



Litepaper

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Abstract

Trac Network is a new approach for data access management and ownership which offers a decentralized, programmable way for dealing with data.

By pioneering '**Headless Crypto**' architecture, Trac Network ensures efficient data validation and distribution without the high costs associated with traditional blockchain systems.

Our goal is to empower content creators, developers, and data providers with the tools to manage and monetize their data assets effectively.

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Motivation

Transactions, asset transfers, DeFi activities - Most of the traffic on Blockchains nowadays is driven primarily by financial use cases. When it comes to combining DeFi solutions with non-financial assets, such as secure data access control or privacy, there is no efficient, self-contained solution.

To illustrate the issue, consider the example of NFTs on the Ethereum blockchain. While the ownerships and transfers are recorded on-chain, the data (images, videos, etc.) is stored using decentralized storage systems like IPFS. While convenient, this creates a significant limitation, as ownership of the NFT doesn't necessarily correlate with the ability to access the underlying data. Anyone can access that content, regardless of owning or being granted permission to do so. This is a fundamental issue when a NFT is used to represent private or sensitive material.

As we move forward to implementing solutions for more complex use cases with blockchains, it is critical that we find a way to combine programmability and ownership, regardless of data format and financial strategies.



Presenting Trac Network

Trac Network addresses the issue of data access management and ownership by enabling decentralized, programmable distribution of data. While it currently operates primarily over the Bitcoin network (TAP Protocol), it is designed to be flexible and programmable enough to include other blockchains as needed – or run standalone as L1.

The network allows individuals and institutions to set up data stream channels, treating data itself as an asset and ensuring only approved subscribers can consume it. It is even possible that data providers will be able to earn token rewards by delivering accurate, timely, and reliable information. This capability has a wide range of applications, from DeFi applications, broadcasting sensor data, to developing entire social networks or streaming platforms. All of it, securely validated for integrity and correctness by crypto technologies.

This functionality is made possible thanks to the **'Headless Crypto'** architecture of the protocol, which enables cryptographic validation of data, as well as peer-to-peer decentralization and consensus without the heavy costs associated with achieving block finality. Additionally, it eliminates the need for a Mempool structure, thereby preventing frontrunning attacks. This aspect allows Trac Network to feature a high transaction throughput and integrate seamlessly with any blockchain protocol, offering an efficient and scalable solution for decentralized data distribution. This empowers content creators, data streamers, and developers to create robust and reliable apps across various domains, either backed by the security and robustness of traditional Layer 1 protocols, or by the flexibility and speed of Layer 2 networks.



How Will It Work

Trac Indexing Network is a peer-to-peer network comprising indexers, validators, and peers:

→ **Indexers**

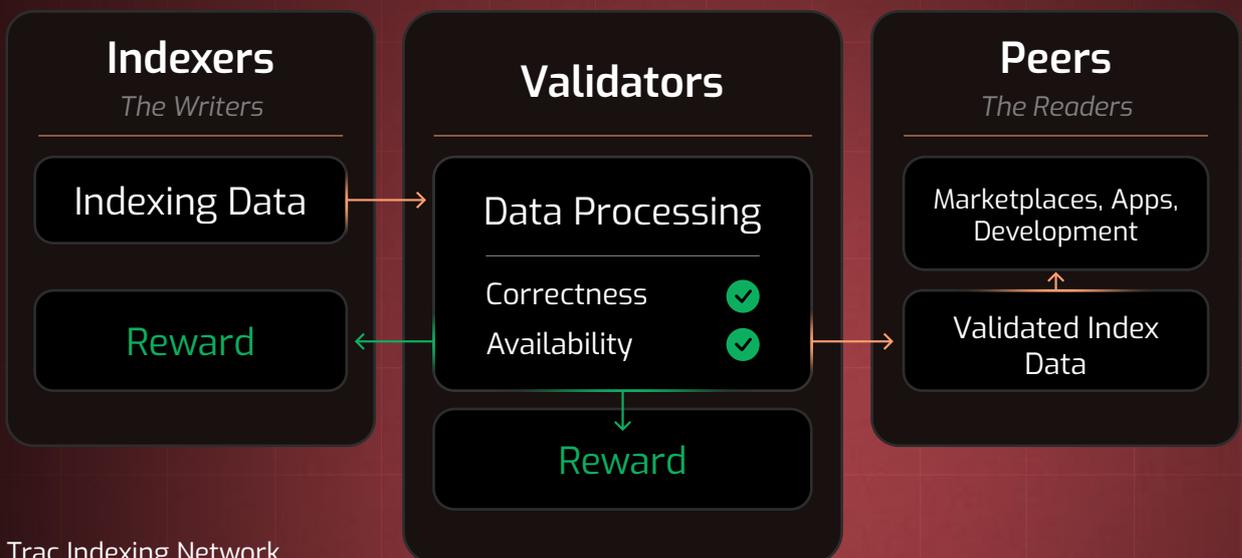
(*The writers*) undertake the core task of generating and indexing generic data which will become an asset depending on the quality before submitting their results to the Trac Network.

