KNOWLEDGE DISCOVERY PROCESS

AUTOMATIC EXTRACTION OF VOCABULARY AND RELATIONSHIPS FROM LEGACY DOCUMENTATION...

IN 10 MINUTES!

THE REUSE COMPANY

The Presenter

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CONTENT

Why capturing knowledge in legacy documents?

Ontologies as key support to knowledge extraction

Approach by TRC: based on NLP and semantic analysis

Demo

Q&A

Capturing knowledge in documents: why?

EXTRACT KNOWLEDGE FROM LEGACY DOCUMENTS...IN 10 MINUTES!

1. Save time when analyzing the quality of your requirements! (Domain-specific concepts)

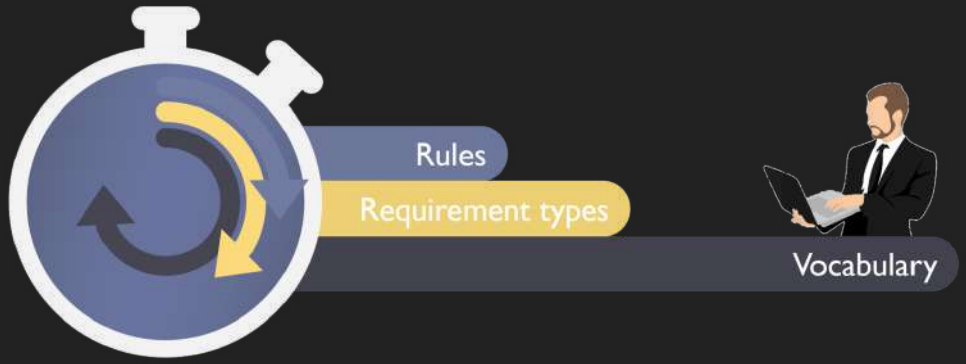
2. Rising complexity = Rising number of documents of many different kinds!

3. Knowledge is invaluable - Knowledge Management is a key project-enabling process in SE

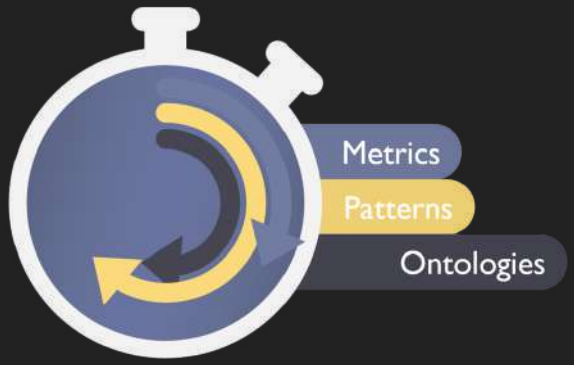
Capturing knowledge in documents: why?

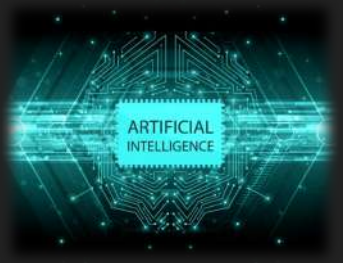
EXTRACT KNOWLEDGE FROM LEGACY DOCUMENTS...IN 10 MINUTES!

Manual Inspection
- Requires time
- Requires intensive SME support



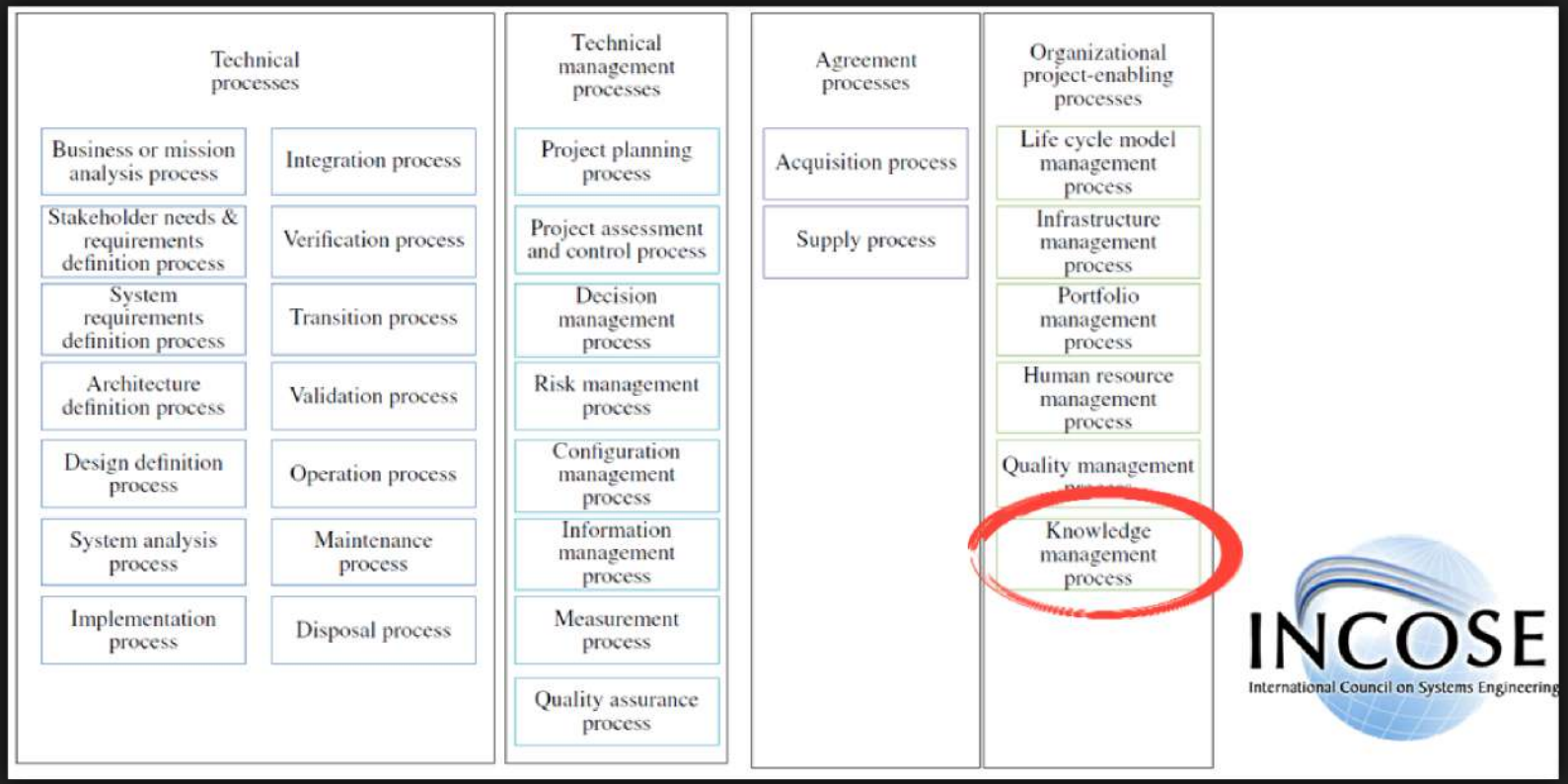
Automated Assessment (AI + NLP)
- Reduction of time
- Less support from SME





Capturing knowledge in documents: why?

EXTRACT KNOWLEDGE FROM LEGACY DOCUMENTS...IN 10 MINUTES!



