ARTIFICIAL INTELLIGENCE AND BIG DATA CSA FOR PROCESS INDUSTRY USERS, BUSINESS DEVELOPMENT AND EXPLOITATION

Updates on the latest project results!

Beginning with an extensive literature review of each SPIRE industry from more than 200 scientific papers, AI-CUBE is now engaging with stakeholders and experts from these sectors to gain insights into the gaps, barriers and opportunities for Artificial Intelligence and Big Data technologies.

In this newsletter, we are happy to present to you all the latest results achieved in the frame of the second year of project implementation.

Remember to subscribe to the AI-CUBE newsletter and follow the main updates by visiting the project website and the LinkedIn and Twitter accounts!

EVENTS PARTICIPATION

Technical results are being successfully achieved across all work packages and the AI-CUBE consortium is committed to presenting all the progress at national and international events. In the past few months, there have been several occasions to disseminate the AI-CUBE results with the aim of boosting its progress, increasing its impacts and visibility to a wider audience.

The A&T fair

Figure 1: Taira Colah and Manuela Guiducci from PNO

CiaoTech (PNO Group) attended the A&T – Automation and Testing fair, the trade show dedicated to innovation, technologies, reliability and industry 4.0, held in Turin (Italy) from 6th to 8th April, 2022. The event brought together manufacturing companies and research centers, entrepreneurs, managers, technicians and researchers with the aim of understanding how to truly and sustainably integrate 4.0 technologies into design and production processes. In this scenario, the project coordinator had the chance to present AI-CUBE to the most innovative companies and to get from them some insights on implementation cases related to artificial intelligence and the big data field from service providers.

AI-CUBE impact assessment and workshop on Impact Assessment

IThe Conference on Digitization Driven Green, Sustainable and Competitive Process Industries is an event organized in collaboration with the COGNITIWIN project, DigiPro and ACT aimed at presenting aspects, opportunities and challenges of the use of digitization in the process industry.

CiaoTech (PNO Group) held a presentation in the frame of the session 'AI for Circular Economy', during which results and progress of the AI-CUBE project were highlighted and a live poll ran to get interesting valuable data to feed into our cube from the experts in the audience.

Figure 2: Ron Weerdmeester, AI-CUBE coordinator from PNO

AI-CUBE booth at the Automatica exhibition

AI-CUBE joined the Automatica exhibition, the world's leading trade fair for smart automation and robotics, that from June 21st to 24th gathered all key technologies in the international technology hub of Munich. At the AI-CUBE booth, CiaoTech (PNO Group) presented the project to key players of the Robotics, Assembly/ Handling Technology, Machine Vision, and Digital Solutions technologies for the Smart Factory technologies, highlighting all the results accomplished so far. More information about the project and the work implemented and services that PNO is providing for AI-CUBE were also given in the presentation made in the frame of the event agenda.

Figure 3: Maryam Mirpourian and Lieke Gerris from PNO

The AI-CUBE LABORATORY at the ACHEMA 2022 Conference

Figure 4: From the left: Saskia Sardesai (IML), Alicia Martínez de Yuso (ZLC), Taira Colah (PNO), Lorenz Kiebler (IML) and Michele Liberati (PNO)

The project consortium organized and hosted the AI-CUBE Laboratory, an interactive space to analyze the current state of Artificial Intelligence and Big Data in the Process Industries and define their future.

The Laboratory was held in the frame of the ACHEMA Conference, the driving force and groundbreaker for the international process industries and their suppliers which took place in Frankfurt (Germany) from 22nd to 26th August 2022.

With the aim of disrupting Artificial Intelligence and Big Data technologies in the EU, CiaoTech (PNO Group), Zaragoza Logistics Center and Fraunhofer IML ran two workshops:

- The VALIDATION WORKSHOP, to explore the current state of these technologies in the Process Industry.
- The BUSINESS MODEL GAME, to unravel the ideas that could impact the Process Industry and make them thrive.

The day saw visits from university students brimming with ideas for the future, as well as strategic feedback provided by industry experts on the state of AI and BD in the Process Industry.

