

Engrave Protocol

Bridging AI Agents with Bitcoin's Settlement Layer

Making the blockchain economy **agent-native**

The Future is Agentic

AI agents are becoming **autonomous economic actors**

- They need to **discover services**
- They need to **pay for resources**
- They need to **operate 24/7** without human intervention

The Problem

AI agents can't easily participate in the economy

- 🚫 No simple way to **discover** paid services
- 🚫 No **micropayment** infrastructure for automation
- 🚫 **Complex integrations** for every service
- 🚫 **No standard** for machine-to-machine payments

“ Agents today are blind consumers in a human-designed economy

The Solution

Engrave Protocol makes services **discoverable** and **payable** for AI agents

- Automatic service discovery** via `.well-known/x402.json`
- Instant micropayments** on Solana (sub-cent transactions)
- Bitcoin data access** with usage-based pricing
- No API keys**, no subscriptions, **pay-as-you-go**

What We Provide

For AI Agents

-  **MCP Server** - Plug-and-play Bitcoin data access
-  **Service Discovery** - Find and connect to services automatically
-  **Micropayments** - Pay cents per query (\$0.01 - \$0.25)
-  **Real-time Data** - Bitcoin mempool, transactions, fees

For Service Providers

-  **Monetization Framework** - Earn from AI agent traffic
-  **Payment Enforcement** - Automated with x402 protocol
-  **Usage-based Pricing** - Configure per-endpoint pricing

How It Works

Simple 5-Step Process

1. **Discover** → Agent finds service via `.well-known/x402.json`
2. **Learn** → Agent reads pricing and capabilities
3. **Pay** → Agent sends USDC payment on Solana (\$0.01-0.25)
4. **Access** → Service validates payment and returns data
5. **Use** → Agent uses Bitcoin data for its task

Everything happens automatically. No humans involved.

Real-World Use Cases

Autonomous Trading Bots

Monitor network conditions • Optimize transaction timing

Blockchain Analytics Agents

Track addresses • Detect patterns • Generate insights

Payment Verification

Verify transactions • Check confirmations • Monitor wallets

Mempool Intelligence

Real-time fees • Transaction prediction • Network analysis

What Makes Us Different

Traditional APIs	Engrave Protocol
Manual integration	Auto-discovery
Monthly subscriptions	Pay-per-use
API keys & auth	Payment IS auth
Fixed pricing	Micro-transactions
Human-centric	Agent-native

The x402 Advantage

x402 is the HTTP 402 "Payment Required" protocol for the AI age

-  **Universal standard** for service discovery
-  **Instant settlements** on Solana (400ms transactions)
-  **Stablecoin payments** (USDC) - no volatility
-  **No gatekeepers** - permissionless participation

“ If HTTP powers the web, x402 powers the agent economy ”

Our Service Catalog

◆ Premium Analytics (\$0.10 - \$0.25)

- Address information & transaction history
- Block data & transaction details

⚡ Micropayments (\$0.01)

- Fee estimates
- Mempool statistics

FREE Free Tier

- Block height queries

All prices in USDC, paid per request

The Agent Economy

Today vs Tomorrow

Today	Tomorrow
Human → Manual discovery	Agent → Auto-discover
Subscription billing	Micropayments
API keys & auth	Payment = Auth
Fixed costs	Dynamic optimization

Engrave Protocol bridges the gap

Traction & Validation

-  **Production API** serving Bitcoin data
-  **x402 compliant** - Full standard implementation
-  **8 endpoints** live on testnet
-  **Solana Devnet payments** operational
-  **Open source** - MIT licensed

Built for the Solana x402 Hackathon

Why Bitcoin?

Bitcoin is the **most valuable blockchain data**

-  **\$1.5T+ market cap** - Highest stakes
-  **Most secure** - Longest track record
-  **Most traded** - Deepest liquidity
-  **Most watched** - Maximum attention

“ Agents monitoring Bitcoin need **real-time, reliable** data

,,

Why Solana?

Solana enables **true micropayments**

- ⚡ **400ms confirmation** - Near-instant
- 💰 **\$0.00025 fees** - Cheaper than the API call
- 🚨 **High throughput** - Scales with agent demand
- 💸 **USDC native** - Stable pricing

“ You can't do \$0.01 transactions on Ethereum

”

The Vision

Phase 1 (Current)

Bitcoin data bridge with x402 payments

Phase 2

Multi-chain aggregation

Phase 3

Agent marketplace

Phase 4

Agent economy operating system

Business Model

Revenue Streams

-  **Service Fees** - Small margin on transactions
-  **Premium Features** - Enhanced data, analytics
-  **Enterprise Hosting** - Private deployments
-  **SDK & Tools** - Developer tools

Network Effects Flywheel

More Agents → More Volume → More Services → More Data → More Agents

Competitive Landscape

Traditional APIs (Alchemy, Infura)

✗ Subscription model

Payment Processors (Stripe, PayPal)

✗ No micropayments

RPC Providers (QuickNode)

✗ No discovery

x402 Services

 We're early in a new category

Why Now?

Three Trends Converging

1. AI Agents Going Mainstream

Claude, GPT with MCP

2. Micropayments Finally Viable

Solana sub-cent transactions

3. x402 Standard Emerging

Machine-to-machine payments

Perfect timing for agent infrastructure

The Ask

We're building the foundation for the agent economy

What We Need

-  **Partnerships** - Service providers adopting x402
-  **Community** - Agent developers integrating our MCP
-  **Feedback** - Real-world use cases and requirements

What You Get

-  Early access to **agent economy infrastructure**
-  Exposure to **autonomous AI agent traffic**
-  Shape the **future of machine-to-machine commerce**

Technical Highlights

- ✓ RESTful API - Easy integration
- ✓ OpenAPI docs - Self-documenting
- ✓ MCP Server - Claude Code native
- ✓ x402 manifest - Auto-discoverable
- ✓ Solana SPL - Battle-tested

Everything just works

Security & Trust

-  **Non-custodial** - Never hold funds
-  **Transparent** - Open source
-  **Direct settlement** - No intermediaries
-  **Trusted data** - Mempool.space

Trust through transparency

Roadmap

Q1 2025

- **Mainnet Launch** - SOL/USDC payments go live
- **20+ Bitcoin Endpoints** - Expanded data coverage
- **Agent Marketplace Alpha** - Service discovery platform

Q2 2025

- **Multi-chain Support** - Ethereum, other chains
- **Premium Analytics** - Advanced data tier
- **Developer SDK** - Integration tools

Join the Agent Economy

Get Started

 **GitHub:** github.com/david-dacruz/engrave-protocol

 **API Docs:** localhost:3000/api-docs (testnet)

 **Manifest:** [/.well-known/x402.json](#)

Connect

 Built for Solana x402 Hackathon

 Open to partnerships and collaboration

 Join us in making the blockchain agent-native

Engrave Protocol

Making Bitcoin Data Accessible to AI Agents

One micropayment at a time

Thank You

Questions?

 github.com/david-dacruz/engrave-protocol

 Let's build the agent economy together