

Technical Article on Connecting Dynamic Digital Product Passports with Mixed Reality in DigInTraCE

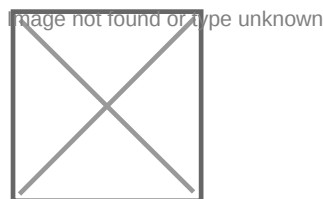
Project:

A Digital value chain Integration Traceability framework for process industries for Circularity and low Emissions by waste reduction and use of secondary raw materials

Process industries are working to find solutions to achieve low emissions and promote circularity through waste reduction and secondary raw materials use. The EU-funded DigInTraCE project will use innovative tracking, sensing and sorting techniques to develop a transparent and interoperable decentralised traceability platform focusing on the pulp and paper and chemicals sectors. The project will also develop dynamically updated DPP schemes supporting certification, quality validation, AI-based decision-making mechanisms for process and life cycle optimisation, and up-cycling, reuse and upgrade technologies for improved secondary raw materials use. DigInTraCE will concentrate on composite wood and furniture, wood and pulp and paper, plastic parts from ICT equipment and the automotive market, and polymers and textiles.

More about DigInTraCE: <https://www.digintrace.eu/>

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Sector:

**Pulp
&
Paper**

 Summary:

This technical article presents the DigInTraCE approach for connecting dynamic Digital Product Passports with Mixed Reality technologies to support transparent and circular value chains. It describes the integration of lifecycle traceability data, blockchain-based services and interactive

visualization tools to provide accessible and actionable product information for industrial stakeholders, consumers and other value-chain actors.

Theme:

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Digital Product Passports can support circular value chains by providing structured information about a product's identity, origin, composition, processing history, environmental performance and end-of-life options. However, circular value chains involve continuous transformations: materials are sorted, upgraded, incorporated into new products, repaired, reused and recycled. Their digital records must therefore evolve together with the physical products and materials.

DigInTraCE addresses this requirement through a **dynamically updated Digital Product Passport**, integrated into the project's Decentralized Traceability Platform. The DPP receives information from sensing and sorting systems, Smart Tags, production systems, mobile applications, environmental assessments and blockchain-based traceability services.

To make this information easier to understand and use, the project has also developed a **Mixed Reality Enabler**, combining a mobile Augmented Reality application with a headset-based Mixed Reality application. These tools allow users to access product information, visualize product composition and traceability, and receive interactive Right-to-Repair guidance.

Together, the DPP and MR Enabler demonstrate how trusted product data can be transformed into accessible and actionable information for industrial actors, consumers, repair professionals, researchers and other value-chain stakeholders.

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