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KCSE Principles:
Enhancing SE activities with a Global KM approach

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Consulting Director

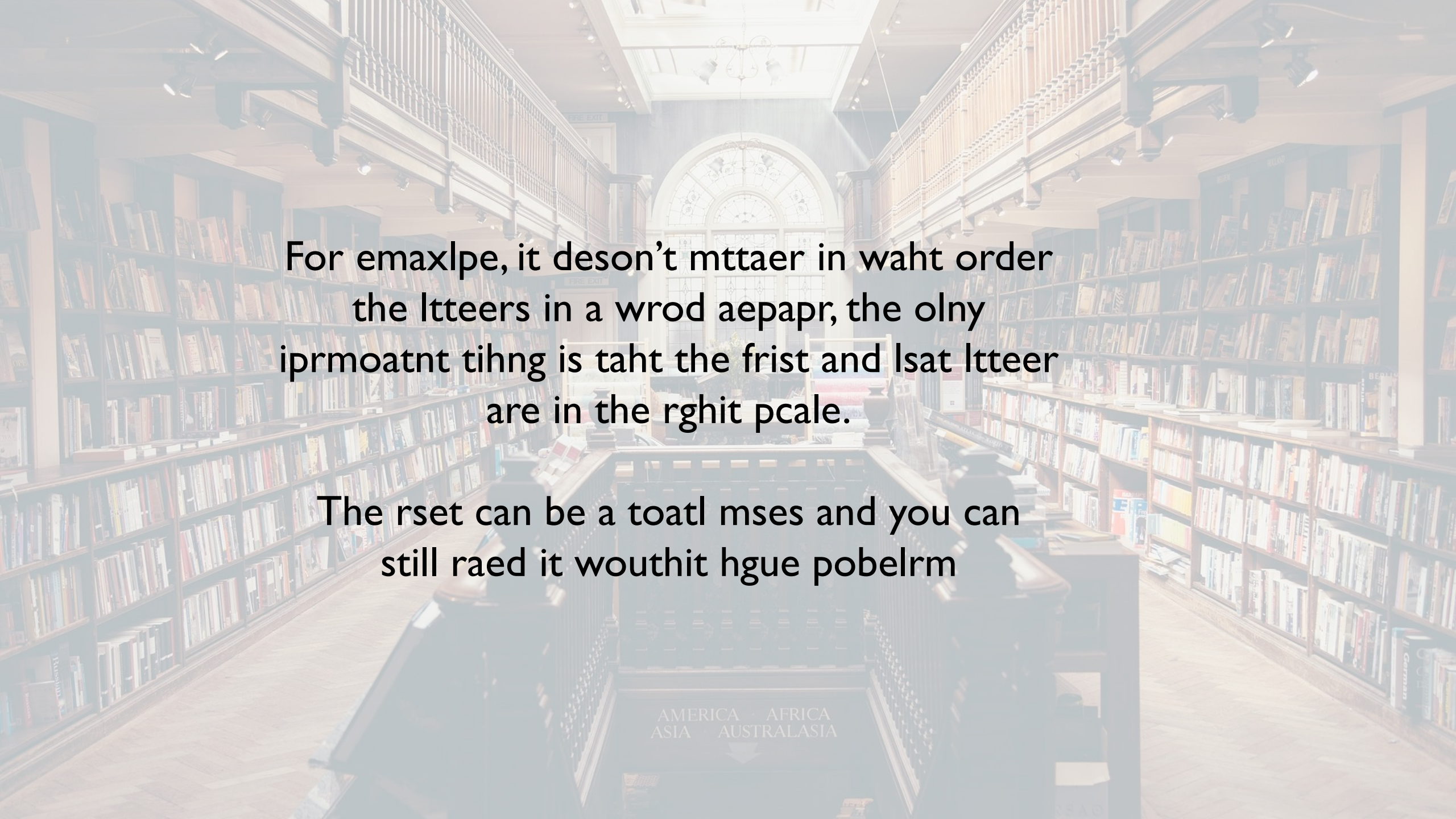
Monday, 20 August 2018

The REUSE Company – TRC Worldwide

Tools and solutions for knowledge Traceability, Reuse and Quality management

- Local partners: France, Germany, Italy, Spain and Japan
- Customers in different countries along United States, Europe and Asia
- TRC Headquarters is based on Madrid (Spain)
- United Kingdom TRC office
- Scandinavian TRC office (Sweden)





For example, it doesn't matter in what order
the letters in a word appear, the only
important thing is that the first and last letter
are in the right place.

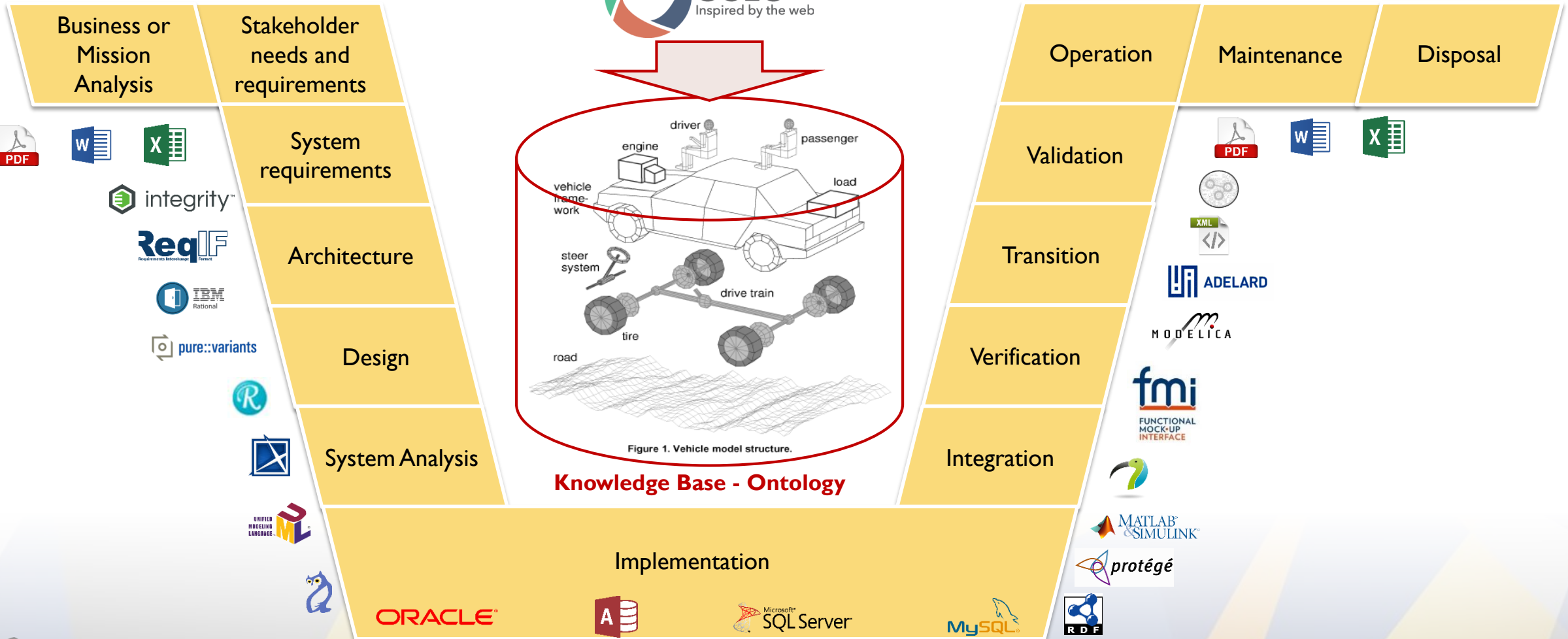
The rest can be a total mess and you can
still read it without huge problems

AMERICA · AFRICA
ASIA · AUSTRALASIA

How does Requirements Understanding enhance SE activities?

40% Cost Saving
(Average Value)

Knowledge Centric Systems Engineering





Project
Infrastructure

Competitiveness

Performance
and Quality

Flexibility

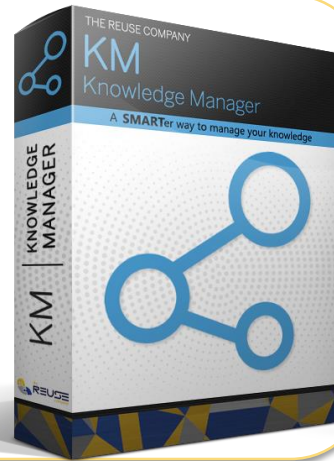
Time to market

Knowledge Centric Systems Engineering

KCSE Principles

Knowledge Management

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



Traceability

Support the **integration** among assets through semantic **interoperability** to ensure the **traces** between similar elements



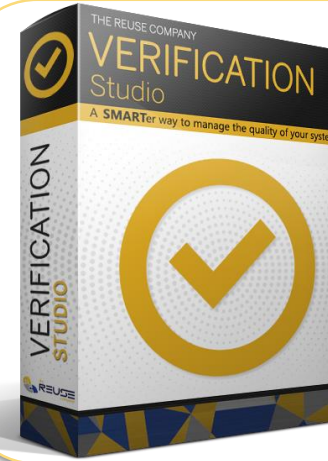
Requirements

Enhance Requirements **writing** engineering skills and ensure **CCC** based on the organizational **know-how**



Quality Management

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



CCC: Correctness, Completeness and Consistency

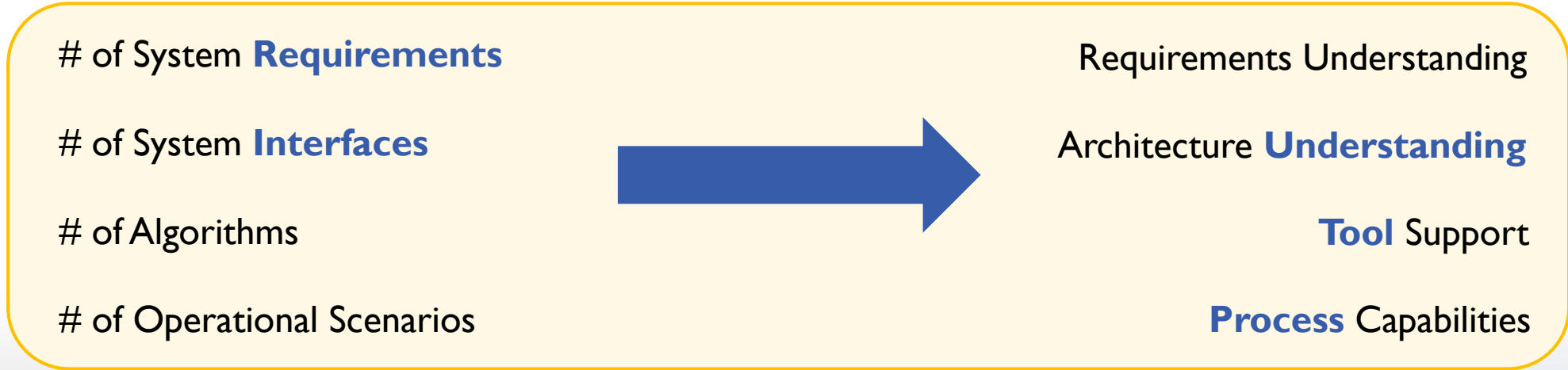
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How does KCSE enhance SE activities?

40% Cost Saving
(Average Value)

Constructive Systems Engineering Model - COSYSMO

- COSYSMO computes **effort (and cost)** as a function of system **functional size** and adjusts it based on a number of environmental factors related to **systems engineering**.



