

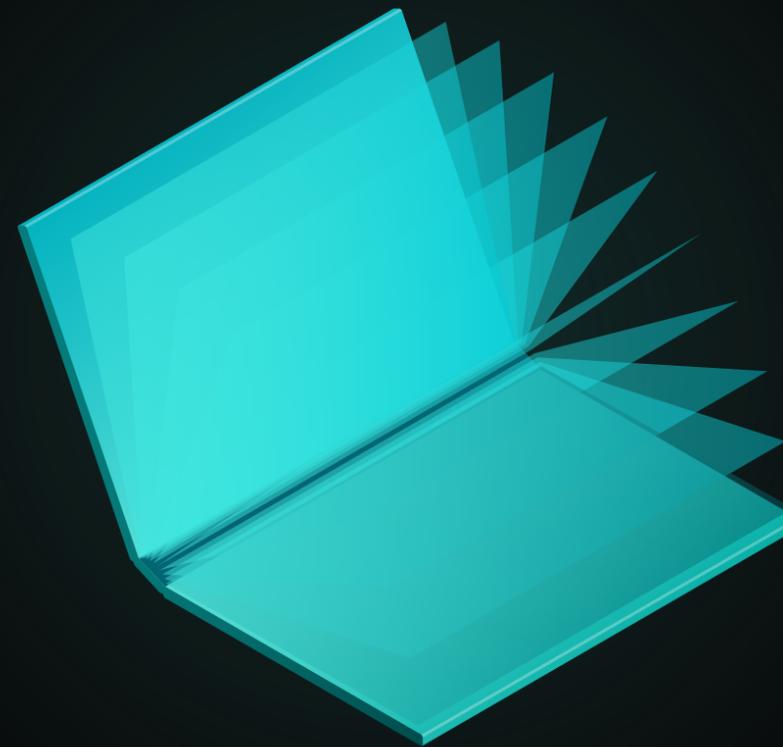
IOVO
INTERNET OF VALUE OMNILEDGER

USE CASE GUIDE



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“We’ve forgotten that if we don’t pay people, they can’t buy our products; they can’t respond to our ads. So there’s a problem with the algorithm that we’re using to run modern businesses.”

-TIM O'REILLY

Introduction

It's easy to forget how quickly the data industry has taken over our lives. Twenty years ago, there was no Facebook, no YouTube, no Alibaba, no WeChat. Google had just been founded. Amazon was still just a bookstore.

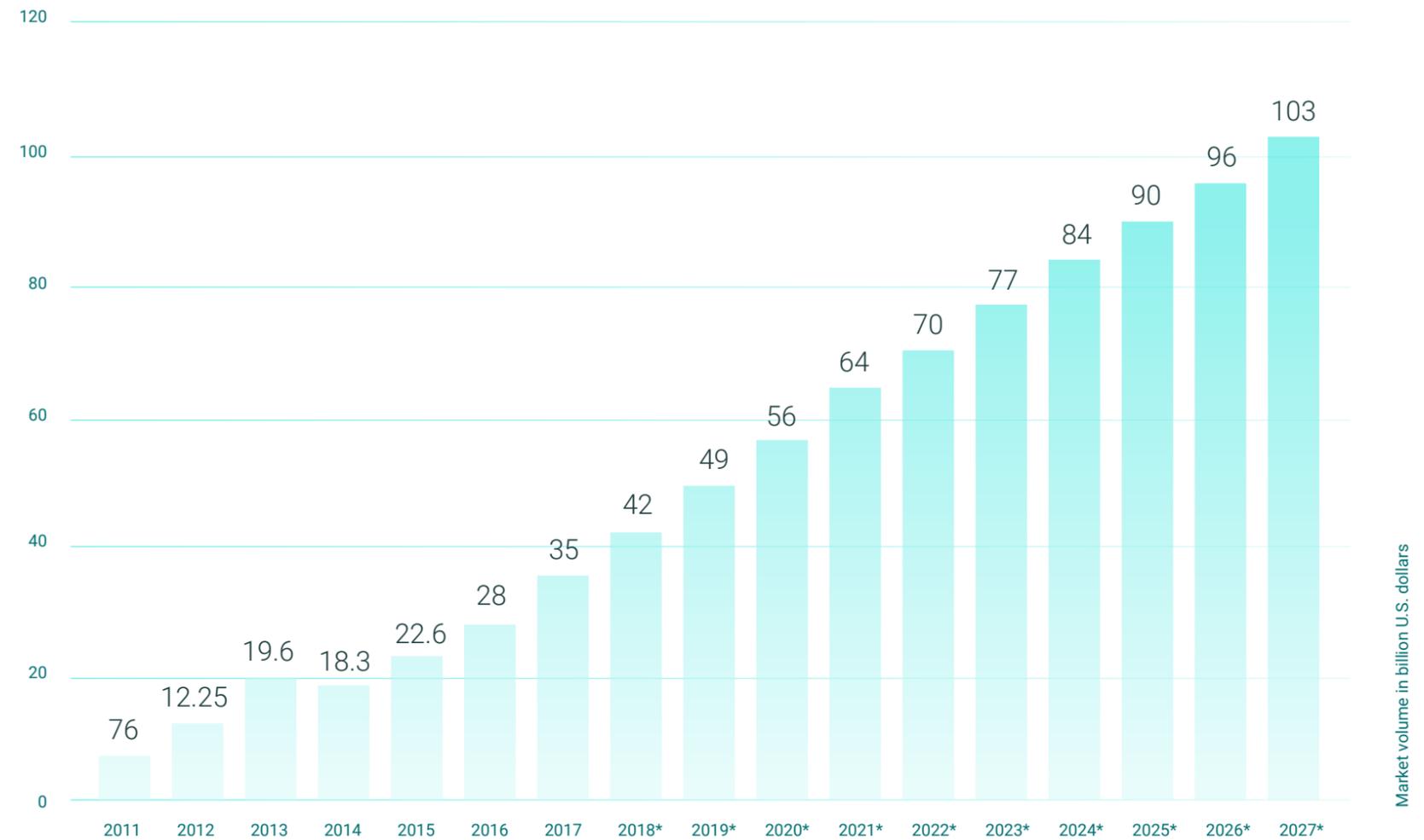
Now these platforms are the biggest companies in the world, making millions of dollars every day by harvesting, leveraging and monetising user data. McKinsey values the worldwide data industry at \$18.7 billion and growing. Many analysts agree that data is a more valuable commodity than oil.

Mark Zuckerberg famously said he wanted Facebook to "Move fast and break things" and many companies adopted the same philosophy.

Well, they succeeded. It took barely twenty years for the predatory data model to take over every aspect of our lives.

And now things are definitely broken.

IOVO plans to move fast and fix things, before it's too late



Source:
<http://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/the-internet-of-things-the-value-of-digitizing-the-physicalworld>
www.iovo.io

The modern data industry is:



UNFAIR

Despite being the source of the data these big companies rely on, individual users receive minimal benefits.



INSECURE

Centralization exposes data to hacks and abuse, with billions of individual accounts compromised in 2018 alone.



UNRELIABLE

A huge amount of data is false, outdated or otherwise unusable. Targeting and curating algorithms are clumsy and users resent being bombarded with unwanted advertising.



OPAQUE

Despite a wealth of analytics tools, companies and advertisers are often kept in the dark about how their ad spends are used and how effective they are.



INEFFICIENT

Despite the huge amount of data being gathered, most of it is kept in silos and remains unused. McKinsey estimates that less than 1% of gathered data is ever used.



STRUGGLING

Despite excellent growth in raw numbers, the industry is showing major cracks. The biggest players have all been hit by scandals, and users are ready to revolt. Platform growth is slowing, and many users say they would switch to a more secure platform if it provided the same features.

IOVO: a new data model

IOVO (Internet of Value Omniledger) is a new approach to collecting, managing, storing and respecting the data which we all generate at every moment of our new digital lives. IOVO is a multi-blockchain directed acyclic graph (DAG) which provides users full control over who they share their data with and how much they receive for sharing it.

Instead of giving data to companies to store on centralized servers, users retain it locally and only share it in response to valid requests parsed from the IOVO DAG.

Data consumers pay IOVO tokens to receive data shared to the network. These tokens are passed on to the users who maintain the network and – most importantly – to the providers of the original data.

By inverting the standard data model, IOVO fixes the problems of centralization by incentivizing everyone in the network. The result is happier users and better data for everyone.



The modern data industry is:



FAIR

Instead of enormous centralized companies taking the bulk of profits, everyone in IOVO is properly incentivized and rewarded. The IOVO token is used to pay for data searches and reward data owners and the validators who maintain the network.



SECURE

Data on IOVO is all encrypted and stored locally (or with a trusted storage provider). Data only moves if the data owner gives permission. Centralized data hacks are impossible, and no data can leak.



TRANSPARENT

The IOVO DAG tracks all data requests and transactions, so it is always clear who owns what data and who has permission to access it.



EFFICIENT

Anyone can request access to almost any category of data and receive accurate data back (provided the data owner is willing to share).



