The Evolution of Layer One Networks for On-Chain Prediction Markets

The development of on-chain prediction markets represents a significant evolution in decentralized finance (DeFi), promising to bring transparency, accessibility, and automated settlement to the world of forecasting. However, the viability of these applications hinges critically on the underlying infrastructure of the blockchain networks they inhabit. For time-sensitive and value-preserving applications like prediction markets, the foundational features of a Layer One (L1) network—its consensus mechanism, data access protocols, smart contract capabilities, and native economic incentives—are paramount. This report provides a comprehensive analysis of how L1 blockchains are being specifically tailored or adapted to support prediction markets, examining the critical role of finality, the strategic integration of oracle systems, the emergence of specialized architectures, and the innovative incentive models that aim to ensure fair and accurate market outcomes. By dissecting the approaches of established giants, pragmatic optimizers, and architectural innovators, this report illuminates the technological and economic forces shaping the future of decentralized forecasting.

The Foundational Role of Consensus and Finality in Time-Sensitive Applications

The operational integrity of a prediction market is fundamentally tied to its ability to achieve fast, deterministic finality. Unlike many other DeFi applications where some degree of probabilistic confirmation can be tolerated, a prediction market requires an irreversible and timely resolution of events to settle bets accurately and prevent disputes. A late-block reorg or delayed confirmation could allow malicious actors to exploit uncertainty for financial gain, undermining the entire system's trustworthiness. Consequently, the choice of consensus mechanism is one of the most critical decisions in designing or selecting an L1 network for this purpose. The provided context highlights a clear trend towards Byzantine Fault Tolerance (BFT)-style consensus mechanisms, which offer deterministic finality, as the preferred architecture for such time-sensitive applications [4,8].

Traditional Proof-of-Work (PoW) mechanisms, used by Bitcoin and pre-merge Ethereum, suffer from low transaction rates and probabilistic finality [8]. Bitcoin processes around seven transactions per second, while Ethereum was limited to $15-30$ TPS before its transition [6]. More importantly, finality in a PoW chain is not immediate; it requires multiple subsequent blocks to be added on top of a transaction's block to make a reorganization attack computationally infeasible, a process that can take minutes or even longer [13]. This latency makes PoW unsuitable for applications requiring sub-second settlement. The situation improved significantly with Ethereum's Merge in 2022, when it transitioned to a Proof-of-Stake (PoS) mechanism, achieving faster finality and reducing energy consumption by over 99% [6,7]. However, even early PoS implementations have faced challenges, and the focus has shifted to more advanced BFT-based designs.

Layer One networks explicitly designed for speed and scalability, such as Avalanche, Solana, and Injective, have adopted sophisticated consensus algorithms to provide instant finality. Tendermint, the consensus engine used by the Cosmos SDK ecosystem, including Injective, enables near-instantaneous transaction finality, allowing for thousands of transactions per second [1,4]. Similarly, Solana combines PoS with its unique Proof of History (PoH) mechanism to achieve high throughput and sub-second finality [6,16]. Injective's use of Tendermint is a direct response to the need for deterministic outcomes in its DeFi applications, including prediction markets [1]. The Concordium blockchain offers finality within 12 seconds, making it another strong candidate for time-critical applications [13]. Even more specialized networks like Kaspa employ GHOSTDAG consensus to achieve instant finality and high block rates [16].

Avalanche's approach is particularly noteworthy, as it uses a novel consensus protocol based on repeated random sampling of nodes to achieve low-latency agreement without sacrificing security [4,16]. This allows for sub-second finality across its three interconnected chains (C-Chain, P-Chain, X-Chain), enabling rapid settlement for derivatives and other complex financial instruments that underpin prediction markets [17]. This emphasis on finality is a direct acknowledgment of the specific needs of prediction markets. The table below summarizes the finality characteristics of various relevant L1 networks.

Network	Consensus Mechanism	Transaction Finality	Throughput (TPS)	Key Features for Prediction Markets
Injective	Tendermint (Proof-of-Stake)	Instant [1]	>10,000 [1]	Natively supports smart contracts for payouts, enshrined oracles, and cross-chain bridging [1].
Concordium	Distributed Proof-of-Stake	Immediate (12s) [13]	Not Available	Provides deterministic finality, public transaction records, and built-in identity verification for compliance [13].
Solana	PoS + Proof of History	Sub-second [6]	Up to 65,000 [17]	High throughput and low cost enable complex derivative markets and automated settlements [16].
Avalanche	Custom Repeat Random Sampling	Under 2s [16]	Not Available	Supports custom Layer 1s (Subnets) for isolated, secure markets and low-latency agreements [17].
Diamante	dPoS + PoH + aBFT	Sub-second [3]	125,000 [3]	Designed for long-term security against quantum threats, ensuring future-proof integrity of market outcomes [3].