<http://csse.usc.edu/tools/COSYSMO.php>

Constructive Systems Engineering Model - COSYSMO

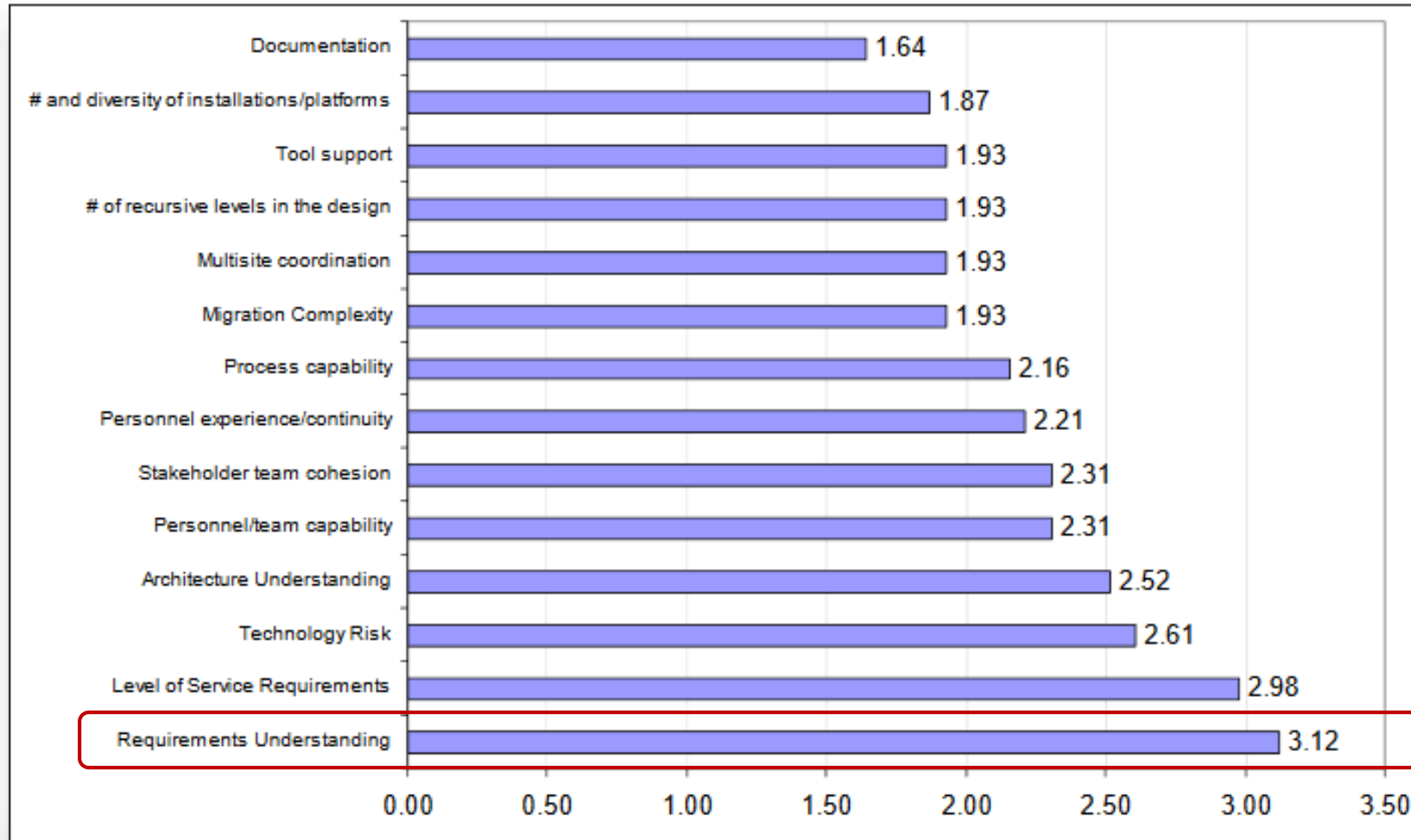
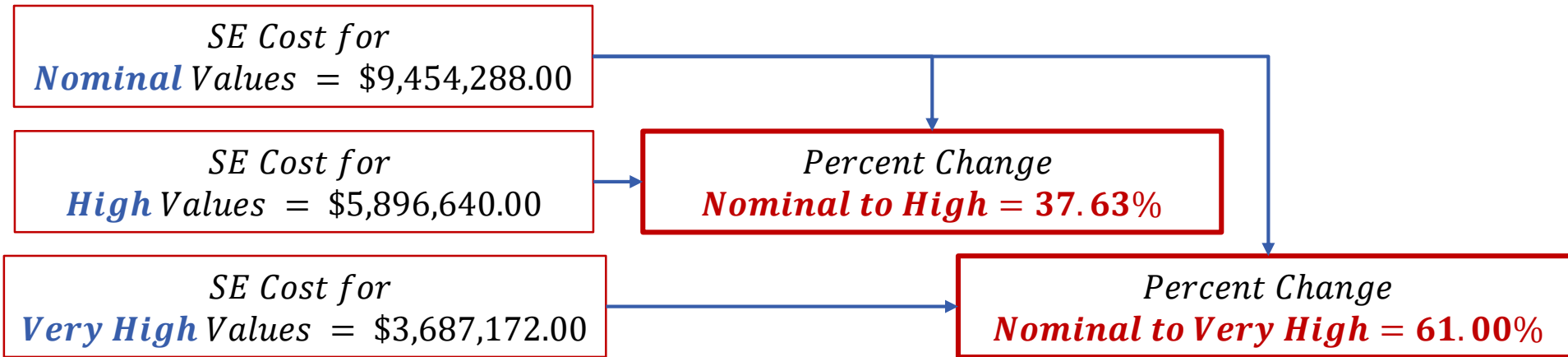


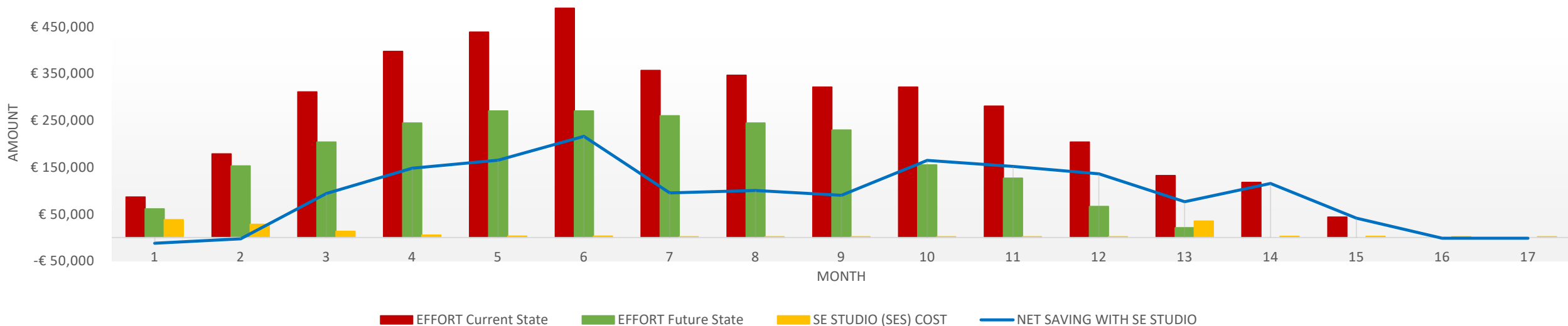
Figure 14 Cost Driver EMRs in Order of Influence from Delphi Round 3

<http://csse.usc.edu/tools/COSYSMO.php>

Example of application – Cost Saving Percentages



Return on Investment with SES v18 - Pilot Project





Application of the KCSE Principles

Application of the KCSE Principles



CCC: Correctness, Completeness and Consistency

The Ontology for KCSE

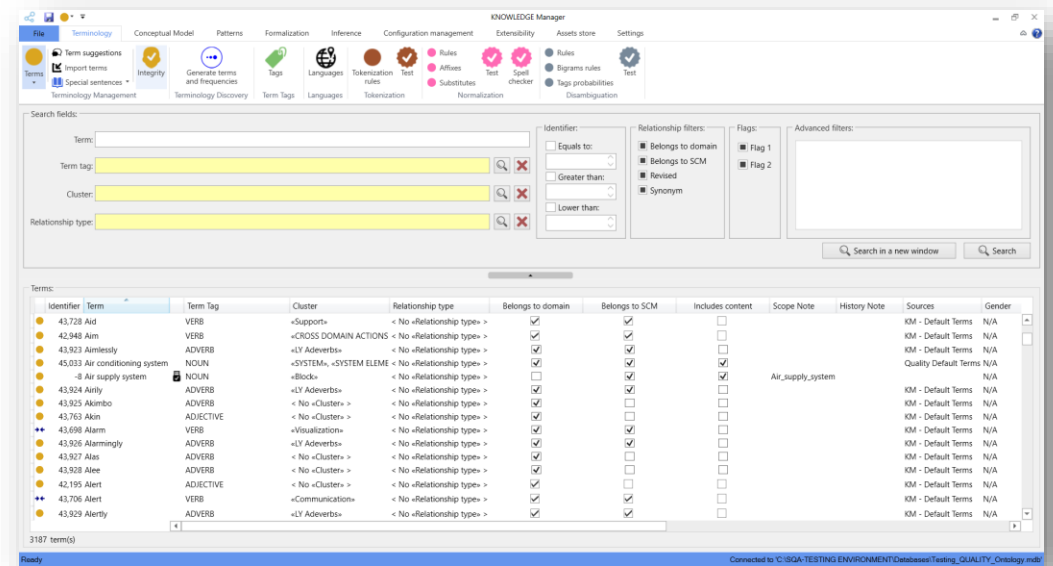




01

Vocabulary

Controlled Organizational and Project Vocabulary for a common understanding among stakeholders

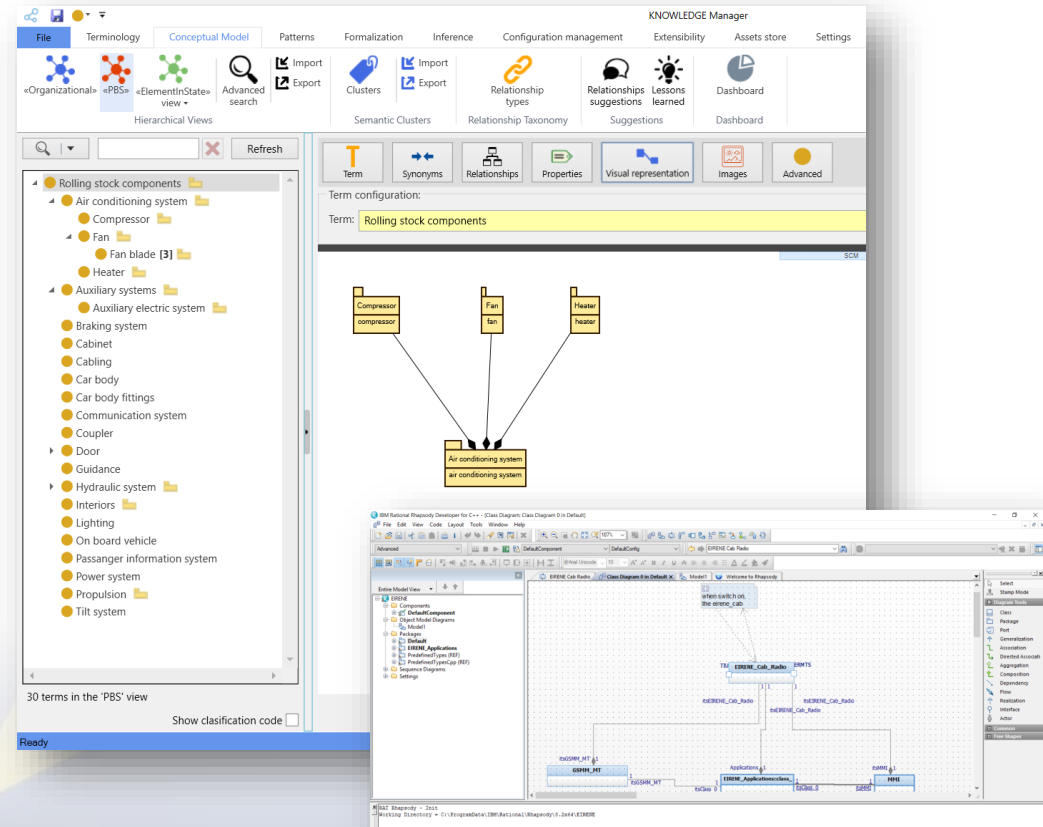




02

Architectures

Recreate and capture the system architectures represented in views and models. Establish relationships among system and system elements





03

Patterns

Represent requirements similarities and enable formal representation, automatic recognition and aid authors

Name:
[METRIC - System Component Definition (Completeness & Consistency)]

Description:
N/A

Pattern group(s):
• METRIC - System Component Definition Requirements (Completeness & Consistency) (150)

Example:
N/A

Indexable: Yes **Enabled:** Yes **Weight:** 1,200

Syntax:

DEFINITE ARTICLE + «SYSTEM ELEMENT» + «MODAL COMPULSORY» + VERB TO HAVE + NUMBER + «SYSTEM ELEMENT»

or

«SYSTEM» MODAL VERB

Editing CoRS_001 - REQUIREMENTS ENGINEERING Studio

File View Log

Authoring with pattern 'METRIC - System physical characteristic (Completeness & Consistency)'

METRIC - System physical requirements (Completeness & Consistency) (2) METRIC - System physical characteristic (Completeness & Consistency)

Font Arial Font Size 12

The power consumption of the

- Accumulator
- Air conditioning system
- Auxiliary electric system
- Auxiliary systems
- Battery
- Braking system
- Cabinet
- Cabling
- Car body
- Car body fittings

Matching patterns elements:

Example

37 terms

Show numbers

Show optional terms

Weight Pattern name

1100 METRIC - System physical characteristic (Completeness...

Correctness metrics summary:

