

HOW TO MAKE MANUFACTURING RESILIENT

Data spaces for **Flexible** production lines and supply chains **for Resilient** manufacturing

About Flex4Res

17
partners

6
countries

8 Million
€ funding

3 years
duration

The challenges

- Supplier networks are complex, multi-layered and interconnected
- Supply chains are vulnerable to disruptions from unpredictable events, which are impacting the supply chain
- Manufacturers are rethinking and reassessing their global supply chains

The goal

In Flex4Res we focus on **strengthening the flexibility** and therefore the **resilience** of the European manufacturing industry by enabling manufacturers to **reconfigure supply chains and production lines** fast and efficiently.

The unique approach



Open platform
for secure and sovereign cross-company data exchange



Two toolboxes
for resilience assessment and reconfiguration planning



Industrial data space
for sharing digital twin models of production facilities



Newest technology
for optimal integration of the developed concept

Based on the latest **Gaia-X** framework, **IDS Reference Architecture Model** and **Asset Administration Shell** (AAS) technology, we will implement an industrial data space for **sharing digital twin models** of production facilities that are stored in AAS middleware.

Knowledge-based and easy-to-integrate **smart tools** from the toolboxes will complete the concept and support users with recommendations for **corrective actions** so that they can make smarter decisions regarding their systems from a resilience perspective.

Industry-related use cases

With our four use cases, we address different types of manufacturing systems and focus on various hierarchical layers: macro, meso and micro level. We will bring different disciplines together in each use case to develop solutions for flexible supply chains.



Reconfiguration measures after a tool change

Challenge: Adjustments to a machine are necessary when a tool or material has changed. How long the adjustments take and how successful they are, depends on the experience of the employee who executes them.

Goal: Reducing the time required to reconfigure the tools, the amount of produced defective components, and the need for the experience required to perform the adjustment tasks.

Industry partner: Hans Berg GmbH & Co. KG



Constant reconfiguration of supply plans

Challenge: Disruptions require reallocating the tasks in production, which takes place manually. Decisions taken at network level aren't connected to the reconfiguration needed at the factory level.

Goal: Reducing the time required for reconfiguration of the production plans for the production network by supporting users throughout the reconfiguration planning.

Industry partner: Sidenor Group



Production planning optimisation

Challenge: The process steps within the production of one part are performed in several working centres. They need to be fixed according to the daily production needs.

Goal: Increasing the efficiency and competitiveness as well as the predictability of production by developing a cross-site production planner, which can be constantly reconfigured.

Industry partner: GOIMEK S. Coop



Reconfiguration of manufacturing during production

Challenge: The products vary in size and shape and can only be machined on machinery providing the necessary capabilities, which also vary on other factors such as tools.

Goal: Highly flexible production planning and scheduling, also depending on the current machine state and manufacturing utilities with the opportunity to reconfigure the processes during production.

Industry partner: voestalpine High Performance Metals Digital Solutions GmbH

Project partners

With 17 partners from six EU countries (Austria, Belgium, Greece, Luxemburg, Germany and Spain), we ensure a multi-perspective approach to the challenges companies across Europe face.



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