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(57) Abstract :

Digital data certified by a reputable organization are valuable digital data that can be stored or shared on the internet. However, the problems are to ensure the security and the reliability of stored and shared data, and to ensure that the data sharing process is safe, transparent, and fair. Therefore, we propose data production, data storage, and data sharing schemas. In the data production schema, we deploy a group signature scheme for a group of reputable organizations that provide the same type of service, an organization in the group generates a valuable digital data from raw data sent from a data owner and then issues a certificate on the cipher text of this digital data. In the data storage schema, the data owner uploads his/her data to the public Inter-Planetary File System (IPFS)network and then stores the access address of the stored data. In the data sharing schema, everyone on the system could verify the reliability of shared data before sending a data sharing request to the data owner. The data sharing process is performed via a smart contract, and involved parties have to escrow to encourage honesty. The schemas of data storing and sharing guarantee the security properties including confidentiality, integrity, privacy, non-repudiation.

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