Purpose : Create the capability and assets that enable the organization to **exploit opportunities to re-apply existing knowledge**

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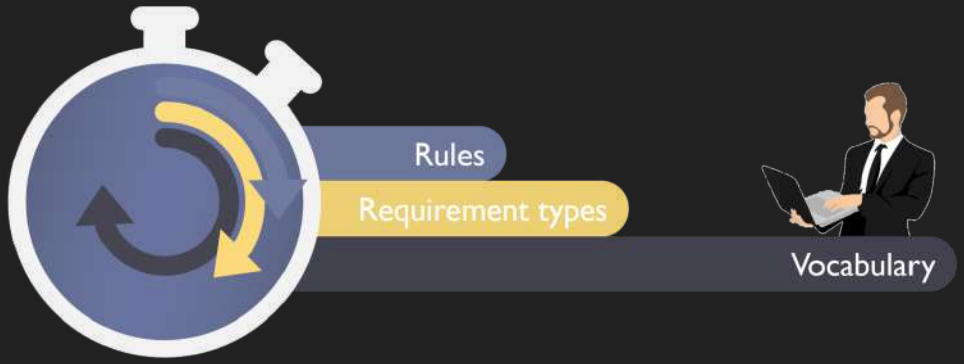

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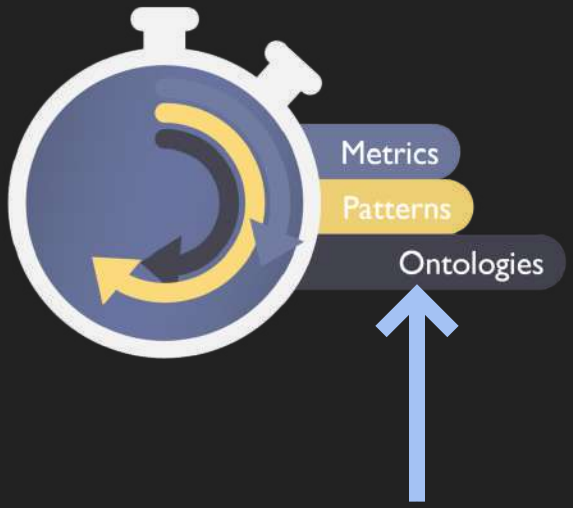

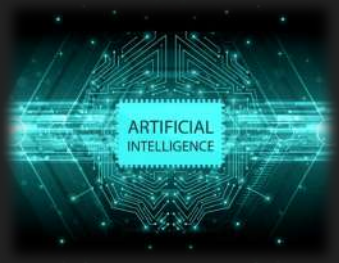

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Ontologies as key support to knowledge extraction

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What is an ontology ?

- **Before** : philosophical concept to study the nature of the existence

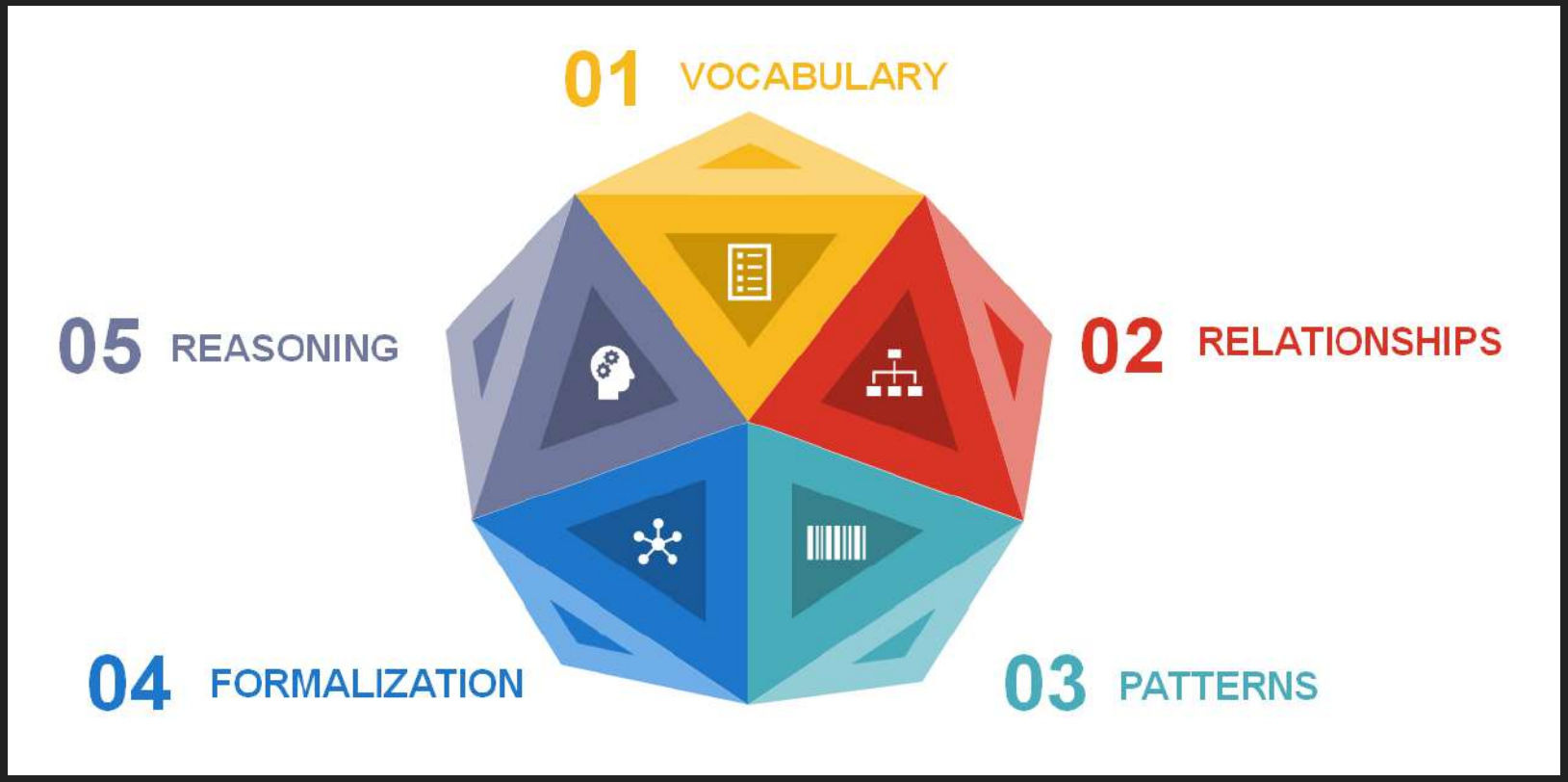
- **Today** : IT concept - The list of terms or controlled and structured vocabulary (descriptors) that represents the key concepts of a given Knowledge domain

The **common ground :** Ask ourselves **what do we have** and **what do we need** to understand our world (KNOWLEDGE)

Ontologies as key support to knowledge extraction

EXTRACT KNOWLEDGE FROM LEGACY DOCUMENTS...IN 10 MINUTES!