These workshops will be run over the following months at different physical and online locations.
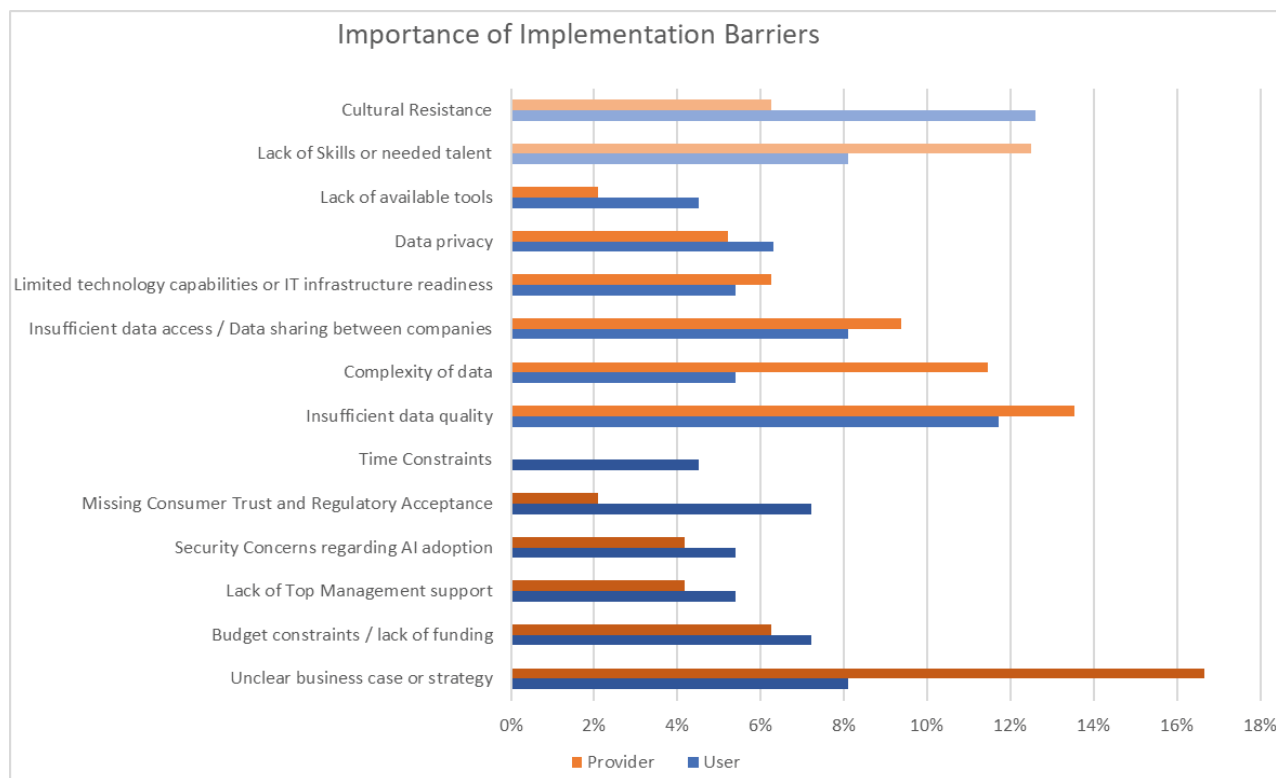
DISCOVER OUR LATEST TECHNICAL RESULTS

So, where have all our research and analysis led us? Here are the highlights from our findings.

Implementation Barriers

In the project's second year, Fraunhofer IML focused on evaluating the previously launched online survey in Work Package 3, collecting further data from workshops and identifying conclusions and correlations in the results. Through the additional insights gathered during the validation workshop at the ACHEMA 2022 conference and trade fair, the validated findings and the derived conclusions will be used in the framework of the guidelines to be developed for each sector and combined with other findings from the project.

The results from over 100 users or software providers from or for the process industry could be analyzed accordingly and evaluated with regards to currently used AI or BD solutions, maturity assessments of companies and implementations, barriers in the implementation process, basic success factors and existing transfer possibilities. Exemplary results such as the enormously influential barriers of insufficient data quality, lack of business cases and strategies, lack of personnel and insufficient change management could be identified as the most critical challenges in the process industry for implementing AI or BD solutions. Separated analyses according to the evaluation by users and providers lead to further insights into different perspectives on AI implementation. This results in direct implications for immediate work priorities and consideration in the sector-specific guidelines.

Importance of Implementation Barriers

Chart showing barriers ranked by importance for Provider (orange) and User (blue):

- Cultural Resistance
- Lack of Skills or needed talent
- Lack of available tools
- Data privacy
- Limited technology capabilities or IT infrastructure readiness
- Insufficient data access / Data sharing between companies
- Complexity of data
- Insufficient data quality
- Time Constraints
- Missing Consumer Trust and Regulatory Acceptance
- Security Concerns regarding AI adoption
- Lack of Top Management support
- Budget constraints / lack of funding
- Unclear business case or strategy

Legend: ■ Provider ■ User

Gaps and Opportunities Analysis – Recommendations and Business Models

After the Gaps Analysis, Opportunities and Barriers workshop on February 23rd, Zaragoza Logistics Center, with the AI-CUBE consortium's support, kept working on the gaps and opportunities analysis. The results from the workshop have been integrated with an extensive literature review looking to complete the vision of the application of AI and BD technology in the process industry and identify the gaps and transfer possibilities.

To this, we can add the information gathered through the search for real implementation cases in the process industry to understand the benefits and opportunities of AI and BD solutions. This compilation and specific literature research have been the grounding for identifying the Process Industry's primary AI and BD driven business models. A preliminary list of 11 key business models has been identified and defined as the main models that will transform the Process Industry, boosting the benefits and thus the applicability of these technologies.

CiaoTech (PNO Group) and Zaragoza Logistics Center used the business models and the implementation cases to design the AI-CUBE Business Model Game held at ACHEMA 2022. The game's objective is to validate the models and understand the implications of AI and BD solutions in the transformation of the Process Industry. The game will be played during other workshops over the following months.

The AI-CUBE consortium is already working on converging all the project results into the ten sector-specific guidelines with practical recommendations to boost the AI and BD application in the Process Industry.

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STAY IN TOUCH

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