

Empowering AI with Bitcoin HyperLayer

Bring AI to Bitcoin to Unleash \$700B

# Abstract

Since Bitcoin was launched in 2009, blockchain has led to the rapid development of numerous distributed applications as the next-generation Internet infrastructure. Alongside this, various blockchain infrastructures have emerged, targeting different application scenarios such as smart contracts, lending, trading, and stablecoins. Currently, Bitcoin accounts for around 50% of the total market capitalization in the crypto market. However, due to its non-Turing complete scripting language, the lack of mainnet smart contracts, and slow transaction speeds, its long-term development is severely hindered. In the immensely prosperous Ethereum ecosystem, we recognize its enormous potential for expansion.

In 2024, the cryptocurrency market continues to be led by the AI sector, with major events such as the launch of OpenAI's new AI system Sora and NVIDIA's latest financial report igniting the crypto market. The ongoing evolution of AI technologies and their expanding application scenarios are injecting vitality and opportunities into the crypto market, indicating that AI will persistently shape the development direction of the crypto market.

Introducing Bitsat, we're engineering a Bitcoin HyperLayer to bridge AI with Bitcoin Layer2, enhancing scalability and EVM compatibility. Through the innovative use of asynchronous consensus mechanisms, SMPC, and zk-proof technologies, Bitsat facilitates a robust environment where diverse protocols and smart contracts converge, allowing the seamless development and integration of decentralized AI applications.

Bitsat revolutionizes the intersection of AI and Bitcoin Layer2, reducing entry barriers for developers and tapping into Bitcoin's trillion-dollar market potential.

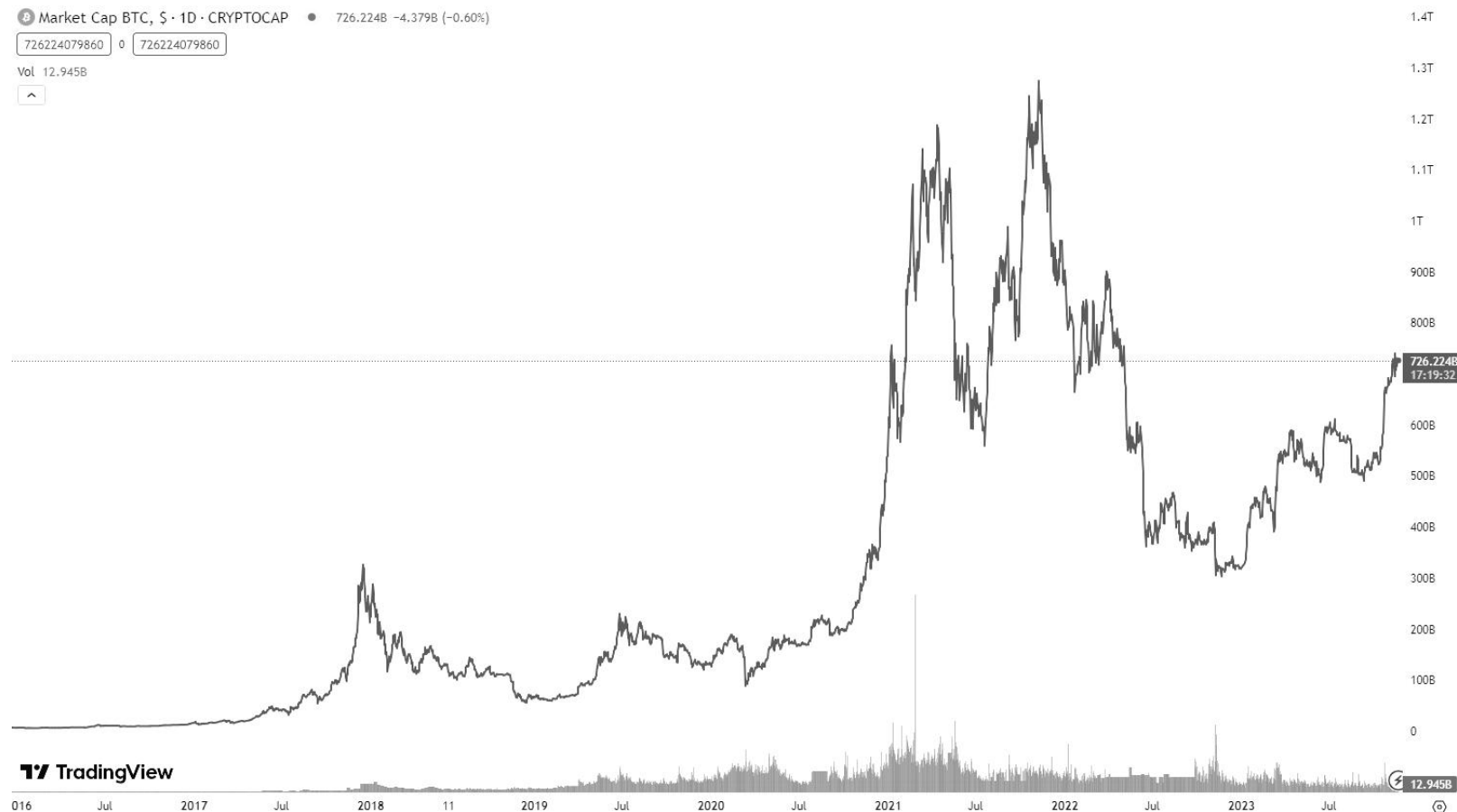
# Why Unleash Value for Largest Blockchain?

