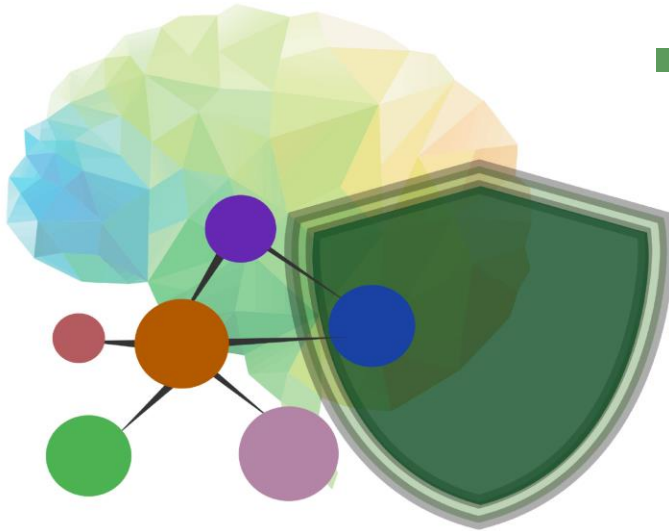


SECURED NEWSLETTER

ISSUE #1 | JULY 2023



SECURED EU Project

WELCOME

Welcome to the first newsletter of the SCALING UP SECURE PROCESSING, ANONYMIZATION AND GENERATION OF HEALTH DATA FOR EU CROSS BORDER COLLABORATIVE RESEARCH AND INNOVATION EU project, formally named also as SECURED.

In SECURED, we offer a one stop collaboration hub (the SECURED Innohub) that can provide a secure and trusted environment for decentralized, cooperative processing of health data through SMPC techniques as well as generation of new, synthetic data and anonymization and anonymization assessment to health data providers and users. [More information can be read here.](#)

OBJECTIVES

Page 2 outlines the ambitious objectives of the project

PILOTS

Page 3 outlines the project's four pilots

NEWS

Page 4 provides the current update of the project from its beginning up until the first semester.

BASIC INFO

Page 5 provides initial information regarding the project, including the members of the Consortium, basic facts of the project and social media platforms.

OBJECTIVES

The overall goals of the SECURED project are scaling up multiparty computation, data anonymization and synthetic data generation in order to increase efficiency and improving security. SECURED will focus on private and unbiased artificial intelligence, data analytics, health-related data, data hubs, and cross-border cooperation. The project will address the limitations that are currently preventing the widespread use of secure multiparty computation and effective anonymization using as pilots health-related use cases.

OBJECTIVE 1

Provide Secure Multiparty Computation (SMPC) schemes for AI based health data analytics tools along with appropriate enhancements to allow them to scale up in realistic health domain scenarios.

OBJECTIVE 2

Provide advanced Anonymization on Health datasets and AI models as well as assess the anonymity level using de-anonymization/re-identification techniques.

OBJECTIVE 3

Provide an adaptable, configurable, and versatile Synthetic-data-generation tools and services for health/medical synthetic data including synthetic images.

OBJECTIVE 4

Creation and Management of the SECURED Privacy-Preserving and Robust Federated-Learning Infrastructure (SECURED Federation Infrastructure) for scalability support of SECURED Health-data-related services and tools. Assure that the created FL models and the anonymized data used for AI training are unbiased.

OBJECTIVE 5

Integration of the SECURED components and infrastructure. Create the SECURED Innohub that can offer a framework of tools and services as well as training and knowledge for a broad range of researchers, EU Data hubs, Innovators and end-users.

OBJECTIVE 6

Evaluate the SECURED solution and associated technologies in terms of legal and ethical aspects. Assess the legal status of cross-country usage of anonymized and synthetic datasets as well as AI models.

OBJECTIVE 7

Validation and Demonstration with four use cases that involve Cross-Border EU health data hubs offering anonymized data and offering privacy preserving data analysis as well as support training and education.

OBJECTIVE 8

Provide a viable dissemination, exploitation and business model of the SECURED solution that will build momentum and support the continuation of a SECURED privacy preserving collaborative health data ecosystem beyond the end of the project.



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PILOTS

The SECURED pilot consortium members have identified four health-related use cases that can highlight the importance and need of the SECURED solution, specifically for **real-time tumor classification**, **telemonitoring for children**, **synthetic data generation for education** and **access to genomic data**.

