRC://CONNECTORS//Exc	cel http://google.com		+Add Url XDelete	e Selected Url	
			r here to group by that	column		٩
		Urls http://jira.thereuseco	ampany com			
		intp://jinditieredsed	Shipany.com			
Nodule(s): 1						
	Connection Sh		ure 69	2		OK Cancel
Mark as	s Connection Sh		URE 69	C		OK Cancel
Mark as	n	ared	URE 69	Knowledge Type Conf		
Mark as	n	ared	URE 69	Knowledge Type Cont		×
Mark as Maing new connection Connection Inform Name: Connection Example	n	ared	URE 69	Knowledge Type Cord		×
Mark as 11 5 581. Adding new connection - Connection Inform Name:	n II a new	ared	URE 69	Knowledge Type Cont		×
Adding new connection     Connection Inform     Name:     Connection Example     Description:	n II a new	ared	URE 69	Koosledge Type Cod		×
Mark as Adig new constitution Connection Inform Name: Connection bangle Description:	n II a new	ared	URE 69	Kountedge Type Cont		×
Mark as Ading new connection Connection Inform Name: Connection transfer Description:	n II a new	ared	URE 69	Knowledge Type Conf		×
Mark as Ading new connection Connection Inform Name: Connection transfer Description:	n II a new	ared	URE 69	Koosledge Type Cont		×
Mark as Ading new connection Connection Inform Name: Connection transfer Description:	n II a new	ared	URE 69	Knowledge Type Cont		×
Mark as Ading new connection Connection Inform Name: Connection transfer Description:	n II a new	ared	URE 69	Knowledge Type Cord		×
Mark as Ading new connection Connection Inform Name: Connection transfer Description:	n II a new	ared	URE 69	Knowledge Type Cort		×
Mark as Ading new connection Connection Inform Name: Connection transfer Description:	n II a new	ared	URE 69	Knowledge Type Cord		×



FIGURE 71

7. Open the connection

<ul> <li>(i)</li> </ul>					
SES	Connections	Change Mana	gement	Quality	V
K≟ Co	nnections				
Search					
Conn	Connuction Example			m Requirement	s
x	ldentifier: 8177		x	Identifier: 2	
[-]	Source: Microsoft Excel Requ	irements		Source: Microsoft Exce	el Re
Λ.	Connection Type: Shared			Connection T Local	ype:
	Last Usage: 3/31/2023 9:34:54 AM	4		Last Usage: 3/21/2023 3:48	8:37
		FIGURE 72			

#### 8. Open Quality View

4 × -	Connection Example					
iew is Table	E Views - CONTENT & Sha	ared				
~	CSysR		^	State in the repository	Binding State	Code
Ø	[CSysR1] The Control System	em shall weight 5	500 g.	New		∠ 🛃 CSysR
Open	[CSysR2] The Control System	em shall be a Ne	tduino 2 Plus.	New		CSyst
onnection(s)	[CSysR3] The Control System	em shall contain	the temperature reg	New		CSyst
~	[CSysR4] When the algorith	im of the Control	System determines	New		CSyst
Cr <sup>O</sup>	[CSysR5] When the algorith	im of the Control	System determines	New		CSysł
Close	[CSysR6] The Control System			New		CSyst
onnection(s)	[CSysR7] The Control System			New		CSyst
	[CSysR8] The Control System			New		CSyst
K.	[CSysR9] The Control System			New		CSysł
$\Sigma_{\perp}$	[CSysR10] When the Temp			New		CSyst
Add	[CSysR11] When the Temp			New		CSyst
Connection	[CSysR12] When the Temp			New		CSyst
	[CSysR13] When the Temp [CSysR14] When the Temp			New		CSysł
14	[CSysR15] When the Temp			New		CSys
R 🛛 Con						
Connections	AS CONTENT R <sup>2</sup> Shared	QUALITY	v≇ V&V	TRACEABILITY		UMENTAL
	rs ← CONTENT R <sup>0</sup> Shared	QUALITY	v&v	ease in temperature, the (	DOC Control System s	SUMENTAL
	AS CONTENT A® Shared CONTENT QUALITY CONTENT QUALITY C(SysR4) When the algorithm of the Q	QUALITY	v&v	ease in temperature, the (	DOC Control System s	SUMENTAL

9. Assign Metrics to Modules



#### 11. Done!



icense humbour

## The REUSE Company

The REUSE Company is an organization specialized in the application of Semantic Representation and Analysis Technologies to a wide range of industries (Aerospace, Defense, Automotive, Naval, Health, ...). Our customers are usually (but not limited to) safety-oriented organizations.

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.



