

THE PROJECT

The overall objective of AI-CUBE project is to contribute harnessing and optimizing the potential of AI and BD in the European process industry. AI-CUBE will define roadmaps that will serve as guidance for researchers, managers, and operators, and include specific recommendations on how to boost digital technologies development in SPIRE industry functions and processes. To achieve this goal, the specific objectives of AI-CUBE are:

- Draw the multi-dimensional AI and BD map, the "CUBE", that will plot out available good practices and assess the current state-of-play and level of penetration of AI and BD within the different organizational processes across SPIRE process industry sectors.
- Build on identified good practices to develop future AI and BD business cases and define a roadmap of the RD&I actions needed in each SPIRE sector.
- Detect the white spots of AI and BD solutions that can be covered adapting good practices from other process industries, outlining an adaptation roadmap.
- Define the data requirements, skills and RD&I requirements for future AI and BD business cases to emerge within the different process industry sectors.

All these will converge into AI and BD roadmaps dedicated to SPIRE sectors, indicating a route map and practical recommendations on AI and BD business cases, transferability of good practices from other industries, data, skills and RD&I requirements, in line with the A.SPIRE 2050 vision.



THE CONCEPT

The AI-CUBE concept is based on a tri-axial mapping of AI and BD technologies. It allows to map and visualize the status of AI & BD use and penetration per SPIRE sector and macro-application-process areas. The 'Cube Concept' allows to set the stage for the development and integration of four sets of key results, which drive the opportunity assessment and take-up of AI and BD by the European process industries:

- **Maturity Level Assessment:** A novel AI and BD Maturity Level Assessment framework to support companies in assessing the level of implementation of technologies and Technology Maturity Level (TML).
- **The AI-CUBE tool:** to be used as mapping tool by individual industries or sectors to assess their state of advancement in AI and BD and the needs

for further development.

- A set of inspirational **AI and BD Business Cases** in the process industries and the **AI-CUBE Business Model Game:** to be used by industries to stimulate the reasoning about how AI and BD can innovate their Business Models and Value Chains for the future and, hence, what actions to take.
- **Roadmaps and Infographics:** A set of roadmaps and easy to consult Infographics, that outline the path towards: i) transferring AI and BD good practices from one SPIRE sector to another; ii) further developing and taking-up technology solutions towards AI & BD Business Cases of the future for the different SPIRE process industry sectors.

THE CUBE

The AI-CUBE Consortium explored the state of the art of digital technologies in the Process Industries from different points of view: the academic research conducted up to now concerning AI and BD technologies in the SPIRE Process Industries, and a sectoral analysis of the industrial processes in Europe. These analyses led to the identification and mapping of processes and technologies, representing the dimensions and macro-areas that will guide AI-CUBE project through its next phases. The key result of these

activities has led to a comprehensive CUBE design:

With the CUBE in mind, the consortium developed a customized Maturity Level Assessment (MLA) framework for AI and BD in the process industry, analysing the interplay between each technology and process, which allows assessing the Technology Maturity Level (TML).

