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Improve the quality of your requirements using advanced Correctness metrics in RQA - QUALITY Studio



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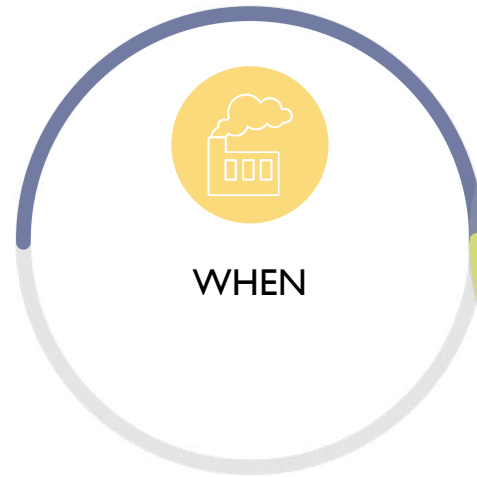


THE
REUSE
COMPANY



- Introduction to The REUSE Company and the speakers
- Why focusing on requirements quality?
- What is requirement correctness?
- RQA – QUALITY Studio and the CCC Approach
- Advanced correctness metrics
- Live demo
- Q&A





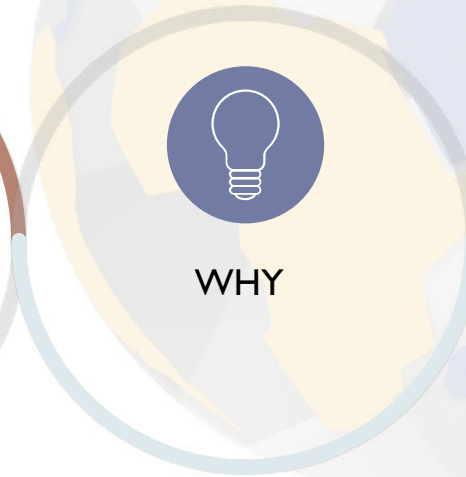
01 The company was established in **1999**
As a spin-off of a University in Madrid



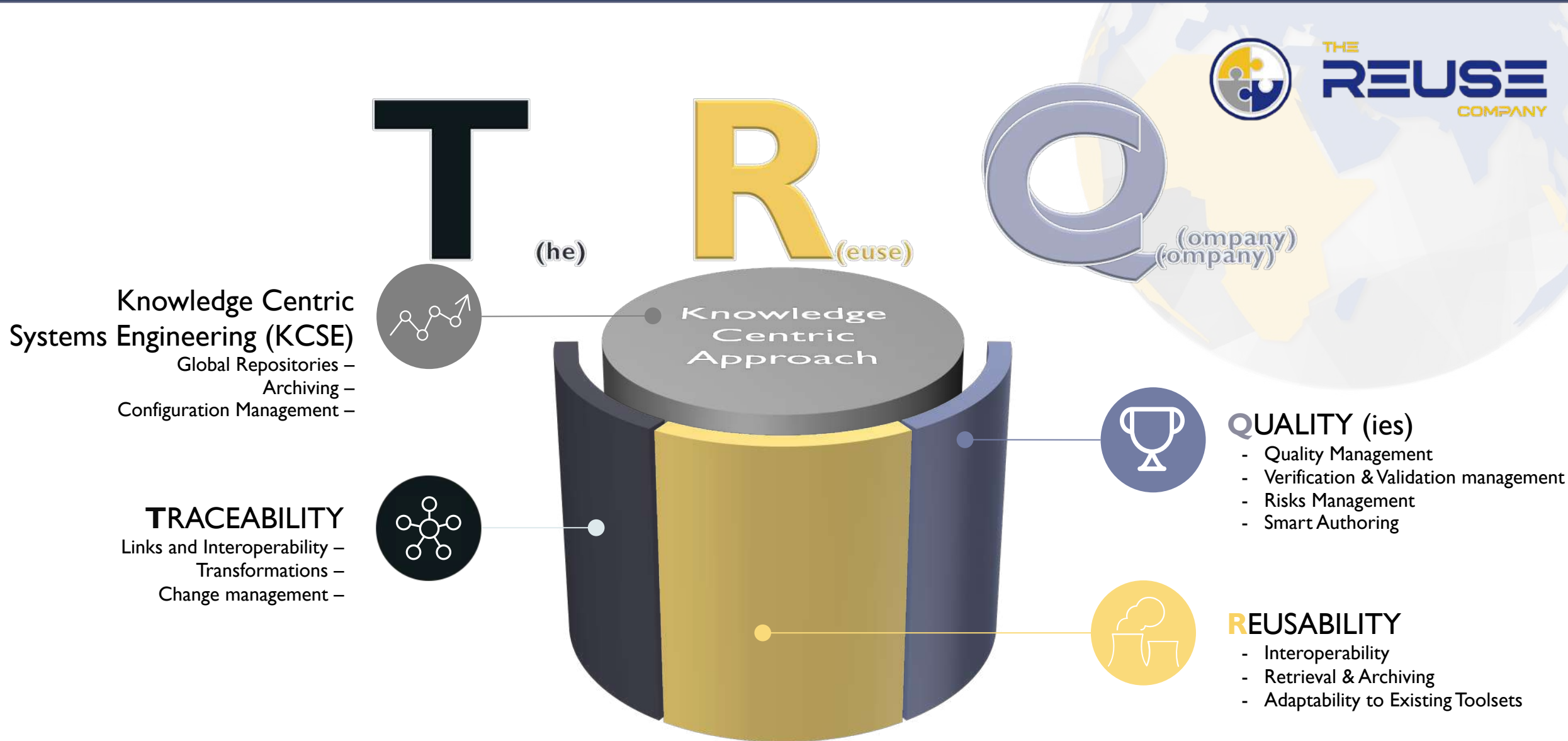
02 **System + Software Engineers**
Smart combination between Company staff and R&D from Academia



03 **Headquarters:** Madrid (Spain)
International offices: Stockholm (Sweden)
Tokyo (Japan) Delegation
2021: USA
Chicago/Detroit/Miami



04 To promote a **reusable, scalable** and global solution to a **smart** and **interoperable** Systems Engineering environment, by offering a **semantic knowledge centric** approach.





Ilyes Yousfi

- **Current position:** Sales & Consulting Engineer at The REUSE Company

Ilyes Yousfi got his Master's degree from the University of Montreal (Canada) and the IMT Atlantique School of Engineering (France). Ilyes has 5 years of experience in sales, technical background in energy and mechanical engineering and was involved in a research project around the environmental impacts of end-of-life management of aircrafts.

Passionate about international projects and learning languages, Ilyes speaks 4 languages fluently: English, French, German and Spanish.

**Why focusing
on
Requirements
quality?**





A disaster investigation board reports that NASA's Mars Climate Orbiter burned up in the Martian atmosphere because **engineers failed to convert units from English to metric.**

The **\$125 million satellite** was supposed to be the first weather observer on another world.

A NASA review board found that the problem was in the software controlling the orbiter's thrusters. The **software** calculated the force the thrusters needed to exert in **pounds** of force. A separate piece of software took in the data assuming it was in the metric unit: **newtons.**

*"People make errors," Gavin said. "The problem here was not the error. It was **the failure of us to look at it end-to-end and find it.** It's unfair to rely on any one person."*

<https://www.wired.com/2010/11/1110mars-climate-observer-report/>
<http://edition.cnn.com/TECH/space/9909/30/mars.metric.02/>





“SNCF's failure to verify measurements results in cost of **€50m to modify 1,300 platforms** in one in six regional stations”

“The train due on platform one will not be arriving for the foreseeable future – because **it is too big.**”

“RFF sent SNCF the dimensions of stations built less than 30 years ago. It was then discovered – after it was too late – that the trains, due to go into service from now until 2016, were too big by several centimeters for stations built more than 50 years ago.”

SNCF said **only 341 trains** – 182 from Alstom and 159 from Bombardier – were affected.

<https://www.theguardian.com/world/2014/may/21/french-railway-operator-sncf-orders-trains-too-big>

<http://www.independent.co.uk/news/world/europe/french-rail-operator-orders-hundreds-of-new-trains-too-big-for-platforms-9412274.html>

Mind le gap! France spends \$15 billion on trains that are too fat for 1,300 station platforms – *Independent*

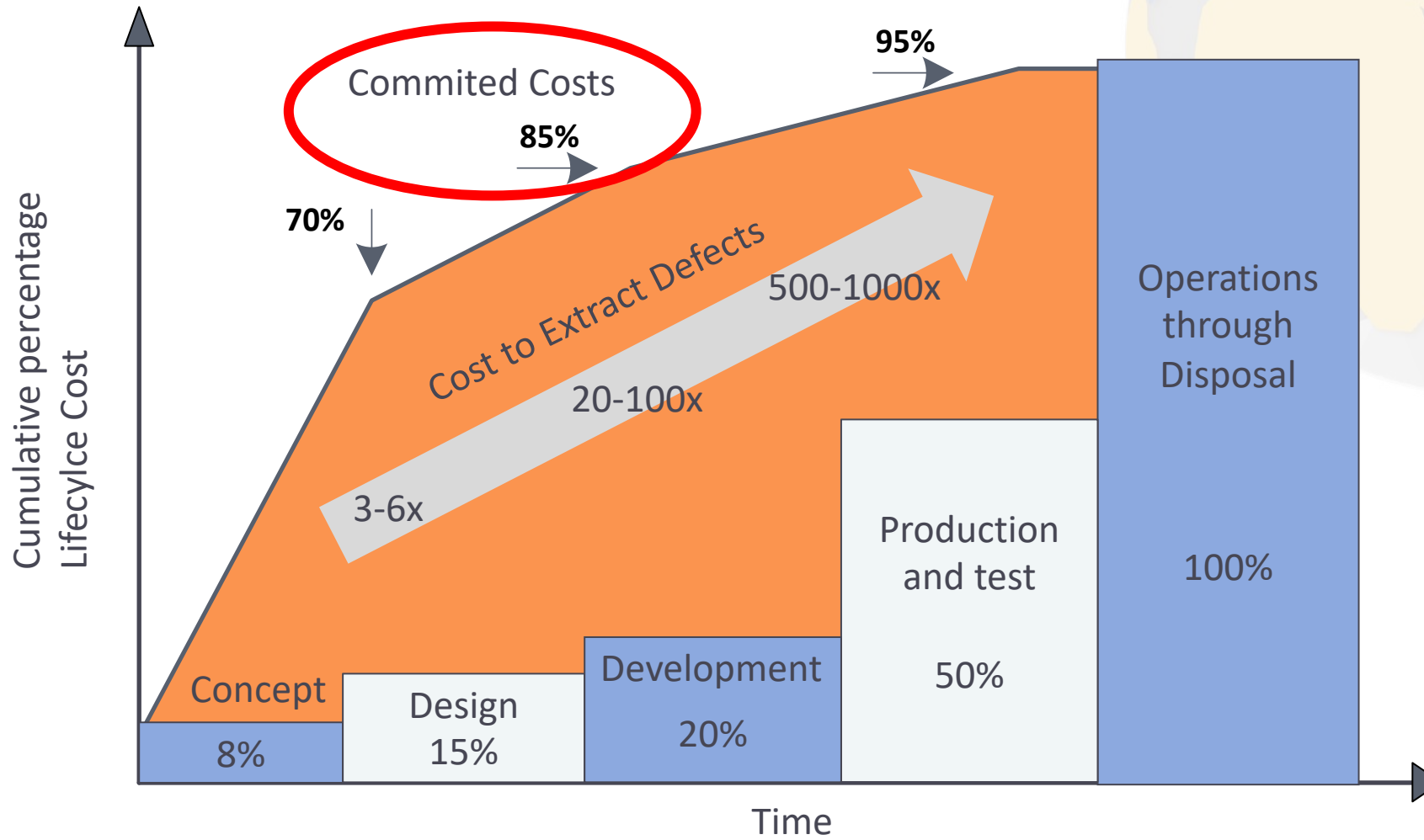




by Dr. Gina Guillaume-Joseph who studied over 200 failed projects with a total value of **15 billion dollars in sunken cost**. I was not surprised by the result. The main reason for project failure was ranked like this:

