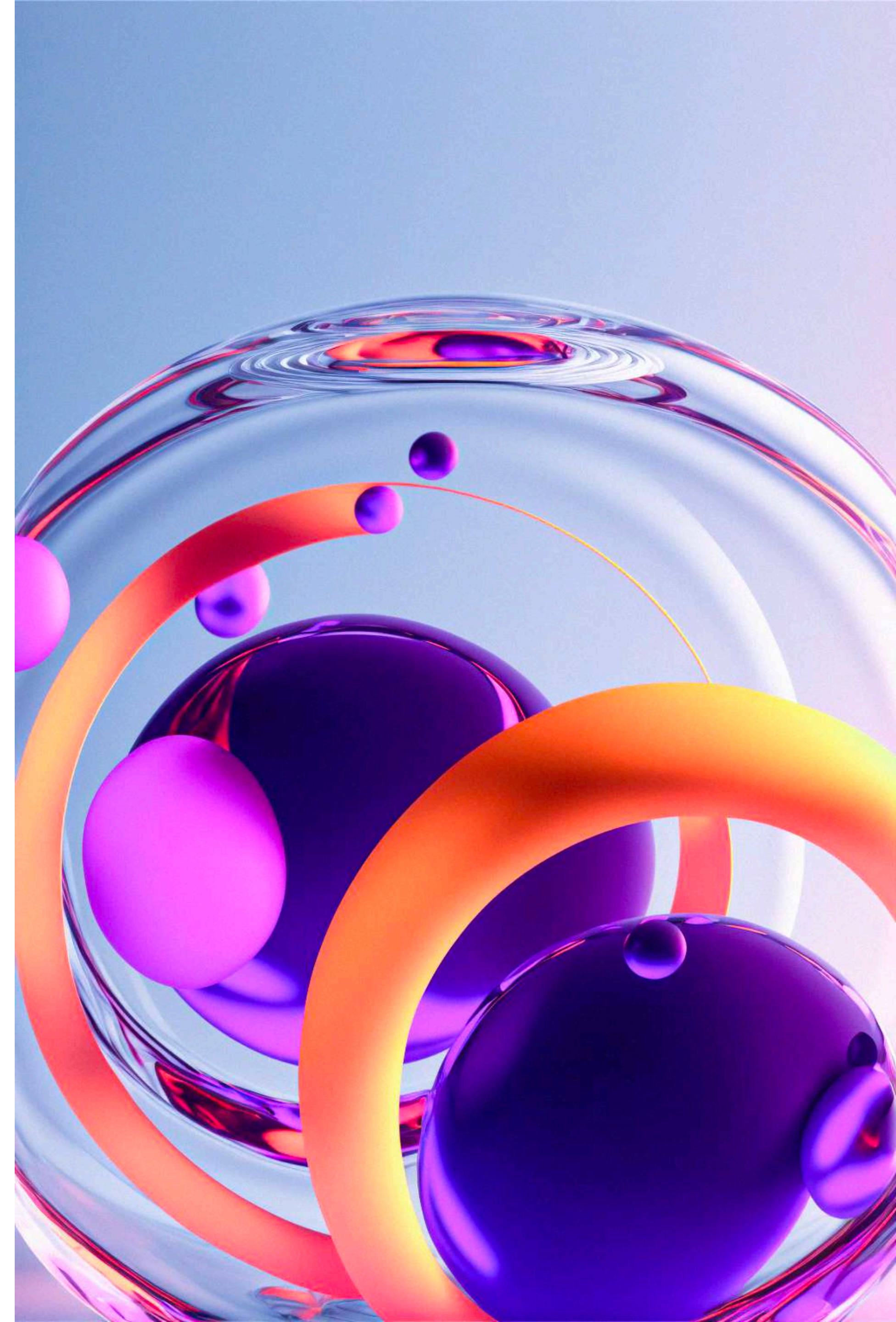




# The first **Layer One** **infrastructure** for a decentralized internet

Version 7.0  
October 9th





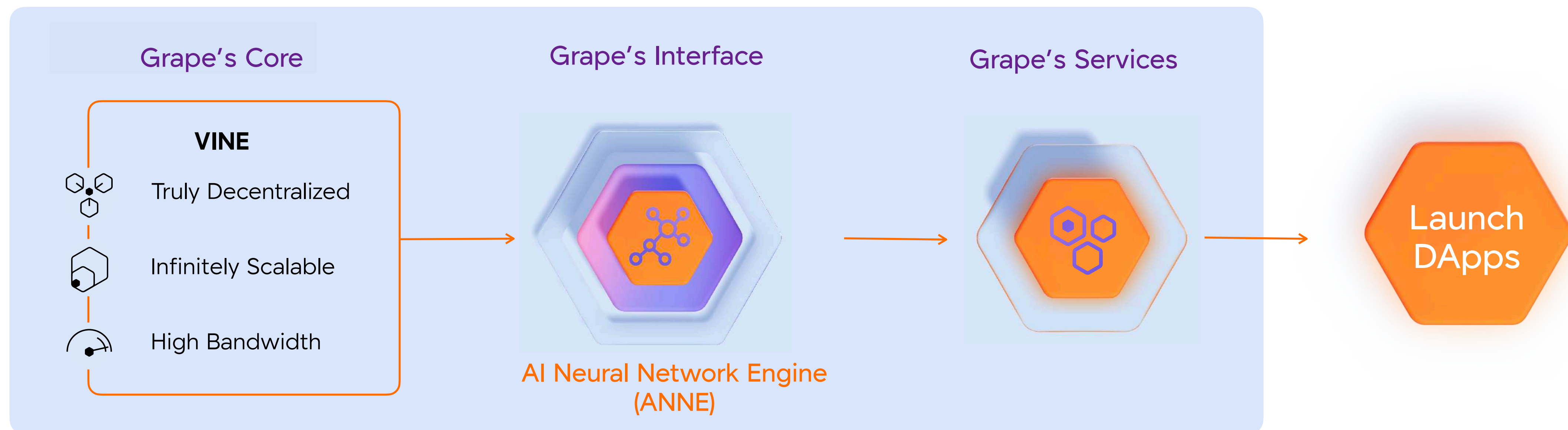
# What is Grape?

Grape is the first DAG-based Layer 1 DLT technology created to support the true decentralization of the Internet.

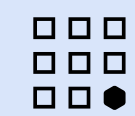
Grape believes that to provide a wide audience with easy access to data decentralization, the infrastructure should have a simple interface enabling a **codeless approach** from top to bottom.



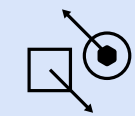
**Grape is a decentralized internet ecosystem with biometric access to all applications and an AI-powered assistant to easily create apps and navigate between them.**



# Grape created **VINE** - a proprietary DAG structure with multi-layer functionality



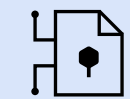
Launchpad



DEX



Quantum-Resistant encryption



Smart Contracts



AI-based interface



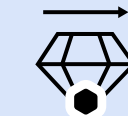
Decentralized Cloud Storage



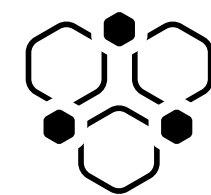
Biometric users access



Marketplace



Interoperable NFTs standard transfer



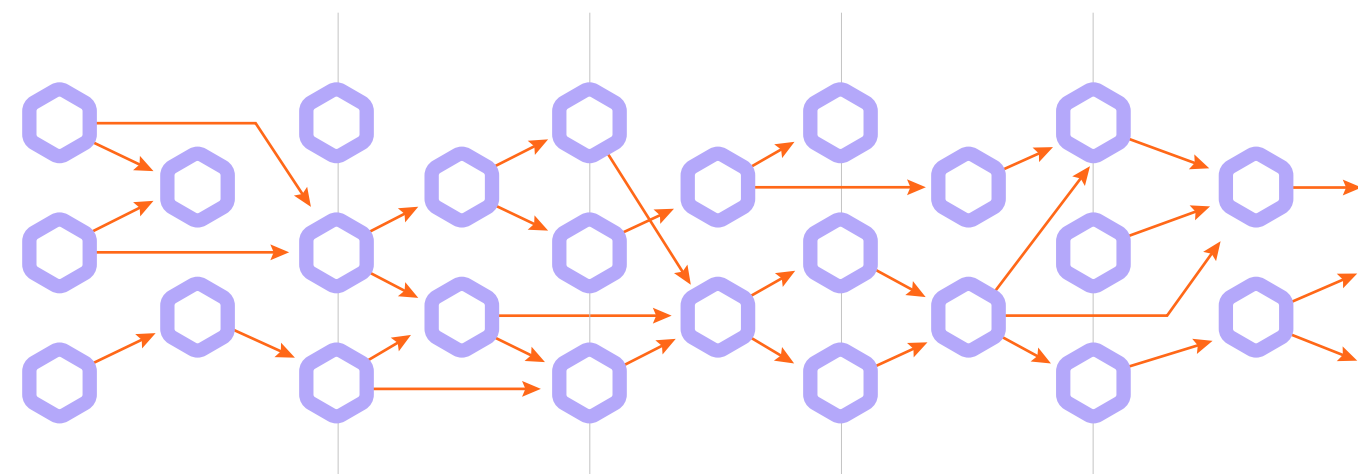
Main net — **VINE** — Branch-chain

# Is Grape's VINE a Blockchain?

Grape's VINE network delivers Distributed Ledger Technology (DLT) based on Directed Acyclic Graph (DAG) technology, which differs from Blockchain in its record structure and asynchrony.

DAG functions as a network of interconnected branches that expands in multiple directions. Transactions can be confirmed much faster while remaining decentralized since each node only confirms the previous one.

DAG



Blockchain



## Core Benefits of VINE

### Scalability

User growth does not create bottlenecks, but rather more nodes create greater scalability resulting in more TPS.

### Asynchronous

Transactions are not queued or formed into blocks, a crucial factor for real-time focused applications used for banking, gaming, etc.

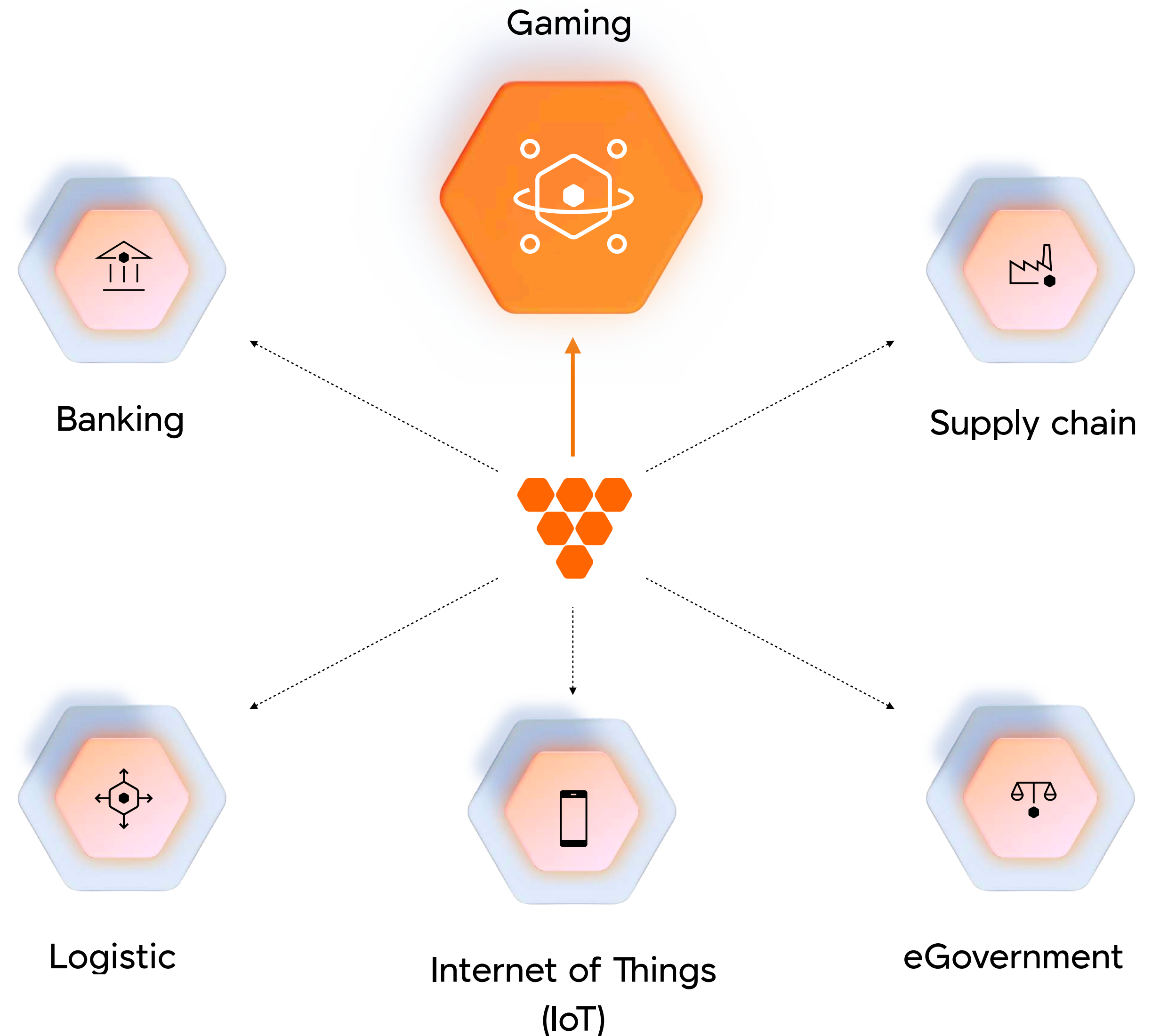
### Flexibility

Microtransactions are handled much more effectively due to the lack of technical requirements affecting fees.

