

# Navigating Crypto: Industry Map

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September 2023

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About Binance Research

# About the Industry Map

The Industry Map provides an overview of the crypto ecosystem. In this report, we break down different verticals into subcategories and lay out a few projects in each of them. Additional details in terms of project descriptions and relevant metrics can be found in the following slides.

This map is compiled based on publicly available data, research, and qualitative analysis. It is not intended to be an exhaustive list of projects in the industry. Certain verticals, subcategories, or projects may or may not have been included, as we aim to share a variety of key leaders as well as emerging players. The projects showcased are mapped according to their primary use cases. For suggestions, please provide your feedback [here](#).

The mention of specific projects does not constitute an endorsement or recommendation by Binance.

# I. Infrastructure

# Infrastructure

## Vertical Spotlights

We identified 5 key areas of innovation.



### Scalability and Fairness

As L1s see increasing adoption, more projects aim to make blockchains more scalable by batching transactions off-chain and more fair by implementing efficient distribution of Maximal Extractable Value.



### Data Usability and Tooling

Data generated on blockchain networks is far from being fully usable by developers. Data querying and indexing services are key innovation areas to improve the current developer experience.



### Security and Privacy

The rising demand for network security and privacy has resulted in the emergence of projects aiming to prevent malicious data tracking, smart contract hacks, etc.



### Cloud Networks

We see more projects focusing on providing users with access to web-based services that may entail storage, computing, and content delivery through decentralized infrastructure.



### Connectivity

Layer-1 blockchains are far from being fully connected and interoperable. Numerous cross-chain solutions are being developed to improve the current on-chain user experience.

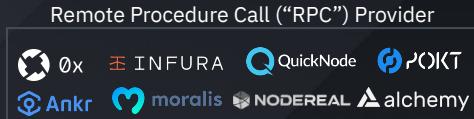
# Infrastructure

## Vertical Overview

### Scalability and Fairness



### Data Usability and Tooling



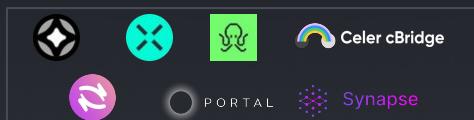
### Security and Privacy



### Cloud Networks



### Connectivity



### Optimistic Rollup Solution



### Data Indexing



### Privacy Solution



### Content Delivery Network (CDN)



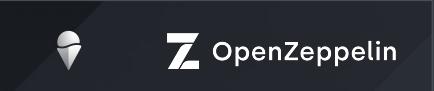
### Oracle



### Maximal Extractable Value ("MEV") Solution



### Smart Contract Automation



### Multisig Wallet



### Storage



### Wireless Networks



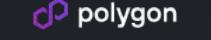
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# Infrastructure

## Subcategory Description

### Zero-Knowledge (“ZK”) Solution:

ZK rollups or Validium protocols execute bundled transactions off-chain and verify it on-chain using zero-knowledge proofs.

 zkSync	zkSync is a ZK rollup solution addressing Ethereum scalability issues with minimized security compromises.
 Aztec	Aztec Network is the first ZK rollup on Ethereum supporting public and private smart contract execution.
 STARKNET	StarkNet is a decentralised, permissionless ZK rollup.
 Loopring	Loopring is a ZK rollup solution primarily for trading and payment.
 polygon	Polygon zkEVM is an Ethereum L2 scaling solution that uses zero-knowledge proofs to offer validity and quick transaction finality.
 Scroll	Scroll is a native zkEVM solution for Ethereum.
 Linea	Linea is a zkEVM rollup developed by Consensys, which is also the developer of Metamask.

### Optimistic Rollup Solution:

Protocols that assume the validity of transactions and then combine them to execute off-chain.

 OP	Optimism is a low-cost L2 optimistic rollup network.
 ARBITRUM	Arbitrum is the largest optimistic rollup network on Ethereum based on total value locked.
 Boba	Boba Network is an L2 scaling solution and a hybrid compute platform.
 Metis	Metis will be an L2 scaling protocol that uses optimistic rollup technology.
 Base	Base is an L2 network launched by Coinbase and built using OP Stack.

# Infrastructure

## Subcategory Description (cont.)

### Maximal Extractable Value (“MEV”) Solution:

Solutions that prevent validators from unfairly profiting by including, excluding, or reordering transactions in a block.

	Flashbots works on mitigating the negative externalities of current MEV techniques and avoiding the risks that MEV causes to state-rich blockchains.
	Jito Labs builds high-performance systems to scale Solana and maximize validator rewards.
	Eden Network is an optional, non-consensus-breaking transaction ordering protocol for Ethereum blocks.
	Manifold is a block builder for users and validators on the Ethereum blockchain, aiding in the creation of MEV for all stakeholders.
	Skip Protocol is a MEV infrastructure for blockchains and protocols, currently serving Juno, Evmos, Injective, Terra 2, Berachain, Neutron, dYdX, and Osmosis.

# Infrastructure

## Subcategory Description (cont.)

### Remote Procedure Call (“RPC”) Provider:

RPC is the most direct interface through which developers can communicate with the blockchain system.

 0x	0x is a protocol that enables the creation of decentralized exchange on Ethereum.
 alchemy	Alchemy is a platform that enables developers to interact with the blockchain, mainly through API calls.
 INFURA	Infura provides Ethereum API, IPFS API and Gateway, and ETH nodes-as-a-service.
 moralis	Moralis provides a suite of APIs for developers to seamlessly integrate blockchain into their dApps.
 QuickNode	QuickNode is a platform for developers to scale blockchain applications.
 Ankr	Ankr enables developers to build upon a distributed network of nodes.
 POKT	Pocket Network provides RPC access to Ethereum, Polygon, etc.
 NODEREAL	NodeReal is a one-stop blockchain infrastructure and services provider.

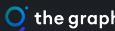
### Smart Contract Automation:

Platforms that enable users to automatically execute smart contracts.

 Gelato	Gelato Network enables users to automate smart contract functions on Ethereum.
 OpenZeppelin	OpenZeppelin Relay sends transactions via HTTP API, automating smart contract operations securely.

### Data Indexing:

Platforms that provide network data indexing and querying services.

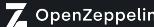
 the graph	The Graph is an indexing protocol for querying networks like Ethereum.
 Covalent	Covalent is a unified API that brings data from different chains and other searchable endpoints.
 OxScope	OxScope is a protocol that aims to standardize Web2 and Web3 data by building a knowledge graph.
 SubQuery	SubQuery offers data indexing on Polkadot, Cosmos, Avalanche, Algorand, NEAR, Ethereum, and more.

# Infrastructure

## Subcategory Description (cont.)

### Security Solution:

Protocols that contribute to the security of blockchains.

	SharkTeam is a leading Web3 security service provider that offers smart contract audits, chain analytics, and emergency response services.
	Forsta is a real-time detection network for security and operational monitoring of blockchain activities.
	OpenZeppelin provides security products to build and operate dApps.
	ImmuneFi is a leading bug bounty platform.
	QuantStamp provides security for hire, protecting over \$200B in digital asset risk from hackers.
	Harpie is the first on-chain firewall that protects users from scams, hacks, and theft.

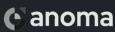
### Multisig Wallet:

Cryptocurrency wallets that require two or more private keys to sign and send a transaction.

	Safe is a platform to manage digital assets on Ethereum.
	Apollo Safe is a multisig asset manager for the Cosmos ecosystem.
	Squads is a multisig management protocol for Web3-native teams.

