assystem

DeepREXT
AN ASSYSTEM SOLUTION

SOLUTION SHEET

DeepREXT

Intelligent digital engineering solution that automatically extracts, classifies and analyses requirements coming from raw documents and existing requirements databases

Use Cases

Adaptation of a product to a normative and regulatory context

Digitalisation, transformation, standardisation, centralisation and sharing of engineering requirements data

Tooling and concrete implementation of systems engineering

Management of industrial assets throughout their life cycle

Project Benefits

Reduction of the time needed to process applicable documentation

Centralisation of technical data allowing quick access to information

Better control of projects in terms of deadlines, risks and costs

Better traceability of engineering choices

Optimisation of impact analysis

CONTEXT & STAKES

A key stage in the life cycle of industrial projects, particularly in the case of nuclear power plants, is to take into account the applicable normative and regulatory reference framework via project and system requirements. In other words, the efficient translation of existing generic documentation into a project-specific requirements framework.

This stage is complex, as it requires the involvement of several professions and experts, time-consuming, as the applicable documents are often dense and diverse, and above all crucial, as failure to take into account the expectations of stakeholders can result in very significant additional costs and delays.

THE SOLUTION

DeepREXT enables the automation of requirements management via algorithms based on the following elements:

- Creation of a centralised database for the documents to be taken into account
- Automatic recognition - after calibration - of the characteristic formulation patterns of a requirement-carrying text element with the help of AI models
- Automatic classification, rationalisation and comparison of requirements based on deduced elements / project (equipment, activity, etc.)
- Search and export tools to interface with an existing digital ecosystem.

Compared to its competitors, DeepREXT requires almost no human intervention to extract, classify and analyse requirements. DeepREXT's algorithms use existing data to derive thousands of rules.

OBJECTIVES

EXTRACT automatically a set of requirements structuring the project

INTERFACE efficiently a requirements management tool in an integrated ecosystem

ENABLE the transition from a time-consuming implementation scheme to an expertise-based verification scheme

OPTIMISE engineering requirements data efficiently through classification and rationalisation

CENTRALISE and organise access to a project requirements database with a digital platform

GUARANTEE the adequate consideration of an applicable context

CHARACTERISTICS OF THE SOLUTION

DeepREXT

CHARACTERISTICS OF THE SOLUTION

DeepREXT is an innovative solution that allows you to capitalise on expertise by automating repetitive and low value-add tasks (extraction of requirements from a regulatory corpus, allocation to technical scopes, etc.).

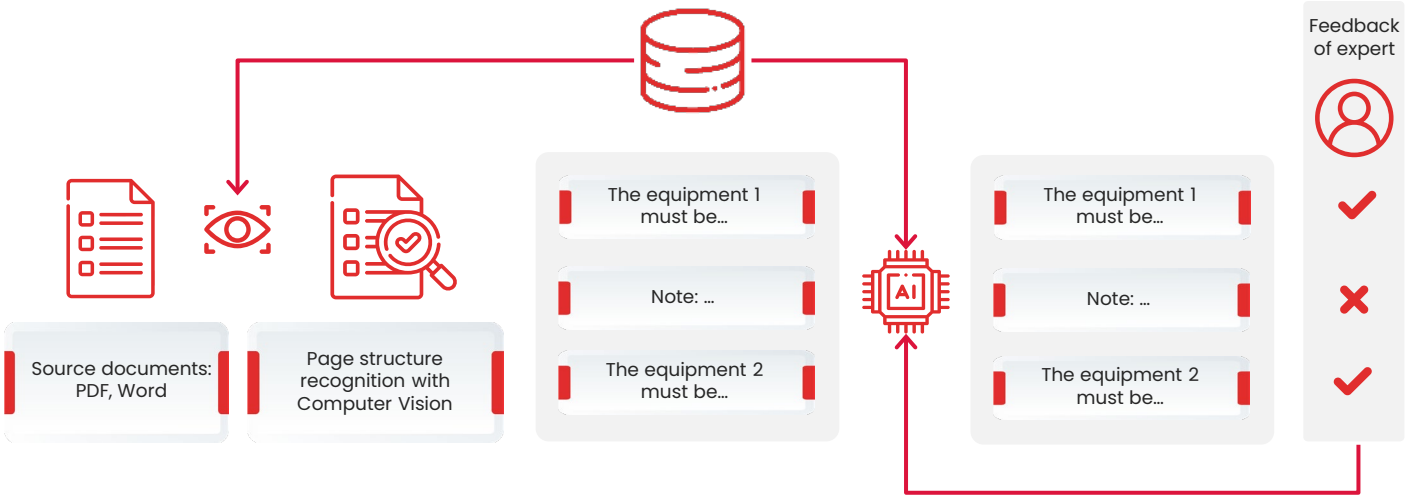
DeepREXT transforms document formats into data using Deep Learning (DL) technologies that analyse the structure of document pages. Character recognition (OCR) and natural language processing (NLP) enable the recognition of the characteristic patterns of a requirement, their classification and rationalisation. As the tool is used, the algorithms adapts to the type of requirement being processed and improves over time. The detected elements are integrated into a dedicated digital environment, with search engine capabilities and the possibility of export and collaboration.

TECHNICAL CHARACTERISTICS

- Operating system: Linux
- User platform: Web
- Deployment platform: On premise, Azure, AWS
- GPU acceleration: Yes (optional)
- Security: SSO

PERFORMANCE

- 5 seconds per PDF page to extract and post-process requirements
- Over 100 recognised equipment classes



CASE STUDY

EDF - RTI² PROJECT

The project concerns the implementation of a solution allowing the preparation of raw requirements for integration into EDF's RTI (Technical Engineering Guidelines).

Issue. Identification of requirements on the basis of existing RTI requirements, effective consideration of the different categories of requirements as well as the relationships between these categories, and early detection of similar requirements which are then marked for rationalisation.

Solution. DeepREXT has enabled the rapid creation of a structured database of requirements from the available documentation, structured around business lines and components divided into several levels (systems, sub-systems, components). Analysis has enabled the identification of similarities between the raw requirements, which are provided to the experts who prepare a synthesis of the differences between the requirements.

Client benefits. Major time savings on the gathering and analysis of engineering requirements - Reliability and completeness of data - Automated capture and tracking of requirements in correlation with the existing data model.

Extraction of requirements from over 100 raw documents

Over 100 categories of equipment and activities covered

Number of unique requirements in the project: over 10,000

business@assystem.com

www.assystem.com

assystem