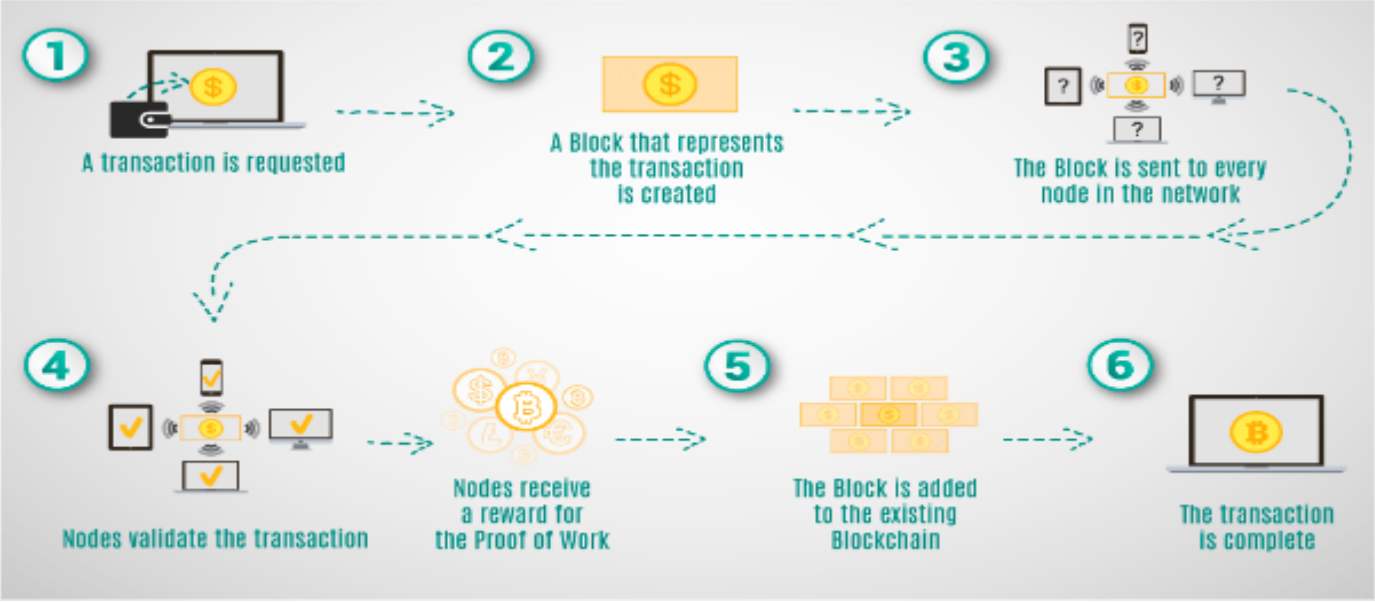
Project Design Phase-II

Technology Stack (Architecture & Stack)

Date	19 Oct 2023
Project Name	Digital Asset Management On The Ethereum Blockchain

