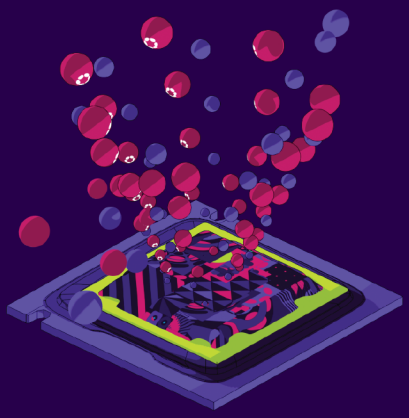
Polkadot

Build at the edge of what's possible

A BUIDLer's Guide to the Multichain Future

What is Polkadot?



Polkadot unites and secures a growing ecosystem of specialized blockchains called parachains. Apps and services on Polkadot can securely communicate across chains, forming the basis for a truly interoperable decentralized web.

Flexibility, performance, and confidence for the future

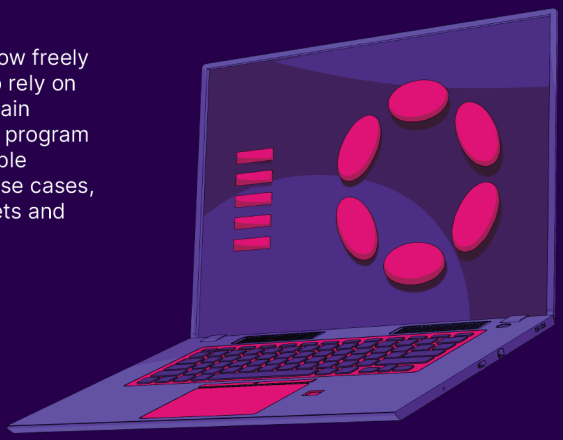
Solidity developers can now deploy smart contracts and dapps directly to parachains that support EVM to take advantage of the diverse and connected Polkadot ecosystem.

Or go one step further and leverage the increased performance of Wasm-based smart contracts on the most interoperable blockchain network by developing in ink!, Polkadot's native Rust-based smart contract language. With growing support from parachains and funding from the Polkadot treasury for auditing by the biggest player in Ethereum, OpenZeppelin, you can have confidence that ink! is secure and developer friendly.

The future of fully multichain dapps is happening on Polkadot with the cross-consensus message format (XCM), enabling secure and fully decentralized bridges, and the multichain API CAPI to compose next-generation Web3 solutions.

Build beyond barriers

On Polkadot, data and assets can flow freely between chains without the need to rely on centralized and vulnerable cross-chain bridges. This enables developers to program advanced functionality across multiple blockchains optimized for specific use cases, and grants seamless access to assets and users in other ecosystems.



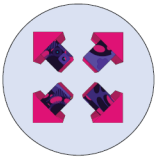
Powering the movement for a better web

Web3 isn't just a buzzword. It's a growing movement for a decentralized, secure, fair, and unstoppable web, where people don't need to place blind trust in intermediaries and tech giants to act ethically, be corruption-free, or have users' interests in mind.

Polkadot was designed with the idea that no one blockchain will rule them all. Since each chain has trade-offs making it better for some applications than others, a rich economy of Web3 products and services requires collaboration and free exchange across a connected ecosystem of chains specialized for specific purposes.

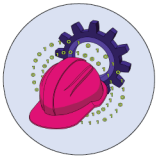
The Polkadot Advantage

Flexible & fully customizable



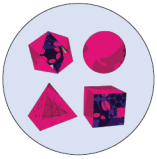
One size does not fit all. Customizing your tech to your use case unlocks an unprecedented level of performance, scalability, and user experience. Polkadot gives you the primitives and the flexibility needed to optimize for your purpose, with a wide range of prebuilt, open-source technologies to integrate.

Seamlessly upgradeable



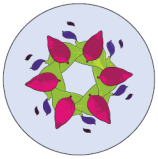
Gone are the days of painstaking hard forks. Your custom Polkadot blockchain can be seamlessly upgraded on the fly like traditional software, so your project can grow, adapt, fix bugs, and evolve at the pace of technology, maintaining relevance in a world of constant innovation.

