
DOCaMEx, a web-based educational and decision support tool that offers a new way of structuring knowledge based on concept maps and technological reasoning trees

BAUDRIT c. (1,2), BUCHE p. (3), COUTEAUX j. (1), CUFI j. (3), FERNANDEZ c. (1,2), MUNCH M. (1,2)

1 Institut de manique et d'ingierie , bordeaux, France

2 INRAE, bordeaux, France

3 INRAE, Montpellier, France

Faced with the increasing aging of the labour force in industry, the migration of processes to industry 4.0 along with recruitment difficulties in certain sectors, one of major challenges manufacturers face today is their capacity to build intelligent platforms for acquiring, storing and transferring their know-how and knowledge. Increasing automation and decision-making guided by data may also lead to the reduction of human labour in the production process, which may contribute to the disappearance of jobs, the reduction of expertise and the loss of know-how in manufacturing organizations. Weakened by this context, industry must also deal with increasingly restrictive standards, while struggling to rely on a growing quantity of generic knowledge and massive data, due to scientific and technological advances. Industrial sectors must turn to the acquisition of digital tools to structure their knowledge domain and then to develop and exploit the knowledge bases. Organising the transmission of knowledge and know-how within the company means enabling employees to acquire a methodology to transfer expertise in an effective and sustainable manner. DOCaMEx proposes a web based tool allowing stakeholders of any food industry sectors to collect, structure, share, remobilise the knowledge and know-how in a context of numerical and digital transition. It is composed of a reasoning engine, based on decision tree structures, that is capable of proposing action levers whose implementation can correct or maintain quality and an electronic knowledge book, based on a semantic network, capable of giving the user access to the entirety of the knowledge gathered from all sectors of the industry. Its aim is to:

- Avoid the loss of knowledge and know-how when people retire
- Formalize good practices and capitalize reusable knowledge to make transfer durable
- Encourage the sharing of expertise on a daily basis within the sectors
- Optimise and make reliable the handover between two or more people
- Ensure the preservation of knowledge and skills in the various sectors

It has the advantages:

- Usable by all stakeholders in all types of environments and with different levels of accessibility,
- Ergonomic interface,
- Integrated and manageable tool in the company,
- Semi-automatic construction and updating of the shared knowledge.