Project failure factor	Odds of project failure
Project Schedule Delays	78,6%
Changing or Unclear Requirements	29,9%
Project Failure in Test Phase	11,4%

(Source: *Improving Software Project Outcomes Through Predictive Analytics*, ENGINEERING MANAGEMENT REVIEW, 2015)



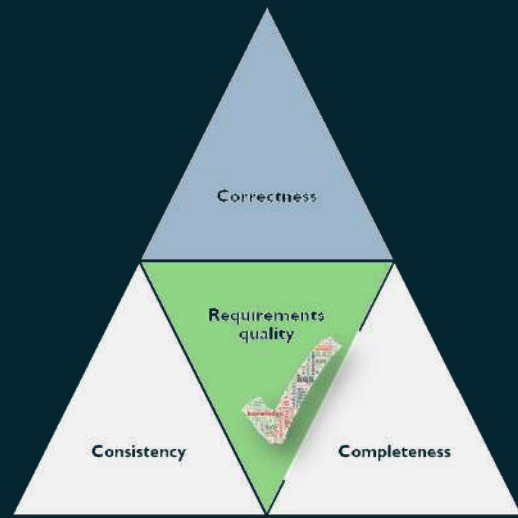
Source : INCOSE SE Handbook V4



- Some of the issues were reported as **software issues...**
- ... while the source was clearly the **requirements**
- And the root cause can be twofold:
 - Wrong engineering decisions
 - Miscommunication and ambiguous requirements
- No matter the root cause, **the impact is huge.**

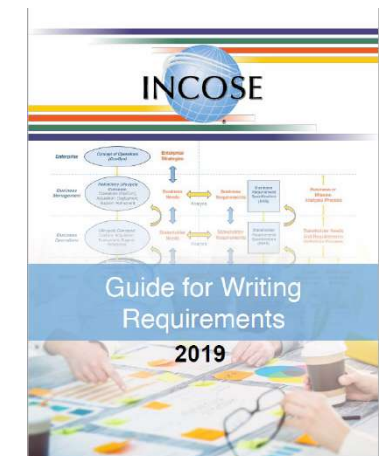
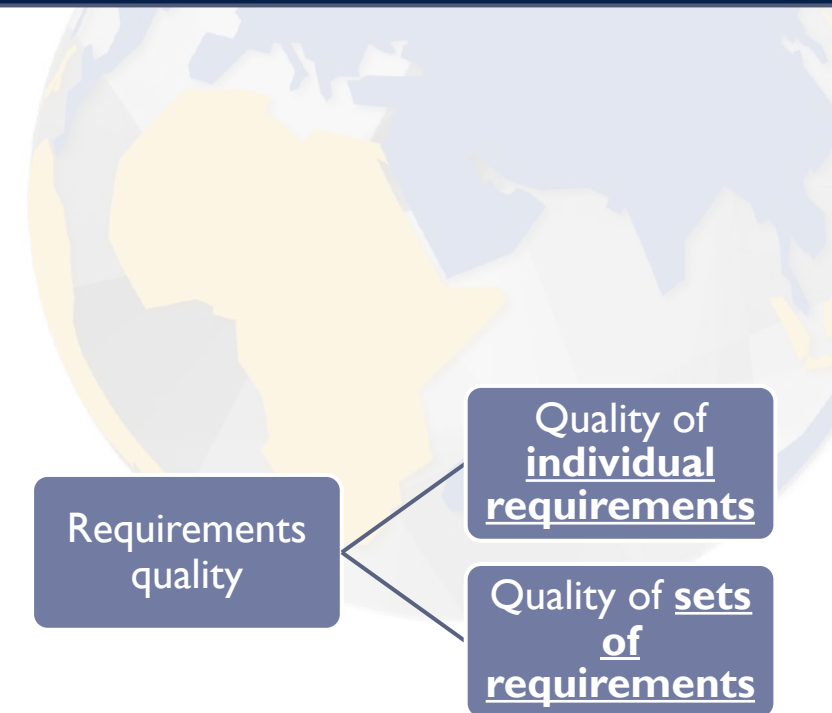
- **How to fix this?** Following the adequate set of tips to write requirements:
 - To reduce miscommunication
 - To streamline the writing of textual requirements, and thus increasing time to study engineering decisions
 - To ease the detection of wrong engineering decisions
 - Even to detect those issues automatically, in real-time





**What is
Requirements
Correctness ?**

- **“Getting it right”**
- In the international standards, Correctness refers to :
 - One of the **characteristics** of well-formed requirements
 - **IEEE Std. 830 – Characteristics of individual requirements**
 - **Correct**
 - Unambiguous
 - Ranked
 - Verifiable
 - Modifiable
 - Traceable
 - ...
 - **ISO/IEC 29148 – Similar characteristics**
 - **Domain-specific standards : ECSS (European Space Agency), NASA, ...**
 - **INCOSE Guide for Writing Requirements**
 - ...



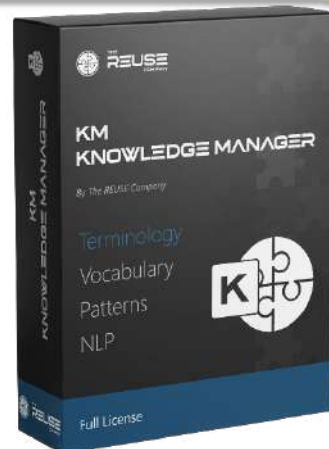


What is RQA – QUALITY Studio?



Knowledge Management

Capture, creation, **representation**, and **exchange of knowledge** across targeted groups of **stakeholders**



Traceability

Support the **integration** among assets through semantic **interoperability** to discover and keep the **traces** among related elements



Authoring

Definition of requirements and other textual engineering assets based on **real-time analysis** (NLP), **writing assistance**, **identification of similar items**...



Quality Management

Define, implement and perform **measures** to meet the **quality priorities** that satisfy the **verification** of any engineering element





Knowledge Management

Capture, creation, representation, and exchange of knowledge across targeted groups of stakeholders



Traceability

Support the integration among assets through semantic interoperability to discover and keep the traces among related elements



Authoring

Definition of requirements and other textual engineering assets based on real-time analysis (NLP), writing assistance, identification of similar items...



Quality Management

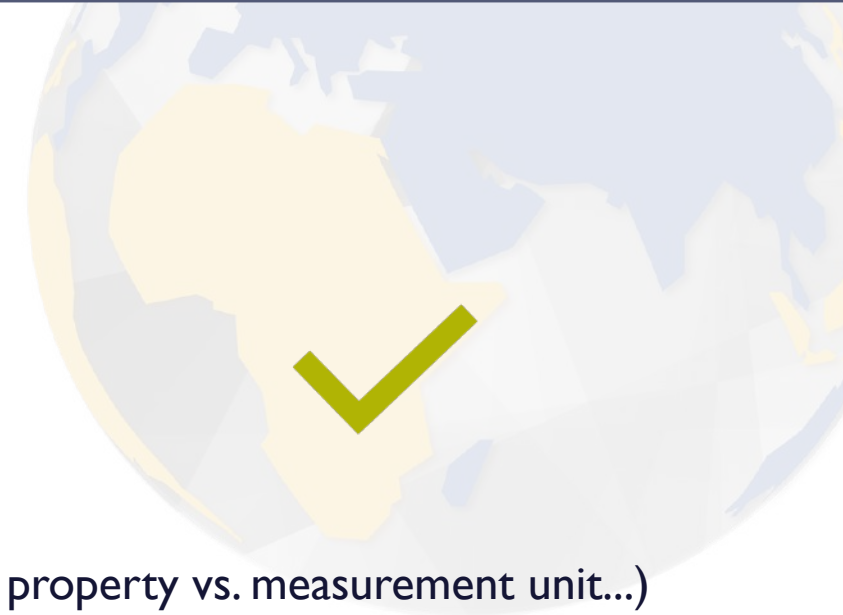
Define, implement and perform measures to meet the quality priorities that satisfy the verification of any engineering element





- In the CCC approach, **Correctness** refers to :
 - **All** the characteristics and criteria to check requirements **individually** :
 - Use of defined, precise and understandable words
 - Atomicity
 - Attributes properly defined
 - Relationships between concepts in a requirement (system structure, property vs. measurement unit...)
 - Requirement syntax (Patterns)

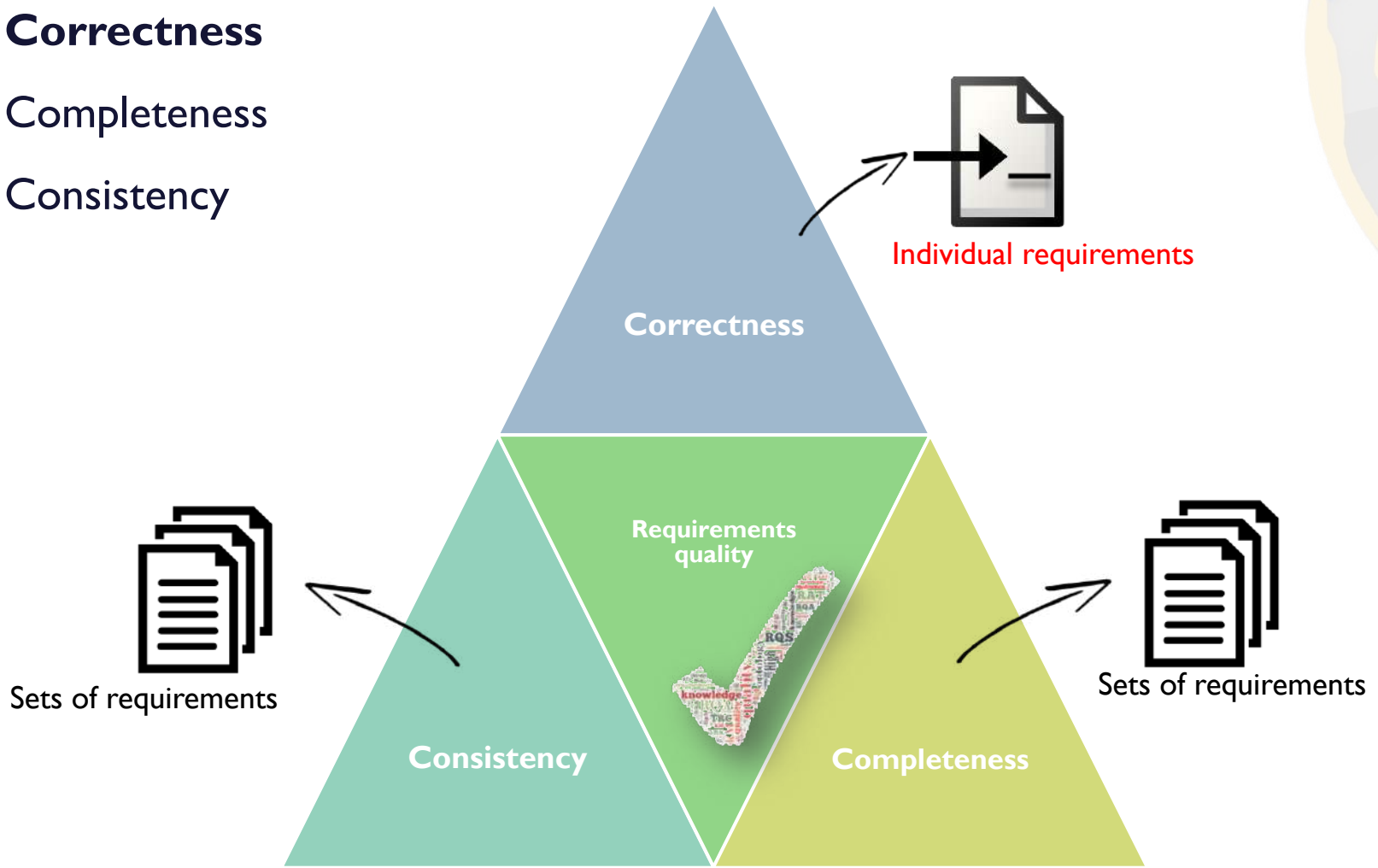
- In the default configuration (OOTB database) there are **35** enabled **CORRECTNESS** metrics.