### Privacy Solution:

Projects that contribute to the protection of user privacy.

	Nym is a decentralized and tokenized infrastructure that provides privacy from the network to the application layer.
	Anoma is an intent-centric, privacy-preserving protocol for decentralized counterparty discovery, solving, and multi-chain atomic settlement.
	Automata provides a blockchain-based authentication solution that secures access to accounts and protects users with an active defense.
	Hopr is a data-centric privacy tool that prevents bots from accessing the metadata of wallets when users run transactions against a blockchain.

# Infrastructure

## Subcategory Description (cont.)

### Content Delivery Network (“CDN”):

CDNs are decentralized, distributed networks that provide fast delivery of internet content.

 MESON.NETWORK	Meson Network is a bandwidth marketplace using blockchain to replace traditional sales models.
 Media Network	Media Network is a privacy-first and community-governed CDN.
 THETA NETWORK	Theta Network is a blockchain infrastructure for video and media.
 Livepeer	Livepeer Network is a protocol for developers who want to add live or on-demand video to their project.

# Infrastructure

## Subcategory Description (cont.)

### Computing:

Projects that provide users with access to computing services based on a decentralized infrastructure.



4EVERLAND is a cloud computing platform that integrates storage, computing, and network core capabilities.



Flux is a scalable, decentralized cloud infrastructure.



Latitude helps developers deploy dedicated servers globally through the bare metal cloud platform.



Akash is a decentralized computing marketplace built for public utility.



Render Network provides decentralized GPU-based rendering solutions.

### Storage:

Projects that provide users with access to storage services based on a decentralized infrastructure.



Filecoin is an open-source cloud storage marketplace, protocol, and incentive layer.



Ethereum Swarm is a decentralized storage and communication system.



Sia is a decentralized cloud storage marketplace that allows direct transactions without third parties.



Storj offers low-cost cloud storage with zero-trust security.



Arweave offers permanent and decentralized storage in an open ledger.

# Infrastructure

## Subcategory Description (cont.)

### Cross-Chain Bridge:

Protocols that bridge tokens from one blockchain to another.

Project	Total Value Locked	Supported Blockchains
 Polygon	US\$373.69M	Polygon, Ethereum, BNB Chain, 8 other chains
 PORTAL	US\$293.85M	Ethereum, Solana, BNB Chain, 21 other chains
 Synapse	US\$108.51M	Ethereum, BNB, Polygon, 15 other chains
 Celer cBridge	US\$85.83M	Ethereum, Arbitrum, BNB, 22 other chains
 Ren	US\$58.88M	Ethereum, Polygon, Arbitrum, 4 other chains
 xDai	US\$52.47M	Ethereum, Optimism, Arbitrum, 3 other chains
 Aavegotchi	US\$3.61M	Ethereum, BNB, Polygon, 15 other chains

# Infrastructure

## Subcategory Description

### Oracle:

Protocols that connect off-chain with on-chain data.

 <b>Chainlink</b>	Chainlink decentralized oracle networks provide tamper-proof inputs, outputs, and computations to support smart contracts.
 <b>UMA</b>	UMA's Optimistic Oracle allows contracts to request and receive data.
 <b>API3</b>	API3 is a first-party oracle network.
 <b>nest</b>	Nest Oracle is an open, free of charge, decentralized oracle that uses non-cooperative game mechanism.
 <b>BINANCE ORACLE</b>	Binance Oracle provides secure, timely, and accurate blockchain data using a robust set of off-chain APIs.
 <b>PYTH</b>	Pyth delivers real-time, high-fidelity, high-frequency market data for DeFi applications.

### Decentralized Wireless Networks:

Protocols that leverage blockchain technology to offer seamless internet connection.

 Helium is a decentralized global network of Hotspots that provides accessible, wireless coverage for Internet of Things devices.
 <b>POLLEN MOBILE</b> Pollen is a decentralized, privacy-focused mobile network.
 Karrier One is a provider of a decentralized mobile network on a telecom-compliant blockchain built using Polygon Supernets.

## II. Decentralized Finance (“DeFi”)

# DeFi

## Vertical Spotlights

We identified 4 key areas of innovation.



### Issuance

We see the emergence of a more diverse suite of financial products in the DeFi space, such as synthetic assets, options, and structured products.



### Liquidity

Liquidity staking and collateralized debt positions (“CDPs”) are becoming more prominent, exposing users to a variety of on-chain liquidity opportunities.



### Trading

More diverse financial products are being traded on decentralized exchanges (“DEXs”).

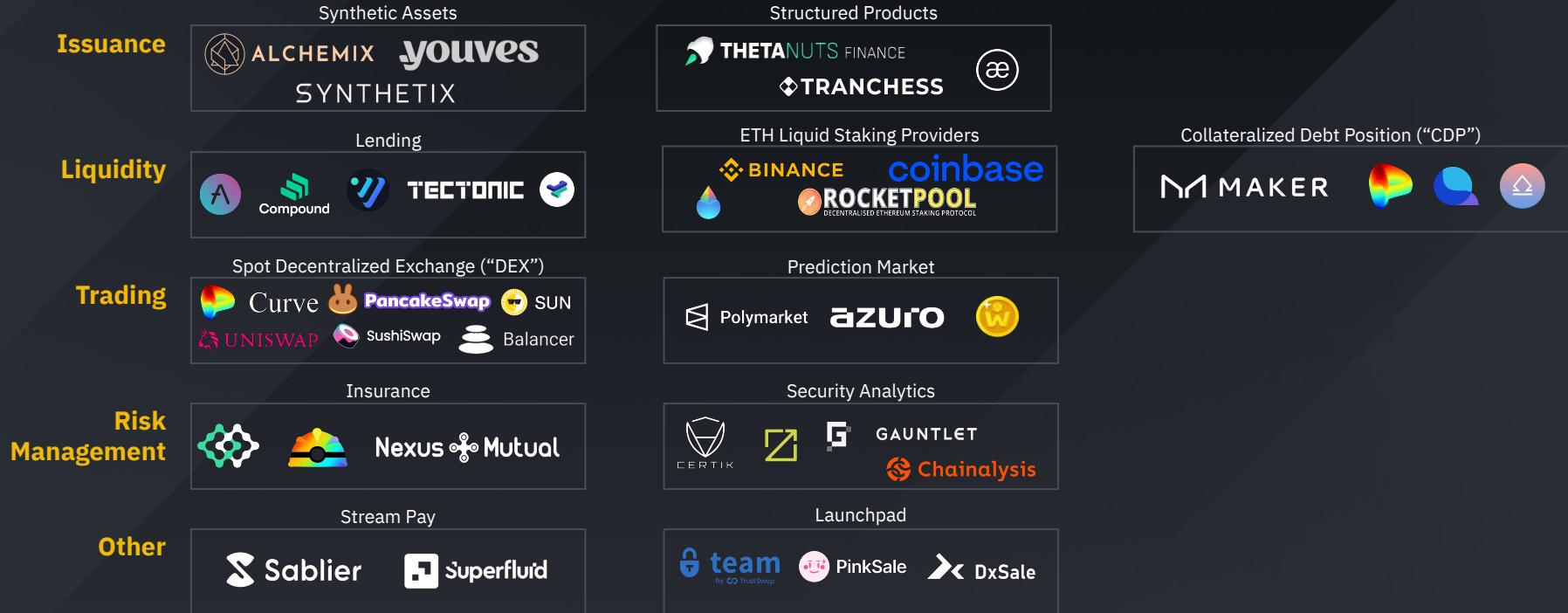


### Risk Management

There are more projects focusing on providing users with monetary protection and other security measures against hacks, scams, and technical loopholes.