The value of the Bitcoin network will be unleashed infinitely. It will be utilized in AI Dapp, such as DeFi, DEX, NFT, etc.

**\$726B +**  
Marketcap

**\$10B–\$70B**  
Trading volume per day

**70B +**  
TVL prediction (≈10% Marketcap)



\*Sources: TradingView, CoinMarketCap | 20,11,2023

# What Factors Limit Bitcoin?

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## Scalability Limitation

Bitcoin's block size limit and transaction confirmation time lead to network congestion and longer transaction processing times.

## Non-Turing Complete

Scalability limitation is the largest barrier for the wide adoption of Bitcoin network.

## Compatibility

Protocols based on Taproot are not mutually compatible and lack bridges to external ecosystems.

## Large Fluctuations in Network Fees

As the Bitcoin market price and network status fluctuate, the continuous increase in network fees makes transactions costly.

## Extended Security

Bitcoin's Layer 2 scaling and network protocols often sacrifice decentralization or efficiency, making it difficult to effectively inherit the security of the native network.

# What Users, Builder, AI Needs on Bitcoin?

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## Needs on Bitcoin

Transactions securely and quickly

Improve cyptos liquidity on DeFi

Build AI DApp on chain quickly and simply

Low transaction fees

## Bitsat

Enhanced Dumbo Protocol and ZKrollup  
guarantee faster and more secure

Support build AI DApp on chain

EVM compatibility

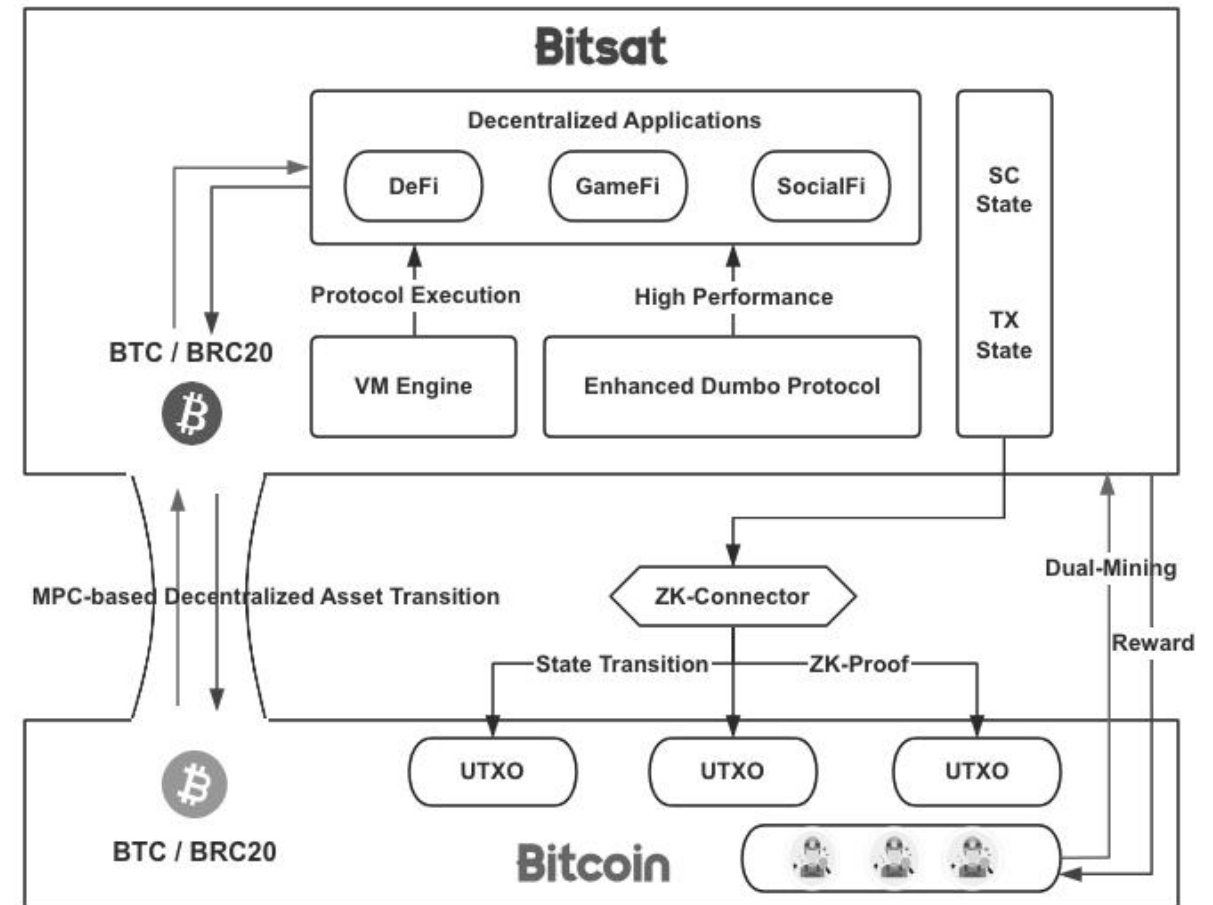
Processing transaction on Hyperlayer

