



European Factory
Platform
XAI-FS

Explainable AI Fusion Service for Predictive Maintenance

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EFPF Open Call Pitching and Exhibition

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- **Brief Partner Introduction**

ATLANTIS ENGINEERING is an SME offering services and bespoke products to the manufacturing industry, towards Industry 4.0 with emphasis on **Decision Support** for the management, **Optimisation of Production activities and assets' Life Cycle**, and **Predictive Maintenance**.



- **Project Overview**

The project aims at designing and implementing a solution that combines *detection and prediction maintenance models within an intelligent fusion engine*

- More accurate prediction/detection outputs
- Improved understandability on AI-based predictive maintenance solutions

- **Main idea/concept**

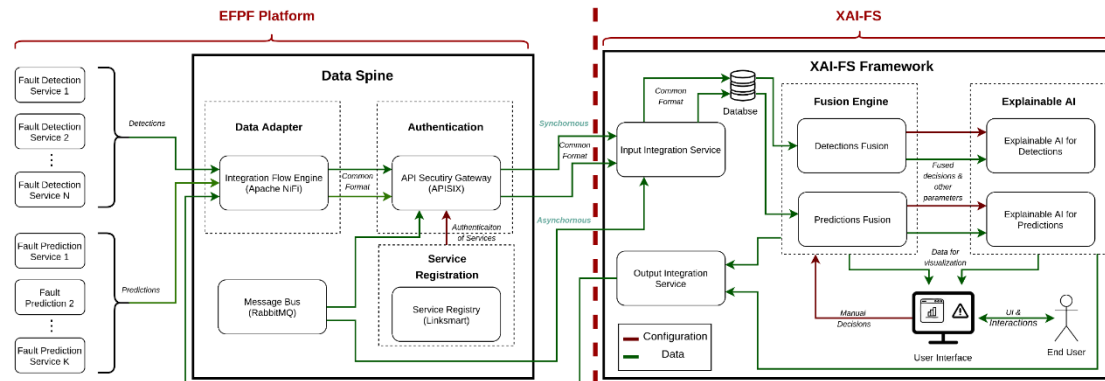
The solutions inherited capacity to provide **explainable AI** capabilities (during the whole process) offering the user **understanding and controlling of the process** and enhanced **trust** to the solution and the result.

Project Objectives

- To develop the XAI-FS solution and integrate it on the EFPF platform.
- To demonstrate seamless integration of the solution with the EFPF predictive maintenance services.
- To technically evaluate and assess the performance of the XAI-FS solution following a methodology which is aligned with the validation framework of the EFPF project.
- To build a business plan with focus on sustainability.