# DeFi

## Vertical Overview



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# DeFi

## Subcategory Description

**Synthetics:** Protocols that incorporate cryptocurrencies and traditional derivative assets, essentially tokenized derivatives.

Project	Total Value Locked	Description
SYNTHETIX	US\$389.35M	Synthetix is the largest derivatives liquidity protocol, allowing users to trade a wide array of derivatives in DeFi.
 ALCHEMIX	US\$53.05M	Alchemix is a DeFi protocol that allows the creation of synthetic tokens that represent the future yield of the deposit.
 youves	US\$25.14M	Youves is a decentralized DeFi platform that facilitates the creation and management of synthetic assets.

# DeFi

## Subcategory Description (cont.)

**Structured Products:** Yield optimizers, yield tranching, automated LP managers, etc.

Project	Total Value Locked	Description
 TRANCHESS	US\$60.73M	Tranchess offers a yield enhancing asset tracker with varied risk-return solutions.
 Aevo	US\$18M	Aevo provides a suite of DeFi products for users to trade options and perps on-chain.
 THETANUTS FINANCE	US\$8.06M	Thetanuts Finance offers automated strategies through structured products for users to earn and optimize their yields.

# DeFi

## Subcategory Description (cont.)

**Lending:** Protocols that allow users to lend and borrow assets.

Project	Total Value Locked	Description
	US\$4.499B	Aave is the largest lending protocol in terms of TVL that allows users to earn interest, borrow assets, and build applications.
	US\$3.699B	JustLend is a decentralized lending protocol that allows users to supply, borrow, and earn.
 Compound	US\$1.885B	Compound is an algorithmic, autonomous interest rate protocol built for developers to unlock open financial applications.
	US\$631.75M	Venus is a DeFi algorithmic money market protocol on BNB Chain. It is also the largest lending platform on BNB Chain.
	US\$121.18M	Tectonic, a fork from Compound, is a cronos-based money market platform for earning passive yield and accessing instant backed loans.

# DeFi

## Subcategory Description (cont.)

**ETH Liquid Staking Providers:** Protocols that allow users to unlock liquidity through LSDs while keeping networks secure.

Project	Total Value Locked	Description
 <b>Lido</b>	US\$13.893B	Lido is a decentralized liquid staking platform for proof-of-stake cryptocurrencies (e.g., ETH, SOL, MATIC).
 <b>coinbase</b>	US\$2.123B	Coinbase allows users to deposit ETH to get cbETH through their wallet.
 <b>ROCKETPOOL</b> DECENTRALISED ETHEREUM STAKING PROTOCOL	\$1.706B	Rocketpool is a decentralized staking protocol that allows users to deposit ETH in exchange for rETH.
 <b>BINANCE</b>	US\$471.17M	Binance provides users who staked ETH with LSD, WBETH, which is reward-bearing in nature.

# DeFi

## Subcategory Description (cont.)

**Collateralized Debt Position (“CDP”):** Protocols that use collaterals to mint stablecoins.

Project	Total Value Locked	Description
 MAKER	US\$4.892B	MakerDAO enables the generation of the stablecoin DAI, which is the largest decentralized stablecoin.
	US\$638.57M	Liquity enables the generation of the stablecoin LUSD against ETH as a collateral.
	US\$149.35M	CrvUSD is a CDP stablecoin that is minted after users deposit collateral such as stETH on Curve.
	US\$130.06M	Lybra Finance is a decentralized finance protocol that allows users to mint its overcollateralized, interest-bearing stablecoin, eUSD.

# DeFi

## Subcategory Description (cont.)

**Spot Decentralized Exchange (“DEX”):** A peer-to-peer marketplace for trading various assets in a non-custodial manner.

Project	Total Value Locked	Description
 UNISWAP	US\$3.199B	Uniswap is a leading decentralized exchange that allows users to swap, earn, and build on its platform.
 Curve	US\$2.012B	Curve is a multi-chain automated market maker-based decentralized exchange that allows users to trade at the lowest slippage.
 PancakeSwap	US\$1.346B	PancakeSwap is the leading decentralized exchange on BNB Chain.
 Balancer	US\$689.63M	Balancer is an automated portfolio manager and trading platform on Ethereum.
 SUN	US\$561.53M	SUN is a platform for stablecoin swap, stake-mining, and self-governance on TRON.
 SushiSwap	US\$285.69M	SushiSwap is a platform for users to swap, earn, stack yields, lend, borrow, and leverage.

# DeFi

## Subcategory Description (cont.)

**Prediction Market:** Protocols that enable users to wager, bet, and buy in future outcomes.

Project	Total Value Locked	Description
 Polymarket	US\$6.98M	Polymarket allows users to build portfolios based on their forecasts and earn a return if they get it right.
 azuro	US\$3.84M	Azuro is an infrastructure and liquidity layer for on-chain betting.
 Winr	US\$3.35M	Winr is a fully autonomous liquidity and incentive infrastructure for on-chain games.

**Stream Pay:** Payment modules that allow continuous settlement via token streaming.

 Sablier	US\$4.75M	Sablier is a token streaming protocol used by DAOs and businesses for token vesting, payroll, airdrops, and more.
 Superfluid	US\$1.43M	Superfluid handles token payment streaming for subscriptions, salaries, and others for extreme capital efficiency.

# DeFi

## Subcategory Description (cont.)

**Insurance:** Protocols that aim to provide users with insurance coverage to hedge risks..

Project	Total Value Locked	Description
 <b>Nexus Mutual</b>	US\$222.84M	Nexus Mutual is the largest decentralized insurance protocol that covers against smart contract failures.
	US\$6.01M	Helmet Insure is a crypto-assets insurance trading platform on Polygon and BNB, protecting cryptocurrency traders.
	US\$3.54M	InsurAce is a leading multi-chain DeFi insurance protocol that is the first to issue cross-chain portfolio-based covers.

**Launchpad:** Composable modules for token issuance, liquidity, etc.

 <b>PinkSale</b>	US\$154.55M	PinkSale allows users to launch tokens and create their initial token sale.
 <b>team</b> <small>by TrustSwap</small>	US\$83.87M	Team Finance is a toolkit that helps founders create tokens to raise funds from investors.
 <b>DxSale</b>	US\$38.32M	DxSale is an initial DEX offering (“IDO”) launchpad.

# DeFi

## Subcategory Description

**Security and Stress Testing:** Modules that stress test or offer other security measures to protocols.

Project	Description
 CERTIK	Certik is a security-focused audit and ranking platform.
 Chainalysis	Chainalysis provides blockchain analysis for government agencies, projects, and financial institutions.
 ZOKYO	Zokyo builds, secures, and funds crypto and DeFi projects.
 GAUNTLET	Gauntlet is a financial modeling platform that optimizes capital efficiency, ensures the systemic health of protocols, and mitigates platform risks.

### III. Non-Fungible Token (“NFT”)

# NFT

## Vertical Spotlights

We identified 3 key areas of innovation.



### Marketplace

We see the emergence of NFT marketplaces targeting a variety of use cases, such as chain-specific listings, aggregators, and thematic curations. Users gain access to a wider range of buyer experiences.