# Which industries can benefit from Grape?

Grape is a comprehensive decentralized infrastructure that is designed to **withstand huge loads**. It has all the necessary functionality to support the needs of DApps for various industries.

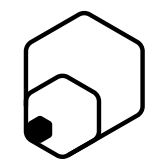
Grape has chosen gaming and virtual worlds as a starting point to validate the functionality of the ecosystem, test its scalability, and potential.







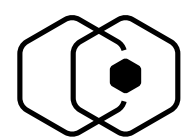
# DApps requirements for a truly decentralized infrastructure



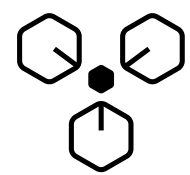
**High performance** network



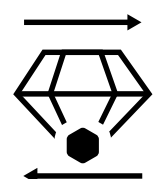
**Easy-to-use** tools to launch dApps and web3 projects



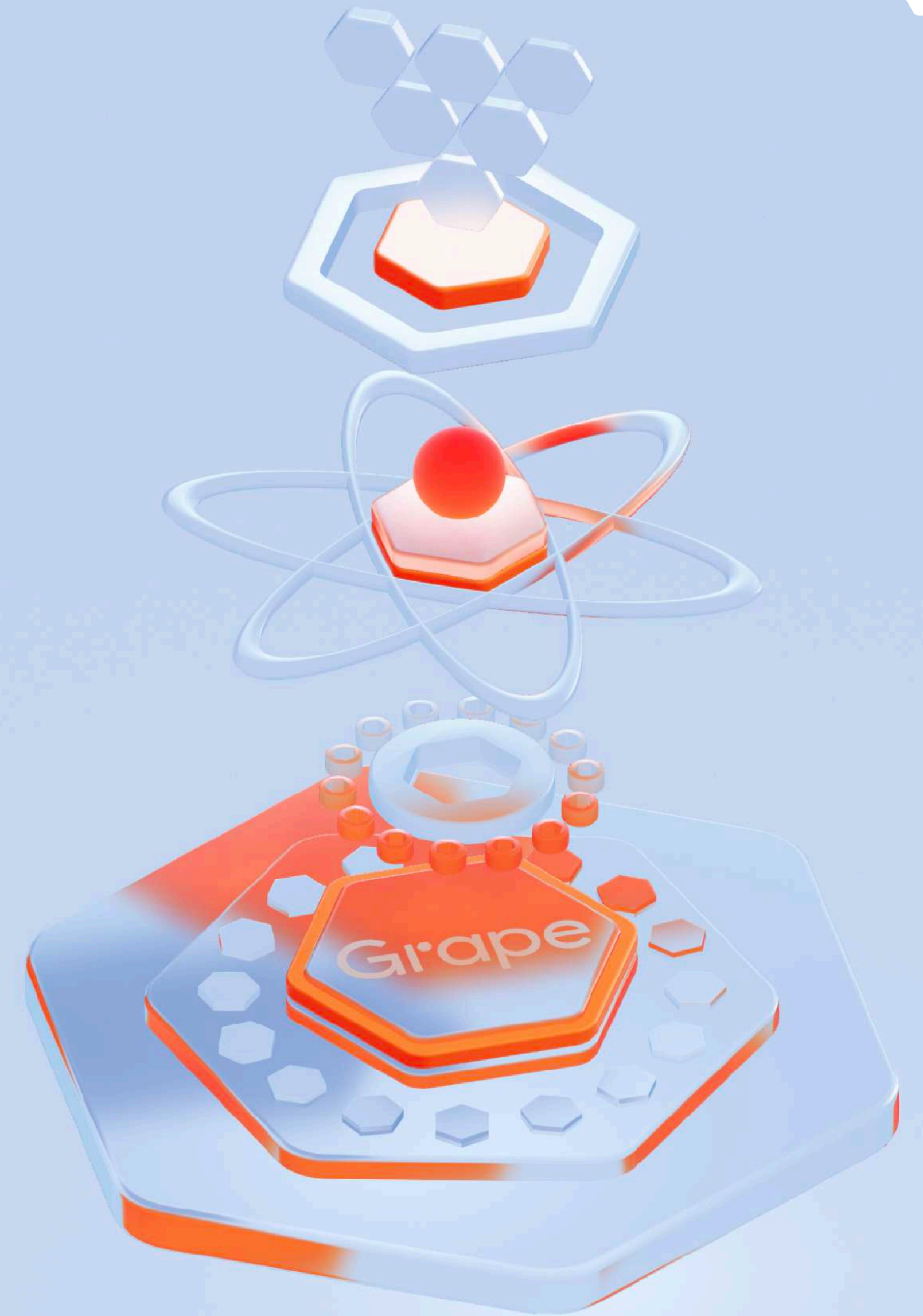
**Military-grade** security of funds and infrastructure



**Decentralized** data & digital-asset storage



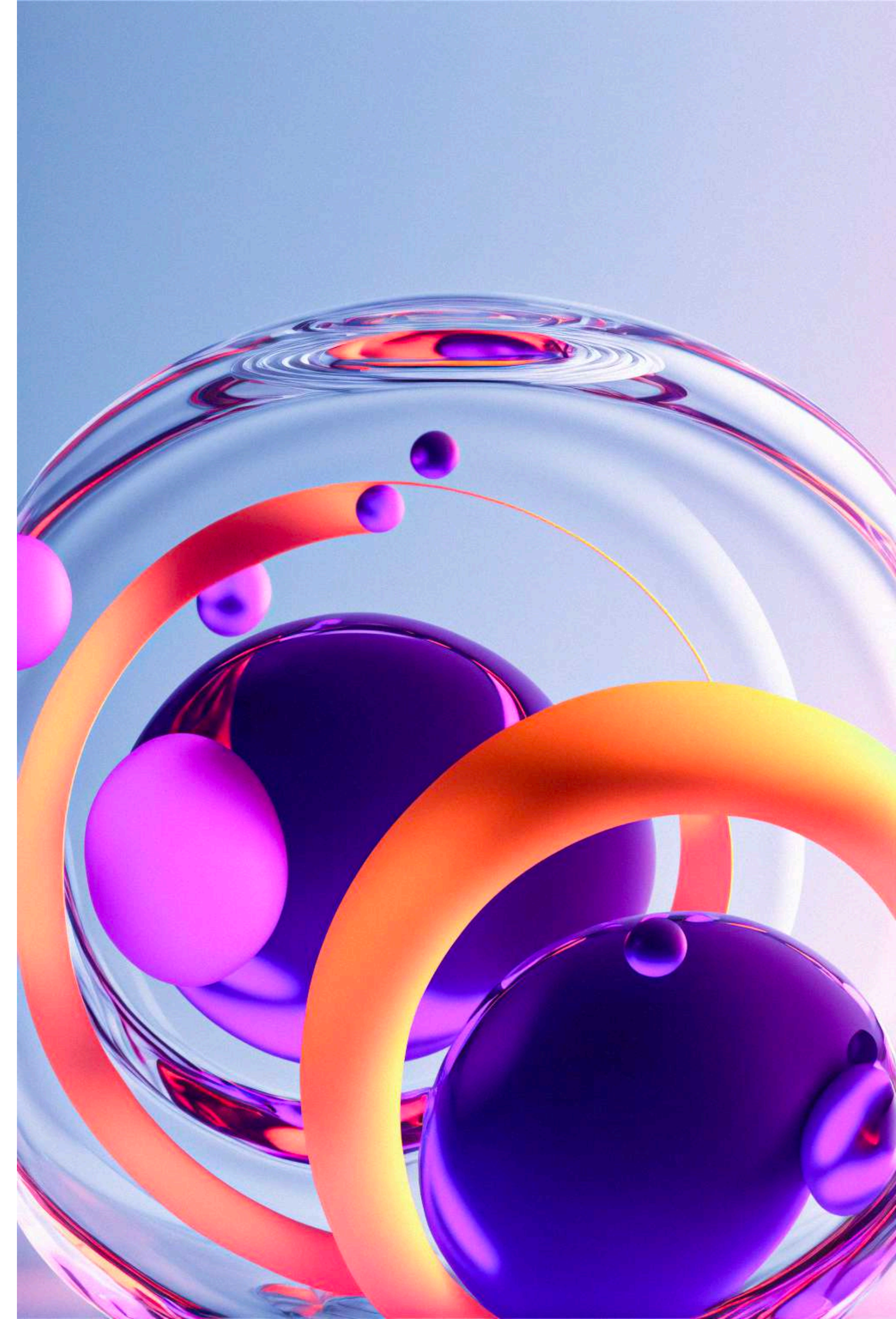
**Interoperable** NFT standard







Section 1	Use Cases
Section 2	Patents
Section 3	Comparing Grape
Section 4	Technical Overview





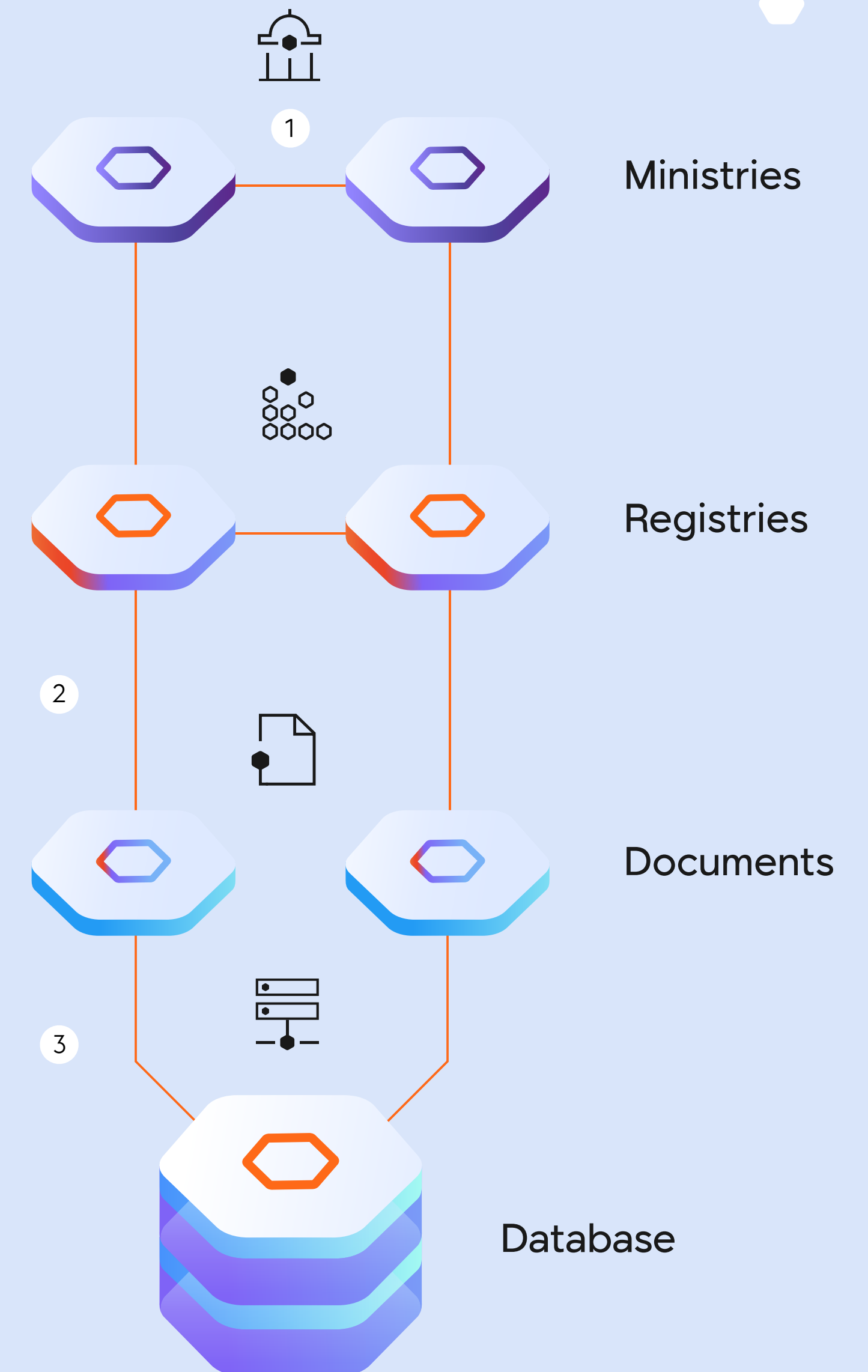
# Section 1 - Use Cases





# Use Case 1 - e-Government

Industrial bottlenecks	VINE	Cardano
Data structure 1	✓ VINE uses sharding to segment information by type and node. Furthermore, Vine supports branch chains (sidechain) to have a flexible infrastructure, allowing it to segment data in any relevant format.	✗ Cardano, like most blockchains, supports only the main net without further structuring by data types. This leads to blockchain bloat and failure on the scale.
Documents maintenance 2	✓ VINE's asynchronous structure can support over 700k data exchanges per second between governmental registries, which in practice means real-time updates in the system.	✗ Classic blockchains are linear and can handle up to a few thousand TPS for all network requests which eventually leads to queueing and delayed execution of requests.
Onboarding	✓ VINE supports two types of nodes, allowing to cost-effectively add new system participants as hardware requirements for light nodes are low.	✗ Cardano, among other blockchains, has one type of node, limiting the flexibility for the system's expansion.
Document security 3	✓ Grape's Decentralized Cloud Storage (DCS) allows storing data in a distributed way with extra segmentation of files between connected nodes. By adding quantum encryption, the system is future-proof and has no point of failure.	✗ Cardano doesn't have any decentralized storage, and they utilize standard encryption methods, limiting the service their ecosystem provides.



