



OST

Eastern Switzerland
University of Applied Sciences

Blockchain (BlCh)

Sui

Thomas Bocek

18.11.2024

Introduction to Sui

- Sui - layer 1 blockchain for scalability
- Built by Mysten Labs
 - Launch: Mainnet May 2023
- Named after 水 (sui), Japanese for water
 - Not Sui for Switzerland :)
 - Expect many water related terms
- Focus on high throughput and low latency
 - Sub-second finality
 - DeFi, gaming, NFT



Markets

- **Markets** are crazy, especially for Sui from 1.8 to 3.8



- **USDC Integration**
 - Circle's USDC stablecoin was launched on Sui's network on September 17
- **DeFi Expansion**
 - Total Value Locked (TVL) on Sui hit an all-time high of \$1.05 billion (up from \$663.87 million in mid-September).
 - Sui's ecosystem attracts developers with features like parallel transaction processing and cross-chain bridges.
- **Transaction Power**
 - Achieving **297,000 transactions** per second (TPS) in theory, surpassing Ethereum's scalability, and offering low fees (~\$0.00229 per transaction). In praxis: **CoinGecko, max**

What Makes Sui Different?

- Unique Architecture
 - Object-Centric Model: Every digital asset is a unique object with its own ID, enabling independent processing
 - Parallel Processing: Non-conflicting transactions execute simultaneously, unlike traditional sequential blockchains
- Performance Features
 - Horizontal Scalability: Network capacity grows with each new validator
 - Sub-Second Finality: Transactions complete in milliseconds
 - Cost Efficiency: Predictable low fees through optimized processing
- Technical Benefits
 - Efficient data storage model
 - Memory-efficient execution
- Real-World Impact
 - High-frequency trading capability
 - Instant payment settlement
 - Scalable GameFi applications
 - Enterprise-grade performance
 - Resource-efficient NFT operations

Key Components of the Sui Ecosystem

- Native Token (SUI)
 - Used for transaction fees
 - Staking mechanism for validators
 - Governance participation
 - Total supply: 10 billion tokens
- Move Smart Contract Programming Language
 - Created by Facebook/Meta (2019), originally for Diem blockchain
 - Resource-oriented programming
 - Focus on safety and verification
 - Enhanced for Sui with object model
- Object Model Architecture
 - Unique identifiers for all assets
 - Everything is an object on Sui, objects are unique and owned
 - Four ownership types
 - Address-owned
 - Object-owned
 - Shared
 - Immutable
 - Dynamic fields capability
 - Composable object relationships
 - Built-in versioning

Key Components of the Sui Ecosystem

- Validator Network
 - Delegated Proof of Stake (DPoS)
 - Currently ~100+ validators
 - Byzantine fault tolerance
 - Checkpoint-based consensus
 - Stake-weighted voting
- Full Node Infrastructure
 - RPC service providers
 - Data indexing capabilities
- Transaction history
- State synchronization
- GraphQL API endpoints
- Programmable Transaction Blocks
 - Multiple commands in a single transaction
 - Up to 1,024 operations per block
 - Lower gas fees through batching
 - Flexible composition of operations

Getting Started / Development Tools

- Sui CLI
- TypeScript SDK
- Rust SDK
- GraphQL API
- Move VS Code extension