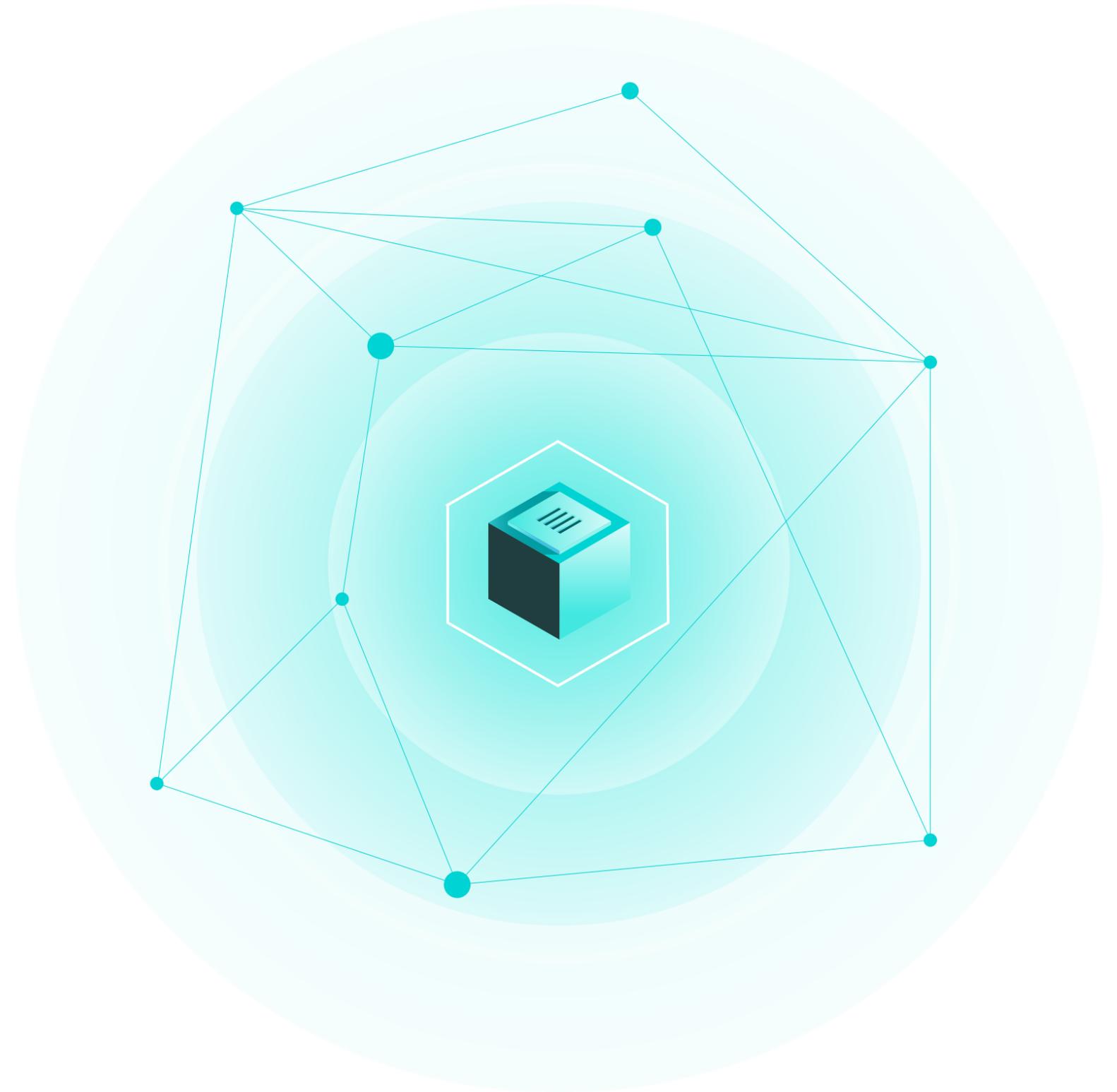
VALUABLE

IOVO's proof of value consensus mechanism ensures that the data on IOVO is accurate, reliable and useful. IOVO goes far beyond mere monetization: it increases the value of data, for everyone.

Security

Every month the news reports another major data breach, with tens of millions of accounts compromised at a time. As apps and websites embrace one-click access systems like Facebook or Google logins, the consequences for these breaches will only increase.

With IOVO, data mostly stays in the safest place of all: on users' devices. Whenever data or metadata is made public, only the type of category of data is exposed, to facilitate searches. User data is always encrypted and the whole network is stored on decentralized nodes, making data breaches impossible.

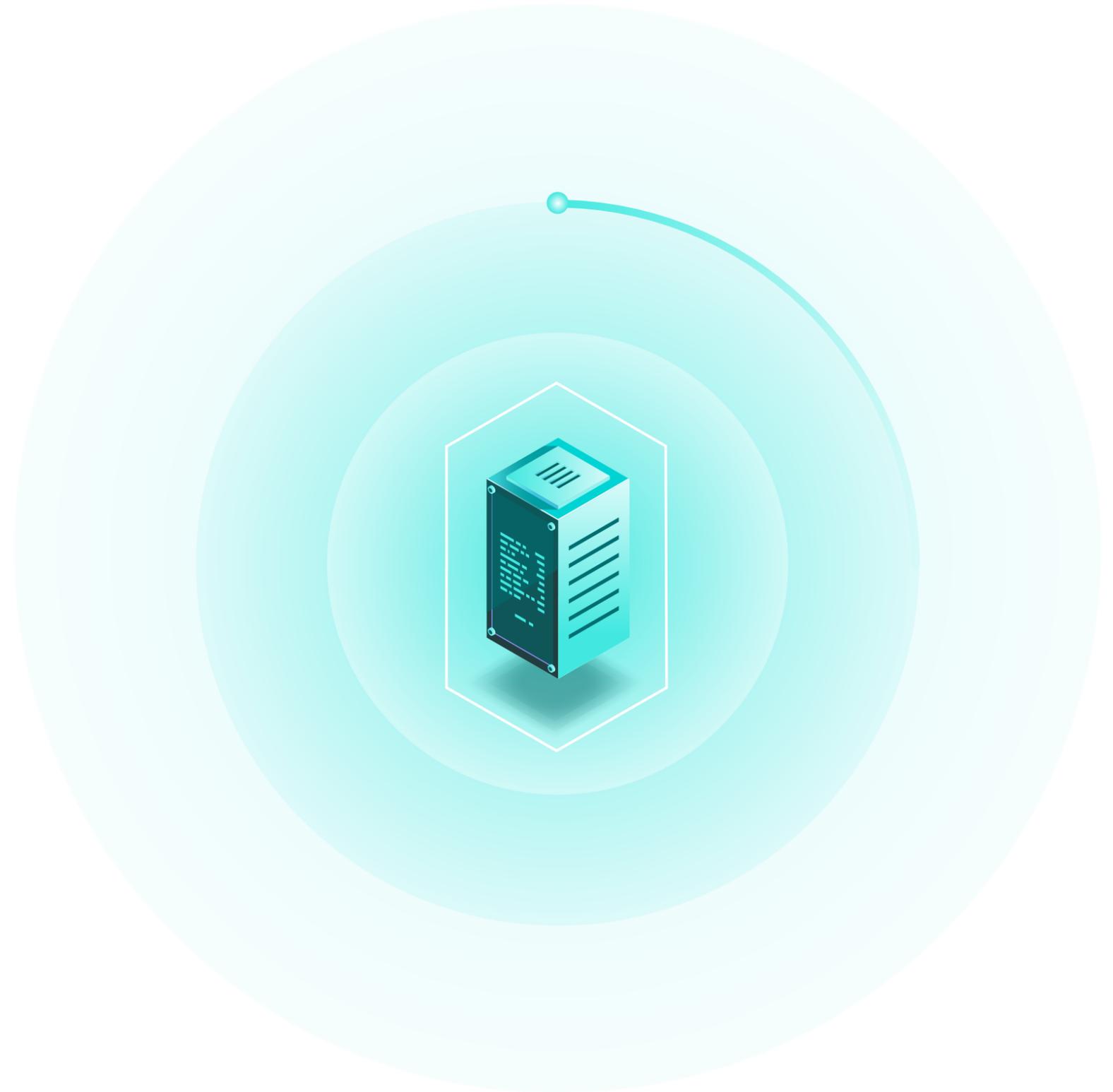


Transparency

Despite a wealth of tracking and analytics tools, the modern data industry is extremely opaque. Users don't know where their data ends up, while data consumers like advertisers can rarely tell if the money they spend is being put to good use.

And the major platforms which dominate the industry rarely seem to know much about how the data they harvest is used, or even how much of it is accurate.

IOVO sweeps away this fog with a fully auditable and transparent decentralized ledger. While data on IOVO is always encrypted and private, data owners can always see what data they've shared, who accessed it, and how much was paid for it.

