SWARM AS A PLATFORM FOR SELF SOVEREIGN DIGITAL SOCIETY

For a long time, the data/digital sector has been facing a lot of challenges. Some of which are related to the right to privacy, fair data, digital freedom and a self-sovereign digital society. We can point to the centralized distribution of data as the major cause of these violations.

With the emergence of web3 and decentralized economy, we have seen an alternative approach to how our data are handled, shared and controlled.

The first peer-to-peer file distribution protocol, IPFS, was created in 2015. IPFS (InterPlanetary File System) is a peer-to-peer, version controlled, content-addressed file system. Unlike the current and popular way of data exchange across the internet (HTTP), data is requested and stored using hash on IPFS. The mode of data transmission on IPFS eliminates the use of IP addresses and a centralized client-server protocol. This allows you to share and access data without fear of censorship.

Sure, IPFS is a decentralized file-sharing system that facilitates seamless, secure, and low latency data distribution. Unlike HTTP, we can use it to share extensive peer-to-peer files over the internet. But it comes with its share of limitations.

IPFS consumes a lot of bandwidth, which is not appreciated by metered internet users.

Also, IPFS is currently not adopted by the masses. It is used by only Tech enthusiasts who set up their node, which leads to the shortage of nodes on the network.

With IPFS, it is impossible to verify the integrity of the data that it stores and the only way to ensure your data remains on the node is to pin it, which is done by paying centralized gateway providers to pin your data. This defeats the purpose of using a decentralized storage provider.

The most important point to note is that data shared on IPFS are public. Once you share your data on IPFS, it remains public and hard to remove. This undermines the goal of data privacy and a self-sovereign digital society.

To solve this limitation and provide a better self-sovereign digital society - SWARM was created.

Swarm is a system of peer-to-peer networked nodes that create decentralised storage. This system is economically self-sustaining because of a built-in incentive system that is enforced through smart contracts on the Ethereum blockchain and powered by the BZZ token.

Unlike IPFS, pinning is done on the chain and registered on the blockchain with the DISC (Distributed Immutable Store of Chunks).

The idea behind SWARM shows that a self-sovereign digital society is possible. Viktor Tron contextualised Swarm as part of Ethereum's world computer and “holy trinity” during We are Million talk. He said, “It extends the blockchain as the world’s data storage and communication layer, or “the OS of the Web and its kernel”.

Swarm provides a framework on which other fair data, privacy protection and digital freedom projects can build upon. It provides continuity of service and resilience against network outages or targeted denial of service attacks.

On swarm, routing a message is achieved by recursively forwarding it closer to its destination, and then passing back a response along the same route. This creates ambiguity and enables the originator of the request to preserve their privacy, thus facilitating permissionless publishing and private browsing.

Swarm has a pattern of operation that ensures the availability of content in the network and re-uploads chunks when they are missing.

Though Swarm is still in its development stage, it is too early to give a final verdict. But there are some important improvements to be made:

Swarm is still very difficult to install, especially for Windows OS users. For mass adoption, a user-friendly interface is needed for developers to build and users to explore. A kind of environment that allows anyone to use Swarm once you have a smart device.

Uploading extensive files with a deep file path, i.e. folders inside folders, most time returns errors and cannot upload.

Another area of concern is the cost of purchasing stamps. Though the fee on swarm is minimal now, is there any assurance that the fee won't increase over time?

Well, Swarm has shown a good sign. Hopefully, this might be the real gateway to a Self-sovereign Digital society.