Base Camp

Outlier Ventures Bitcoin Thesis

Outlier Ventures

BITCOIN UNCHAINED:

The New Startup Goldrush

Less than 1% of Bitcoin (BTC) is used in dApps in the Bitcoin ecosystem. BTC holders underutilize their assets by HODLing. This is set to change. Recent innovations in composability and scalability provide founders with new tools to create BTC native dApps and offer BTC holders an alternative to HODLing. We believe that creating new applications and utility for BTC holders is the largest unexplored opportunity for founders and investors in digital assets.

By Jasper De Maere

NARRATIVE SHIFT

Bitcoin is shedding its skin. Since its creation in 2009, Bitcoin has long been a medium of exchange. A new monetary future in which Bitcoin plays a central role. The network's high-grade integrity combined with its lack of smart contract capabilities and low scalability makes it the perfect store of value in a digital era. This is changing. 2023 brings a wave of innovation on top of the Bitcoin network. We believe this will allow developers to access an unprecedented amount of functionality, composability and scalability while leveraging the network's security and decentralization.

SLUMBERING TITAN

The year of breakthrough innovation for Bitcoin. Building on the Bitcoin network is a unique experience. The base layer (L1) has limitations. It was never designed to host decentralized applications (dApps). Innovation in layered solutions, protocols and proposals are changing that. Through increasing scalability of the network and adding more functionality, layers like Lightning Network, Stacks, Trustless Computer, RSK, and Liquid Network allow developers to use the Bitcoin network for new, unseen applications (DeFi, DID, Atomic Swaps, RWAs, and others). New innovations on the Layer 1 itself also enable new use cases; Ordinals and recursive inscriptions in particular are enabling new ways of using the Bitcoin blockchain.

Despite its $530B market cap, we see only $520m (TVL) or <1% used on the four largest BTC-based projects (Stacks, Lightning, RSK, Liquid). Innovation is now allowing founders to create utility on top of the network and offer BTC holders an alternative way to HODLing. We believe this is currently the largest untapped opportunity in digital assets. If we compare Ordinals and Inscriptions' composability, Bitcoin has the potential to give Ethereum a run for its money.

WHY BUILD ON BITCOIN?

TL;DR ~ We got you

We believe the Bitcoin network has a strong and unique value proposition that should be attractive to founders looking to build:

- Network Effect - Bitcoin has the strongest network effect of all blockchains
- Adoption - corporates and investors continue to prefer BTC over any other digital asset
- Blockchain Trilemma - Bitcoin is uniquely positioned on the trilemma, prioritizing decentralization and security

For a long time, Bitcoin has been seen almost exclusively as a currency and store of value. "To build or not to build?" The community has long been divided by this question. While still highly debated, we've seen a number of proposals and innovations to improve the composability and scalability of the Bitcoin Network.

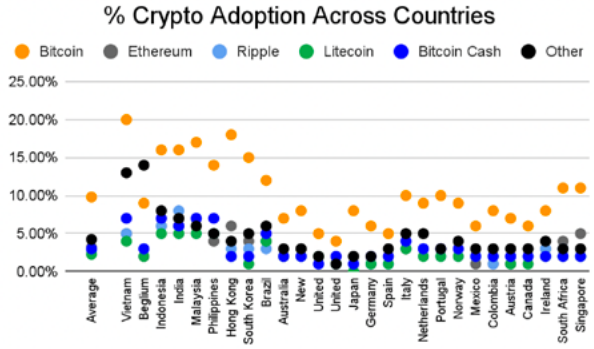
Composability and scalability of the Bitcoin network are moving in a similar direction to Ethereum and other L1. So why bother? Why would developers and founders leave an existing ecosystem to build on Bitcoin. We believe Bitcoin has a unique value proposition for founders looking to tab into a strong network effect, institutional adoption or best-in-class security.

THE NETWORK EFFECT

Blockchains and their applications are fundamentally based on network effects. To date, the cold start problem remains one of the most difficult challenges for new founders to overcome. Building on the Bitcoin network allows founders to leverage the power of an existing strong network effect to their advantage when building applications.

This means that they do not need to wait for ecosystem adoption before users can start using their application. Bitcoin's network effect is unrivaled. Due to its first mover advantage, liquidity, and wide acceptance, Bitcoin continues to see strong adoption. Over the past five years, Bitcoin's dominance has averaged around 50%, meaning that it makes up half of all digital assets. Bitcoin also remains the go-to asset across geographies, with Bitcoin being the most purchased cryptocurrency in almost every country globally.

Despite Bitcoin's $530B market cap, we see only $500m (TVL) or <1% used on the four largest BTC-based projects (Stacks, Lightning, RSK, Liquid). Building utility on Bitcoin for BTC holders in the form of DeFi or other services is the largest, untapped opportunity in digital assets today.