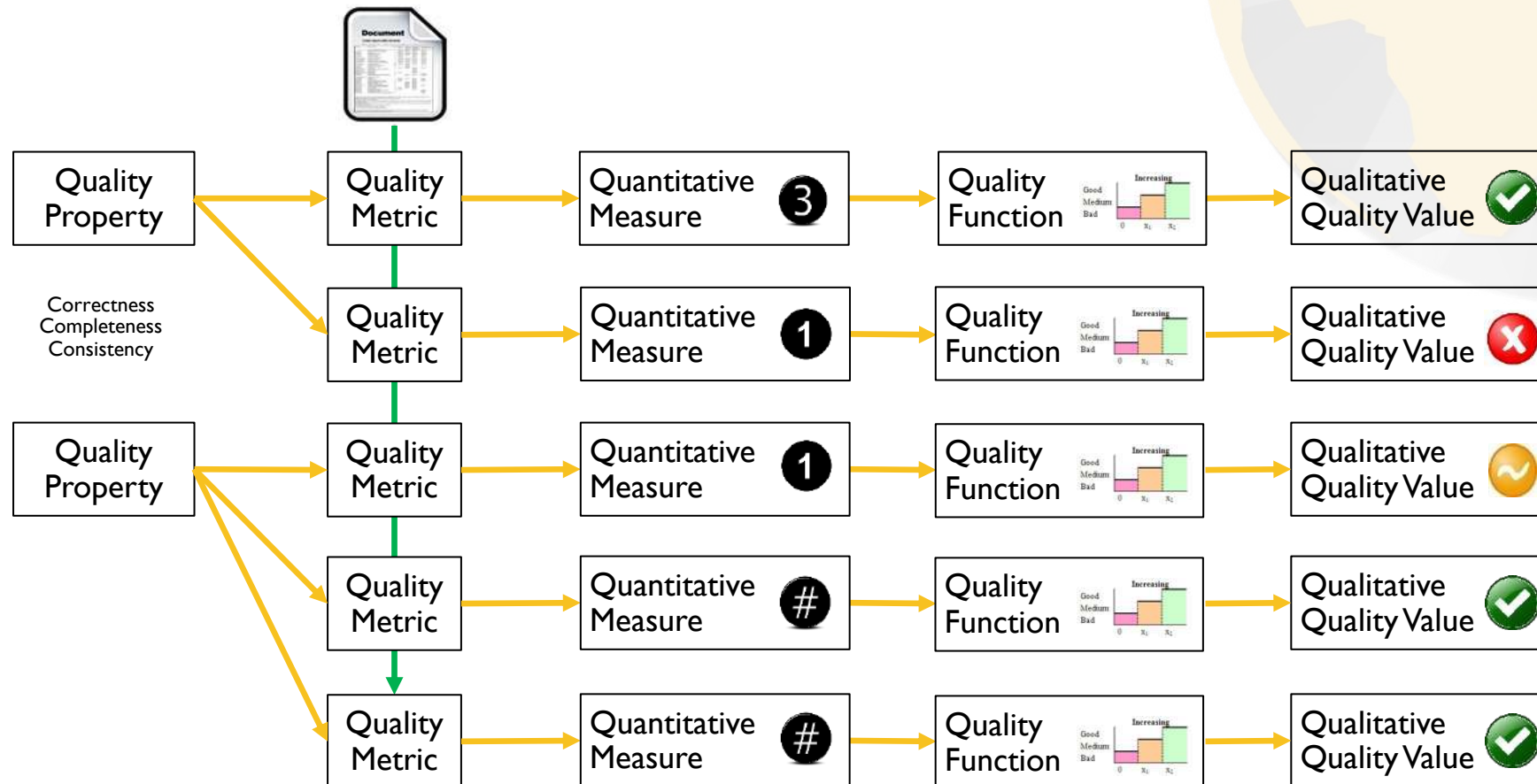


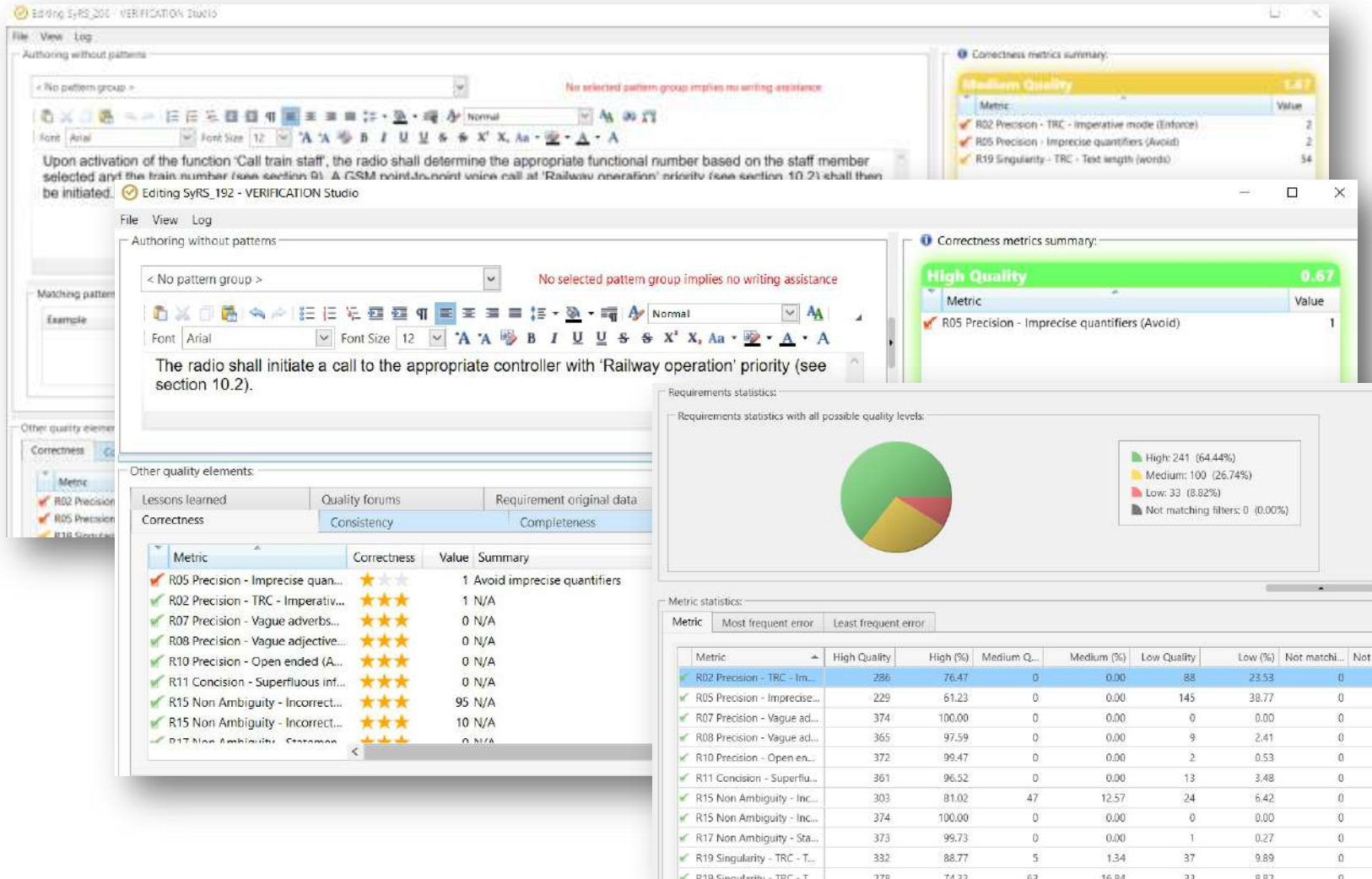
The CCC approach in RQA – QUALITY Studio to assess requirements quality :

- **Correctness**
- **Completeness**
- **Consistency**



➤ Calculate qualitative values for defined Characteristics





The screenshot displays the QUALITY Studio interface with several overlapping windows:

- Correctness metrics summary:** Shows a 'Medium Quality' score of 1.87. Metrics include R02 Precision - TRC - Imperative mode (Enforce) with a value of 2, R05 Precision - Imprecise quantifiers (Avoid) with a value of 2, and R19 Singularity - TRC - Text length (words) with a value of 34.
- High Quality:** Shows a 'High Quality' score of 0.67. The only metric listed is R05 Precision - Imprecise quantifiers (Avoid) with a value of 1.
- Requirements statistics:** A pie chart showing the distribution of quality levels: High (241, 64.44%), Medium (100, 26.74%), Low (33, 8.82%), and Not matching filters (0, 0.00%).
- Metric statistics table:** A detailed table showing the most and least frequent errors for various metrics.

Metric	Most frequent error	Least frequent error
R02 Precision - TRC - Im...	296	76.47
R05 Precision - Imprecise...	229	61.23
R07 Precision - Vague adverbs...	374	100.00
R08 Precision - Vague adjective...	365	97.59
R10 Precision - Open ended (A...	372	99.47
R11 Concision - Superfluous inf...	361	96.52
R15 Non Ambiguity - Incorrec...	303	81.02
R15 Non Ambiguity - Incorrec...	374	100.00
R17 Non Ambiguity - Sta...	373	99.73
R19 Singularity - TRC - T...	332	88.77
R19 Singularity - TRC - T...	378	74.33

Quality Analysis applied to single requirements

The Correctness Quality Set:

- Characteristics coverage
- Ontology dependency
- Effort needed to fix identified error



➤ For each dimension, 4 different types of metrics:

Fixed metrics No need of additional configuration

- Ex. :Text length
- Ex.: Passive voice detection...

Parameterized Requires a parameter to operate

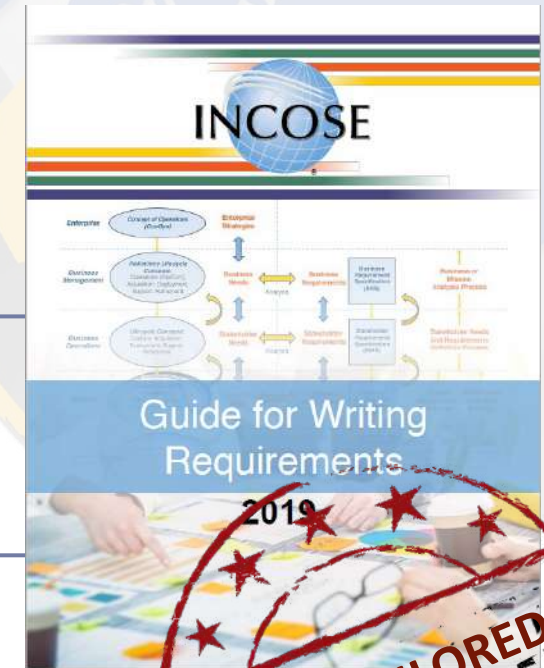
- Ex.: Pattern based metrics (some available out-of-the-box)
- Ex.: Identification of forbidden words (many available out-of-the-box)

Check-list based As many different check-lists as needed

- Custom-defined check-lists
- Aimed to have manual inspection of work-products

Custom-code Using C#

- 5 different interfaces to meet



➤ **Metrics based on information coming from the RMS:**

➤ Attributes, links, versions...

