An IPFS-Blockchain Interface (Topic 10)

Aim/problem/goal

LifeBlock - based on Blockchain - technology will enable the management and organisation of data from various information sources with traceability, provenance, tokenization and application of FAIR principles. LifeBlock through its developing interfaces will allow the connection with infrastructures (e.g. GBIF, Plazi) participating in the BiCIKL project. The objective is to provide a unique platform to the community which addresses the provision of information from different information sources that can be enriched and extended in the future. The use of blockchain technology guarantees the performance of the afore-mentioned operations, as well as its strict compliance with FAIR principles. The inclusion of non-fungible tokenization (NFT) elements will allow information to be managed in different ways, including the generation of unique datasets that can be licensed and identified.

Method

Exchange of information using blockchain and InterPlanetary File System (IPFS) technologies with the infrastructures present at the hackathon: GBIF, Naturalis/DiSSCo, PlutoF, Plazi, OpenBioDiv.

Results

LifeBlock's data provenance and traceability system was refined by better understanding the characteristics of each of the data sources and identifying use cases of this technology in the themes of other hackathon teams. For DiSSCo (see also Topic 6), the LifeWatch ERIC team explored (1) The generation of traceability mechanisms on the events of changes in object information contained in its database. (2) The provision of traceability elements for images and storage space using the IPFS infrastructure is another identified user case. (3) Image comparison based on hashes for copy identification and to implement storage saving strategies. (4) Tokenization of digital objects to evaluate the possibility of introducing an NFT-based “micropayment” system for the environmental impact of the objects. For PlutoF the team identified potential use cases on the uploading, management and use of images and the traceability and storage of PlutoF curated data.

Conclusion

Compliance with FAIR principles and guaranteed mass storage of information are the main attributes that LifeBlock will be able to contribute to the community. Additionally, the encapsulation of information in a tokenized system based on NFT can bring numerous advantages to the management of the information generated. It will allow the inclusion of systems such as the “micropayments”, and the identification of the origin of the information and will allow the establishment of unique data sets whose generation and subsequent transmission can be permanently rewarded to the producers of information. Further exploration is ongoing.