SE-STAR Full System Overview & Contract Descriptions

SE-STAR is a decentralized Web3 security and fraud prevention platform built to protect the blockchain ecosystem from scams, phishing, and exploitative actors. It includes:  
  
- A smart contract suite (Wallet flagging, escrow, exchange registry, AI integration, token, rewards)  
- A real-time AI monitoring system for blockchain transactions  
- Public dashboards and educational interfaces (web, mobile, and youth-accessible)  
- SST Token powering all utility, rewards, and access control  
- “TrustWall” compliance badges for exchanges that follow SE-STAR rules

# Smart Contract Modules

## 1. SST Token (SST.sol)

Standard ERC-20 token representing utility access, staking rights, and reward mechanisms.  
- Total Supply: 1,000,000,000 SST  
- 250M Founder Allocation  
- 250M Burn Pool  
- 500M Presale + Community Distribution  
- Functions: transfer, approve, mint, burn, owner lock

## 2. Wallet Registry (WalletRegistry.sol)

Registry for wallet addresses flagged by users or AI for scam-related activity.  
- `flagAddress(address, reason)` logs wallet, timestamp, and reporter  
- `unflagAddress(address)` can only be called by the admin  
- Query flag status with `isFlagged()` or `getFlagDetails()`

## 3. AI Risk Agent (AIFlagger.sol)

Smart contract for automated flagging by AI system based on risk patterns.  
- AI flags wallets/tokens through a feed or oracle trigger  
- Human + AI flag = emergency contract pause  
- Flag data synced to WalletRegistry

## 4. Exchange Registry (ExchangeRegistry.sol)

Maintains registry of exchanges that comply with SE-STAR security policy.  
- Admin can approve/revoke “Trusted Exchange” status  
- Exchange wallet tied to badge metadata  
- Frontend can display score + status

## 5. Vault Escrow (VaultEscrow.sol)

Handles token and ETH custody during disputed transactions or suspected fraud.  
- Default escrow box checked on all SE-STAR-linked trades  
- Requires 2FA + user agreement to override lock  
- Small fee taken from seller at resolution  
- Supports time-based auto-release fallback

## 6. Rewards Engine (Rewards.sol)

Payout module that distributes SST tokens and NFTs to scam reporters.  
- Points system for users who submit validated flags  
- Weekly and monthly leaderboards  
- NFT minting for major bounty hunters

## 7. SE-STAR Custody & Safety Vault (combined)

Combines escrow logic and risk-custody storage.  
- Token holders can deposit wallet assets for protection  
- AI monitors custody vaults in real-time for unusual activity  
- Recovery flows available for users under attack