How and Why Building a Federative Ecosystem Using Datachain Infrastructure ?

ICONIQLAB   DATACHAIN

The Cryptonetwork

Let's start with a classical definition of Cryptonetworks (CN):

We call (CN) to those networks built on top of the internet that 1) use consensus mechanisms such as blockchains to maintain and update their state, 2) use cryptocurrencies (coins/tokens) as the incentive mechanism for their participants, i.e. miners, validators, etc.

Compared to the early internet protocols, created by University working groups or non-profit organizations that also aligned developers to follow a common goal (internet from the 90s), CNs adds an economic incentive in the form of tokens to these project participants. This aligns them into the goal of making grow the network and the value of the token with it, adding a decentralised community, unlike centralized platform based companies such as AirBnB, Amazon, Facebook, Twitter, Uber, etc.

Examples of CNs are as diverse as the purpose they pursuit. They can range from general programming platforms such as Ethereum, to value, location or file storing networks like Bitcoin, Filecoin and XYO respectively.

The success of this new way of networking can be seen if we dig a bit into the history of the Internet.

DECENTRALIZATION IS WINNING THE GAME

Here is just an example of how a decentralised platform can overcome an established centralised one[1], the rivalry in the year 2000 between Wikipedia and a centralized competitor: Microsoft Encarta. This last one was by far a much better consulting platform at the time, its aim was to digitize the Encyclopedia Britannica and make it available to people at a subscription cost. Nevertheless, Wikipedia's project grew much faster because of its active decentralized community of contributors. By 2006, Wikipedia was the most popular reference site on the internet[2] and three years later, in 2009 Microsoft stated that *"People today seek and consume information in considerably different ways than in years past"[3]*. That same year Encarta ceased to exist.

Nowadays centralization dictates user experience. Dominating corporations such as Facebook or Google who have drastic power over other smaller scaled companies. A simple change in their terms and conditions agreement can bring down underlying businesses. This is why today the tech community is more reluctant to build on top of centralized platforms. It represents a considerable amount of loss in technological resources development.

THE DATA OWNERSHIP PROMISE

The use of connected devices follows an exponential growth. Each user is responsible for the generation of tremendous amounts of data, thus data itself expands at astronomical rates. Users tend to ignore that this data constitutes the core business of many seemingly invisible companies gathering and selling personal data to persona seeking corporations such as advertisers or social media. The future is now about retaining ownership over user-generated data. Allowing users to then sell their data to whomever seems appropriate. The challenge will reside in making sure that data integrity is maintained all along trades.

The Proposed Solution

A Highly Secured Decentralized Network with Inclusive Community and Federative Ecosystem (Federation) Structures on Higher Layers.

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[1] Comment Wikipedia a tue Encarta, Le Monde (2011).
[2] Growing Wikipedia Refines Its 'Anyone Can Edit' Policy, New York Times (2006).
[3] Microsoft To Shut Down Encarta, Forbes (2009).

"Store Cleaned/Verified Data ID, Origin,
Ownership Store Curated algorithms ID & Ownership Securing
historic P2P Data transactions Using AI for consensus processing"

THE FEDERATION'S APPROACH

In order to build an autonomous network, the Datachain proposes a structure of Layers of different hierarchies living together in a Main-Net, with a Datawallet (DW) being the basic building block of the network. In this spirit, each DW that corresponds to an individual will be a data storage space composed of the different types of data: personal data i.e. national ID number, passport information, place of residence, University certifications, web navigation data (cookies), banking and insurance information, among others.

This data will only be available to the Federation member that requests it, requiring the explicit permission of the DW owner to access the data. In this way, privacy is guaranteed in a secured environment by design.

However, the writing permission will be only granted to specific certified institutions (government, universities, banks, web browsers) that form part of a higher layer entity, defined in DATACHAIN language as a Federation.

Needless to say, Federation members will have limited writing permits over DWs. These writing permits must be in agreement with the type of industry the Federation belongs to, i.e. a Banking institution cannot have writing permits in someone's DW 'cookies' folder. Nevertheless, it will have the permit to write in someone's 'credit card expenses' folder and so on.

"Datachain is a federated network of networks.
Interactions between members of the network"

An important fact of the DATACHAIN design is that for each access request to someone's DW, the owner of it will receive a transaction payment for granting the access to its data. This payment will be done by a new cryptocurrency: the DataCoin (D^c).

The cost of the transaction, to be determined, will be spread between the user and the federation operators. Also, a percentage of it will also be retained to pay the costs of the Main-net.

The power challenge

With Datachain, resources are not divided. Federations are autonomous and add computation power to the Main-net enabling our smart consensus to proceed to the auditing, validation and notarisation of an unlimited amount of transaction per second.

Asynchronicity ...

Transactions are asynchronously validated, by parties that have antagonist interests. This is an alternative application of the Byzantine fault tolerant algorithm.

Datachain is designed for a data-driven world where AI will have to process Zetabytes of data in real time to provide context-aware recommendations. It will host BRAINER the first Decentralised Cognitive Operating System.

… Solves the overloading problem

The platform is expected to easily perform 200−500 thousand operations per second. During peak system loads the platform should support more than 500 thousand operations. Its design fills a security breach in the data storage and data streaming industries. We aim to provide a secure decentralized solution making data injection impossible to ensure point to point data integrity.

"With Datachain data scientists will
have access to quality structured data
to train their algorithms."

CREATING A FEDERATION IN DATACHAIN

When creating a Federation, the system will allow the selection of the **Type of Industry**. Then it will be required to select the Scale of this Federation's industry. **Scales** can be either local, regional or even global. Consequently, the **Number of Entities** will be automatically generated to avoid single-member Federations. During this stage a unique (randomly generated and encrypted) key will be assigned for the Federation, a DataWallet for the Fed Operator will be created, and also a collection of blank DWs. These DWs will be connected with each other following a selected **P2P Method** that could be Hyperledger, Wanchain, Blockchain and Gnutella among others to be determined. A **Protocol** (KYC / AML, SWIFT, ...) is next to be specified and followed by a **Smart Layer**. This layer will consist of different scanning and/or analysis tools, some of them based on AI. Examples are: layer scripts for predictability, matching, context mining, fraud detection, etc. Finally, a selection of **Components** will be available like web services and cryptocurrencies. These last ones can be selected from a list of available currencies i.e. Bitcoin, Eth, (your own)-coin and mandatorily the **Datacoin** that will be the underlying currency to pay for the maintenance of the network, etc.

Analogous to Federations,
Communities, i.e. Universities, cities
will be at the same level of hierarchy.
Being able to write into their registered DWs

THE FUTURE

Currently working in specific use-cases for industries like Porsche, Careaway and Global Ads as a way of validating the Federation approach. We are also working on Community based use cases for the cities of Montreuil and soon Dubai.

Join the Datachain community and contribute to the construction of the first Smart layer based Decentralized network.