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Project Profile

Secur-e-Health

Preserving privacy in healthcare collaboration

The ITEA project Secur-e-Health integrates new digital ID and privacy-preserving data analysis technologies into a secure system to enable safe, cross-organisational collaboration among medical institutions. By ensuring trust and security, the project aims to enhance data sharing and analysis, ultimately improving healthcare outcomes.

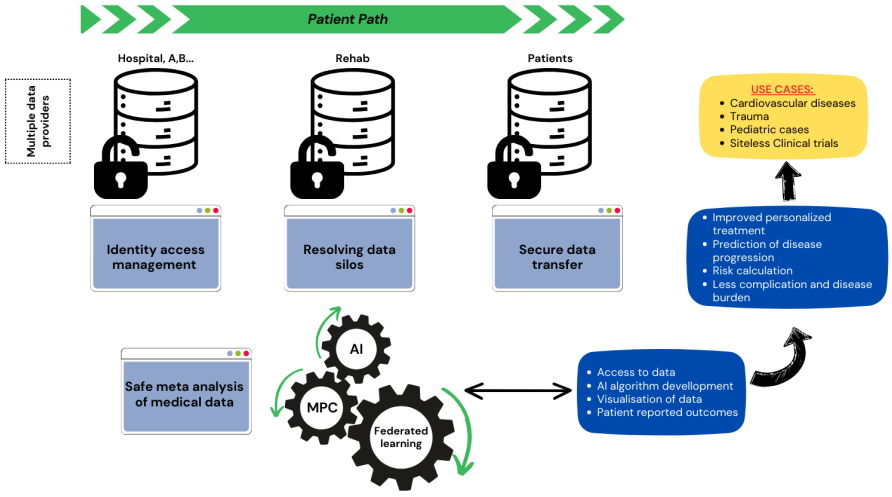
Addressing the challenge

Healthcare costs, which account for 10% of EU GDP, are rising due to comorbidity and aging populations, straining practitioners. Sensitive health data is often siloed and inefficiently used, leading to suboptimal care and task allocation. While new technologies are emerging, there is no widely accepted international infrastructure for digital trust and privacy in healthcare. The Secur-e-Health project aims to address this by establishing a comprehensive security infrastructure and fostering confidence in digital identities. This involves implementing advanced encryption and insight-sharing frameworks to enable secure, collaborative healthcare.

Proposed solutions

Secur-e-Health proposes a shift to a decentralised approach for secure, distributed data analysis, where only encrypted data and model parameters are shared, and privacy is enforced mathematically with transparent, auditable transactions. This will be achieved through a fully integrated technology stack featuring two key innovations:
(1) a new digital ID infrastructure with federated identity over a decentralised, open data architecture, incorporating strong digital identification and authorisation processes to establish trust in medical data requests.
(2) advanced technologies to connect data silos, including multi-party computation and federated learning for evidence-based predictions.

Additionally, breakthrough technologies like multi-party threshold cryptography (MPTC), fully homomorphic encryption (HE), time-dependent Cox models will address security and privacy challenges, facilitating secure, innovative healthcare collaborations.



Schematic of the Secur-e-Health project, which illustrates the secure use of previously separate data sources using privacy-preserving technologies to deliver better care in a variety of settings.

Projected results and impact

The Secur-e-Health project benefits patients, healthcare providers, researchers, and society at large by integrating digital ID tech and privacy-preserving methods, fostering collaboration among medical institutions. It will significantly enhance medical predictive models and data-driven treatments, while also advancing clinical research and overall healthcare quality. The system's flexibility, scalability, and cost-effectiveness surpass existing solutions. It will reduce new client setup time by 80% (a factor of five) and cut privacy-preserving data analysis time by 25%, making it a more efficient and adaptable option for healthcare institutions.

Healthcare Benefits:

- Preventive healthcare: enhances preventive care, potentially preventing 80% of premature heart diseases and strokes.
- Patient outcomes: aims to improve patient outcomes by 15% based on specific treatment metrics.
- Quality of life: boost patient quality of life and reduces treatment costs.

Business impact:

- Market competitiveness: increases competitiveness and market share in the EUR 157 billion healthcare IT market.
- Growth projection: market expected to grow at a 15.6% CAGR until 2026.

Project partners

Secur-e-Health
20050

Project start
November 2021

Project end
December 2025

Project leader
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