Network	Consensus Mechanism	Transaction Finality	Throughput (TPS)	Key Features for Prediction Markets
Ethereum	PoS (Post-Merge)	Fast Finality [6]	15 – 30 (Base Layer) [6]	Prioritizes scaling via Layer 2s but remains a major hub for prediction markets using its robust smart contract environment [6,15].

This analytical insight reveals that the "smart contract operations" and "finality" mentioned by the user are deeply intertwined. The ability to execute conditional logic for payouts is only meaningful if the outcome is settled with deterministic speed. The move away from probabilistic finality towards instant, immutable settlement is therefore the single most important architectural evolution occurring on modern L1s to enable a new generation of secure and reliable on-chain prediction markets.

Native Oracles: The Engine of Decentralized Market Resolution

For a prediction market to function autonomously, it must be able to resolve its outcomes without relying on a central authority. This requires a mechanism to securely and reliably bring real-world data onto the blockchain—a task traditionally handled by third-party oracles. However, the reliance on external oracle providers introduces points of failure, centralization risks, and potential manipulation, posing a fundamental threat to the integrity of the market [14,15]. In response, a new class of Layer One networks is integrating their oracle functionality directly into the core protocol, creating what are known as "enshrined" or "native" oracles. This architectural choice elevates the oracle from a peripheral service to a core component of the network's security and operation, providing a higher degree of trust and decentralization for prediction markets [28,29].

Flare stands out as a prime example of this paradigm. Its native oracle system, the Flare Time Series Oracle (FTSO), is not an add-on but a core feature of the network [2,12]. The FTSO operates by having the network's 100 validators act as both consensus participants and data providers [29]. These validators stake FLR tokens, and their accuracy in reporting price data is directly tied to their staking rewards [12,29]. This creates a powerful alignment of interests: the same economic security that protects the network also secures the data feed. Data aggregation is performed using a weighted median algorithm, where weights are determined by the amount of staked WFLR (wrapped FLR), and outliers are trimmed to mitigate manipulation [24,29]. Furthermore, the system includes a liquid democracy model where token holders can delegate their voting power to trusted providers, ensuring participation even for those who do not wish to run a node themselves [23]. This design contrasts sharply with Chainlink's Decentralized Oracle Network (DON), which relies on a separate set of node operators incentivized through service agreements rather than direct network staking [14,26]. Flare's co-founder, Hugo Philion, argues that this embedded approach provides higher trust and decentralization, as the oracle's security is inherited directly from the network's consensus mechanism [29].

Another key native oracle technology is IOTA's Flare Data Connector, which complements the FTSO by enabling validation of Web2 and Web3 events via Merkle tree proofs from API attestations by the same validator set [12 28]. This allows for the resolution of markets based on arbitrary off-chain events, such as sports scores or news headlines, further expanding the scope of on-chain prediction markets. The connector is scheduled to launch in September-October 2025 alongside the FAssets bridge, enhancing Flare's ability to integrate diverse data sources [12]. While not natively integrated at the protocol level, the concept is similar, aiming to create a seamless bridge between the on-chain and off-chain worlds.

The benefits of this native approach for prediction markets are profound. First, it eliminates the trust assumptions required by third-party services. If the network is secure, the data is secure. Second, it can dramatically reduce costs. Because the data is available at the protocol level, dApps built on the network may be able to query it for free or at minimal gas cost, avoiding the fees associated with paying for oracle services on other chains [12 26]. Third, it enhances composability and interoperability. Since the data source is a standard part of the L1, any application on the network can use it, fostering a richer ecosystem of interconnected financial products. The table below compares Flare's native oracle with common third-party solutions.

