



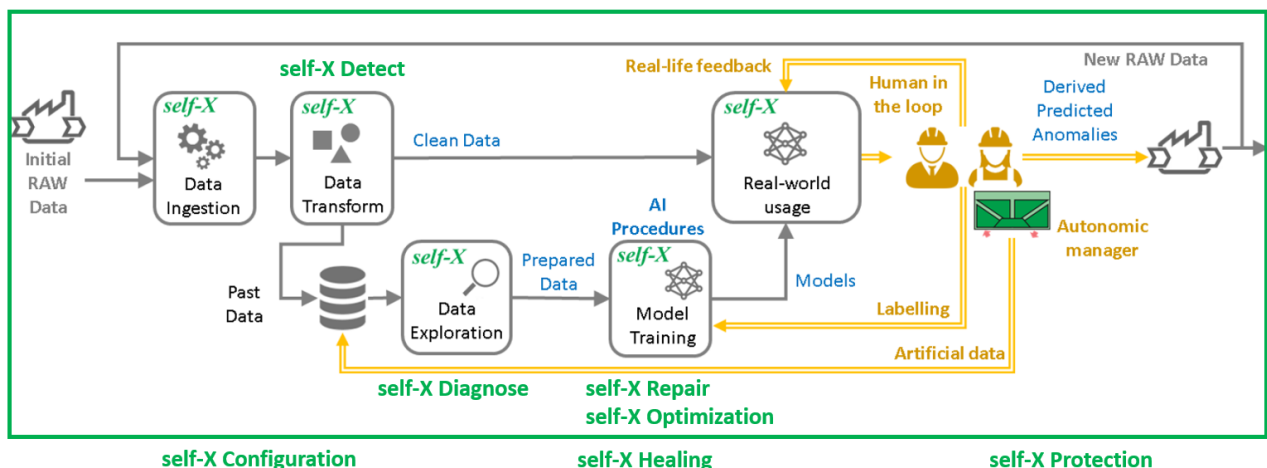
Press Release

24 March 2023

## Bringing AI closer to the process industry

S-X-AIPI project is currently engaged in the task of developing an architecture for the self-X AI (Artificial Intelligence)<sup>1</sup> solutions that optimize industrial processes and assist the human-in-the-loop for decision-making.

In recent months, the consortium has faced the challenge of identify the different requirements to achieve applications of AI focused on the optimization on processes within four representative industrial use cases of the process industry: asphalt, steel, aluminium and pharmaceuticals. In each of them the industrial value chains, as well as the different sources of data available, have been analysed and potential points for improvement where data-driven AI can be applied have been identified. Moreover, without losing sight of the need to generate enhanced self-X AI applications, the MAPE-K model<sup>2</sup> (Autonomic Manager) will be introduced into the AI pipeline to support various Human in the loop roles in different situations.



<sup>1</sup> <https://doi.org/10.1109/MECO55406.2022.9797193>

<sup>2</sup> <http://dx.doi.org/10.1109/ICAC.2015.61>



The s-X-AIPI consortium has undertaken a crucial initial task in defining the requirements for self-X AI solutions that work collaboratively with humans. This involved a detailed analysis of industrial manufacturing processes and use cases, with the aim of fine-tuning the definition and purpose of various self-X AI tools. Significant challenge that the project faces is building a shared vision among industry experts, AI researchers and IT professionals to ensure seamless integration of all procedures.

Special attention has been paid to what has been referred to within the project as 'unknown situations'. This term is used to describe unexpected situations that occur in the day-to-day work of industries and that generate, for example, a change in the way processes are carried out or in the input data to AI models that make them no longer valid. How traditional IA algorithms can be empowered with self-X abilities able to react to these 'unknown situations' have been analysed and will be developed in the coming months.

In general, the requirements contain aspects of the product, the process, the quality of the data, the traceability of the product carried out throughout the entire process, the diagnosis of the plant, etc. Everything contemplated for improvement of process, helping the human in the loop to make decisions to obtain better results. In addition, technical requirements to achieve these objectives have been identified alongside the different necessities related to the infrastructure of the facilities, which must be equipped with good monitoring equipment for data capture, collection, storage and processing. The requirements also make an analysis of the different possibilities available at IT infrastructure level and available components that includes the availability of data sources and IT systems to interact with the “Data ingestion” components layer for the self-X AI data pipeline.

Besides the requirements, different tentative categorized KPIs have also been defined for each of the use cases, classified them in four categories: socio, environmental, business and technical. This KPI will be evaluated in the demonstration phase during the last month of the project development.

In conclusion, although the project has just started, the deep exploration done in this task constitutes a solid foundation for the definition of different self-X AI tools that are being currently designed, and that will guide the development and refinement for the integration of the components in the AI Data pipeline<sup>3</sup> for human support. All these defined scenarios and requirements lays the foundation of the needed extended data pipeline with self-X abilities, where AI-based solutions will be able to resolve “new and/or unforeseen issues” and adapt over time.

## About the project

**Project full name:** self-X Artificial Intelligence for European Process Industry digital transformation

**Project ID:** 101058715

**Start Date:** 01/06/2022

**Duration:** 36 months

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<sup>3</sup> <https://www.ibm.com/blogs/systems/building-your-ai-data-pipeline/>



## Follow the project

