



White Paper:

Controlled safe analysis of personal data

Privacy-by-Design solution from Pryv and Sharemind

Challenges in Medical Data Sharing

Data Collection and Consent

It is hard to maintain compliance with regulations (e.g., HIPAA in the US, GDPR in Europe) upon sharing medical data, especially with data of different geographic origins. Similarly, it is difficult to help the patient to manage and delegate their consent. Turning patients, caregivers and analysts into the stakeholder of the data sharing process requires continuous work to build confidence in the data controller.

Reusing and Sharing Data

Sometimes, the data collector would like to share or-re-use its controlled data. This brings new responsibilities as sharing data for a large number individuals is inherently more risky than for a single person. Modern sharing technology duplicates data which makes the controlling process challenging.

The Pryv + Sharemind: Privacy-by-Design Solution

Pryv Healthcare App Platform

Pryv.io provides a scalable platform for handling sensitive data in a compliant way. Pryv.io's unique data ontology helps app developers build healthcare apps by making consent management segmentation understandable to both patients and data users. By building with Pryv, the app developer can focus on their added values – services, machine learning, artificial intelligence, user-engagement UIs. Pryv ensures that the data is managed well under their full control and it is easier to achieve and maintain compliance with local and international laws and regulations.

Pryv.io features include:

- Technologies to aid ethical and regulatory compliance;
- Contextualization of different patient attributes over time;
- Privacy, consent and ownership management and delegation;
- Logical data storage with a per-user distribution scheme, associating identity to storage locations;
- Security controlled by a single API for accessing data.
- Scalability achieved with data and software distributed as microservices.

Sharemind Application Server for Secure Computing

Sharemind is an application server that processes information without seeing a single value. Apps running on Sharemind collect data in encrypted form and analyse them without removing the protection.

Sharemind computes analysis results directly in an encrypted form and returns them to the analyst who can decrypt them.

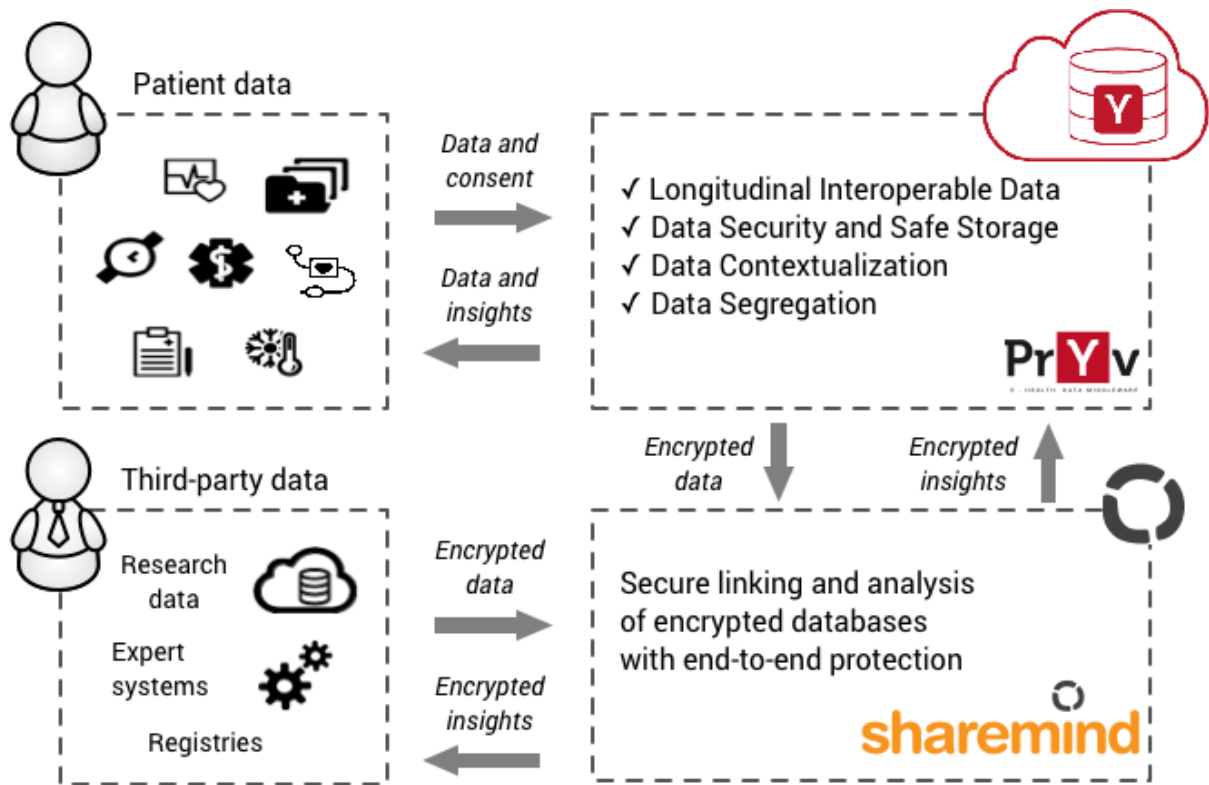
Distributed control is the key value of Sharemind.

