

Digital Product Passport and Digital Twin to Face Recycling Challenges for SMEs

Debora Giorgi¹, Claudia Morea², Chiara Rutigliano³

¹ *University of Florence, Department of Architecture, Via della Mattonaia 8, Florence, Italy*

² *University of Florence, Department of Architecture, Via della Mattonaia 8, Florence, Italy*

³ *University of Florence, Department of Architecture, Via della Mattonaia 8, Florence, Italy*

Abstract

The research investigates the opportunities offered by combining the *Digital Product Passport* and the *Digital Twin* to meet European regulations on traceability and transparency of the entire fashion supply-chain, particularly about the recycling stage of the supply chain. The major brands are starting to use a portfolio of technologies to store and share product information with the different stakeholders. However important critical issues emerged concerning the regulation on data occurrence and privacy, as well as the affordability of these technologies for small and medium-sized companies. The goal of this study is to define the opportunities coming from the use of *Digital Product Passport* with the *Digital Twin* to develop a portfolio of traceability and ecodesign services for SMEs. To achieve this goal a database related to technology and service solutions has been developed. Then, a co-design activity was conducted with different stakeholders to enhance the cross-sectoral opportunities within the textile industry. In conclusion, the study highlights two main directions for integrating ‘digital product passports’ within ‘digital twin’: the integration supports brands in improving their growth sustainability awareness with new user experience; facilitates the eco-design process by providing a traceable, data-driven, overview of the recycled raw-materials.

Keywords: Blockchain, Digital Product Passport, Digital Twin, Ecodesign, Traceability.