

EncryptFlow: End-to-end data encryption and governance

General description

EncryptFlow is an advanced application level, end-to-end data encryption solution designed specifically for secure, fair and auditable data sharing. It empowers data owners with precise control over data access, specifying exactly who can access which data items. Built as a portable encryption layer, EncryptFlow integrates with existing architectures and is optimized to scale—even across large IoT deployments while keeping overheads to minimum.

Features

- Autonomous, low-overhead encryption module
- Compact, unified key management for diverse data sources
- Decryption keys issued exclusively upon verified digital requests
- Automatic creation of key-sharing audit trails
- Auditable support for secure key re-sharing
- Effective integration for both off-chain and on-chain use

Applications

- eHealth data management
- Industrial IoT (IIoT)
- Data marketplace platforms (applicable across verticals)

Principle

Rapid digitalization is driving exponential growth in data collection across all industry verticals, often from vast networks of interconnected devices. However, much of the potential value embedded in this data remains untapped, hindered primarily by concerns over trust and data governance.

EncryptFlow addresses this challenge by encrypting data at the source—whether from sensors, industrial controllers, cloud microservices, or other points of origin—using encryption keys that remain fully controlled by the original data owner. Entities wishing to access specific data (such as healthcare providers, industrial service providers, or data buyers) submit digitally authenticated requests, after which EncryptFlow delivers precise decryption keys for the requested data alone.

Leveraging advanced committing cryptography and secure micro-ledgers, EncryptFlow generates automatic audit trails, ensuring transparency and accountability in every interaction. These committing properties allow for a straightforward integration with Distributed Ledger Technology (DLT). Additionally, EncryptFlow provides robust support for traceable data re-sharing. This functionality enables trusted yet flexible data flows ideal for scenarios like specialist medical consultations or advanced (level-2) industrial maintenance support.

