# Pseudonymization of Health Data

As aging and very expensive programs put more pressure on health and social care systems, the increasing use of electronic health records that promise a reduction of costs and the improvement of the quality of clinical trials brings legitimate concerns about privacy and confidentiality of the stored medical data.

[PIPE – Pseudonymization of Information for Privacy in e-Health]

[Challenges]

- Nowadays, the protection of sensitive data is more important than ever before because data is stored longer and in a centralized way.

- It is the patient's right to demand privacy (e.g. HIPAA, EC Directives, Domestic Acts).

- Disclosure of medical data can create serious problems for the patient.

- It is necessary to assure the availability of data for secondary use, e.g. for research.

[Privacy vs. Transparency]

- Anonymization by removing identifiers allows privacy-enabled secondary use but cannot be reversed.

- Fully encrypting health data with a secret key only known to the patient ensures confidentiality but prevents secondary use of the encrypted data unless explicitly decrypted by the patient thus unconcealing her identity.

- Secondary use without privacy-enhancing measures discloses the link between patients and their health data.

- Pseudonymization severs this link which can still be reestablished under strictly controlled circumstances.
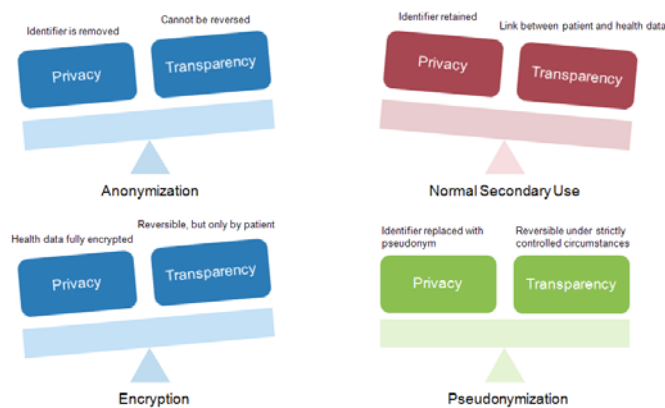

Pseudonymization retains the balance between privacy and transparency and allows privacy-preserving secondary use.

[PIPE Hull Architecture]
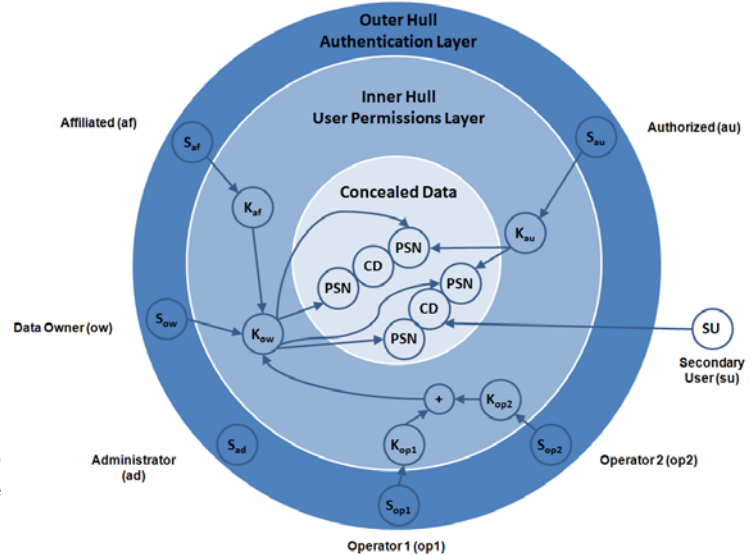
The three-layered hull structure supports different roles including the data owner (patient), affiliated (trusted relative), authorized (trusted health care provider), and secondary user (research institution), as well as administrative roles such as the administrator and operator.

[Pseudonyms]
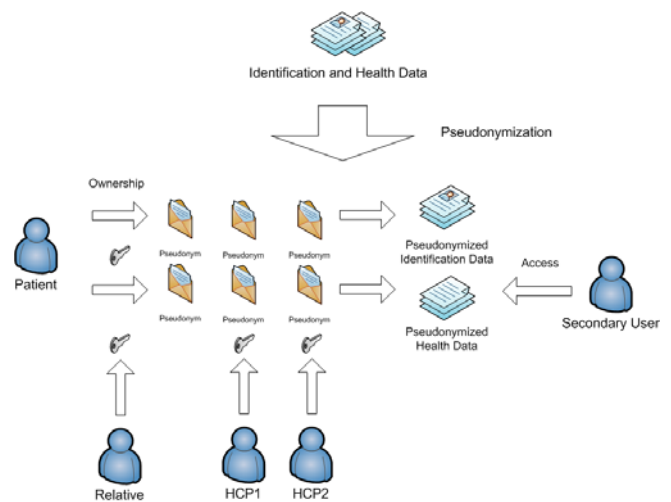
Pseudonymization at the data level allows reconnecting the medical data to their corresponding patients only for explicitly authorized users.

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