



Project Profile

Muwo

Reconfiguring production systems in a scalable manner

The ITEA project Muwo (Multi-method workspace for highly scalable production lines) will allow production systems to be configured more effectively via flexible scaling. Using smart hardware interfaces, multi-method workstations, transmutable simulation and a process combiner, a higher level of autonomy can be introduced to both design and operation.

Addressing the challenge

Production systems come in many forms, each with advantages and disadvantages: manual production stations are highly adaptable to changing requirements but less efficient for large batch sizes, for instance, while special machines can produce products with a low cycle time but require expensive modifications when process changes are required. As a product's lot size changes, more efficient variants of the production system become possible, yet conversion requires significant costs and efforts.

The investment costs for new systems are also high due to a lack of component reuse from the old system. A solution lies in the scaling of production systems and integration of several products into a multi-product system, but missing hardware capabilities and planning methods have so far prevented this.

Proposed solutions

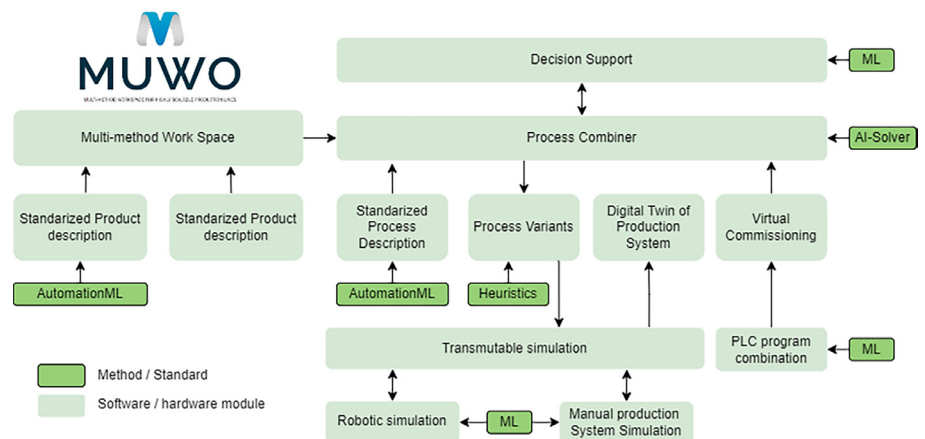
To solve these issues, Muwo focuses on simpler transitions between configurations and the improvement of existing planning methods that cannot handle multiple production lines. A multi-method workspace will be developed as hardware that can reconfigure for different processes and a standardised smart hardware interface will allow new tools and hardware components to be integrated into existing production systems.

Additionally, a process combiner will utilise artificial intelligence/machine

learning algorithms to generate the optimal configuration of several production processes, while planning alternatives will be validated via a transmutable simulation based on digital twins.

Finally, Muwo will develop a method to integrate several programmable logic controller (PLC) programmes into

The project will lead to approximately 25% fewer personnel hours spent during both the process planning and operational phases of a system, allowing several variants to be generated and considered. By improving productivity with proactive maintenance, automated decisions and reduced downtimes, Muwo also expects a 60% shorter planning process and a 10% decrease in costs. In the longer term, factory operators will benefit from the reuse of resources that are no longer required and the optimisation of factory space, allowing for the creation of further production lines.