➤ **Metrics based on lists of terms:**

➤ Forbidden: ambiguous, pronouns...

➤ Restricted: negations...

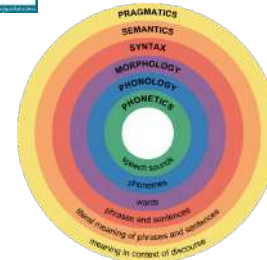
➤ Mandatory: 'shall', 'will', 'should'...



➤ **Metrics based on linguistic algorithms:**

➤ Text length, misspelling, readability....

➤ Detection of passive voice, imperative tense...



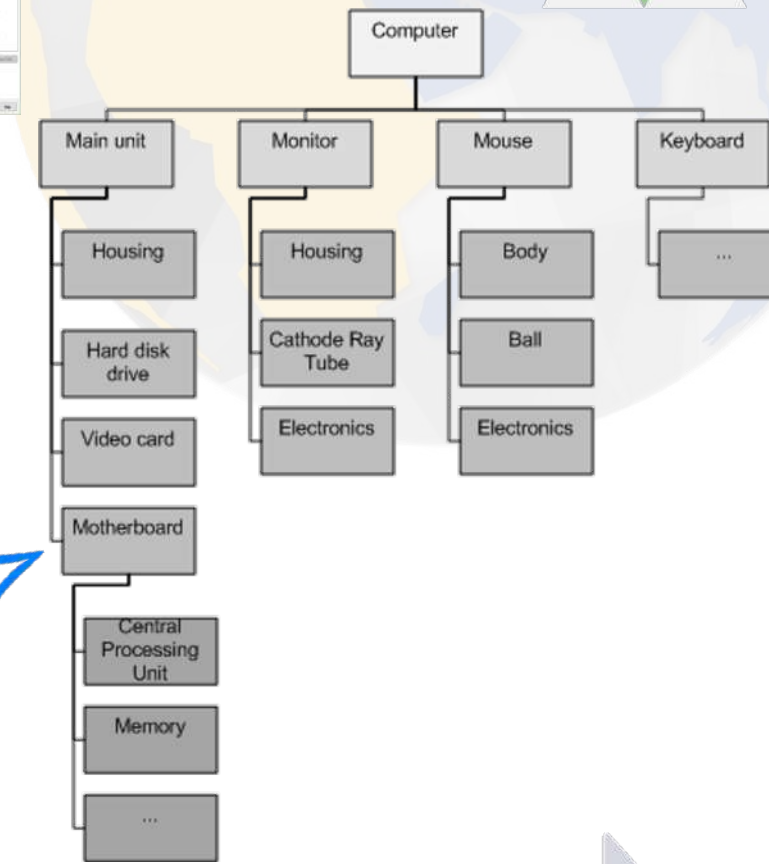
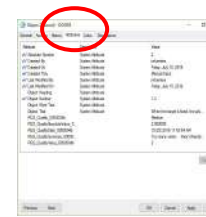
➤ **Metrics based on the conformance with models:**

➤ Concepts in your requirements coming from PBS, FBS...

➤ **Metrics based on patterns:**

➤ Compliance with different types of requirements patterns

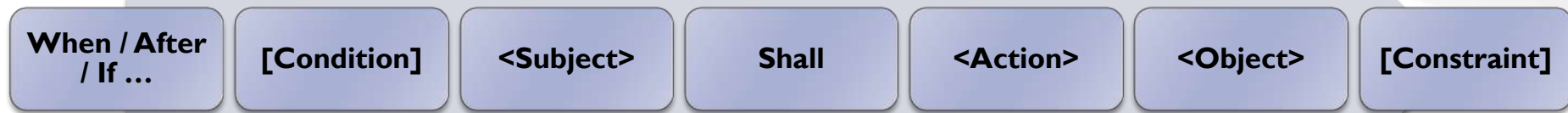
➤ Detection of specific structures within the requirements





> **Patterns:**

- > Represents the structures every *correct* requirement should meet
- > Different types of requirements → different patterns (templates)
- > Customizable for every domain, customer and content of each requirements document
- > Libraries with sets of patterns
- > Represented as a sequential set of *restrictions: placeholders*



> **Patterns are useful to:**

- > **Reduce false positives** in correctness metrics
- > **Help authors** while they formulate their requirements





Reduce false positives : Detect the passive voice only outside condition sentences:

File View Log

Authoring without patterns

< No pattern group >

No selected pattern group implies no writing assistance

Font: Arial Font Size: 12

When the alarm is activated, the train shall be redirected to the closest station

Metric: Accuracy R02 / TRC-M040: Avoid the use of Passive Voice out of the condition block

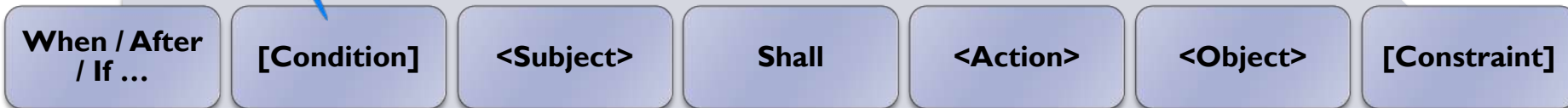
N/A

Correctness metrics summary:

Low Quality 20.00

Metric	Value
Accuracy R02 / TRC-M040: Avoid the use of Passive Voice out of the condition block	1

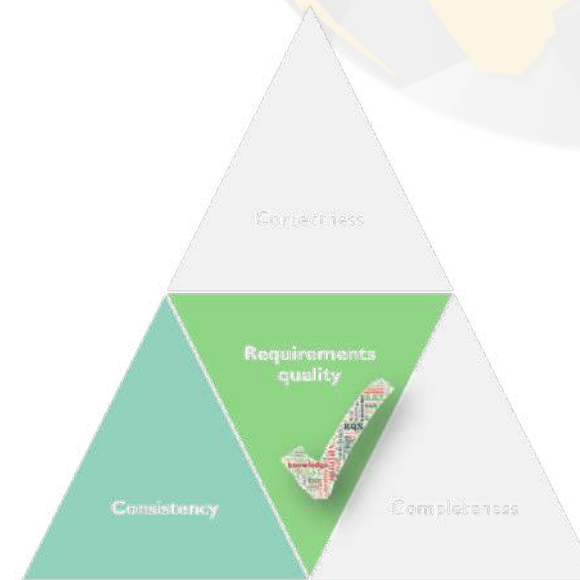
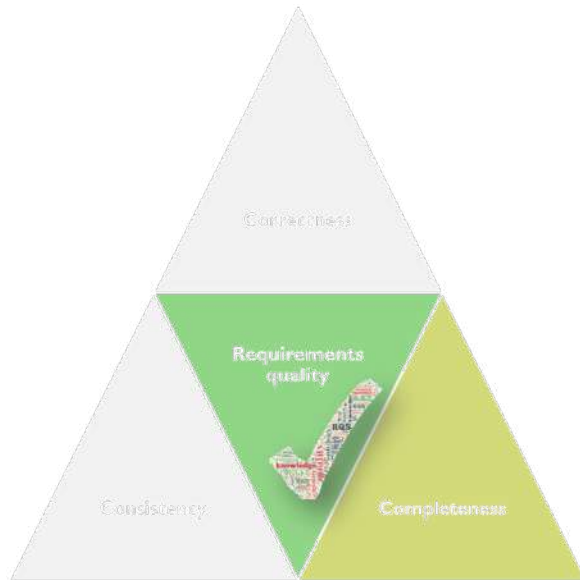
Edit manual assessment Ready





If you want to start or keep learning about the 2 other dimensions...

TRC WEBINARS



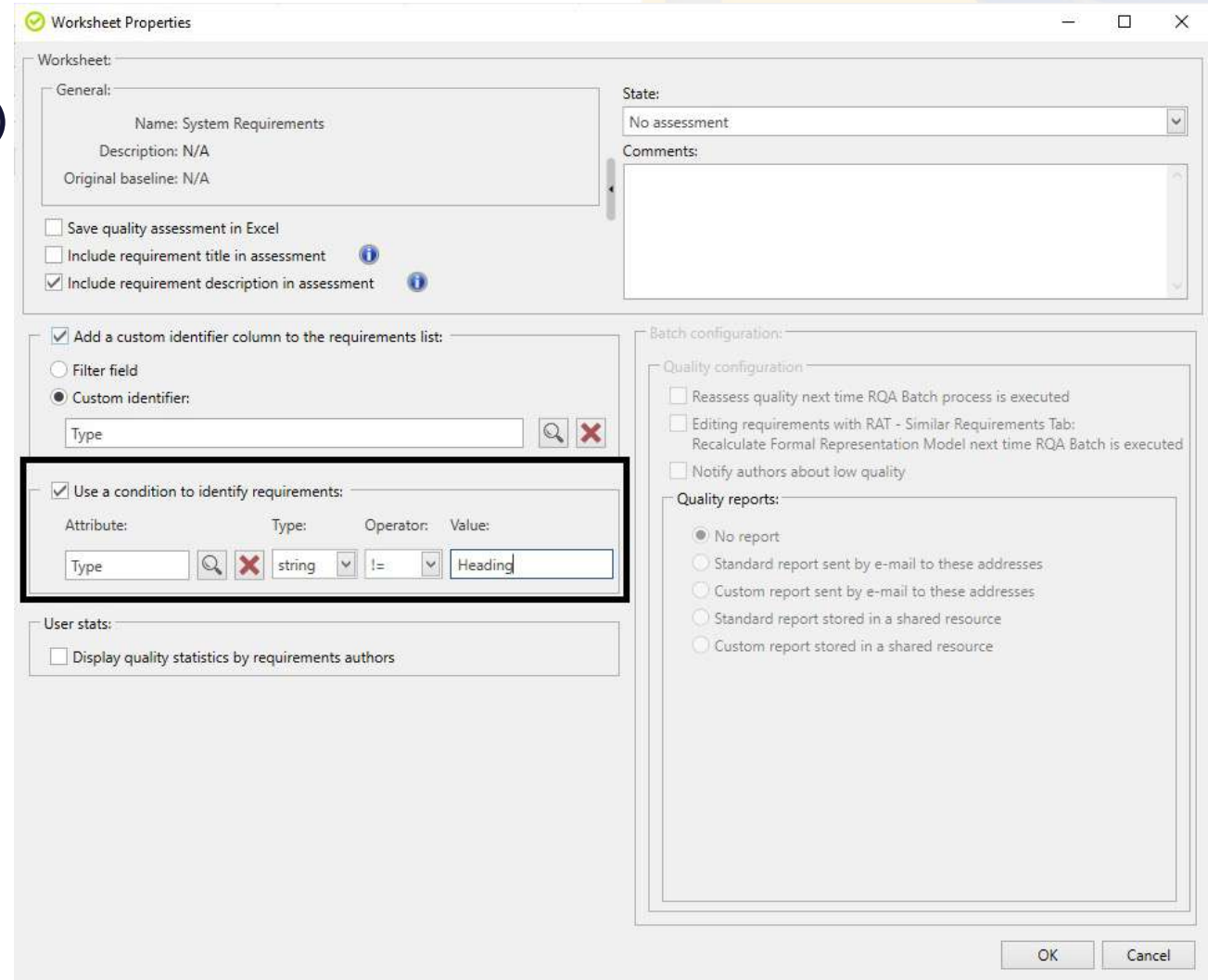
➤ Completeness :Webinar on September 28th and 30th