Source: Chainalysis, 2022

Source: TradingView

CORPORATE & INSTITUTIONAL ADOPTION

Institutional investors and corporates are becoming sophisticated BTC users but remain underserved. Bitcoin continues to enjoy strong adoption by institutional investors and corporations. Institutional investors currently hold 5% of the BTC market cap. It is estimated that we will see another $30Bn of incremental demand for BTC once spot ETFs are approved. With many deadlines and decision dates in 1Q24, we might see strong institutional inflow soon.

Corporate adoption of Bitcoin on their balance sheets continues. Companies, ranging from tech giants to traditional corporations, are diversifying their treasury assets by adding Bitcoin. This strategic move is driven by a desire to hedge against inflation, capitalize on Bitcoin's potential as a store of value, and tap into its long-term investment opportunities. As a result, Bitcoin's role as a treasury reserve asset is becoming increasingly mainstream. There's an estimated $6Bn of BTC sitting on corporate balance sheets.

SECURITY & DECENTRALISATION FIRST

Bitcoin is uniquely positioned in the Bitcoin trilemma because it prioritizes security and decentralization over scalability. While Ethereum and other competing chains may offer greater scalability through features like smart contracts and decentralized applications (DApps), Bitcoin's primary focus on security and decentralization makes it valuable in distinct ways.

Now that it is becoming easier to build more complex logic on the Bitcoin network, we believe developers will value the unique attributes of Bitcoin when making decisions of what chain to build their application on. We see the higher security and decentralization of Bitcoin as useful on which to build dApps that require a higher degree of integrity such as institutional-grade web3 solutions. The limited scaling of Bitcoin will also get resolved through new layered scaling solutions, making all sorts of use cases on the network economically viable.

BUILDING ON BITCOIN - COMPOSABILITY & SCALABILITY

TL;DR ~ We got you

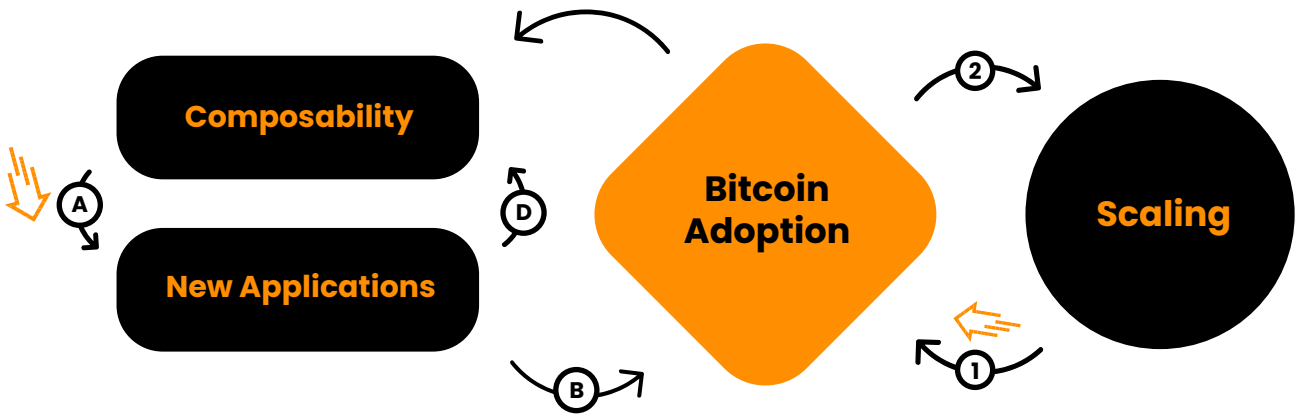
We believe increased **composability** and **scalability** of the Bitcoin network drives adoption. 2023 was a year of innovation on both fronts through:

- Launch of Ordinals protocol
- Innovation in metalayers like RSK, Stacks, Liquid, Lightning Network & ICP
- Adoption of existing upgrades like Taproot & debates for proposals like BIP300/301

Building on Bitcoin is an unusual and sometimes difficult experience. In contrast with Ethereum, Solana, Avalanche or any other base layer, Bitcoin was not designed to run decentralized applications (dApps) on. Instead, it was designed to be a permissionless peer-to-peer network to exchange monetary value on. Since its inception in 2009, this stayed the core value proposition of the network. Given the community takes a cautious approach to any changes happening on the base layer this is unlikely to change in the near future.

Instead of changing the Bitcoin network, layers, sidechains, and protocols are built on top to increase functionality. Developers add these metalayers on the Bitcoin network to increase the blockchain's composability and scalability. We believe that the recent innovation in both composability and scalability are pivotal changes that can kickstart wider adoption of the Bitcoin network.

We illustrate this effect through the “Bitcoin Adoption Flywheel”. While general blockchain adoption is not exclusively driven by composability and scaling, changes in these components are critical.



Source: Outlier Ventures

Composability - Bitcoin Adoption Flywheel

A Composability **unlocks new building blocks** for developers to create new decentralized applications.

B New applications **serve underserved users**, driving network adoption.

C More users and developers have **new expectations of network composability**, changing governance consensus.