High Quality 0.63

Metric Value

R02 Precision - TRC - Imperative mode (Enforce) 0

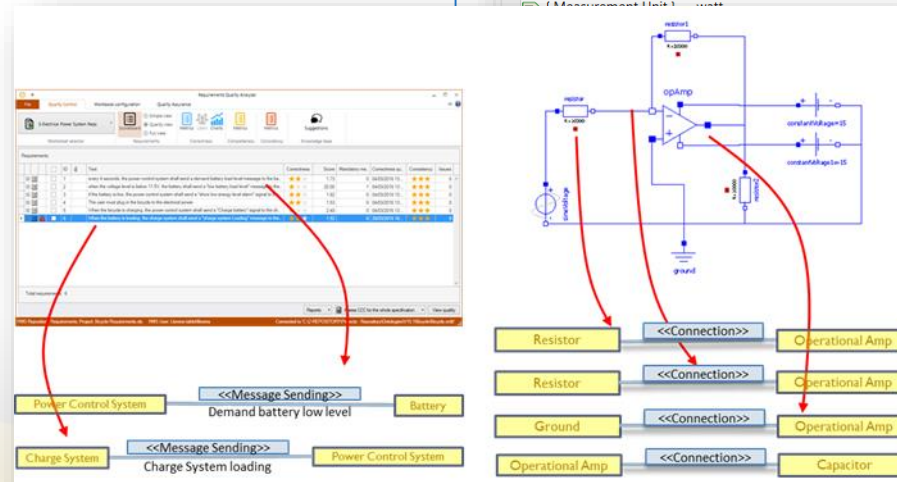
[Suggest manual assessment](#) Ready

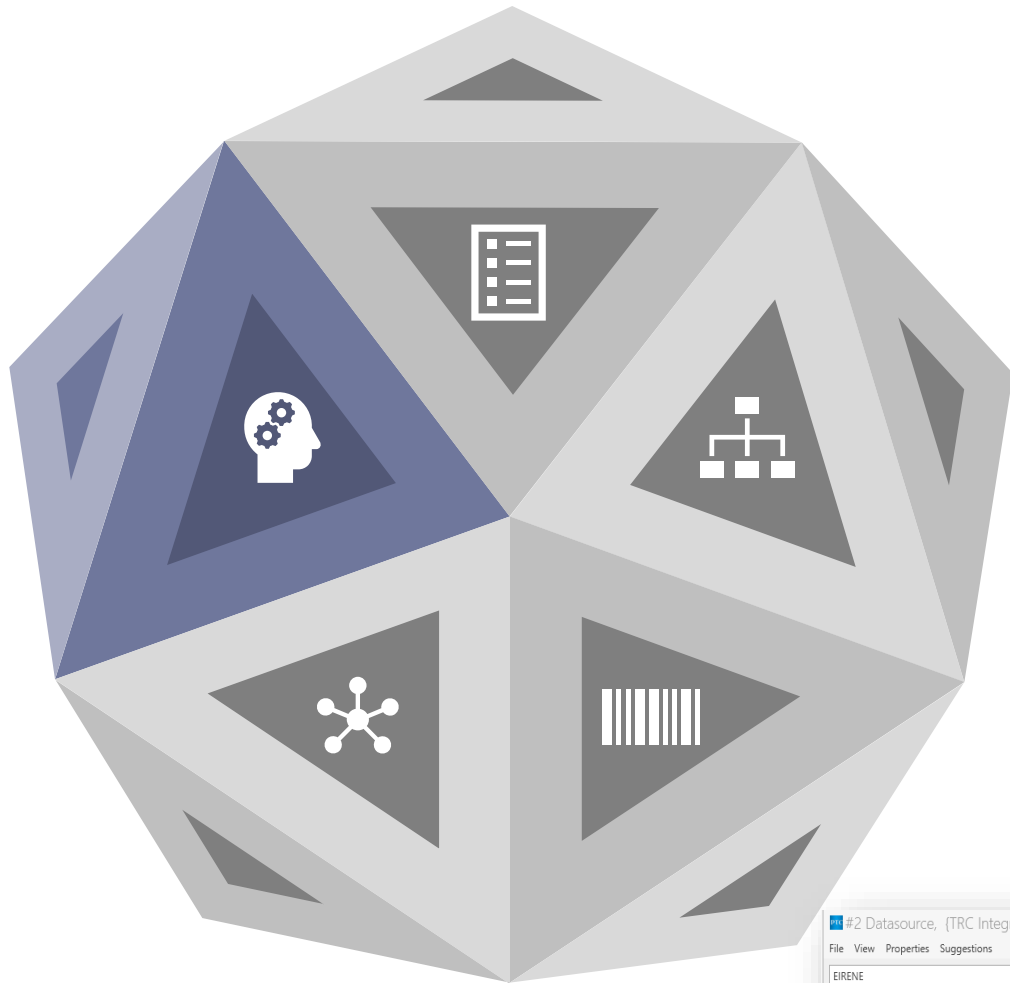


04

Formalization

Representation of assets semantic through SRL – System Representation Language





05

Reasoning

A combination of rules, tasks and groups to infer information from valuable assets

The screenshot displays a multi-paneled software interface. The top pane shows a C# code file named 'Task (Generate traceability based on PBS), custom-code'. The code includes logic for handling 'token', 'current', and 'traceabilityAPI' objects, with a 'SemanticItem' property being set. A dropdown menu is open over the code, showing a tree view of project classes like 'AppDomain', 'Accessability', and 'Action'. The middle pane shows a 'Reasoning manager' configuration window with 'Tasks' and 'Configuration' tabs. The 'Configuration' tab is active, showing 'Source Dataset' and 'Target Dataset' fields, both pointing to datasets in the 'TRC Integrity' module. The 'Selected Task' is 'Generate traceability based on PBS'. The bottom pane shows a 'Datasource, (TRC Integrity)' window with a list of requirements, such as 'The EIRENE mobile installation shall be designed to operate in a network meeting the criteria in...'. The right side of the interface shows 'Using / Imports' and 'Assemblies' panels with various system and application dependencies.

Vocabulary

A380

A350

System

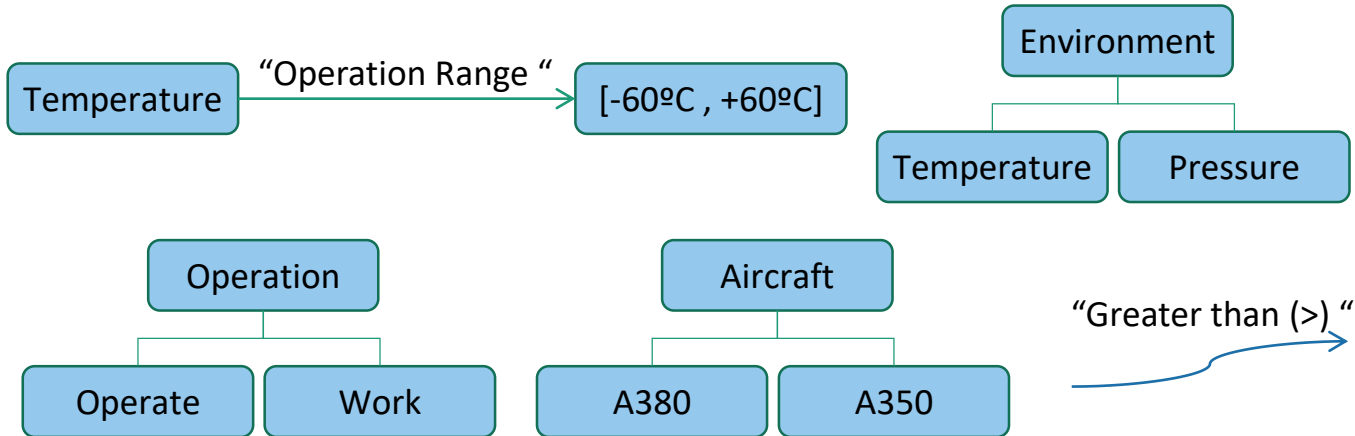
Operate

Temperature

Environment

Pressure

Architectures - Conceptual model



Patterns

Aircraft (*)

Shall

Operation (*)

At

«Minimum»

Environment (*)

Of

NUMBER

MEASUREMENT
UNIT

Formalization

The aircraft shall be able to operate at a minimum temperature of -70° C

Temperature

"Greater than (>)"

-70

°C

Reasoning

If

NUMBER

Lower than (<)

-70°

°C

Or

NUMBER

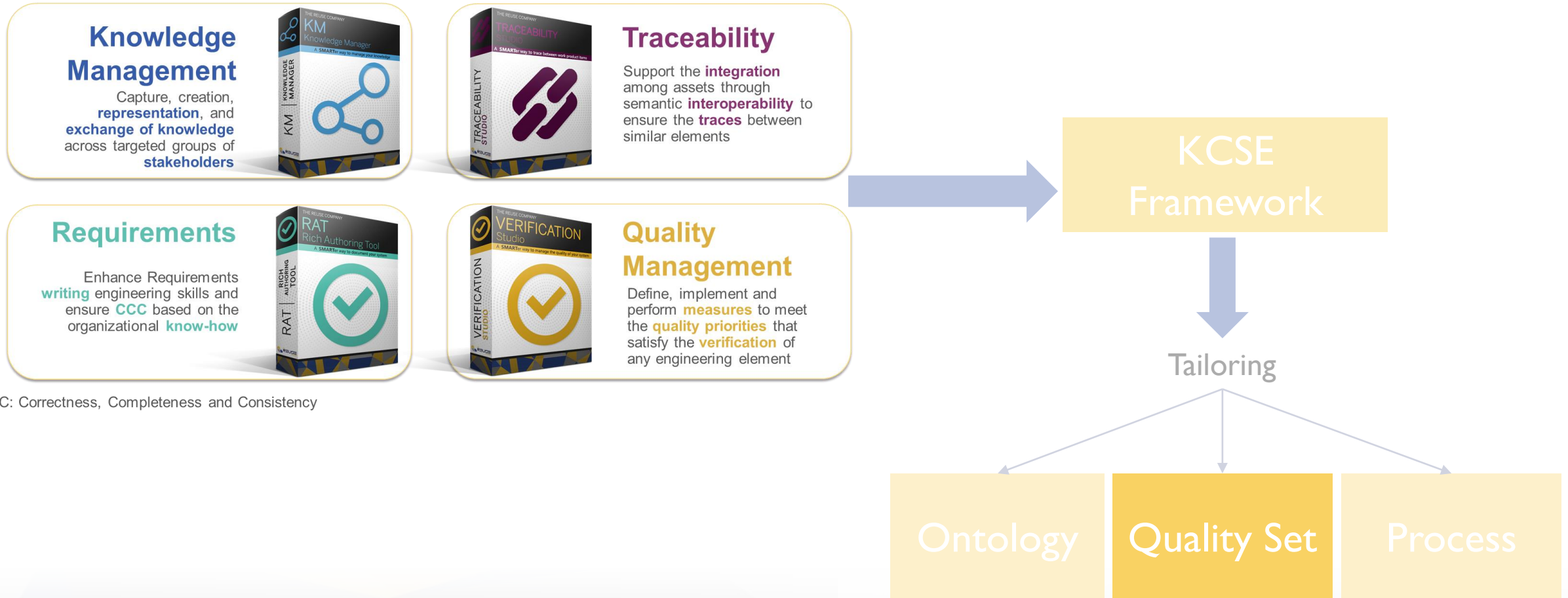
"Greater than (>)"

+65°

°C



Application of the KCSE Principles



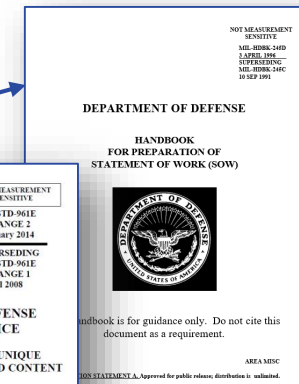
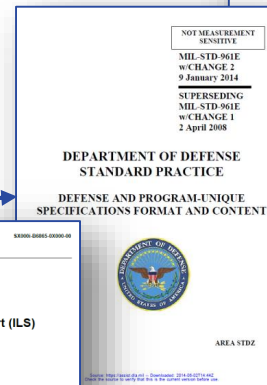
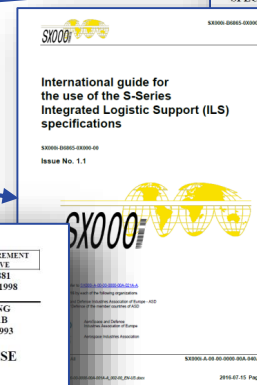
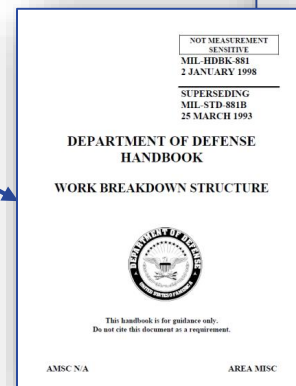
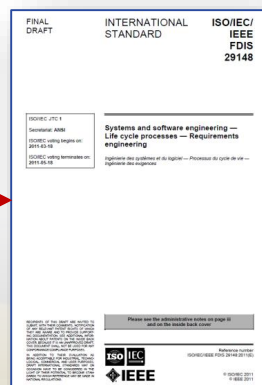
CCC: Correctness, Completeness and Consistency

Quality in the context of KCSE

ID	Description	Category	Priority	Status	Assignee	Start Date	End Date	Comments
...

