COINWEB™

Cross-Chain Computation Platform

Positioning chart

Coinweb provides an **expanded solution space**[1] and **reduced platform risk**[2] for dApps by combining **unifying interoperability**[3] with **high capacity computation**[4]. This chart shows how Coinweb is positioned compared to other systems based on key interoperability and computation functionality.

Type	Functionality	Bitcoin	Ethereum	Quant Network	The Graph	Polygon	Cosmos	Polkadot	Dfinity	Coinweb
Interoperability / Execution model	Deterministic computation over multiple chains	N/A	No	No	N/A	No	No	No [5]	No explicit interoperability	Yes [6]
Interoperability / Execution model	Smart contracts reacts to events on other chains	N/A	No	N/A	N/A	No	No	No	No	Yes
Interoperability / Execution model	Smart contracts executes in parallel over multiple chains	N/A	No	N/A	N/A	No	No	No	No	Yes
Interoperability / Execution model	Smart contracts executes over multiple blocks	N/A	No	N/A	N/A	No	No	No	Yes	Yes
Interoperability / Execution model	Smart contracts emits transactions	N/A	No	N/A	N/A	No	No	No	Yes	Yes
Interoperability / Execution model	Smart contracts holds gas balance	N/A	No	N/A	N/A	No	No	No	Yes	Yes
Interoperability / Security	Consensus from multiple underlying chains	N/A	No	Yes, for on-chain messages	No [7]	No	No	Shared security with relay chain	No explicit interoperability	Yes
Interoperability	Common interoperability interface	No	No	Can connect to any	Can connect to any	No	Yes IBC	Yes XCMP	No	Can connect to any
Interoperability	Cross-chain data visibility of self-soverign chains	No	Bridge	For on-chain data	Medium [8]	Bridge	Bridge	Bridge	Bridge	High
Execution model	Smart contracts executes in parallel on single chains	N/A	No	N/A	N/A	Not natively	Not natively	Not natively	Yes	Yes
Execution model	Smart contracts	No	Yes	Centralized mapps [9]	No	Yes	On individual zones	Supported by parachains	Yes	Yes
Execution model	Computational complexity	Low	Medium	N/A	High	Medium	Medium	Medium	Very high	High
Security	Correctness guarantee for computation	51% of all nodes must be honest	51% of all nodes must be honest	N/A	Centralized arbitrator [10]	2/3 of all validators must be honest	2/3 of all nodes must be honest	2/3 of all nodes must be honest	2/3 of all nodes must be honest	Only 1 honest node required
Security	Network decentralization	High	High	Low	Low	Medium	Medium	Medium	Low	High
Security	Censorship resistance	High	High	Low	High	Medium	Medium	Medium	Medium	High
Security	Data redundancy	Thousands	Thousands	Thousands, for on-chain data	Very high / Medium [11]	Low guarantee	Max 200 validators	Min 14 validators	7 - 151	Very high / Medium [11]
Scalability	Transaction processing efficiency [12]	High	Low	N/A	Medium	Medium	Medium	Medium	Very high	Very high

[1] The Coinweb protocol allows dApps to combine information, functionality and properties of multiple self-sovereign blockchains within a high capacity computational framework, dramatically increasing the solution space for dApps.
[2] Coinweb reduces the platform risk for dApps by providing an abstraction layer that eliminates the need to hard code dApps on specific low level protocols. dApps allowed to horizontally scale capacity and functionality over existing and new blockchains.
[3] Coinweb's interoperability allows decentralized applications to combine a wide set of features from different blockchains under unified consensus.
[4] Parallel execution model allows computation to scale horizontally on single chains and across multiple chains. This significantly reduces platform risk by preventing gas fee bottlenecks. It also allows for more powerful dApps with high computation requirements.
[5] Block ordering in relay-chain is non-deterministic and based on a separate consensus.
[6] Block ordering based on underlying consensus' timestamp and delay graph.
[7] No ordering between blockchains. A subgraph is tied to a single chain.
[8] The subgraph does not see cross-chain. A client of The Graph can see cross-chain.
[9] Overledger Mapps are centralized applications that run on top of multiple chains, data input can be both onchain or offchain. Offchain data is hashed on underlying blockchains.
[10] The indexes are deterministic, and GraphQL query results are signed by an indexer, but clients cannot check the results themselves currently.
[11] The underlying chain has very high data redundancy. The computed state might have less, but can be re-created deterministically in case of data loss.
[12] What is the required CPU and bandwidth for the average transaction for a given decentralization setup? Sequential execution models and complex computations drive this down. Simple transactions, parallel execution, or eliding computation from consensus drives it up.

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