D New **dApps require new composability** to continue to grow and serve more users.

Scalability - Bitcoin Adoption Flywheel

1 Network handles more transactions, **lowering friction for users** and specific use cases.

2 Network adoption **increases demand for scalability**. Creating economic incentive for users and developers to adopt & work on scaling solutions.

COMPOSABILITY

"Allows developers to create new applications and services leveraging existing, open-source infrastructure."

WHY IS COMPOSABILITY IMPORTANT

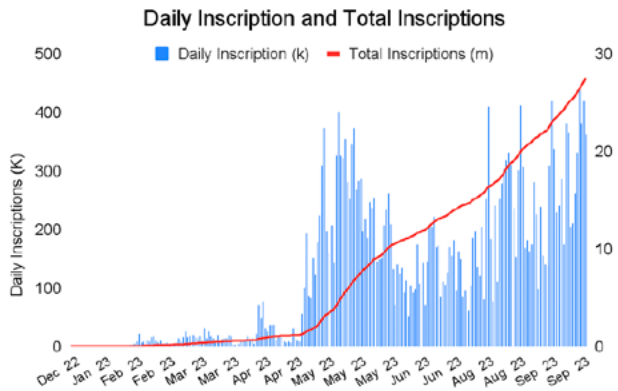
Composability of the blockchain refers to the ability to seamlessly combine various protocols, smart contracts and decentralized application (dApps) in a modular and interoperable way, similar to assembling Lego bricks. The open-source nature of Bitcoin makes previously found composability available to all developers and founders to use. New building blocks, provided by innovations on the base and metalayers, enable the creation of new applications without having to start from the ground up. This is why new composability on a blockchain has a profound effect on what can and will be built going forward. Similarly to having only 2x4 Lego bricks available, improvement in composability adds plates and connectors to the developer & founder toolbox.

WHAT IS THE CURRENT STATE OF COMPOSABILITY ON BITCOIN?

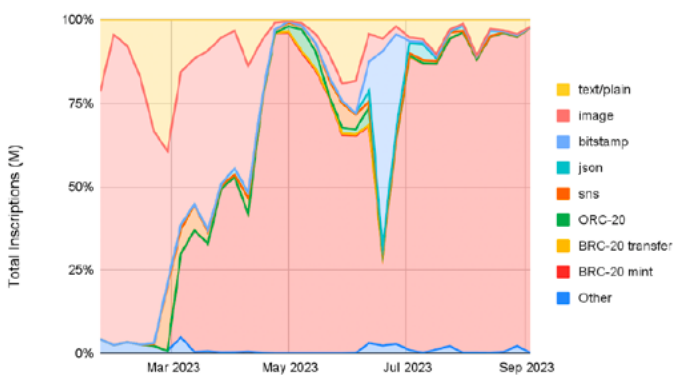
In 2023, Ordinals, Inscriptions, and BRC-20 tokens have dramatically reshaped Bitcoin's composability. These changes are fueling intense community debates over the allocation of blockspace and the fundamental purpose of the Bitcoin network.

The Ordinals protocol enabled the structured creation of both fungible and non-fungible tokens. While this might sound trivial, the ability to represent digital and tangible assets in a structured way is vital for building more complex blockchain applications.

Onchain data shows a rapid shift from simple text and image inscriptions to the active minting of BRC-20 tokens. Even with volatile digital asset prices, the daily count of inscriptions remains elevated. We believe this stable activity indicates that the community is exploring the possible use cases. We think BRC-20 tokens have demonstrated user demand for issuing assets on the Bitcoin blockchain. Many blockchain innovations began as small-scale, low-utility tests that paved the way for more useful applications. While we don't think BRC-20 is the ideal way of issuing tokens, we note a strong appetite from the open market for structured token issuance standards.



Source: Dune Analytics



Source: Dune Analytics

Looking at the Bitcoin adoption flywheel, new composability generally leads to the creation of new applications. These new applications will serve a larger number of underserved users, driving the adoption of the Bitcoin network. In turn this increases the desire for scaling solutions and new composability as a larger user base equals more throughput and a wider set of expectations of the network's functionality.

SCALABILITY

"Increases throughput, making the network more attractive & economically viable for a wider range of use cases."

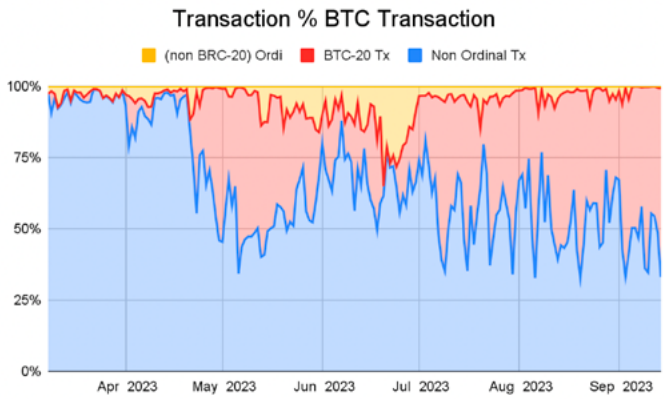
WHY IS SCALABILITY IMPORTANT?