Feature	Flare (Native FTSO)	Chainlink / Pyth (Third-Party)
Integration	Enshrined in the L1 protocol [29]	External middleware service [14]
Data Providers	Network Validators (100) [24]	Independent Node Operators (e.g., 31 for Chainlink) [14 26]
Security Model	Inherited from L1 PoS consensus; tied to staked FLR [12 29]	Reputation, service agreements, and potentially independent staking [14]
Incentive Alignment	Direct reward for validators for accurate data submission [29]	Fees paid by dApps for data access [26]
Decentralization	Higher, as all validators contribute to every feed [12]	Dependent on the number of node operators; risk of collusion [14]
Cost	Free or minimal gas cost for dApp queries [12]	Paid by dApp users or developers for data subscription/service [26]

Emerging technologies like Flare's FTSOv2 push this concept further, introducing features like anchor-and-stream updates for near-real-time data, on-chain randomness generation, and volatility incentives funded by community proposals [24 35]. This demonstrates a clear trajectory: from simple price feeds to a sophisticated, programmable data layer that actively supports the dynamic needs of complex financial applications like high-frequency prediction markets. The integration of these native oracle systems is arguably the most significant technological advancement enabling the next wave of on-chain prediction markets.

Smart Contract Capabilities and Architectural Innovations

Beyond consensus and oracles, the practical implementation of prediction markets depends heavily on the capabilities of a Layer One network's smart contract platform. The ability to execute complex logic, perform precise arithmetic calculations, manage state, and interact with other chains is essential. Different L1s are pursuing varied architectural innovations to meet these demands, ranging from full EVM compatibility to entirely new virtual machines and consensus models. These choices profoundly impact developer experience, application performance, and the types of prediction markets that can be built.

The Ethereum Virtual Machine (EVM) remains the dominant smart contract environment, and its EVM-compatibility is a crucial factor for adoption. Networks like BNB Chain, Linea, Celo, Polygon, and Flare are all EVM-compatible, allowing them to leverage the vast existing developer ecosystem, tooling, and libraries built around Solidity [5 11 25]. This lowers the barrier to entry for building prediction markets. Myriad Protocol, for instance, is deployed on Abstract, Linea, and Celo, all of which implement the EVM, and targets developers with a REST API-first approach to abstract away complexity [5]. However, the EVM itself presents limitations. It lacks native support for floating-point arithmetic, which is problematic for financial calculations involving probabilities and payouts [18 28]. Developers must resort to workarounds like fixed-point math libraries (`Decimal` in CosmWasm, `WAD` in Solidity) to achieve precision, adding complexity and potential for error [19 20]. Some projects, like IOTA, have chosen to build on top of the EVM but introduce their own innovations, such as the IOTA Smart Contracts Protocol (ISCP), which runs Rust-written smart contracts on a Layer 2 (Wasp) interacting with the Layer 1 (GoShimmer) [10 31].

Other networks are exploring alternative virtual machines and programming languages to address these limitations. Sui and Aptos, for example, both use the Move language, originally developed for Diem (now Libra). Move is designed with resource-centric programming in mind, offering stronger guarantees against common vulnerabilities like reentrancy attacks and accidental loss of funds [16 17]. This focus on safety and parallel execution is well-suited for high-performance DeFi and prediction markets. Similarly, Diamante uses post-quantum cryptography from the outset, a forward-looking architectural choice that avoids the migration headaches future networks may face if large-scale quantum computers become a reality [3]. This commitment to long-term security is a significant advantage for high-integrity applications.

Architectural modularity is another emerging theme. Celestia, for instance, is a modular L1 that separates data availability from consensus, allowing other chains to use its data availability layer (DAL) to scale efficiently [17]. This specialization allows different parts of the stack to be optimized independently. For prediction markets, this could mean using a high-throughput DAL to publish large volumes of market data without bloating the main consensus layer. The Internet Computer (ICP) takes a different approach by enabling canisters (smart contracts) to make direct HTTPS calls to web2 APIs, effectively turning them into backend servers [16]. This capability could drastically simplify the creation of subjective prediction markets, where human judgment is involved, by allowing oracles to fetch answers directly from web pages.

Finally, the physical structure of the network plays a role. Flare's use of a Directed Acyclic Graph (DAG) called the Tangle instead of a traditional blockchain is a significant architectural deviation [10]. The Tangle enables parallel transaction validation and feeless microtransactions, which could be highly beneficial for prediction markets with very small bet sizes or high trade volumes [31]. While still nascent, this architecture promises a different path to scalability and efficiency compared to the linear blockchains of most other L1s. The innovation in smart contract platforms and network architecture shows a clear trend toward specialization. Rather than a one-size-fits-all solution, the landscape is diversifying, with different L1s catering to different needs within the prediction market space, from the developer-friendly EVM-compatible chains to the high-security, high-speed, or modular networks.