# Build on Bitcoin HyperLayer

Bitsat operates by creating a HyperLayer, with its core design consisting of three elements: the cross-layer communication mechanism established by **ZK-Connector**, the smart contracts established by the VM Engine, and the asynchronous high-performance consensus mechanism of the Enhanced Dumbo Protocol.

The HyperLayer compresses transaction states and verifies them on the UTXO, which means that when a transaction occurs, it does not need to directly record all information on the Bitcoin main blockchain, while inheriting the security of the Bitcoin network.

By offloading most transactions, the HyperLayer reduces main blockchain congestion, enhancing Bitcoin network efficiency. Its integration with AI tools like the AI Framework Synthesizer, ZK Accelerator, Decentralized AI MarketSphere, and AI Bridge simplifies writing and deploying AI projects in Solidity, merging fast transactions with AI innovation on the Bitcoin HyperLayer.



bitsat system structure

# Feature

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## High Performance and Scalability

The asynchronous consensus mechanism delivers exceptional performance and scalability, enabling AI applications to run efficiently, handle large-scale data, and perform complex computations while ensuring seamless operation and swift responsiveness.

## Security

Leveraging innovative technologies such as SMPC and zk-proof, Bitsat ensures the decentralized security of asset transfers while integrating the steadfast security of the Bitcoin network, providing AI projects with a highly protected execution environment.