### Financialization

There are more diverse NFT-based financial products and services, such as staking, lending, derivatives, fractionalization, etc. Users are exposed to liquidity opportunities for their previously illiquid NFT assets.



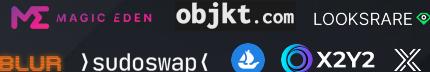
### Services

An increasing number of projects are helping users improve their experiences purchasing NFTs and managing portfolios. Other projects provide services to help creators launch, secure, and store their NFTs more seamlessly.

# NFT Vertical Overview

## Marketplace

### Open Marketplace



### Curated Marketplace



### Aggregator



## Financialization

### Lending



### Fractionalization



### Buy Now, Pay Later



## Services

### Derivatives



### Options



### Portfolio Analytics and Appraisal



### Rental



### Membership and Content Gating



### Storage



### Launchpad



### Safety



# NFT Subcategory Description

**Open Marketplace:** Platforms that allow for any NFTs from any brands to be sold.

Project	Traders (30D)	Volume (30D)	Description
<b>BLUR</b>	29.84K	US\$137.39M	Blur is an NFT marketplace designed for pro traders.
 OpenSea	115.63K	US\$90.88M	OpenSea is the largest NFT marketplace by the number of unique Ethereum NFT traders.
LOOKSRARE 	1.44K	US\$79.35M	LooksRare is a decentralized NFT marketplace offering community rewards for participating.
 X2Y2	1.97K	US\$48.60M	X2Y2 is an NFT marketplace on Ethereum with 100% revenue shared with token stakers.
 Immutable X	27.05K	US\$19.65M	Immutable X is an NFT marketplace built on the Immutable X blockchain.
 MAGIC EDEN	5.51K	US\$2.82M	Magic Eden is a NFT marketplace on Solana with 0% listing fees.
 objkt.com	11.29K	US\$470.87K	Objkt is the largest NFT marketplace on Tezos.
) sudoswap(	180	US\$242.52K	Sudoswap is a decentralized, on-chain NFT exchange based on an AMM model.

# NFT

## Subcategory Description (cont.)

**Aggregator:** Platforms that allow users to easily trade NFT collections from different marketplaces in one central destination.

Project	Traders (30D)	Volume (30D)	Description
<b>BLUR</b>	31.81K	US\$41.61M	Blur is an NFT marketplace aggregator for pro traders.
	23.57K	US\$13.78M	Opensea Pro, formerly known as Gem, is a low-fee NFT marketplace aggregator. Gem was acquired by OpenSea.
 <b>element</b>	837	US\$39.82K	Element is a community-driven, aggregated marketplace for NFTs.

**Curated Marketplace:** Selective platforms that focus on a certain type of NFT, aesthetic, or set of values.

 <b>Foundation</b>	900	US\$415.35K	Foundation is a curated, decentralized NFT marketplace.
 <b>tofuNFT</b>	3.08K	\$8.71K	tofuNFT is a NFT marketplace focused on GameFi.
 <b>KnownOrigin</b>	11	\$1.41K	KnownOrigin is a NFT marketplace for rare digital arts and NFT.

# NFT

## Subcategory Description (cont.)

**Lending:** Protocols that allow users to collateralize NFTs for loans.

Project	Total Value Locked	Description
 <b>BendDAO</b> WEB3 DATA LIQUIDITY	US\$44.85M	BendDAO is a decentralized peer-to-pool-based NFT liquidity protocol.
 <b>BLUR</b>	US\$21.13M	Blend enables NFT owners to borrow ETH against their assets with a buy now, pay later feature for NFT purchases.
 <b>nftfi</b>	US\$12.15M	NFTfi is a peer-to-peer lending protocol.
 <b>fRAKT</b>	US\$939.64K	Based on Solana, FRAKT allows users to buy, sell, earn yield, and get instant liquidity out of NFTs.

# NFT

## Subcategory Description (cont.)

### Fractionalization:

Protocols that allow users to create and trade fractionalized NFTs.

	NFTFY offers tools for NFT fractionalization and a marketplace of fractionalized NFTs.
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### Options:

Protocols that allow NFT holders to earn yields on their NFTs and engage in options trading.

	hook is an NFT-native options protocol.
	Wasabi Protocol is an Ethereum-based, decentralized, NFT option trading protocol.

### Derivatives:

Protocols that allow users to trade NFT derivatives.

	Tribe3 is a DEX for social and gamified NFT futures.
	Nftperp is a perpetual futures DEX for NFTs.

### Buy Now, Pay Later (“BNPL”):

Protocols that allow users to buy NFTs and pay for them later.

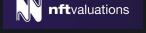
	Teller is an oracle-less lending protocol that has a buy now, pay later system with as little as a 25% down payment.
	Cyan offers buy now, pay later for NFT purchases with a 25% down payment.
	Pine is a decentralized NFT-backed borrowing and lending protocol with a buy now, pay later system.

# NFT

## Subcategory Description (cont.)

### Portfolio Analytics and Appraisal:

Tools that analyze or appraise NFTs.

 <b>NFTBank</b>	NFT Bank is a NFT portfolio management service.
 <b>UPSHOT</b>	Upshot builds a scalable NFT pricing infrastructure.
 <b>nftvaluations</b>	NFT Valuations is a provider of AI-powered valuations and market insights.

### Membership and Content Gating:

Tools that gate access to membership or content using NFTs.

 <b>AUDIUS</b>	Audius is a music streaming and sharing platform that puts power back into the hands of content creators.
 Moongate	Moongate is a no-code toolkit to create and adopt NFT-gated memberships for brands and events.
 Collab.land	Collab.land is an NFT token gating bot for Telegram and Discord with over 6.5M verified wallets.

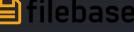
### Rental:

Protocols that allow users to rent NFTs.

 <b>DOUBLE</b>	Double Protocol is an NFT rental protocol.
 <b>reNFT</b>	reNFT is a multi-chain NFT rental protocol that enables uncollateralized renting, lending, and reward sharing.
 <b>Taker Protocol</b>	Taker Protocol is a platform that allows users to rent NFTs based on their risk profiles.

### Storage:

Solutions for storing NFT data.

 <b>NFT STORAGE</b>	Nft.storage is a long-term storage service designed for off-chain NFT data.
 <b>Pinata</b>	Pinata is an IPFS solution for creators and developers.
 <b>filebase</b>	Filebase is a storage platform that allows on-ramp to IPFS and decentralized file storage networks.

# NFT

## Subcategory Description

### Launchpad:

Platforms for projects to launch their own NFTs.

 <b>NFT LAUNCH</b> Revolutionizing NFT Launches	NFT Launch is a launchpad for upcoming NFT projects.
 <b>Mintbase</b>	Mintbase enables users to build their own minters, markets, and NFT redeeming systems.
 <b>—</b>	Dropspace is a full-service minting platform that provides the technology to help founders launch their NFTs.

### Safety:

Modules that offer security measures to protocols.

 <b>Doppel</b>	Doppel is an IP protection platform for NFTs.
 <b>optic</b>	Optic monitors blockchains to reveal the origins of NFTs and how they have been reimagined, remixed, or copied.
 <b>YAKOA</b>	Yakoa is an NFT fraud detection network.

## IV. Gaming

# Gaming

## Vertical Spotlights

We identified 4 key areas of innovation.



### Games

The question remains: what is the best way to most seamlessly implement crypto-based in-game economies without impacting gamer incentives in an unsustainable way?