Protocol-Level Incentives and Economic Security Models

To ensure the long-term viability and integrity of on-chain prediction markets, a robust economic model is as crucial as the technical architecture. Such a model must incentivize honest behavior, penalize malicious actions, and attract sufficient capital to secure the network and fund its operations. Modern Layer One networks are moving beyond simple transaction fees to implement sophisticated, protocol-level incentive structures that are directly tied to the health and accuracy of the system, particularly in the context of their oracle functionalities.

Flare's economic model is perhaps the most explicit and integrated example of this trend. Its native oracle, the FTSO, is governed by a multi-faceted reward and penalty system designed to maximize data accuracy. Data providers are rewarded for two primary activities: submitting accurate anchor values and participating in the signing and finalization process [35]. Anchor values, which represent the official price for a given asset, are updated every 90 seconds. Providers whose submissions fall within the interquartile range (IQR) of all other submissions receive the majority of the reward [24,35]. This mathematical approach automatically weeds out extreme outliers, whether due to error or malice. Furthermore, penalties are introduced for rule violations, such as mismatched reveal commitments in the commit-reveal scheme or attempting to sign multiple times in a round. These penalties result in the burning of a portion of the provider's potential rewards, directly disincentivizing cheating [35]. This entire system is secured by the economic stake of the 100 validators and delegators on the network, whose collective collateral backs both consensus and data provision [29]. This tight coupling of security and utility is a defining feature of Flare's design.

Injective presents a different but equally compelling model focused on deflationary pressure and governance. Its native token, INJ, serves three purposes: staking for network security, governance, and paying for network services [1]. A key innovation is its weekly auction mechanism, where 60% of the total fees generated by its dApps are burned [1]. This creates a powerful deflationary tailwind for the INJ token, theoretically increasing its value over time and providing a strong incentive for long-term holders to participate in securing the network through staking. This model aligns the financial interests of token holders directly with the growth and success of the ecosystem of applications running on the chain, including prediction markets.

Ethereum's model, while less directly tied to oracles, is foundational to the entire DeFi and prediction market ecosystem. Its PoS upgrade implemented Casper, a protocol that uses security deposits to penalize validators who support invalid blocks, addressing the 'Nothing-at-Stake' problem and enabling faster finality [8]. The ETH token powers transaction fees, validator rewards, and governance, creating a stable economic base upon which countless dApps, including Augur and Polymarket, are built [6,15]. The recent Dencun upgrade, which cut Layer 2 fees by up to 100x, further strengthens this foundation by making the ecosystem more accessible and cost-effective [6].

These models highlight a broader shift in L1 economics. They are no longer just transaction ledgers but are becoming self-sustaining ecosystems with internal economies. The analysis reveals several key principles: 1. Direct Alignment: Incentives are increasingly aligned with core functions. On Flare, earning rewards is contingent on providing accurate data; on Injective, burning fees increases token value, benefiting long-term stakeholders. 2. Multi-Dimensional Rewards: Protocols are moving beyond simple block rewards to include performance-based bonuses (e.g., for accuracy) and activity-based rewards (e.g., for participation). 3. Penalties and Slashing: Economic penalties are a critical component of security, deterring malicious behavior more effectively than purely positive incentives. 4. Governance Integration: Economic parameters, such as reward splits or parameter adjustments, are often controlled by on-chain governance, allowing the community to adapt the model over time.

The following table compares the incentive models of selected networks.

Network	Primary Incentive Type	Key Mechanics	Purpose for Prediction Markets
Flare	Oracle Accuracy & Participation	Reward for anchor accuracy (+80%), signing (+10%), finalization (+10%). Penalty for rule-breaking (burning). Secured by validator stake [29,35].	Ensures highly accurate, decentralized, and trustworthy data resolution, which is the core requirement for any automated market [29].
Injective	Ecosystem Growth & Staking	Weekly burning of 60% of dApp fees. INJ used for staking and governance [1].	Creates deflationary pressure on INJ, incentivizing long-term security and growth of the entire DeFi ecosystem, including prediction markets [1].
Ethereum	Network Security & Governance	PoS validator rewards and penalties. ETH powers transaction fees and governance. Recent upgrades reduce L2 costs [6,8].	Provides a stable, secure, and scalable base layer for the entire DeFi and prediction market ecosystem, making it cost-effective [6].
Concordium	Identity Verification & Compliance	Low transaction costs (€0.01). KYC/AML compliant identity verification [13].	Attracts institutional and regulated entities by providing verifiable, compliant, and efficient transaction records, which is

Network	Primary Incentive Type	Key Mechanics	Purpose for Prediction Markets
			valuable for certain market segments [13].

