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





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# REQUIREMENTS AUTHORING TOOL -RAT FOR WEB

The REUSE Company

2025 Edition

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## REQUIREMENTS AUTHORING TOOL - RAT FOR WEB

Version 1.4

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#### **Changes History:**

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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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## 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	
3.2 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)	41
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	_		×
Furn Windows features on or off			
fo turn a feature on, select its checkbox. To checkbox. A filled box means that only part	turn a feature t of the feature	off, clear is turned	its on.
🗉 📃 Device Lockdown			
Guarded Host			
🗉 🔲 Hyper-V			
Internet Information Services			
FTP Server			- 1
표 📑 Web Management Tools			
World Wide Web Services			_
Internet Information Services Ho	stable Web Co	re	
Legacy Components			
Media Features			
Microsoft Defender Application (	Guard		
Microsoft Message Oueue (MSM)	(O) Server		_

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 AF Wizard	PI Se	etup		T
	This will install RAT API 23.4 on your comp	uter.			
1-1	It is recommended that you close all other continuing.	applica	tions bef	fore	
	Click Next to continue, or Cancel to exit Se	etup.			R
	Next >	>	Can	cel	•
	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.

Setup - RAT API  License Agreement 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 convisited information of KCS  I accept the agreement I do not accept	E S	etup - RAT API — 🗌	×
License Agreement       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 conviribited information of KCS         I accept the agreement         I do not accept the agreement	U	icense Agreement	-
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 convisitited information of KCS         I accept the agreement         I do not accept the agreement		Please read the following important information before continuing.	∎ ∎∧
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         I do not accept the agreement		Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.	
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 conviribited information of KCS I accept the agreement I do not accept the agreement		Rat API	
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         I do not accept the agreement		Version 23.4	
<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 convrighted information of KCS</li> <li>I accept the agreement</li> <li>I do not accept the agreement</li> </ol>		Binary Code License	
• I accept the agreement I do not accept the agreement		<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 convrighted information of KCS</li> </ol>	
○ 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.

Y

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		-	×	
License Server Configuration			1-1	
You have to complete this info	rmation in order to connect	with the License		
Server. Don't worry ir you do n	iot know it now, it can be m	louined 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				
Electic Log Configuration (OPTION)				
Liastic Log Configuration (OFTIONA	•L)	ale Electrones		
log. Do not worry if you do not know	it now, it can be modifi	ed later		
		eu laterini		
Db Server				
Index Name				
User				
Password				
	< Pack	Nexts	Cancel	
	< Back	Next >	Cancel	
-				

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.

a chrome v	web store	🕼 Log in
Start >	extensions > Requirements Authoring Tool - RAT	
	Requirements Authoring Tool - RAT     Add to Chron       ★★★★★ ○ ○   Productivity	me
	General description Privacy Practices reviews Ald Related	
	Concernation     C	×
	Resurremental sealably information standardistry. Model Batteri Resurremental Engineering, MBBB	

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		×
	No a Thes infor	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.

	🖻 🛧 🧿 🖸
	ရို္ကြို့ RAT for Chrome
	RAT Extension is Active, but is NOT Configured
	CONFIGURE NOW TO UNLOCK:
	✓ Real Time Authoring Tool
	Customize your Metrics     Configure your Modules
	Comigure
	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
	4 DONE
0	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."

	Server URL	
0	Select Default Module	
3	Module Options	20
	Auto detection module by url (recommended)	
	Notifications when selected module 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	
	Auto detection module by url (recommended)	<b>a</b>		
	Notifications when selected module changes			
	Check for enable suggestions on inputs			
	Check for enable suggestions on textareas			
	Check for enable suggestions on content editables			
[ize]				
NU	Figure 24			
		Starts (1)   Image: The provide with indefinition of the provide wi	Starth ()   Figure 23 Figure 24	Second of a ratio of a

## 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)
	<b>Aceptar</b> 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	- 🗈 🗟 🕇	6 6 6 6	₽ ×	
← → Paragraph v	Aª - AI - B I <u>∪</u>	5 II · @ A ·	▲ - = - := - ;= -		
	Maria	tout 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 Online	
Select Pattern Group 👻 Select Pattern	- E B ★ C 0 C ≪ B F ×
∽ → Paragraph v A <sup>z</sup> v At v <b>B</b>	$I \ \ \underline{\cup} \ \ \underline{\circ} \ \ \underline{\boxplus} \ \ \ \underline{\circ} \ \ \underline{\frown} \ \ \ \underline{\frown} \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$
	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	×××
1 Select Suggestion Type	
T Term	
[미] Pattern	
C Relationship	
2 Select Action Type	2
3 Create Suggestion	
Frank (D	