Composable & interoperable



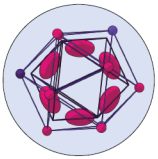
Blockchains and dapps on Polkadot can securely exchange data and assets seamlessly across chains in a decentralized way. This unlocks cross-chain programmability and integrations, including advanced functionality like scheduling, previously impossible in fully synchronous single-chain environments.

Freedom from gas fees



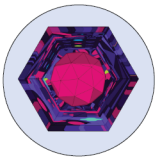
Free your users from high gas fees thanks to Polkadot's free execution model. Blockchains can access as much computing power as they need without additional fees, and developers are free to implement any fee structure they want for their users, who don't need to hold multiple tokens to interact with the network

Industry-leading light-clients



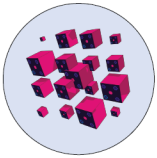
Providing a lightweight, decentralized, and trustless way to connect to blockchains, light clients eliminate the need to run a full node or rely on centralized RPC nodes for dapp development. Because they can run in browsers and on mobile and IoT devices, they're an important key to mass adoption of Web3.

Secure, high-quality blockspace



Polkadot provides a marketplace for the most advanced, flexible, secure, and high-quality blockspace, optimized for specific use cases and capable of meeting both consistent and intermittent demand.

Fast & scalable

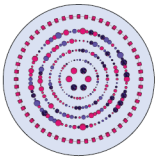


Polkadot offers high scalability without sacrificing high-quality blockspace, security, decentralization, or energy efficiency, and can process 100,000+ transactions per second (based on the Relay Chain + up to 100 parachains processing ~1500 TPS).

Built on the greenest blockchain tech

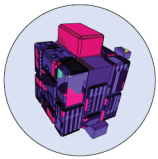
Polkadot's Nominated Proof of Stake (NPoS) mechanism has extremely low energy requirements, and Polkadot was named the greenest PoS protocol in 2022, consuming the equivalent of 6.6 US households worth of energy per year.

