Kryptosafe: managing and trading data sets using blockchain and IPFS

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What is Kryptosafe?

- Dataset trading system
- DLT & IPFS
- SWE: ABCDE method
- GDPR compliant
- NFT
Enabling technologies: IPFS

➢ Another platform to store big data
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➢ A technology running on a P2P network that allows its members to store and distribute information in a completely decentralized way
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➢ A technology running on a P2P network that allows its members to store and distribute information in a completely decentralized way
➢ It uses:
  - a distributed hash table technology
  - Merkle Directed Acyclic Graph data structure
  - content addressing
NFTs VS traditional TOKEN

Traditional Token:
 ➢ fungible assets
 ➢ not distinguishable
 ➢ they can be exchanged for other assets

Non-Fungible Token:
 ➢ unique
 ➢ non-interchangeable
Ethereum Standard:
- ERC-721: not-duplicable
- ERC-1155: duplicable

Combining NFTs with SCs will give users the flexibility to unlock a wide range of use cases.

Contract structures and complex agreements can be created.
ACTORS

➢ **Owner**: who owns the data and decides to sell it. S/He owns the relative NFT token and the password to be able to generate the decryption key

➢ **Buyer**: who is connected to the platform, can view the accessible contents of the datasets, can make queries and can purchase data

➢ **Data Protection Officer**: who has the responsibility to protect the data from unwanted alterations and to guarantee access

➢ **Data Manager**: who is responsible for the type of content displayed depending on the type of user connected, allows a search on datasets and the execution of queries
<table>
<thead>
<tr>
<th>Owner</th>
<th>Buyer</th>
</tr>
</thead>
<tbody>
<tr>
<td>➢ Dataset encryption</td>
<td>➢ Datasets public visualization</td>
</tr>
<tr>
<td>➢ Personal datasets visualization</td>
<td>➢ Query datasets</td>
</tr>
<tr>
<td>➢ Dataset tokenization</td>
<td>➢ Dataset purchase</td>
</tr>
<tr>
<td>➢ Sale of datasets</td>
<td>➢ Dataset decryption</td>
</tr>
</tbody>
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Architecture

4 modules:

- **Client- interface**: user-side functionalities
- **Data persistence**: store data
- **Smart Contracts**: allows the creation and management of the NFTs
- **Server**: displays datasets according to the user
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