Scalability in blockchain refers to the network's ability to handle large volumes of transactions without delays, congestion, or high costs. It plays a critical role in determining the practical adoption of blockchain technology in real-world scenarios. Scalability makes the blockchain more viable across a range of practical use cases, thereby encouraging broader adoption. While not all use cases require fast and low-cost transactions, a scalable blockchain is essential for achieving widespread use.

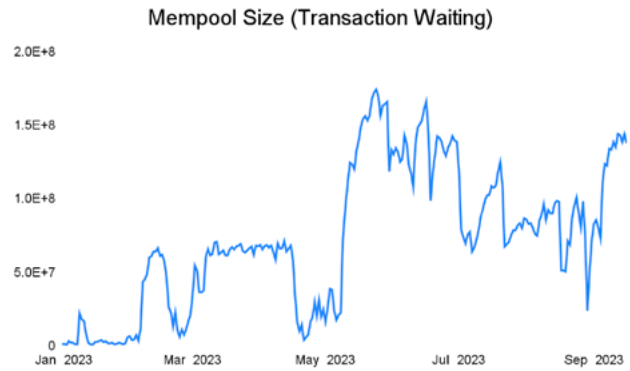
WHAT IS THE CURRENT STATE OF SCALING ON BITCOIN?

The topic of scaling generates much debate within the Bitcoin community. One camp argues that Bitcoin's network blockspace should focus on BTC transactions as a medium of exchange. The other contends that a free market should determine the purpose of transactions and that any transaction willing to pay fees is valid.

Setting aside these differing philosophies, we observe that rising demand for transaction settlement on the blockchain has driven up the demand for blockspace and, consequently, transaction fees. Since the introduction of the Ordinal protocol and BRC-20 tokens, transactions related to these protocols have surged. As of today, Ordinal transactions account for about half of the network's daily transactions. This popularity, along with the relatively large size of Ordinal transactions—even considering recursive inscriptions—has led to an increased workload in BTC mempools.



Source: Dune Analytics



Source: Blockchain.com

Bitcoin is open-source, and a free marketplace drives its transaction activities. We view increased Tx price as a natural evolution of Bitcoin's network activity as it expands beyond serving merely as a medium of exchange. This growth is also beneficial for the miners' fee market, where we will see fees increasingly replacing block rewards, enhancing the network's long-term security and integrity.

Higher transaction fees make certain use cases, like sending BTC microtransactions, less practical. This dislocation fuels a demand for scaling solutions from users and opens opportunities for Bitcoin sidechains and Layer 2 solutions like Lightning Network, Liquid, RSK and Stacks to cater for the increasing demand in scaling and capture the user moving to the metalayer in search for scaling.

LAYERS, PROTOCOLS & UPGRADES

TL;DR ~ We got you

We offer an overview of the layers, protocols, and upgrades that we believe have the most significant impact on the composability and scalability of the Bitcoin network. Although many are still in development, we're excited about recent breakthroughs and upcoming releases.

For a long time, Bitcoin has been seen almost exclusively as a currency and store of value. "To build or not to build?" The community has long been divided by this question. While still highly debated, we've seen a number of developments and proposals to improve the composability and scalability of the Bitcoin Network.

NOW IS THE TIME

For some time, Bitcoin-based metalayers and protocols have tried to build out an ecosystem. Besides scaling, the metalayers often also bring smart contract capabilities, increasing composability for developers. Some ecosystems are seeing growth however for many the pace of adoption has been underwhelming. Now is the time. We believe there's a perfect storm brewing on the Bitcoin mainchain that will lead to the adoption of sidechains. While the metalayers all bring a ton of scalability and composability, they did not see mass adoption because there was no real necessity for their product. This is quickly changing.

- Scaling: As discussed earlier. Ordinals are clogging the mempool and hogging block space on the base layer. As a result we're seeing inflated fees, making specific economic use cases no longer viable. (we'll discuss this in more detail during the Etheruem analogy). We expect more users to try out existing scaling solutions as they are looking for cheaper ways to settle transactions on the Bitcoin network.

- Composability: We believe that the ordinal protocol and its adoption will increase the demand for smart contract capability. The ability to inscribe arbitrary information into sats and mint tokens and issue assets (ordinals, BTC-20, etc.) will increase the demand for smart contract capability.

So where do developers find a combination of scalability and smart contract capabilities? On existing metalayers like RSK, Liquid, Stacks and maybe in the future on Drivechains. Below we have a (non-exhaustive) list of innovations in composability & scalability which we believe will have a meaningful impact on the attractiveness of the Bitcoin ecosystem for developers and founders.

LAYERS, PROTOCOLS & UPGRADES

Lightning Network

What is it?