Completeness
Consistency

Correctness
Completeness
Consistency



Correctness Quality Check

The screenshot displays the VERIFICATION Studio interface with several key components:

- Correctness metrics summary (Medium Quality):**
 - R02 Precision - TRC - Imperative mode (Enforce): 2
 - R05 Precision - Imprecise quantifiers (Avoid): 2
 - R19 Singularity - TRC - Text length (words): 54
- Correctness metrics summary (High Quality):**
 - R05 Precision - Imprecise quantifiers (Avoid): 1
- Requirements statistics:**
 - High: 241 (64.44%)
 - Medium: 100 (26.74%)
 - Low: 33 (8.82%)
 - Not matching filters: 0 (0.00%)
- Metric statistics table:**

Metric	High Quality	High (%)	Medium Q...	Medium (%)	Low Quality	Low (%)	Not matchi...	Not ma
R02 Precision - TRC - Im...	286	76.47	0	0.00	88	23.53	0	
R05 Precision - Imprecise...	229	61.23	0	0.00	145	38.77	0	
R07 Precision - Vague adverbs...	374	100.00	0	0.00	0	0.00	0	
R08 Precision - Vague adjective...	365	97.59	0	0.00	9	2.41	0	
R10 Precision - Open en...	372	99.47	0	0.00	2	0.53	0	
R11 Concision - Superflu...	361	96.52	0	0.00	13	3.48	0	
R15 Non Ambiguity - Inc...	303	81.02	47	12.57	24	6.42	0	
R15 Non Ambiguity - Inc...	374	100.00	0	0.00	0	0.00	0	
R17 Non Ambiguity - Sta...	373	99.73	0	0.00	1	0.27	0	
R19 Singularity - TRC - T...	332	88.77	5	1.34	37	9.89	0	
R19 Singularity - TRC - T...	278	74.33	63	16.84	33	8.82	0	

Quality Analysis applied to single requirements

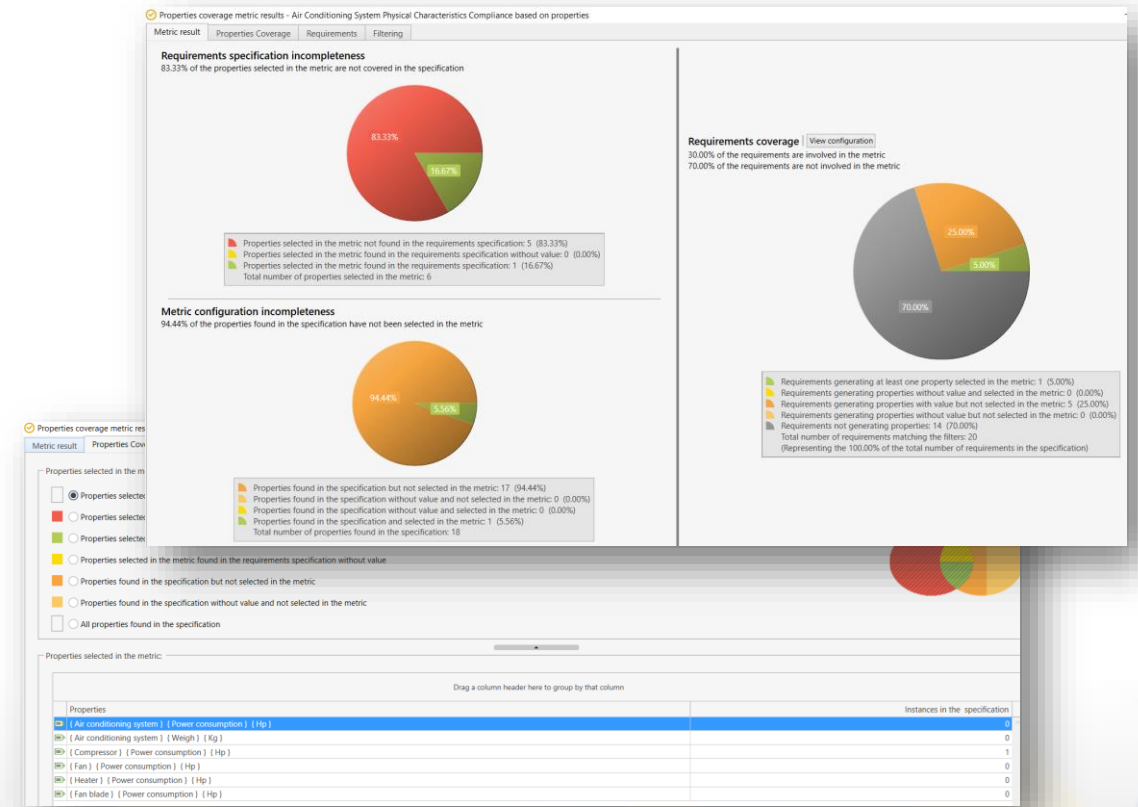
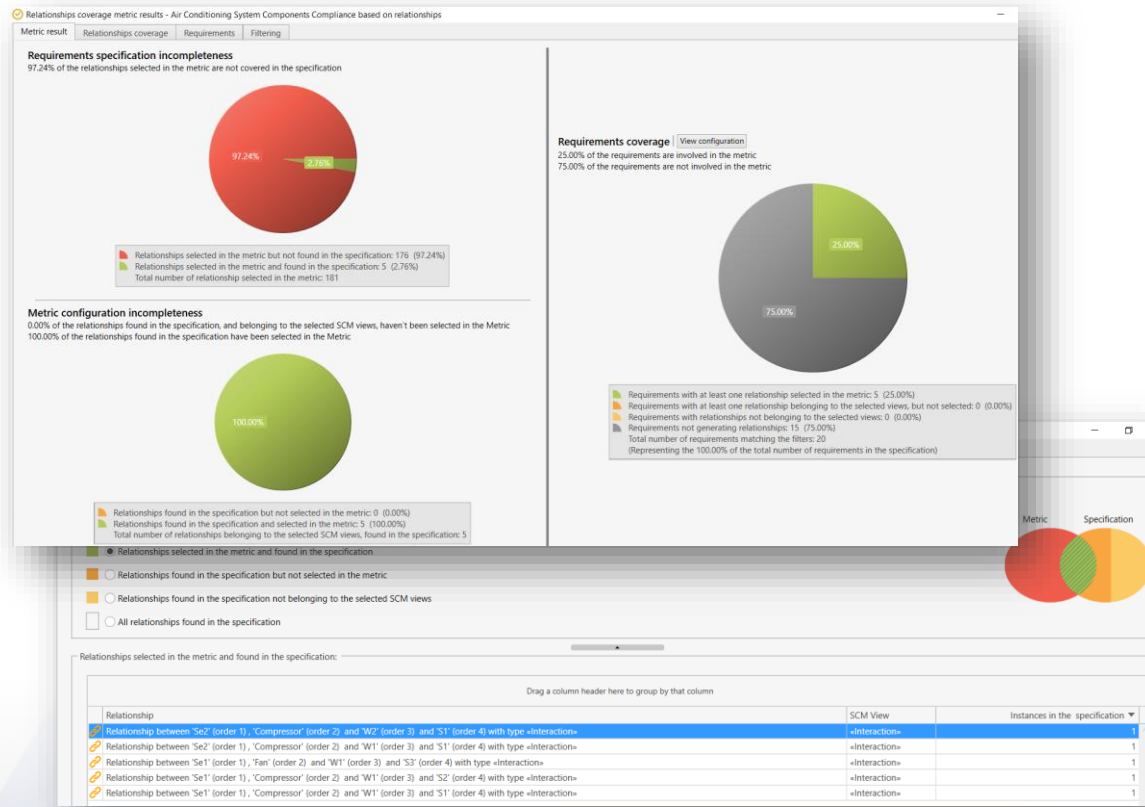
The Correctness Quality Set:

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

Completeness Quality Check

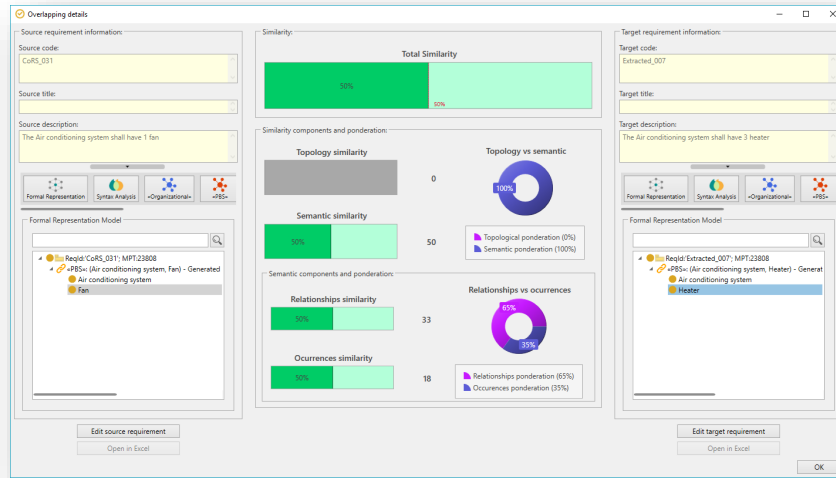
Specification viewpoint

Ontology viewpoint

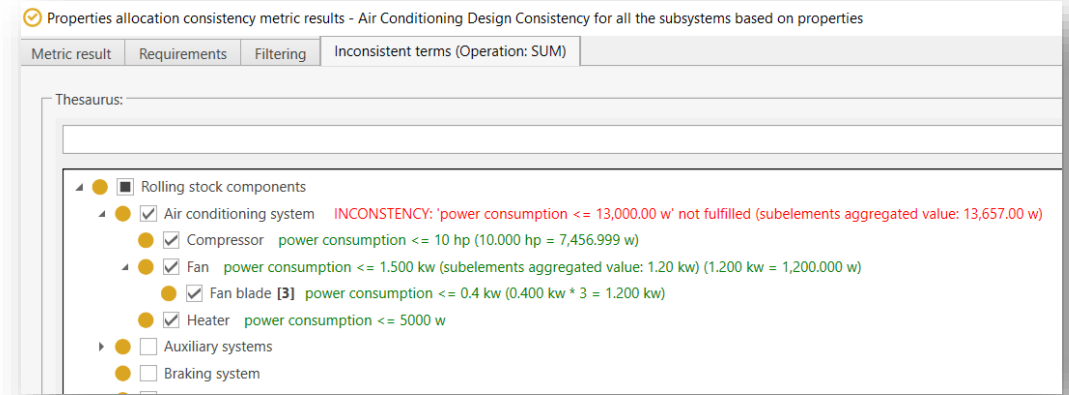


Consistency Quality Check

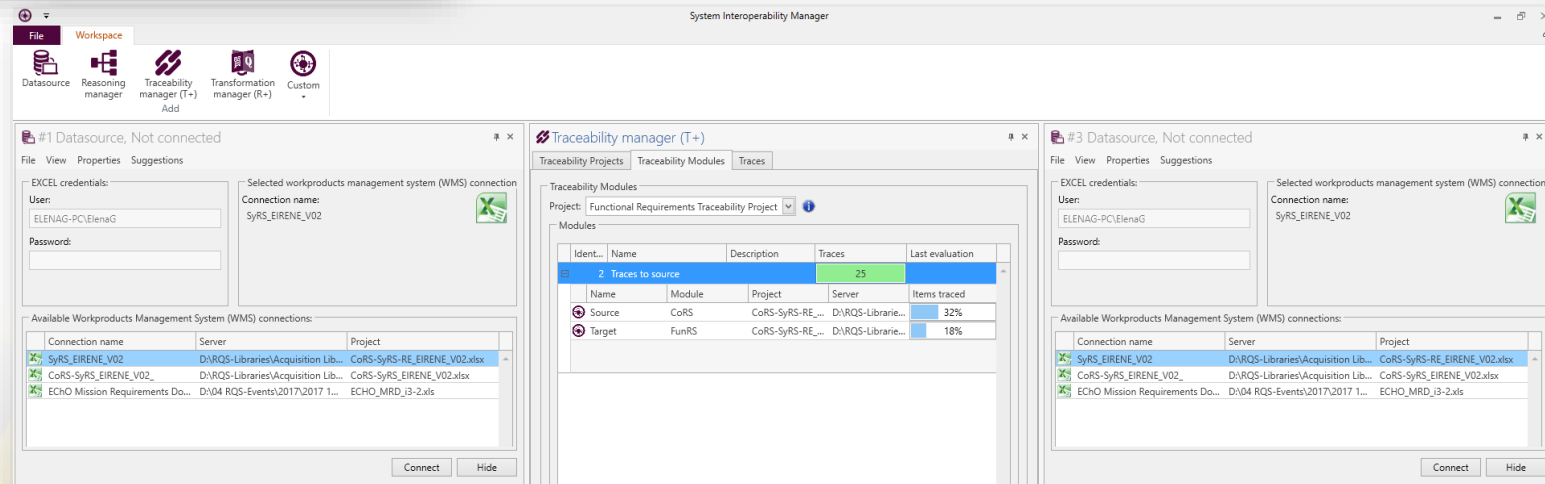
Specification Inconsistency



Ontology Inconsistency



Traces Inconsistency



Project Performance

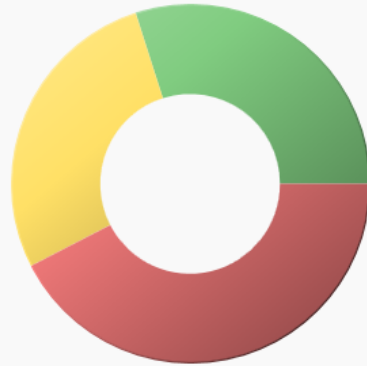
Requirements quality



- Requirements with 'High' quality: 433 (60.81%)
- Requirements with 'Medium' quality: 192 (26.97%)
- Requirements with 'Low' quality: 87 (12.22%)