→ **Validators**

The validators are entrusted with the responsibility of verifying the integrity of the generic data submitted by the indexers and rewarding indexers within the Trac Network assets for maintaining correct and verifiable information.

→ **Peers**

(*The readers*) are the recipients of the indexed data that has been validated. They utilize this data to support a wide spectrum of applications. The release of the “Trac core for TAP Protocol” signifies the launch of the first peer application, laying the background for future expansion and development within the Trac ecosystem.



Our mission is to enable the seamless incorporation of large scale data into decentralized systems by utilizing the **Holepuch Framework** - a peer-to-peer project funded by Coinbase and Tether - We enhance our implementations to not only advance programmability within smart contracts but also to reinforce data ownership, where indexers gain full control over their data assets, ensuring privacy and security. The objective is to allow indexers to receive rewards for providing reliable and accurate data.

As we continue to advance the development of Trac Network, we are diligently working on selecting the optimal consensus mechanism for our Validation layer. This layer will operate without a traditional blockchain, embracing our vision of '**Headless Crypto**'. The blockchain component will, instead, reside within the Indexers layer. Our goal is to adopt the most effective aspects of Proof of Stake or Proof of History to ensure the efficiency and reliability of our network.

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Tokenomics

A network asset, often referred to as a cryptocurrency, is a digital token used within blockchain networks such as Bitcoin or Ethereum. These assets function as rewards that perform specific actions - such as validating transactions or contributing computational power (also known as Gas). Tokens are essential for maintaining the security of decentralized networks, which are acting as a “proof of done” contributed by participants.

The Trac Network employs a reward mechanism based on a multi-subsidy asset model. Native **\$TRAC**¹ is the main token for rewards and Gas to pay for transactions. However, for a limited time **\$TAP**² is being distributed as the first subsidy asset to validators. Once native **\$TRAC** is activated, everyone will be able to add their own reward asset as a complementary reward token if they choose to do so. **\$TRAC** remains the sole Gas asset.

Access to the validator role is obtained through validator licenses paid in BRC-20 **\$TRAC**, which grants participants the privilege to engage in the validation process. Validators are rewarded for verifying the integrity of the data, with compensation based on their performance. Currently, there is a cap of 3000 validator licenses. License ownerships may be transferable.

Validation and rewards are processed on a per-transaction basis instead of per-block (as there are no blocks). Also, for each transaction in the network, a percentage of available **\$TRAC** tokens will be burned as fees.

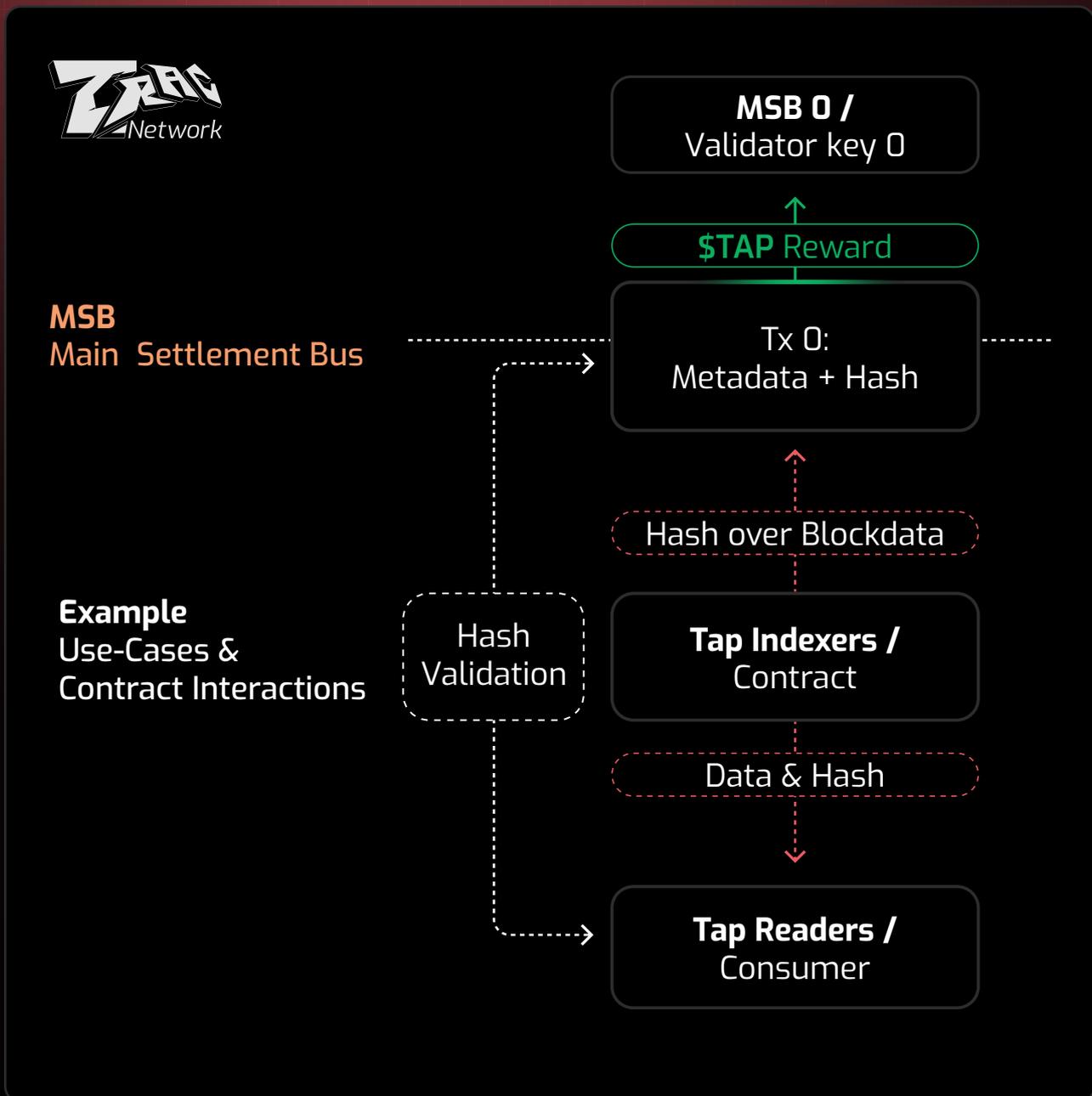
¹ \$TRAC - Created within BRC-20 standard, this is the Trac Network's main reward and gas asset