The Lightning Network is a Layer 2 for Bitcoin that facilitates rapid and cost-effective transactions by processing them off-chain. LN is not a blockchain and doesn't have the capability to handle smart contracts or complex applications.

Liquid Network

What is it?

The Liquid Network is a Bitcoin sidechain that provides quicker transactions and heightened privacy using confidential transactions, allowing users to conceal transaction values. It is built on the Bitcoin codebase and uses the same UTXO transaction model. Beyond offering L-BTC, a pegged Bitcoin asset, Liquid also enables the issuance of various digital assets, such as tokenized fiat, other cryptocurrencies, and tokenized securities.

What is it?

A key value proposition of Liquid is its increase privacy, making it an optimal chain for DeFi use cases. Because of its support for multiple assets, it attracts traders across different digital assets. Hodl Hodl and SideSwap are some of the projects built on top

RSK

What is it?

RSK, a sidechain for Bitcoin, introduces smart contract capabilities through its Ethereum Virtual Machine (EVM) compatibility. This alignment with the EVM ensures it works seamlessly with prevalent ETH tools and the Solidity language, simplifying the transition of ETH applications to the Bitcoin platform and allowing developers to tap into established Solidity resources for quicker development.

What is built on top?

RSK is mainly used for DeFi applications, leveraging its scalability and EVM compatibility. Larger protocols such as Sovryn and RSKswap focus on borrowing, lending and liquidity provision. We also have some RSK wallets and stablecoins facilitating the wider DeFi ecosystem.

Stacks

What is it?

Stacks is a distinctive layer 2 blockchain that augments Bitcoin's capabilities. With its own native token (STX), consensus mechanism, and Clarity programming language, Stacks enables developers to craft comprehensive smart contracts that, while periodically settling on the Bitcoin blockchain, inherit its security and resilience.

What is built on top?

Stacks is the largest user and developer community built on the Bitcoin network and has a wide variety of web3 use cases. It is seeing DeFi projects such as Alex and Arkadiko. NFT projects (market places, NFT bridges) and even DAOs are also using Stacks.

Internet Computer (ICP)

What is it?

Sidechain using the Threshold Relay consensus mechanism, enabling smart contract and high throughput. ICP uses chainkey cryptography so smart contracts on ICP control BTC balances without the need for wrapping or bridging.

What is built on top?

Its direct interface with the Bitcoin mainchain allows it to bring smart contract capability to BTC without having to wrap the assets (WBTC). The BTC implementation is relatively new but we see grassroot DeFi & NFT applications coming on ICP that are leveraging smart contract access on native BTC.

Drivechains - BIP300/301

What is it?

Drivechains is a proposed soft fork to enable the creation of sidechains to leverage functionality like smart contracts and privacy technologies.

- BIP300 - innovates the peg-out of BTC back to the mainchain through Hashrate Escrows.
- BIP301 - Adds blind merged mining, allowing miners to provide security to main- and sidechains simultaneously.

- Drivechains don't rely on central entities for de-peging. Instead they rely on Bitcoin miners, making them decentralized at the expense of costs and speed.
- It allows builders who value decentralization to also use smart contracts and scale offered by sidechains.

Taproot

What is it?

Taproot, activated in November 2021, is a soft fork Bitcoin upgrade introducing more complex yet efficient transaction types, mainly through Schnorr signatures and MAST. The upgrade enhances Bitcoin's privacy by making transactions indistinguishable, promotes fee reductions through efficiency, and paves the way for advanced functionalities like intricate smart contracts and optimized multi-signature wallets.

Despite the Ordinals & Inscriptions application Taproot's full potential is still unfolding, but its promise lies in redefining transaction privacy, cost-efficiency, and unlocking innovative Bitcoin applications in the future.

Ordinals, Inscriptions & BRC-20

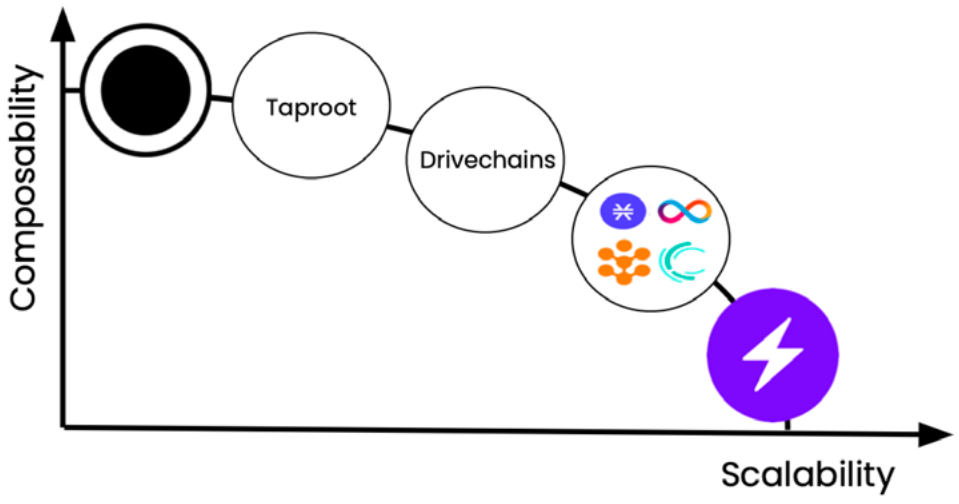
What is it?