# Use Case 1 - e-Government

Grape has partnered with a company that will allow them to offer an e-Governance solution that enables a comprehensive process of digital transformation within a country.

Once the system is fully deployed and operational in the state, it will decrease the burden of bureaucracy on individuals and companies, as well as increases the effectiveness and transparency of a government.

## Features include:

- 1 Multi-level Transparency
- 2 Modular Design
- 3 Customizable
- 4 Fast Deployment
- 5 Flexible Architecture

## Registry types:

Demographic

Land

State

Finance

Health

Education

Defence

Energy

Justice

Agriculture

Transport



# Use Case 1 - e-Government

The system has various interfaces that are used by relevant departments for data entry and exchange. It also has a list of protocols created to monitor cooperation within government departments. Finally, the system integrates with proprietary distributed ledger to store all information in a secure and transparent way.

## Citizen Functions:

- 1 Registration with 2FA
- 2 Page of available requests
- 3 Request e-docs from different registries
- 4 History of requests
- 5 Page of received e-docs

## Government Functions:

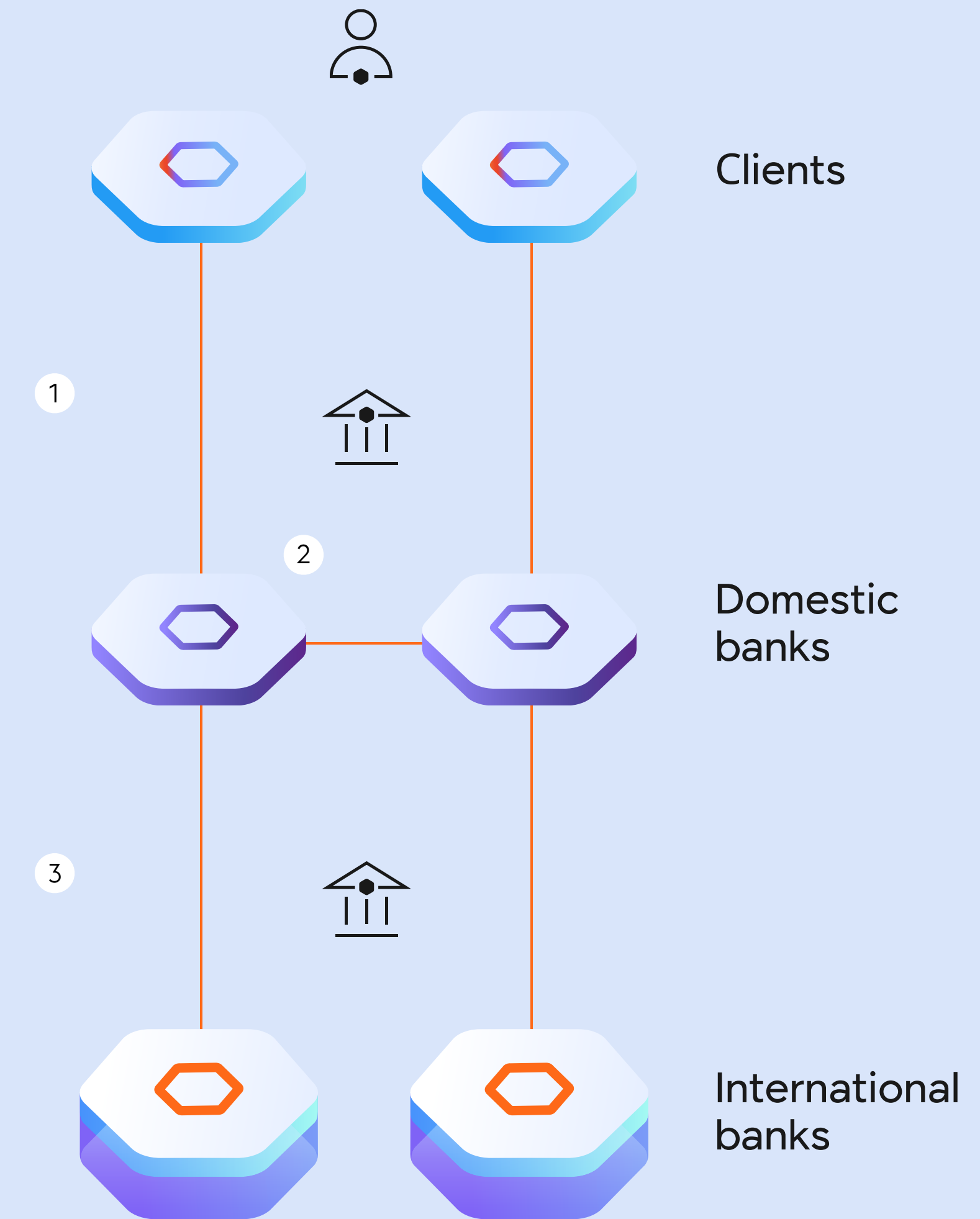
- 1 Employee and Admin functions
- 2 Full logs
- 3 e-doc creation and view
- 4 Signature of e-docs
- 5 Request to issue or revoke employee certificate
- 6 Registry integration with distributed database

## Businesses Functions:

- 1 Admin dashboard
- 2 Request e-docs from registry
- 3 Route requests for info
- 4 e-doc creation and view
- 5 Business integration
- 6 History of requests
- 7 Issue and Revoke certificates
- 8 Certificate validity check

# Use Case 2 - Global Finance Network

Industrial bottlenecks	VINE	XRP
Financial Security <sup>1</sup>	✓ VINE is future-proof and supports post-quantum encryption.	✗ XRPL uses standard encryption algorithms that will become obsolete in the next decade.
Bandwidth <sup>2</sup>	✓ With each new node (bank) connected to the system VINE's bandwidth effectively grows. VINE's architecture allows to connect unlimited amount of nodes to the network making it distributed to avoid a single point of failure.	✗ XRPL is technologically limited to 3,400 TPS and has around 100 nodes, leading to blockchain bloat and failure once the participant network grows.
Cost Flexibility <sup>3</sup>	✓ With each new node (bank) connected to the system VINE's bandwidth effectively grows. VINE's architecture allows the connection of unlimited nodes to the network, making it distributed to avoid a single point of failure.	✗ XRP transaction cost can't be adjusted and depends on the network.
Documents Support	✓ With proprietary Decentralized Cloud Storage, VINE allows the storage of documents in a distributed way, ensuring their security.	✗ XRP doesn't have a dedicated way to store documents and thus doesn't support all banking industry requirements.





# Use Case 2 - Global Finance Network

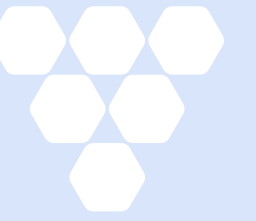
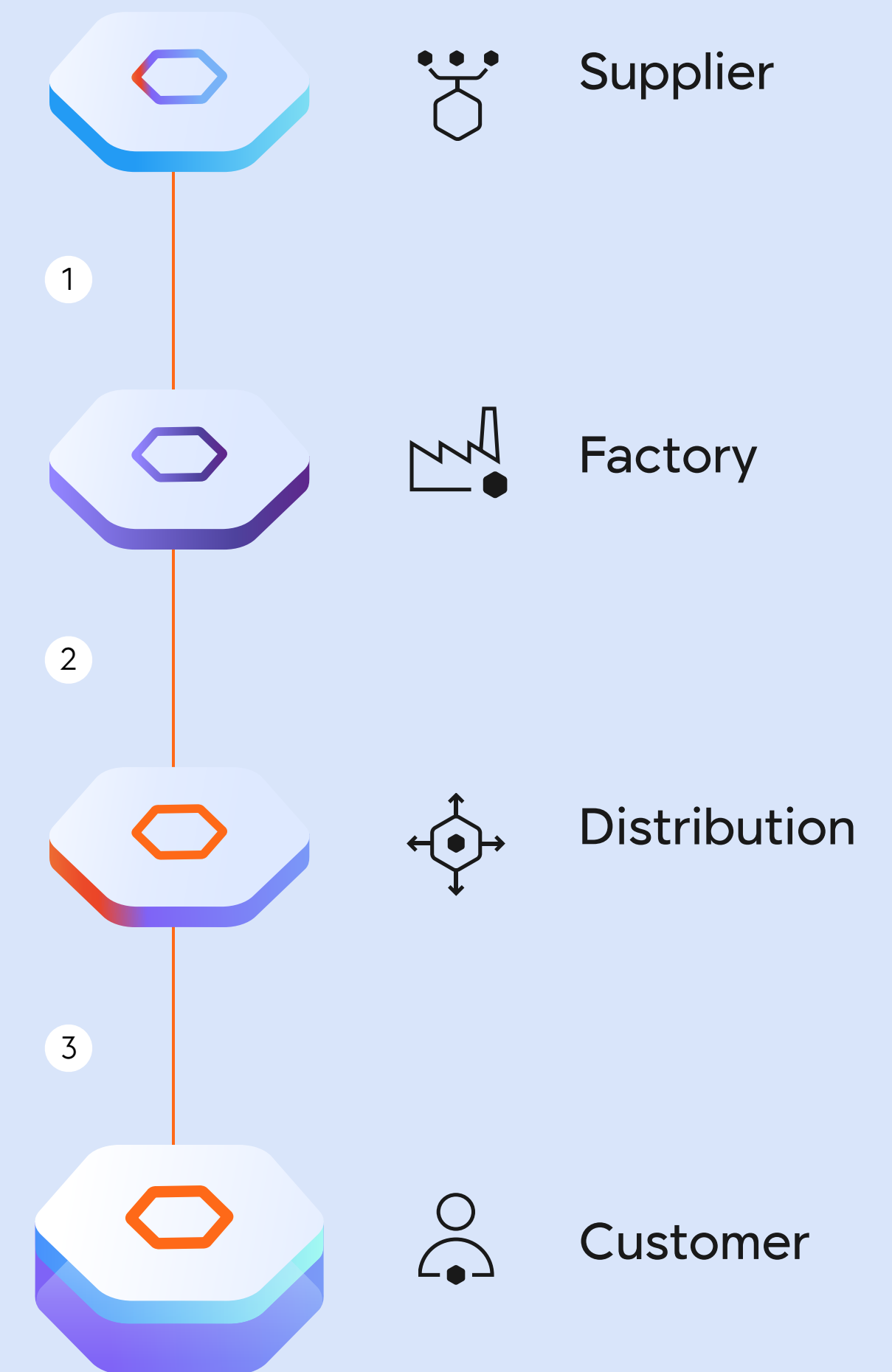
An international Bank-to-Bank system to process cross-border payments with minimal commission almost instantly. This system is designed to be used by financial institutions such as regular banks, credit unions, loan associations, investment companies, brokerage firms, insurance companies, mortgage companies, and others.

## Main Benefits:

- 1 Reaches 200 countries in 150 local currencies
- 2 Earn revenue on every transaction
- 3 Bi-directional messaging system
- 4 Multiple payment methods
- 5 Bank integration
- 6 Real-time gross settlement
- 7 High priority support
- 8 Low-cost transactions
- 9 Highly secure using DLT
- 10 High transaction speed
- 11 Financial Messaging Network

# Use Case 3 - Supply Chain

Industrial bottlenecks	VINE	vechain
Network Stability 1	✓ Any node can become the network's validator, ensuring a distributed approach, and with low hardware requirements, all supply chain participants can validate data exchange.	✗ VeChain uses Proof of Authority and master nodes to support the network, which opens the possibility for a single point of failure and limits the influence of newly added nodes.
Technology Adoption 2	✓ VINE supports Solidity as an industry-standard language for developing smart contracts that are actively used by the supply chain industry. Thus, there is no need to hire unique engineers to maintain the network.	✗ VeChain utilized its own approach to smart contracts and limits applications with templates. Any custom solution will require a unique team to support the system.
Status Updates 3	✓ With the possibility of maintaining more than 700k TPS, VINE can broadcast real-time tracking of goods at any step of the supply chain.	✗ VeChain supports only ~50TPS, limiting the number of status updates thus limiting tracking visibility.
Security	✓ By utilizing post-quantum encryption and decentralized cloud storage, VINE is effective against bad actors for data transmission and storage.	✗ VeChain doesn't have a dedicated service for storing data and uses standard encryption methods limiting its possibilities to support the supply chain industry in the long term.