No single party can decrypt data or run a query that breaks privacy.

This makes Sharemind perfect for linking and analysing two or more databases without privacy leaks, with complete control over what kind of queries are made.

What We Offer Together

We want to provide the best privacy for the users and the best utility for data collectors. Together, Pryv and Sharemind provide a healthcare data solution that gives users control over their data and secures the analysis and re-use of collected databases.



Use Case 1.

Using phone location data in lifestyle analysis

Processing personal data is a key part in modern healthcare services. For example, a lifestyle monitoring app could collect the location of someone and count the number of times went to a specific location (e.g., to a fitness centre or a food restaurant chain). In an ideal app, the fewer parties learn the count and not the actual locations and trips of the user.

Both Pryv and Cybernetica can bring confidence to individuals with their technical solution.

Pryv brings the proof of data interactions and digital consent management.

Sharemind brings the proof that analytics on data sets are performed without exposing the personal details of the patient.

Use Case 2.

Researching Relations of Nutrition and Diabetes

A company is collecting historical nutritional data using an app alongside with activity data from wearable devices and glycaemia measurements from a special device. The company wants to collaborate with a university for data analysis of how lifestyle and measurements are related to offer the patient better guidances. According to regulations, companies holding personal data (data controllers) can have difficulties in sharing data they manage with third parties, even with the consent of the owner. Even when the third party signs a contract, the data controller can never ensure that a copy of the data is not kept. If data is stolen and publicly exposed through an error of the processor, the company managing the consents will take the most of the reputation damage.

Pryv enforces consent while **Sharemind** protects data from leaks to third-party data analysts processing the data.



About Pryv

Pryv is an independent Swiss SME founded in 2012 with the mission to promote, develop and implement Health IT patient-centric solutions across the healthcare industry.

Pryv develop and sell licenses of a trusted Swiss-made and validated eHealth Data Middleware to empower Pharma, Hospitals/ Clinics, Medtech, Digital Health and Insurances organizations to build compliant, innovative and scalable data-driven eHealth products with confidence while respecting Data Privacy Regulations.

Pryv SA

Innovation Park Building D,
1015 Lausanne
Switzerland
contact@pryv.com

About Sharemind

Sharemind is a product from Cybernetica, an Estonian company with 20 years of experience in developing security solutions for the information society.

Cybernetica's e-Government security solutions are deployed in Europe, Africa and the Americas.

Sharemind is one of the latest breakthroughs from Cybernetica's R&D team, bringing cryptographic research to practice since 1997.

Cybernetica AS / Sharemind

Mäealuse 2/1
Tallinn 12618
Estonia
sharemind@cyber.ee