Decentralized & Unstoppable

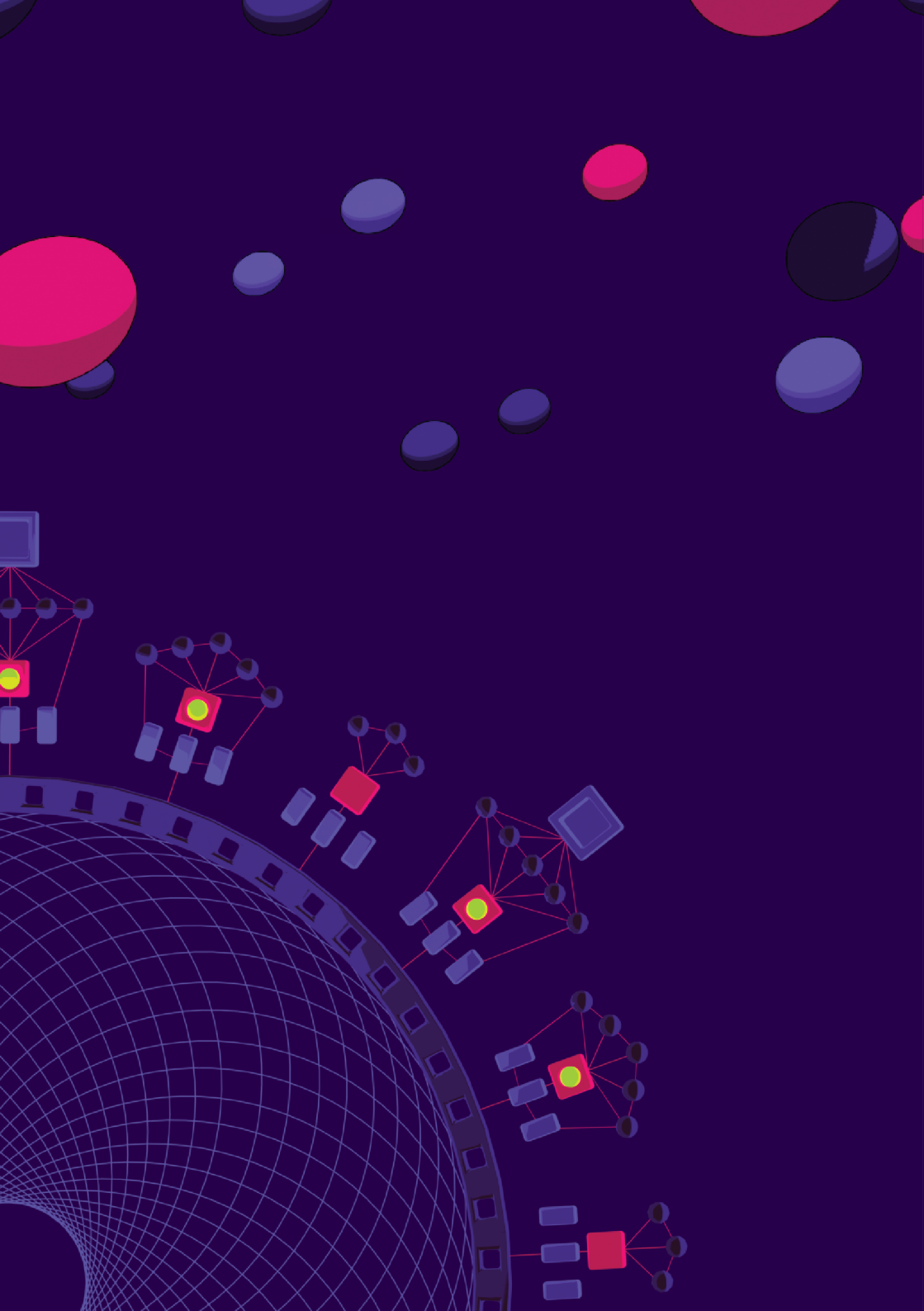


Polkadot is built to be truly decentralized and unstoppable, and is becoming more and more decentralized day-by-day, with key innovations like light clients and the most advanced and decentralized on-chain governance system in the world.

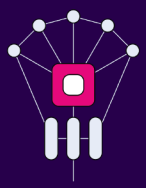
Most active developer community outside Ethereum



Polkadot has one of the largest, most active and diverse builder communities in Web3, with the second-largest full-time developer community after Ethereum according to the 2022 Electric Capital Developer Report.

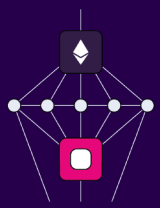


The Polkadot Network



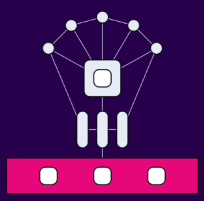
Parachains & parathreads

The sovereign custom blockchains that make up the Polkadot ecosystem are called parachains because they process transactions in parallel. Parathreads are a type of parachain that connect to Polkadot on a pay-as-you-go, block-by-block basis.



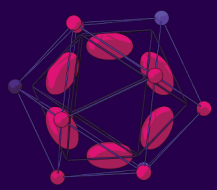
Bridges

Bridges are a special type of parachain that connect Polkadot with external networks like Ethereum and Bitcoin. Instead of relying on centralized choke-points, trustless bridges use light clients, a more decentralized and secure way to bridge blockchains.



Relay Chain

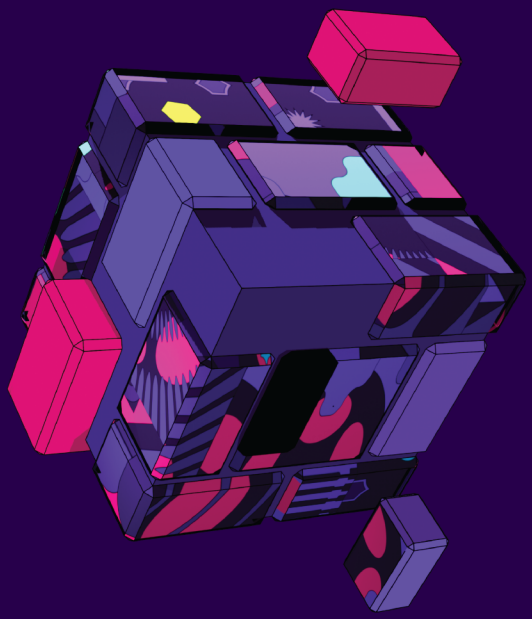
The heart of Polkadot, the Relay Chain connects all parachains, parathreads, and bridges into a cohesive interoperable ecosystem. The Relay Chain does not host dapps itself, but provides a shared validator set that coordinates network consensus and provides bank-grade security guarantees to the entire ecosystem.



