Open Science Platform Artifact

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1 Open Science Platform

1.1 Overview

The Open Science platform aims to empower researchers and members of the scientific community by providing a secure, transparent, and tamper-evident environment for sharing project artifacts and data. Building on this objective, our platform leverages cutting-edge technologies to ensure the integrity and reliability of shared information.

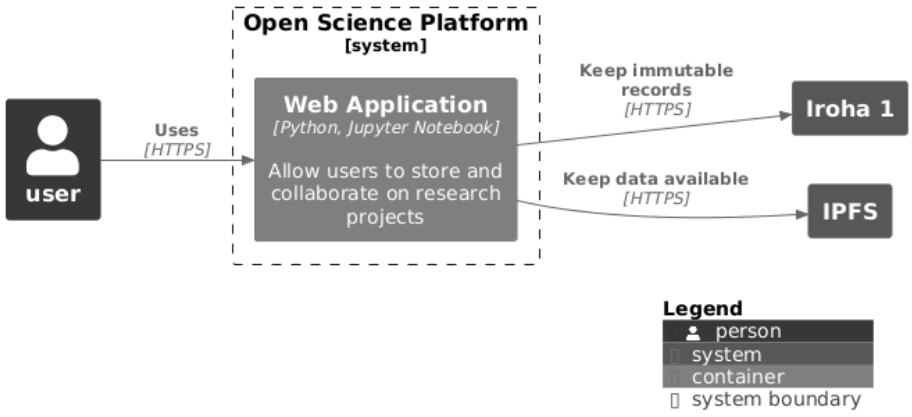

Figure 1: System diagram for the Open Science Platform.

1.2 Technology Stack

The Open Science platform is built upon a robust technical foundation, comprising:

- Hyperledger Iroha v1 Blockchain: Serves as the core infrastructure for account management and transaction recording, ensuring secure and transparent data exchange.
- IPFS (InterPlanetary File System): Provides decentralized storage for project artifacts and metadata, guaranteeing tamper-proof and persistent access to shared information.
- Apache Tika: Utilized for extracting file metadata, enhancing the platform's ability to manage and describe artifact content.
- Woosh: For efficient indexing and search capabilities for artifacts stored on the platform.
- Jupyter Notebooks in Python: The front-end interface of the platform leverages Jupyter Notebooks in Python to provide automate and display the execution steps of the activities in the platform.

