ACADEMIA ROMÂNĂ

SCOSAAR

Anexa nr.6

ABSTRACT OF THE HABILITATION THESIS

The sociology of algorithmic infrastructures: social trust and applications in education, healthcare and public governance

Field of habilitation: Sociology

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This habilitation thesis synthesizes the scientific, professional and academic achievements I obtained after receiving my doctoral degree and presents the programme through which I intend to develop my career as a researcher and doctoral supervisor in Sociology. Unlike a doctoral dissertation, which pursues a single research problem to its conclusion, the present work attests to the maturity and autonomy of a coherent research trajectory, pursued for more than a decade at the Research Institute for Quality of Life of the Romanian Academy, together with my capacity to lead independent research and to build a team.

The thread that binds all my contributions is the study of social trust and institutional legitimacy. In the sociological tradition I claim, trust is the bond that makes cooperation possible, and its erosion announces crises of legitimacy. The recurring question in my work concerns how this bond is reshaped when institutions move their operation into the digital environment. My thirty and more post-doctoral studies fall into four converging directions.

The first direction, the sociological core of my work, comprises research on the welfare state, social capital, the social economy and institutional legitimacy in post-transition Romanian society. The second direction, the most internationally visible, examines digitalization, artificial intelligence and society, in both education and healthcare, and culminates in two original contributions. The first is the Algorithmic Trust Ledger, a tool for traceability and contestability grounded in immutable logging and in the principle of audit without exposure. The second is the Trust-by-Design framework, which establishes trust as a verifiable property of artificial

intelligence systems rather than a mere psychological effect. The third direction applies the quality-of-life perspective to vulnerable groups, addressing ageing, addictions, violence, migration and mental health. The fourth direction connects the sociological core to governance technologies and to data science literacy, and includes my single-author monographs, among them the Springer volume published in September 2026 on blockchain as an audit layer in European healthcare.

The findings converge on a clear conclusion. The social acceptance of algorithmic infrastructures does not rest on mere technical disclosure, but on procedural fairness, explainability and the genuine possibility of contesting a decision. In education, large language models increase students' satisfaction and self-efficacy without producing robust gains on objective scores. In healthcare, conversational agents support access to information but require clear scope-of-competence signals and escalation routes to human professionals. In public administration, the proposed ledger operationalizes traceability and the effective right of appeal.

The second section of the thesis presents my research programme for the period 2025-2030, which includes the experimental validation of the ledger in a real administrative setting, the extension of comparative studies on generative artificial intelligence in public institutions, the analysis of compliance with European artificial intelligence legislation, and the opening towards new fields such as digital justice and energy. The programme is accompanied by a plan for doctoral supervision and team building, a funding strategy based on competitive grants, and a set of success indicators. Through this programme I intend to consolidate a school of thought in digital sociology at the Romanian Academy and to train a new generation of researchers able to work at the interface between the social sciences, public policy and technology.

Keywords: social trust, social capital, institutional legitimacy, algorithmic infrastructures, artificial intelligence, digital governance, Trust-by-Design, Algorithmic Trust Ledger, quality of life, digital sociology.