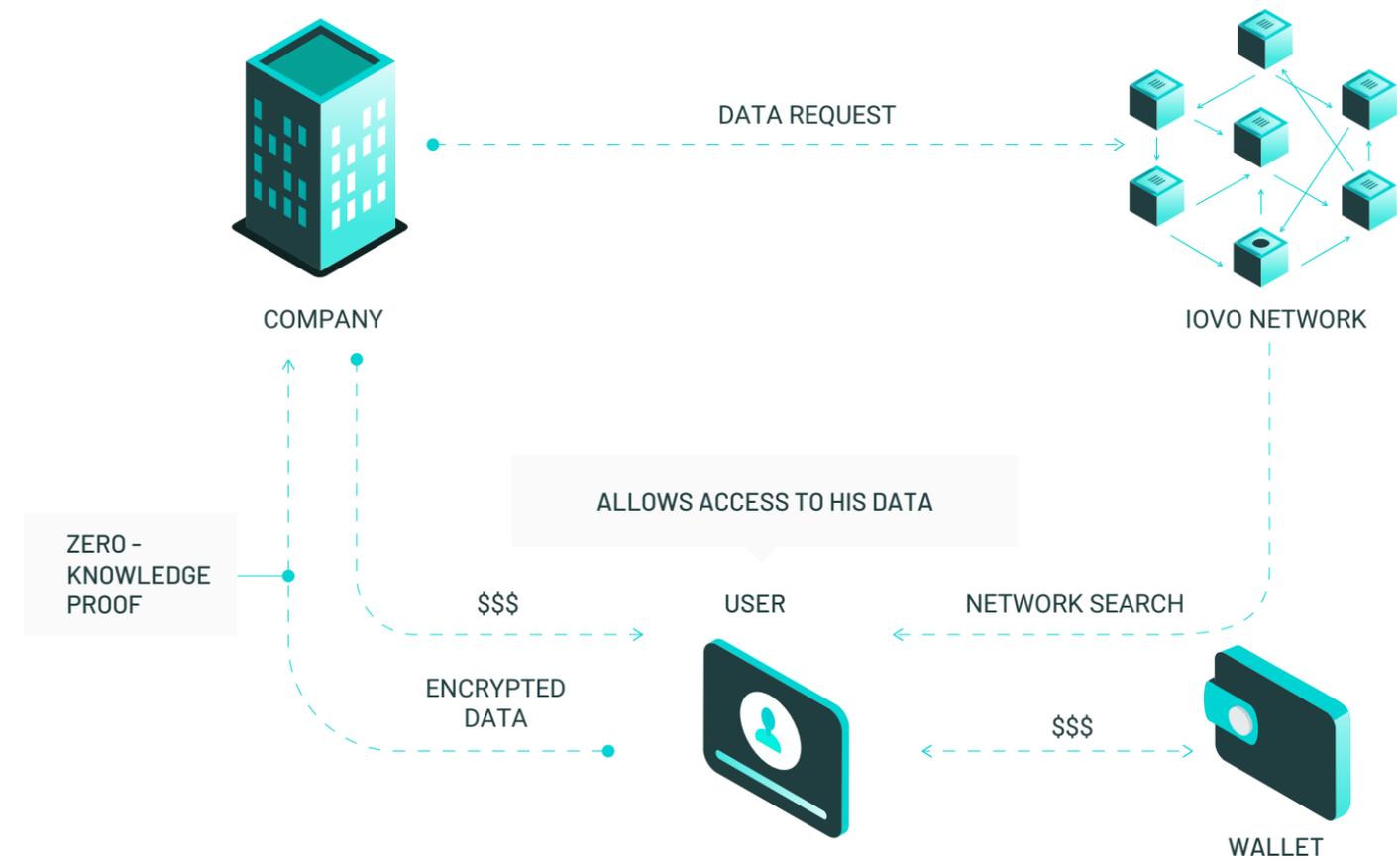


Privacy

Users receive an IOVO wallet with a unique ID, just like the public/private key pairings familiar from bitcoin and other cryptocurrencies.

All private data is encrypted using these keys, so it can only be accessed with permission.

Where possible, IOVO uses zero-knowledge proofs to ensure that the full content of the data is never actually revealed. For example: when requesting a credit score or a total user rating, users can reveal their total score without revealing all of the components of that score. The zero-knowledge proof setup ensures that users cannot hide relevant data from this calculation, without forcing them to reveal every part of it.



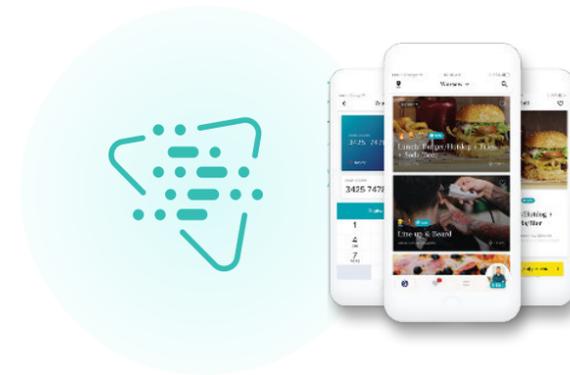
Encrypted data is sent together with a zero-knowledge proof - a full guarantee that the data is correct, precise and no other information about the user is leaked.

Simplicity

One of the biggest problems in crypto is adoption: the technology is so complicated, and most people are too overwhelmed or busy to learn how to use it.

Although IOVO provides users with full control over their data, if they want it, most users will interact with IOVO via IOVO dApps. From a user perspective, these dApps are just like regular apps people are familiar with from their smart devices.

These dApps can handle all standard interactions with the IOVO network automatically, ensuring that users receive the rewards for sharing their data without having to learn anything about the technology behind it.

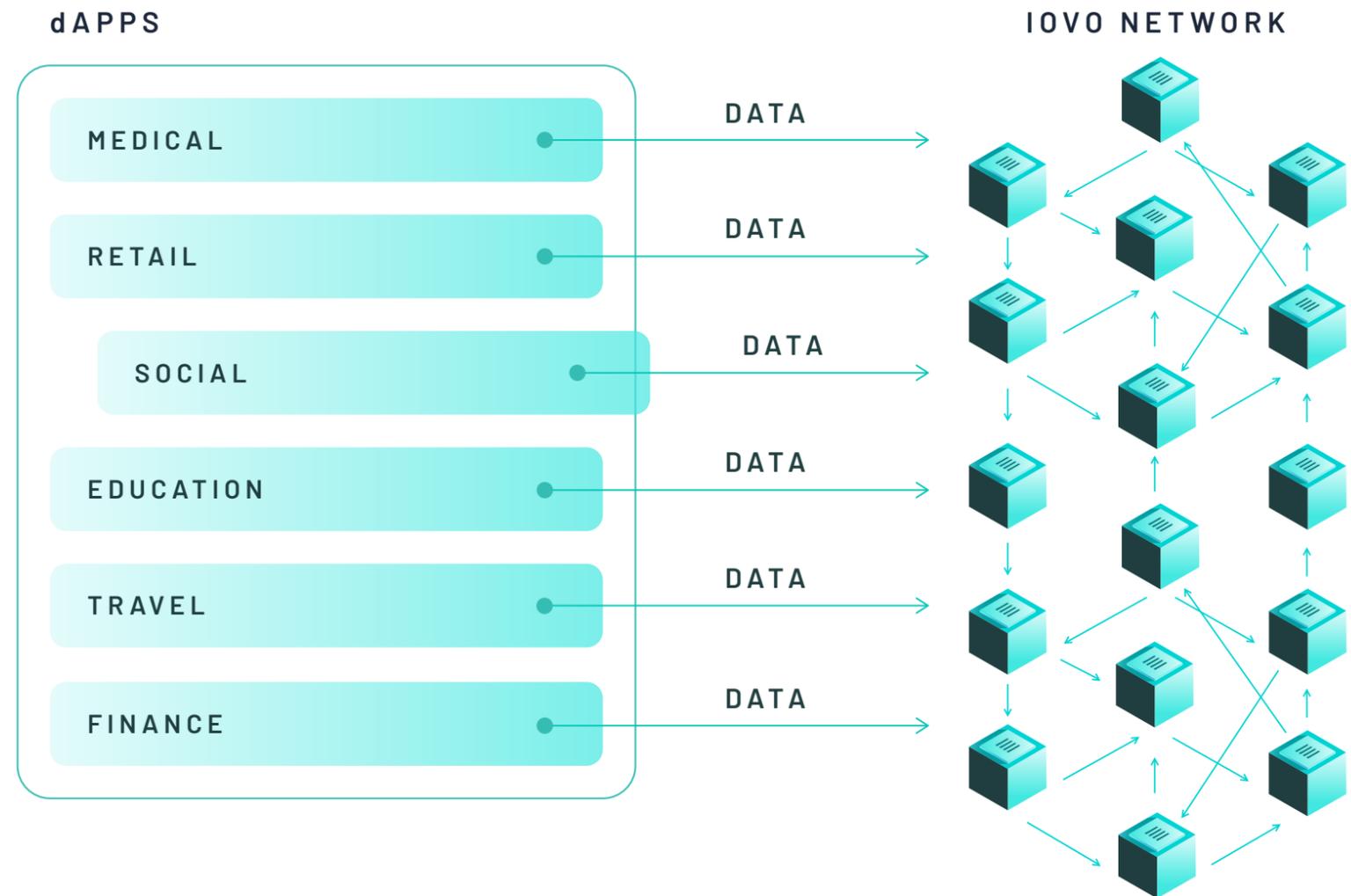


Efficiency

Despite the huge amount of data the modern data industry collects every day, most of it is inaccessible: stored in centralized data silos where it will never actually be used or analysed.

IOVO combines all data on a single decentralized network, breaking down the data silos without compromising data security.

By connecting data producers and data consumers directly, IOVO cuts out the centralized middleman and improves the efficiency of the whole data ecosystem.

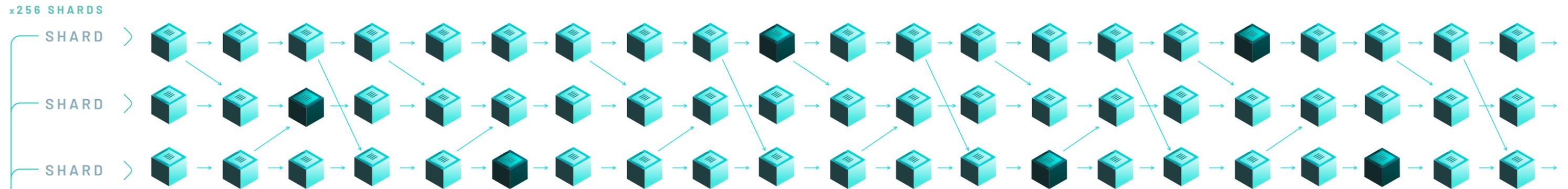


Speed

Many first-generation blockchains suffer from throughput problems, with Bitcoin limited to around seven transactions per second. DAGs eliminate this problem, but at the expense of security and accuracy of timestamping.

IOVO is a multi-blockchain DAG, combining both approaches to get the best of both worlds. IOVO runs 256 chains in parallel, with a main chain to help with coordination. This gives us the speed of

a single-transaction DAG, with the security, unambiguous ordering and guaranteed timestamping of a blockchain, something which is essential for more complex functionality such as smart contracts.



MORE THAN 350K TRANSACTIONS PER SECOND

IOVO's multi-blockchain DAG provides the flexibility, efficiency, and scalability of a DAG, while retaining the security and reliability of blockchain.