# Use Case 4 - Internet of Things (IoT)

## Industrial bottlenecks

### VINE



#### Device Communication 1

✓ VINE can fuel unlimited communication between devices due to its unique scalable network that can support over 700k TPS, reaching higher bandwidth with more nodes connected to the network.

✗ With up to 1,000 transactions per second, IOTA can only support a small network of devices and will bloat on scale.

#### Hardware Requirements 2

✓ VINE filed a patent application for a unique node functionality that allows minimal hardware requirements. This invention enables more device types to be connected to the system.

✗ IOTA has faced many issues with throttle due to its hardware requirement for nodes.

#### Data Security 3

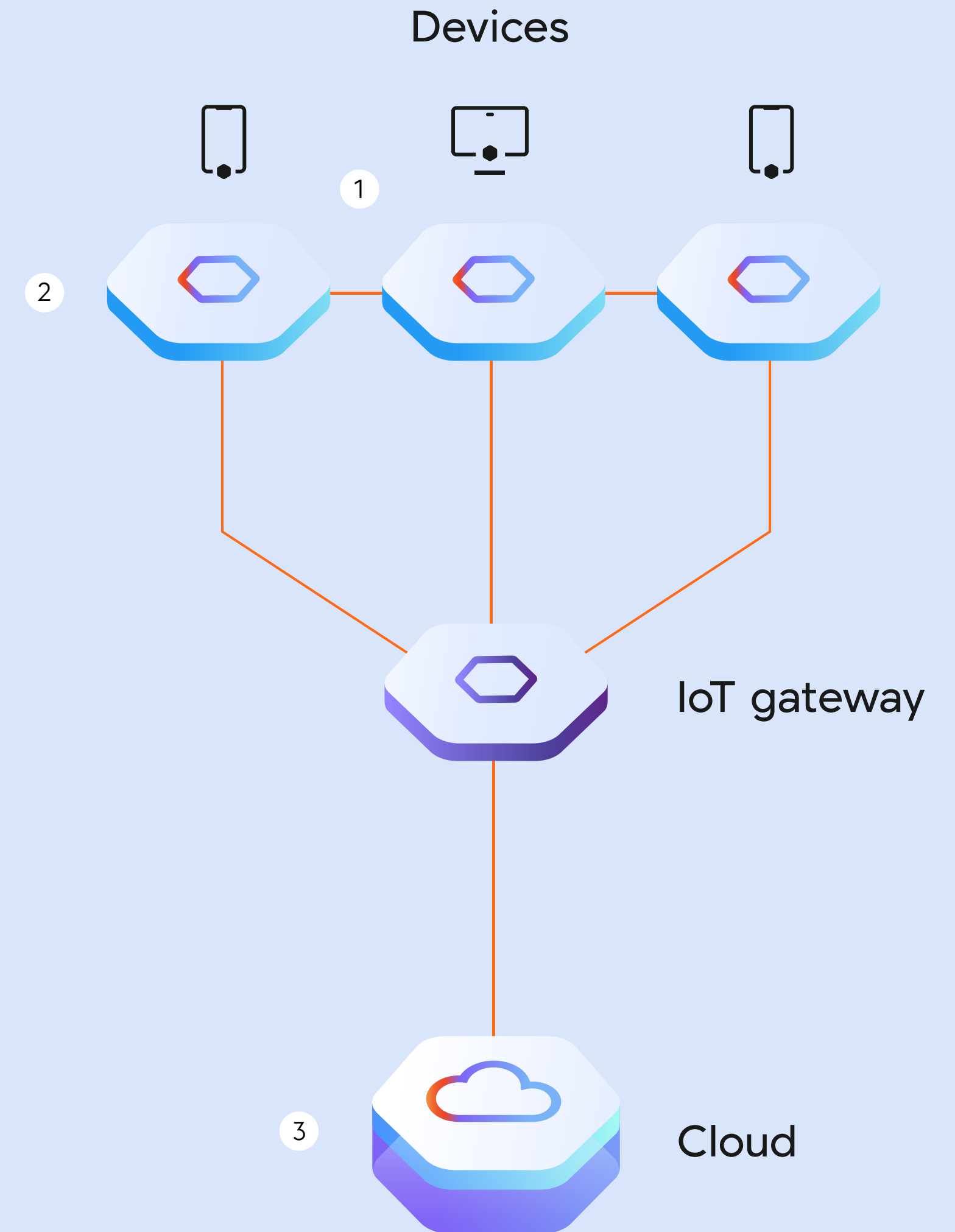
✓ With proprietary decentralized cloud stage and post-quantum encryption, user data on devices is secure from external influence.

✗ IOTA utilizes standard encryption and doesn't support its own storage, opening devices to potential threats.

#### Data Structure

✓ By utilizing sharding, devices can be grouped by type, allowing a more effective data exchange. All device types are connected through shards, ensuring the system's consistency.

✗ IOTA doesn't structure the network, making it ineffective on scale once more devices are connected to the system.



## Section 2 - Patents (Unique IP)





# Patents Pending for Grape

Invention Name	Description
1 Vertex selection system	The purpose of the invention is to protect against attacks when choosing vertices in a distributed ledger based on DAG. The Vertex selection system includes forming a DAG and protecting against lazy (placed close to the genesis block) vertex nodes of the graph.
2 Data consistency and synchronization	The main purpose of the invention is to ensure consistency and synchronization of data in DLT based on DAG. Due to the asynchronous nature of DAG, there is a need to have protection against the uncontrolled creation of parallel chains. A special structure of vertex confirmation achieves this.
3 System for resolving transaction order inversion and method for rapid ledger verification	The invention is intended for resolving the inversion of transaction order in a DLT and checking the consistency of the ledger and balance calculation, providing enhanced security, reliability, scalability, and performance of DLT based on a DAG. It is achieved by establishing global consistency in transaction order without using timestamps and other parameters vulnerable to manipulation.
4 System for ensuring irreversibility and consistency of data when processing smart contracts	The invention focuses on enhancing stability, security, and reliability using commit transactions when operating smart contracts in the DAG-based DLT.
5 Sharding - special use	Grape have found a way to use shading in a unique way to work within the Grape VINE network.


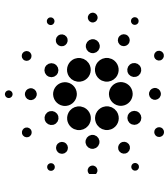

# Section 3 - Comparing Grape





# Grape has enormous potential

As a reference, similar networks have raised significant funds and built enormous value in terms of market cap. Grape is a better network and has tremendous potential.

	Amount Raised	Market Cap*
 Solana	\$25,500,000	\$12,380,000,000
 Cardano	\$62,200,000	\$11,345,000,000
 Ripple	\$298,000,000	\$50,000,000,000

# Scarcity of Grape Tokens

Scarcity is a major factor affecting the value of a token. The more tokens there are, the more volatile and unpredictable they will be. Bitcoin and Ethereum had the lowest amount of tokens and the highest price.

		Total Supply	Token Price	Dollars
Millions	Grape's (GRP)	10,000,000	\$60	
	Bitcoin (BTC)	21,000,000	\$26,534	
	Ethereum (ETH)	120,000,000	\$1,636	
	Solana (SOL)	557,000,000	\$19	

Billions	IOTA (MIOTA)	2,780,000,000	\$0.17	Cents
	Algorand (ALGO)	10,000,000,000	\$0.09	
	Cardano (ADA)	45,000,000,000	\$0.25	
	Ripple (XRP)	100,000,000,000	\$0.48	

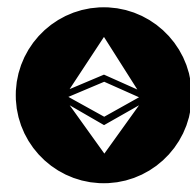


# Grape has overcome major technical challenges

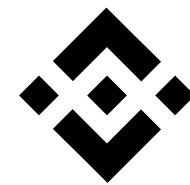
There are no Layer 1 ecosystems on the market that can support the shift to distributed infrastructure. Grape has developed its platform to overcome these bottlenecks.



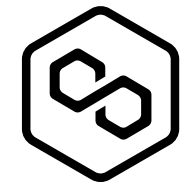
Solana



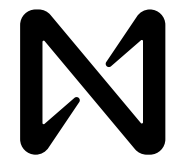
Ethereum



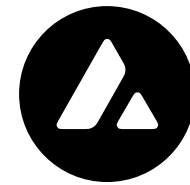
BSC



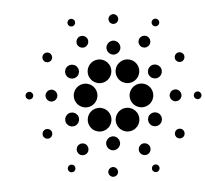
Polygon



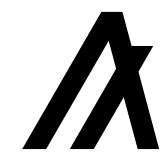
Near



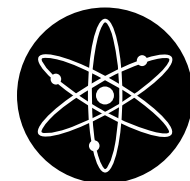
Avalanche



Cardano



Algorand



Cosmos

## Problems facing of current Layer 1 networks

- High Transaction Costs
- Low Transaction Speed
- High Adoption Threshold
- Limited Security Features
- Single Point of Failure
- Network Bloat