➤ Consistency :Webinar on October 13th and 14th



Advanced Correctness features In RQA – QUALITY Studio

- Based on a *boolean expression*
- Based on *Views* (only for IBM DOORS)
- Based on *Attributes*



RQA

Drag a column header here to group by that column

	C.	Project	Worksheet	ID	Type	Label	Workproduct name	Correctness	Score	Mandatory metrics	Correctness quality date	Consistency	Issues
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	1	Heading	1 Introduction		☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	2	Information	N/A	This specification has been developed within UIC Project EIRENE. It specifies a digital radio stan...	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	3	Heading	1.1 System purpose		☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	4	Information	N/A	The EIRENE System Requirements Specification defines the set of requirements which a railway...	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	5	Information	N/A	The EIRENE Functional Requirements Specification [EIRENE FRS] specifies the functional require...	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	6	Information	N/A	The specification distinguishes between requirements affecting a railway's network infrastru...	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	7	Information	N/A	The statements made in the specification are assigned to one of three categories: () - Mandato...	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	8	Heading	1.2 System scope		☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	9	Information	N/A	The EIRENE System Requirements Specification defines a radio system satisfying the mobile co...	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	10	Information	N/A		☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	11	Information	N/A	The application of this specification will ensure interoperability for trains and staff crossing nati...	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	12	Heading	1.3 Definitions, acronyms,...		☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	13	Definition	N/A	3GPP Third Generation Partnership Project AoC Advice of Charge ARFCN Absolute Radio Frequu...	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	14	Heading	1.4 References		☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	15	Definition	N/A	EIRENE FRS 'UIC Project EIRENE Functional Requirements Specification', PSA167D005-7 MOR...	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	16	Heading	1.5 System overview		☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	17	Information	N/A	The system is based on the ETSI GSM standard. To meet additional functionality and perform...	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	18	Heading	1.6 General system descrip...		☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	19	Heading	1.6.1 System context		☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	20	Information	N/A	The scope of the specification is shown in figure 1-2, showing the hierarchy of the GSM, and rai...	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	21	Information	N/A		☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	22	Information	N/A	A list of ETSI and 3GPP specifications is provided in the normative references section of this do...	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	23	Information	N/A	Compliance to the list of normative documents is mandatory for all of the GSM services necess...	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	24	Information	N/A	Later releases of these specifications may be used, providing that the system is backwards-com...	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	25	Heading	1.6.3 Major system archite...		☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	26	Heading	1.6.4 Outline architecture		☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	27	Information	N/A	The system is based on the GSM architecture which is summarised in figure 1-3. ()	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	28	Information	N/A		☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	29	Information	N/A	The system comprises the following elements: ()	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	30	Information	N/A	Base station sub-systems (BSSs) of base station controllers (BSCs) controlling base transceiver s...	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	EIRENE-PROJECT - Hands-on - Copy.xlsx	System Requirements	31	Information	N/A	Network sub-system (NSS) interfaces to the BSC via the GSM/UMTS interface. The NSS contain...	☆☆☆	N/A	0	N/A	☆☆☆	N/A

Total items: 769 , Requirements: 562





- > This metric **WILL NOT BE** analysed when the requirement is **(not)** matching the filtering expression (string, Boolean, Regular expression, ...)
 - > Filtering based on *Attributes*
 - > Filtering based on *Patterns*

Parameterized cluster metric configuration

Information Computation **Filtering**

Apply on requirements holding this expression over an attribute:

Attribute:	Type:	Operator:	Value:
Type	string	!=	Safety

Apply only on requirements matching a pattern group, a pattern or both at the same time:

Pattern group:	Pattern:

Negative filter: If selected, requirements matched by filters will not be applied by the metric

OK Cancel



Editing 654 - RQA

File View Log

Authoring without patterns

< No pattern group >

No selected pattern group implies no writing assistance

Font Arial Font Size 22

Not all calls require confirmation. The application must be able to deduce that a confirmation is necessary from the call priority, as all calls of 'Railway emergency' priority must be confirmed.

Other quality elements:

Correctness Consistency Completeness Similar requirements Additional attributes Syntactic information Formal representation

Metric

- ✓ R11 Concision - Superfluous infinitives (Avoid) ★★★★★
- ✓ R34 Quantifiers - Ambiguous Universal Keywords (Avoid) ★★★★★
- ✓ R26 Completeness - Pronouns (Avoid) ★★★★★
- ✓ R07 Precision - Vague adverbs (Avoid) ★★★★★
- ✓ R08 Precision - Vague adjectives (Avoid) ★★★★★
- ✓ R10 Precision - Open ended (Avoid) ★★★★★
- ✓ R15 Non Ambiguity - Incorrect Punctuation (number of characters between two punctuation symbols) ★★★★★
- ✓ R15 Non Ambiguity - Incorrect Punctuation (Readability) (Avoid) ★★★★★
- ✓ R17 Non Ambiguity - Statement and/or (Avoid) ★★★★★
- ✓ R19 Singularity - TRC - Text length (paragraphs) ★★★★★
- ✓ R19 Singularity - TRC - Text length (words) ★★★★★
- ✓ R37 Quantification - Indefinite temporal keywords (Avoid) ★★★★★
- ✓ R64 Concision - TRC - Rationale sentences (Avoid) ★★★★★
- ✓ R13 Non Ambiguity - TRC: Avoid negative expressions in non-safety requirements ★☆☆☆☆

Other quality elements:

Correctness Consistency Completeness Similar requirements Additional attributes Syntactic information Formal representation

Metric

- ✓ R11 Concision - Superfluous infinitives (Avoid) ★★★★★
- ✓ R34 Quantifiers - Ambiguous Universal Keywords (Avoid) ★★★★★
- ✓ R26 Completeness - Pronouns (Avoid) ★★★★★
- ✓ R07 Precision - Vague adverbs (Avoid) ★★★★★
- ✓ R08 Precision - Vague adjectives (Avoid) ★★★★★
- ✓ R10 Precision - Open ended (Avoid) ★★★★★
- ✓ R15 Non Ambiguity - Incorrect Punctuation (number of characters between two punctuation symbols) ★★★★★
- ✓ R15 Non Ambiguity - Incorrect Punctuation (Readability) (Avoid) ★★★★★
- ✓ R17 Non Ambiguity - Statement and/or (Avoid) ★★★★★
- ✓ R19 Singularity - TRC - Text length (paragraphs) ★★★★★
- ✓ R19 Singularity - TRC - Text length (words) ★★★★★
- ✓ R37 Quantification - Indefinite temporal keywords (Avoid) ★★★★★
- ✓ R64 Concision - TRC - Rationale sentences (Avoid) ★★★★★
- ✓ R13 Non Ambiguity - TRC: Avoid negative expressions in non-safety requirements ★☆☆☆☆

94 N/A

9 N/A

0 N/A

1 N/A

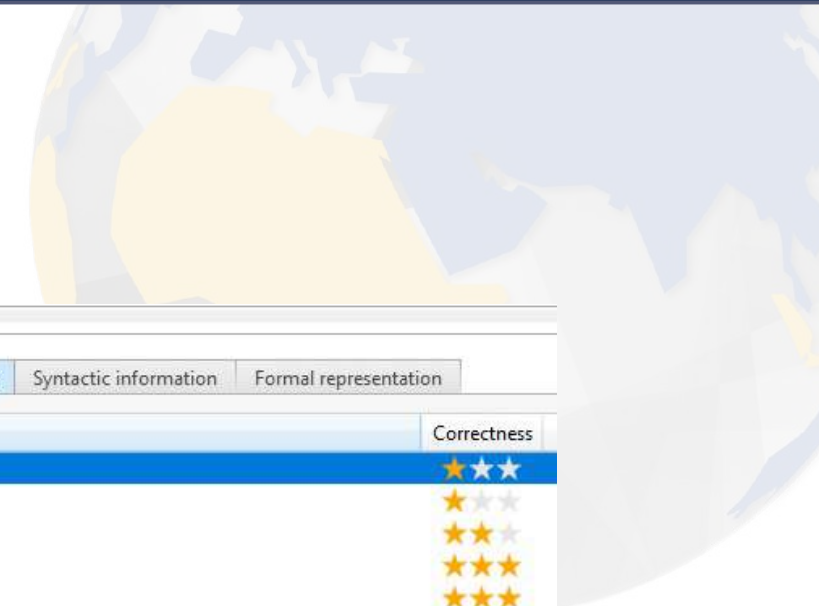
32 N/A

0 N/A

0 N/A

N/A The quality has not been assessed because this require...

Create report



➤ This metric **WILL BE** analysed and the issues counted **ONLY WHEN** the requirement is **(not) matching** the filtering expression (string, Boolean, Regular expression, ...)



parameterized cluster metric configuration

Information **Computation** Filtering

Cluster parameters:

Cluster: «Negation»

Include child clusters Count repetitions

Calculate this metric on the text matching:

Pattern group: METRIC - Condition delimiter

Pattern:

Negative: Calculate this metric on the text NOT matching

OK Cancel

KNOWLEDGE Manager

File Terminology Conceptual Model Patterns Formalization Inference Configuration management Extensibility Assets store Settings

«Organizational» «PBS» Other view Advanced search Import Import from Excel Export Clusters Import Export All relationship types Relationships suggestions Lessons learned Dashboard

Searching fields:

Cluster: nega Identifier: 0 kM Code: 0 Clusters with terms: Filter Enabled Search

Clusters:

Cluster: «Negation»

Terms:

Term	Term Tag	Cluster	Relationship type	Language
No	NEGATION	«Negation»	< No «Relationship	English (United Kingdom)
No longer	ADVERB	«Negation»	< No «Relationship	English (United Kingdom)
No more	DETERMINER	«Negation»	< No «Relationship	English (United Kingdom)
No more than	DETERMINER	«Negation»	< No «Relationship	English (United Kingdom)
No one	PRONOUN	«Negation»	< No «Relationship	English (United Kingdom)
No one else	PRONOUN	«Negation»	< No «Relationship	English (United Kingdom)
Nobody	PRONOUN	«Negation»	< No «Relationship	English (United Kingdom)
Nobody else	PRONOUN	«Negation»	< No «Relationship	English (United Kingdom)
None of	DETERMINER	«Negation»	< No «Relationship	English (United Kingdom)
Not	NEGATION	«Negation»	< No «Relationship	English (United Kingdom)
Not only	ADVERB	«Negation»	< No «Relationship	English (United Kingdom)

11 term(s)

1 clusters

Connected to C:\Users\ichris\Google Drive\2_Kurser\#Staysathome_Training\MasteringRBSE\MasteringRESE\Databases\SES v18.5 - FQA - RAT Hands-on session.mdb

Editing 363 - RQA

File View Log

Authoring without patterns

< No pattern group >

No selected pattern group implies no writing assistance

Font Arial Font Size 12

When the radio is **not** connected to the external power source, changing the battery shall **not** result in the loss of data stored in the radio and **not** saved before.