Dapps

Decentralized applications are built on top of parachains, many of which provide smart contract capabilities and are often optimized for a certain type of application, such as DeFi. You can write Solidity dapps, migrate an existing Ethereum dapp, or build WebAssembly (Wasm) dapps for added performance.

Ways to build on Polkadot



Build a parachain or parathread

Get the most power and flexibility, and do it in months rather than years by building with the Substrate framework. By connecting to Polkadot you can tap into a rich and growing Web3 ecosystem and get plug-and-play economic security and cross-chain interoperability.

Build using smart contracts

Choose from multiple smart contract platforms, virtual machine types, and supported programming languages. You can start from scratch or port over an existing codebase, with EVM backwards compatibility and an upgrade path to the latest Wasm technology with ink!

Build a runtime module

Polkadot's runtime modules, known as pallets, give you more flexibility and control than building at the smart contract level. Integrate and extend existing pallets from libraries like FRAME or build your own for parachains in the network to integrate and/or compose with.

Build tooling or infrastructure

Help build out Polkadot's tech stack with the potential of support from the Polkadot Treasury or a Web3 Foundation grant.

Polkadot Use Cases

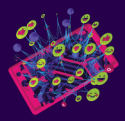
Polkadot provides maximum flexibility to build next-generation products and services at every layer of the Web3 tech stack.
This flexibility enables teams to optimize their project for virtually any Web3 use case. Below are just a few examples.

Multichain smart contracts

The Polkadot ecosystem offers several smart contract platforms for dapp builders, including those specialized for specific use cases. Smart contracts on Polkadot benefit from native multichain interoperability, integration with off-chain data, industry-leading light clients, and much more.

DeFi

Cross-chain communication, low, predictable fees, and fast, dependable processing open up new possibilities for DeFi and an effortless experience for end-users. Polkadot offers better customization, security, and power than legacy platforms, and can mitigate legacy issues like high and unpredictable gas fees.



Social media

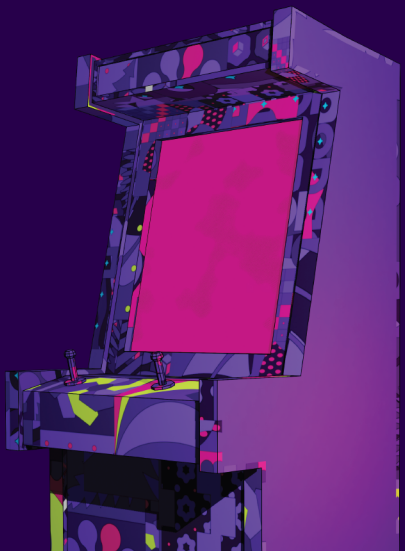
The future of Web3 social media is forming on Polkadot thanks to its advanced technology stack offering full customization and interoperability. Polkadot's low, predictable transaction costs make decentralized, blockchain-based social media platforms practical for global adoption.

Identity & supply chain

Identity, credentials, and provenance require a level of optimization, interoperability, and cost-predictability only possible on Polkadot. Data and identifiers can be shared across multiple chains and smart contracts, opening up network effects and portability across diverse systems.

NFTs, gaming, & metaverse

Next-generation NFT, gaming, and metaverse functionality is being built on Polkadot, including true cross-chain interoperability, interactive and composable NFTs, customizable fee structures, advanced ownership models, and seamless scalable integration with metaverse and gaming platforms.



Tools & Resources for Builders

Substrate

The blockchain framework for a multichain future

Substrate is a blockchain framework and development kit used by builders to create custom parachains. Substrate's modularity speeds up time-to-market with plug-and-play modules for common blockchain functionality, enabling you to focus on your specific business logic.

ink!

ink! is Polkadot's native Rust-based language for writing high-performance Wasm smart contracts. It provides instant safety-guarantees, the full range of Rust tooling, interoperability with Solidity contracts, and a clear migration path for upgrading from dapp to parachain.