# Grape's VINE is an evolutionary mechanism for scalability

**700K+ TPS** Grape

**10x** faster than Solana

**150x** faster than Avalanche

**350x** faster than Tron

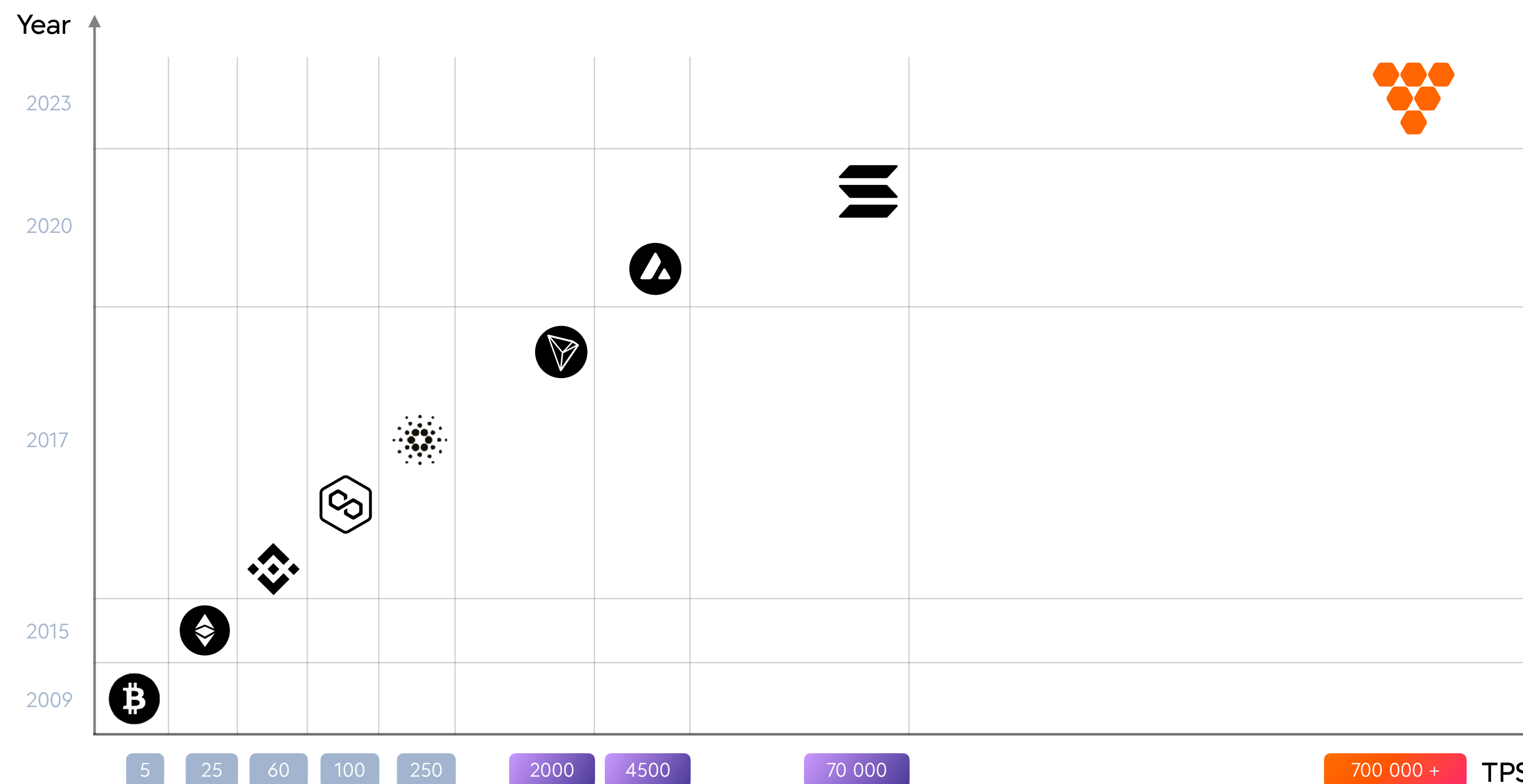
**2Kx** faster than Cardano

**5Kx** faster than Polygon

**7Kx** faster than BSC

**17Kx** faster than ETH

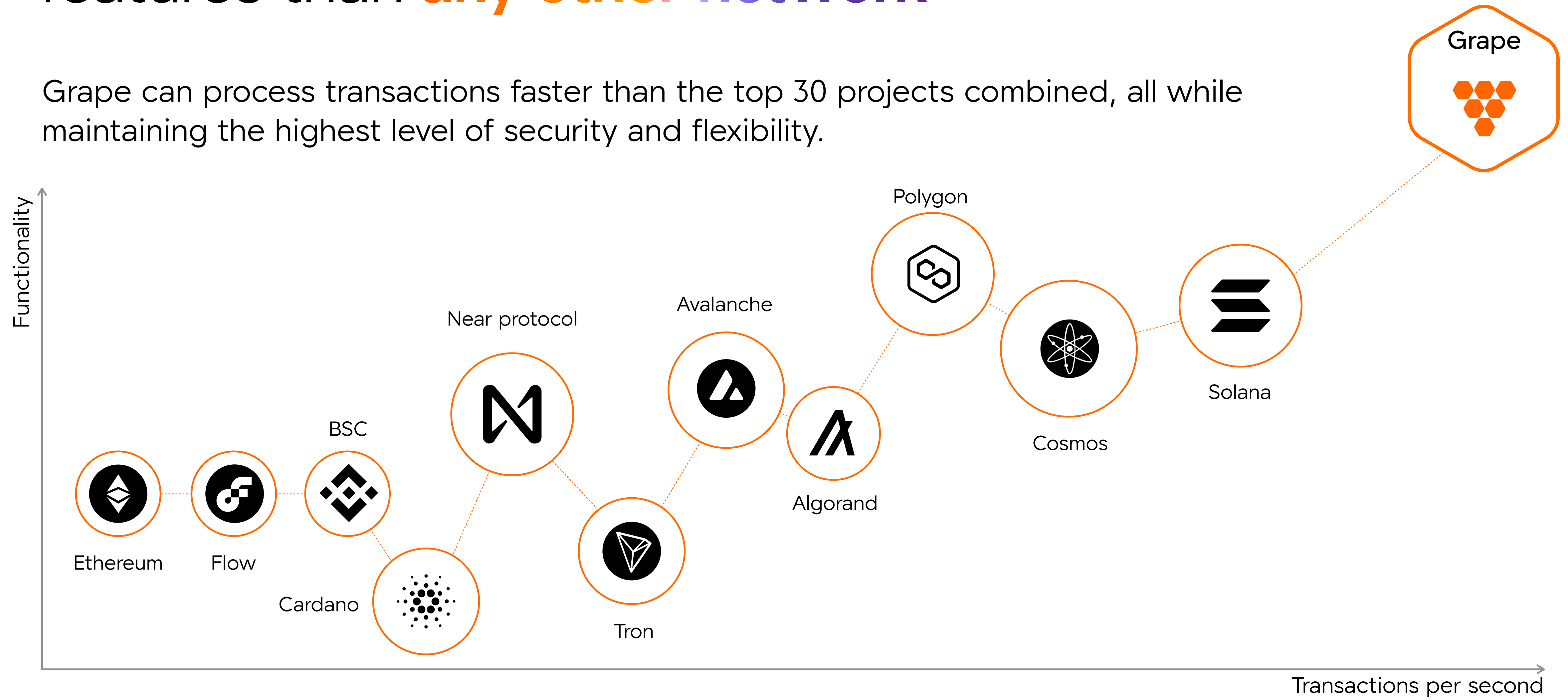
**84Kx** faster than BTC





# Grape's infrastructure has more features than **any other network**

Grape can process transactions faster than the top 30 projects combined, all while maintaining the highest level of security and flexibility.



# VINE vs. other DAG-based systems

Technology	Release Date	Consensus	Transaction Speed (TPS)	Scalability	Security	Governance	Transaction Approval time	Fee
<b>IOTA</b>	June 2016	Coordinator-based consensus	1,000 (with Coordinator)	Limited by Coordinator, it's slower without it	Cryptographically secured	Decentralized foundation	1-3 minutes	zero
<b>DAGCoin</b>	July 2018	DAG-based consensus	8.000	Limited by hardware resources	Cryptographically secured	Centralized	30 seconds	0.0005 DAGCoin
<b>ByteBall</b>	December 2016	DAG-based consensus	100	Limited by hardware resources	Cryptographically secured	Centralized	Few minutes	1 Mb storage fee \$0,033
<b>Nano</b>	November 2017	Open representative voting consensus	Up to 7,000	Limited by hardware resources	Cryptographically secured	Decentralized	Limited only by transaction transfer delays	zero
<b>XDag</b>	December 2017	DAG-based consensus	200-300	Limited by hardware resources	Cryptographically secured	Decentralized	30 seconds	min of 0.01 XDAG
<b>Fantom</b>	February 2018	Lachesis-based consensus	300,000 (Up to 10,000 in real test)	Horizontally scalable	Cryptographically secured	Decentralized	Few seconds	very low
<b>Grape</b>	<b>2023</b>	<b>VINE proprietary synchronization and confirmation algorithms complex</b>	<b>Higher than 700,000</b>	<b>Increased with every connected node (linear effect)</b>	<b>Post-quantum cryptographically secured</b>	<b>Decentralized</b>	<b>Sub-second limited by front-end</b>	<b>very low or zero</b>



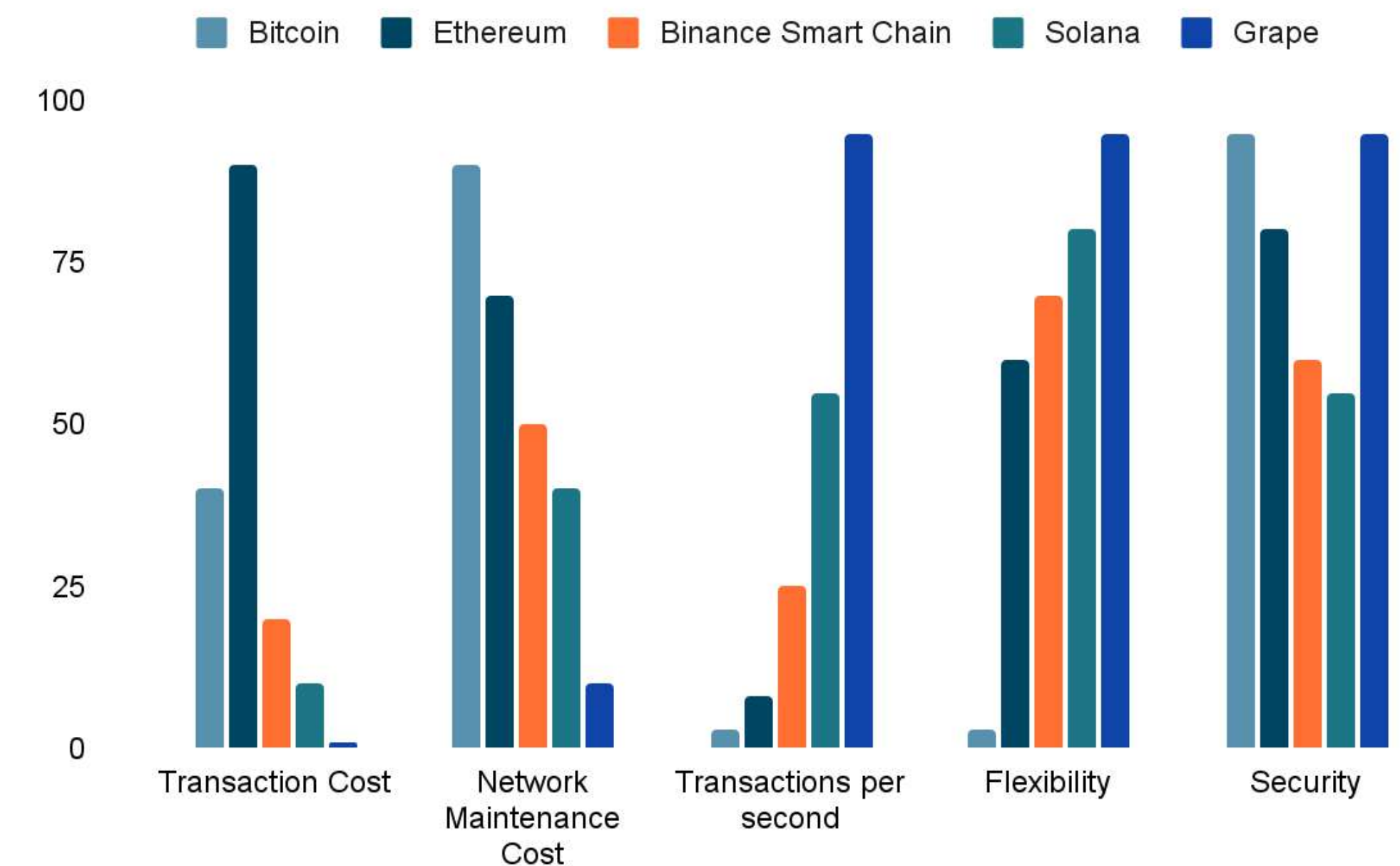
# Grape is the final step in the evolution of DLT

Scarcity is a major factor affecting the value of a token. The more tokens there are, the more volatile and unpredictable they will be. Bitcoin and Ethereum have the lowest amount of tokens and the highest price.

Year	Project	Limitations
2009	Bitcoin	Practically zero infrastructure for further development.
2012	Ripple	Very little capability to scale.
2015	Ethereum	Infrastructure is difficult to upgrade, hence it is not scalable. Expensive fees.
2019	BSC	Relies on Ethereum and has very limited capabilities.
2020	Solana	Prone to security risks and practical limitations during user growth.
2023	Grape	The final step in solving scalability, security, and low-cost transactions.

# Grape is the final step in the evolution of DLT

Year	Project	
2009	Bitcoin	Bitcoin was a first validation that crypto assets are possible, but it has practically zero infrastructure for further development.
2015	Ethereum	Ethereum started to the concept of decentralized application but it's existing infrastructure is hard to upgrade, thus not scalable.
2019	BSC	BSC was one of the forefront of using EVM to overcome issues of Ethereum but with centralization and focus only on dApps market.
2020	Solana	Solana aimed to create a comprehensive infrastructure ready for mass adoption but didn't pass market validation due to security risks and limitations during user growth.
2023	Grape	Grape is the final step in the evolution of layer 1s that outperforms all previous generation infrastructures. It focuses on being scalable for any industrial application in combination with easy-to-use approach.



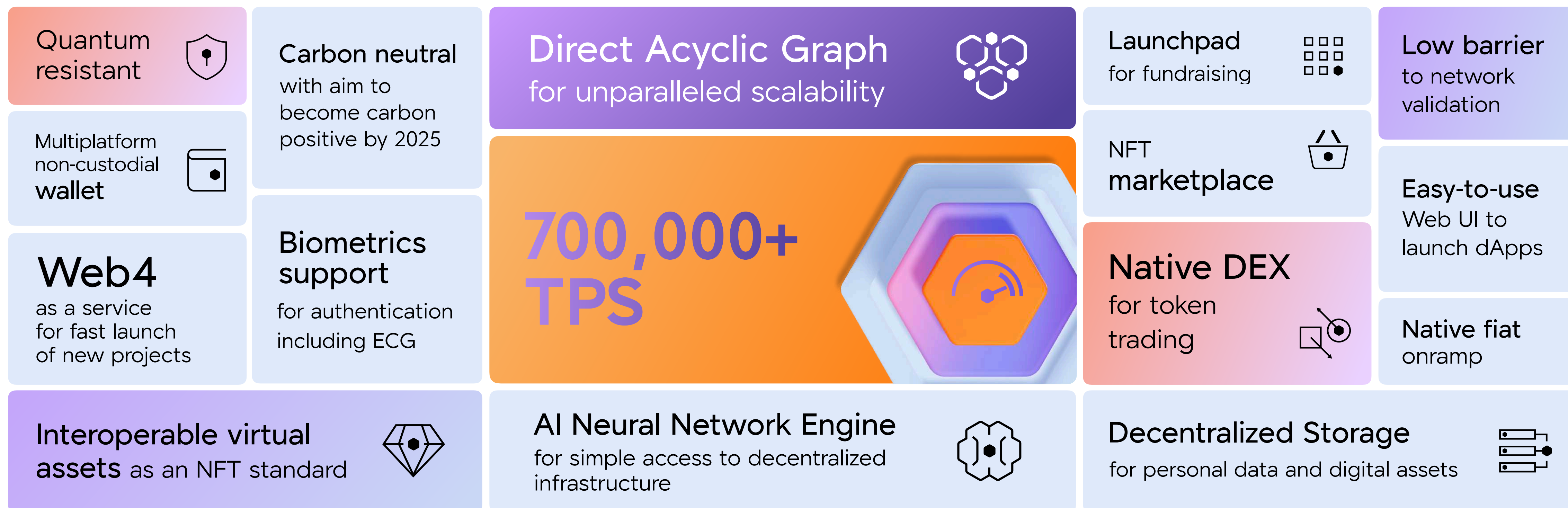


# Section 4 - VINE & ANNE Technical Overview





# Grape is the most advanced DAG-based Layer 1 infrastructure for a decentralized internet



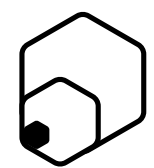




**Each action in a DApp is based on a data transfer,** which is a foundation for transactions

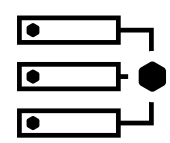
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The Grape main pillars to ensure ecosystems operation are:



