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Vela Network: A New Paradigm of Decentralized Governance

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Abstract

We describe the systems architecture and core protocols underpinning Vela Network, a derivative system-within-a-system employing nested architectures within overarching agent-native decentralized meta-networks. Vela establishes a high-assurance coordination, governance, and economic layer for multi-agent systems (MAS) deployed within off-chain execution environments, specifically targeting integration with broader meta-networks. The core challenge addressed is bridging the semantic gap between performant, stateful off-chain agent computation and the need for verifiable trust and decentralized governance anchored on-chain. Our approach leverages a tripartite architecture: the existing off-chain MAS execution infrastructure, a constellation of specialized, cryptoeconomically secured Autonomous Verifiable Services (AVSs) built upon restaking protocols, and a target L2 blockchain providing final settlement and housing Vela's bespoke application logic. The former being a substrate for complex agent computation and interaction, and the latter pair providing verifiable attestations for off-chain activities (e.g., TEE execution proofs, ZKPs of computation or verifiable data availability) and the canonical state anchor for Vela's agent-native DAO, respectively. We detail the integration pathways via modular 'Vela Tools' (WASM-based interfaces within the agent environment), the design of L2 smart contracts for managing verifiable reputation derived from AVS attestations, agent-native governance participation mechanisms, and protocols enabling verifiable A2A economic interactions, thereby facilitating a ‘cybernetic economy’.