



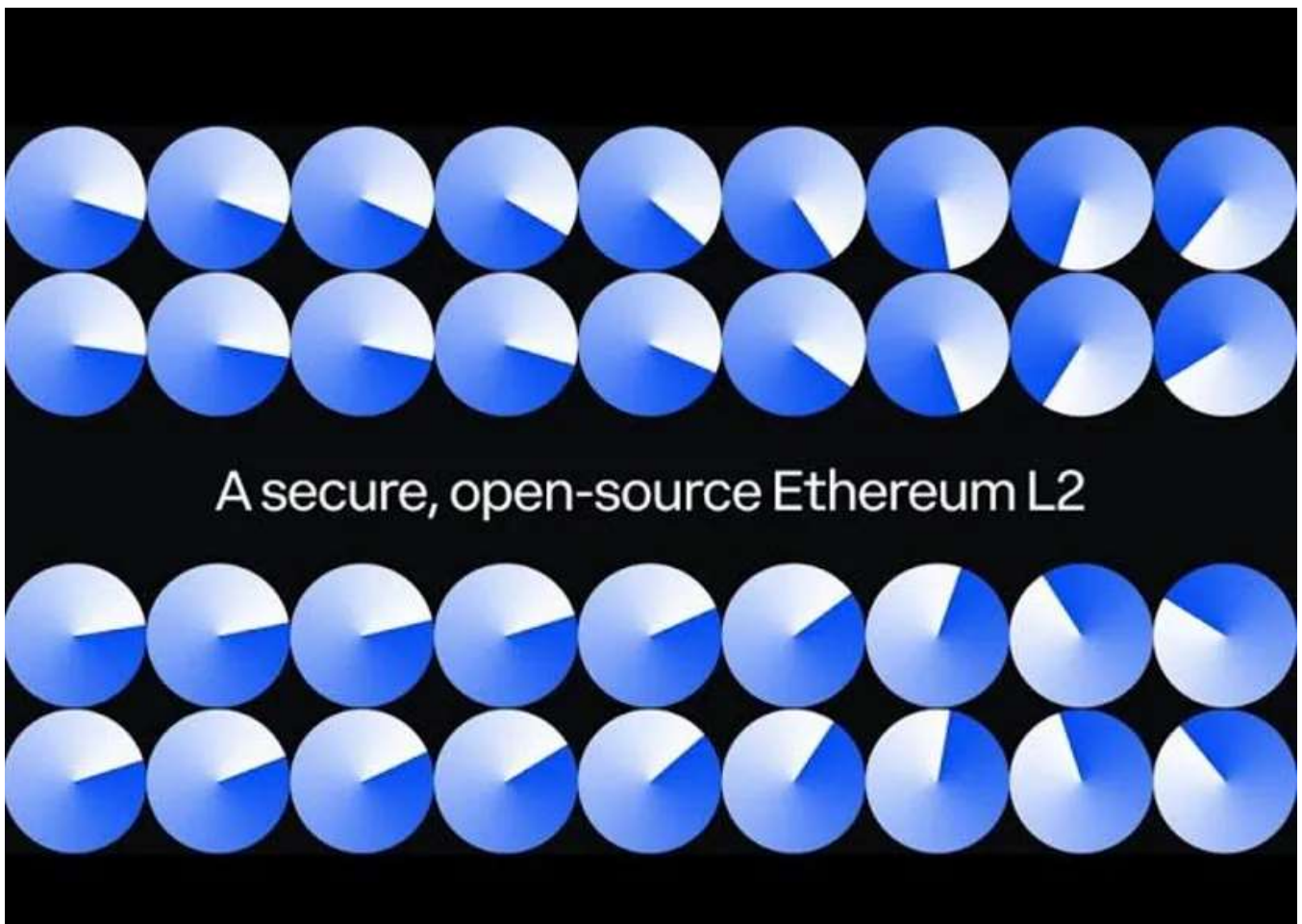
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Analysis of Coinbase Layer 2 network Base and OP Stack



On February 23, Coinbase announced that they would launch the testnet of Base, a Layer 2 network built on OP Stack, aiming to provide financial service for a billion users in the future. Base is now in the testnet stage and the mainnet is expected to be launched in two months. As soon as this news came out, the entire market was talking about the future of Base.