Requirement total = 3

Metric: R13 Non Ambiguity - TRC: Avoid negative expressions outside conditions

not

- Scope Note: N/A
- Clusters: «Negation»

Correctness metrics summary:

Low Quality 0.63

R13 Non Ambiguity - TRC: Avoid negative expressions outside conditions 2

Metric Total = 2

When * , The <system> shall

Edit manual assessment

Other quality elements:

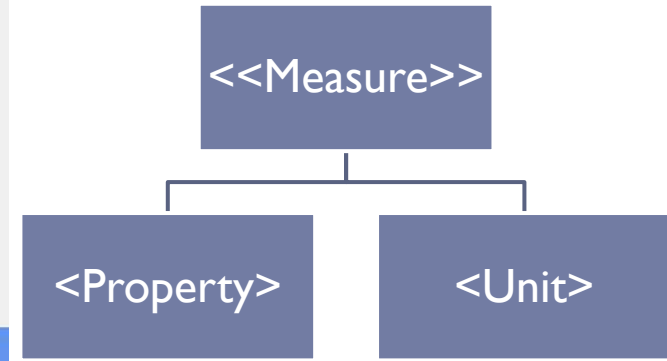
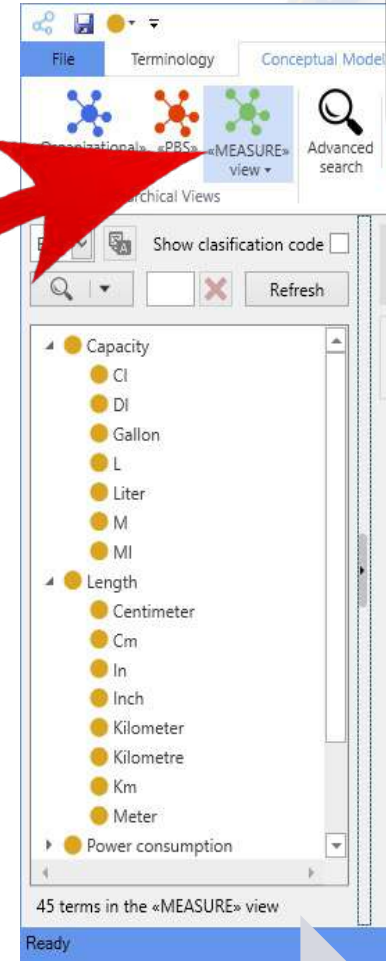
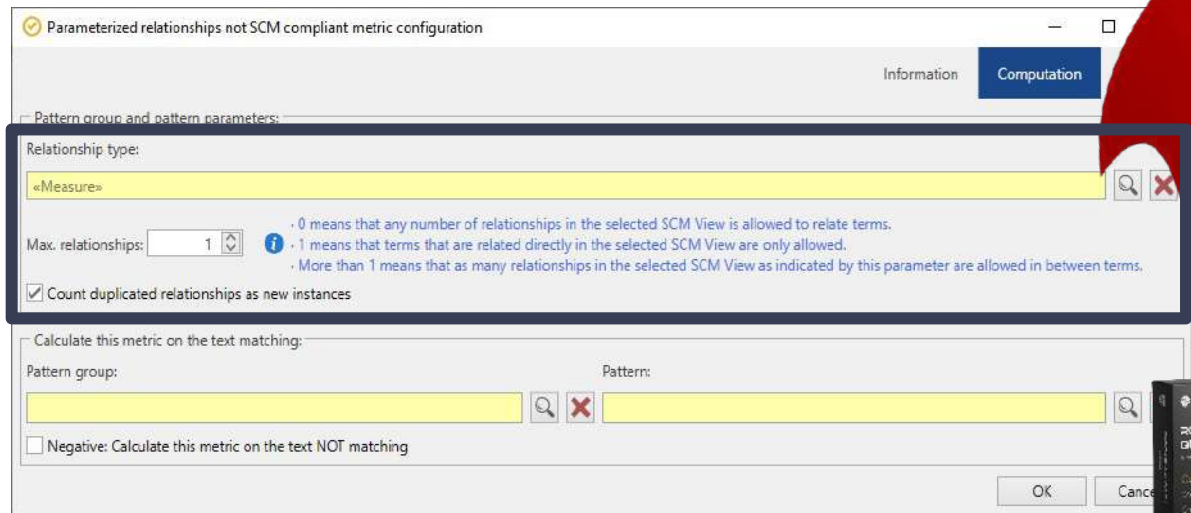
Metric	Correctness	Value	Summary	Mandatory	Weight
R13 Non Ambiguity - TRC: Avoid...	☆☆☆	2	N/A	<input type="checkbox"/>	1
R02 Precision - TRC - Imperativ...	☆☆☆☆	1	N/A	<input type="checkbox"/>	1
R05 Precision - Imprecise quant...	☆☆☆☆	0	N/A	<input type="checkbox"/>	1
R07 Precision - Vague adverbs (...)	☆☆☆☆	0	N/A	<input type="checkbox"/>	1
R08 Precision - Vague adjective	☆☆☆☆	0	N/A	<input type="checkbox"/>	1

Correctness Consistency Completeness Similar requirements Additional attributes Syntactic information Formal representation

- R02 Precision - TRC - Imperative mode (Enforce)
- R13 Non Ambiguity - TRC: Avoid negative expressions outside conditions
 - «Negation»

➤ **Metrics based on System Conceptual Models:**

- Detect inadequate Unit for a Characteristic
- Control values for a given *signal/property* from an er



The <Property> Of the <system element> shall be NUMBER UNIT



➤ **Metrics based on Patterns:**

- Avoid the use of Passive Voice after out of the condition block
- Avoid the use of Indefinite Articles before an Entity



Parameterized pattern matching metric configuration

Information **Computation** Filtering

Pattern parameter:

Pattern:

[METRIC: Passive voice detector] 🔍 ✖

Count repetitions

Calculate this metric on the text matching:

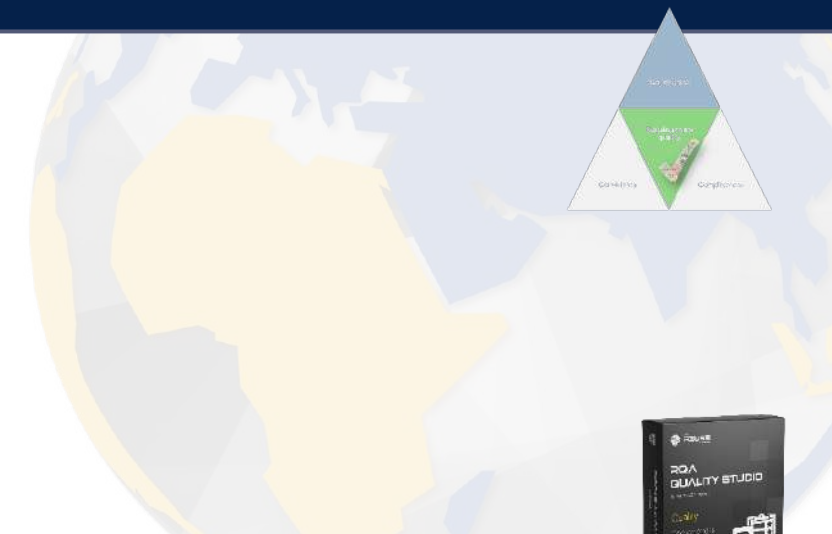
Pattern group: Pattern:

METRIC - Condition delimiter 🔍 ✖ [] 🔍 ✖

Negative: Calculate this metric on the text NOT matching

OK Cancel

- **Metrics based on Pattern groups:**
 - Avoid inadequate grammar structures:
 - There + MODAL+ be ...
 - There has to be
 - NOUN + shall + be + designed + to



Parameterized pattern group matching metric configuration

Information **Computation** Filtering

Pattern group parameter:

Pattern group:

METRIC - Anti-Patterns

Count repetitions

Calculate this metric on the text matching:

Pattern group: Pattern:

Negative: Calculate this metric on the text NOT matching

OK Cancel

Metrics base

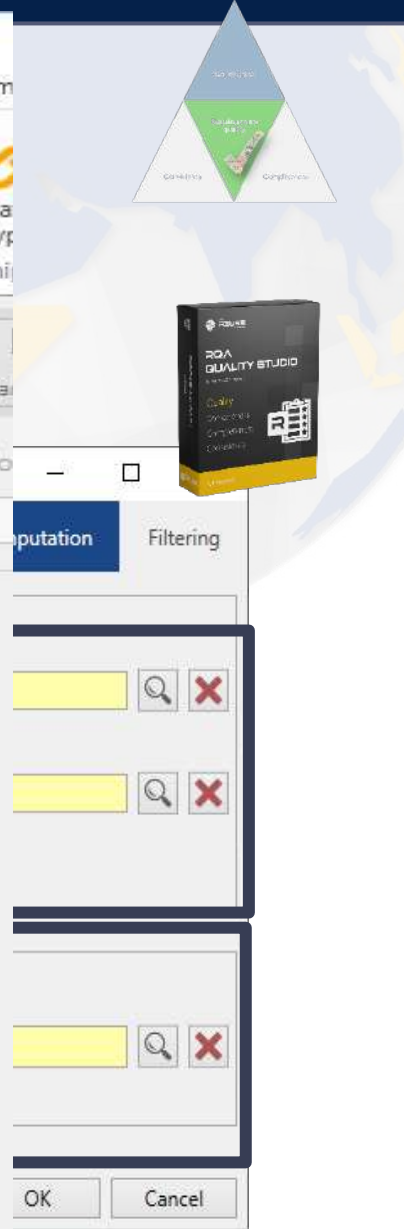
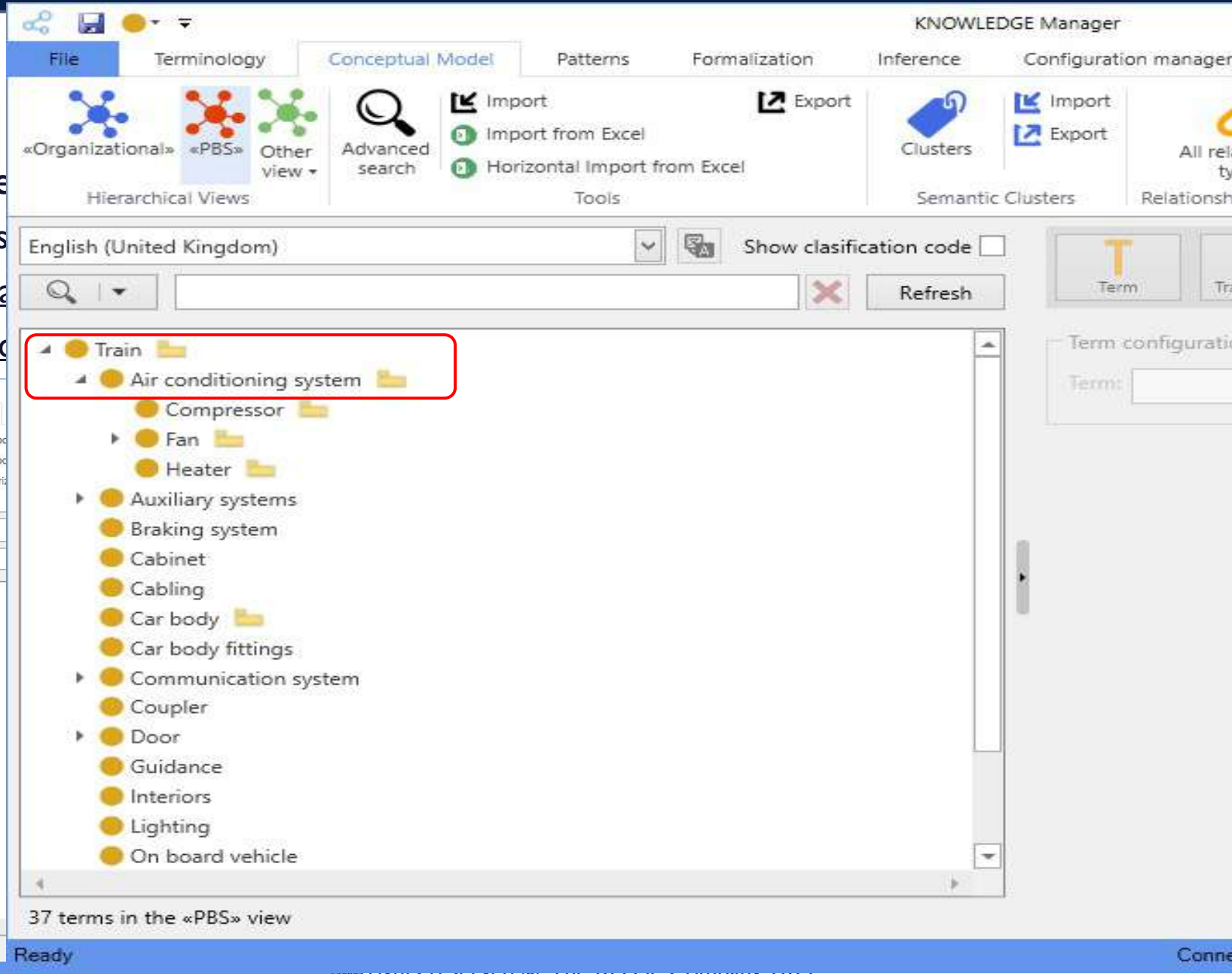
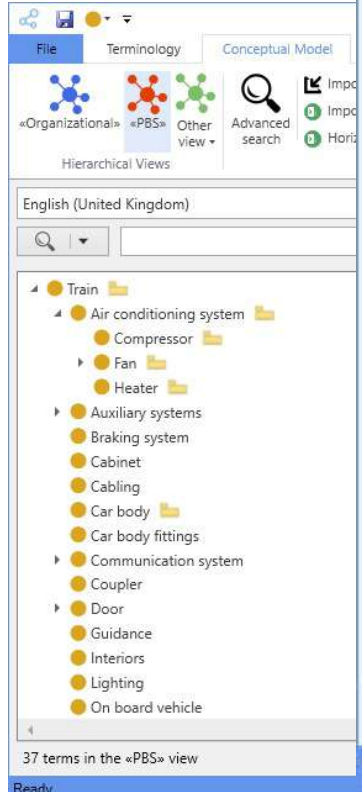
Detecting s