Value

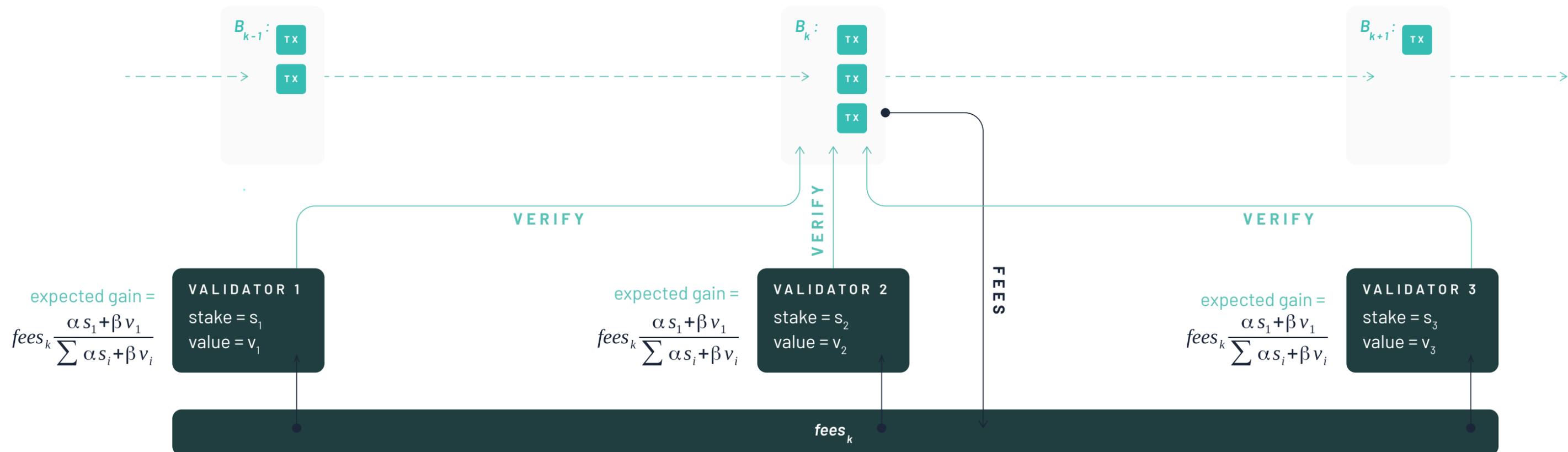
IOVO is powered by Proof of Value, a unique consensus mechanism that rewards users for providing measurable value to the entire network.

First-generation decentralized consensus mechanisms like proof of work or proof of stake only incentivize the people who maintain the network, with no thought for those who

use it. This is one reason why cryptocurrencies have stalled: there is simply no good reason for most people to use them.

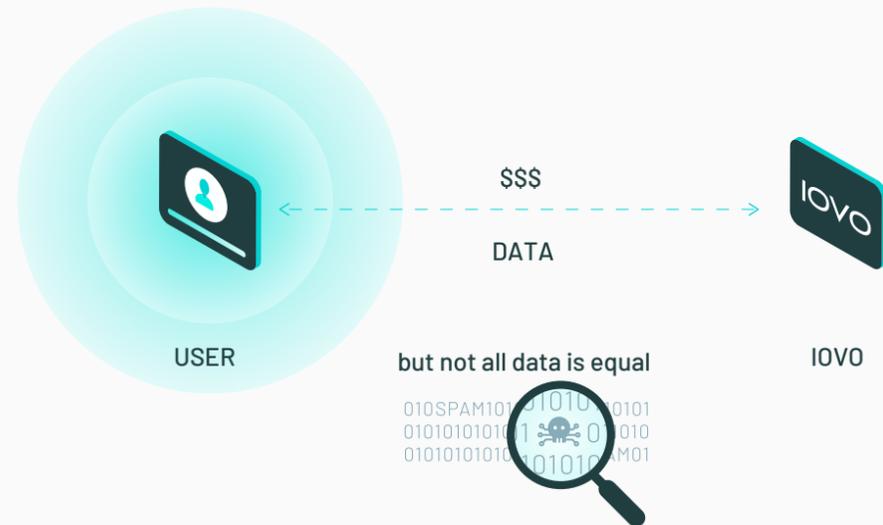
Proof of Value rewards everyone: both the users who share their data with the network and the validators who keep the network running.

Not only that, it tracks the users who are providing the most valuable data and ensures that they earn more. This ensures that the quality of the data in the IOVO network remains high, without having to commit to inflexible rules for data curation or censorship at the network level.