The ontology for TRC



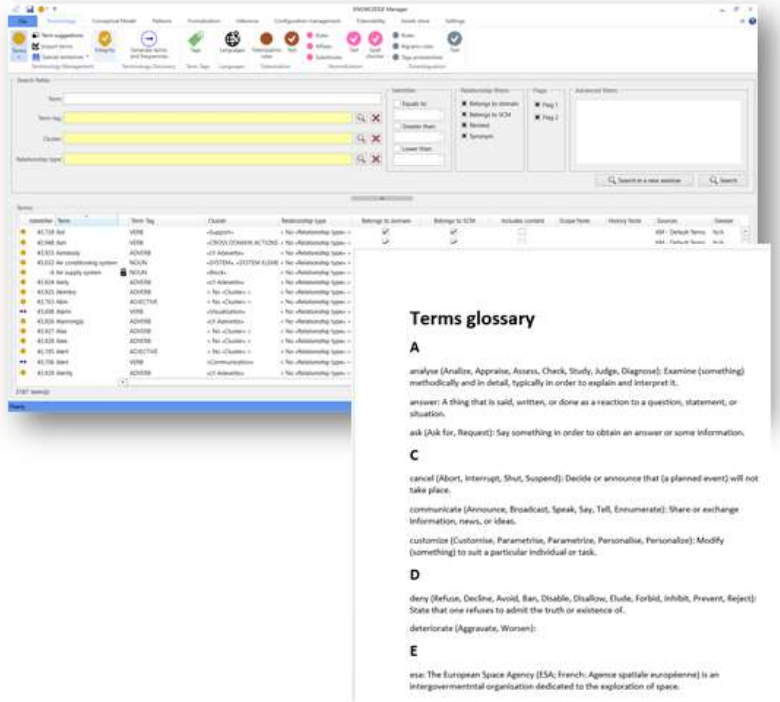
Ontologies as key support to knowledge extraction

EXTRACT KNOWLEDGE FROM LEGACY DOCUMENTS...IN 10 MINUTES!

01

Vocabulary

Controlled Organizational and Project Vocabulary for a common understanding among stakeholders



Terms glossary

A

analyse (Analize, Appraise, Assess, Check, Study, Judge, Diagnose): Examine (something) methodically and in detail, typically in order to explain and interpret it.

answer: A thing that is said, written, or done as a reaction to a question, statement, or situation.

ask (Ask for, Request): Say something in order to obtain an answer or some information.

C

cancel (Abort, Interrupt, Shut, Suspend): Decide or announce that (a planned event) will not take place.

communicate (Announce, Broadcast, Speak, Say, Tell, Enumerate): Share or exchange information, news, or ideas.

customize (Customise, Parametrise, Parametrize, Personalise, Personalize): Modify (something) to suit a particular individual or task.

D

deny (Refuse, Decline, Avoid, Ban, Disable, Disallow, Elude, Forbid, Inhibit, Prevent, Reject): State that one refuses to admit the truth or existence of.

deteriorate (Aggravate, Worsen):

E

esa: The European Space Agency (ESA; French: Agence spatiale européenne) is an intergovernmental organisation dedicated to the exploration of space.

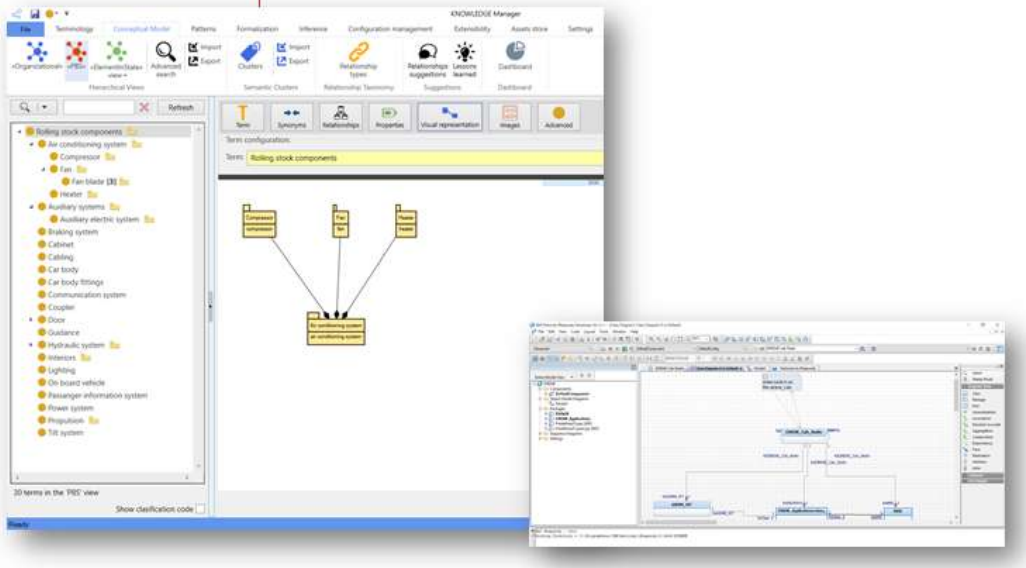
Ontologies as key support to knowledge extraction

EXTRACT KNOWLEDGE FROM LEGACY DOCUMENTS...IN 10 MINUTES!

02

SCM/Architectures

Recreate and capture the system architectures represented in views and models. Stablish relationships among system and system elements.
Linking terms together and classifying terms
Useful to define lists of tags for properties



Ontologies as key support to knowledge extraction

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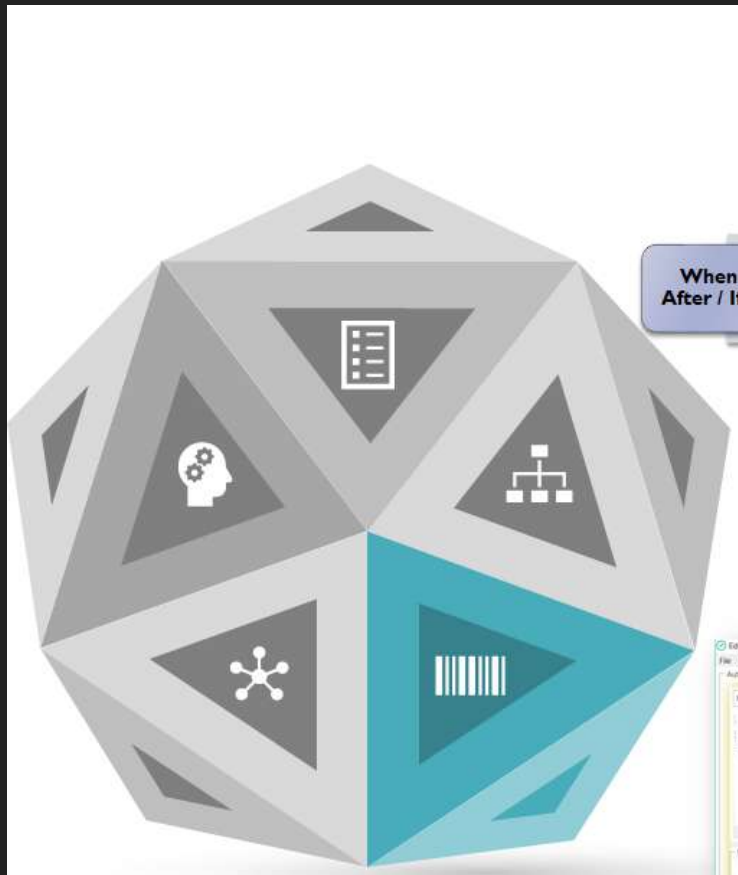
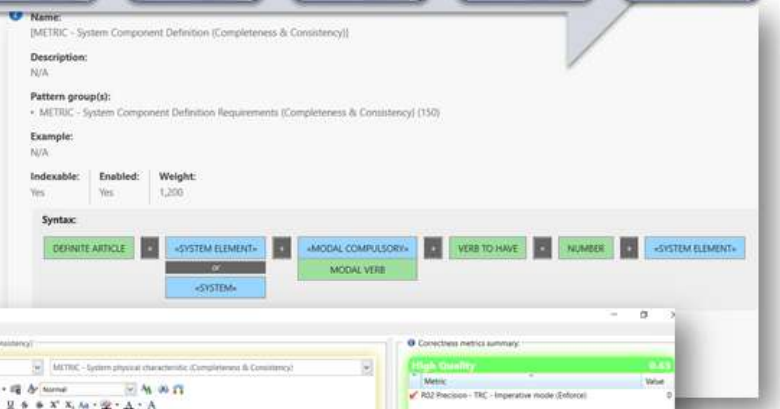