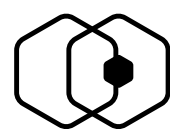
**VINE - scalable DAG technology** for fast and cheap transactions

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**Decentralized Cloud Storage (DCS)** for securely storing NFTs and other game data

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AI DApp creation and standards for **interoperable NFTs**



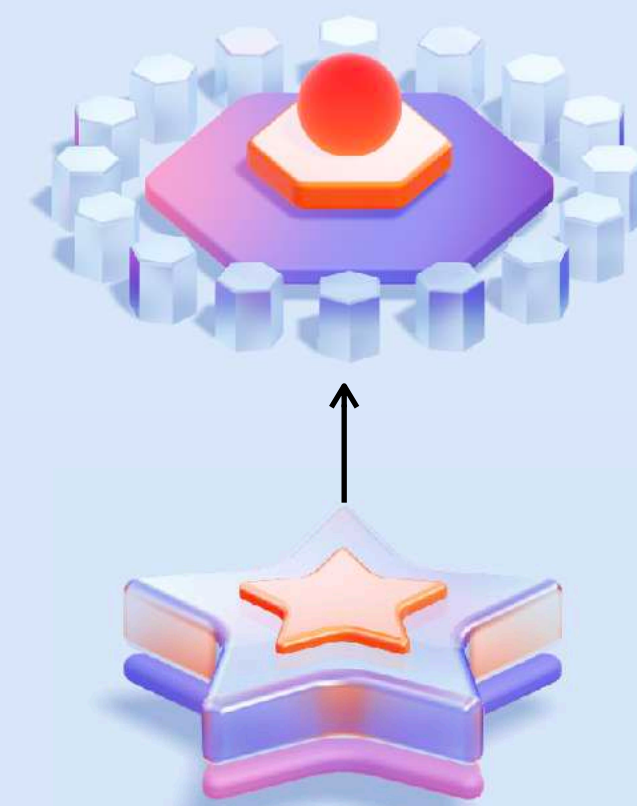
# The primary goal of Grape is to create a fully decentralized infrastructure



Due to its unique design, Grape network performance will grow with each new advanced node connected to it.

1 Advanced validators will need to store database to ensure effective scalability of the network.

2 Basic validators will be able to verify transactions with any device without the need to store database.



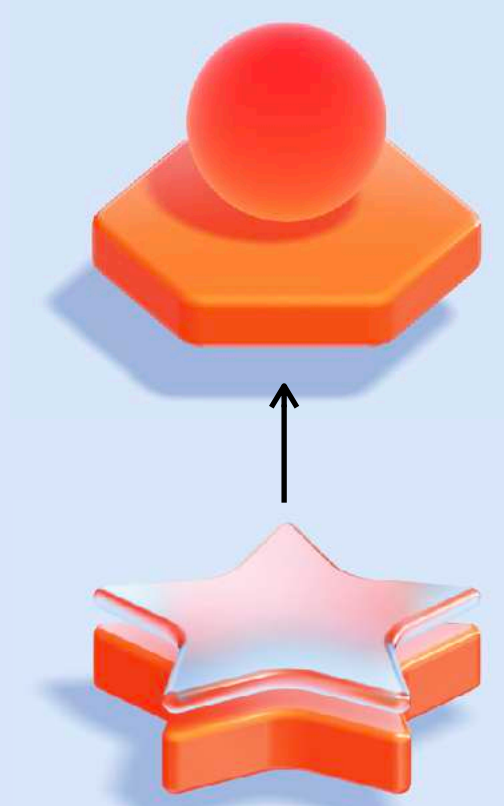
Advanced node

Extra rewards

Validation

Basic node

Rewards

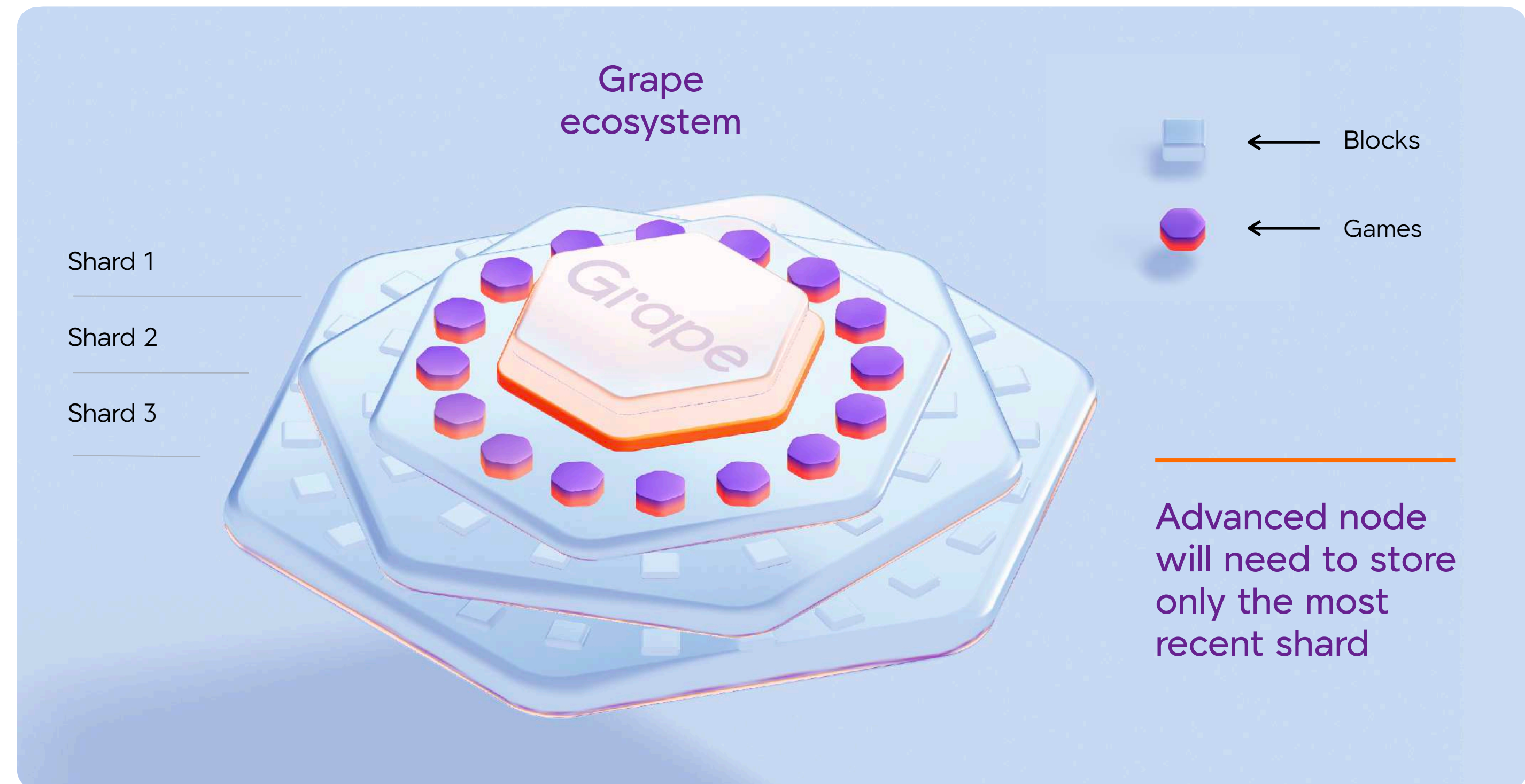




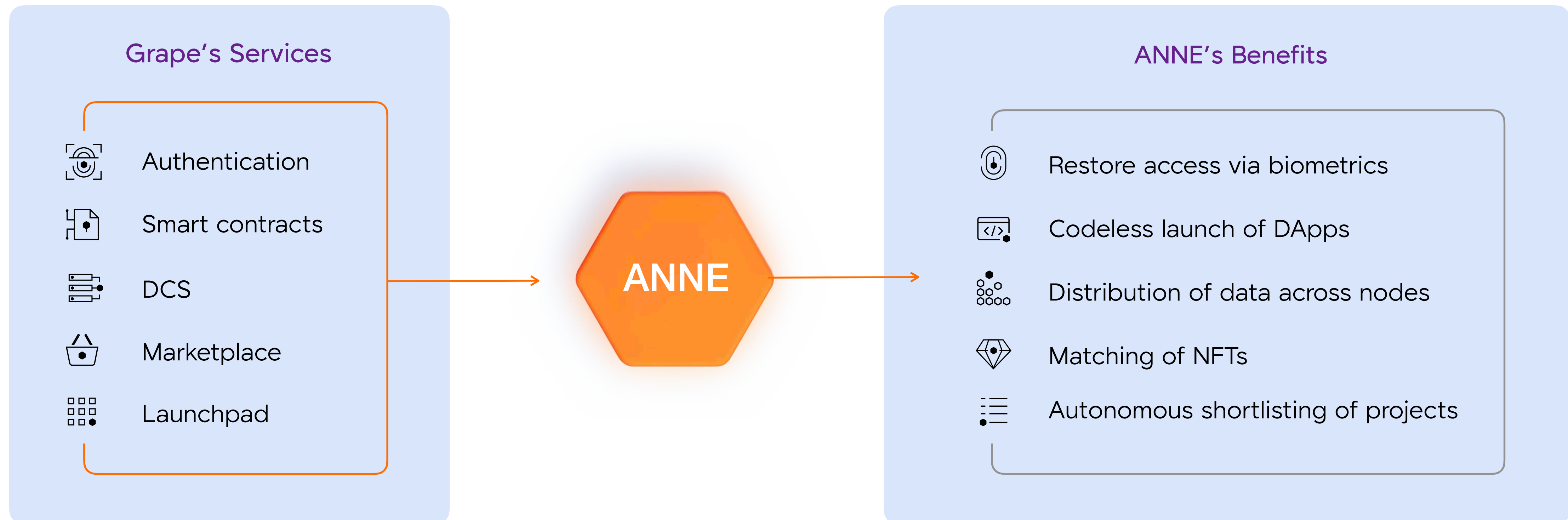
To make advanced nodes even more accessible and achieve higher performance for Grape, sharding will be launched to split the database



In comparison, to participate in block validation in Ethereum, a user requires to stake at least 32 ETH and have more than 900 terabytes of free space to download the full Ethereum blockchain.



