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Managing healthcare transformation towards intelligent and ethical ecosystems

Abstract:

Healthcare systems worldwide are undergoing rapid organizational, methodological, and technological transformation towards personalized, preventive, predictive, participative precision (5P) medicine ecosystems. These ecosystems integrate individual health status, genetic and genomic predispositions, and personal social, occupational, environmental, and behavioral contexts. Designing and managing such complex, interdisciplinary, and dynamic ecosystems requires formal and consistent representation of all system components from the perspective of every actor, including the subject of care. As actors from diverse domains possess different education, skills, methodologies, and terminologies, interoperability must progress beyond data sharing to knowledge sharing. To achieve this, each use case must be formally represented both structurally and functionally. The design, implementation, and management of intelligent and ethical ecosystems must therefore adopt a system-theoretical, architecture-centered, ontology-based, and policy-driven approach developed by the author over the past 30 years. This model, now standardized as the ISO 23903 Interoperability and Integration Reference Architecture, is mandated for any specification or project at ISO, CEN, IEEE, OMG, and related bodies addressing multiple domains. It further ensures the detailed management of security, privacy, and trust. This keynote introduces essential standards and methodologies for building 5P medicine ecosystems, supported by practical examples.

Biography

Bernd Blobel is former Head of the German National eHealth Competence Center at the University of Regensburg and has been instrumental in shaping global strategies for health digitalization and electronic health records. With a background spanning Mathematics, Cybernetics, Physics, Medicine, and Informatics, he has authored over 600 scientific publications and several books. He has represented Germany in leading standards organizations such as HL7, ISO, CEN, IEEE, and SNOMED, and continues to contribute to international higher education and interdisciplinary health informatics.