## AI Framework Synthesizer

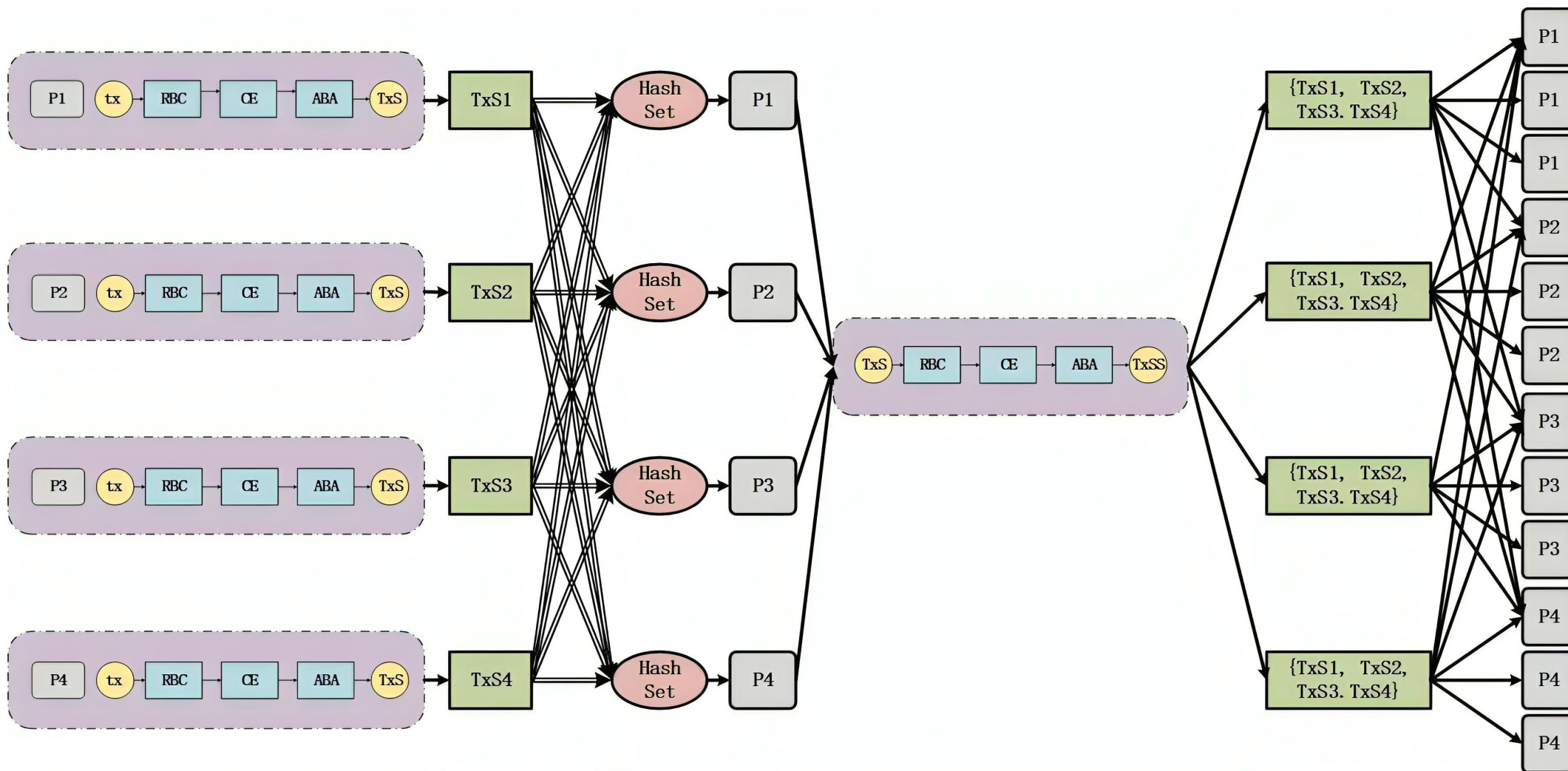
The AI Framework Synthesizer empowers developers by streamlining the development and deployment of AI applications through smart contract templates and development toolkits tailored for AI, enabling them to easily build and optimize their solutions.