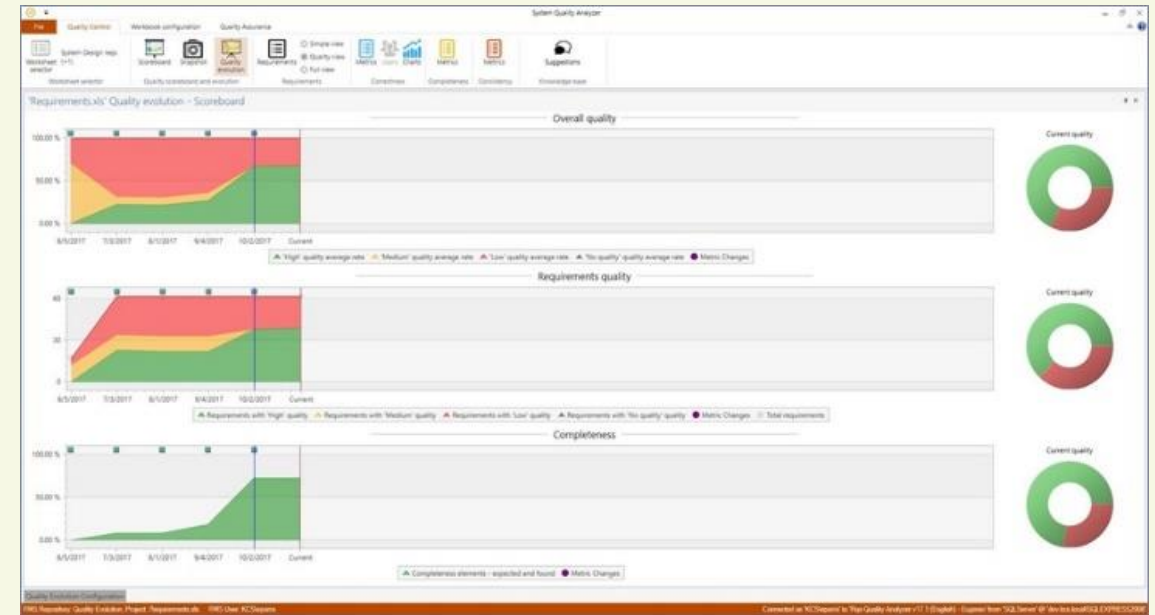
First Assessment

Requirements quality



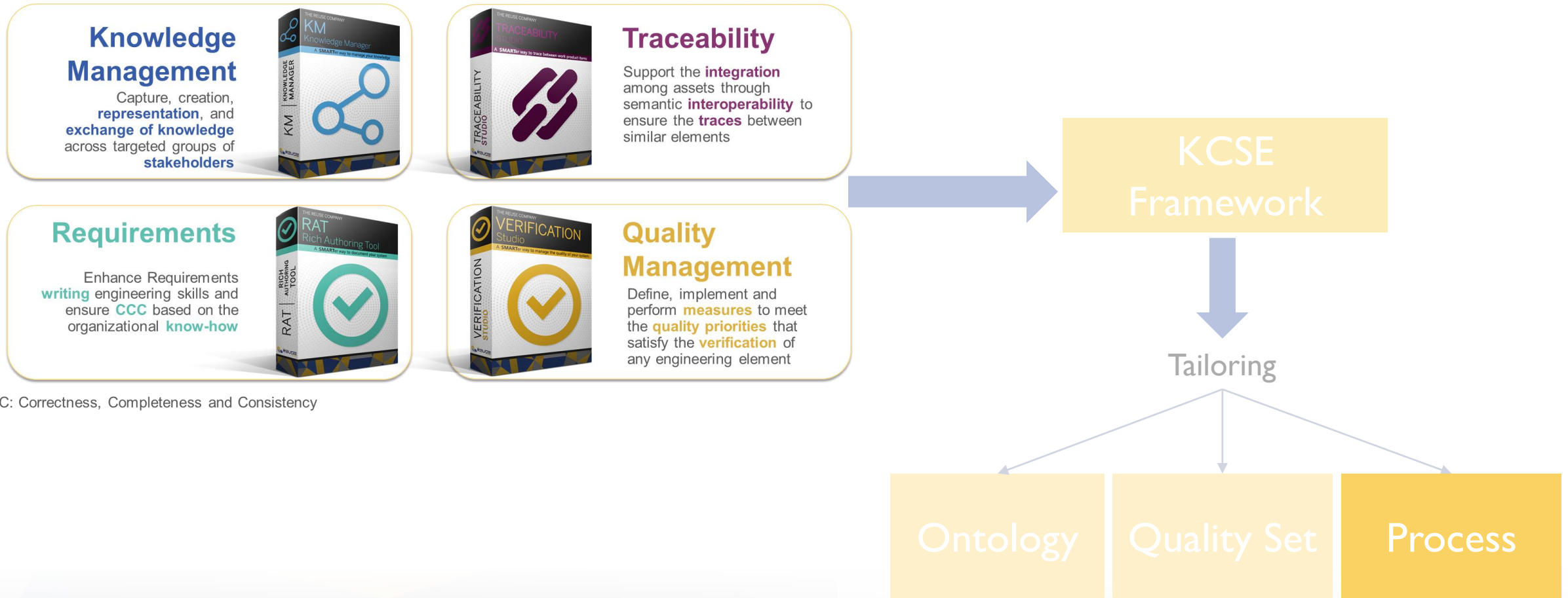
- Requirements with 'High' quality: 213 (29.92%)
- Requirements with 'Medium' quality: 197 (27.67%)
- Requirements with 'Low' quality: 302 (42.42%)

Second Assessment



Quality Evolution

Application of the KCSE Principles



CCC: Correctness, Completeness and Consistency

Common Representation Language

Requirements Quality Analyzer

File Quality Control Workbook configuration Quality Assurance

3-Electrical Power System Reqs

Worksheet selector Requirements Correctness Completeness Consistency Knowledge base

Simple view Quality view Full View

Metrics Users Charts Metrics Metrics Suggestions

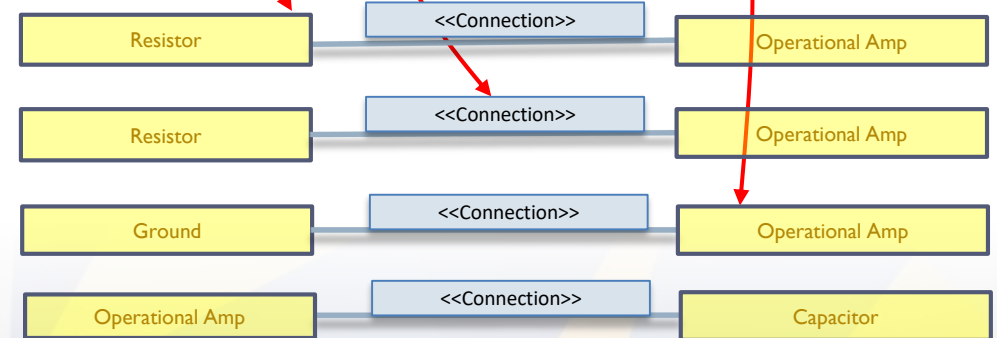
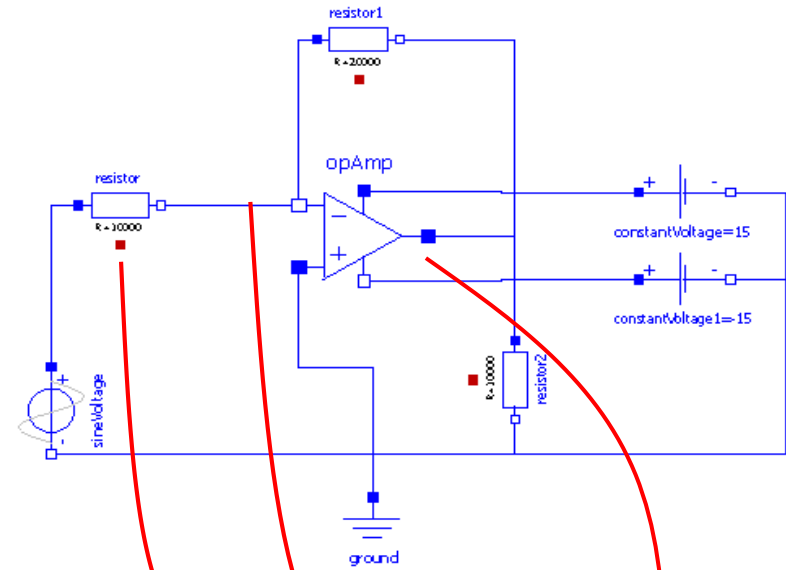
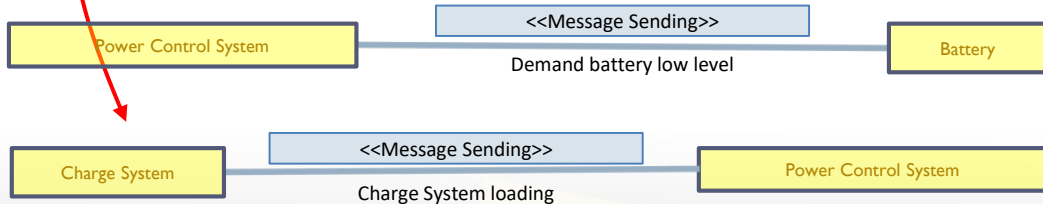
Requirements:

ID	Text	Correctness	Score	Mandatory me...	Correctness qu...	Consistency	Issues
1	every 4 seconds, the power control system shall send a demand battery load level message to the ba...	☆☆☆	1.73	0	04/03/2016 13:...	☆☆☆☆	0
2	when the voltage level is below 11.5V, the battery shall send a "low battery load level" message to the...	☆☆☆	20.00	1	04/03/2016 13:...	☆☆☆☆	0
3	if the battery is low, the power control system shall send a "show low energy level alarm" signal to the...	☆☆☆	1.82	0	04/03/2016 13:...	☆☆☆☆	0
4	The user must plug in the bicycle to the electrical power	☆☆☆	1.53	0	04/03/2016 13:...	☆☆☆☆	0
5	When the bicycle is charging, the power control system shall send a "Charge battery" signal to the ch...	☆☆☆	2.40	0	04/03/2016 13:...	☆☆☆☆	0
6	When the battery is loading, the charge system shall send a "charge system Loading" message to the...	☆☆☆	1.92	0	26/03/2016 18:...	☆☆☆☆	0

Total requirements: 6

Reports Assess CCC for the whole specification View quality

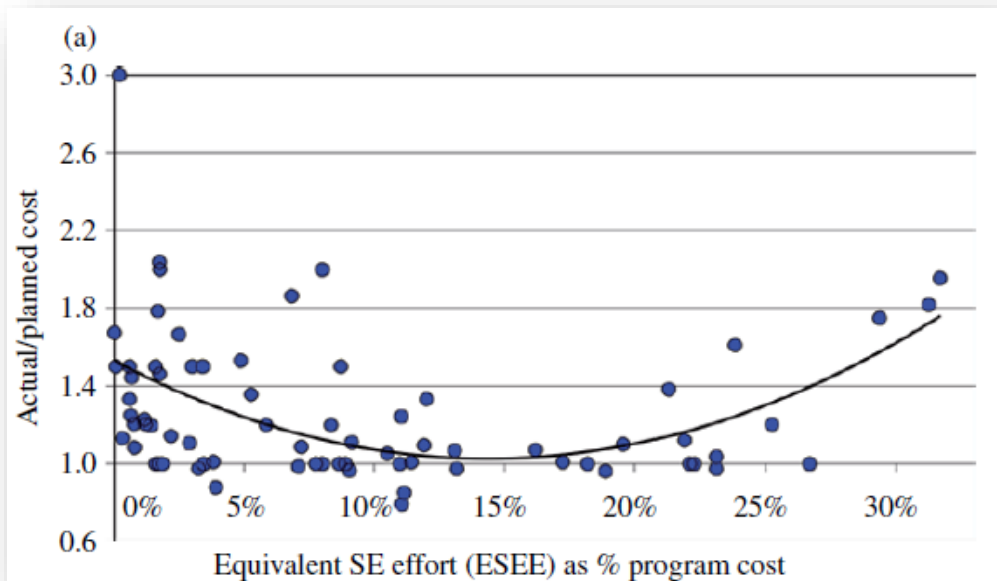
RMS Repository Requirements: Project: Bicycle Requirements.xls RMS User: Llorens-tablet@lorens Connected to 'C:\Z-REPOSITORY\Pr...jects - Repository\Ontologies\15.11\Bicycle\Bicycle.mdb'





Efficient application of KCSE: Tailoring

Efforts to apply KCSE



Systems Engineering Handbook. INCOSE-TP-2003-002-2015

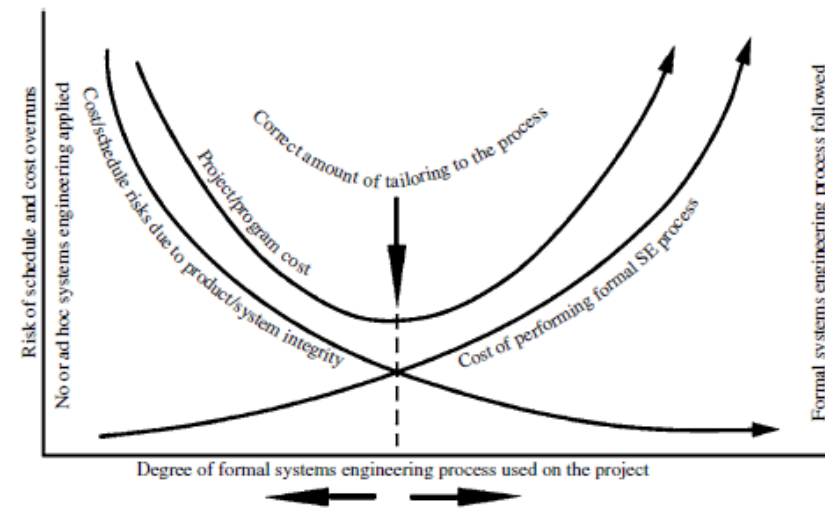


FIGURE 8.1 Tailoring requires balance between risk and process. INCOSE SEH original figure created by Michael Krueger, adapted from Ken Salter. Usage per the INCOSE Notices page. All other rights reserved.

