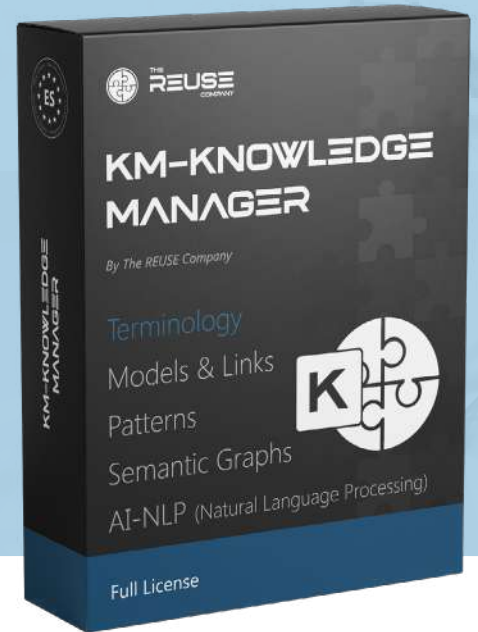


## KM - KNOWLEDGE MANAGER

For SES ENGINEERING Studio



# A SMARTER WAY TO DIGITALIZE YOUR KNOWLEDGE



## ABOUT

**Knowledge is the most valuable assets in every organization.** The key driver to success in any system or software project is to **reuse knowledge assets**. These include engineers' explicit and tacit knowledge, and guidelines defining the organizational know-how.

Knowledge should therefore be gathered from different sources, stored in secure repositories, and accessed by the appointed person at the appropriate time.

**KM – KNOWLEDGE Manager** allows you to **manage knowledge from the systems engineering point of view** and to store valuable information from requirements, models, system architectures, and other documents in a common System Knowledge Base.



### QUALITY

The more knowledge you explicit in a Knowledge base, the more advanced engineering activities can be performed (automatic verification of workproducts, semantic search engines along a project, semantic suggestion of traces...).



### TIME

KM – KNOWLEDGE Manager eases knowledge sharing and reuse activities among different engineering tools, allowing users to evolve and update ontologies seamlessly.



### MONEY

Proper knowledge management is an asset for the organization that translates into earnings and savings. **Knowledge is Money!**

### AUTHORITATIVE SOURCE OF TRUTH

**KM – KNOWLEDGE Manager** permits the creation of a specific ontology to address the full complexity of the project's context and tackle any kind of **semantic structure** required.

A **controlled vocabulary** is a must to facilitate **consistency** across the different work products developed during the life cycle of a project.

**Ontologies** in **KM – KNOWLEDGE Manager** help specific relationships between terms to fully represent a project's context: synonyms, parent-child dependencies, subsystems, functional structures, etc.

### PATTERNS

The feature of creating textual patterns is a flexible solution to satisfy personalized preferences while writing requirements or other kind of textual workproducts (risks, tests scenarios...). It helps optimize the editing process, standardize the writing approach, and englobe any possible variations within the requirements specifications.

### INTERFACE WITH EXTERNAL SOURCES

As your project knowledge can be stored in several different formats (e.g. SysML/ UML models, simulations, tables, external databases, ...), **KM – KNOWLEDGE Manager** enables interfacing with several external sources so that the ontology includes **multiple sources of truth**.



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### MANAGING KNOWLEDGE REPOSITORIES

**KM – KNOWLEDGE Manager** is designed to manage all the knowledge needed for your system or software-intensive projects (breakdown structures, terms, acronyms, restrictions, etc.). Knowledge is stored within a **System Knowledge Repository (SKR)** and is organized in **ontologies** (called **System Knowledge Base – SKB**) and **knowledge libraries**. The **Ontology** and the libraries are used by the **KM – KNOWLEDGE Manager** for quality analysis, requirements, and textual work product authoring, to identify different types of link traces, transforming from requirements to models or test cases, identification of reusable products, etc.

**KM – KNOWLEDGE Manager** enables the management of the System Knowledge Repository, its System Knowledge Base, and all assets involved in the life cycle of your systems.