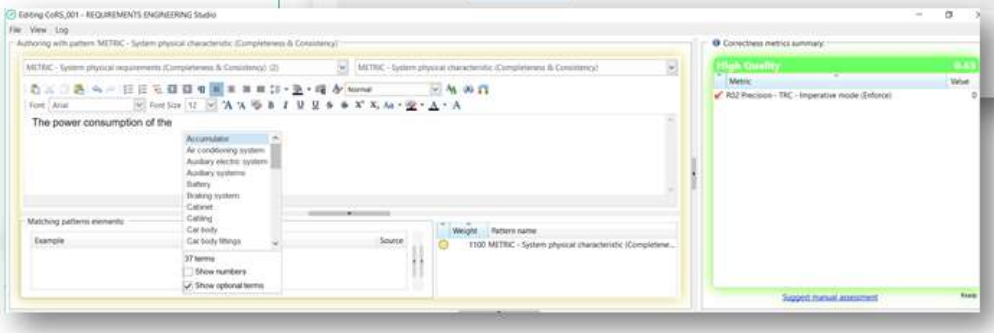
03

Patterns

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

When / After / If ... | [Condition] | <Subject> | Shall | <Action> | <Object> | [Constraint]





Ontologies as key support to knowledge extraction

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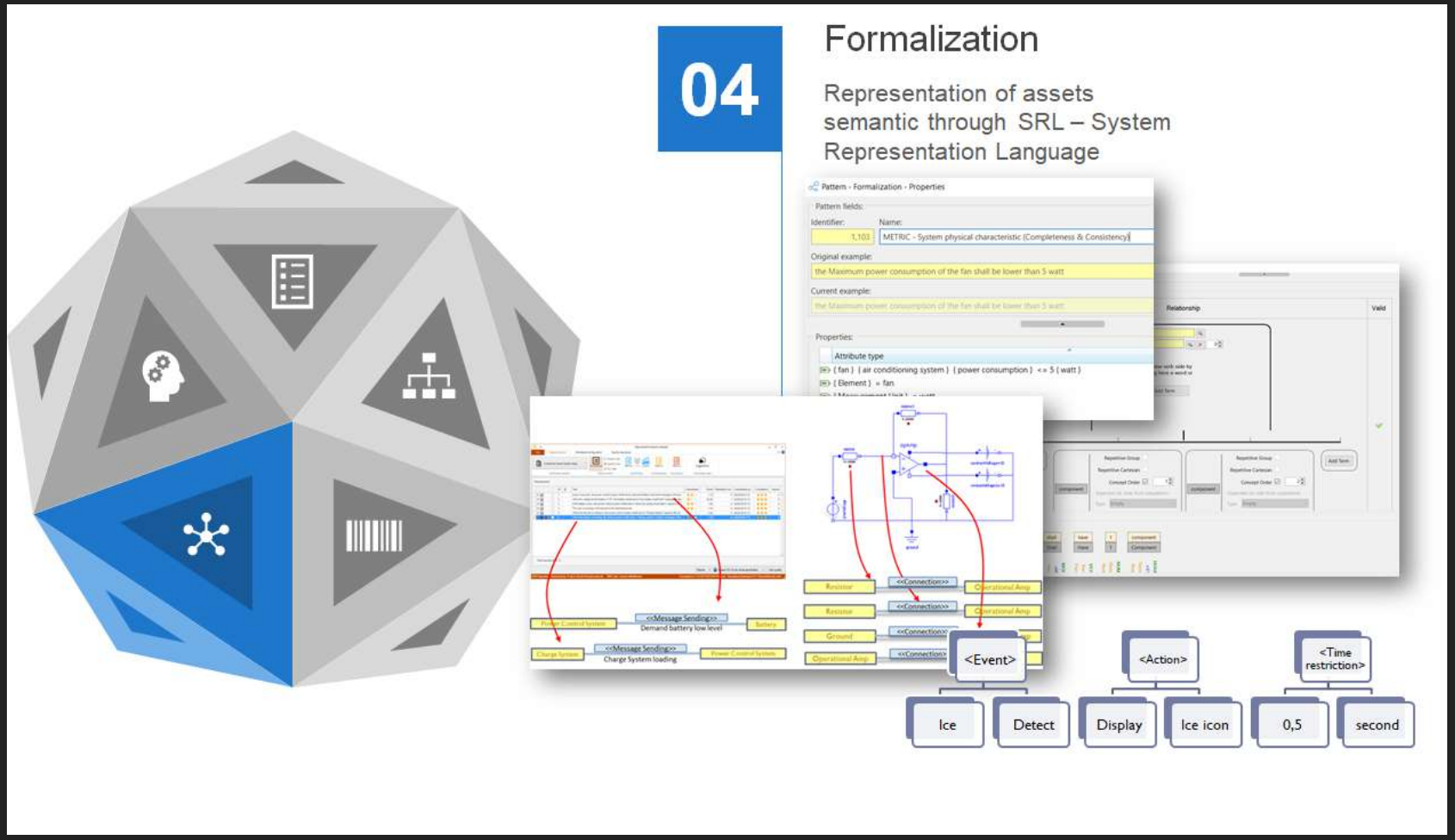

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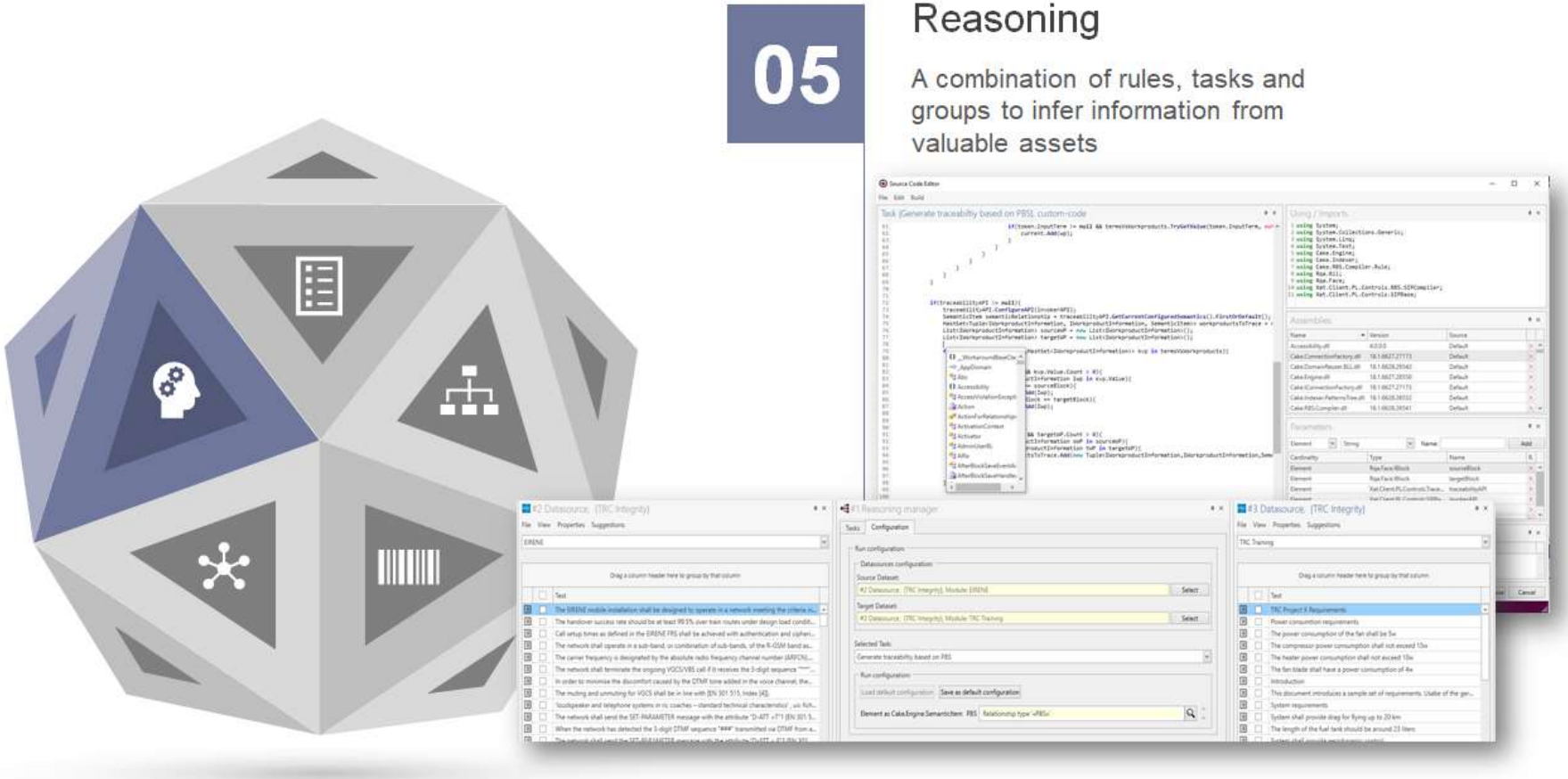