## ZK Accelerator

The ZK Rollup technology offers an efficient computing environment with enhanced privacy, ensuring safer AI computations. It also boosts transaction throughput and minimizes delays, addressing the requirements of complex AI applications.

# High Performance Consensus

The asynchronous Byzantine fault tolerance ensures security and maintains liveness even under extreme network conditions. Based on the Enhanced Dumbo Protocol, it can be widely adopted on a large scale. It has also led to a sharp reduction in transaction costs.





# Enhanced Dumbo Protocol Performance

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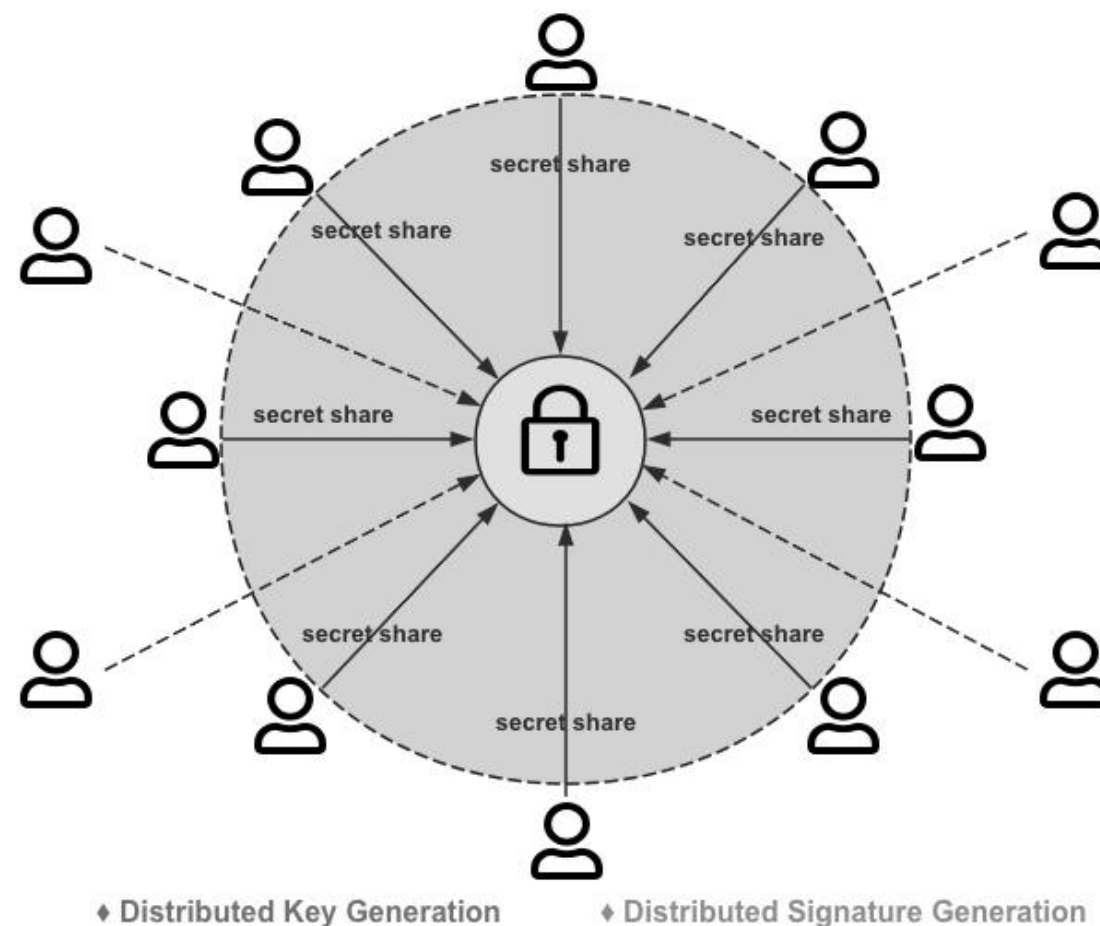
Best Security & Performance