Proof of Value in action

1 IOVO REWARDS DATA SHARING



4 IOVO'S PROOF OF VALUE REWARDS USERS WHO PROVIDE REAL HUMAN VALUE



2 IOVO SCORINGS LET USERS FIND THE DATA THEY NEED AND RANK IT



Use existing scoring, or make your own

3 OVER TIME, THE NETWORK IDENTIFIES VALUABLE DATA

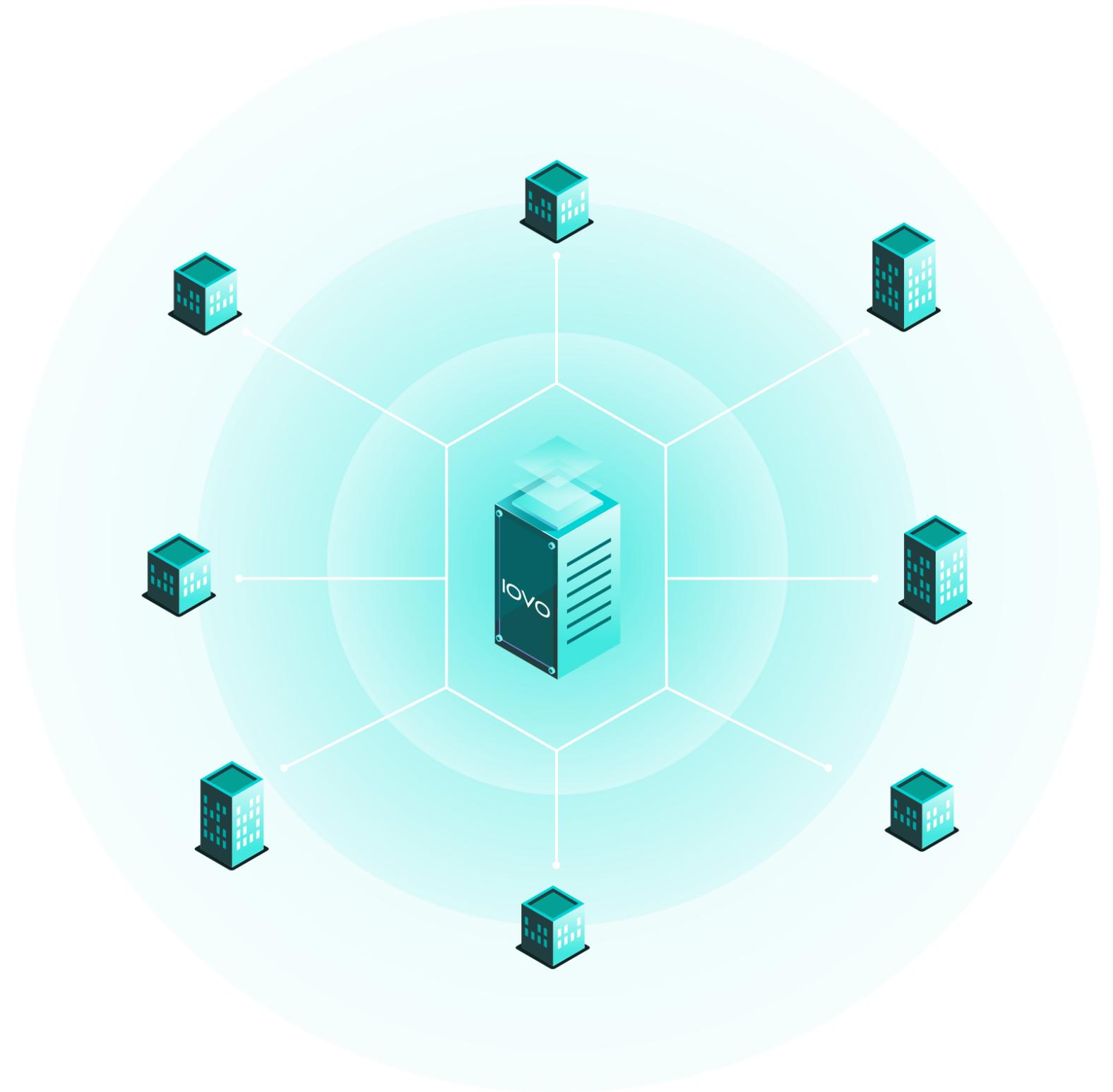


And scorings themselves are ranked too

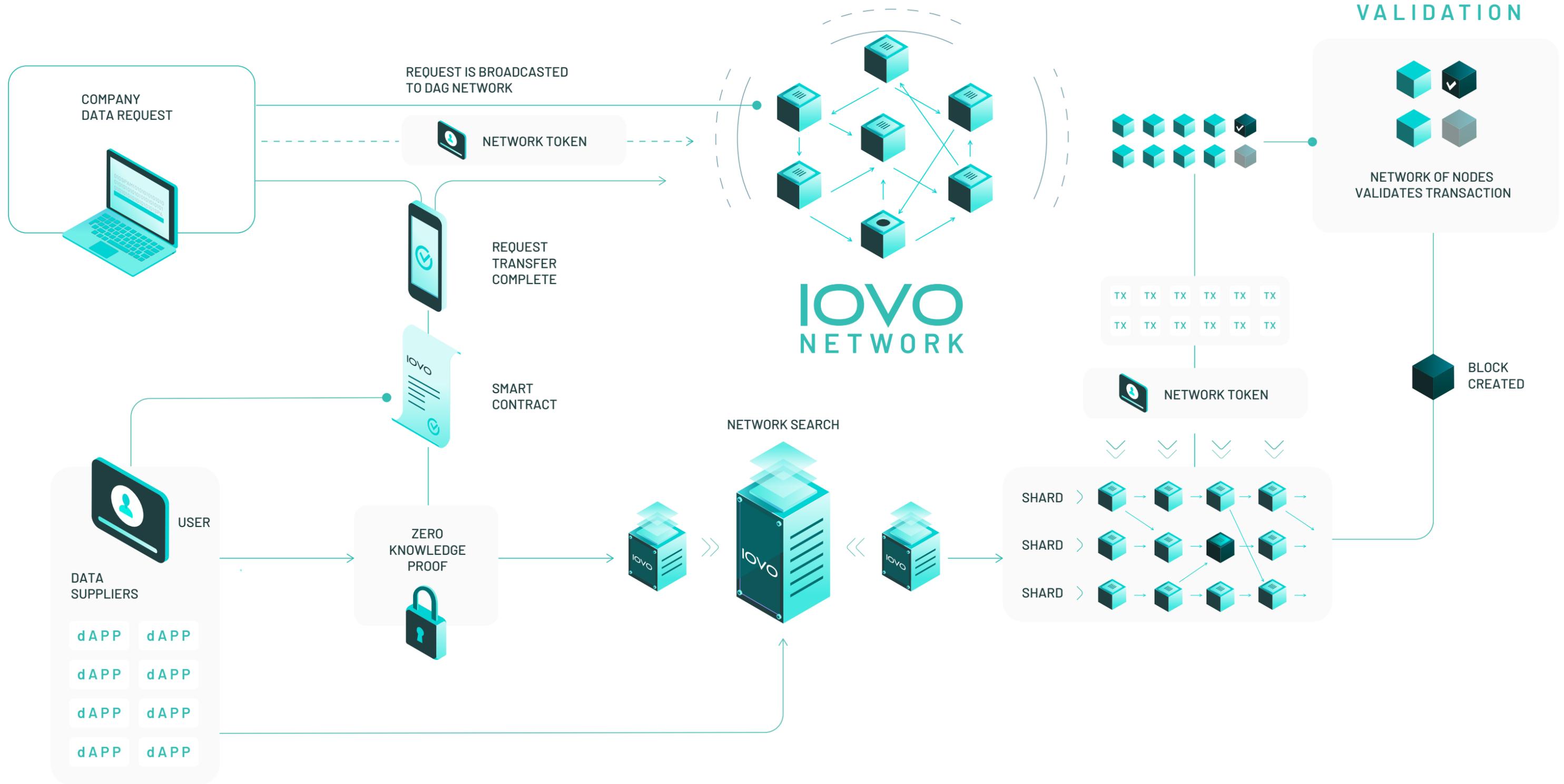
IOVO is for everyone

IOVO creates an entire data ecosystem where everyone is properly rewarded for the value they add to the network.

By balancing incentives for users, advertisers, investors, network validators and more, IOVO ensures that the network remains strong, grows stably and, most importantly, provides a source of accurate, useful data that can be used responsibly to enrich all of our lives.



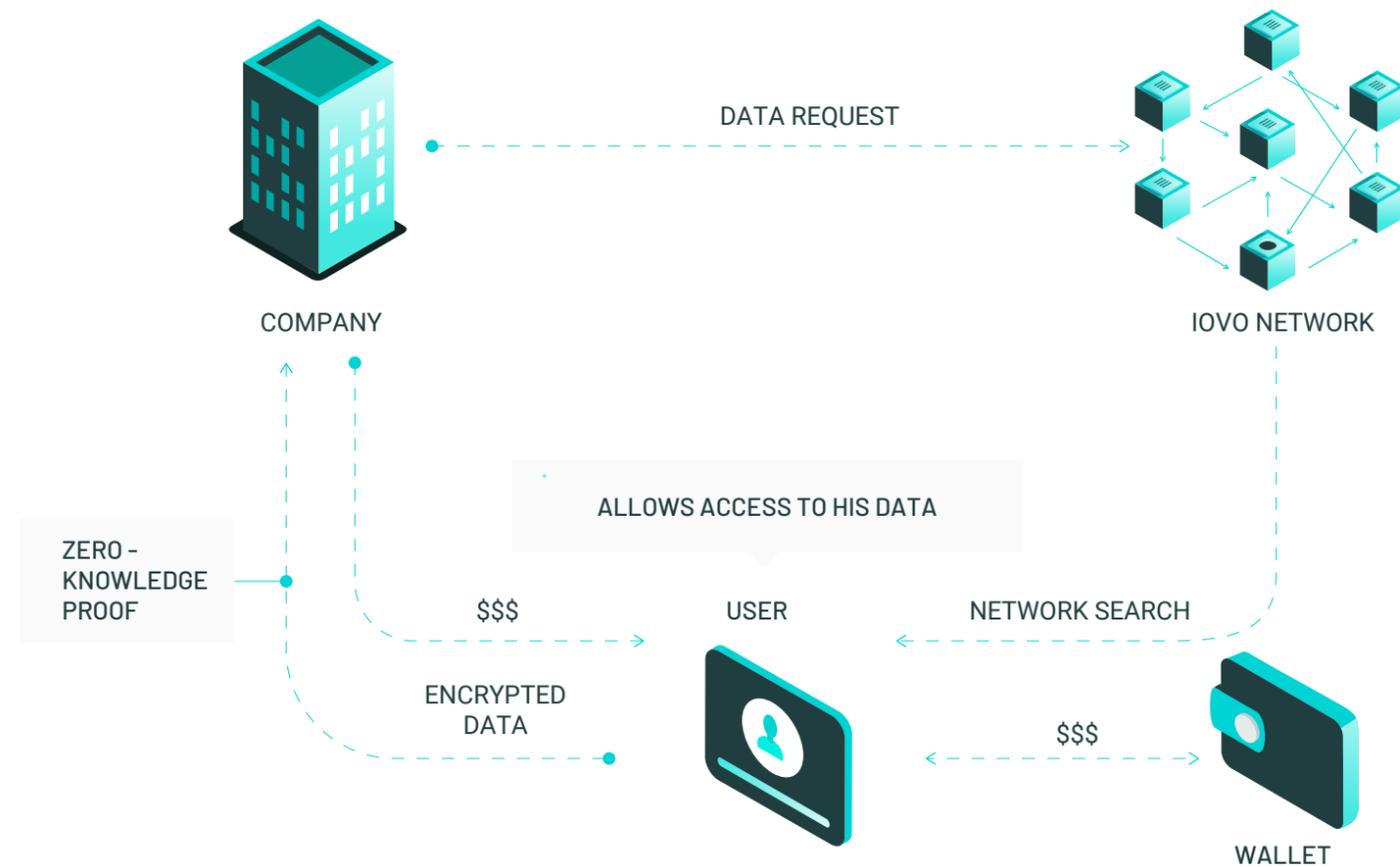
How it works



IOVO for Users

IOVO is designed to provide users with access to all the data-driven online interactions they are familiar with today, while opening the door for new and better services that can only come from a healthy data ecosystem where everyone's value is nurtured, respected and rewarded.

IOVO gives users full control over their data.



Example: Alice uploads some basic personal data to an IOVO dApp. She's happy to share her name, job description, and home town with anyone, so she sets these to automatic. Control of this data is given to the dApp owner, to ensure it's available 24/7. Now every time her data matches a network search, she automatically receives tokens to her IOVO wallet.

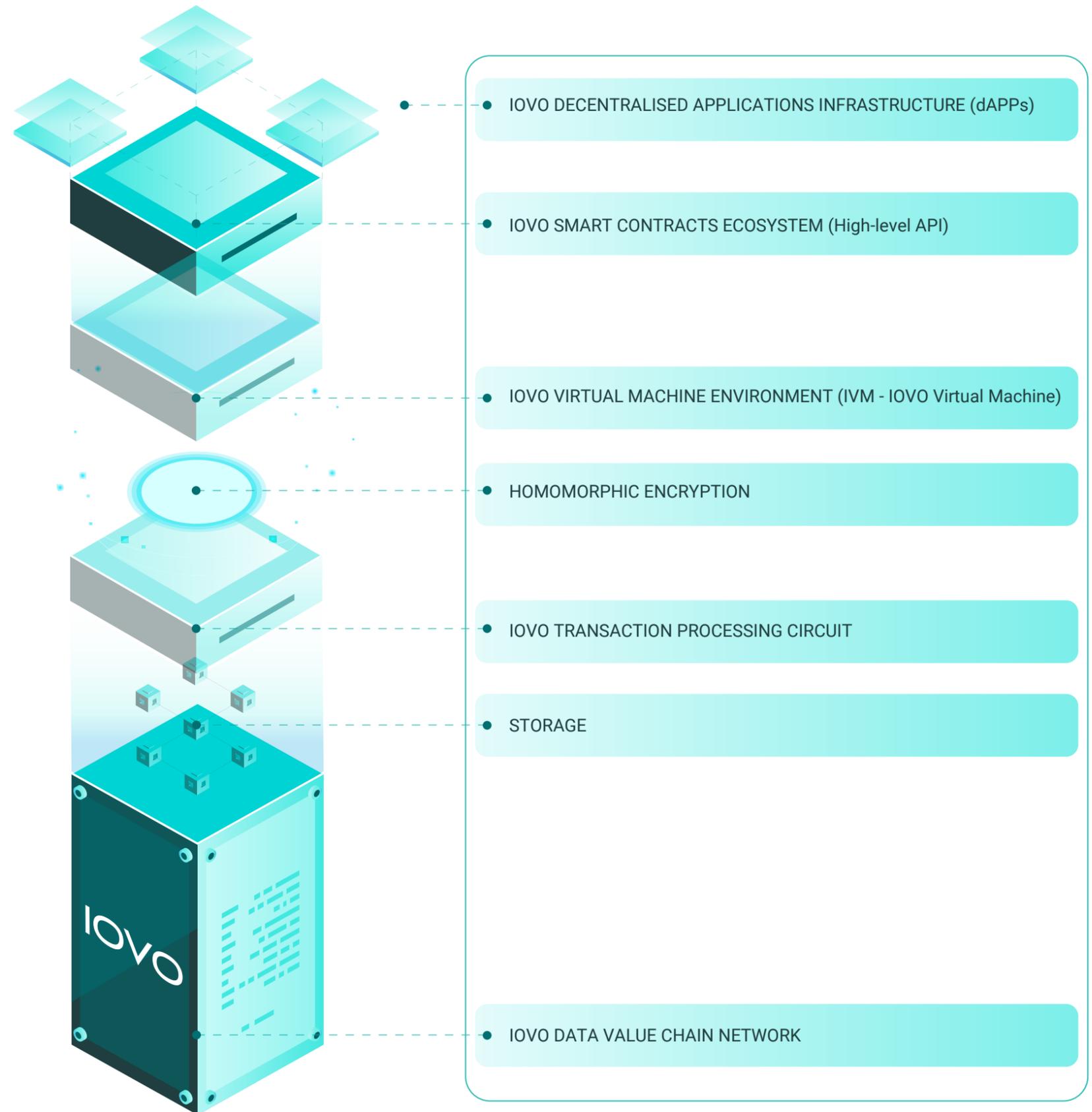
Alice doesn't want to share her phone number or employer details with everyone, so she sets this data to manual. Now she will receive a private notification when her data matches a network search. She can manually choose if she wants to share her data and claim the token reward. Until she does, the data never leaves her device.