Why did Coinbase launch a Layer 2 network?

The ultimate goal of Coinbase is to create an open financial system. Coinbase had a secret master plan back in 2016. The plan describes what Coinbase would do in four

major phases of the digital currency industry:

| Phase | Internet | Digital Currency | Reach |
|-----------------------|----------------------|---------------------------|-------------|
| 1. Protocol | TCP/IP, SMTP, etc | Bitcoin, Ethereum, etc | 1M People |
| 2. Infrastructure | ISPs, lay fiber, etc | Exchanges, secure storage | 10M People |
| 3. Consumer Interface | Browser | User Controlled Wallet | 100M People |
| 4. Decentralized Apps | Web 2.0 | Finance 2.0 | 1B People |

Source: <https://www.coinbase.com/blog/the-coinbase-secret-master-plan>

In the first phase, Coinbase mainly worked with the open-source communities of Bitcoin and Ethereum to provide funding to help build new protocols.

In the second phase, Coinbase created Coinbase exchange and Coinbase Pro to provide secure and convenient digital currency services for retail, institutions, and pro traders.

In the third phase, Coinbase participated in the building and investment of decentralized applications, providing users with a more convenient application layer to have access to crypto assets. During this period, Coinbase Wallet was developed to help users store crypto assets quickly and safely and access various decentralized applications. Coinbase Ventures also supported promising projects in various areas of Web3: They invested in Uniswap, Synthetix, Rocket Pool, and others, including the areas of swapping, derivatives, synthetic assets, insurance, and ETH 2.0. In NFT, they invested in Yuga Labs, OpenSea, Rarible, and other projects, covering music, luxury goods, NFT for fans, and NFT casting, distribution, trading platforms. In infrastructure investment, they invested in public blockchains like Aptos, Near, Polygon, Mina and storage infrastructures like Arweave, Kyve, and Subspace. They also invested in Web3 development tools like Alchemy, OpenZeppelin, and Moralis.

In the fourth phase, Coinbase will create an open financial system, reshape the current financial system and improve the level of economic freedom. Coinbase will build the identity and credit score based on blockchain, and provide different types of loans, savings, index funds, venture capital, and cross-border remittances to ordinary users and institutions around the world.

Building an open financial system requires the technology of blockchain and its ecosystem. According to Jesse Pollak, Coinbase's senior director of engineering,

Coinbase has an idea for launching a blockchain in the past few years, but eventually gave up. Now that the ecosystem has blossomed, Coinbase can make sure that the entire digital currency industry has entered the third phase and is on its way to the fourth. Base is a key part of Coinbase between phases three and four. If Base succeeds, it can help Coinbase develop and deploy its decentralised applications, plus Coinbase wallet and smart contract wallet technology in the future, users can easily access the financial services hosted by Base.

