MyPub

A Decentralized Privacy-Preserving Publishing Platform

分権型のプライバシー保護の出版プラットフォーム

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About me

https://yepengding.github.io/

About MyPub

https://github.com/yepengding/MyPub

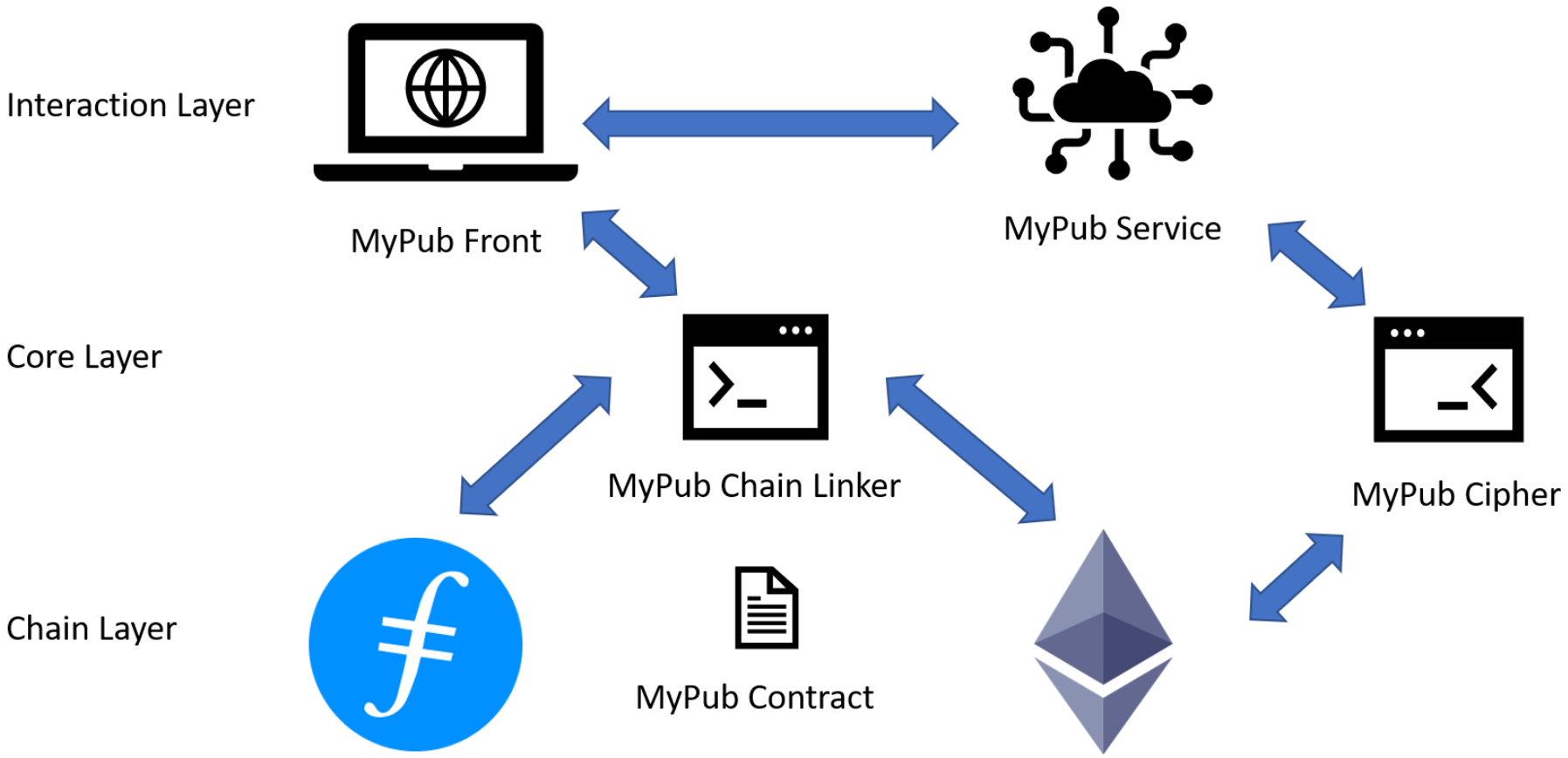
Motivation

- Centralized Publication Issues
  - Paywall for readers,
  - Low flexibility (e.g., pricing, gain sharing) for authors,
  - Huge cost caused by multiple participants,
  - Rights (e.g., copyright, ownership) solidification and transfer,
  - Centralization issues (e.g., single point of failure, data tampering)
- NFT Market Challenges
  - Large and secure data storage,
  - Private data sharing (confidentiality),
  - Right to use without acquiring ownership

Demo

- Full demo (11’)
  - https://youtu.be/BAB9LXLFbzo
- Quick demo (4’) with Japanese audio
  - https://youtu.be/iWzx6xJPVAw

Architecture



Feature 1: Publication as NFT

- Authorityless publication
- Copyright solidification
- Tradable ownership
- Traceable transaction history
- Integrity
- Decentralized Cryptographic Storage

Feature 2: Technically Supported Rights

- Copyright
- Ownership
- Right to use

Feature 3: Technically Supported Rights

- Fairly large data persistence
- Privacy-preservable data storage and sharing
- CIA (Confidentiality + Integrity + Availability)
- Decentralized decryption
- Traceable distribution

Subsystems

- MyPub Front + Chain Linker
  - https://github.com/yepengding/MyPub/tree/main/ui
- MyPub Contract
  - https://github.com/yepengding/MyPub/tree/main/contracts
- MyPub Cipher
  - https://github.com/yepengding/MyPubEncryptor
  - https://github.com/yepengding/MyPubDecryptor
- MyPub Service
  - https://github.com/yepengding/MyPubService
- IPFS Server API Simulator
  - https://github.com/yepengding/IPFSServerAPISimulator