Alice never wants to share her date of birth or home address with anyone outside of the dApp, so she sets this data to private. She'll receive a one-off reward for sharing with the dApp, but her data won't be revealed to external searches, and it remains on her device.

IOVO for Developers

IOVO is a multi-blockchain DAG, which allows the full ordering and timestamping needed to support smart contracts. IOVO's Turing-complete scripting language provides a limitless canvas for creating data-based metrics, ranking and reputation systems and other systems that rely on collecting, sharing or using data.

Developers will find a strong foundation for building dApps, data analytics tools and more, with clear processes and incentives.



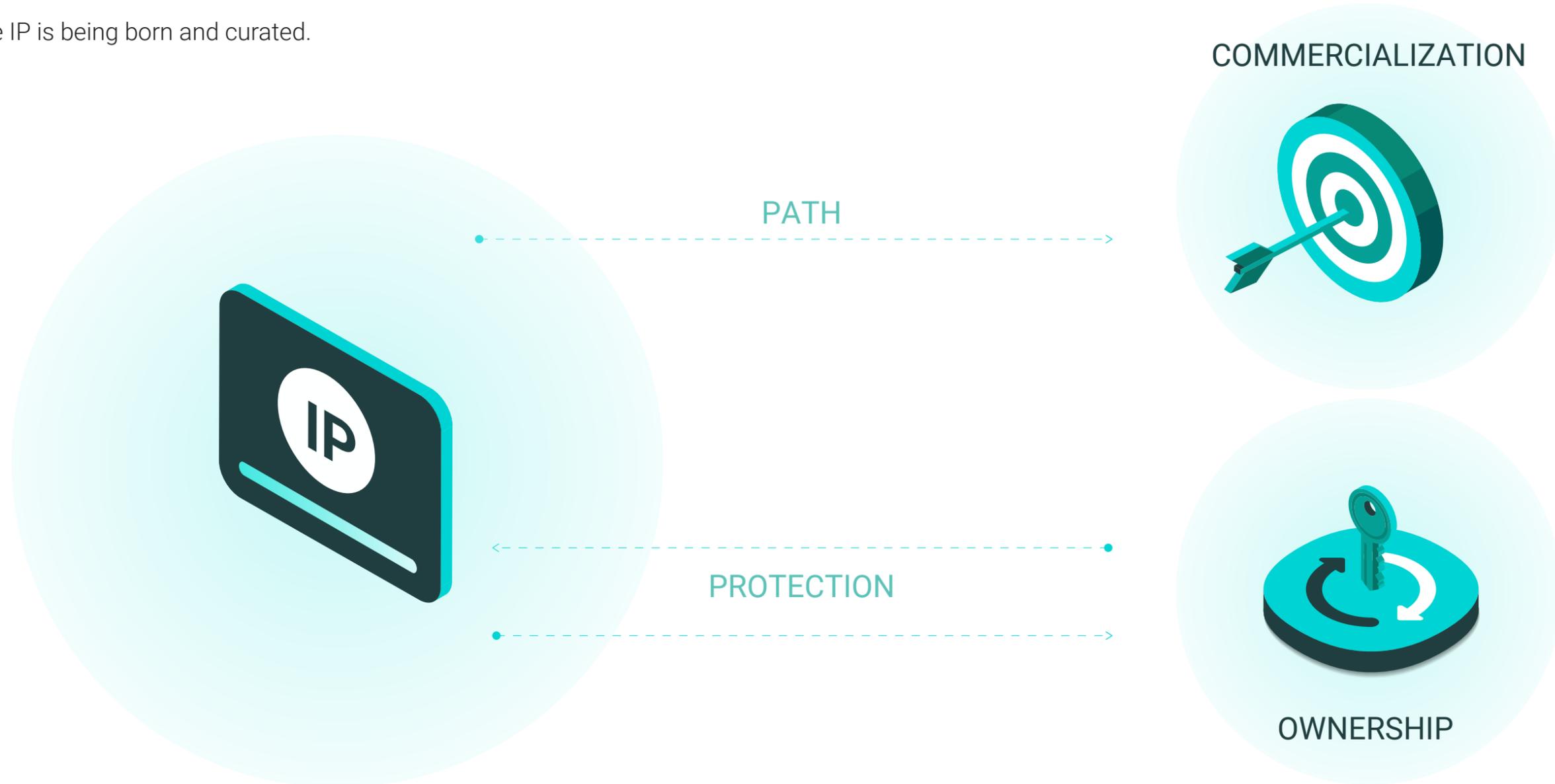
Growth and innovation of biomedical and clinical science is blocked.

- ✓ IP of universities not Monetized
- ✓ No incentive for students, professors, contributors
- ✓ Protection of IP is complicated
- ✓ No clear path of commercialization



DLT will re shape medical sector across all paths.

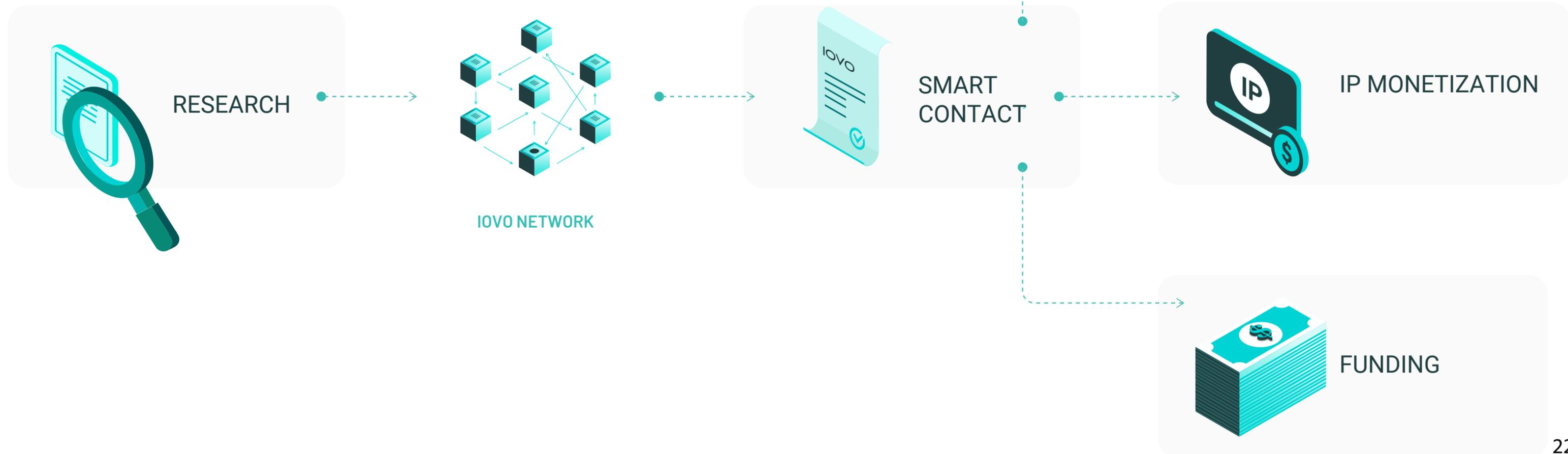
- ✓ Starting from the bottom.
- ✓ Starting from universities.
- ✓ Where the IP is being born and curated.



IOVO for biomedical research

- ✓ Data ownership, monetization
- ✓ Ownership structure
- ✓ IP protection

- ✓ Incentives
- ✓ Funding



IOVO for Companies

At the simplest level, IOVO provides companies with direct access to all the data-driven systems and services which are needed to operate in the global economy.

The IOVO model is a more efficient, secure and cost-effective way for companies to collect, manage and store data, and the advanced targeting capabilities provide direct access to willing and engaged customers.

Beyond that, IOVO supports an almost limitless array of advanced data handling techniques. Online merchants can use IOVO's manifest system to track user profiles and reputations. Banks can create credit rating systems for thousands or millions of uses, without the risks of exposing that data through hacking or errors.

IOVO also supports bespoke tokens which can run on top of the standard IOVO token, so companies can easily tokenize their products and services without needing to create a cryptocurrency infrastructure from scratch.



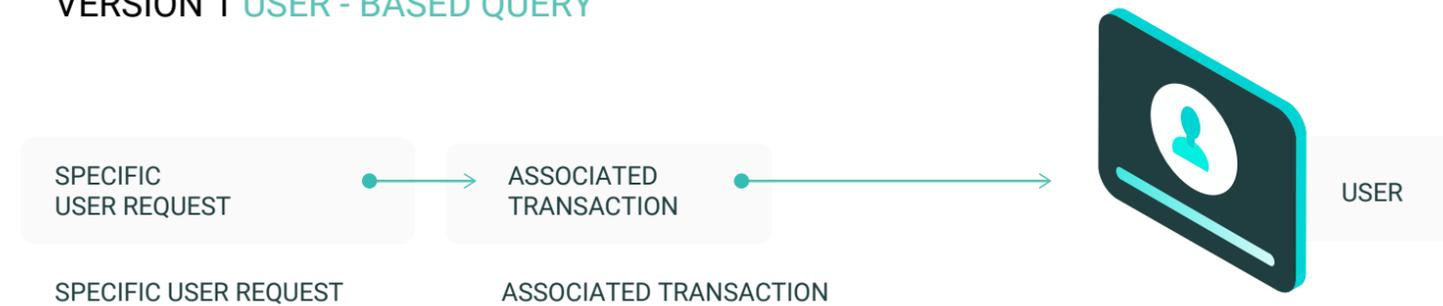
IOVO for Advertisers

Digital advertising is broken. Despite an apparent wealth of targeting and analytics tools, advertising on major platforms like YouTube or Facebook is a black box.