**100,000 Tx+ /s**

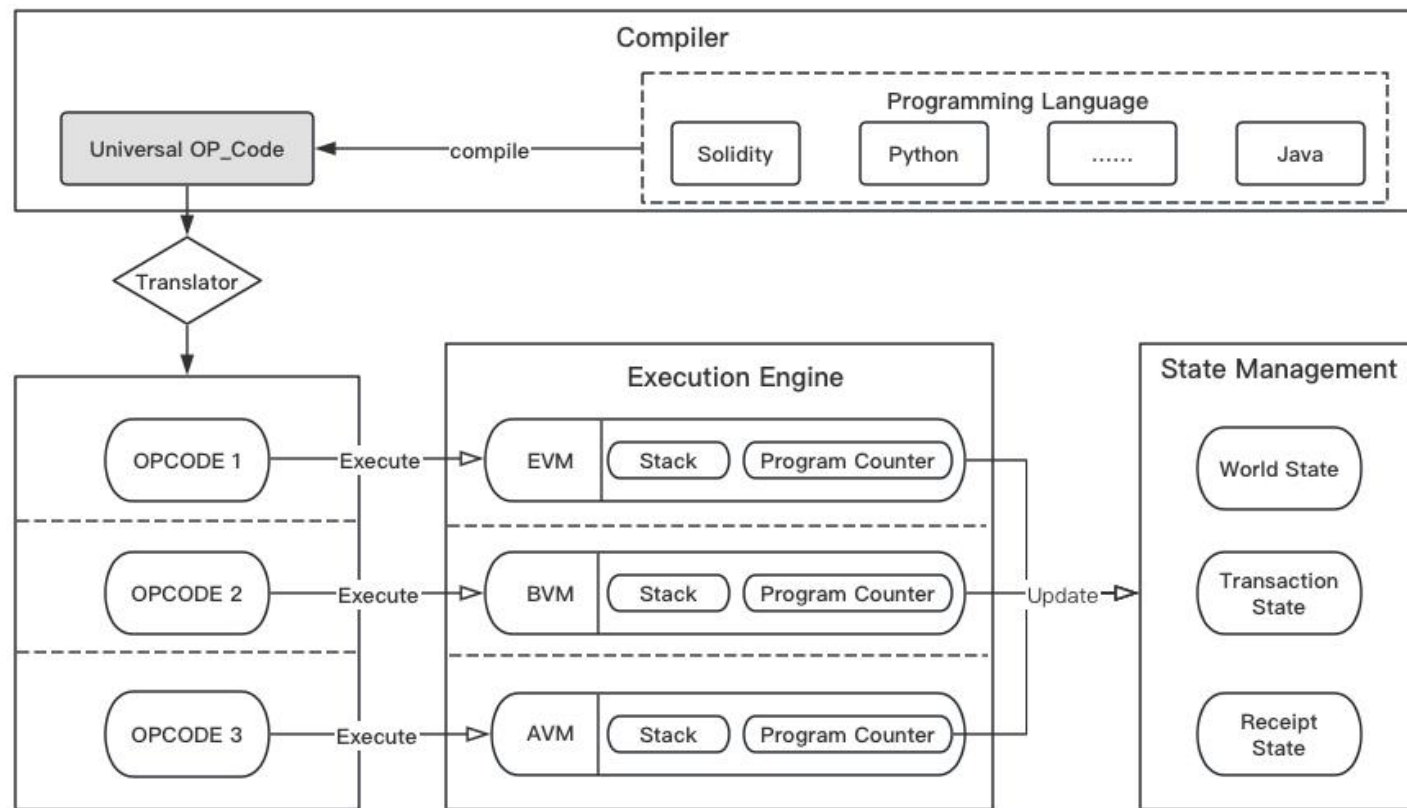
# How to Implement Cross-layer Assets Securely?