Systems Engineering Handbook. INCOSE-TP-2003-002-2015

Make it simple

KCSE application purpose



- Process Automation
- User's Support
- Both

Systems Engineering Studio v18.1



Verification Studio (V&V Studio)

- Manages the preparation of verification actions
- Manages the realization of verification actions
- Manages and improves the quality of all types of work-products
- Manages the results of the verification process



Authoring Tools (RAT)

- Assists you in the activity of writing requirements and other natural language text
- Performs Correctness and Consistency analysis on the fly
- Suggests terminology changes based on a central knowledge base
- Fully integrated in your Requirements Management Tool and Modelling Tool



Knowledge Manager (KM)

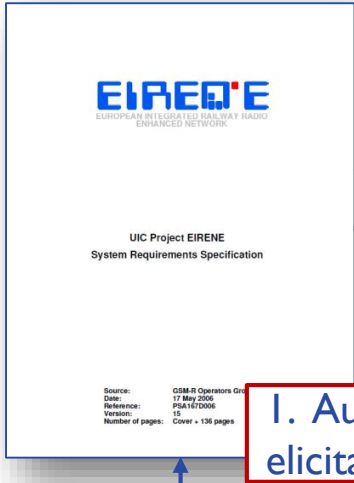
- Manages terminology and knowledge of your system
- Helps you in the creation of patterns
- Provides methods for automatic generation of Ontologies
- Manages knowledge evolution over time



Traceability Studio

- Manages trace links between all sorts of information
- Discovers user-tailored trace links
- Monitors and reports trace links in a tailorable platform
- Connects every tool involved in the systems engineering processes

What you are going to see in the Demonstration of SES v18.1

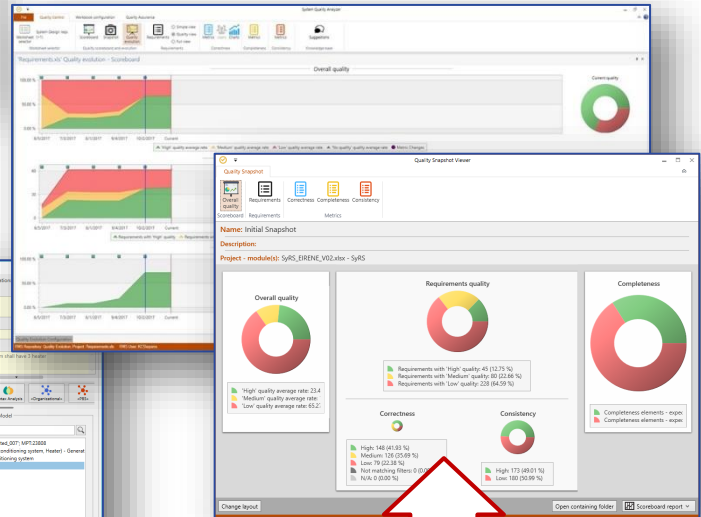


1. Automatic requirements elicitation from documents

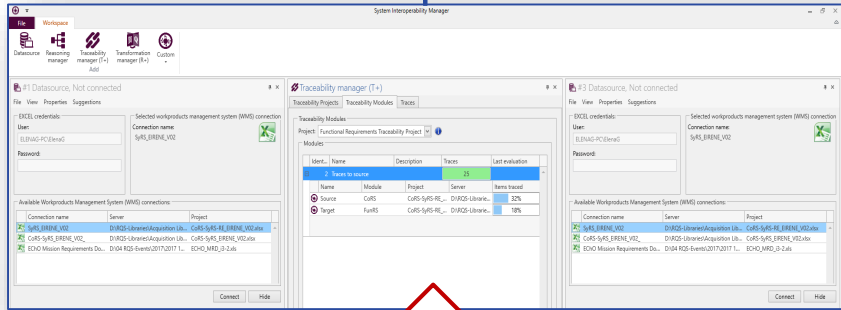
Req ID	Req Text	Source	Category	Status
REQ-001	The building block component shall have a...	Document A	Functional	Valid
REQ-002	...	Document B	Performance	Invalid
REQ-003	...	Document C	Interface	Valid
REQ-004	...	Document D	Security	Invalid
REQ-005	...	Document E	Availability	Valid



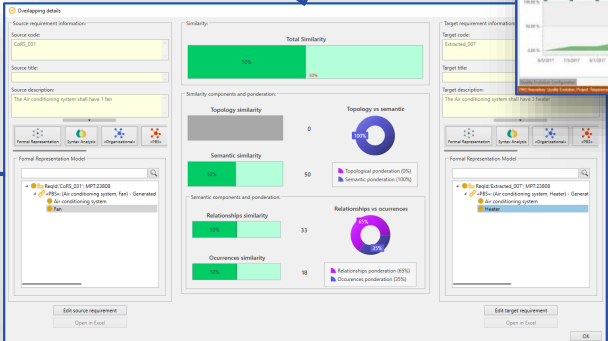
2. An application to check compliance with standards in the procurement projects



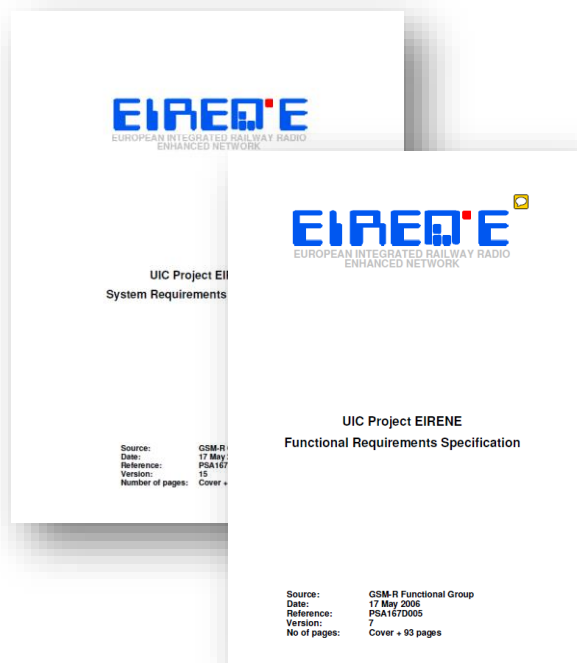
3. How are we performing?



4. Keep tracing all the information back to their source.



I. Automatic requirements elicitation from documents



ID	Description	Status	Other
REQ_001	The rolling stock component shall have 1 cabinet	Information	
REQ_002	The electronic hardware for large and medium size locomotives shall be able to operate in the frequency range of 400-470 MHz and 470-510 MHz	Information	
REQ_003	The electronic hardware for large and medium size locomotives shall be able to operate in the frequency range of 400-470 MHz and 470-510 MHz	Information	
REQ_004	The electronic hardware for large and medium size locomotives shall be able to operate in the frequency range of 400-470 MHz and 470-510 MHz	Information	
REQ_005	The electronic hardware for large and medium size locomotives shall be able to operate in the frequency range of 400-470 MHz and 470-510 MHz	Information	
REQ_006	The electronic hardware for large and medium size locomotives shall be able to operate in the frequency range of 400-470 MHz and 470-510 MHz	Information	
REQ_007	The electronic hardware for large and medium size locomotives shall be able to operate in the frequency range of 400-470 MHz and 470-510 MHz	Information	
REQ_008	The electronic hardware for large and medium size locomotives shall be able to operate in the frequency range of 400-470 MHz and 470-510 MHz	Information	
REQ_009	The electronic hardware for large and medium size locomotives shall be able to operate in the frequency range of 400-470 MHz and 470-510 MHz	Information	
REQ_010	The electronic hardware for large and medium size locomotives shall be able to operate in the frequency range of 400-470 MHz and 470-510 MHz	Information	

Automatic Extraction based on **patterns**

Source Requirements Documents (Word, PDF)

Simple Index Process

Knowledge - Based Index Process

Requirements Documents (Excel, DOORS, Word, ...)

COMPLETE USE CASE

File Home Share View

Clipboard: Pin to Quick access, Copy, Paste, Copy path, Paste shortcut

Organize: Move to, Copy to, Delete, Rename

New: New folder, Easy access, New item

Open: Properties, Open, Edit, History

Select: Select all, Select none, Invert selection

← → ↕ ↑ This PC > Projects (D:) > 09 RQS-Libraries > Acquisition Library > v1.0 2017 > Library v1.0 > Ontology > COMPLETE USE CASE

Search COMPLETE USE CASE

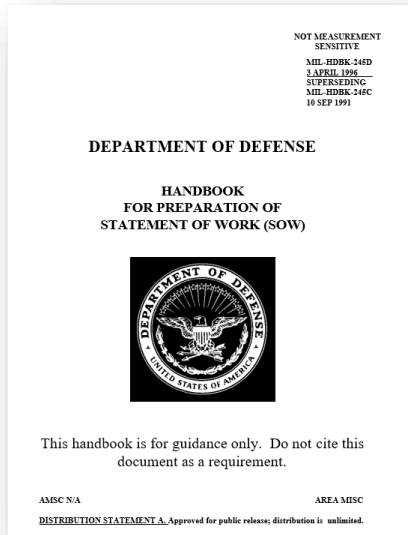
- ★ Quick access
- v1.0 2017
- COMPLETE USE CASE
- 2018 01 30 Upp Stockholm
- 2018 01 23 - Webinar Quality
- 2018_01_29_Use_Cases_Work
- Ontology Composition
- Quality Evolution
- Creative Cloud Files
- OneDrive
- This PC
- 02 - IEG (krnas.kr.inf.uc3m.es)
- 3D Objects
- 3-Videos (kcsnas.kcs.local (K
- 10-Sales (KCSNAS.kcs.local (
- Desktop
- Documents
- Downloads
- Music
- Pictures
- Videos
- OS (C:)
- Projects (D:)
- SDXC (E:)
- Elena (F:)

<input type="checkbox"/>	Name	Date modified	Type	Size
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<input type="checkbox"/>	20180131_08574486_First Quality Assessment...	1/31/2018 8:57 AM	SNAPSHOT File	86 KB
<input type="checkbox"/>	CoRS-SyRS_EIRENE_V02 - Interoperability.eqa	1/22/2018 6:57 PM	EQA File	2 KB
<input type="checkbox"/>	CoRS-SyRS_EIRENE_V02 - Interoperability.xlsx	1/22/2018 6:57 PM	Microsoft Excel W...	190 KB
<input type="checkbox"/>	CoRS-SyRS-RE_EIRENE_V02.eqa	1/30/2018 6:49 PM	EQA File	2 KB
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<input type="checkbox"/>	CoRS-SyRS-RE_EIRENE_V03.xlsx	1/30/2018 6:37 PM	Microsoft Excel W...	172 KB
<input type="checkbox"/>	PQS Railway - Interoperability - Quality.ldb	1/31/2018 9:11 AM	Microsoft Access R...	1 KB
<input type="checkbox"/>	PQS Railway - Interoperability - Quality.mdb	1/31/2018 9:11 AM	Microsoft Access ...	10,596 KB
<input type="checkbox"/>	PQS v18.1 - DoD Knowledge Base.lib	1/22/2018 6:57 PM	LIB File	914 KB
<input type="checkbox"/>	PQS v18.1 - LCC Knowledge Base.lib	1/22/2018 6:57 PM	LIB File	378 KB
<input type="checkbox"/>	PQS v18.1 - Master Knowledge Base.lib	1/22/2018 6:57 PM	LIB File	376 KB
<input type="checkbox"/>	PQS v18.1 - SoW Knowledge Base.lib	1/22/2018 6:57 PM	LIB File	389 KB
<input type="checkbox"/>	PQS v18.1 - SSS Knowledge Base.lib	1/22/2018 6:57 PM	LIB File	389 KB
<input type="checkbox"/>	PQS v18.1 - Support Knowledge Base.lib	1/22/2018 6:57 PM	LIB File	405 KB
<input type="checkbox"/>	PQS_Procurement_Library_v18.ldb	1/31/2018 9:55 AM	Microsoft Access R...	1 KB
<input type="checkbox"/>	PQS_Procurement_Library_v18.mdb	1/31/2018 9:55 AM	Microsoft Access ...	24,752 KB

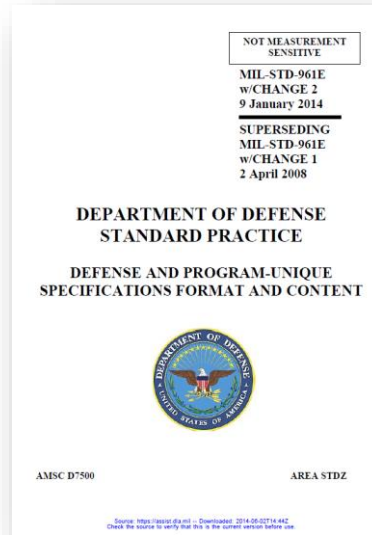
17 items 1 item selected 2.49 MB

Windows taskbar with icons for File Explorer, Edge, Word, PowerPoint, and other applications. System tray shows network, volume, and date/time (ENG 9:57 AM).