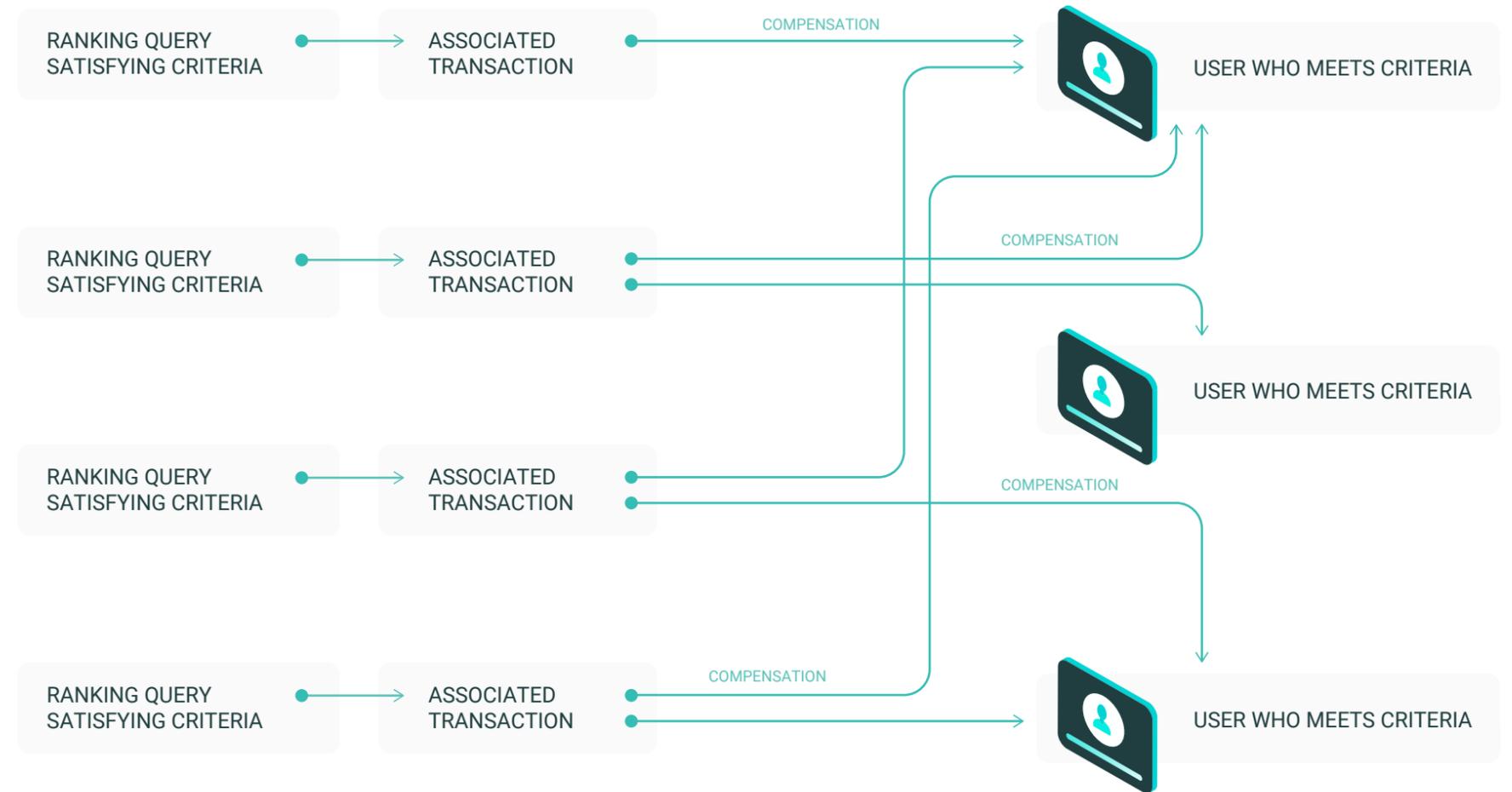
Ad targeting is often blunt and ineffective, and ads regularly end up linked to undesirable or controversial content, causing major headaches for brands. And users hate the experience, with vast numbers migrating to ad-free platforms or using tools to block ads altogether.

IOVO fixes the advertising model by providing much needed transparency and proper incentives, so everyone is a willing participant. Users are directly rewarded for providing the data that lets them be targeted by ads. And because the data is willingly shared and high quality, advertisers can be certain that their ads are reaching the right places. This eliminates the need to spam.

VERSION 1 USER - BASED QUERY



VERSION 2 CRITERIA - BASED QUERY



IOVO for Investors

IOVO provides multiple avenues to invest in the development of the decentralized data ecosystem.

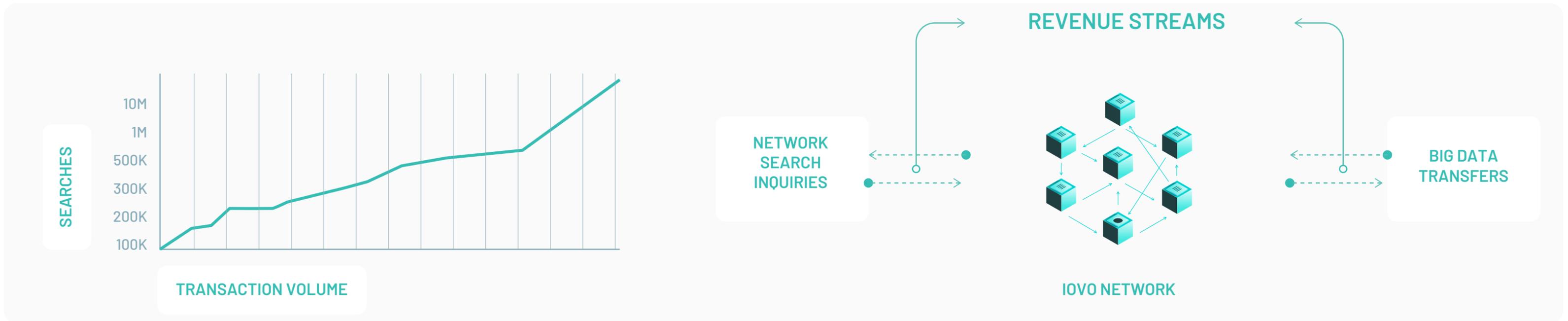
Every search on IOVO generates fees, and all incentives within the IOVO network are paid in IOVO tokens. The IOVO tokenomic system is designed to provide steady, stable growth to the value of the IOVO token, side-eliminating the volatility which has plagued other cryptocurrency projects.

In addition to simply holding tokens, it is possible to invest in the infrastructure which underpins IOVO.

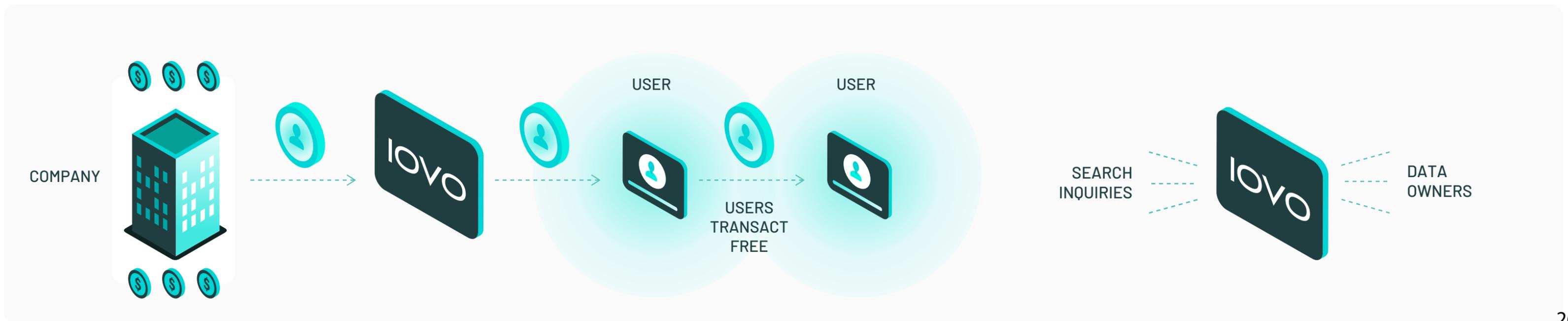
Nodes which support IOVO by providing the storage, validation and processing power the network needs receive proportionally higher rewards thanks to IOVO's Proof-of Value consensus mechanism.