### Game Development

We see the emergence of projects in the form of game studios, initial game offerings (“IGOs”) launchpads, and developer kits that aim to help creators smoothly develop and launch their games with crypto-based in-game economies.



### Player Experience

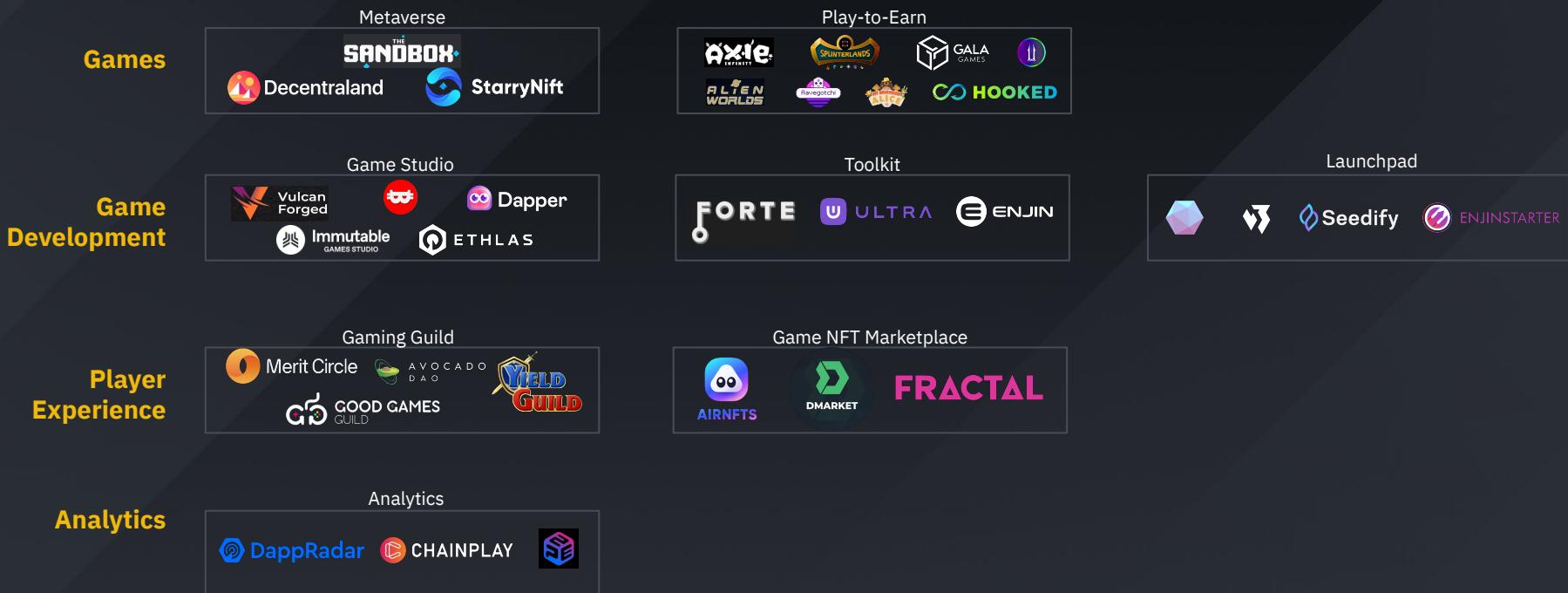
There are more diverse products and services that aim to improve the player experience by lowering the barriers to exploring and onboarding in crypto-based games.



### Analytics

Developments in analytics tools continue to remain pivotal for game developers to make informed decisions.

# Gaming Vertical Overview



# Gaming

## Subcategory Description

### Metaverse:

Virtual worlds where users can engage in a variety of immersive virtual experiences.

Project	Market Cap	Description
 THE SANDBOX	US\$583.95M	The Sandbox is currently the largest metaverse project where players can build, own, and monetize their gaming experiences on the Ethereum blockchain.
 Decentraland	US\$511.35M	Decentraland is a 3D virtual world where users can create and monetize content.
 StarryNift	N/A	StarryNift is an immersive VR-supported metaverse.

# Gaming

## Subcategory Description (cont.)

### Play-to-Earn:

Games where users can monetize their gaming experiences in the form of cryptocurrencies.

Project	Market Cap	Description
 Axie Infinity	US\$587.19M	Players of Axie Infinity collect and mint NFTs that represent digital pets and engage in the crypto-based in-game economy.
 GALA GAMES	US\$332.01M	Players can earn GALA and limited-edition NFTs by playing games on the Gala platform.
 Illuvium	US\$142.68M	Illuvium is a blockchain-based AAA game that includes open-world exploration games, autobattlers, etc.
 Aavegotchi	US\$38.62M	Aavegotchi is an open-source, community-owned NFT gaming protocol.
 HOOKED	US\$38.12M	Hooked Protocol aims to provide a streamlined and fun gamified learning mechanism and experience for new users.
 My Neighbor Alice	US\$37.20M	My Neighbor Alice is a multiplayer builder game where players can buy virtual islands, collect and build items, and meet new friends.
 ALIEN WORLDS	US\$35.12M	Players can earn Trilium, which gives them power in the Planet DAOs.
 SPLINTERLANDS	US\$16.87M	Splinterlands is an NFT card game that enables players to play, trade, and earn.

# Gaming

## Subcategory Description (cont.)

### Game Studio:

Studios that specialize in developing crypto-based games. The games listed are not meant to be exhaustive.

 <b>Dapper</b>	NBA Top Shot, NFL All Day, UFC Strike, CryptoKitties, etc.
 <b>Immutable GAMES STUDIO</b>	Gods Unchained (Strategy Cards), Guild of Guardians (Action RPG).
 <b>Vulcan Forged</b>	Vulcan Verse (MMORPG), Tartarus (Action Survival), etc.
 <b>ETHLAS</b>	Battle Showdown, Ethlas, My Pizza Story etc.
 <b>Topps</b>	Night Warrior, Naka Strike, Cycle Stunts, etc.

### Launchpad:

Platforms that provide services to creators to launch games with crypto-based in-game economies.

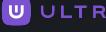
	Combo Network provides a launchpad that aims to bridge more creators into crypto via GameFi incubation, investment, distribution, IGO, etc.
	Seedify is a launchpad and incubator for crypto games.
	Web3Games is an integrated blockchain gaming ecosystem offering a suite of solutions for users and developers.
	Enjinstarter is a leading launchpad focused on Gamefi/Metaverse/NFT/Music and Gamified utility projects.

# Gaming

## Subcategory Description (cont.)

### Toolkit:

Tools for incorporating crypto-based economies into games.

 <b>FORTE</b>	Forte is a game platform that enables game companies to create blockchain games and scale in-game economies.
 <b>ENJIN</b>	Enjin offers a suite of products that make NFTs easy for individuals, businesses, and developers.
 <b>ULTRA</b>	Ultra is a platform that brings games, digital assets, tournaments, and live streams to one place through a single login.

# Gaming

## Subcategory Description (cont.)

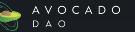
### Game NFT Marketplace:

Platforms for gamers to trade in-game items in the form of NFTs.

 AIRNFTS	AirNFTs is a cross chain, gaming NFT marketplace on BNB Chain, Fantom, and Polygon.
 dMarket	dMarket enables secure buying, selling, and trading of in-game NFTs.
 FRACTAL	Fractal is an open marketplace for gaming NFTs.

