

S3MT Smart Contract Stack Selection

This document outlines the selected technical stack for the development of S3MT's Solana-based smart contract architecture, covering minting, burning, presale operations, DAO integration, and ecosystem interaction tools. These selections are designed to ensure long-term flexibility, modularity, and ease of integration across future components including NFTs, staking, and governance.

Core Frameworks and Tools

1. Anchor Framework (Solana)

Purpose: Smart contract development for minting, burning, treasury management, DAO logic, and presale operations.

Rationale:

- Anchor offers a powerful Rust-based abstraction layer for building and deploying Solana smart contracts with clean syntax and security-focused defaults.
- Supports program-derived addresses (PDAs) and upgradable programs, aligning with the evolving nature of S3MT's tokenomics and DAO phases.
- Strong ecosystem support and extensibility for staking, proposals, and modular DAO governance.

2. SPL Token Program

Purpose: Standard implementation of fungible tokens on Solana.

Rationale:

- SPL Token is the canonical Solana token program equivalent to Ethereum's ERC-20.
- Supports minting, burning, and transferring logic via a well-maintained CLI and SDK.
- Used in conjunction with Anchor for low-level token operations and compatibility with the broader Solana ecosystem.

3. Metaplex Token Metadata (Optional)

Purpose: Support for token branding, Founders NFTs, and metadata flexibility.

Rationale:

- Enables attaching and updating metadata for NFTs or wrapped S3MT tokens.
- Provides functionality for Founders NFT distribution with verifiable linkage to token access and long-term reward rights.
- Future-proof support for pNFTs, staking passes, or community badges.

4. Solana Pay + Helius SDK

Purpose: Enable seamless presale UX, payment flows, and transaction analytics.

Rationale:

- Solana Pay allows token buyers to purchase via QR code or wallet-integrated payment flows, directly in USDC or SOL.
- Helius SDK provides webhook infrastructure to track real-time mint/burn events, presale purchases, or token transfers.
- Improves transparency and makes it easier to integrate live analytics and notifications into the frontend or admin systems.

Suggested Architecture

Component	Framework/Tool	Notes
Token Mint/Burn	Anchor + SPL Token	Secure and modular mint/burn logic
Presale Contract	Anchor + Solana Pay	Presale purchase, price tiering, buyer validation
Founders NFTs	Metaplex Metadata	NFT-based access control, reward eligibility
Treasury Logic	Anchor	Allocation to dev, ops, marketing, founders, buyers
Event Tracking	Helius Webhooks	For logging purchases, burns, distributions, DAO proposals
DAO Governance	Anchor Modules + Realm	Optional integration with Realms or custom DAO voting flows

Development Strategy

1. Begin with Anchor contract for minting, burning, and presale.

2. Integrate SPL Token + Solana Pay for live presale and token distribution.
 3. Use Helius to track wallet interactions and event logs.
 4. Deploy optional NFT logic for Founders access and branding.
 5. Transition to DAO-based governance using Anchor modules and/or Realm integration.
-

This stack provides the flexibility, scalability, and performance needed for the S3MT roadmap, with compatibility across Solana-native tools and open-source best practices.