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(57) Abstract :

The invention discloses a decentralized model for secure supply chain data management integrating IoT Data Capture Module (101), Cryptographic Identity Manager (102), Blockchain Ledger (103), Smart Contract Engine (104), Off-Chain Storage System (105), and Stakeholder Access Interface (106). This framework ensures immutable records, transparent transactions, cryptographic participant authentication, automated compliance enforcement, and scalable hybrid storage, thereby enhancing trust, reducing fraud, and improving operational efficiency across global supply chain ecosystems.

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