DocSecure

Secure Your Documents, Empower Your Bids

- **Problem Statement Title**:
  Work Order Management DApp for a Government College using Sign Protocol and Avail

- **Team Name**: Skill Issue

- **Team Members**:
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PROBLEM

- Government colleges ***face difficulties in managing work orders and procurement*** with current systems lacking integration and security.

- Traditional systems fail to ensure document authenticity and transparency, increasing the risk of fraud and inefficiencies.

- There is a critical need for a secure, transparent system that handles work orders, certificates, and auctions effectively.

PROPOSED SOLUTION

DocSecure aims to solve these problems by focusing on the following aspects-

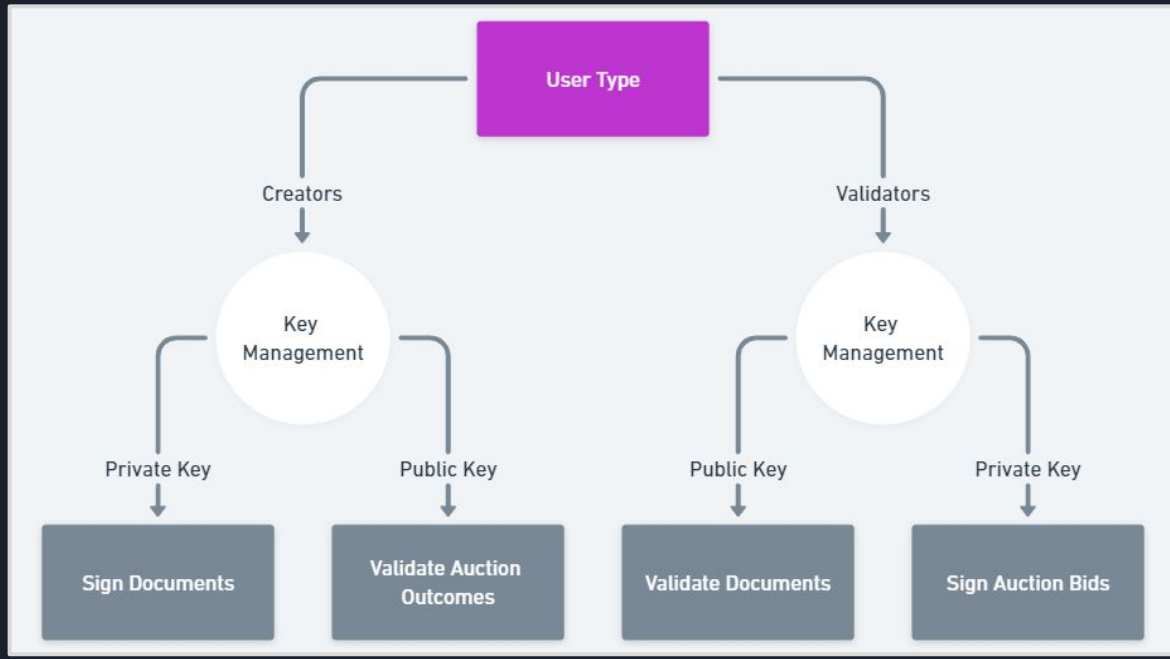
- Utilizes blockchain and Sign Protocol for tamper-proof verification and integrity of work orders and certificates.
- Provides a decentralized auction platform using Avail's P2P network for secure and scalable item procurement.
- Has an intuitive interface with seamless integration and a comprehensive audit trail for compliance.