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Knowledge Discovery Process by TRC

EXTRACT KNOWLEDGE FROM LEGACY DOCUMENTS...IN 10 MINUTES!

1. Problem definition

2. Knowledge Source Understanding

3. Knowledge Processing and Model Development (ONTOLOGY)

4. Knowledge Selection

5. Rating the results

Knowledge mining is iterative!

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Knowledge Discovery Process by TRC

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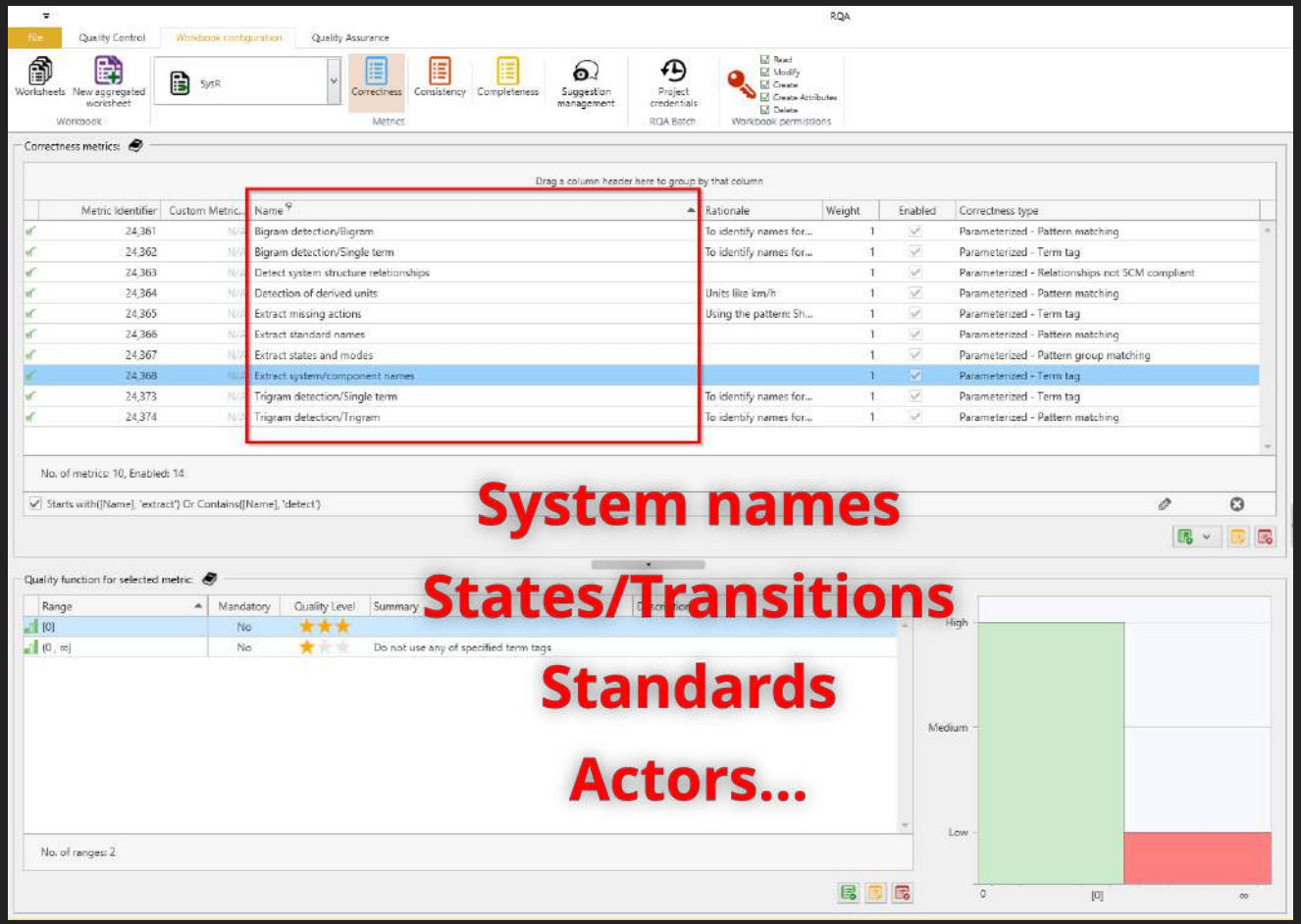
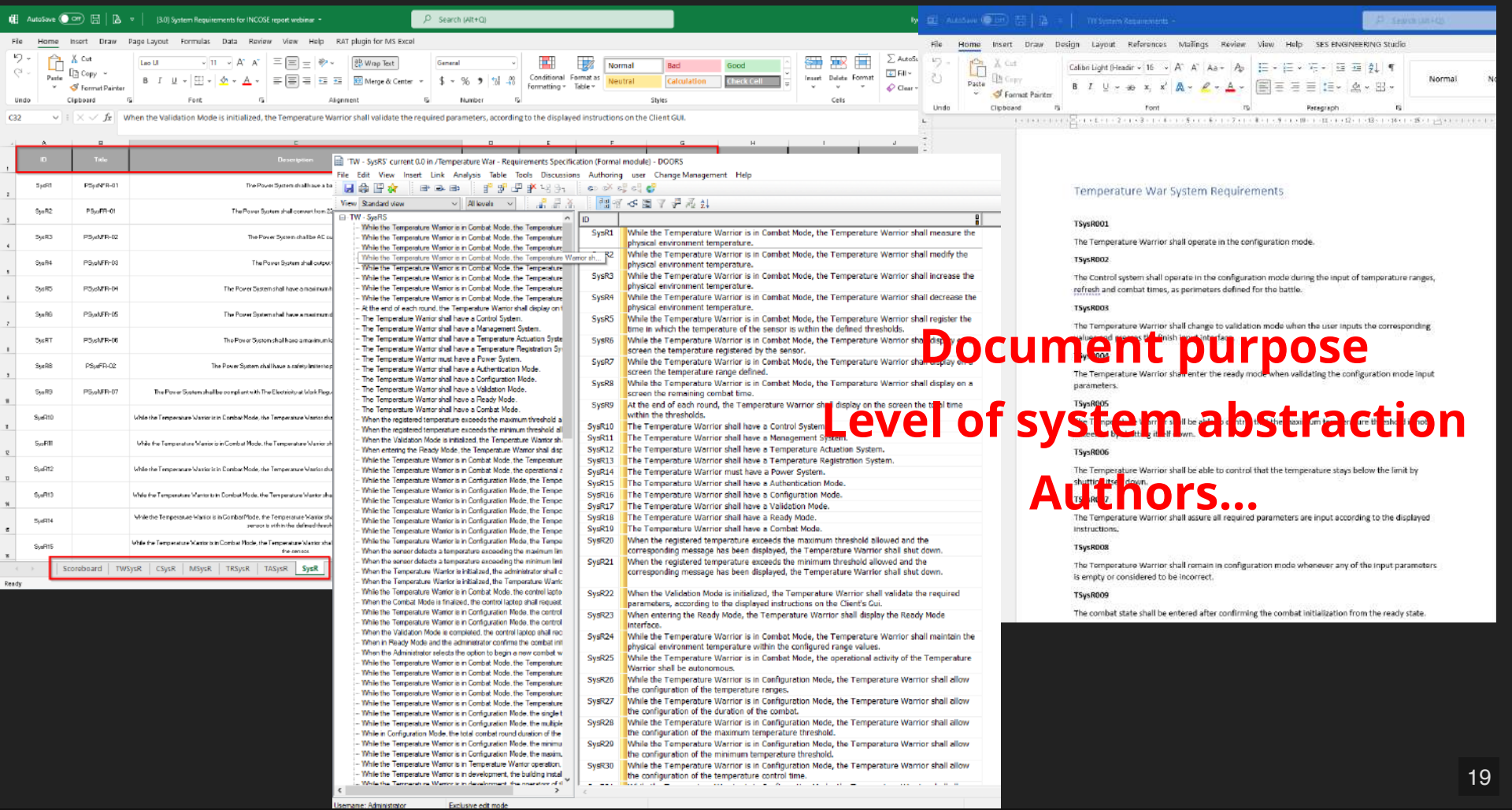
1. Problem definition