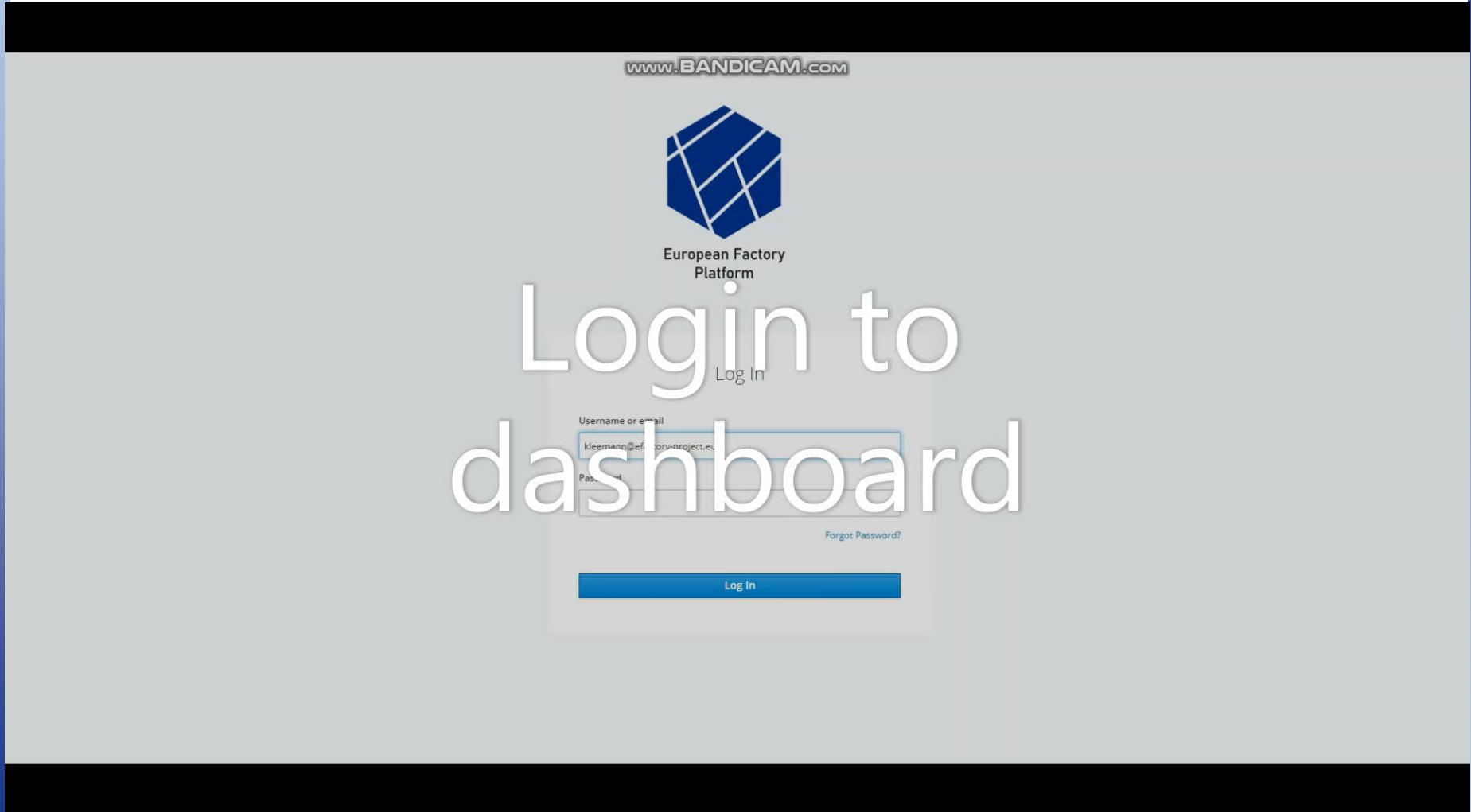
Technical Achievements and Outcomes

- In the XAI-FS solution the following components have been developed:
 - **Input Integration Service** (Raw data collection, EFPF analytics data collection)
 - **Baseline models** (Anomaly detection/prediction models, e.g. kNN, SVM, XGBoost, etc.)
 - **Fusion Engine** (Feed Forward NN, responsible for fusing the outputs of the baseline models)
 - **XAI module** (Based on SHAP XAI technique, provide insights about feature importance and effects on the final output)
 - **Output Integration Service** (Responsible to post the results from Fusion Engine to EFPF DataSpine)
 - **User Interface** (Stats about the raw data measurements, visualization of the anomaly detection/prediction tool and plots for the XAI-FS module)



- KPIs met : **Accuracy, Precision, Recall, F1-score** metrics

Demonstration of the Outcomes



- **Dissemination Results**

- Monthly Social Media posts for raising awareness (8 In total)
- Two Newsletters presenting the progress of the project, the lessons learnt and the innovation of the XAI-FS solution
- One Press Release detailing the project from start to finish
- An interview in the framework of XAI-FS and EFPP
- Participated in the 14th Maintenance Forum 2021

- **Exploitation Plan related to EFPP outcomes**

- As active member of HMS, EFNMS, SEPVE, SEVE, the XAI-FS solution will be promoted.
- Ambassador for the EFPP project leveraging on participation in EU initiatives
- Envision the solution to become available on the EFPP platform

Aim: The developed solution to be promoted to all target markets that have been identified as potential customers.

Technical Summary

- Interaction with EFPF analytic tools and DataSpine.
- Development of anomaly detection models.
- Exploration of XAI for manufacturing industry.
- End to end solution for real scenarios.



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Thank you for your attention!