Created in 2023, Ordinals, inscriptions and BRC-20 are a unique way to identify, add data to and create tokens on the Bitcoin network. The protocol leverages Taproot capabilities allowing for more complex and efficient Bitcoin transactions.

- Ordinals - Track and identify individual sats
- Inscriptions - Attach or embed data to sats
- BRC-20 - New token standard to mint fungible tokens on Bitcoin

What is built on top?

Despite being relatively new, ordinals, inscription and BRC-20 we are seeing strong appetite from users to test and transact the assets. We also see the creation of dapps and projects in NFTs, Defi, Social, Gaming and other verticals. As projects are nascent, many applications are still low utility however see strong appetite and rapid changes in quality of applications leveraging the new found composability.



Source: Outlier Ventures

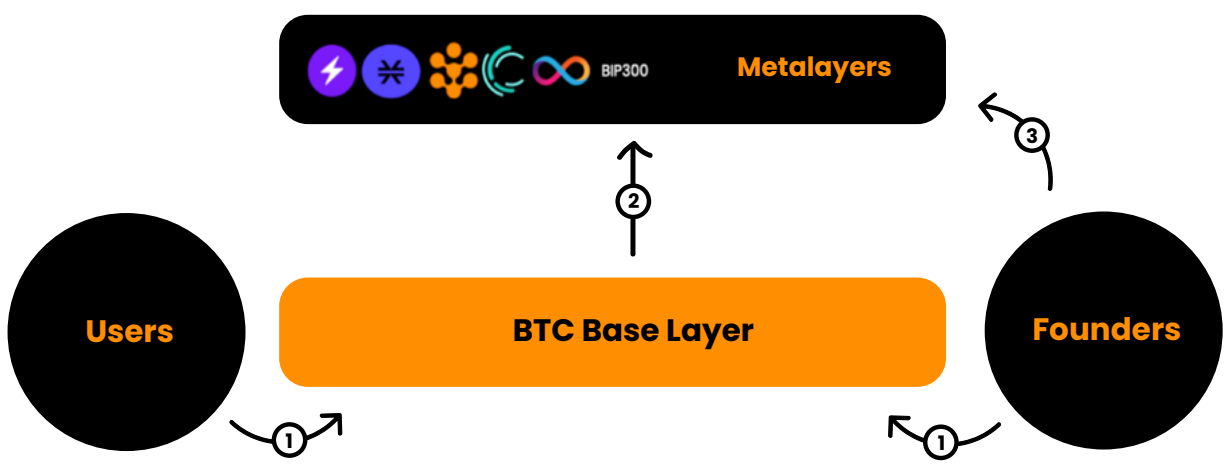
At Outlier, we don't have a strong view on which one sidechains or protocols will do best. We believe there are ample tools and opportunities available for founders to make use of the composability offered across the Bitcoin baselayer and the metalayers. Founders need to decide what's the best technology to leverage for their USP and product. In short, we believe the following trends will happen across base- and metalayers:

BASELAYER

We believe we'll see a new wave of dApps leveraging BRC-20 tokens across DeFi, NFTs, Social, etc. Despite being early days, we continue to see strong appetite from users and founders to bring baselayer utility from other blockchains to the Bitcoin network.

METALAYERS

As the baselayer gets crowded, users will start adopting sidechains and other scaling mechanisms. This is an opportunity for founders and developers wanting to capture these new sidechains users. Leveraging smart contracts we expect to see sidechain ecosystems growing as dApps increase in complexity, mimicking more mature ecosystems like Ethereum.



1. Ordinal & BRC-20 use cases draw users & founders in
2. Users move on metalayers in search of scalability
3. Founders capture increasing number of users on metalayers

HISTORY RHYMES - ETHEREUM

TL;DR ~ We got you

Similar to smart contracts and ERC-721 on Ethereum, **we believe that ordinals, inscriptions, BRC-20 and smart contract capabilities on other layers are new found composability which will serve as a catalyst for founders to build new dApps for the Bitcoin.**

Recent innovation in the composability and scalability of the Bitcoin network offer (i) founders new tools to build apps and (ii) users the right incentives to explore new features on the Bitcoin network.