Knowledge Discovery Process by TRC

EXTRACT KNOWLEDGE FROM LEGACY DOCUMENTS...IN 10 MINUTES!

2. Knowledge Source Understanding



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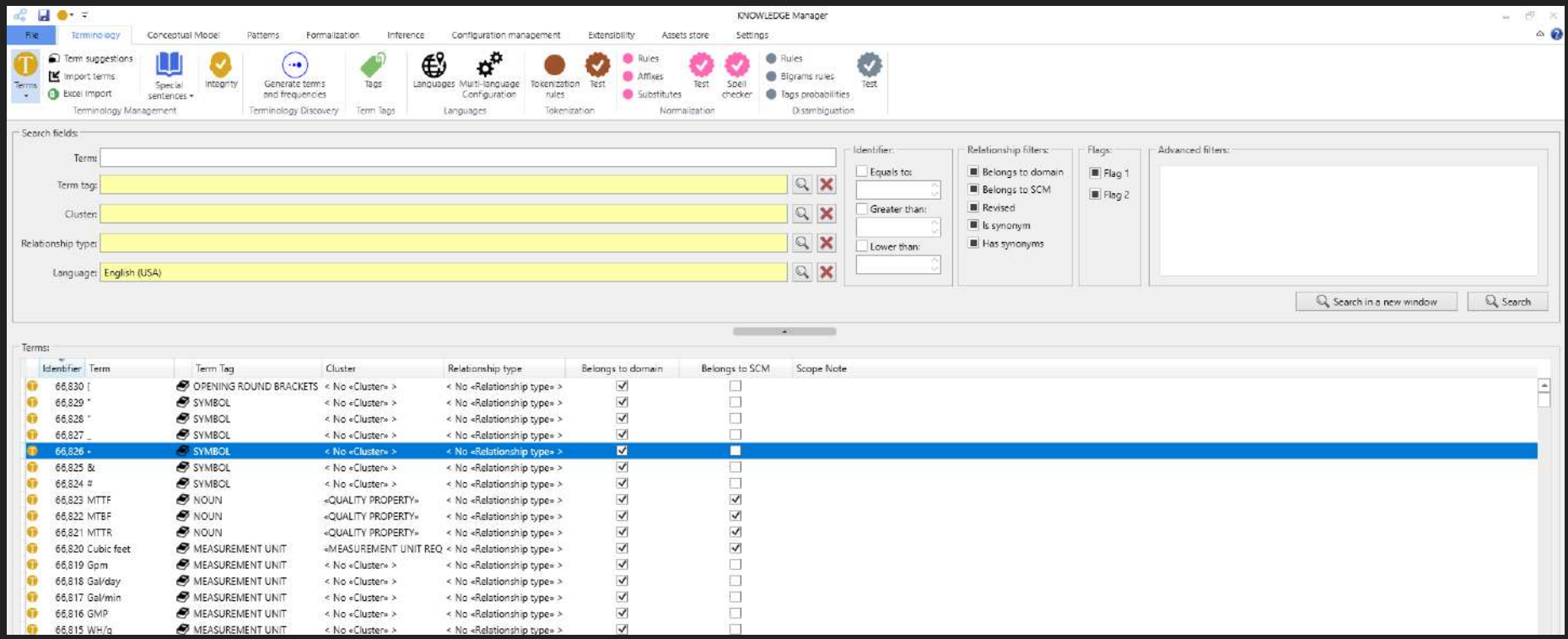
Knowledge Discovery Process by TRC

EXTRACT KNOWLEDGE FROM LEGACY DOCUMENTS...IN 10 MINUTES!