Ultimately, a sound economic model is the bedrock of a sustainable prediction market. It ensures that the network remains secure, the data remains accurate, and the ecosystem continues to grow, providing the stability and trust necessary for users to place real capital on the outcomes of future events.

Comparative Analysis of Layer One Platforms for Prediction Markets

The current landscape of Layer One networks presents a diverse array of options for building and deploying on-chain prediction markets, each with distinct strengths and weaknesses. The optimal choice for a given project depends heavily on its specific requirements regarding speed, cost, security, and the type of market it aims to serve. A comparative analysis of leading platforms reveals a clear division between general-purpose giants, pragmatic optimizers, and specialized innovators.

General-Purpose Giants: Ethereum stands as the original and largest smart contract platform. Its primary strength is its unparalleled network effect, massive liquidity, and extensive developer ecosystem [17]. Major prediction markets like Polymarket and Augur are built on or around the Ethereum ecosystem, leveraging its robust infrastructure [15]. Post-Merge, its transition to PoS has enhanced its scalability and security, though base-layer throughput remains limited [6]. To overcome this, the ecosystem has heavily invested in Layer 2 scaling solutions like Arbitrum and Optimism, and recently, the Dencun upgrade with proto-danksharding has made L2 interactions significantly cheaper [6]. For prediction markets, Ethereum's key advantages are its proven security and deep liquidity. However, its limitations in base-layer speed and cost make it better suited for larger, less frequent trades or for markets that benefit from the rich, composable DeFi ecosystem.

BNB Chain (formerly BNB Smart Chain) offers a compelling alternative with high throughput, low fees, and EVM compatibility [17]. It supports both Automated Market Maker (AMM) and order book models, providing flexibility for market design [11]. With backing from Binance, it has rapidly grown into a major DeFi hub, supporting a wide range of assets and integrations, including with decentralized oracles like Chainlink and UMA [11]. Its primary appeal for prediction markets lies in its cost-effectiveness and speed, making it ideal for high-volume, low-value betting scenarios. The main trade-off is a lower degree of decentralization compared to Ethereum, which may be a concern for some users.

Pragmatic Optimizers: Networks like Injective, Solana, and Concordium represent a pragmatic optimization of the L1 model. They prioritize speed and throughput above all else. Injective utilizes the high-performance Tendermint consensus to achieve instant finality and process over 10,000 TPS, making it exceptionally well-suited for fast-moving derivative markets [1]. Its EVM compatibility and native oracle support further enhance its appeal [1]. Solana's combination of PoS and Proof of History allows it to reach tens of thousands of TPS with sub-cent transaction fees, enabling extremely low-cost, high-frequency trading environments [16 17]. Concordium focuses on a different angle: providing deterministic finality in 12 seconds along with a built-in identity verification system, which could be crucial for creating regulated or institutional-grade prediction markets [13].

Specialized Innovators: At the cutting edge are networks that challenge the traditional blockchain model. Flare is a masterclass in specialization. Instead of trying to be everything to everyone, it has built a network centered on solving the oracle problem through its enshrined FTSO [29]. This makes it uniquely positioned for prediction markets that require highly accurate, decentralized, and low-cost data resolution. Its EVM compatibility means it can tap into existing tools, while its native oracle provides a competitive moat [12]. Diamante's focus on post-quantum cryptography represents a forward-looking innovation aimed at ensuring the long-term security of applications, which is a non-issue for all other L1s [3]. IOTA's DAG-based Tangle offers a completely different architectural vision of feeless, parallel processing that could revolutionize micro-betting markets [31].

The following table provides a synthesized comparison of these platforms.

Platform	Core Architecture	Speed/ Finality	Oracle Solution	Ideal Prediction Market Use Case
Ethereum	Blockchain (PoS)	Moderate (Finality ~13s) [6]	Third-Party (Chainlink, UMA, etc.) [11 15]	Large-volume, institutional markets; markets needing deep DeFi integration; regulated markets benefiting from KYC/Compliance layers.
BNB Chain	Blockchain (PoSA)	High (Finality ~3s) [17]	Third-Party (Chainlink, UMA) [11]	High-volume, retail-focused markets; arbitrage opportunities; markets prioritizing low cost and speed over maximum decentralization.
Injective	Blockchain (Tendermint PoS)	Very High (Instant) [1]	Native (Enshrined) [1]	Fast-moving derivative markets; high-frequency trading; markets where instant finality and native oracle trust are paramount.
Solana	Hybrid (PoH+PoS)	Extremely High (High TPS, Sub-second) [17]	Third-Party (Pyth, etc.) [26]	Ultra-high-frequency markets; algorithmic trading bots; markets with extremely low tolerance for latency.