# ANNE is a proprietary AI-based interface that improves each functional module of Grape



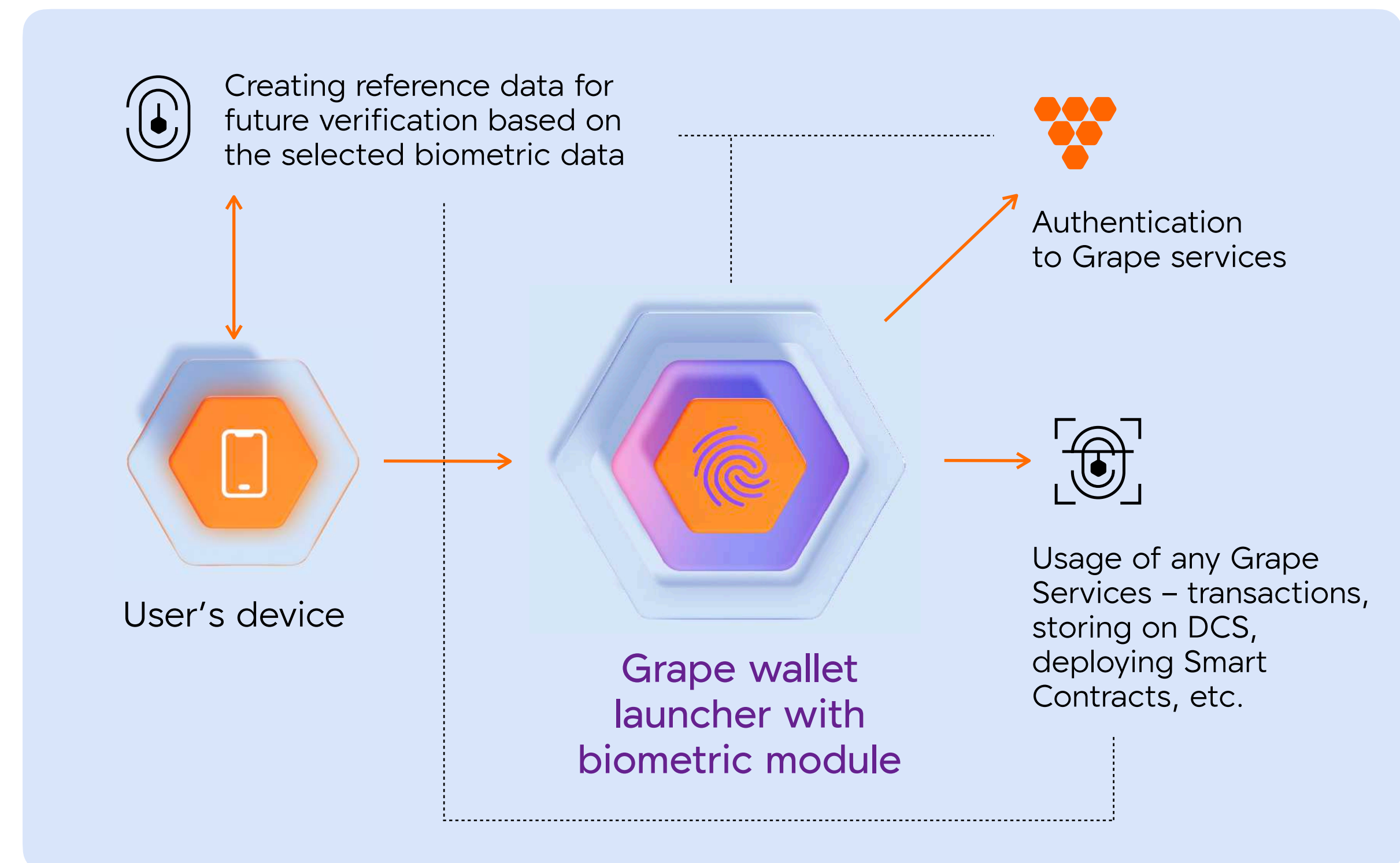
# Grape allows multiple biometric options for authentication and verification options including ECG

Maintaining decentralized approaches to privacy, users will be able to access wallets using **unique biometric identifiers** including electrocardiogram.

Security levels will be fully **customizable** through the application to simplify operations with assets and ensure the highest security level.



**Cryptocurrency theft increased 516% from 2020, to \$3.2 billion worth of cryptocurrency.**



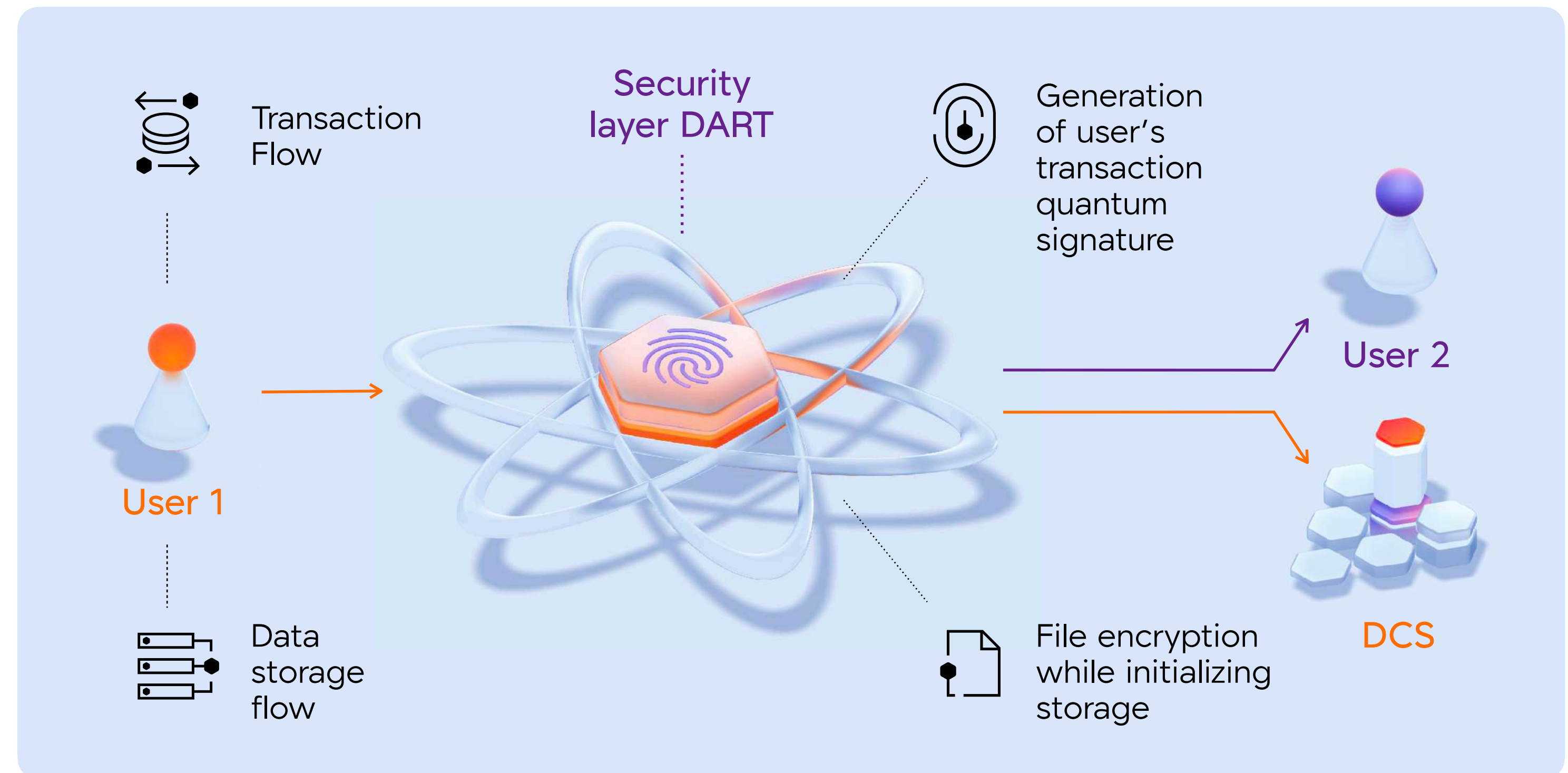


# Grape's Quantum Resistance is a fundamental requirement in the post-quantum world

A proprietary module DART is based on a **quantum-resistant** encryption algorithm, which allows Grape to ensure comprehensive security.



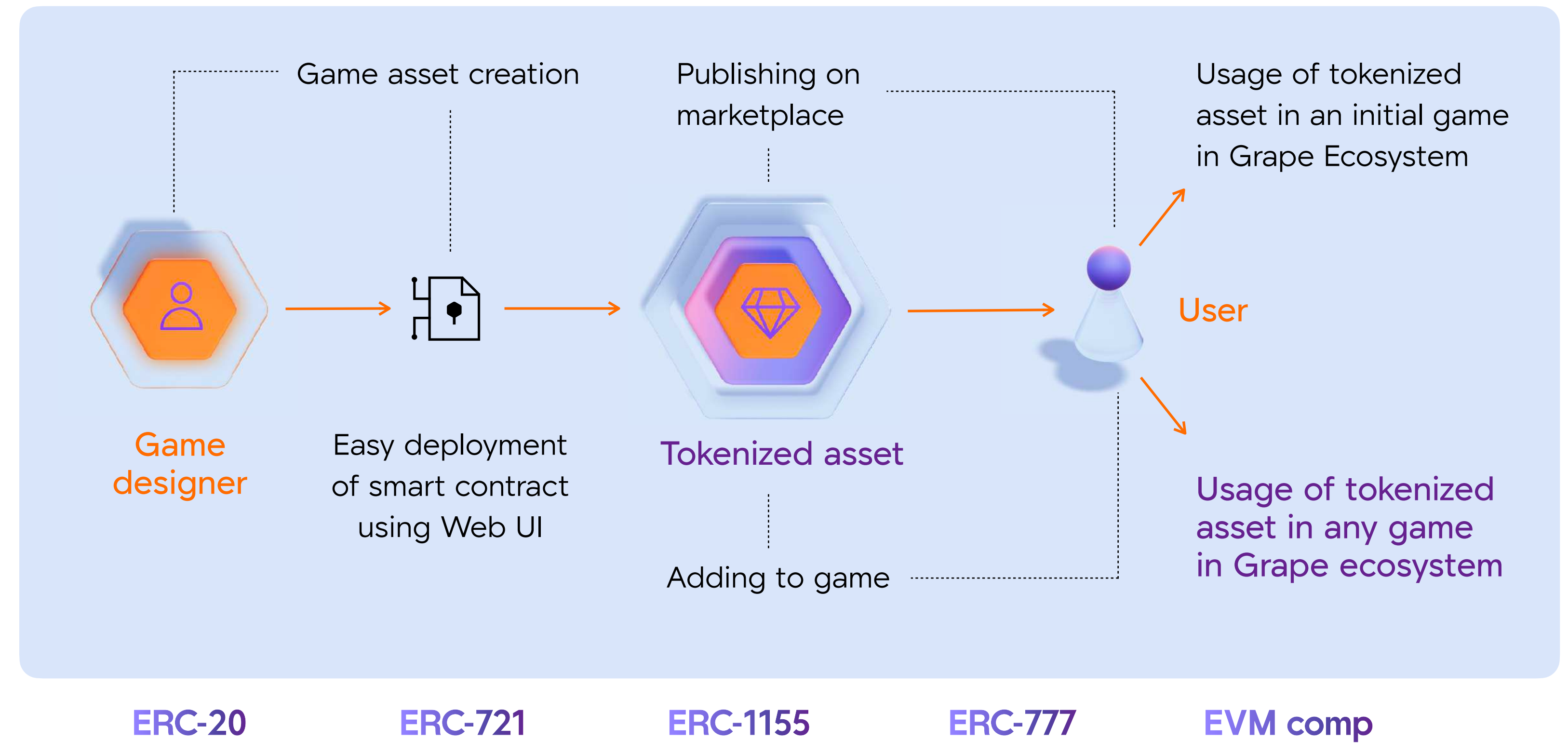
Opinion-based estimates of the cumulative probability of a digital quantum computer able to break RSA-2048 within 24 hours.



# Grape's unique Smart Contract Engine removes boundaries between virtual worlds by introducing interoperable NFTs



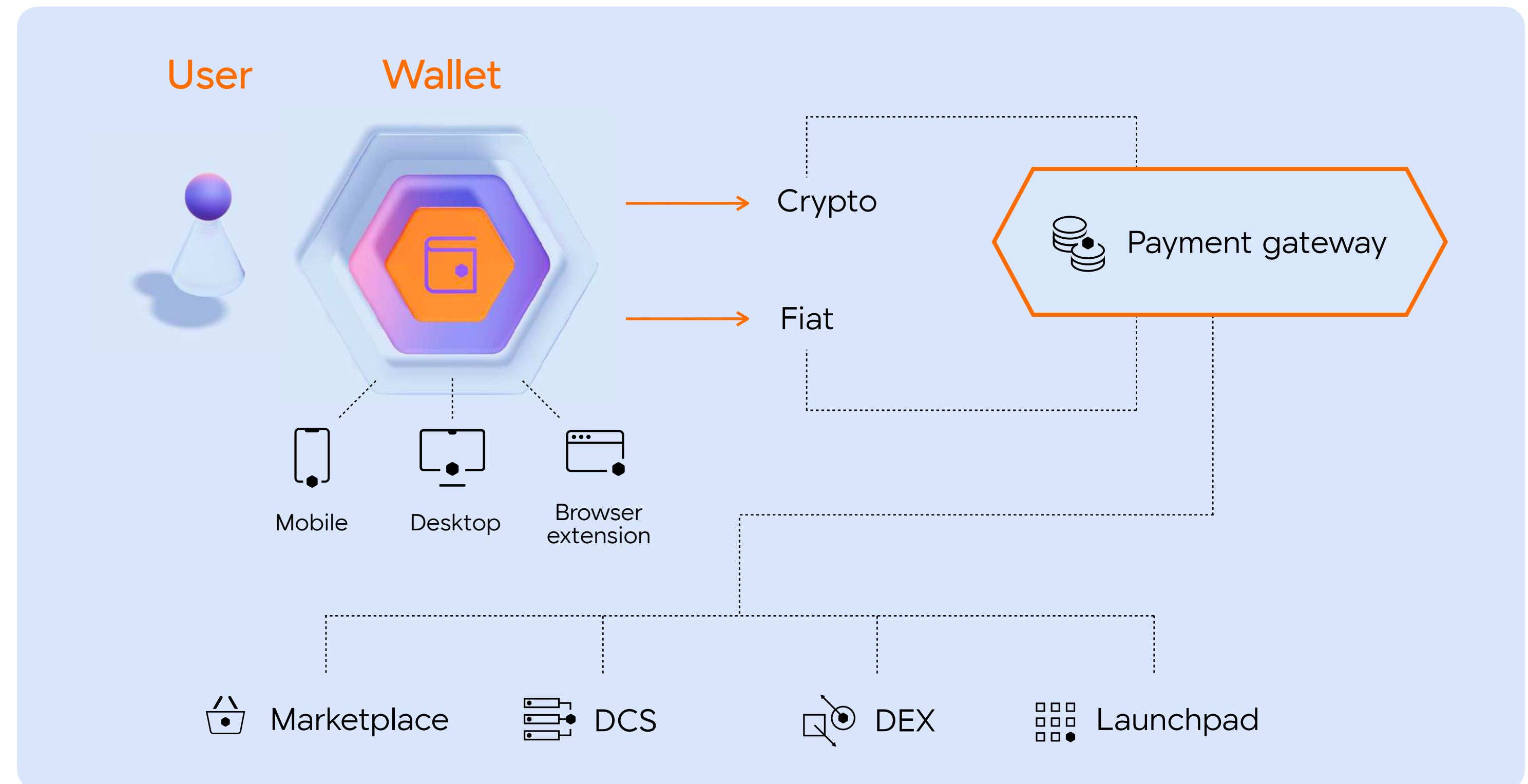
Some platforms like Oculus perceive the development of an open NFT market on their platform as a competitive advantage.