## Trustless Custody of Assets

The Decentralized Custody Node (DCN) is a decentralized custody node deployed on Layer 1, enabling multi-party management of accounts through threshold signatures. Users can transfer assets to the DCN, facilitating the transfer of assets from Layer 1 to HyperLayer. Upon receiving a user's withdrawal request, the asset management node constructs a transaction, generates the corresponding valid signature, and broadcasts the transaction on Layer 1, smoothly transferring the user's funds from HyperLayer to the Layer 1 account.



# VM Engine: Compatibility with EVM

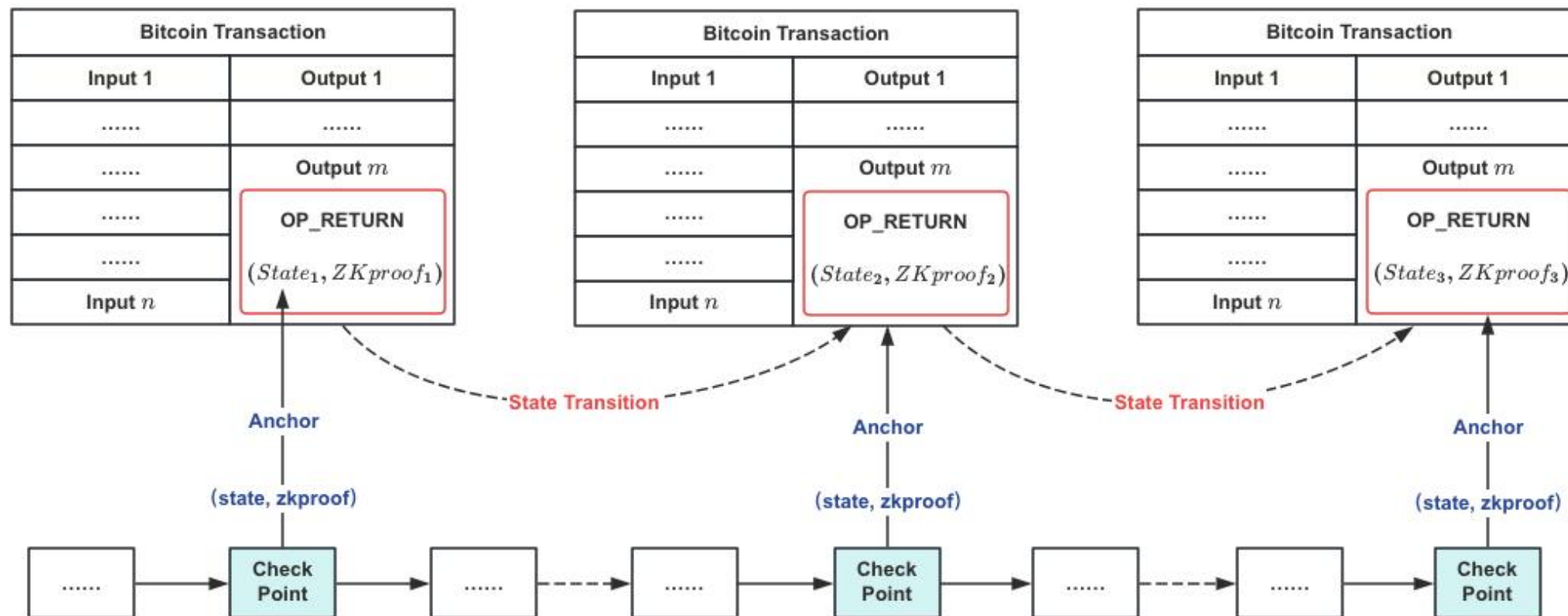


bitsat VM Engine

It is possible to build different types of protocols and smart contracts using the VM Engine on HyperLayer. This means that Dapp can be built on the Bitcoin network, and assets from different protocols can circulate within the same network layer.