Funding

Apply for funding from Polkadot's decentralized on-chain treasury:
polkadot.network/treasury

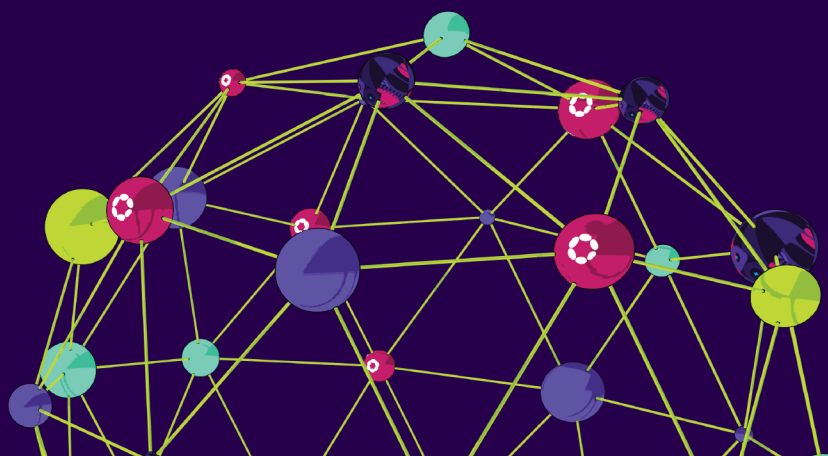
Get a grant to build in the ecosystem from Web3 Foundation:
web3.foundation/grants

Education

With certifications, global hackathons, and even full-fledged Polkadot Academy, expand your programming expertise and develop your project's PoC:
polkadot.network/academy

Development support

Completely bespoke resources are available to aid project development and growth through initiatives like the Substrate Builders Program.
https://substrate.io/ecosystem/substrate-builders-program/



dotinsights | Polkadot & Kusama Ecosystem Map

For the exhaustive list of **500+** projects, visit **dotinsights.xyz**

DEFI — 138 Projects

Acala, HydraDX, Karura, Mangata X, Equilibrium, Polkaswap, Bifrost, SoftStake, Nutsfinance, Centrifuge, Interlay, Bajunetwork, Tapio, Hydro, Centrifuge, Bodhi, SquidDefi, CDEX, Polkaswap, Lido, Solarmint, AstroDAO, AstroDAO, Curve, Kintsugi, Acuity, Starlay, Taiga, SubsPlore, Connect Wallet, Vault, Sushi, Amplitude, Algem, pricoco, Beefy, Centrifuge, Nuts Network, Q DAO, Firefly, Dotin, Energill, Pendulum, Altair, Bridge Network, Tinlem, StarFish, Banana Swap, Parachain Swap, PHCDefi, Virtu Finance, Yapanese Swap, Liquid Protocol, Altair Finance, Liquid Collection, KINTA, Altair, AlbatrossSwap, AstroDAO, Acala Network, Polk Finance, Insurhe Protocol, Unicorn, QDEX, Virtu Finance, DAM Finance, Ocelot, Bitlide, Starlaunch, Aster Exchange, Cash Protocol, ZeroDAO, Kujira Zona, Karmia DAO

DAO — 17 Projects

ChainDAO, PlasmaDAO, GLOBAL ARTS DAO, Angel Dragons, Kimberlite TF Alliance, Parachain, Kalicoin, SubDAO, MoonDAO, Tangaroa, crowd, GalileoDAO, Polkadot DAO, Secrint, ASAP, Open Social Better

DATA — 37 Projects

dotinsights, Subsquid, SubQuery, DotCharts, Chainviz, Apyn, DragonFlat, weirdgo, Darkblocks Cap, APIS, TEA Project, SensoSystem, Mars, DoppiPolitir, Crust, Band Protocol, DIA, DeepLearner, Ocean Insight, Bonsoso, Khala Network, Aera Protocol, KYVE, Litmus, Parallax Network, Project Aria, Ceramic, Time Capsule, Ocean Protocol, Polka watch, Polkalytics, Totem

METAVERSE — 11 Projects

Bitcountry Pioneer, Bitcountry Continuum, MetaDogs, Efinity, Cosmos, Momentum, Polymesh, Skybreach

GAMING — 34 Projects

MaxeFi, Alpha Network, GUMI Jungle, Gaft Network, Exalted Raven, Awesome Space Heroes, Moonscape, Ignite Experiment, Bit Hotel, Evrfast, Blockchain Monster Hunt, Exosama, My Crypto Heroes, Crypto Spirits, Seascape, Moonsama, Metaverse Heroes Game, Time Engine, ZERO, Pandorama, Metalight, Bogan Network, Sakia, double jump.tokyo, Moonsea, Moonpets, The Fighters, Counterfeit Apes, MetaPunk, Open Ether Earth, Avize Farm, Momentum