The tra



The a/c



- > **Metrics based on Custom code:**
 - > Ensure tolerance values are in an adequate value range



Parameterized custom-code metric configuration

Metric Information:

Metric: Measure tolerance value related to an absolute value

Rationale: The ratio between the nominal value and the tolerance value must be kept under control. This metric retrieves the following value: tolerance / nominal

Weight: 1 Custom Metric Identifier: N/A Generate Enabled:

Custom-code metric configuration:

Type: Type 6 : ArtifactAndEvaluation TYPE6(CustomCodeCorrectnessInputInformation inputInformation)

External library file:

Assembly:

Class:

Method:

Built-in code editor: Code the metric in C# language using the programming environment built-in in RQA:

Apply only on requirements holding this expression over an attribute:

Attribute:	Type:	Operator:	Value:
<input type="text"/>	string	=	<input type="text"/>

Apply only on requirements matching a pattern group, a pattern or both at the same time:

Pattern group:	Pattern:
<input type="text"/>	[METRIC: Unit with tolerance]

Negate filter: *If selected, requirements matched by filters will not be applied by the metric*

Test custom-code



- > **Metrics based on Custom code:**
 - > Ensure tolerance values are in an adequate value range

Editing 2 - RQA

File View Log

Authoring without patterns

< No pattern group >

No selected pattern group implies no writing assistance

Font Arial Font Size 18

The voltage of the system shall be 230 V ± 30 %

Correctness metrics summary:

Low Quality 0.25

Metric	Value
Realism R26 / Tolerance R33 / TRC-M525: Ensure tolerance value are within an adequate value range	0.3

Metric: Realism R26 / Tolerance R33 / TRC-M525: Ensure tolerance value are within an adequate value range

Quality: ★☆☆

Concepts found: N/A

Mandatory: False

Summary: Tolerance is higher than expected

Recommendation:

Quality function evaluation:

Other quality elements:

Metric	Correctness	Value	Summary	Mandatory	Weight
Realism R26 / Tolerance R33 / T...	★★★	0.3	Tolerance is higher than expected	<input type="checkbox"/>	1
Abstraction R31 / TRC-M500: A...	★★★★	0	N/A	<input type="checkbox"/>	1
Accuracy R01 / TRC-M365: A...	★★★★	0	N/A	<input type="checkbox"/>	1

Singularity R18 / Conditions R27 / TRC-M360: Check the number of Modal Verbs

**Real-time
quality
assessment
using advanced
Correctness
metrics**

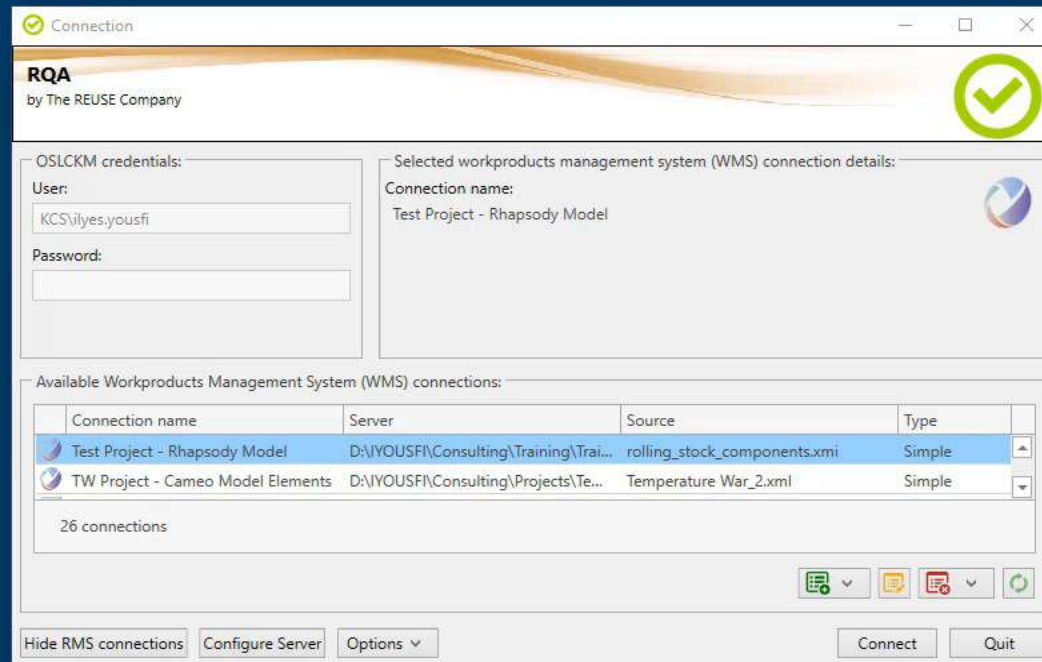
Demo

The screenshot displays the RQA (Requirements Quality Assurance) software interface. It features a central table of requirements, a text editor for editing requirements, and a dashboard with various quality metrics visualized as donut charts.

C	Pr...	W...	ID	Workproduct name	Correctness	Score	M	Cor...	Consistency	...
<input type="checkbox"/>	De...	No...	Req...	The maximum power consumption of the HVAC Sys...	★★★★	0.00	0	09/0...	★★★★	1
<input type="checkbox"/>	De...	No...	Req...	The maximum power consumption of the interiors s...	★★★★	0.00	0	09/0...	★★★★	1
<input type="checkbox"/>	De...	No...	Req...	The maximum power consumption of the lighting s...	★★★★	0.00	0	09/0...	★★★★	1
<input type="checkbox"/>	De...	No...	Req...	The maximum power consumption of the on board...	★★★★	0.00	0	09/0...	★★★★	1
<input type="checkbox"/>	De...	No...	Req...	The maximum power consumption of the passenge...	★★★★	0.00	0	09/0...	★★★★	1
<input type="checkbox"/>	De...	No...	Req...	The maximum power consumption of the power sy...	★★★★	0.00	0	09/0...	★★★★	1
<input type="checkbox"/>	De...	No...	Req...	The maximum power consumption of the propulsi...	★★★★	0.00	0	09/0...	★★★★	1
<input type="checkbox"/>	De...	No...	Req...	The maximum power consumption of the tilt syste...	★★★★	0.00	0	09/0...	★★★★	1
<input type="checkbox"/>	De...	No...	Req...	The maximum height of the internal door shall be 2...	★★★★	0.00	0	09/0...	★★★★	1
<input type="checkbox"/>	De...	No...	Req...	The maximum height of the internal door shall be 7...	★★★★	0.27	0	09/0...	★★★★	1
<input type="checkbox"/>	De...	No...	Req...	The maximum capacity of the car body shall be 20...	★★★★	0.00	0	09/0...	★★★★	1
<input type="checkbox"/>	De...	No...	Req...	The Train shall have 1 auxiliary system	★★★	0.27	0	09/0...	★★★	1
<input type="checkbox"/>	De...	No...	Req...	The Train shall have 1 braking system	★★★★	0.00	0	09/0...	★★★★	1

Correctness metrics summary:
Low Quality 0.27
 Metric Value
 Singularity R18 / TRC-M330: Check L... 3

Overall quality
 Requirements quality: 33.82% High, 0.00% Medium, 66.18% Low
 Correctness: 88.24% High, 0.00% Medium, 11.76% Low
 Consistency: 41.18% High, 58.82% Low



RQA

File Quality Control Workbook configuration Quality Assurance

Worksheet selector TWSysR

Current state Snapshot Evolution scoreboard Quality view Metrics Users Metrics Metrics Suggestions

Worksheet selector Quality scoreboard Requirement... Correctness Consistency Completeness Knowledge base