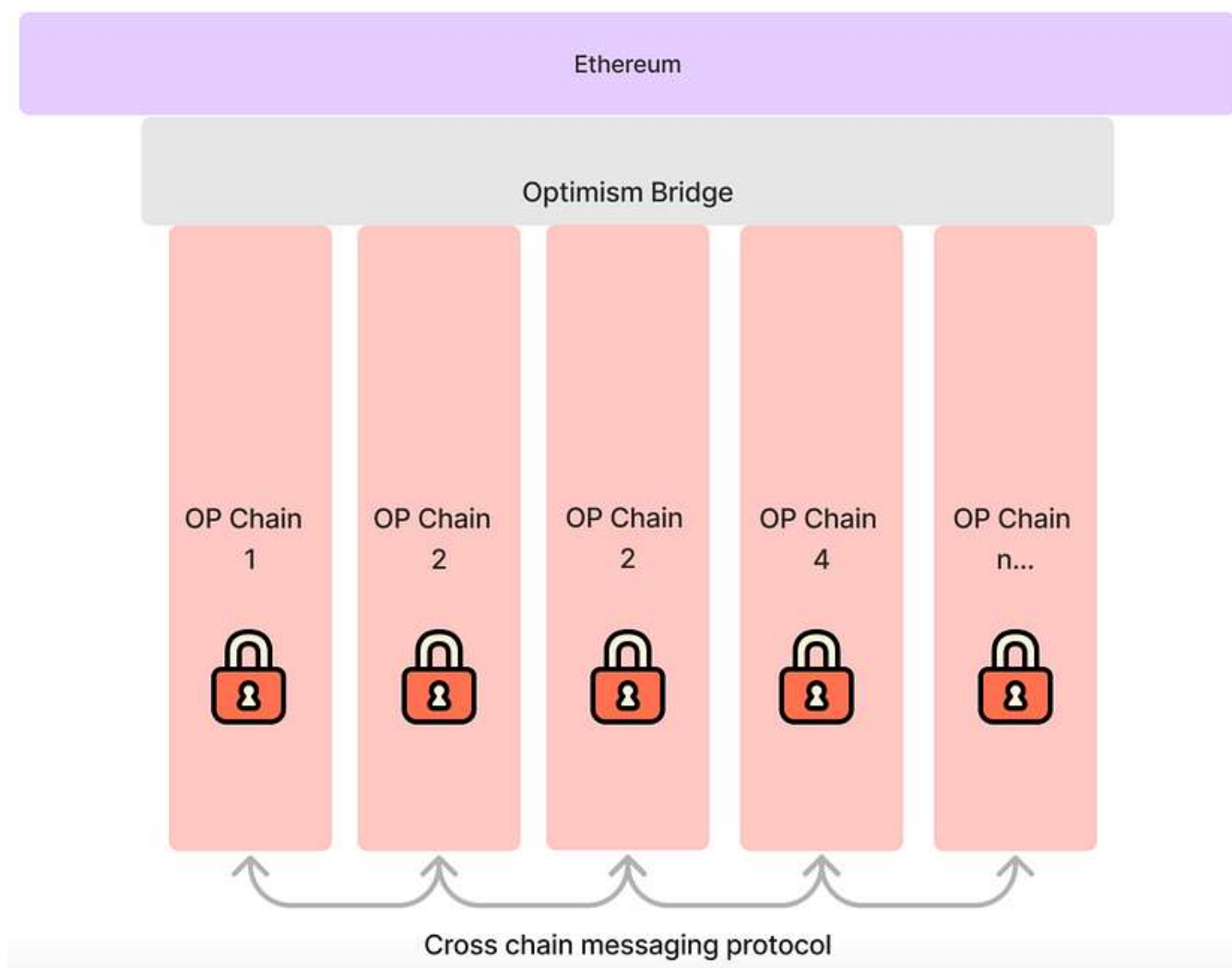
Why did Coinbase choose Layer 2 and OP Stack?

1. Building a Layer 1 network is more expensive and difficult than building a Layer 2. If Coinbase chooses to build a Layer1, it will need to issue the native token of this blockchain, which makes it face more regulatory pressure from SEC and NYDFS in the future. In addition, the cost of developing, running, and maintaining a Layer 1 is higher than that of running a Layer 2 rollup.

2. Layer 2 is built on Ethereum. Layer2 is an important way to scale Ethereum. Layer 2 networks have carried the capital of Ethereum. If Coinbase launches a Layer 1 instead of Layer 2, then this new public blockchain has to compete with Ethereum. Just like the public blockchain war in the second half of 2021, Coinbase will need to expend a lot of resources to attract users to its new chain, coupled with the competition with Layer 2 networks and other Layer 1 networks. There is a high risk that Coinbase's Layer 1 will be an isolated island. Coinbase chose Layer 2, meaning that Coinbase can avoid regulation and join the family of Ethereum Layer 2, which can take over Ethereum's funds like Arbitrum and Optimism. Moreover, there are many potential users from Web2 through Coinbase exchange. Choosing Layer 2 creates a much higher probability of Base's future success.