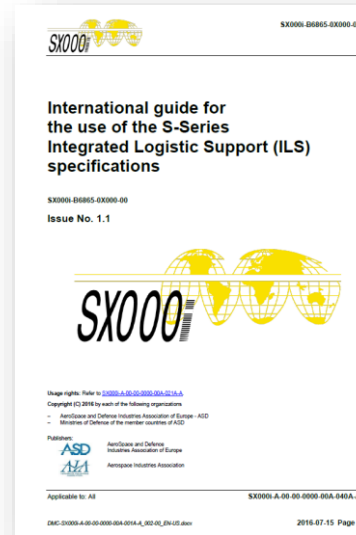
2. An application to check compliance with standards



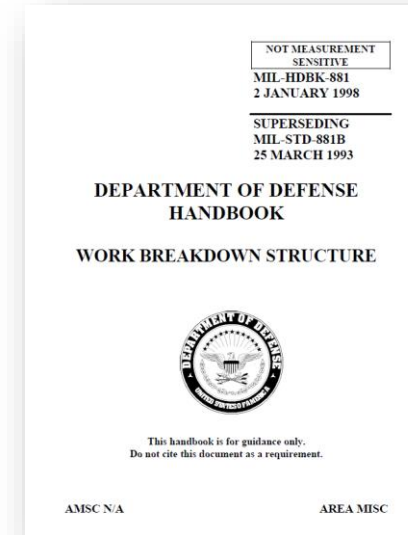
Statement of Work
SoW



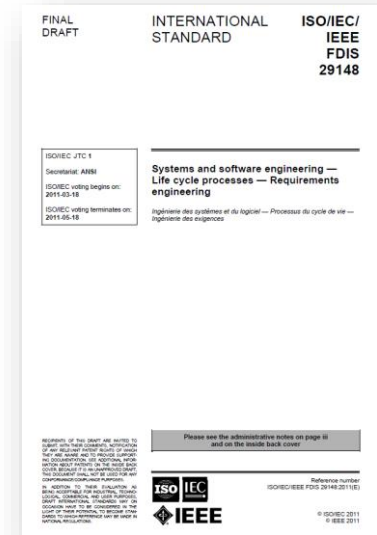
Defence Technical
Specification



Support
CLS / ILS



Work Breakdown
SoW



Technical Specification
SSS

Terms
Term suggestions
Import terms
Special sentences
Integrity
Generate terms and frequencies
Tags
Languages
Tokenization rules
Test
Rules
Affixes
Substitutes
Test
Spell checker
Rules
Bigrams rules
Tags probabilities
Test

Terminology Management Terminology Discovery Term Tags Languages Tokenization Normalization Disambiguation

Search fields:

Term:

Term tag:

Cluster:

Relationship type:

Identifier: Equals to:

Greater than:

Lower than:

Relationship filters: Belongs to domain

Belongs to SCM

Revised

Synonym

Flags: Flag 1

Flag 2

Advanced filters:

Terms:

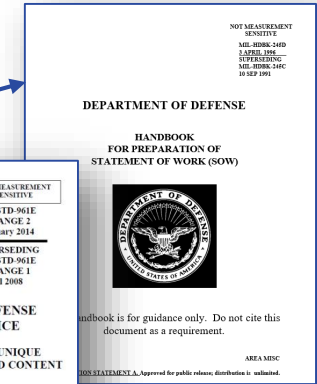
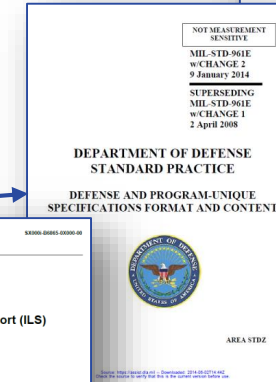
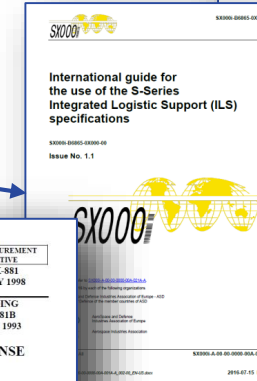
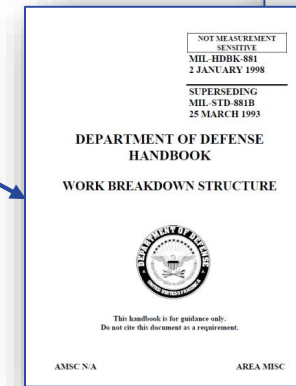
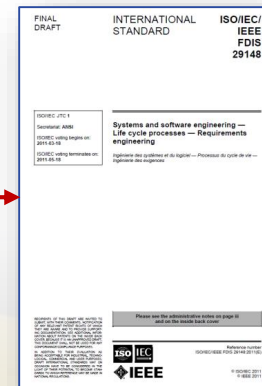
Identifier	Term	Term Tag	Cluster	Relationship type	Belongs to domain	Belongs to SCM	Includes content	Scope Note
48,865 A-1	ACRONYMS	ACRONYMS	< No «Cluster» >	< No «Relationship type» >	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	director of manpower, personnel, and services (Air Force)
48,866 A2	ACRONYMS	ACRONYMS	< No «Cluster» >	< No «Relationship type» >	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	antiaircraft
48,868 A-2	ACRONYMS	ACRONYMS	< No «Cluster» >	< No «Relationship type» >	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	intelligence staff officer (Air Force)
48,867 A2C2	ACRONYMS	ACRONYMS	< No «Cluster» >	< No «Relationship type» >	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Army airspace command and control
48,869 A-3	ACRONYMS	ACRONYMS	< No «Cluster» >	< No «Relationship type» >	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	operations directorate (COMAFFOR staff); operations staff officer (Air Force)
48,870 A-4	ACRONYMS	ACRONYMS	< No «Cluster» >	< No «Relationship type» >	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	director of logistics (Air Force)
48,564 A4A	ACRONYMS	ACRONYMS	--- Locked ---	--- Locked ---	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Airlines for America [Source: SX000i-B6865-0X000-00]
48,871 A-5	ACRONYMS	ACRONYMS	< No «Cluster» >	< No «Relationship type» >	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	plans directorate (COMAFFOR staff)
48,872 A-6	ACRONYMS	ACRONYMS	< No «Cluster» >	< No «Relationship type» >	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	communications staff officer (Air Force)
48,873 A-7	ACRONYMS	ACRONYMS	< No «Cluster» >	< No «Relationship type» >	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	director of installations and mission support (Air Force)
48,874 AA	ACRONYMS	ACRONYMS	< No «Cluster» >	< No «Relationship type» >	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	assessment agent; avenue of approach
48,875 AA&E	ACRONYMS	ACRONYMS	< No «Cluster» >	< No «Relationship type» >	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	arms, ammunition, and explosives
48,876 AAA	ACRONYMS	ACRONYMS	< No «Cluster» >	< No «Relationship type» >	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	antiaircraft artillery; arrival and assembly area; assign alternate area
48,877 AABB	ACRONYMS	ACRONYMS	< No «Cluster» >	< No «Relationship type» >	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	American Association of Blood Banks
48,878 AABWS	ACRONYMS	ACRONYMS	< No «Cluster» >	< No «Relationship type» >	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	amphibious assault bulk water system

16096 term(s)

3. An application to check compliance with standards

Completeness
Consistency

Correctness
Completeness
Consistency



Handbook is for guidance only. Do not cite this document as a requirement.

NOT MEASUREMENT SENSITIVE
ML-HDBK-24FD
3 APRIL 1996
SUPERSEDING
ML-HDBK-24FC
10 SEP 1991

DEPARTMENT OF DEFENSE
HANDBOOK
FOR PREPARATION OF
STATEMENT OF WORK (SOW)



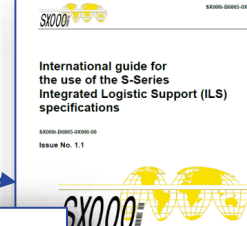
AREA MSC

NOT MEASUREMENT SENSITIVE
MIL-STD-901E
w/CHANGE 2
9 January 2014
SUPERSEDING
MIL-STD-901E
w/CHANGE 1
2 April 2008

DEPARTMENT OF DEFENSE
STANDARD PRACTICE
DEFENSE AND PROGRAM-UNIQUE
SPECIFICATIONS FORMAT AND CONTENT

AREA MSC

AREA STDE



NOT MEASUREMENT SENSITIVE
MIL-HDBK-881
2 JANUARY 1998
SUPERSEDING
MIL-STD-881B
25 MARCH 1993

DEPARTMENT OF DEFENSE
HANDBOOK
WORK BREAKDOWN STRUCTURE



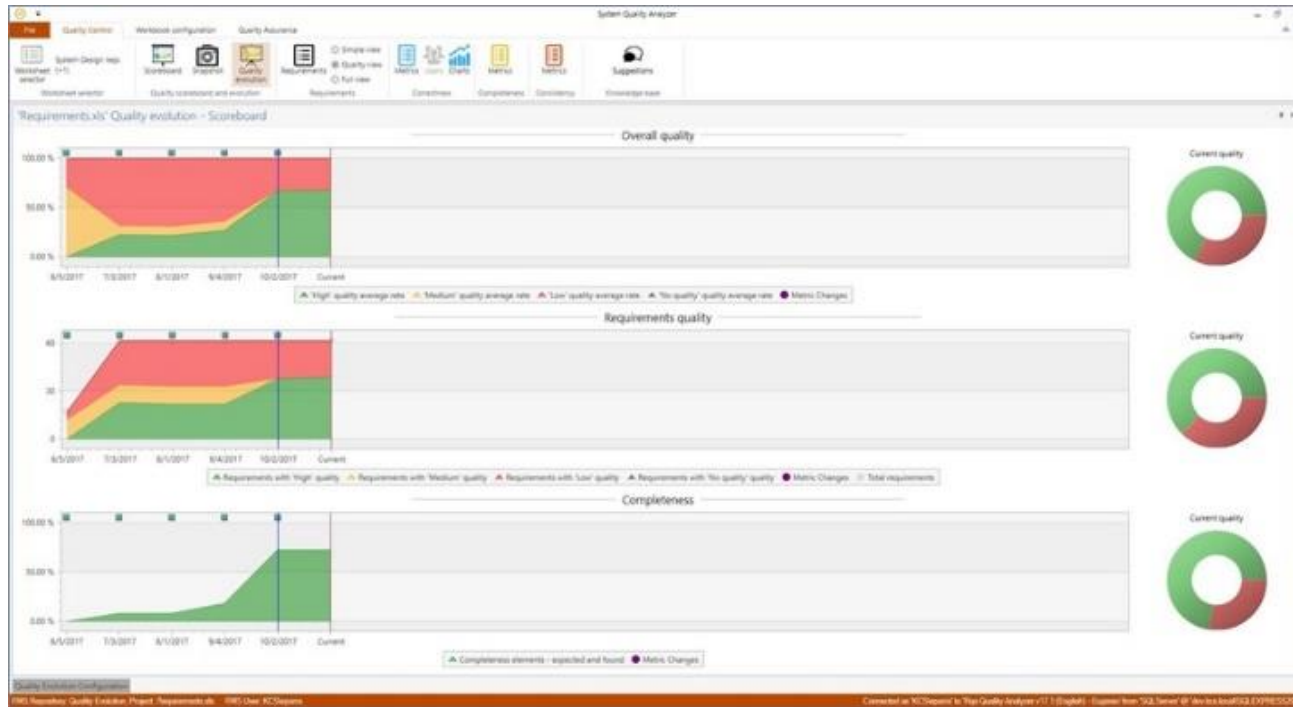
This handbook is for guidance only.
Do not cite this document as a requirement.

AMSC NA AREA MSC

3. Keep the performance under control

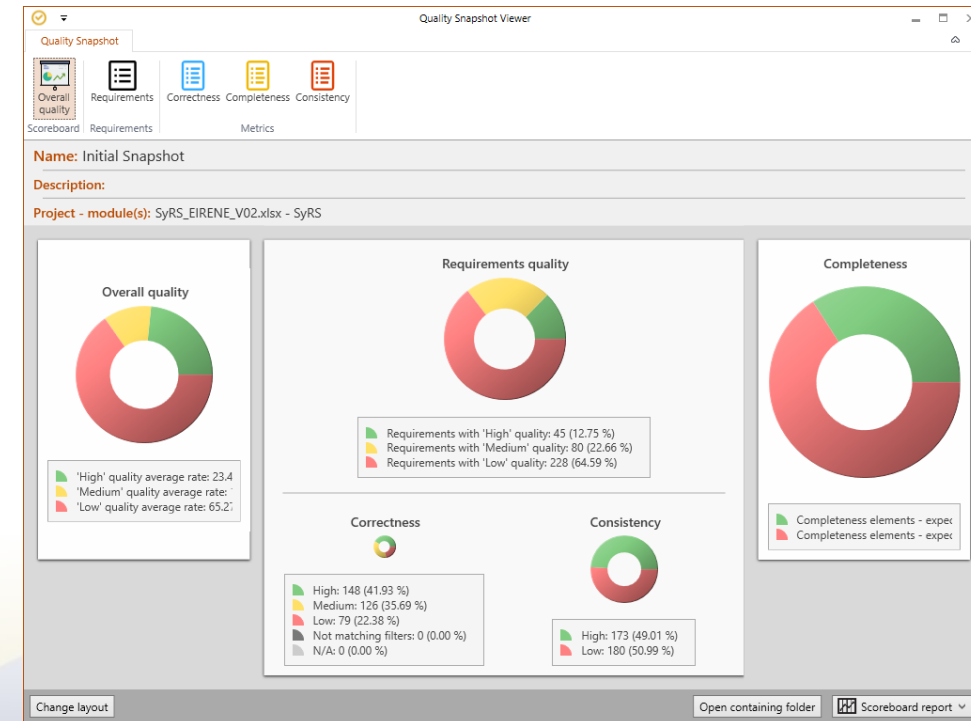
Supplier viewpoint

Key Performance Indicators from the beginning, up to today!