Drag a column header here to group by that column

	C.	<input type="checkbox"/>	Project	Worksheet	Type	Label	Workproduct name	Correctness	Score	Mandator...	Correctness quality date	Consistency	Issues
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Physical Design	NFR-30	The Temperature Warrior will utilize the connection plate TW-E40 1020 for the connections establishment.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Physical Design	NFR-32	The Temperature Warrior shall receive electric power through a micro USB cable attached to an external power source.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Physical Design	NFR-33	The Temperature Warrior shall be powered with a 5V current.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Safety	NFR-34	The maximum total power installed in the Temperature Warrior component shall be inferior to 4000 W.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Safety	NFR-35	The maximum power installed of each Temperature Warrior component shall be inferior to 2000 W.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Safety	NFR-36	The Temperature Warrior shall have a grounding.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Software Interface	NFR-37	The Temperature Warrior shall be connected to an external router to obtain connectivity.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Hardware Interface	NFR-38	The Temperature Warrior shall connect to an external router using an ethernet cable RJ45-IP4.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Competition	NFR-48	Before starting the competition, an individual checking shall be conducted to verify and validate the fulfilment of the...	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Competition	NFR-49	The incomplection of any test section shall divert to the failure of the subject.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Competition	NFR-50	The competition shall be completed according to the rules defined within the Project Charter documentation.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Competition	NFR-51	The competition shall consist on several rounds.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Competition	NFR-52	The Temperature Warrior capable of maintaining the temperature within the range for the most time shall win the ro...	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Competition	NFR-53	The Temperature Warrior shall receive a larger amount of points the higher their ranking position is in the round.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Competition	NFR-54	The execution rounds shall be separated by configuration breaks.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Competition	NFR-55	The Temperature Warrior's reconfiguration shall have a limited time of 2 minutes.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Competition	NFR-56	The order of reconfiguration shall be defined by the ranking of each Temperature Warrior.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Competition	NFR-57	Before every round, the required parameters shall be specified by the competition regulator.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Competition	NFR-58	Before every round, a single or several temperature ranges shall be defined.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Competition	NFR-59	Before every round, the time for the round shall be defined.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Competition	NFR-60	Before every round, the maximum cadence for the temperature to be measured shall be defined.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Competition	NFR-61	All Temperature Warriors shall compete physically in a common area (arena) autonomously.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Competition	NFR-62	The arena shall consist on three contiguous 50x50 squares.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Competition	NFR-63	The competition shall take place in an environment between 20 and 22 °C.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Competition	NFR-64	During the competition, they Temperature Warrior shall be in release mode.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Competition	NFR-65	During the competition, the code shall not be modified.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Competition	NFR-66	The Temperature Warrior shall be physically disconnected to control laptop (CL).	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Physical Design	NFR-67	The software of the Temperature Warrior shall be developed in C#.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Physical Design	NFR-70	The Temperature Warrior shall be built utilizing physical components.	☆☆☆	N/A	0	N/A	☆☆☆	N/A
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Physical Design	NFR-71	The Temperature Warrior shall weight less than 50 kg.	☆☆☆	N/A	0	N/A	☆☆☆	N/A

Total items: 107, Requirements: 107

RQA

File Quality Control Workbook configuration Quality Assurance

Worksheet selector TWSysR

Current state Snapshot Evolution scoreboard Quality view Metrics Users Metrics Metrics Suggestions

Worksheet selector Quality scoreboard Requirement... Correctness Consistency Completeness Knowledge base

Drag a column header here to group by that column

	C.	<input type="checkbox"/>	Project	Worksheet	Type	Label	Workproduct name	Correct...	Score	Mandatory metr...	Correctness quality date	Consistency	Issues
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Functional	SR-01	The Temperature Warrior shall be able to measure the physical environment temperature.	★★★★	0.00	0	06/09/2021 22:27:53	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Functional	SR-03	The Temperature Warrior shall be capable of increasing the environment temperature.	★★★★	0.00	0	06/09/2021 22:27:59	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Functional	SR-04	The Temperature Warrior shall be capable of decreasing the environment temperature.	★★★★	0.00	0	06/09/2021 22:27:58	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Functional	SR-08	The Temperature Warrior shall be able to display on the screen the combat time remaining.	★★★★	0.00	0	06/09/2021 22:27:59	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Configuration	SR-21	The Temperature Warrior shall assure all required parameters are input according to the displayed instructions.	★★★★	0.00	0	06/09/2021 22:27:53	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Functional	SR-23	The Temperature Warrior shall display the ready mode interface if all input parameters are correct.	★★★★	0.00	0	06/09/2021 22:27:53	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Functional	SR-26	The system's operational activity shall be autonomous during combat phase.	★★★★	0.00	0	06/09/2021 22:27:55	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Configuration	SR-30	The Temperature Warrior shall allow the configuration of the temporal duration of the combat.	★★★★	0.00	0	06/09/2021 22:27:58	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Configuration	SR-31	The Temperature Warrior shall allow the configuration of the sensor's maximum temperature threshold.	★★★★	0.00	0	06/09/2021 22:27:53	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Configuration	SR-32	The Temperature Warrior shall allow the configuration of the sensor's minimum temperature threshold.	★★★★	0.00	0	06/09/2021 22:27:53	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Configuration	SR-33	The Temperature Warrior shall allow the configuration of the sensor's temperature control time.	★★★★	0.00	0	06/09/2021 22:27:53	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	User Interface	SR-42	The laptop shall be able to send all configuration input parameters.	★★★★	0.00	0	06/09/2021 22:27:53	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	User Interface	SR-43	The control laptop shall be able to request the change to ready mode.	★★★★	0.00	0	06/09/2021 22:27:54	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	User Interface	SR-45	The control laptop shall be able to request the Temperature Warrior changing into combat mode when being in ready mode.	★★★★	0.00	0	06/09/2021 22:27:55	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Physical Design	SR-47	The Temperature Warrior shall regulate the surrounding temperature utilizing a software algorithm.	★★★★	0.00	0	06/09/2021 22:27:56	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Standards Compliance	NFR-09	The configuration of the Temperature Warrior regarding the temporal duration in combat mode shall be in seconds.	★★★★	0.00	0	06/09/2021 22:27:56	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Safety	NFR-15	The operators of the Temperature Warrior shall utilize at all times insulating footwear with plastic materials.	★★★★	0.00	0	06/09/2021 22:27:54	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Configuration	NFR-20	The maximum temperature allowed for the definition of the temperature ranges shall be between 28 °C and 30 °C.	★★★★	0.00	0	06/09/2021 22:27:57	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Configuration	NFR-21	The minimum temperature allowed for the definition of the temperature ranges shall be between 10 and 12 °C.	★★★★	0.00	0	06/09/2021 22:27:58	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Physical Design	NFR-24	The protective walls of the Temperature Warrior shall protect at most 5 cm x 5 cm.	★★★★	0.00	0	06/09/2021 22:27:53	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Physical Design	NFR-26	The maximum wingspan of the Temperature Warrior shall not exceed 50 cm x 50 cm x 50 cm.	★★★★	0.00	0	06/09/2021 22:27:54	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Physical Design	NFR-27	The Temperature Warrior shall use a motherboard Netduino Plus 2 as physical control Temperature Warrior.	★★★★	0.00	0	06/09/2021 22:27:55	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Physical Design	NFR-28	The Temperature Warrior shall utilize, at least, a temperature sensor TMP36GT9 for the environment temperature measurement.	★★★★	0.00	0	06/09/2021 22:27:56	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Physical Design	NFR-29	The Temperature Warrior shall utilize the Lumex LCD-S301C31TR screen for the information visualization.	★★★★	0.00	0	06/09/2021 22:27:56	☆☆☆	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TW - System Requirem...	TWSysR	Safety	NFR-34	The maximum total power installed in the Temperature Warrior component shall be inferior to 4000	★★★★	0.00	0	06/09/2021 22:27:53	☆☆☆	N/A

Total items: 107, Requirements: 107

RQA

File Quality Control Workbook configuration Quality Assurance

Worksheet selector TWSysR

Current state Snapshot Evolution scoreboard Quality view Metrics Users Metrics Metrics Suggestions

Worksheet selector Quality scoreboard Requirement... Correctness Consistency Completeness Knowledge base

Drag a column header here to group by that column

	C.	Project	Worksheet	Type	Label	Workproduct name	Correctness	Score	Mandatory metri...	Correctness quality date	Consistency	Issues
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Functional	SR-01	The Temperature Warrior shall be able to measure the physical environment temperature.	★★★★	0.00	0	06/09/2021 22:27:53	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Functional	SR-02	The Temperature Warrior shall be able to modify its physical environment temperature.	★★★☆☆	0.32	0	06/09/2021 22:27:59	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Functional	SR-03	The Temperature Warrior shall be capable of increasing the environment temperature.	★★★★	0.00	0	06/09/2021 22:27:59	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Functional	SR-04	The Temperature Warrior shall be capable of decreasing the environment temperature.	★★★★	0.00	0	06/09/2021 22:27:58	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Functional	SR-05	The Temperature Warrior shall be able to keep track of the time in which the temperature of the sensor is within the previously defined thresholds to its functional release.	★★★☆☆	1.12	0	06/09/2021 22:27:59	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Functional	SR-06	The Temperature Warrior shall be able to display on a screen the measured temperature by the sensor.	★★★☆☆	0.16	0	06/09/2021 22:27:59	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Functional	SR-07	The Temperature Warrior shall be able to display on a screen the temperature range within which the sensor must be maintained.	★★★☆☆	0.96	0	06/09/2021 22:27:59	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Functional	SR-08	The Temperature Warrior shall be able to display on the screen the combat time remaining.	★★★★	0.00	0	06/09/2021 22:27:59	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Functional	SR-09	At the end of each round, the Temperature Warrior shall be able to display on the screen the time in which the temperature of the sensor has been within the thresholds.	★★★☆☆	0.32	0	06/09/2021 22:27:59	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Architectural	SR-10	In order to control and coordinate the operations, the Temperature Warrior shall have a Control System.	★★★☆☆	0.64	0	06/09/2021 22:27:59	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Architectural	SR-11	In order to allow user interaction, the Temperature Warrior shall have a Management System.	★★★☆☆	0.32	0	06/09/2021 22:27:53	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Architectural	SR-12	In order to manage the environment temperature, the Temperature Warrior shall have a Temperature Actuation System.	★★★☆☆	0.64	0	06/09/2021 22:27:53	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Architectural	SR-13	In order to register the environment temperature, the Temperature Warrior shall have a Temperature Registration System.	★★★☆☆	0.32	0	06/09/2021 22:27:54	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Architectural	SR-14	In order to provide the energy resources required, the Temperature Warrior shall have a Power System.	★★★☆☆	0.32	0	06/09/2021 22:27:54	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Functional	SR-15	The Temperature Warrior shall operate in the following modes: configuration prepared and combat.	★★★☆☆	0.32	0	06/09/2021 22:27:55	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Functional	SR-16	The Temperature Warrior shall operate in the configuration mode during the input of temperature ranges, refresh and combat times, as perimeters defined for the battle.	★★★☆☆	0.32	0	06/09/2021 22:27:56	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Functional	SR-17	The Temperature Warrior shall change to validation mode when the user inputs the corresponding values and presses the finish input interface.	★★★☆☆	0.16	0	06/09/2021 22:27:56	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Functional	SR-18	The Temperature Warrior shall enter the ready mode when the configuration mode input parameters are validated.	★★★☆☆	0.32	0	06/09/2021 22:27:57	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Functional	SR-19	The Temperature Warrior shall be able to control that the maximum temperature threshold is not exceeded by shutting itself down.	★★★☆☆	0.80	0	06/09/2021 22:27:58	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Functional	SR-20	The Temperature Warrior shall be able to control that the minimum temperature threshold is not exceeded by shutting itself down.	★★★☆☆	0.80	0	06/09/2021 22:27:58	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Configuration	SR-21	The Temperature Warrior shall assure all required parameters are input according to the displayed instructions.	★★★★	0.00	0	06/09/2021 22:27:53	★★★★	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	TW - System Requireme...	TWSysR	Functional	SR-22	The Temperature Warrior shall remain in configuration mode whenever any of the input parameters is empty or considered to be incorrect.	★★★☆☆	0.80	0	06/09/2021 22:27:53	★★★★	N/A

Total items: 107, Requirements: 107





- **Completeness: tips and tricks to address the most challenging topic towards high-quality specifications**
 - According to many different surveys and studies, requirements completeness is the factor that impacts the most when verifying requirements quality.
 - This webinar will show how lacking completeness can impact systems engineering projects and review some tips and tricks to reduce the gap between an actual specification and the ideal 'complete' specification. Asking the proper questions contributes to reducing this gap, so we'll see some of those questions (you are welcome to prepare and share yours during the session).
 - This webinar will provide more detail on this topic and show how the tool RQA – QUALITY Studio can contribute to complete specifications.
 - **Dates:** September 28 and 30, 2021
 - <https://www.reusecompany.com/webinars/completeness-tips-and-tricks-to-address-the-most-challenging-topic-towards-high-quality-specifications>





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