Professional Certificate in AI-Driven Pharmaceutical Supply Chain Management

Blockchain and Supply Chain Visibility

AI (Artificial Intelligence): A branch of computer science that focuses on creating intelligent machines that can think and learn like humans. In the context of pharmaceutical supply chain management, AI can be used to optimize operations, predict demand, and detect fraud.

Blockchain: A decentralized, digital ledger that records transactions across a network of computers. Each block in the chain contains a record of multiple transactions, and once data is added to the block, it cannot be altered or deleted. Blockchain can be used to increase supply chain visibility and traceability in the pharmaceutical industry.

Consortium Blockchain: A type of blockchain where a group of organizations or individuals come together to form a network and share data. In the pharmaceutical industry, a consortium blockchain can be used to share supply chain data between manufacturers, distributors, and retailers.

Cryptography: The practice of securing communication and data in the presence of adversaries. Cryptography is used to secure transactions and data on a blockchain.

Decentralization: The process of distributing power, authority, or data away from a central location or authority. In the context of blockchain, decentralization refers to the distribution of data across a network of computers, rather than a central server.

Demand Forecasting: The process of predicting the demand for a product or service. In the pharmaceutical industry, demand forecasting can be used to optimize inventory management and reduce waste.

Decentralized Applications (DApps): Applications that run on a decentralized network, such as a blockchain. DApps are resistant to censorship and control by a single entity.

Distributed Ledger Technology (DLT): A type of database that is distributed across a network of computers. Blockchain is a type of DLT.

Ethereum: An open-source, blockchain-based platform that enables the creation of decentralized applications. Ethereum is the most commonly used platform for building blockchain-based supply chain solutions.

Hash Function: A mathematical function that takes an input (or 'message') and returns a fixed-size string of characters, which is called the 'hash'. Hash functions are used to secure transactions and data on a blockchain.

Hyperledger Fabric: An open-source blockchain platform developed by the Linux Foundation. Hyperledger Fabric is commonly used for building supply chain solutions in the pharmaceutical industry.

Immutable: A characteristic of data on a blockchain that cannot be altered or deleted.

Internet of Things (IoT): A network of physical devices, vehicles, home appliances, and other items embedded with electronics, software, sensors, and connectivity which enables these objects to connect and exchange data. IoT can be used to increase visibility and traceability in the pharmaceutical supply chain.

Machine Learning (ML): A type of artificial intelligence that allows a system to learn and improve from data without being explicitly programmed. In the context of pharmaceutical supply chain management, ML can be used to predict demand, detect fraud, and optimize operations.

Private Blockchain: A type of blockchain that is only accessible to a specific group of individuals or organizations. Private blockchains are often used in supply chain management to share data between partners.

Public Blockchain: A type of blockchain that is open to anyone. Public blockchains are often used for cryptocurrencies, but can also be used for supply chain management.

QR Code: A type of barcode that can be read by a camera or smartphone. QR codes can be used to increase visibility and traceability in the pharmaceutical supply chain.

RFID (Radio-Frequency Identification): A technology that uses radio waves to communicate between a reader and a tag. RFID can be used to track and trace products in the pharmaceutical supply chain.

Smart Contracts: Self-executing contracts with the terms of the agreement written directly into code. Smart contracts can be used to automate processes and increase efficiency in the pharmaceutical supply chain.

Supply Chain Visibility: The ability to track and trace products and data throughout the supply chain. Supply chain visibility can be increased through the use of technologies such as blockchain, IoT, and RFID.

Token: A digital asset that represents a particular fungible and tradable asset or a utility. Tokens can be used to facilitate transactions on a blockchain.

Traceability: The ability to track the movement of products throughout the supply chain. Traceability can be increased through the use of technologies such as blockchain, IoT, and RFID.

Transparency: The ability to access and view data throughout the supply chain. Transparency can be increased through the use of technologies such as blockchain, IoT, and RFID.

Utility Token: A type of token that provides access to a particular product or service. Utility tokens are often used in the context of decentralized applications.

Visibility Network: A network of partners and technologies that work together to increase visibility and traceability in the supply chain. A visibility network may include technologies such as blockchain, IoT, RFID, and smart contracts.

Zero-Knowledge Proof (ZKP): A cryptographic method that allows one party to prove to another that

they know a value, without conveying any information apart from the fact that they know the value. ZKP can be used to secure transactions and data on a blockchain.

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