



Newsletter #2

Message from the Coordinator



Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

Message from the Coordinator:

metaFacturing has reached the end of project year 2, and 2025 will be the final year, where the developed technologies will be showcased at industrial scale, focusing on the welding use case (hosted by Benteler) and on the casting use case (hosted by LTH Castings).

The partners have been collaborating towards reaching the project objectives:

- Several activities have been performed towards the **creation of a framework for process setup and control based on a digital twin**, such as data collection/integration/merging/synchronisation, the definition of a generic digital twin framework, the infrastructure integration related to the demonstration activities (industrial use cases as well as lab scale activities), quality assessment.
- The first step towards **data fusion for production lines** has been a thorough understanding of the existing processes and their related challenges, providing data fusion rooted in the physical process behaviour.
- Several activities have been performed successfully towards **material characterization**, which is crucial to metaFacturing as it is linked to both process parameters as well as product quality. These include include a novel approach to thermal and mechanical characterization based on a FE model together with thermal camera measurements, and AI/ML data-driven techniques to get process/product insights (including material properties and anomaly detection/classification). Regarding standards, metaFacturing is currently investigating how to exploit the CHADA standard, which is tailored to experimental data in an operational setting. This has the potential to extend the operational data reuse, as well as extend the scope of this standard.



Further objectives will be pursued in the last project year, including **automatic process parameter optimization methods** and **validation in realistic conditions**.

The good progress in the project activities towards the project objectives as well as the application to both the welding and casting use cases is a clear step towards a more resilient production process with respect to the raw materials used, to reduce operator effort in calibrating and validating the production, and to improve environmental sustainability (e.g. by reducing scrap due to out-of-specification parts or disruptive tests).



metaFacturing