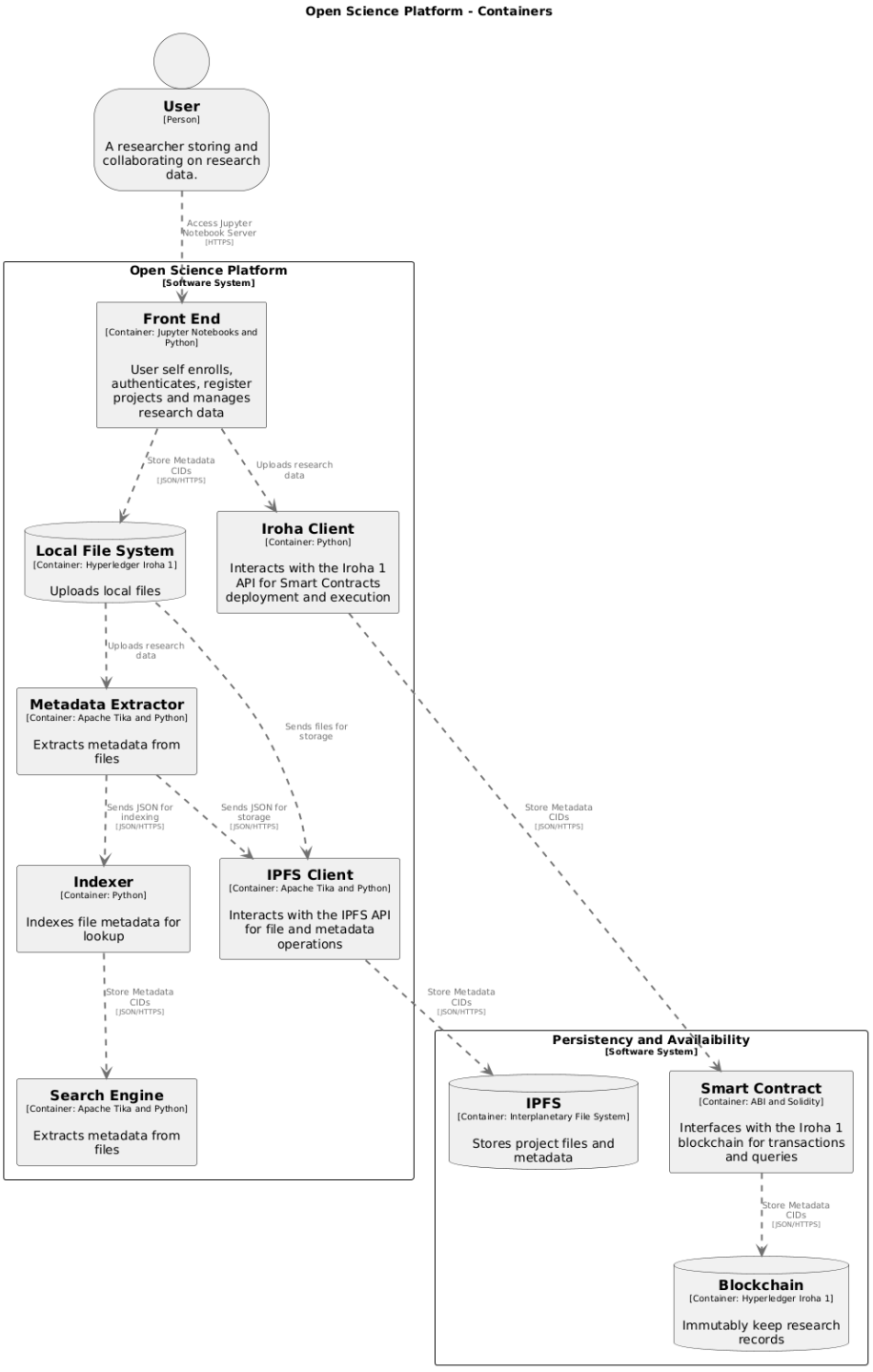

Figure 2: System diagram for the Open Science Platform.

1.3 Operations

Entity	Attribute	Description
`foaf:Person`	foaf:name	The name of the person.
	foaf:mbox	The email address of the person.
`foaf:holdsAccount`	schema:identifier	The account name of the person in the blockchain.
	schema:roleName	The role of the person in the platform.
	schema:publicKey	The cryptographic public key of the account in the blockchain.
`foaf:Organization`	foaf:name	The name of the organization the person belongs to.
`schema:identifier`	propertyID	The type of identifier is ORCID (Open Researcher and Contributor ID).
	value	The actual ORCID value for the person.

1.4 Project Account

Entity	Attribute	Description
`foaf:Person`	foaf:name	The name of the person.
	foaf:mbox	The email address of the person.
	foaf:holdsAccount	Links the person to an account.
`foaf:Organization`	foaf:name	The name of the organization.
	foaf:location	The physical or digital location of the organization.
`schema:identifier`	propertyID	The type of identifier (e.g., ORCID).
	value	The actual identifier value.

2 Entity-Relationship Diagram

The diagram below represents the relationships between various entities extracted from the given JSON-LD data. The main entities in the diagram include:

- **foaf:Person** – Represents an individual, identified by attributes such as name, email, and affiliation.
- **foaf:Organization** – Represents an institution or organization to which a person is affiliated.
- **foaf:holdsAccount** – Represents an individual's digital account, containing an identifier, role, and public key.
- **schema:identifier** – Represents a unique identifier (such as an ORCID) assigned to a person.

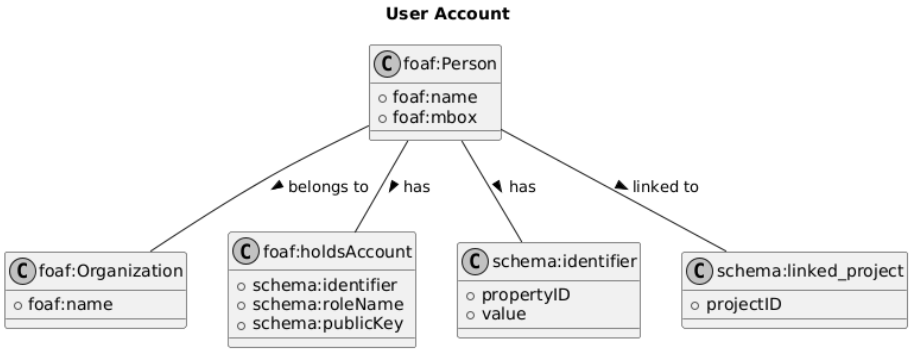

Figure 3: Entity-Relationship diagram for the user account.

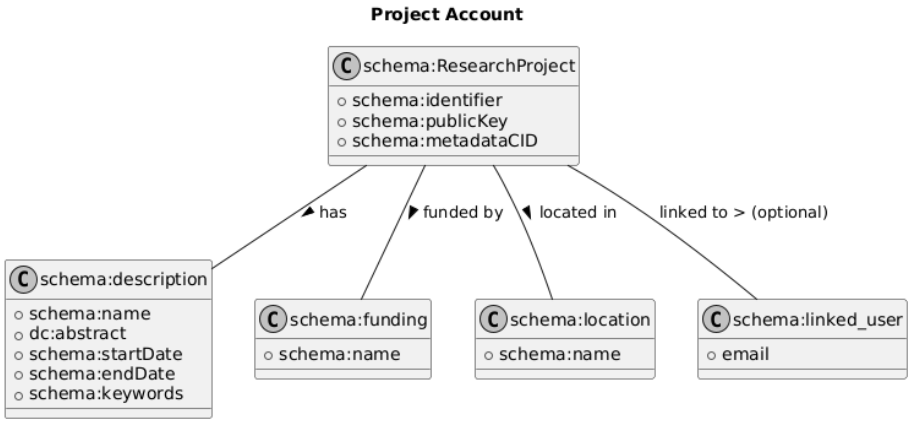

Figure 4: Entity-Relationship diagram for the project account.