THE APPLICATION

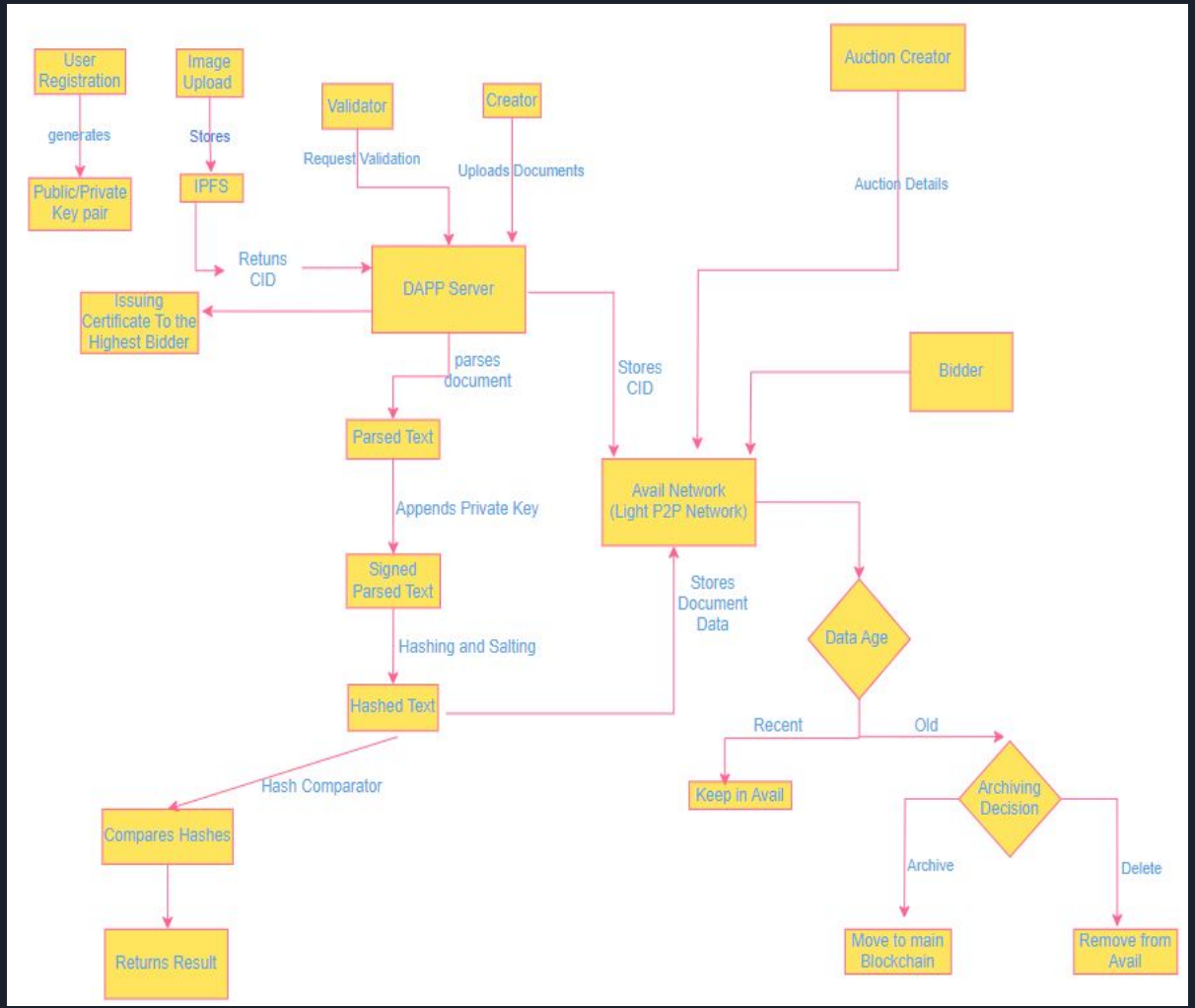
The Decentralized applications caters to two type of users namely the creators and the validators

a)Creators: Responsible for creating and signing documents, including auction listings.

b)Validators: Responsible for validating documents and overseeing auction processes.



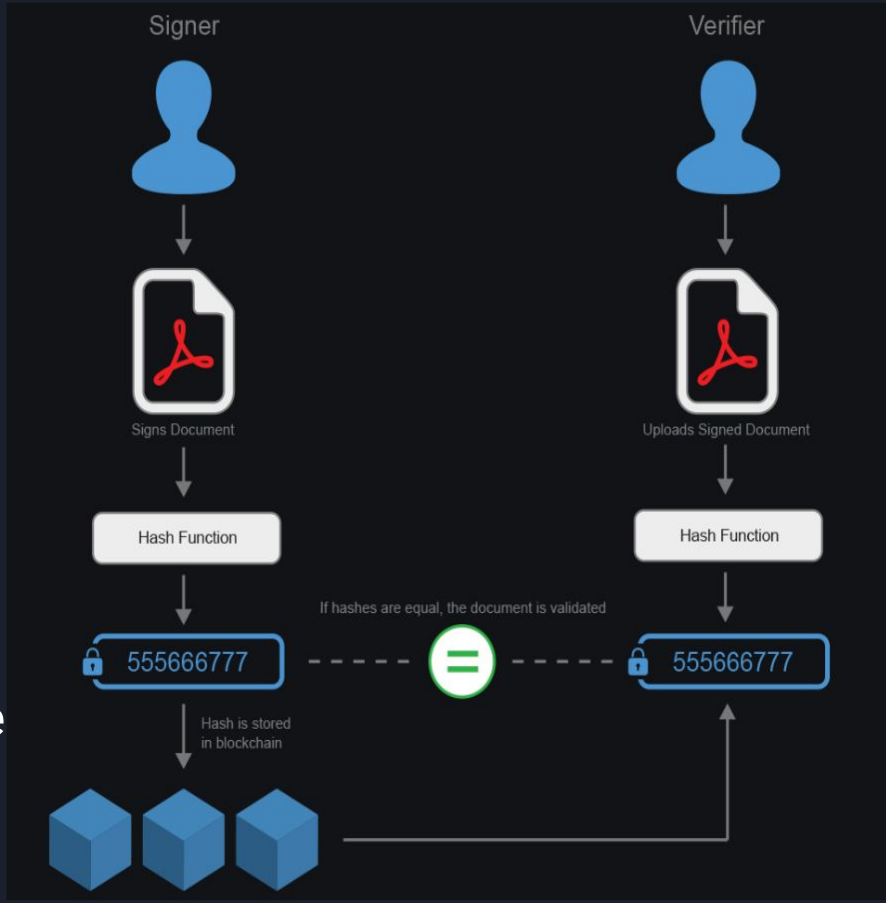
Work Order Management DApp Architecture



DOCUMENT HANDLING

- DocSecure offers various functionalities such as-

  - ***Document Upload:*** Document is uploaded parsed and signed using creator's private key. Document is hashed and stored over the blockchain.
  - ***Document Validation:*** The same process is repeated, and the generated hash is compared with the stored hash to determine the document's authenticity.