### KM AND SYSTEMS ENGINEERING

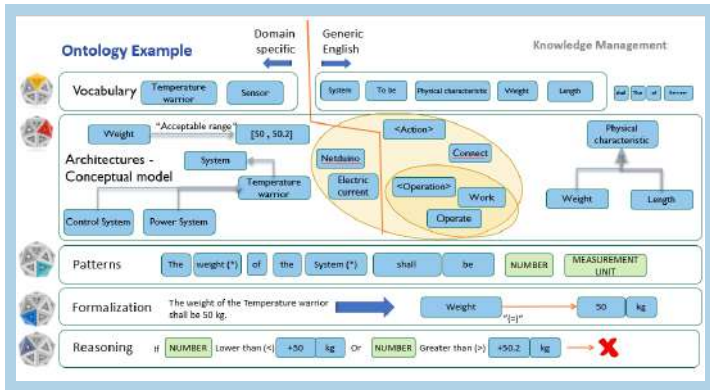
**KM – KNOWLEDGE Manager** is the core tool for the Knowledge Centric Systems Engineering approach which aims to take advantage of all the knowledge developed during the System definition phase and thus make it available to subsequent projects.

The structure of our knowledge bases includes 5 different layers:

1. Fill your ontology with the domain-specific vocabulary on top of the already included generic vocabulary.
2. Build hierarchical structures and create relationships between the terms of your ontology.
3. Design textual structures, and patterns, that you can reuse while writing the requirements.
4. Once a pattern is "matched" for a given textual input, this input can be **Formalized** (transformed) into one or several semantic graphs.
5. The reasoning layer represents a complete toolbox that enables semantic operation to be performed with your workproducts



An example of the 5 steps put into practice can be observed on the following schema:

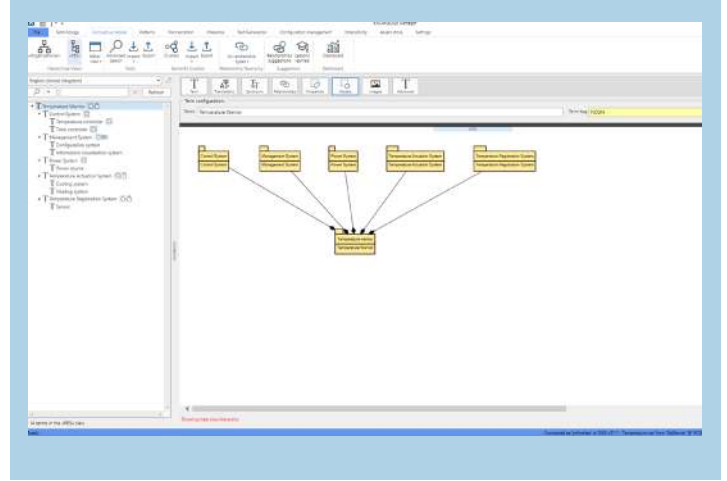


### TEXTUAL PATTERNS: STANDARDIZE AND REWRITE REQUIREMENTS

Textual Patterns represent the grammatical structure that a natural language sentence needs to follow according to an organization's policies and know-how. Textual patterns can also be used to enable text transformation. By setting up source and target patterns for a transformation, the **KM – KNOWLEDGE Manager** will detect requirements that match the pattern to execute the transformation to the target structure while maintaining the semantic consistency.

### SEMANTIC INDEXING AND RETREIVAL

Using **Natural Language Processing tools** and **Artificial Intelligence algorithms**, **KM – KNOWLEDGE Manager** provides a **semantic search engine** that enables the search and reuse of all sorts of information based on its actual meaning.



### LIBRARIES

**KM – KNOWLEDGE Manager** provides the capability to use **Knowledge Libraries**: combinations of Knowledge items of different natures and levels of abstraction that can be reused in numerous projects. Knowledge management based on Libraries is the best way to blend knowledge flexibly. The REUSE Company provides a wide catalogue of Libraries ready to plug and play. Our current set of libraries is:

- INCOSE Knowledge Library
- EARS Knowledge Library
- SOPHIST Master Patterns Library
- NASA Knowledge Library
- ECSS Knowledge Library
- Requirements with Numbers Library
- BABOK® Library

For more information regarding each library in particular, and access to a download link, scan the following code:



### EXTERNAL CONNECTORS

**External connectors** allow for merge, in real-time, between the knowledge natively managed in KNOWLEDGE Manager (mainly corresponding to layers 1 and 2 of the Knowledge Base), and information coming from one or more external sources. Thus, if part of your knowledge is managed in MBSE tools, external ontologies in Protégé, or even MS Excel or Visio, there is no need to export and import in KM, you can just add an external connector from **KM – KNOWLEDGE Manager**, later, when users make use of the Knowledge Base from other tools of the suite such as **SES ENGINEERING Studio, RAT AUTHORIZING Tools...**, the information from such external source shall be blended in real-time with the information from the KM ontology.

### CONTACT



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