

## **Algorithm 1 : Data sharing and storage**

1. Individual exchanges DID's with the Keeper - a node running keeper contracts/set of smart contracts ,to establish a connection with them. Keeper maintains a registry of asset ownership and assigns data credential (creddata) to the Individual agent, with the (pkaes) as an attribute of the credential.
2. The Keeper uses the public key of the CKKS scheme (pkf he) to perform fully homomorphic encryption on the data of the individual. Then, Individual uses the public key of the AES encryption scheme (pkaes) to encrypt the data.
3. The data can stay on the premises and its location is hidden by parity EVM technology where secret store will store the encrypted URL of the data assets such that no specific secret store is able to decrypt the entire URL alone.
- 4.The keeper and parity EVM keeps the data safe by encrypting it and hiding its location respectively.
- 5.The datatoken gets published with help of aquarius metadata store where DDO's - Metadata with ID and signatures is sent to the metadata store (aquarius) in the Marketplace
- 6.The Marketplace issues the data token location URL (address) to the Individual agent, with the (pkaes) as an attribute of the credential as a proof of storage.
7. Data consumers apply filters to search for relevant data.
- 8.The client does not get data location location directly, instead the data providers in the marketplace will issue a service URL where consumers can request and access the data,
- 9.This service URL is also provided to the marketplace as part of meta data.
- 10.Brizo which serves as a data access control proxy of the data provider is responsible for accepting these data service requests , enforcing service level agreements and granting access to the data and verifying payments.
- 11.The consumer fulfills the requirements like paying the price for the service( access to the data token) and signs the service level agreement.
12. Brizo verifies the paid price via the keeper contracts.
13. The payments are held in escrow account by keeper contracts until verified and not transferred to the data provider.

14. Once the payment is received in the escrow account and all the checks are completed, the Brizo streams the data to the data consumers for download and hence neither the location of actual data nor the location of data token is shared.

15. Data consumers download the data token and finally Brizo claims the payment from the escrow account by the Ocean.

## **FLOWCHARTS**