3. Knowledge Processing and Model Development (Ontology)



Knowledge Discovery Process by TRC

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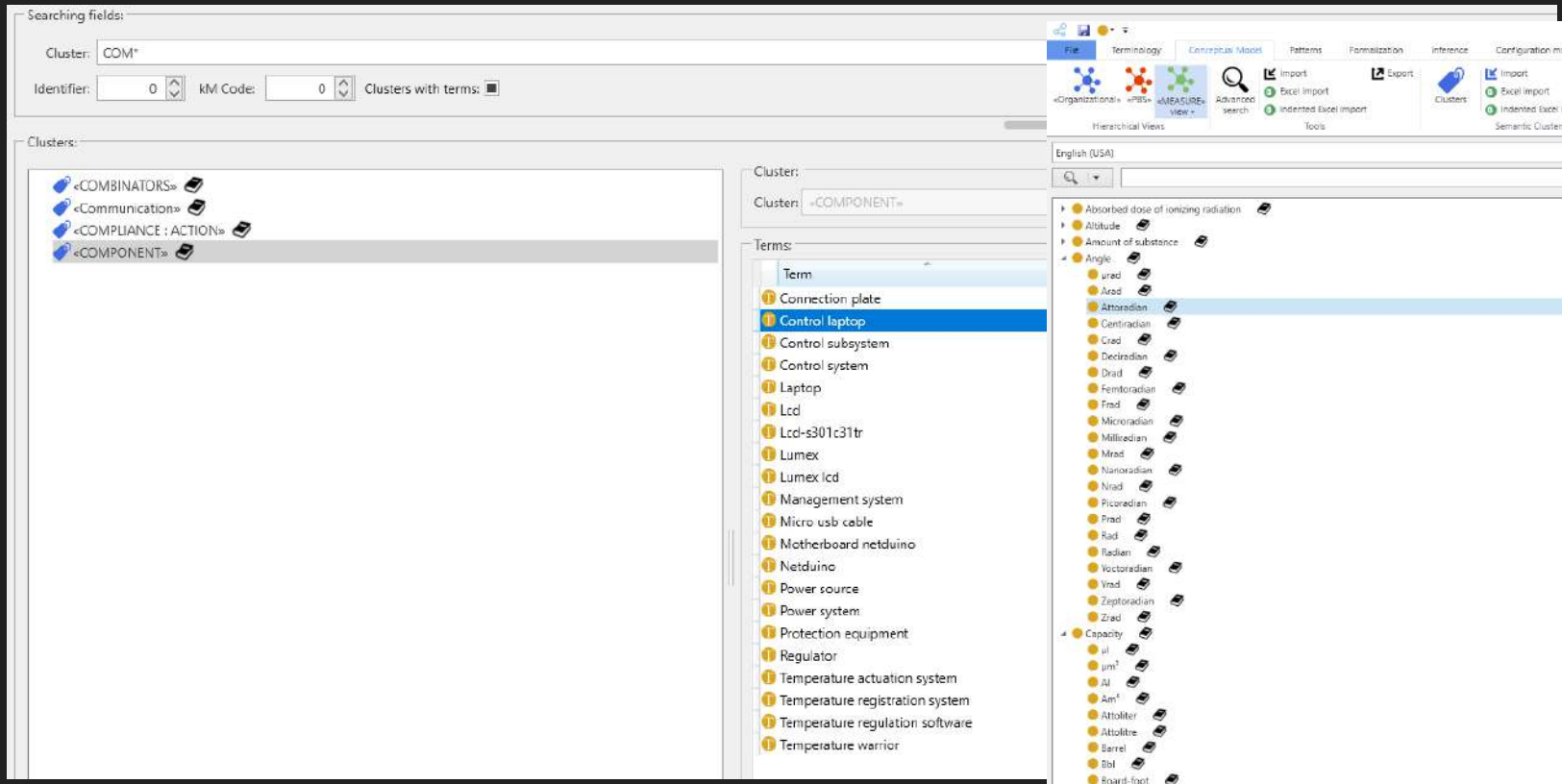


Knowledge Discovery Process by TRC

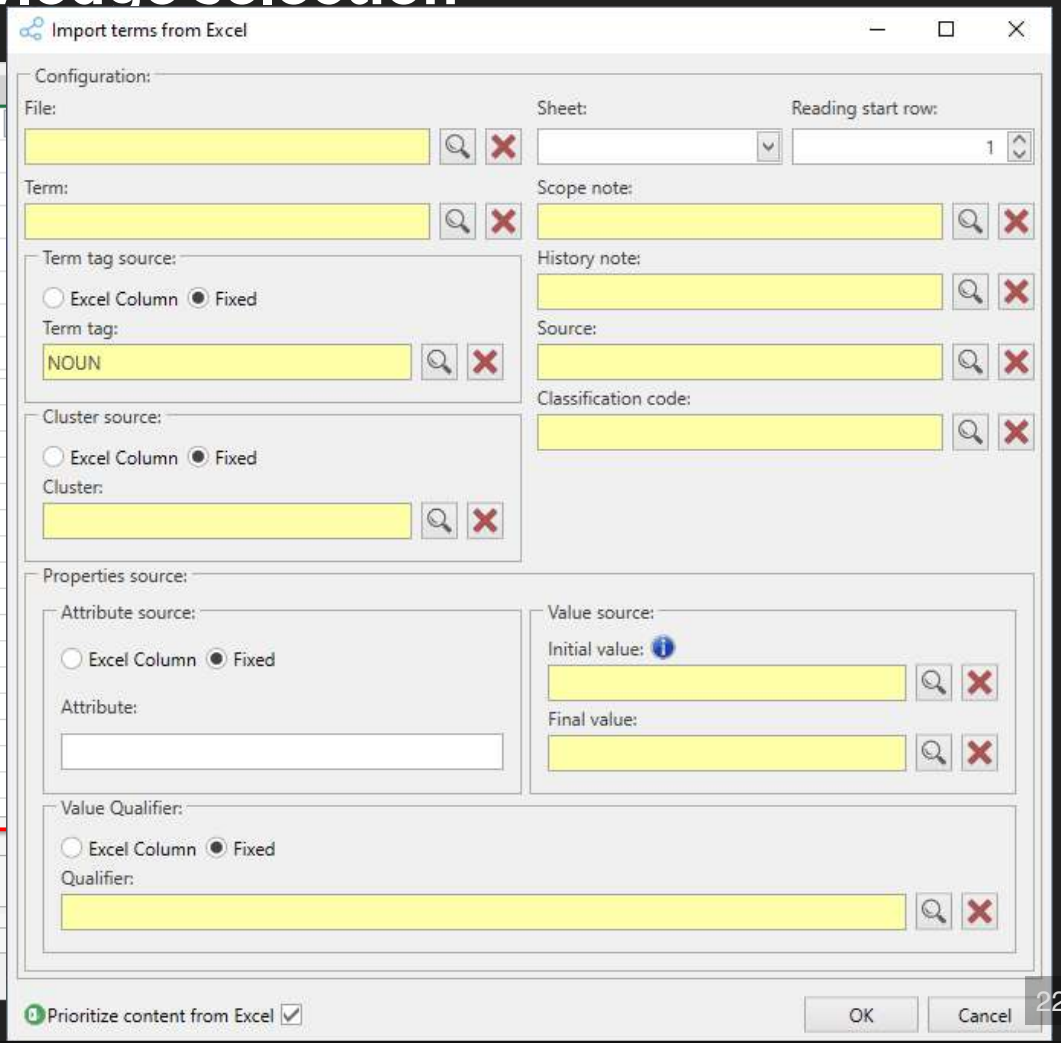
EXTRACT KNOWLEDGE FROM LEGACY DOCUMENTS...IN 10 MINUTES!

4. Knowledge selection

	A	B
1	TERM	TERM_TAG
2	authentication mode	NOUN
3	bidirectional services	NOUN
4	configuration mode	NOUN
5	configuration parameters	NOUN
6	control laptop	NOUN
7	control system	NOUN
8	management system	NOUN

- control laptop
- validation mode
- ready mode
- physical environment
- temperature actuation
- configuration parameters
- temperature registration
- management system
- temperature of the sensor
- one configuration
- algorithm of the control
- temperature regulation
- temperature threshold
- configuration of the temperature
- screen the total
- screen the temperature
- competition of the temperature