• 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	10.
	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 b	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 are of</li> </ul>	Search	re no problems	, B
No issues All the metrics are of	high quality, there ar	re no problems	, RSA
			1B
C J Patterns Live N	Aatching Patterns & I	Metrics >	

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

•	Medium quality (0.29)		Search	
		Figu	JRE 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 $\mathfrak{R}^{R} \vee$	,O Buscar			0 7	· 💮	🔝 Reading list 👻	×
+ N 🐼 RAT Online				Х	-		
O Esta Metrics & Patterns Panel	×	ect Pattern Group 👻 Se	lect Pattern	- E	×		
Low quality (0.57) Search	¢	→ Paragraph v A <sup>Ξ</sup> v A	AI ~ B I <u>∪</u> <del>S</del> [	■ ~   ÷	figuración e vídeo		3
One modal verb is necessary for Singularity / Conditions / TBC-M360	r the requireme Ad	d a new requirement			mentarios	You'll find your reading lis	there
★☆☆	⊙ 🐴 dio &				5	To add a page to read later, click	he button
More information must be inclu	ded into the re				unalis <i>is</i>	+ Add current tab	
Singularity / TRC-M330: Check the ter	ct length by counti				0		
RAT							
14 de							
Agree  K Metrics Authoring Patterns	Live Ma 🔺						
Correctness							
		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.

Stream RAT for JIRA ℝ <sup>0</sup> ∨	Ø Buscar	۲ 🛞
+ Nue 🛷 RAT Online		× ir ~
O Esta pa Metrics & Patterns Panel X	Select Pattern Group 🔹 Select Pattern 🗣 🗈 🗒 ★ 🗈 🗳 拱 🗙	×
Low quality (0.57)     Search	$\Leftrightarrow \ \hookrightarrow \ \ Paragraph \qquad \lor \ \ A^{\underline{\ast}} \lor A^{\underline{\ast}} \lor A^{\underline{\ast}} \lor B  I  \  \  \  \  \  \  \  \  \  \  \  \  \$	Configuración
Avoid the use of Banned Modal Verbs Acouracy / TRC M38.8 Avoid the use of Banned Modal - **** © `` `` `` `` `` `` `` `` `` `` `` `` `	The maximum length about not be longer than 5 meters!	ar Valor Connentance Aculto Apulat

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	of high quality, there are no problems

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.



FIGURE 60

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.

Metr	edium quality (0.29)	Search	
[00]	[Maximum] <proper [[Maximum] <property Matched</property </proper 	r <b>ty&gt; of <system> shall be [&lt;</system></b> > of <system> shall be [&lt;0perato</system>	R
[00]	<system> [<system>] Matched</system></system>	ⓒ ∰ ⚠ै 1,000	
	Invalid measureme Accuracy / TRC-M150: ★ ☆ ☆	nt unit for a given property Detect inadequate Unit for a Ch	
	Fig	une 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 ×
	🔴 Medium quality (0.29)	Search
anse	[Maximum] <proper [I] [[Maximum] <property: Matched</property: </proper 	rty> of <system> shall be [&lt; &gt; of <system> shall be [&lt;0perato</system></system>
	<system> [□□] [<system>] Matched</system></system>	⊚ ∰1,000
	This unit needs a to COMPLETENESS: TRC 文 ☆ ☆	Derance value -M520: Force to include toleranc

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  $\pm$  0.5 kg".

Now we can see that there are no issues left.