We dive deeper into the Ethereum analogy to make the point

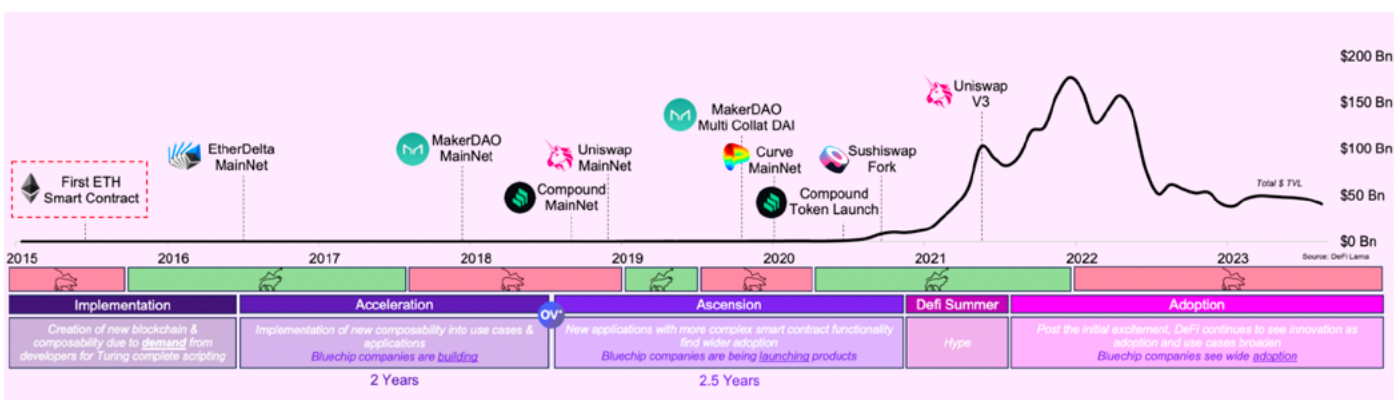
SMART CONTRACTS & PROGRAMMABLE FINANCE

"New composability in the form of smart contract capability was the catalyst for Programmable Finance innovation on Ethereum"

The deployment of the first Ethereum smart contract in 2015 marks a historic moment for composability of the blockchain. Allowing seamless, onchain execution of contracts was one of the key building blocks for the movement of programmable finance and later Decentralised Finance.

2016 and 2017 were marked by developers testing the potential of smart contracts including some initial products of programmable finance such as EtherDelta. After more than two years, MarkerDAO launched on mainnet late 2017 followed by the likes of Compound and Uniswap in 2018.

Shortly after their introduction on Ethereum, smart contracts rapidly emerged as crucial tools for developers. During this exploratory phase, developers concentrated on testing and implementing smart contracts to create new protocols. This period of experimentation laid the groundwork for the first generation of decentralized finance (DeFi) protocols. Many of these pioneering DeFi platforms continue to play a significant role in the sector's activity today.



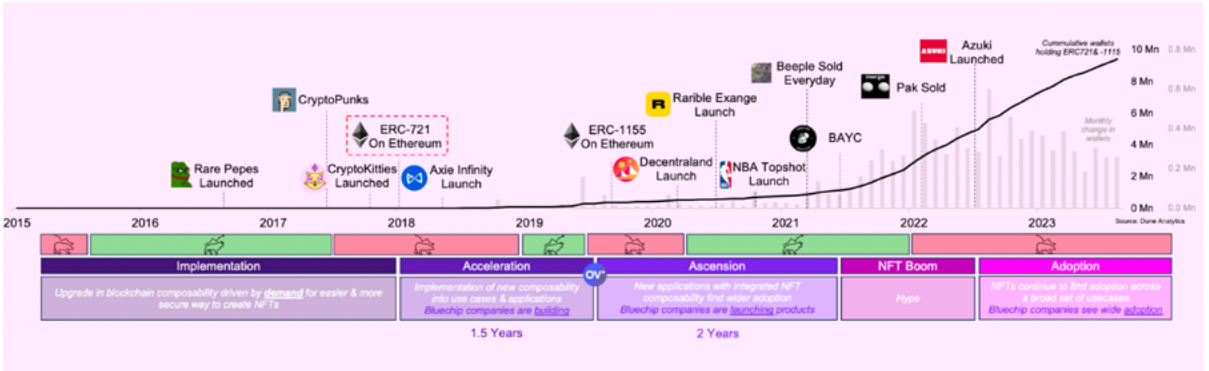
Source: Outlier Ventures, Dune Analytics

ERC-721 & NON-FUNGIBLE TOKENS

“New composability in the form of ERC 721 standard smart contract was the catalyst for the NFT Boom on Ethereum”

The concept of ERC-721 tokens have been created from the desire to represent unique digital assets on the Ethereum blockchain after earlier attempts with ERC-20 tokens fell short (CryptoKitties, CryptoPunks). Initially built on the ERC-20 standard, these collectibles faced limitations. As a result, enthusiasts and developers sought a new standard that could provide true ownership and scarcity to digital assets.