### Gaming Guild:

Gamer communities that collectively monetize the play-to-earn model and lower its entry barrier.

 YIELD GUILD	YGG is a play-to-earn gaming guild. Within YGG DAO, members are able to rent NFTs to play popular games.
 Merit Circle	Merit Circle is a guild that also allows players to rent NFTs to engage in these games.
 AVOCADO DAO	Avocado DAO community focuses on investing in NFT assets within games and emergent metaverses, NFT platforms, and P2E games.
 GOOD GAMES GUILD	Good Games Guild is a leading gaming hub for blockchain-based games.

# Gaming

## Subcategory Description

### Gaming Analytics:

Platforms that provide data insights on the Web3 gaming landscape.

 <b>DappRadar</b>	DappRadar is an analytics platform that offers the latest data on various Dapps.
 <b>CHAINPLAY</b>	Chainplay.GG is a one-stop hub for all things blockchain gaming.
 <b>P2E Analytics</b>	P2E Analytics is an NFT gaming research hub that provides on-chain and off-chain data on Web3 games.

# **V. Payment and Merchant Services**



# Payment and Merchant Services

## Vertical Spotlights

We identified 3 key areas of innovation.



### Stablecoin Issuers

Centralized and decentralized institutions are issuing their own stablecoins in an increasingly high interest rate environment.



### Cross-Border Transfers

Projects that facilitate cross-border transfers efficiently by removing the need for intermediaries.

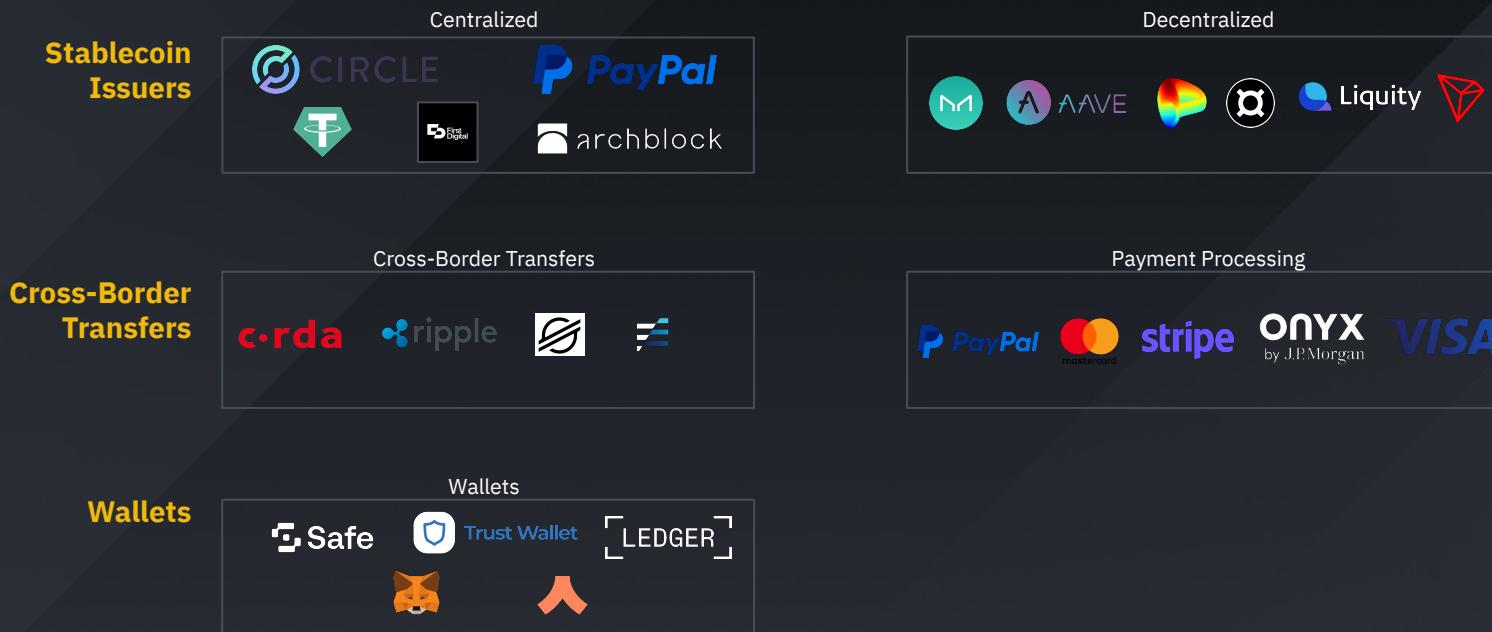


### Wallets

Web3 wallets that facilitate payments and interactions with the Web3 ecosystem.

# Payment and Merchant Services

## Vertical Overview



# Payment and Merchant Services

## Subcategory Description

### Centralized Stablecoin Issuers:

Stablecoins that are issued and backed by centralized entities.

Name	Market Cap	Description
	US\$82.98B	Tether is the largest centralized stablecoin issuer, with its native stablecoin, USDT, having the largest market share.
 CIRCLE	US\$25.69B	Circle is a centralized entity that issues the second-most dominant stablecoin, USDC.
	US\$3.12B	Archblock is a centralized entity that issues the stablecoin TUSD.
	US\$393.78M	First Digital is the issuer of the stablecoin FDUSD.
	US\$6.49M	Paypal recently launched its own stablecoin, PYUSD, on Ethereum that can be transacted on its app or website.

# Payment and Merchant Services

## Subcategory Description (cont.)

### Decentralized Stablecoin Issuers:

Stablecoins that are issued by decentralized protocols.

Name	Market Cap	Description
	US\$4.90B	MakerDAO is the largest decentralized stablecoin issuer, issuing the native stablecoin DAI.
	US\$724.22M	The TRON DAO Reserve is the issuer of the stablecoin USDD, which is an over-collateralized stablecoin.
	US\$668.21M	FRAX is a collateralized stablecoin issued by FRAX Finance.
	US\$282.39M	Liquity is a decentralized borrowing protocol that issues the crypto-backed, over-collateralized stablecoin, LUSD.
	US\$103.23M	Curve Finance, a decentralized exchange for stablecoin trading, is also the issuer of its native over-collateralized stablecoin, crvUSD.
	US\$22.1M	AAVE, the largest decentralized lending protocol, is the issuer of the over-collateralized stablecoin GHO.

# Payment and Merchant Services

## Subcategory Description (cont.)

### Cross-Border Transfer:

Blockchain protocols that enable seamless cross-border transfers.

	Stellar Lumen is a blockchain protocol that is open-sourced and decentralized, aimed at promoting greater ease in cross-border payments.
	R3's Corda is a distributed ledger technology that enables fast and cost-effective cross-border payments.
	Ripple is a decentralized payment network used by banks to settle cross-border and remittance payments.
	Partior network is a platform that promotes faster, more secure, interbank cross-border transfers.

### Payment Processing:

Payment processing networks that facilitate payments between consumers, organizations, and businesses.

	Mastercard is a payment processing network that facilitates electronic transactions. Its Mastercard Engage program helps bring more crypto card programs to market.
	Paypal is an online payment system that facilitates payments between parties through online money transfers. It has recently issued its own stablecoin, PYUSD.
	Stripe is a payment service provider that lets merchants accept debit and credit cards or other payment methods. Stripe currently offers a fiat-to-crypto onramp for businesses.
	Visa is the world's largest payment network, processing the most transactions in 2022. Visa has partnerships with various institutions to process cross-border payments across the Ethereum and Solana blockchains.
	ONYX, developed by Onyx, has already been used by institutional clients for cross-border settlements.