EXPLORER

SubScan, Mosaicum, PolkaScan, Chain Scanner

WALLET

SubWallet, Talisman, Nova Wallet, Polkadot Lite, MetaMask, Polka Wallet, CrX Wallet, SRWallet, Math Wallet, TRON Wallet, PolkaGate, Ambire Wallet, DeBank, Fearless, CoinDB, Spacon, Klever, Token Pocket, Frontier, Nabox, Rabby, Enkrypt

INFRASTRUCTURE — 65 Projects

Polkadot, Kusama, Gaussian, Statemint, KSM, Pluto Network, Chainstack, Ipfs, Swirlnet, Subsquid, Ankr, Avalon Network, Tertiary, Anagolay, Economy, Oak Network, Polkadot, Kindynos, Bonsai Social, Galois, SPAR Network, Ices, Apollo Network, Stellinality

STORAGE

Crust, Crust Shadow, CESS, DUDOS, Moonbase Network

COMMON GOOD

Statemine, Statemint, Encointer, Collectives, Bridgehub

COLD WALLET

Ledger, Keystone, Airkap, Subsrip, Jacksons, NuWallet

SUSTAINABILITY

Poze Protocol, Digiten, Energy Web, EverTag, Stepdefier

SOCIALFI — 28 Projects

Subsocial, Zeitgeist, Jetblue network, Public Premium, SEOC, Music Finance, AirLift, Frequency, Qrobber, ShowMe, Chrontiqs Network, Sumi, Polka market, Jaystream, Listen, JAMIE, UniFrit, BNFTbu, OpenSquare, SUBSTOP MARKETING, Kame, Waffle, Swapster, Speedbase, CamTalk, Fimbleclub, Magic Labs, Lore, Primetive

TOOLING — 49 Projects

Subsquid, SubQuery, Polkassembly, Parsiq, Covalent, Celebrity, Super solway, Node Cannon, Betting Web Services, Blockscout, Medipass, The Graph, Luka Labs, prospect, SMP Protocol, Aphin, MyMath, ZEMO, Token Multimarket, UniNetwork, Ethereyed, Geneto, Open Singularity, SUBSTOP MARKETING, Kame, Waffle, Swapster, Speedbase, CamTalk, Fimbleclub, Magic Labs, Lore, Primetive

FINTECH

Bond, Current, Kaunlet, Polimec

SECURITY — 10 Projects

Moonbeam Safe, Certik, Qredo, BeakiFarm, Trust of Bits, Slowmist, QRCACK, ZFA Guru

AGGREGATOR — 20 Projects

LUN, Yield Buy Farms, Beefy, Nanoly, NFTSCan, DEXTools, FOS, AnyDAO, Acoolaim Network, DEFYFIELD, Kingpin Swap, Minotaur, Minmax, DEX Screener, OM Finance, Pulse Network, SubDAO, Polkawatch

VALIDATOR — 35 Projects

Afrikulae, KeepNode, Master Node, EAGLENODE, P2P, DP Validator, Stake-Space, Ironstaking, BLOCK-LOCK STAKING, Tendal Staking, Bysteve, Parhash Network, LetsStake, Brightly Stake, Stake Gnor, StakeRabbit, Stake-responsible validator, Simply Staking, Anonstake, Stake-Ops, Aerlon, Turtle Pulse, Node validation, Polkadot Bird, mcsnft, Fortune, Certikum, stakingtab, scanfish, Cellarnode, Paranodes, Amarke, Cartel

PRIVACY — 14 Projects

Integritee, Snowfork, Zeropool, Time Capsule, Automata Network, INKHAT, Mantle Network, Triton Network

BRIDGE — 28 Projects

Interlay, Bowmix, LayerZero, SCNX, Kintsugi, Atoko Network, Multichain, Celer Bridge, Cbridge, Snowfork, Nomad, ICON, Wormhole, Relay Chain, NarrBridge, Injective Bridge, Sakura, connext, Moon Passport, Octopus Network, DotOracle, Warchain, everPay, DeCus

NFT MARKETPLACE

Singular, Moonbeans, soLANFT, NFTrade, Rarenuma, Secret NFT, NFTTeal, NFTDeal, AnDero, Secret Team, Treasure land, KanaDOT, HyNFT, Unique Network, Quartz, KANG GUMI, World Alliance