In response to this demand, ERC-721 came into existence in 2018. This new standard allowed for the creation of non-fungible tokens (NFTs), each with its own unique identifier and distinct characteristics. ERC-721 tokens revolutionized the digital collectibles space by providing a framework for artists, gamers, and creators to mint, trade, and own individual digital items as NFTs. This breakthrough in onchain composability laid the foundation for the NFT Boom that happened three years later. ERC-721 opened up a world of possibilities for which concrete use cases (collectibles, exchanges, wallets,...) were built in the following years. Many of which are still considered blue chip projects of the NFT space.



Source: Outlier Ventures, Dune Analytics

THE DEMAND FOR SCALING

TL;DR ~ We got you

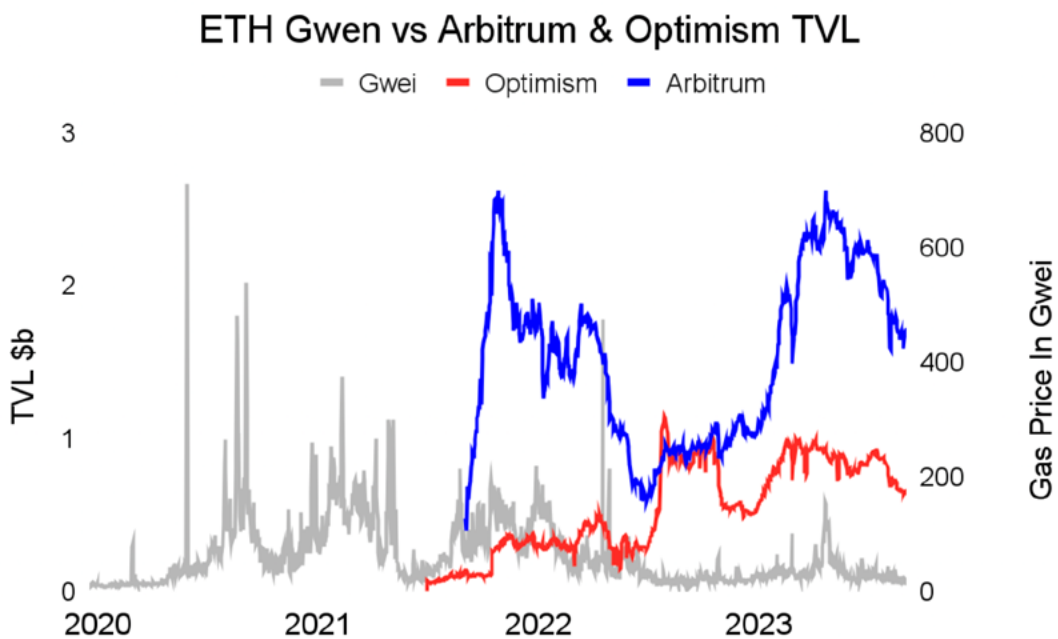
Similar to Ethereum's congestion from DeFi and NFTs, higher fees and longer transaction times caused by BRC-20 and its early applications are driving users and developers to focus on scaling solutions.

"An increase in the Ethereum user base in 2020 and 2021 drove up the demand for scalability of the network"

In 2020 and 2021, Ethereum experienced a surge in gas fee activity, primarily driven by the DeFi (decentralized finance) summer and the subsequent NFT Boom. As DeFi flourished and NFTs gained mainstream attention, users were drawn to Ethereum's ecosystem, resulting in a significant uptick in transactions and smart contract interactions. The subsequent increased demand for blockspace caused congestion on the Ethereum network, leading to exorbitant gas fees and slower transaction processing times. As a result, economic use cases involving microtransactions were no longer viable on the blockchain.

Recognizing the urgent need for relief, the Ethereum community sought scalable solutions, which gave rise to Layer 2 scaling solutions like Arbitrum and Optimism. These innovations sought to alleviate the network's workload, lower gas fees, and enhance the user experience. They addressed the urgent scalability challenges that had been magnified by the rise of NFTs and DeFi.

It is debated if ordinals and BRC-20, which are the source of network congestion, are going through a boom-bust cycle. We argue that the new found composability will continue to drive innovation and create new use cases. We draw the analogy with how composability in smart contract capability and ERC-721 saw a similar rise in gas fees, followed by adoption of scaling mechanisms like Polygon, Arbitrum and Optimism.



Source: Etherscan & DefiLama

We believe in similar fashion, a sustained level of network congestion on the Bitcoin network will incentivize (i) users to move to metalayers with embedded scaling and (ii) developers and founders to build on these layers to capture new users.

Conclusion

In short, we believe a surge in innovation is imminent in the Bitcoin ecosystem. A perfect storm of composability, scalability, and innovation is brewing. Ordinals and smart contract composability are providing founders with tools to leverage Bitcoin's network effect. At the same time, scalability, provided by metalayers that have been building out over the past years, are ready to welcome new users that are looking to make use of scaling and new smart contract enabled dApps.

While building on Bitcoin is not entirely new, at Outlier Ventures, we believe the Bitcoin network has finally become widely accessible to all sorts of founders. Based on our experience in previous innovation cycles across ecosystems, we believe NOW is the time to build.