# Payment and Merchant Services

## Subcategory Description

### Wallets:

Wallets are pivotal as they enable transactions and interactions with various Web3 applications.

	Metamask is a leading self-custodial Web3 wallet developed by Consensys.
 LEDGER	Ledger wallets, developed by Ledger, are hardware cryptocurrency wallets that store the private keys for cryptocurrencies offline.
	Trust Wallet, acquired by Binance, is a self-custody wallet.
 Safe	Safe is a decentralized, self-custodial, and multisig crypto wallet.
	Argent is an Ethereum-focused wallet for DeFi and NFTs.

## VI. Decentralized Social

# Decentralized Social Vertical Spotlights

We identified 4 key areas of innovation.



## Infrastructure

Blockchain layers tailored for social applications given that social apps require faster transaction speeds, larger bandwidth, and cheaper media storage.



## Middleware

Protocols that are built on existing infrastructure and act as intermediaries between blockchains and applications.



## Application

Decentralized social applications that offer users more security, privacy, and control over their data.



## Tooling

Applications that help decentralized social networks scale and manage their communities.

# Decentralized Social

## Vertical Overview

### Infrastructure

#### Social Networking Protocols



#### Storage

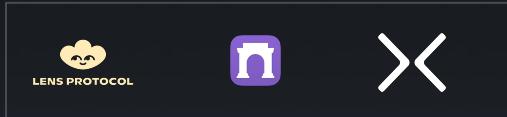


### Middleware

#### Decentralized Oracles



#### Decentralized Social Graphs



#### Decentralized Identities



### Applications

#### Social Media



#### Creator Engagement



#### Messaging



### Tooling

#### Community Management



# Decentralized Social

## Subcategory Description

### Social Networking Protocols:

Blockchains that are tailored for decentralized social applications.

	Subsocial is a web3 social platform that allows users to build decentralized social apps.
	Crossbell is a social ownership platform that consists of an EVM-compatible blockchain that is built for social networks.
	DeSo is an L1 blockchain built for social media platforms.

### Storage:

Storage platforms for social media content.

	Livepeer is the world's open video infrastructure that utilizes excess computing power to more efficiently share videos from broadcasters with consumers.
	Ceramic is a decentralized data network for building Web3 applications with composable data.
	IPFS is a distributed file storage protocol that allows the storage and retrieval of data in a decentralized manner.
	Storj is a blockchain platform powering a decentralized file storage system.
	Filecoin is the largest peer-to-peer, decentralized cloud storage and retrieval platform.
	Arweave is a decentralized storage platform that allows anyone to store their data permanently.

# Decentralized Social

## Subcategory Description (cont.)

### Decentralized Oracles:

Protocols that enable smart contracts to reliably access off-chain identity and credential-related data feeds.

	zkMe is a zk-credential layer for web3 applications to securely and reliably access off-chain identity and credential-related data feeds and web APIs.
 LENS PROTOCOL	LensAPI Oracle offers an easy way to access verifiable Lens API data in smart contracts.

### Decentralized Social Graphs:

Protocols that offer users control over their identity, social connections, and content in social networks.

 LENS PROTOCOL	Lens Protocol is a decentralized smart contract protocol that allows users to manage and monetize their social graph.
	Cyberconnect is a decentralized, smart contract protocol that empowers ownership of social identities, networks, and content in a social network.
	Farcaster is a decentralized social graph protocol that enables the composability of one's data.

# Decentralized Social

## Subcategory Description (cont.)

### Decentralized Identities:

Protocols that provide credentials to facilitate digital relationships.

	Formerly known as Project Galaxy, Galxe is a credential data network that provides both on-chain and off-chain credentials.
	Otterspace is a DAO management and badge credentialing application.
	Created by Polygon, Polygon ID uses a decentralized identity system to create interactions with Web3 services.

# Decentralized Social

## Subcategory Description (cont.)

### Social Media:

Decentralized social media networks for users to interact with each other in a similar manner to traditional Web2 platforms.

	Showtime is a decentralized social network that facilitates bonding between communities by allowing creators to drop free NFTs to their community.
	Mastodon is an open-source social media platform that is regarded as a Web3 alternative to twitter.
	Steemit, the pioneer of decentralized social networks, is the longest-running blockchain-based blogging and social media platform.
	Minds is an open-source social networking platform where users are rewarded with tokens for contributing to the community.
	Torum is a social media platform that prides itself on being a SocialFi ecosystem with DeFi services and an NFT marketplace.
	Myriad Social is a decentralized, censorship-resistant social network that enables users to host their own social network without centralized control.

# Decentralized Social

## Subcategory Description (cont.)

### Creator Engagement:

Protocols that built a tighter-knit community among their fans.

	Friend.tech is a decentralized app that allows users and creators to create tokenized keys. The purchase of these keys gives access to token-gated chat rooms with exclusive interaction with the creators.
	Galaxy is a Web3 social application that allows creators to monetize and deliver exclusive content for their fans through tokenization and digital assets.
	Mojito is an all-in-one Web3 platform that powers brands and creators.

# Decentralized Social

## Subcategory Description (cont.)

### **Messaging:**

Web3-powered messaging tools.

 <b>Blockscan</b>	Blockscan Chat is a messaging platform for users to message each other wallet-to-wallet, powered by Log-in With Ethereum.
 <b>nansen</b>	The vision of Nansen Connect is to become the go-to platform for the crypto community to discuss alphas and trading opportunities while avoiding spam and noise on Discord channels.
 <b>WalletConnect</b>	WalletConnect Chat is a direct messaging protocol that enables wallets to message each other.
 <b>gm</b>	Gm allows users to create a community with chat, forums, and token gating.

# Decentralized Social

## Subcategory Description

### Community Management:

Tools that help social platforms scale and manage communities.

	Unlock is a no-code tool to create and manage memberships.
	Intract is a Web3 CRM platform for Web3 projects to better engage with their communities.
	Bello is a no-code analytics platform that offers actionable insights for the new generation of creators.

# VII. Real-World Assets ("RWAs")

# RWA

## Vertical Spotlights

We identified 2 key areas of innovation.