3. OP Stack is a practical solution for building modular Layer 2 and the narrative of OP Superchain is attractive. According to Jesse Pollak, they talked to almost every team working on scaling Ethereum and developing Layer 2. Coinbase team realized that there will be many Layer2 networks in the future, and war between Layer2 is inevitable. If Layer2 networks are still connected like Layer 1 with bridges, it's just as bad as the current situation: different networks are still isolated, and the risk and cost frictions of bridges still exist. In the second half of 2022, the Optimism team was breaking down their original development into multiple layers (Data Availability Layer, Derivation Layer, Execution Layer, and Settlement Layer) and developing OP Stack. OP Stack decouples the functions of the blockchain and assembles the modules by API. As long as

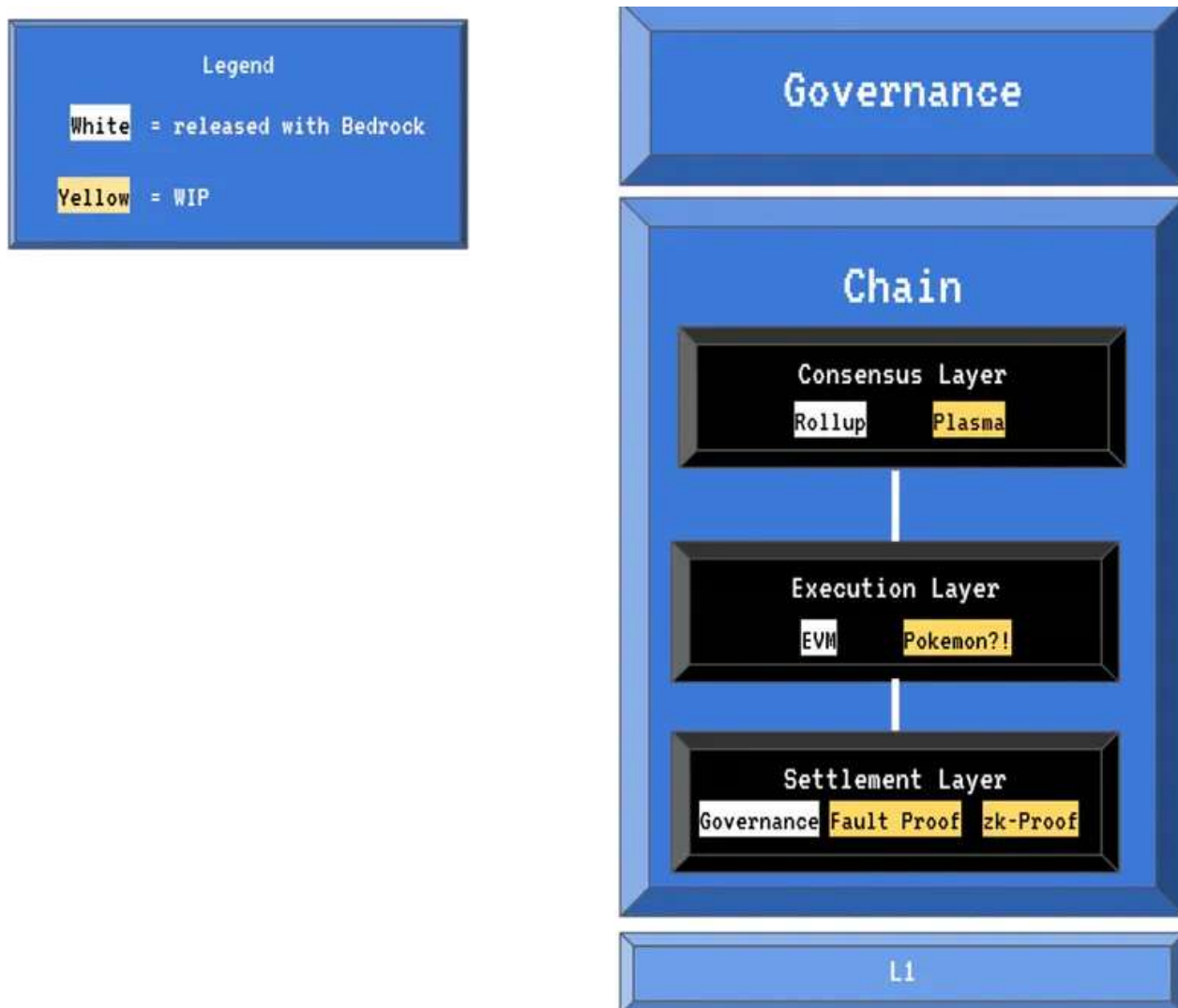
a functional module API conforms to the standards of OP Stack, it can be added to an OP Chain as a module. This allows other developers to build a Layer 2 network quickly. The OP Chain built through OP Stack can not only reuse the existing Optimism codes but also provide new modules for the OP Stack. Based on this, the Optimism team came up with the idea of a Superchain and looked forward to a future where Layer 2 would be unified.



