

ARTICLE

SELF-SOVEREIGN IDENTITY: UTILIZING ZERO-KNOWLEDGE PROOFS TO MINIMIZE IDENTITY BREACH RISKS

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Centralized data storage models in healthcare create significant security vulnerabilities by aggregating sensitive patient identifiers into singular repositories that act as "honeypots" for malicious actors. In the legacy healthcare economy, patients often lack control over their identifiers, which are managed by third-party brokers and siphoned through "silent" de-identification clauses. This centralization increases the risk of large-scale data breaches and identity theft, as a single point of failure can expose the records of millions. Furthermore, traditional de-identification methods often fail to provide robust security against sophisticated re-identification techniques, undermining patient trust and clinical data integrity.

THE CIRCLE DATASET INTERVENTION: DECENTRALIZED IDENTITY ARCHITECTURE

A primary feature of **Circle Datasets** is the incorporation of **Self-Sovereign Identity (SSI)** and **Zero-Knowledge Proofs (ZKPs)** to provide blockchain-level security for patient data. SSI allows patients to maintain absolute control over their identifiers and health credentials through private keys, effectively decentralizing identity management.

The application of Zero-Knowledge Proofs ensures that only the specific, relevant facets of a patient's data are shared with providers or researchers, without revealing unnecessary sensitive identifiers. This allows for the verification of clinical attributes—such as meeting a specific inclusion criterion—without disclosing the underlying raw data.

- **Minimizing Exposure:** Patients manage their identifiers via private keys, ensuring they only share what is strictly necessary for a specific clinical or research encounter.
- **Mitigating Breach Risk:** By minimizing the risk of identification, the platform protects the data as a "rights-laden emanation of the person" and a fundamental human right.
- **Global Compliance:** This decentralized architecture satisfies global privacy and residency requirements by keeping data at the primary point of care while enabling federated research across the ecosystem.

By replacing centralized "honeypots" with a self-sovereign model, Circle Datasets provide a technical solution to the persistent threat of identity breaches in the modern healthcare data economy.

Download RegenMed white paper "[Bridging The 17 Years Evidence to Practice Gap](#)" to go deeper.

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