AUCTION SYSTEM

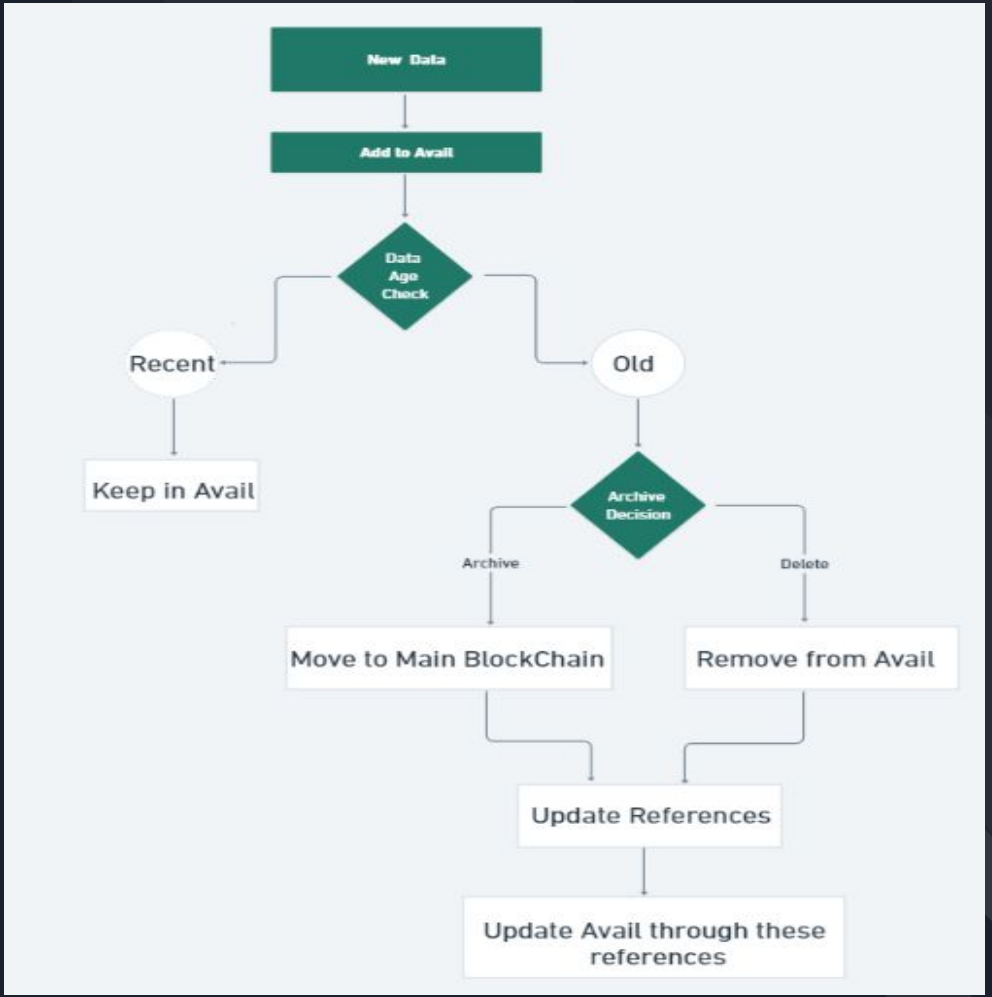
- Allows government colleges to transparently and securely procure services or equipment.
- Utilizing Avail's light client P2P network, the system ensures that all auction data, including bids and outcomes, is decentralized, tamper-proof, and available in real-time.
- The auction process is automated, enabling authorized users to create auctions, invite vendors, and evaluate bids within the DApp.
- Key features include fraud-proof mechanisms, scalability for handling multiple auctions simultaneously, and seamless integration with the work order management system, ensuring a fair and efficient procurement process.

BLOCKCHAIN AND IPFS SYSTEM

- Storing large files directly on blockchains is inefficient due to data bloat, storage requirements, and operational costs. IPFS uses cryptographic hashes. Its advantages are:

1. Decentralized Storage: IPFS provides decentralized storage for blockchain data, eliminating single points of failure.
2. Content Addressing: Files are identified by cryptographic hashes, ensuring immutable data integrity.
3. Reduced Redundancy: IPFS reduces data redundancy, saving blockchain storage space.
4. Off-Chain Storage: IPFS handles off-chain data, preserving integrity and decentralization.
5. Immutable Data: IPFS stores data immutably, aligning with blockchain's principles

Data Management Flow in Avail and BlockChain



TECH STACK

- ReactJS
- Tailwind CSS
- Nodejs
- Solidity
- Hardhat
- Pdf-parsing
- Automated testing