Platform	Core Architecture	Speed/ Finality	Oracle Solution	Ideal Prediction Market Use Case
Flare	Blockchain (PoS)	High (Anchor every 90s, Stream every 1.8s) [24]	Native (FTSO) [12]	Markets requiring highly accurate, decentralized, and low-cost data resolution; arbitrage-free event markets.
Diamante	Blockchain (dPoS+PoH+aBFT)	Very High (Sub-second) [3]	Third-Party	Long-term, high-integrity markets where future-proof security against quantum threats is a critical requirement.
IOTA	DAG (Tangle)	High (Feeless, Parallel) [31]	Third-Party (Future) [10]	Micro-betting markets; prediction markets with very small stakes and high volume; IoT-related prediction markets.

This analysis underscores that there is no single "best" L1 for prediction markets. The choice is a strategic decision based on a careful evaluation of trade-offs between decentralization, speed, cost, and the specific data and smart contract requirements of the intended application.

Emerging Technologies and Future Outlook

The field of Layer One networks is characterized by rapid innovation, with new technologies constantly emerging to address the limitations of existing solutions and unlock new possibilities for on-chain applications like prediction markets. Looking ahead, several key trends and emerging technologies are poised to shape the future of this domain, pushing the boundaries of speed, security, and functionality.

One of the most significant areas of development is the continuous enhancement of oracle technology. Flare's FTSOv2 is a prime example of this evolution, moving beyond simple periodic price checks to a hybrid anchor-and-stream model [24 35]. The introduction of block-latency stream updates, which provide near real-time data between the primary 90-second anchor updates, allows for the creation of markets that can react almost instantly to changing conditions [38 41]. This is complemented by a sophisticated volatility incentive mechanism, where third parties can pay a fee to temporarily increase the frequency of data sampling during periods of high market volatility, ensuring the oracle feed remains responsive [35]. This level of programmability and responsiveness is a game-changer, enabling a whole new class of high-frequency prediction markets that were previously impossible on less flexible networks.

Another frontier is the integration of formal verification into the development lifecycle. As prediction markets handle increasing amounts of value, the cost of a single smart contract bug becomes prohibitively high, with past incidents costing hundreds of millions of dollars [37 39]. Formal verification is a mathematical method used to prove the correctness of a smart contract's code under all possible conditions [33, 36]. While it is currently expensive and requires specialized expertise, its importance is growing [37]. Audits are already incorporating formal methods to supplement manual reviews and automated scans [39, 40]. For prediction markets, where payout logic must be flawless, the adoption of formal verification will be critical for building trust and attracting institutional capital. The successful audit of IOTA Smart Contracts, which achieved a perfect score with no critical or high issues, signals that the industry is maturing and adopting more rigorous quality assurance practices [30].

Furthermore, the convergence of on-chain and off-chain worlds is accelerating. Flare's Flare Data Connector, which validates Web2 and Web3 events via Merkle proofs, is a step towards a truly universal oracle [12]. This allows for the creation of subjective prediction markets, where outcomes are based on human-curated information from sources like news APIs or social media. The Internet Computer's ability to make direct HTTPS calls from smart contracts opens up even more possibilities for fetching arbitrary data [16]. This will dissolve the artificial boundary between on-chain and off-chain data, enabling prediction markets on virtually any topic imaginable.

Finally, the modular architecture trend will likely continue to mature. Projects like Celestia are pioneering the separation of data availability from consensus, allowing for highly scalable and efficient data publishing [17]. This could be leveraged by prediction markets to publish vast amounts of historical trade data or complex market parameters without congesting the main chain. The rise of omnichain networks like ZetaChain, which natively support cross-chain smart contracts, will also foster greater interoperability [16]. A prediction market could easily be created with liquidity sourced from multiple chains simultaneously, maximizing depth and reducing slippage.

In conclusion, the future of Layer One networks for prediction markets is one of increasing specialization, sophistication, and integration. We will see a continued push for faster finality and more responsive oracle systems. Economic models will become more nuanced, incorporating performance-based rewards and penalties to ensure maximum data integrity. The line between on-chain and off-chain will blur, enabling a wider variety of market types. Ultimately, the most successful L1s will be those that provide developers with a powerful, secure, and cost-effective toolkit, allowing them to innovate and build the next generation of decentralized forecasting applications.

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