LAUNCHPAD

HUSD, DEXO, Crowdfunding Offering, TokenSoft, Polki Finance, Impossible Finance, Polka starter

MEDIA

Polkadot.news, Magnitude, Polkadot Insider, Polkadot Space, The Kusamarian, Polkadot News, Memento Polkadot, DOGAMIRA, Polkadot Homepage

IOT

Jelurj, Nodle, Helium Network, Ethos Stories, IOOC

NFT COLLECTION — 10 Projects

Kanaria, Zeemonkeys, Polka Pet Rapids, Moonkeys, Gimr Punks, Street Turtles

FIAT ON-RAMP

Transak, Banxa

IDENTITY — 18 Projects

Liberty, KILT, Encointer, Fractal, Sporran, Litentacle, Social BTC, Unique Name System, Notebook Labs, Avaire, Polkadot, NFT3, Dock, DiDogs, Vitrage, webXcheme

SMART CONTRACT — 17 Projects

Astar Network, Moonbeam, xx network, Oak Network, Aleph Zero, Moonriver, Gear, Shiden, Centrifuge Bit Finance, Crab Network, Dora Factory, Edgeware, Clover, Chainx, Shardpod, Etrna

ARTIFICIAL INTELLIGENCE

Talisman

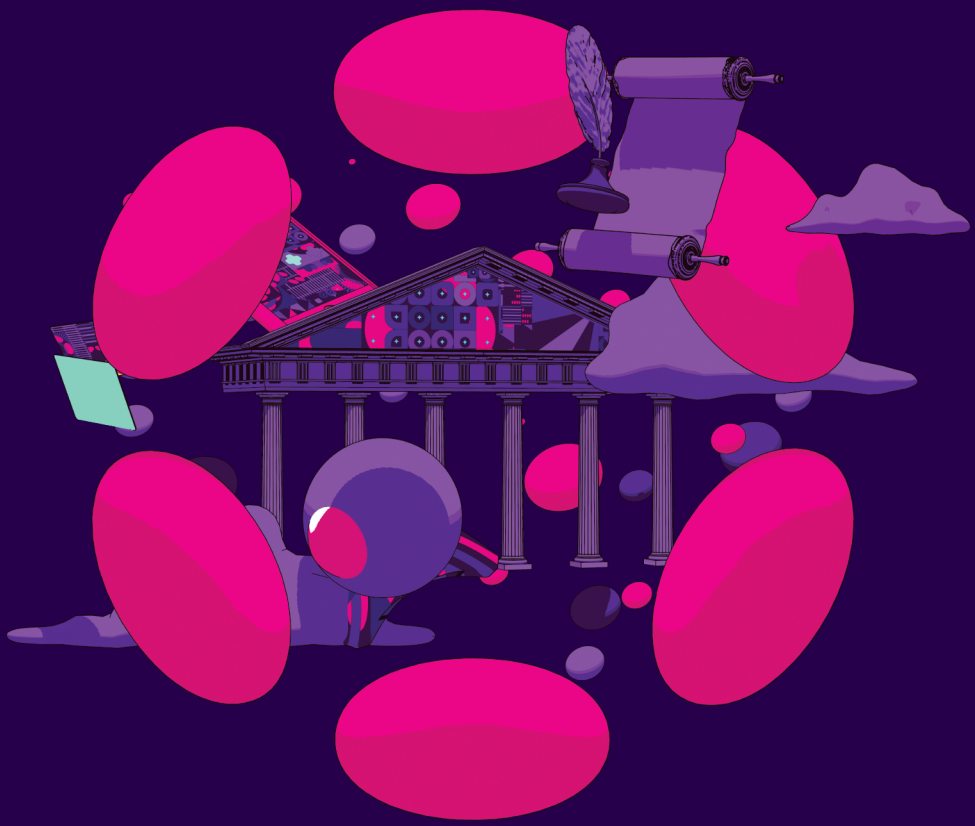
An ecosystem of boundary-pushing builders

Polkadot has one of the largest, most collaborative, and fastest-growing ecosystems in Web3. Builders are leveraging Polkadot's multichain technology to work together on a new wave of collaborative cross-chain applications pushing the boundaries of what's possible in Web3.

Made by SubWallet

Data as of 13 Feb 2023

@dotinsights_xyz



Build on Polkadot

polkadot.network