MODAPTO [101091996]:
Modular Manufacturing and Distributed Control via Interoperable Digital Twins

Press Release

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Three Years of MODAPTO: Key Results, Progress and Impact

Working towards a more flexible and adaptable industrial environment that can respond effectively to dynamic production requirements or changing market conditions.

As MODAPTO enters its final year, the project showcases strong progress in delivering modular industrial systems capable of responding to evolving production requirements and market dynamics. In line with the six principles of Reconfigurable Manufacturing Systems (RMS), MODAPTO integrates smart and connected Digital Twins (interoperable DTs) that transform how manufacturing components are configured and optimised.

Project Progress and Key Outcomes

1. **Final Project Management and Data Ethics**

The project has finalised its FAIR-aligned, GDPR-compliant and securely governed datasets through the final Data Management Plan.

2. **Dissemination and Communication Report**

MODAPTO has successfully delivered its three-year communication and dissemination strategy, reaching its key audiences through a wide range of channels, showcasing project progress and results, and achieving all KPIs set at the project’s start.

3. **Business Models and Industrial Strategies**

The project has developed a comprehensive analysis, examining market trends, defining the value propositions and exploitable results, and financial projections, and sector-specific strategies to support the adoption and commercialisation of modular manufacturing solutions.

4. **SME Engagement and Training for MODAPTO**

MODAPTO has engaged SMEs throughout the project and delivered a focused training programme enabling them to understand, explore, and adopt the project’s modular manufacturing tools.

5. Standardisation Progress and Open Contributions

MODAPTO has advanced its work on standardisation and open-source contributions by supporting the development of the Asset Administration Shell and making all software components openly available through GitHub structure to promote interoperability and wider industry adoption.

6. Final Standardisation and Open Contributions

MODAPTO has continued its work on standardisation and open-source contributions by updating its involvement in key industrial standards, documenting each partner's inputs, and expanding its openly accessible software components and repositories to support interoperability and wider community use.

7. Use Cases' Progress Execution, Evaluation and Lessons Learnt

MODAPTO has reviewed the progress of all pilots and evaluated the system's components, confirming strong advancements toward the targeted KPIs, and identifying practical lessons that will guide the final integration, improvement of smart services, and alignment of digital twin implementations.

8. Use Case's Outcomes and Final Evaluation

MODAPTO has completed its final assessment of the three industrial pilots, confirming strong KPI results in real industrial conditions, valuable technical and business impacts, and clear lessons that support the system's readiness to advance toward higher TRLs and wider industrial adoption.

9. Designing New Modules and Interoperable Digital Twins

The project has defined a unified methodology for designing new production modules and their digital twins, using standardised approaches to ensure interoperability and enabling flexible, modular and sustainable manufacturing systems.

10. Distributed Intelligence, Self-awareness & Sustainability for Modular Systems

MODAPTO project has advanced its distributed intelligence and self-awareness capabilities by developing analytics, predictive maintenance methods, and sustainability assessments that enhance decision-making across modular production systems.

11. Framework for Modular Production and Reconfiguration

MODAPTO has delivered a unified framework that brings together its core modular production tools, including the message bus, notification center, orchestrator, service catalogue, and reconfiguration toolkit for designing, executing, and managing reconfigurable manufacturing workflows.

12. Decision Support Tools for Modular Production and Reconfiguration

MODAPTO developed a set of decision-support tools that combine optimisation, co-simulation, predictive maintenance, and sustainability analytics to help factories plan, evaluate, and improve modular and reconfigurable production systems.

13. **Unified Architecture for MODAPTO**

MODAPTO updated and refined its system architecture, consolidating all modules, interfaces, and data flows into a unified technical blueprint that supports the full integration of modular production, digital twins, smart services, and decision-support tools.

14. **Integration and Framework Deployment**

MODAPTO has delivered the full integration and deployment framework for its Digital Twin ecosystem, detailing how DTs, smart services and system components are connected, configured, and deployed across all pilots, enabling a unified, scalable and fully operational modular production environment.

Looking Ahead

As MODAPTO comes to an end, the project leaves behind a robust set of tools, interoperable digital twins, and a flexible modular production framework. These outcomes empower factories to become more adaptive, intelligent, and sustainable.

The project partners remain committed to engaging with industry, researchers, and SMEs, and anticipating MODAPTO's concepts and tools continuing to inspire new solutions and wider industrial adoption in the years ahead.

Additional Resources

[YouTube Channel]
[GitHub]

Disclaimer
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