PILOT 1 - REAL-TIME TUMOR CLASSIFICATION

The first pilot is **Real-Time tumor classification** from the **Erasmus Medical Center in Rotterdam**, Netherlands. EMC expects to use Functional Magnetic Resonance Imaging (fMRI) and Functional UltraSound (fUS) for Brain imaging to generate novel insights related to the correlation of anatomically separate but functionally connected brain regions, confirmations of previous connectivities and discovery of new ones with maximum security and privacy.

PILOT 2 - TELEMONITORING FOR CHILDREN

The second pilot is **telemonitoring for children** from the paediatric **Hospital Niño Jesús in Madrid**. HNJ expects to address the challenges posed by new precision and personalised treatments for oncology, such as the anonymization of local modin terms of prediction of bad evolution in oncology patients using AI to foster the extension of telemedicine among paediatric patients, which can contribute significantly to meet goals 1, 3, 13, and 15 of 2030 Agenda for Sustainable Development.

PILOT 3 - SYNTHETIC-DATA GENERATION FOR EDUCATION

The third pilot is **synthetic-data generation for education** from the **Semmelwies University in Hungary**, SEM expects to transition from using real limited cases in education of medical doctors to easily and finely controllable synthetic cases. SEM will put emphasis on the use and scaling up of synthetic data generation, facilitate movement between countries and statistical data collection while protecting individual privacy, generate large amounts of synthetic data guaranteed to be GDPR compliant,

PILOT 4 - ACCESS TO GENOMIC DATA

The final pilot is **access to genomic data** from the **Josep Carreras Leukaemia Research Institute in Spain**. JCLRI's research group has been collecting and processing genetic data from over one million individuals over the last four years and SECURED's federated learning system will allow researchers to train their models on all existing genetic data without the need of spending months preparing the paperwork to access it while, at the same time, preserving patient privacy, will transform the way genetics research is currently done.



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KICK OFF MEETING

The SECURED project started on January 2023 and a Successful Kick off meeting took place on the 25-26th of January in Amsterdam. The first action points for the project were discussed and the planning for the main project activities were sketched. The EU project officer was also present in the kick-off meeting and provided the consortium with valuable feedback on the Project's activities.



SECOND MEETING - 1ST USER WORKSHOP

The 1st Workshop with the SECURED project users/pilots was held in June 2023 in Barcelona at the Barcelona Supercomputing Center. The Workshop's goal was to discuss the various SECURED project use cases and extract information regarding the user requirements of the SECURED solution.

PROJECT PROGRESS

The project has made a great start towards its current goals. Already a number of deliverables have been successfully submitted and a number of milestones have been met:

- **D1.1 Project Handbook Quality, Risk Management**
- **D1.7 Project Website**
- **D1.2 GDPR and Ethics Project Guidelines**
- **M1 Kick off meeting**
- **M2 SECURED web site and initial dissemination**
- **M3 GDPR and ethics guidelines**

PAPER PUBLICATIONS

Even if the project is still in its early stages, already a number of high quality papers have been published:

- Pej3, Bal3zs, and Gergely Bicz3k. "Quality inference in federated learning with secure aggregation." IEEE Transactions on Big Data (2023).
- Regazzoni, Francesco, Paolo Palmieri, and Apostolos P. Fournaris. "Treating a different kind of patient: curing security weaknesses in digital health systems of the future." In 2023 9th International Workshop on Advances in Sensors and Interfaces (IWASI), pp. 99-102. IEEE, 2023.
- Ratto, Francesco, Luigi Raffo, and Francesca Palumbo. "A multithread AES accelerator for Cyber-Physical Systems." arXiv preprint arXiv:2306.10788 (2023). (Submitted for publication)



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CONSORTIUM

The SECURED project is bringing together 17 partners from 9 different European countries highlighting the expertise to successfully accomplish the needs and goals of the project.

[More info on the consortium here.](#)



PROJECT BASIC INFORMATION

Title: SCALING UP SECURE PROCESSING, ANONYMIZATION AND GENERATION OF HEALTH DATA FOR EU CROSS BORDER COLLABORATIVE RESEARCH AND INNOVATION

Acronym: SECURED

GA No: 101095717

Start: 01 January 2023

End: 31 December 2025

Topic: HORIZON-HLTH-2022-IND-13-02

Type of action: HORIZON-RIA

Project Coordinator: Francesco Regazzoni

Project Coordinator Institute: University of Amsterdam

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