# Synchronization with UTXO

The transactions on HyperLayer are packaged and verified through zk-proof, inheriting the security of the Bitcoin network.



# Why HyperLayer For AI?

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## Bitcoin Layer 1

Economic Incentives

Consensus

P2P Network

Blocks

## Bitcoin Layer 2

Lightning

Sidechain

Plasma

## HyperLayer

Economic Incentives

High Performance Consensus

P2P Network

Blocks

Smart-contract

ZK-Rollup

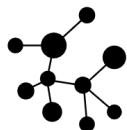
EVM

# Why Bitsat?

	UTXO	Sidechain	Lightning	Protocol Layer	HyperLayer
Project	Bitcoin	Stacks	RGB	Ordinals	bitsat
Consensus	Proof of Work	Proof of Transfer	/	/	Enhanced Dumbo Protocol
Tx Processing	UTXO	UTXO	Client-Side Verification	UTXO	ZK rollup+UTXO
Security	High	Middling	Middling	High	High
Decentralization	High	Low	Low	Low	High
Performance	Low	High	Middling	Low	High
Smart-contract	×	√	×	√	√
Account	×	√	√	×	√
Language	×	Clarity	×	×	Solidity
DApp	×	√	×	×	√
Network Fee	High	Low	Low	High	Low

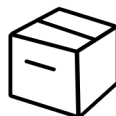
# Technical Innovations

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## Decentralized Assets Mint

Management of assets are achieved using secure multi-party computation (SMPC), supporting ECDSA and Schnorr threshold signature algorithms, and enabling secure asset transfers between the Bitcoin network and HyperLayer in a fully decentralized manner.



## ZK rollup

The data of HyperLayer (including account state and contract state) is anchored in UTXO after being aggregated and compressed based on ZK. UTXO carry HyperLayer data, including validity and other relevant information.



## Enhanced Dumbo Protocol

The asynchronous consensus mechanism ensures high performance and scalability of HyperLayer, achieving eventual atomicity and maximizing the efficient throughput of consensus groups.



## VM Engine

The virtual machine execution abstraction encapsulates compatibility with mainstream virtual machines, introducing smart contracts to Bitcoin, and supporting costless migration of other DApps.



## Dual-Mining

Bitcoin blocks carry transactions containing HyperLayer's state data and zk-proof. Block miners receive additional incentives.

# Beneficial for AI Builders, Traders, Users

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## Real-time Confirmation of Transactions

Enhanced Dumbo Protocol enables high-speed processing of transaction throughput, meeting the needs of large-scale adoption by AI decentralized applications.

## Low Network Fee

Tenfold lower the network fee based on HyperLayer processing.

## Additional Incentives for Bitcoin Miners

Bitcoin miners receive economic incentives for verifying transactions that include HyperLayer-packaged state on HyperLayer.

## Assets Circulation of Trustless

Secured Asset transfer ensured by Zero-knowledge.

## EVM Compatibility

Developers can quickly build AI decentralized applications on HyperLayer.

## Inheritance of UTXO Security

Transactions on HyperLayer are packaged into UTXO verification through zk-proof, inheriting the security of the Bitcoin network.



# Bitcoin Ecosystem is Coming

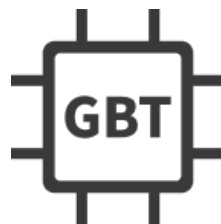
2023	2024 Q2	2024 Q4
Feasibility Analysis	Testnet Launch	Mainnet 1.0 For AI
Technical Research	VM EGINE EVM compatibility	Enhanced Dumbo Protocol
Product Development	Incentive Plan	
	WhitePaper Issurance	
2025	2026	
Mainnet Launch	Protocal Compatibility	
Mainnet	VM EGINE WASM compatibility	
ZK-Connector Compress and verify transactions in zk-proof	Cross Layer protocal ERC on HyperLayer	

# Build AI DApp on Bitcoin HyperLayer?

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Chat AI



Decentralized computing platform



AI Infrastructure



Web3 AI



AI Tools



More

# Contact US

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