# Grape supports Fiat and Cryptocurrencies in its multi-platform wallet



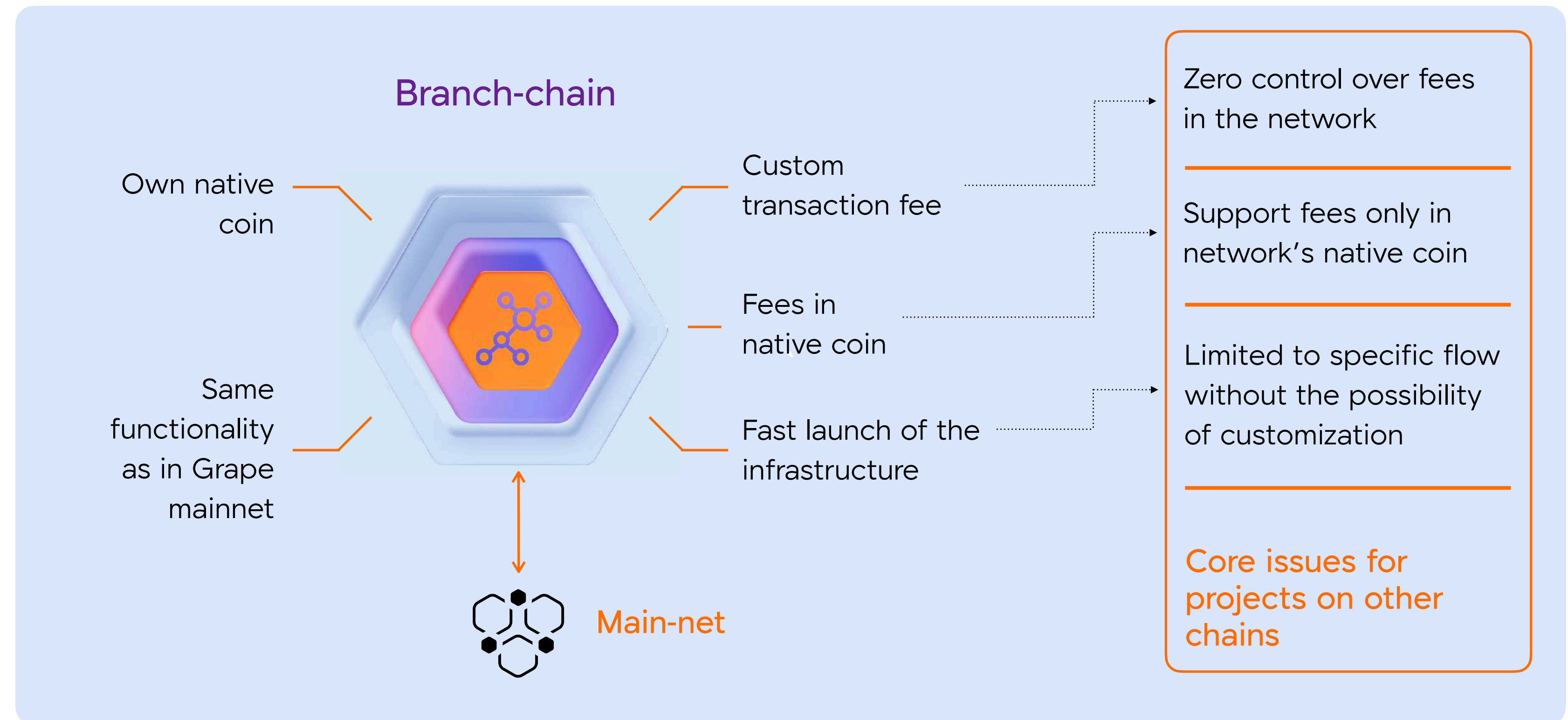
With recent beta launch of fiat-crypto on-ramp solution from Stripe, it becomes obvious that market requires on edge solutions to be able to use blockchain with both fiat and crypto.





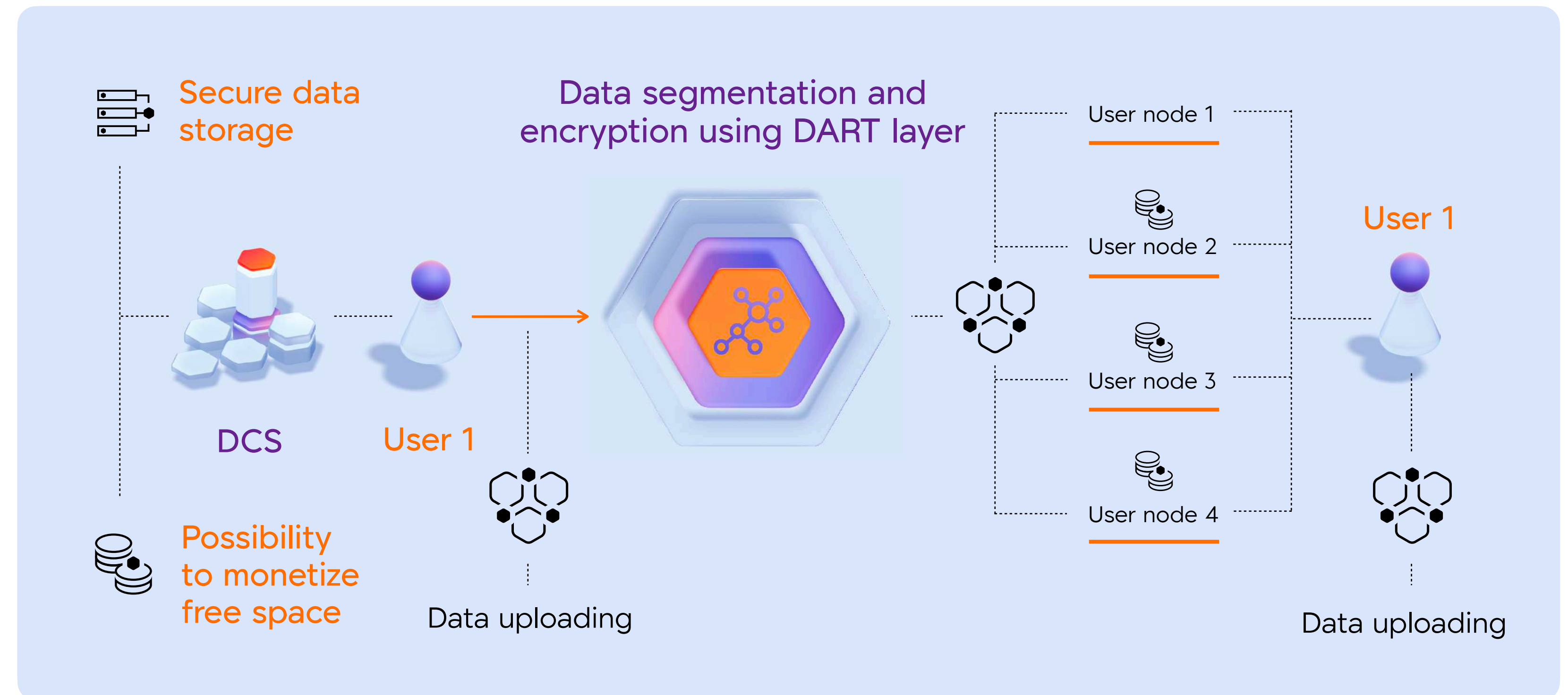
# Grape offers Web4-as-a-Service as a tool to launch projects using ready-to-deploy infrastructure

Grape will provide an **autonomous infrastructure** for projects requiring custom operations flow with most of the ecosystem's benefits.



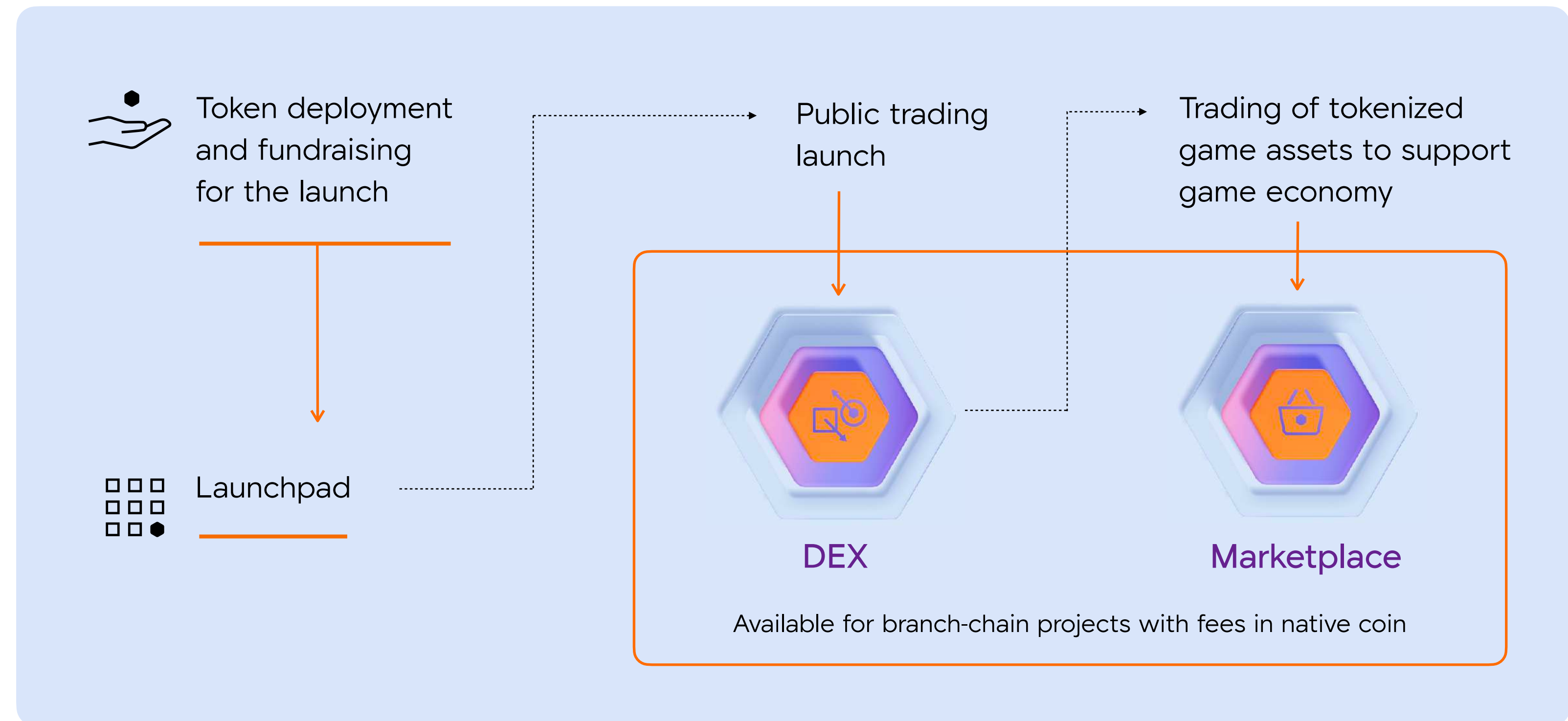
# Decentralized Cloud Storage (DCS) is a crucial element of the decentralized ecosystem

Grape will allow **anyone** to become a **node operator** and provide disk space for distributed data storage in exchange for a reward.



# Grape allows anyone to launch and maintain projects within a **single ecosystem**

Grape's economic infrastructure covers the **full cycle of a project's needs** from fundraising to the initial token launch on the exchange or marketplace.





# Distribution: \$GRP & \$GGT

To form a strong economy in the Grape ecosystem, and have a clear application, there's a separate governance token.

**\$GRP is the main coin of the Grape ecosystem** that allows accessing all functions and services.

**\$GGT is a governance token** that will be launched on Grape's smart contract engine that will be used to create proposals and vote on the future of Grape.