Metrics & Patte	rns Panel	×
High Quality (0.00)	Search	
[Maximum] <pro [미] [[Maximum] <prope Matched</prope </pro 	perty> of <system> shall be orty&gt; of <system> shall be [<opera< th=""><th>[&lt; ato 000</th></opera<></system></system>	[< ato 000
<system> []] [<system>] Matched</system></system>	ි 🏦 🗂 1,0	000
No issues All the metrics are o	of high quality, there are no proble	ems

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

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FIGURE 66

4. Fill Connection Compulsory Information

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SRT SRT	USDM Requirements						
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Dynamic Linked	FMU Connector	Functions	J				
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ysical Modeling							
Altium Designer	FMU Connector	OM Open Modelica	PowerPoint	PTC Creo	Siemens Teamcenter	Simulink	
Simulink File	Solid Works	Visio					
stom	_						
Customer Defined Connection to ow	•						

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.

	seen go						
odures:		Formalization Acc	cess Level Cha	inge Request Visual Workproduct ID			
earch	~ ~	Groups of patterns an	nd patterns for inc	lusion:			
Name	<ul> <li>Location</li> </ul>				L Add antitem annuald L Add antitem	e fet   Ram	
CSysR	KCS-TRC://CONNECTORS//Excel//C:\Users\dmunoz				L and herror, Brochtel   L and herror	(av)   marin	-
MSysR	KCS-TRC://CONNECTORS//Excel//C\Users\dmunoz	Туре	Identifier Na	me			-
PSysR	KCS-TRC://CONNECTORS//Excel//C:\Users\chrunoz	Pattern Group	1202 01	- System Functionality			1
TASysR	KCS-TRC://CONNECTORS//Excel//C:\Userst;dmunoz	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 08	.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 - Mantainability Requirements			
		Pattern Group	1214 03	.08 - Portability Requirements			
		Pattern Group	1215 03	.09 - Life Duration Requirements			
		Pattern Group	1216 03	.10 - Erganomics Requirements			
		Pattern Group	1217 03	.11 - Other NF Requirements			
		Pattern Group	1203 04	- Structural (System Structure Description) Requirements			
		Pattern Group	1218 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	- METRIC - 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 televance			
		diffe and a second	2002 84	there exites			

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.

dules: arch	~ ~	Formalization Change Request	Attributes fr Visual W	rom SES Reposi orkproduct ID	tory	Access Leve RAT Remote Url	el s
lame tRS	Location     KCS-TRC://CONNECTORS//E	xcel http://google.com		+Add Url	XDelete Sel	ected Url	
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FIGURE 70



FIGURE 71

7. Open the connection

10 - C					
SES	Connections	Change Mana	gement	Quality	V
K⊈ Cor	nnections				
Search					
Conp	ction Example	0	Syster	m Requirement	s
×	Identifier: 8177		x	Identifier: 2	
(-	Source: Microsoft Excel Requ	irements		Source: Microsoft Exce	el Re
Ν.	Connection Type: Shared			Connection T Local	ype
	Last Usage: 3/31/2023 9:34:54 AN	1		Last Usage: 3/21/2023 3:48	3:37
		FIGURE 72			

#### 8. Open Quality View

iew as Table	E Views - CONTENT & Shared			
A	🖌 🖬 CSysR	State in the repository	Binding State	Code
<u>S</u>	[CSysR1] The Control System shall weight 500 g.	New		🔺 🗌 💶 CSysR
Open	[CSysR2] The Control System shall be a Netduino 2 Plus.	New		CSyst
innection(s)	[CSysR3] The Control System shall contain the temperature reg	New		CSyst
d	[CSysR4] When the algorithm of the Control System determines	New		CSysF
\$	[CSysR5] When the algorithm of the Control System determines	New		CSysF
Close	CSysRb] The Control System shall connect physically to the Te     CSysRb] The Control System shall connect physically to the Te	New		CSysF
onnection(s)	[CSysR/] The Control System shall connect physically to the Mz     [CSysR/] The Control System shall connect physically to the Mz	New		CSysF
	[CSysRo] The Control System shall connect physically to the Fe     [CSysRo] The Control System system shall function with power	New		CSysł
C4	ICSvsR10] When the Temperature Warrior is in Combat Mode 1	New		CSysF
$\sim_+$	CSvsR111 When the Temperature Warrior is in the Configuration	New		CSys
Add	[CSvsR12] When the Temperature Warrior is in the Validation M	New		CSysF
Jonnection	[CSysR13] When the Temperature Warrior is in the Validation M	New		CSysł
	[CSysR14] When the Temperature Warrior is in the Validation M	New		CSysF
14	ICSvsR151 When the Temperature Warrior is in the Ready Mode	New		CSysi
SES C	FIGURE 73	Interoperability	Reports	DMS KM
SES C	FIGURE 73	Interoperability	Reports	DMS KM
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9. Assign Metrics to Modules



#### 11. Done!



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## 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.

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