IMAGINE A WORLD WHERE GOOGLE PAID ITS USERS FOR EVERY SEARCH ON THEIR DATA



EVERY SEARCH ON THE IOVO NETWORK IS PAID

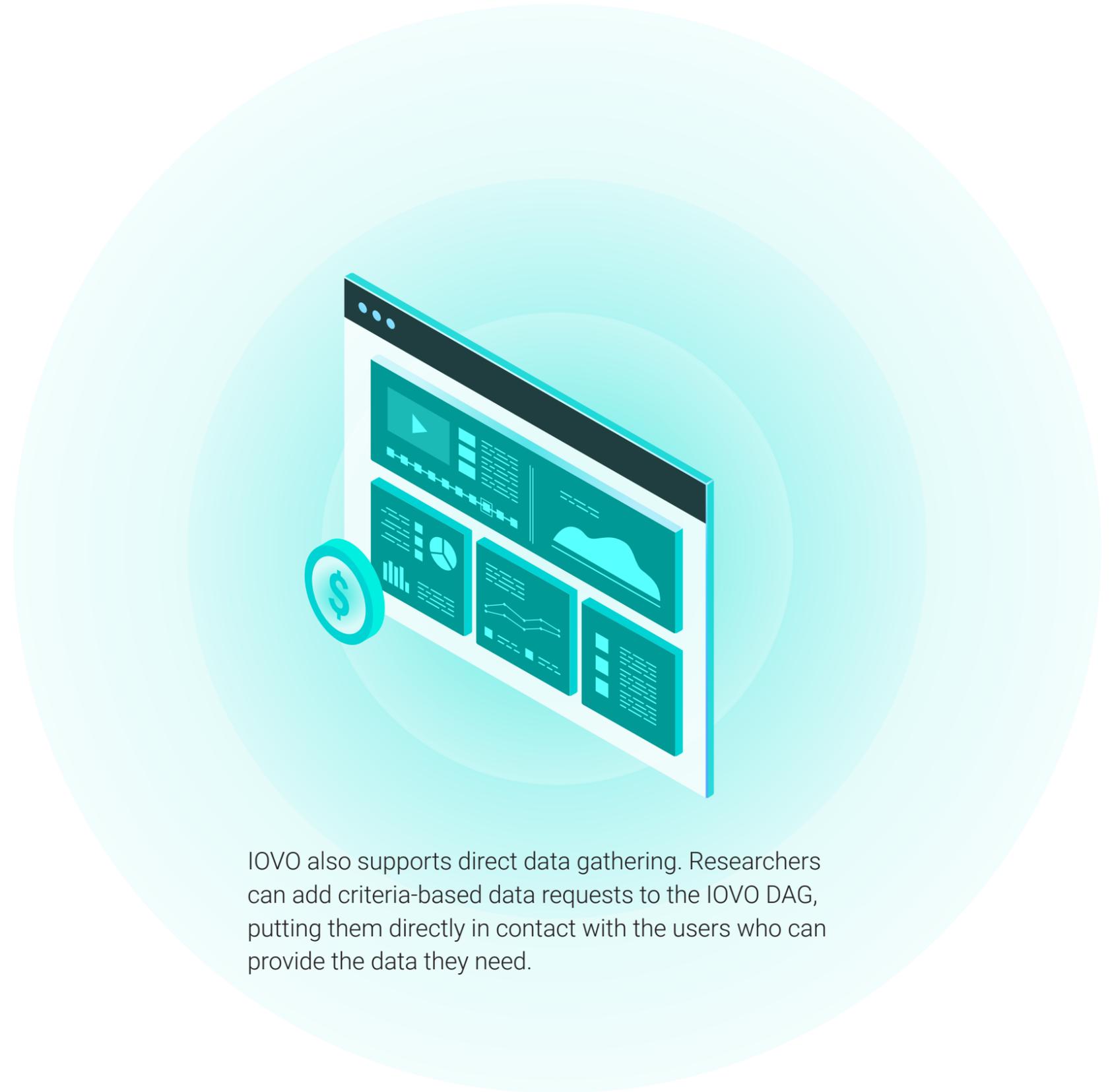


IOVO for Researchers

Much modern research, particularly in growing fields like AI and machine learning, requires access to large and reliable datasets from a broad range of disciplines. The current model is focused on acquiring and hoarding data at any cost, which means quality suffers: data is rarely filtered for accuracy at the point of collection, and there's no way to analyse data across different siloes.

With IOVO's proof of value system, high-quality data is encouraged and rewarded, while low-quality data is discouraged and ultimately filtered from the network. IOVO is one enormous decentralized data network, so data siloes are a thing of the past. This will give researchers access to all the data they need, including surprising connections between data which would previously have been in separate data siloes.

This, in combination with the fact that all data on IOVO is willingly and proactively shared, rather than harvested, will vastly improve the quality of datasets, leading to better data analysis, easier research and faster breakthroughs.



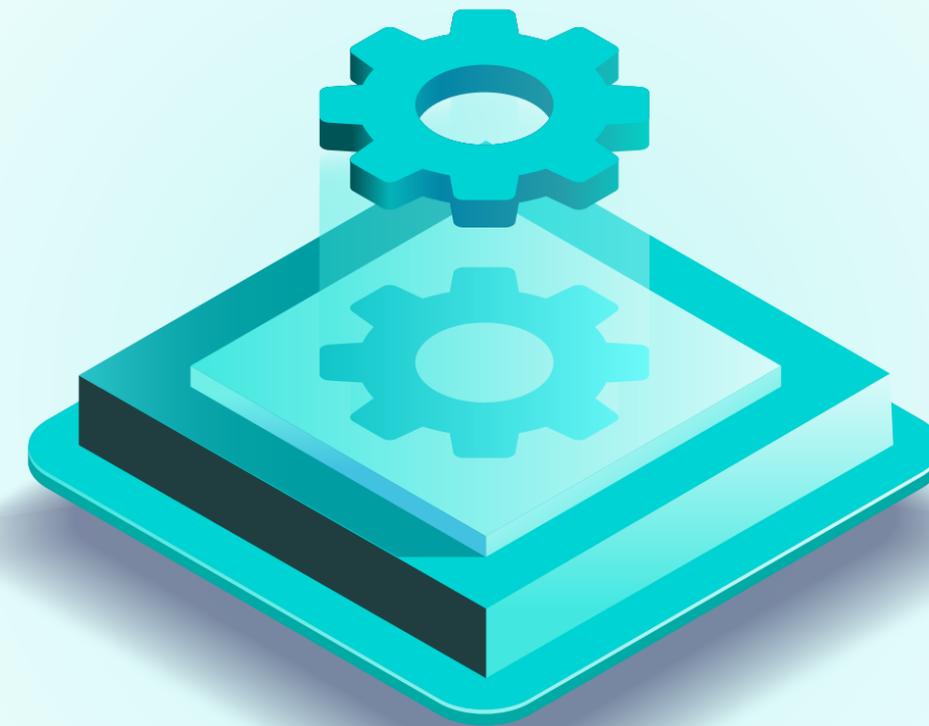
IOVO also supports direct data gathering. Researchers can add criteria-based data requests to the IOVO DAG, putting them directly in contact with the users who can provide the data they need.

IOVO for Regulators

As data markets have grown and become more global, regulators have struggled to balance consumer protection and supporting this valuable new industry. Crucially, IOVO drastically improves the auditability of data processes, without exposing the underlying data.

IOVO also provides huge benefits to small and medium companies who need to interact with user data but lack the resources or expertise to handle that data themselves in compliance with complicated data regulations across multiple jurisdictions.

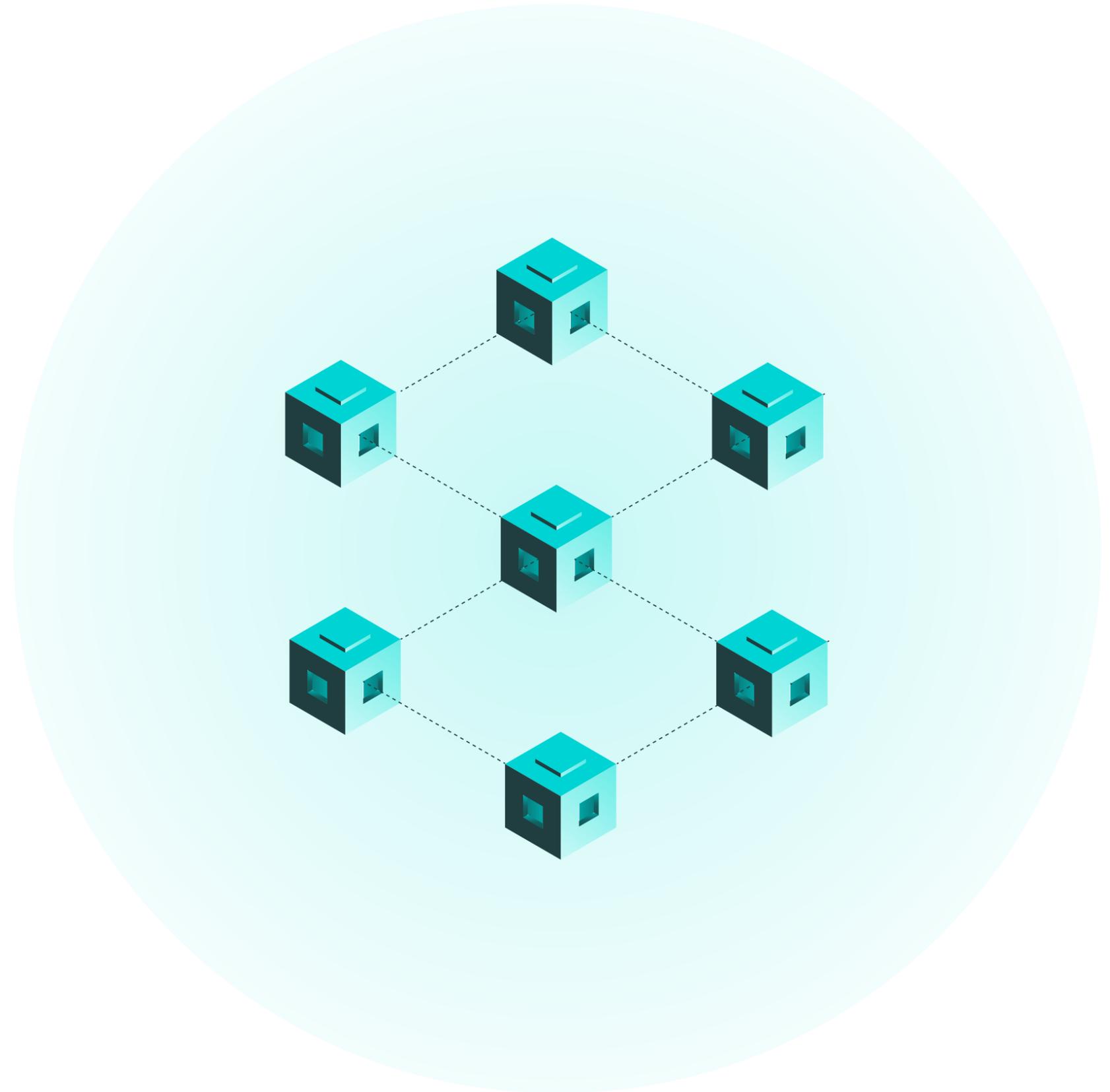
With IOVO, data remains on user devices as much as possible, automatically solving many problems surrounding data storage and security.



IOVO for Governments

Although all data on IOVO is fully encrypted, we appreciate that some data is so sensitive that even the metadata (and meta-metadata) which can be gleaned from the public parts of the IOVO DAG need to be protected. Often this confidential data is proprietary and should simply be handled off-chain, but governments and other large public institutions are often in a unique position of having to handle a large amount of private data gathered from members of the public.

To facilitate this unique need, IOVO supports permissioned chains. Parts of the DAG can be kept separate from the rest, with the only coordination via the main chain. This preserves the security and trustless nature of the DAG without exposing any part of the data on the permissioned chains.



About/Contact

[WhitePaper](#)

For further technical and analytical knowledge about IOVO DAG please read the White Paper available at:

www.iovo.io

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