Source: <https://stack.optimism.io/docs/understand/explainer/#superchain-overview>

The first version of OP Stack has released now: Bedrock. As you can see, the current Consensus Layer in Bedrock (consisting of the Data Availability Layer and Derivation Layer) is Rollup. The execution Layer is EVM and the settlement Layer is Governance. Modules in these layers can be replaced with other modules. Lattice moved Minecraft onto blockchain via Bedrock and created OPCraft. Another developer replaced EVM at the execution level with a game simulator and created a game simulator Rollup. There is no Fraud Proof or ZK Proof in the settlement layer of Optimism, which is one of the controversial things that Optimism faces. However, with the development of OP Stack,

Optimism and other OP chains will be able to easily choose between adding Fraud Proof or ZK Proof to the settlement layer in the future.



Source: https://optimism.mirror.xyz/fLk5UGjZDiXFuvQh6R_HSCMQUUY9ABYNF7PI76-QJYS

In addition to the fact that Coinbase and OP Labs had previously worked together on EIP4844, the first version of OP Stack and the grand narrative of Superchain were probably the reasons why Coinbase joined OP Labs and participated in the research and development of OP Stack. In the future, some of the transaction fees on Base will also flow into OP Collective, which will continue to drive the development of OP Stack. Perhaps in the next few years, we will see more OP Chains and Layer 2 will be in a new landscape.

The effect of Base

1. It helps Coinbase prepare for the next phase of mass adoption of decentralized applications. Base will provide financial services for Coinbase users (Coinbase had nearly 110 million users in 2022 and more than 8 million users who do monthly transactions),

users from Layer 1 and other Layer 2 networks. Up till now, nearly 60 projects have become partners of Base, including infrastructures and tools such as Chainlink, Nansen, Dune Analytics, The Graph, and well-known projects that have previously built on Ethereum, such as Sushiswap, Balancer, and PoolTogether.



2. It helps Coinbase increase its revenue. As you can see from the chart below, Arbitrum and Optimism are currently making \$4-\$5 million a year in a bear market respectively, while Coinbase suffered a loss of more than \$2 billion in 2022. It is facing the policy regulation of prohibiting ETH2.0 stake service. In addition to trading income, Coinbase is trying to find other ways to increase income: custody fees, interest income from crypto assets, and the fees from Coinbase NFT market. In the future, transaction fees on Base will be another source of revenue for Coinbase.



3. It confirms the promising future of Ethereum and Layer 2. Coinbase made it clear that there was no token plan and that it was using ETH as the native token. In addition, Coinbase has joined the development of OP Stack and has announced they would continue investing and building Layer 2 infrastructures and related tools.

4. It challenges the narrative of Cosmos application chain and Avalanche subnet. Base is developed based on OP Stack. It is likely to see more OP chains in the future which will be combined into OP Superchain. In the future, OP Superchain may be a major blow to the application chain narrative of Cosmos and Avalanche.