Acquirer viewpoint

Automatic Evaluation of the different bidder's documentation!



3. Do we specify our projects too much (or not enough)?

ID	Description	Status
ReqId:CoRS_031	The Air conditioning system shall have 1 fan	Generated
ReqId:CoRS_032	The Air conditioning system shall have 2 fans	Generated
ReqId:CoRS_033	The Air conditioning system shall have 3 fans	Generated
ReqId:CoRS_034	The Air conditioning system shall have 4 fans	Generated
ReqId:CoRS_035	The Air conditioning system shall have 5 fans	Generated

Overlapping analysis of documents

ID	Description	Status
ReqId:Extracted_007	The Air conditioning system shall have 3 heater	Generated
ReqId:Extracted_008	The Air conditioning system shall have 4 heaters	Generated
ReqId:Extracted_009	The Air conditioning system shall have 5 heaters	Generated
ReqId:Extracted_010	The Air conditioning system shall have 6 heaters	Generated
ReqId:Extracted_011	The Air conditioning system shall have 7 heaters	Generated

Overlapping details

Source requirement information:
Source code: CoRS_031
Source title: [Empty]
Source description: The Air conditioning system shall have 1 fan

Similarity:
Total Similarity: 50%

Similarity components and ponderation:
Topology similarity: 0 (Topology vs semantic: 100%)
Semantic similarity: 50%

Semantic components and ponderation:
Relationships similarity: 33 (Relationships vs occurrences: 65%)
Occurrences similarity: 18 (Relationships ponderation: 65%, Occurrences ponderation: 35%)

Formal Representation Model:
ReqId:CoRS_031; MPT:23808
-PBS- (Air conditioning system, Fan) - Generated
Air conditioning system
Fan

Target requirement information:
Target code: Extracted_007
Target title: [Empty]
Target description: The Air conditioning system shall have 3 heater

Formal Representation Model:
ReqId:Extracted_007; MPT:23808
-PBS- (Air conditioning system, Heater) - Genera
Air conditioning system
Heater

Buttons: Edit source requirement, Open in Excel, Edit target requirement, Open in Excel, OK

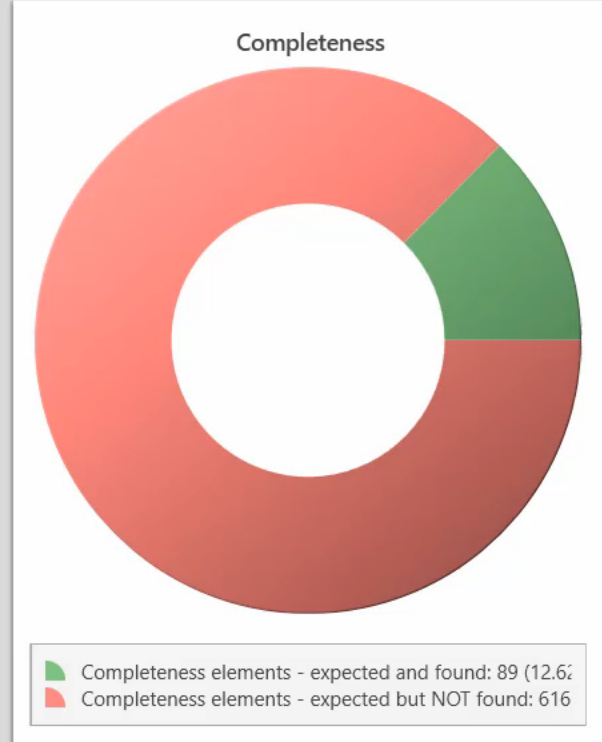
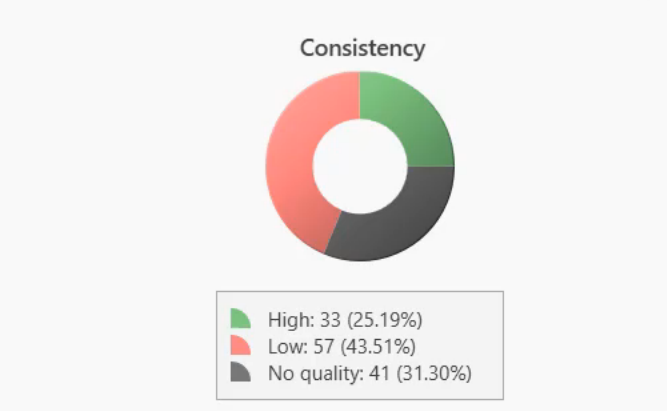
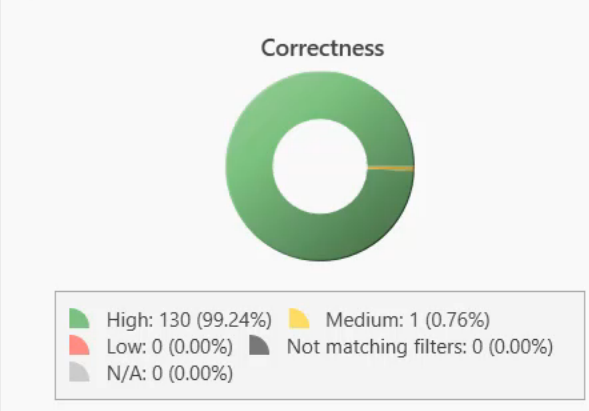
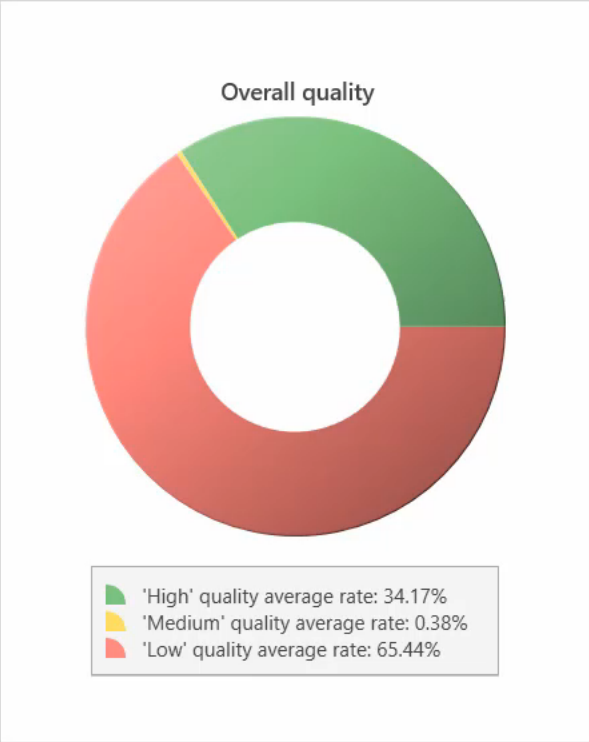
Worksheet selector CoRS (+2) Worksheet selector

Scoreboard Snapshot Quality evolution Quality scoreboard and evolution

Requirements Requirements Simple view Quality view Full view

Metrics Users Charts Correctness Metrics Metrics Consistency Completeness

Suggestions Knowledge base



#2 Datasource, {Use Case for Procurement PQS Dem... | File View Properties Suggestions

CoRS

Drag a column header here to group by that column

	<input type="checkbox"/>		Label	Text
	<input type="checkbox"/>		N/A	Every 2 seconds, the power control system shall send...
	<input type="checkbox"/>		N/A	When the voltage level is below 11,5V, the battery sh...
	<input type="checkbox"/>		N/A	If the battery is low, the power control system shall s...
	<input type="checkbox"/>		N/A	The user must activate the emergency battery
	<input type="checkbox"/>		N/A	When the capacity of the accumulator is lower than...
	<input type="checkbox"/>		N/A	The sensor shall acquire T0 with an accuracy of 5 °C
	<input type="checkbox"/>		N/A	The sensor shall acquire T0 within the operating ran...
	<input type="checkbox"/>		N/A	The sensor shall acquire T1 with an accuracy of 5 °C
	<input type="checkbox"/>		N/A	The sensor shall acquire T1 within the operating ran...
	<input type="checkbox"/>		N/A	The sensor shall acquire T1 within the survival range...
	<input type="checkbox"/>		N/A	The sensor shall acquire T2 with an accuracy of 5 °C
	<input type="checkbox"/>		N/A	The sensor shall acquire T2 within the operating ran...
	<input type="checkbox"/>		N/A	The sensor shall acquire T2 within the survival range...
	<input type="checkbox"/>		N/A	The sensor shall acquire T2 within the response time...
	<input type="checkbox"/>		N/A	The sensor shall acquire T3 within the survival range...
	<input type="checkbox"/>		N/A	The sensor shall acquire T3 within the response time...
	<input type="checkbox"/>		N/A	The sensor shall acquire T4 with an accuracy of 5 °C
	<input type="checkbox"/>		N/A	The sensor shall acquire T4 within the operating ran...
	<input type="checkbox"/>		N/A	The sensor shall acquire T4 within the survival range...

Total requirements: 34

Hide non-Requirement

RMS Repository: COMPLETE USE CASE; Project: CoRS-SyRS-f

Save Close

TRACEABILITY Studio | Traceability projects Traceability modules Traces

Traceability project scoreboard:

ID: 2 Number of projects: 2 Number of document
 Name: Traceabili between Functiona Number of traceability modules: 1

Traceability completeness: Trace analysis:

Number of workproducts: 89 Number of traces: 0
 Traced workproducts: 0 Non-suspects traces: 0
 Untraced workproducts: 89 Suspect traces: 0

0% 0

Traceability projects:

	▲	Name	Description	Modific...	Creatio...
		1 Functional R...	This traceability project will mana...	1/31/2...	1/18/20...
		2 Traceability b...	Traceability project to connect sy...	5/21/2...	5/21/20...

Number of projects: 2

#3 Datasource, {Use Case for Procurement Demonstr... | File View Properties Suggestions

FunRS

Drag a column header here to group by that column

	<input type="checkbox"/>		Label	Text
	<input type="checkbox"/>		N/A	The maximum power consumption of the compresso...
	<input type="checkbox"/>		N/A	The maximum power consumption of the fan shall b...
	<input type="checkbox"/>		N/A	The maximum power consumption of the fan blade s...
	<input type="checkbox"/>		N/A	The maximum power consumption of the heater shal...
	<input type="checkbox"/>		N/A	The maximum power consumption of the air conditi...
	<input type="checkbox"/>		N/A	The Air conditioning system shall have 3 heater
	<input type="checkbox"/>		N/A	The Hydraulic system shall have 1 accumulator
	<input type="checkbox"/>		N/A	The Hydraulic system shall have 1 Pump
	<input type="checkbox"/>		N/A	The Hydraulic system shall have 1 relief valve
	<input type="checkbox"/>		N/A	The capacity of the pump shall be lower than 2 gallo...
	<input type="checkbox"/>		N/A	The maximum power consumption of the Rolling Sto...
	<input type="checkbox"/>		N/A	The maximum power consumption of the Auxiliary s...
	<input type="checkbox"/>		N/A	The maximum power consumption of the Braking sy...
	<input type="checkbox"/>		N/A	The maximum power consumption of the cabinet sh...
	<input type="checkbox"/>		N/A	The maximum power consumption of the cabling sh...
	<input type="checkbox"/>		N/A	The maximum power consumption of the car body s...
	<input type="checkbox"/>		N/A	The maximum power consumption of the car body fi...
	<input type="checkbox"/>		N/A	The maximum power consumption of the communic...
	<input type="checkbox"/>		N/A	The maximum power consumption of the coupler sh...

Total items: 55 , Requirements: 55

Hide non-Requirement

RMS Repository: Ontology; Project: CoRS-SyRS_EIRENE_V02.

Save Close

Conclusions

KCSE approach as a mean to enhance projects



40% Cost Saving

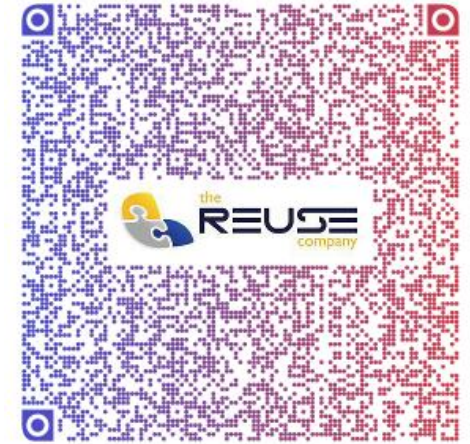
Ontology Design and Architecture based on the goals and efforts

Tailoring activities to optimize tools, processes and assets

4 Person Month



Any
Questions



THANK
YOU!

elena.gallego@reusecompany.com