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2



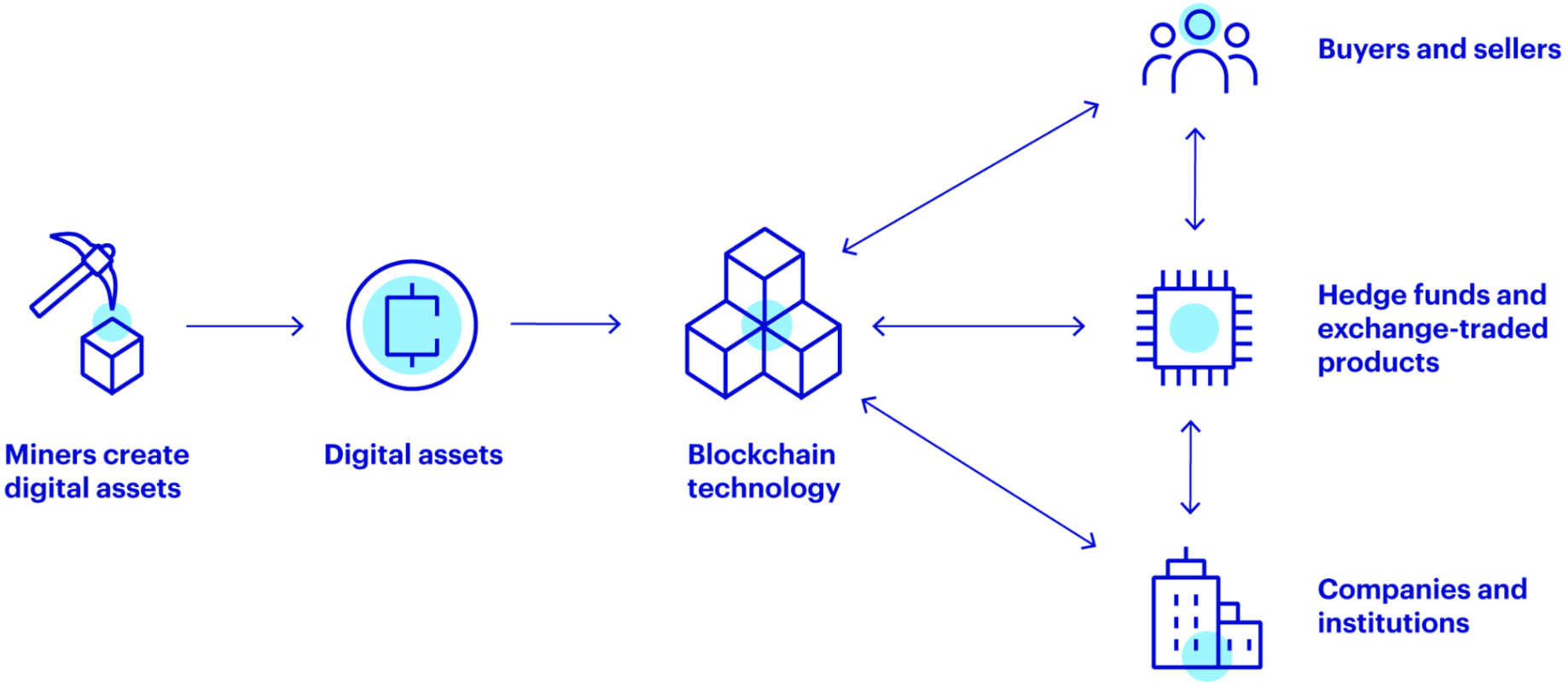

Buyers and sellers
Hedge funds and exchange-traded products
Companies and institutions
Miners create digital assets
Digital assets
Blockchain technology

Table-1: Components & Technologies:

S No	Component	Description	Technology
1.	User Registration	Allows users to register within the system and specify their roles and permissions. Utilizes a user-friendly React.js interface for registration.	React.js: A user-friendly web framework for building the registration interface. Solidity: Smart contract language for managing user roles and permissions on the blockchain.
2.	Resource Catalog	Enables supply chain stakeholders to catalog and manage data set ethereum, adding comprehensive metadata such as origin, processing, and transportation details.	Utilizes a user-friendly React.js interface for cataloging and indexing.React.js for the user interface, Solidity for smart contracts, and IPFS for decentralized storage.
3.	Resource Tracking	Allows consumers to search for data set ethereum, verify their authenticity, and trace their journey in real-time.	Offers a user-friendly React.js interface for tracking and traceability. Integrates with the blockchain, particularly Ethereum, for transparent cataloging and real-time updates.
4.	User Dashboard	The user dashboard provides a user-friendly interface for consumers to manage their interactions with the system.	User Interface: Develops a user-friendly dashboard using React.js for a seamless user experience.
5.	Security and Permissions	This component manages access control to ensure that the right users have the appropriate permissions within the system.	Utilizes Solidity smart contracts for enforcing access control. Provides a React.js user interface for user authentication, and may integrate with appropriate security mechanisms.

6.	Blockchain Integration	Forms the core of the system, integrating with blockchain technology (e.g., Ethereum). Involves the development and deployment of smart contracts using Solidity.	Interfaces with relevant blockchain wallet services (e.g., Metamask) to ensure secure and seamless interactions.

Table-2: Application Characteristics:

S No	Characteristics	Description	Technology
1.	Decentralization	The system operates on a decentralized blockchain network, eliminating the need for a central authority. This ensures data integrity and builds trust among supply chain stakeholders.	Ethereum blockchain for decentralization, Solidity smart contracts.
2.	Immutability	Once data is recorded on the blockchain, it becomes immutable, meaning it cannot be altered or deleted. This ensures the integrity and reliability of the recorded information.	Blockchain technology Ethereum for data immutability.
3.	Transparency	The system offers transparent access to food product information, supply chain transactions, and origin details. This enhances accountability and fosters user confidence.	Blockchain for transparent ledger, React.js for user interface.
4.	Security	The system prioritizes data security by implementing encryption, access control, and decentralized storage.	Data encryption, blockchain for access control, Solidity smart contracts.
5.	Data Privacy	Data privacy is a paramount concern, and the system implements stringent measures to safeguard sensitive user and ethereum information from unauthorized access.	Data encryption, access control, and blockchain for privacy.