² \$TAP - Created within the TAP Protocol, it is a utility token within the protocol



The initial native \$TRAC needed to start network transactions will be dispensed from a BRC-20 \$TRAC staking vault, similar to the Ethereum => Ethereum 2.0 transition.

The diagram below showcases that in a first release, validators contribute by watching over the Main Settlement Bus of the Trac Network and receiving \$TAP rewards for that:



Datastreams as Assets

Trac Network recognizes the intrinsic economic value of data, treating it as a valuable resource which can be traded, shared or monetized upon according to the policies defined by its owner.

To illustrate this concept, consider a content creator who launches a live stream on a platform which is integrated with the Trac Network.

The content generated during the stream is owned by the influencer and can be treated as a unique data asset. Access to this exclusive content is granted to a targeted audience that pays to view the stream, ensuring that only approved subscribers can consume the content. Moreover, the content creator can collaborate with advertisers who can pay to place advertisements within the stream directly compensating the content creator for the advertising space. It empowers content creators to control and profit from their data assets in the form of a generated live stream which is provided by the actual owner of it.

Another use case that we can consider is an institution that owns a network of environmental sensors across a city to monitor, for example, air quality levels. The sensors continuously generate data on pollution levels, temperature and humidity. By establishing a data stream channel on Trac Network, the organization that owns the sensors can ensure that only subscribed client entities, such as research institutions, meteorology service providers, or government agencies can access the data. The owner organization can then receive token rewards based on the reliability and accuracy of the data it provides.



Headless Crypto

The concept of '**Headless Crypto**' refers to the use of cryptographic concepts and technologies to implement solutions without relying on a traditional blockchain ledger structure. The goals of decentralization, data integrity, and cryptographic proofs/signatures are achieved without using a blockchain ledger. This type of architecture offers several advantages.

An important benefit is significantly lower maintenance costs of the system as a whole. '**Headless Crypto**' systems are less resource-intensive and when compared to blockchain systems, allows for easier and quicker participation and engagement in the network.

Another advantage is its flexibility. '**Headless Crypto**' Systems can be tailored to meet very specific use cases. This is especially useful for applications where consensus on history and balances between peers is not critical. (e.g.: secure messaging and distributed file storages).

Scalability is also a key advantage of '**Headless Crypto**' systems. The lack of complex consensus mechanisms typical to traditional blockchains also allows for the system to scale more effectively, handling large volumes of data with greater efficiency.

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Conclusion

Trac Network offers a novel approach to addressing data access management and ownership, leveraging the strengths of decentralized network technology and programmable data distribution. By treating data streams as assets and ensuring secure, authorized access, we aim to provide practical solutions for a variety of applications.

As we continue to develop and refine our protocol, we invite you to stay informed about our progress, join our community discussions, and explore the potential of Trac Network in creating efficient and scalable decentralized applications. Your insights and participation are invaluable as we work towards realizing this vision.

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