### RWA Rails

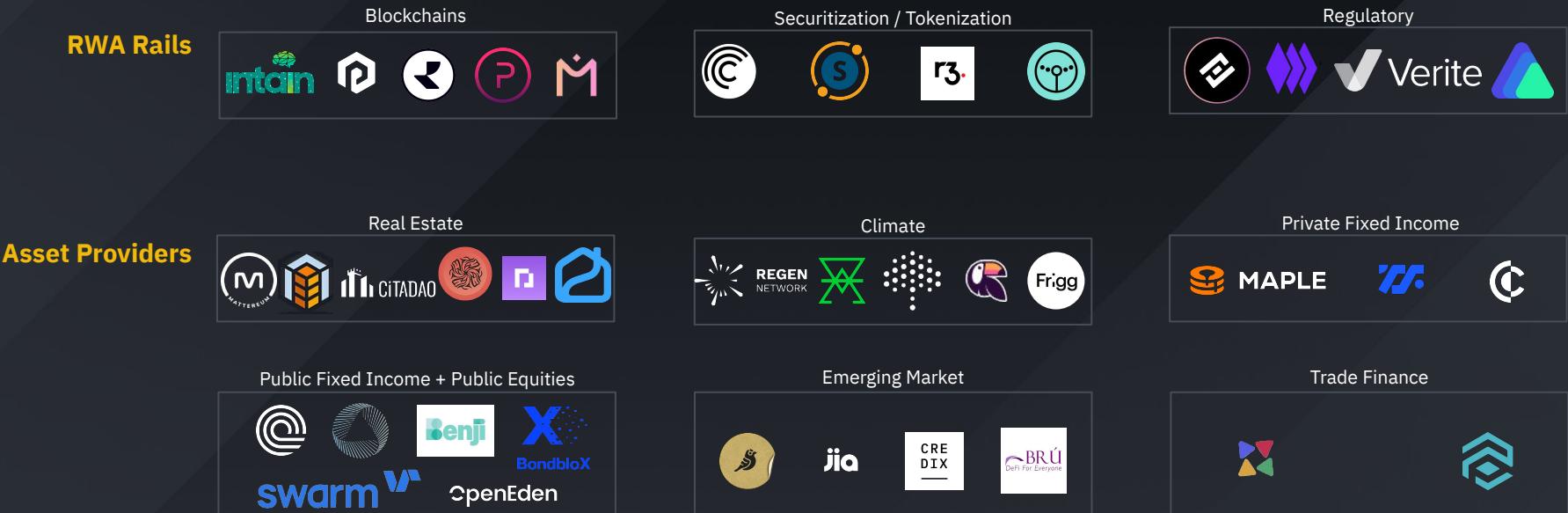
These projects provide the regulatory, technical, and operational rails upon which real-world assets are brought into crypto.



### Asset Providers

Asset providers are focused on originating and creating demand for RWAs that maintain a specific underlying asset class.

# RWA Vertical Overview



*Note: Map is not an exhaustive list of projects in the industry. Projects showcased are mapped according to their primary use cases.  
The mention of specific projects does not constitute endorsement or recommendation by Binance.*

# RWA

## Subcategory Description

### Blockchains:

Permissioned or permissionless blockchains tailored specifically for RWAs.

	Intain is building blockchains for transparency and efficiency in capital market transactions, with an initial focus on asset-backed investments.
	Provenance blockchain enables institutions and fintechs to seamlessly and securely issue, transact, and service digitally native financial assets at scale.
	Realio is an EVM-compatible, purpose-built layer 1 for RWAs.
	Polymesh is an institutional-grade, permissioned blockchain built specifically for regulated assets.
	MANTRA Chain is the protocol for regulated assets and RWA tokenization in the Cosmos ecosystem.

### Securitization / Tokenization:

Converting real-world assets into legally compliant digital securities.

	Centrifuge offers a turnkey solution for the securitization and tokenization of structured credit assets.
	Securitize provides a suite of products dedicated to tokenization and issuer compliance.
	R3 is a leading provider of enterprise technology and services such as digitalization and tokenization. R3's Corda is trusted by regulated institutions and is the leading DLT platform for financial services.
	CurioInvest helps firms unlock liquidity from real-world assets by tokenizing their assets and connecting them with investors.

# RWA

## Subcategory Description (cont.)

### Regulatory:

Services to ensure investor and issuer compliance.

	The Quadrata network provides blockchain-verified KYC so users can participate in RWAs in a legally compliant way.
	Tokeny provides an enterprise-grade infrastructure to allow companies and financial actors to compliantly issue, transfer, and manage assets on blockchain.
	Verite is a collection of standardized protocols for decentralized identity that can help make it safer, easier, and more efficient to do business in the transformative world of RWAs.
	Spruce is a toolkit for digital identity and can be used to reference investor and issuer compliance when transacting RWAs.

# RWA

## Subcategory Description (cont.)

### Real Estate:

Originate and create demand for real estate-backed RWAs.

	Mattereum renders real-world physical assets (especially real estate) to be compatible in an e-commerce world.
	RealT fractionalizes the value of real estate properties into RWAs and creates a two-sided market between sellers and buyers.
	Citadao is a global marketplace for tokenized real estate built on the Ethereum ecosystem.
	Ekta Real Estate enables a marketplace around tokenized and fractionalized real estate properties.
	Parcl allows users to trade the US real estate housing market through tokenized RWAs.
	Propy uses blockchain technology to ensure faster and more secure real estate transactions.

### Climate:

Originate and create demand for climate asset-backed RWAs.

	Regen Marketplace creates a place to buy, trade, and retire ecological credits in the digital carbon market.
	KlimaDAO sells bonds and distributes rewards to KLIMA holders. Every bond the DAO sells adds to a treasury of real carbon assets.
	Flowcarbon vertically integrates across the entire carbon credit lifecycle, offering strategies and solutions ranging from RWA origination and financing to credit sales and corporate carbon portfolio management.
	Toucan Protocol is an infrastructure provider built to bring environmental assets on-chain, starting with carbon credits, and make them more easily accessible for markets and builders.
	Frigg.eco works with a select group of project developers and helps them access refinancing via crypto by issuing green bonds on-chain.

# RWA

## Subcategory Description (cont.)

### Private Fixed Income:

Originate and create demand for private fixed income-backed RWAs.

 <b>MAPLE</b>	On Maple, credit professionals manage fast-flowing lending businesses where pooled capital is lent to a wide range of institutional borrowers to fund business growth and operations.
	TrueFi brings collateral-free lending on-chain, maximizing capital efficiency for borrowers with proven real-world assets and earning rates for lenders.
	Clearpool is a marketplace that allows institutions to borrow unsecured funds from a decentralized network of lenders, given their proven creditworthiness.

### Public Fixed Income / Public Equities:

Originate and create demand for public fixed income and equity-backed RWAs.

	Swarm Markets is a regulatory-compliant platform offering a unique tokenization and trading solution to the world of TradFi.
	Ondo brings institutional-grade financial products, such as US Treasuries and corporate bonds, into DeFi.
	Backed creates ERC-20 tokens that represent ownership of structured product units. Each token is backed by different public securities.
	Benji Investments by Franklin Templeton is a mobile app that allows investors to browse tokenized securities such as its money market fund.
	BondbloX is a fractionalized bond exchange that offers an assortment of public corporate bond offerings.
	Openeden is the first smart contract vault managed by a regulated entity, providing 24/7 access to US Treasury Bills.

# RWA

## Subcategory Description

### Emerging Market:

Originate and create demand for RWAs coming from emerging markets.

	Goldfinch is a decentralized protocol that allows for crypto borrowing without crypto collateral for primarily emerging market businesses.
	Jia provides blockchain-based loans, investments, and ownership to small businesses in every corner of the world.
	Credix connects institutional investors across the globe with blockchain-based credit opportunities.
	Bru Finance is a decentralized lending protocol focused on agricultural commodities that is live across over 1400+ custodian warehouses in India, with plans to expand to the Southeast Asian, African, and European markets.

### Trade Finance:

Originate and create demand for trade finance-backed RWAs.

	Defactor is providing a DeFi-based source of funding to help close the trade finance gap.
	Polytrade is a decentralized trade finance platform focused on receivables financing.

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Jin Ming is currently an intern with Binance on the Macro Research team. Prior to joining Binance, he had experience working in several family offices as an investment analyst intern. He was also part of the Coinbase Community Analyst Program, working closely with the crypto intelligence team. Jin Ming is currently an undergraduate at Singapore Management University, studying Business with a major in Finance.

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