

DESIGN AND TECHNOLOGY. PEOPLE, SYSTEMS, ENVIRONMENT

DM 630/Gestione Servizi Integrati - Blockchain for Business Innovation and Environmental Sustainability: An Integrated Approach in Systemic Design

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Context of the research activity	<p>The topic explores the integration of blockchain in circular design and innovation, with the goal of promoting sustainability and social responsibility in business practices.</p> <p>Progetto finanziato dal PNRR a valere sul DM 630/2024 - CUP E14D24002360004</p>
	<p>The field of computer science dedicated to blockchain technology today presents itself as an area undergoing major change, diverging from its original context of cryptocurrencies. In this context, the integration, almost absent today, of blockchain to the world of design and design-driven circular innovation represents a significant opportunity in interdisciplinary research. Blockchain emerges as one of the potential Key Enabling Technologies (KETs), offering strategic and innovative opportunities for decentralized verification of data and methodologies applied particularly in the field of Systemic Design.</p> <p>This topic explores the potential of blockchain applied to environmental data verification and supply chain management, with particular reference to the case study of the company under analysis and funder GSI S.r.l., in order to provide practical and scalable solutions for interested companies. The objective is to investigate how blockchain, with all its IT potential, can be integrated to the world of Design and more generally to the project, in order to generate a methodology easily scalable from micro to macro contexts. It is planned to actively involve Italian territory actors and small local communities in the system development process, in collaboration with the company. In</p>

Objectives

addition, it is intended to apply blockchain technology to circularity, supporting the adoption of new methodologies aimed at protecting people and the environment, which through this tool would become certifiable.

The Ph.D. track will take an interdisciplinary approach to combine blockchain technologies with the discipline and methodologies of systemic design, evaluating matter flows between systems-parts involved for proper analysis of related environmental and social impacts. Beginning with the literature review and analysis of existing similar designs, a development of the methodology will be fostered by merging known design criteria with those of the other domains and disciplines that will be involved: the environment, people, and information technology. Qualitative and quantitative analyses will be conducted to assess the impact of blockchain as a verification and tracking method, exploring new contexts of use and contrasting the centralization and high costs for companies using current verification.

Expected outcomes could include guidelines for integrating blockchain into business processes, with an emphasis on transparency, efficiency and innovation in the context of managing and optimizing the flow of matter between systems, fostering continuous metabolization that reduces the overall carbon footprint. In addition, it is hoped to develop a new methodology in the area of design capable of establishing itself alongside current and recognized major compliance audits.

Skills and competencies for the development of the activity

The candidate should have knowledge of blockchain technology and systemic design methodologies