MyPub Front

- User-centric frontend application.
- Providing friendly graphical user interface to interact with MyPub system.
- Tech Stack (JavaScript)
  - React
  - Redux
  - react-bulma-components
  - styled-components
  - Other scaffolds (e.g., Node.js, webpack, …)

MyPub Contract

- On-chain smart contracts.
- Providing support for NFT-associated functionalities.
- Tech Stack (Solidity)
  - Truffle Suite
  - OpenZeppelin

MyPub Chain Linker

- Connector between MyPub Front and MyPub Contract.
- Encapsulating blockchain operations and providing high-level APIs for MyPub Front.
- Tech Stack (JavaScript)
  - Ethers.js
  - IPFS Server API Simulator

IPFS Server API Simulator

- A simple IPFS server.
- Simulating common APIs of an IPFS server for a quick start to interact with an IPFS server.
- Tech Stack (Java)
  - Spring Boot
  - Spring Web
  - Thymeleaf
  - Spring Data JPA
  - H2 Database
  - Other utils (Guava, Swagger, …)

MyPub Cipher

- Cipher suite.
- Providing encryption and decryption support for publications.
- Tech Stack (Rust)
  - age
  - clap
  - ethers
  - tokio
  - Other utils (k256, hex-literal, …)

MyPub Service

- Backend web application.
- Providing computing support for application-level services.
- Tech Stack (Java)
  - Spring Boot
  - Spring Web
  - Thymeleaf
  - Spring Data JPA
  - H2 Database
- Extensible Tech Stack
  - Database: SQL (e.g., MySQL) + NoSQL (e.g., MongoDB)
  - Microservice framework (e.g., Spring Cloud, …)
  - Middleware (e.g., RabbitMQ, WebSocket, …)
  - Containerization (e.g., Kubernetes, Docker, …)
  - CI/CD (e.g., Jenkins, …)

Business Model

- Extending MyPub Service functionalities
- Initial Coin Offering (PUB Coin)

Academic Extension

- A privacy-preserving data sharing framework for public blockchains.

Thank You!