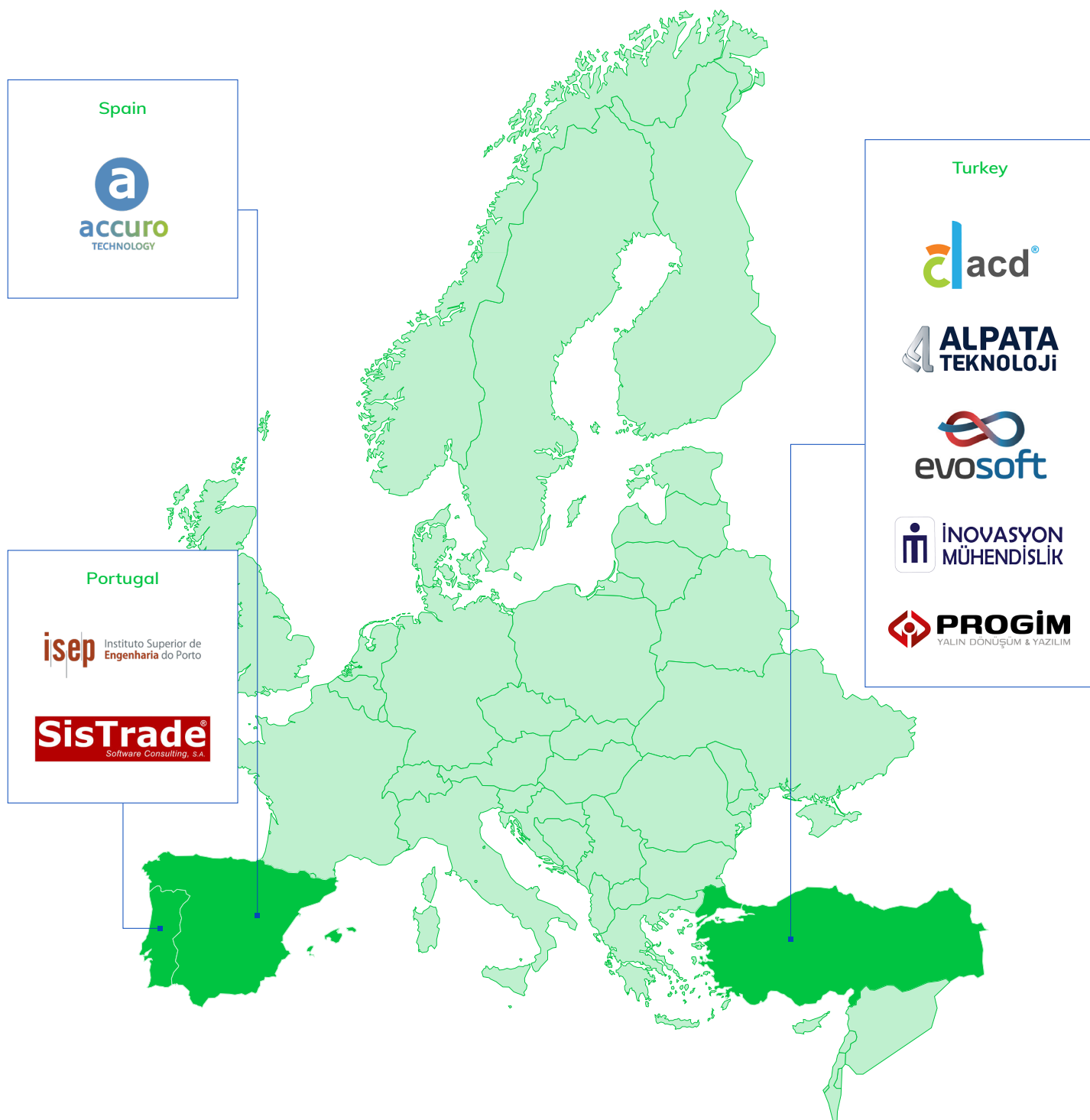
^ MUWO outputs and their relationships

one or to control production systems with several master PLCs. The result will be flexible workspaces that can switch between manual and (merged) automated production with minimal time and effort.

Projected results and impact

As Muwo's corresponding specification will be made publicly available, production providers everywhere will be able to gain a competitive advantage.

All in all, strong commercial results are expected: by 2026, the export business volume or sales & services per partner are expected to be worth up to EUR 535,000 as a direct result of the project.



Project start
February 2021

Project leader
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Project website
<https://muwo.accuro.es/>

Project end
January 2024

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