Total: 51



Knowledge Discovery Process by TRC

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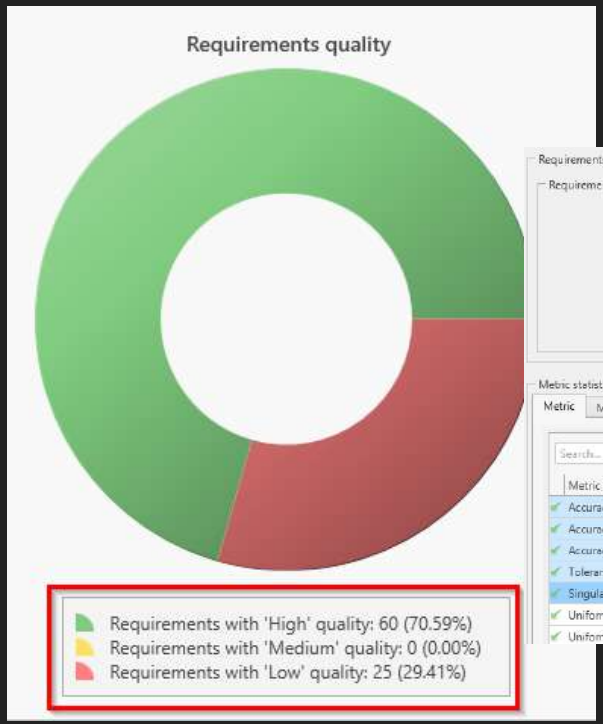
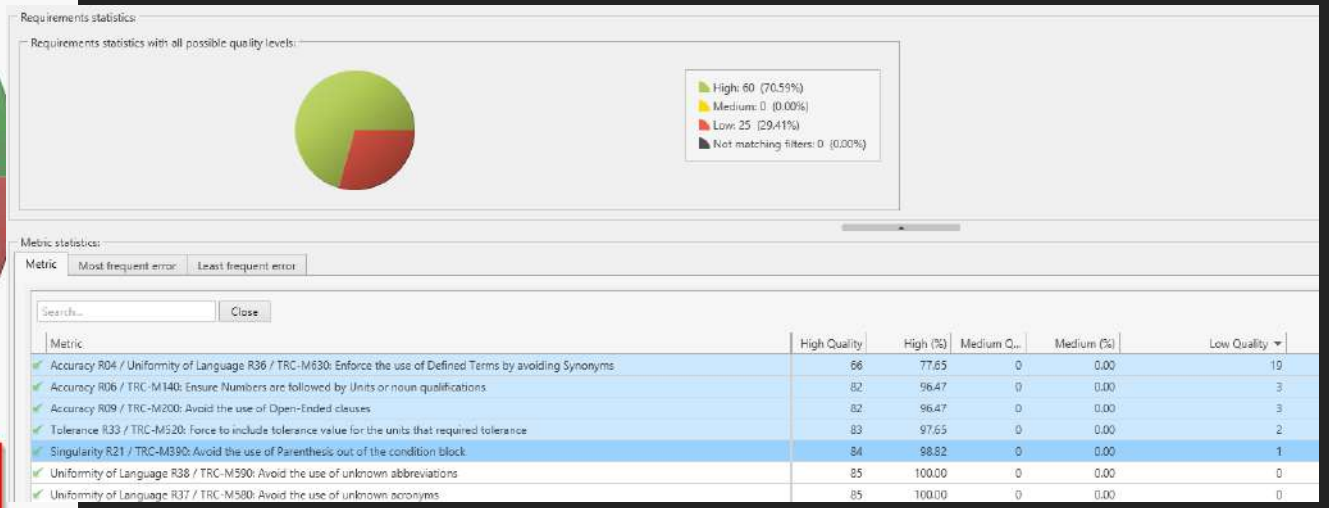
5. Rate the results





Not satisfactory ? = New iteration!

Live Demo

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Live demo

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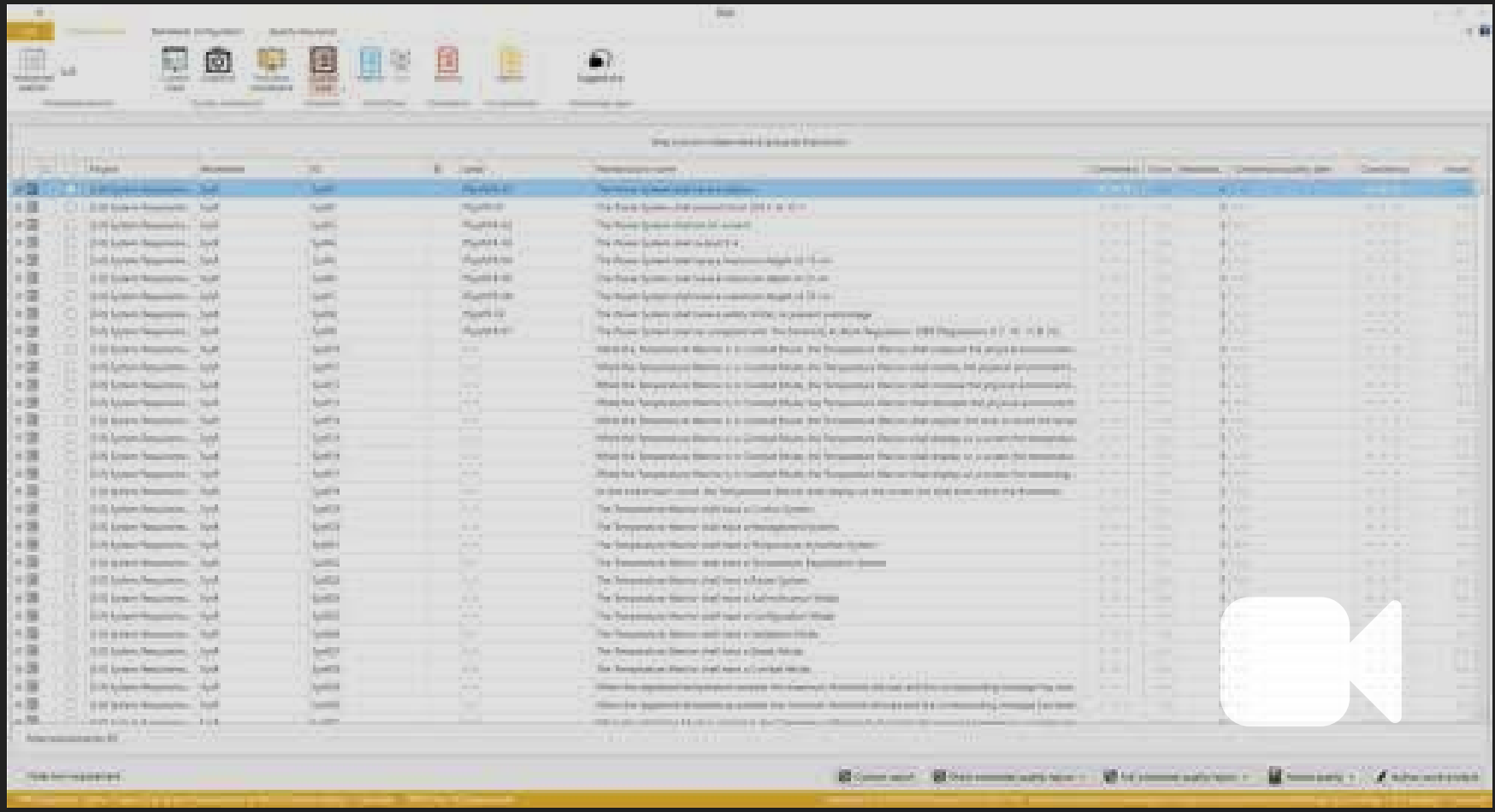

Q&A

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COMING UP NEXT...

15' EXPRESS WEBINAR

KNOWLEDGE EXTRACTION FROM MODELS

TO ENHANCE DOMAIN-SPECIFIC

QUALITY ASSESSMENT

DECEMBER 14TH, 2021 - 05:00pm CET

DECEMBER 16TH, 2021 - 09:00am CET

SAVE THE DATE!

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COMING UP NEXT...

ANY IDEA?

SUGGEST YOUR TOPIC

FOR A NEXT

EXPRESS WEBINAR

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Thanks
for your attention!

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