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 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

🎯 Phase 1

- **Token Launch** - Build in public starts
- **MVP Development and Stress Testing** - Final submission 11/11/25
- **Solana x402 Hackathon** - Final submission 11/11/25

🎯 Phase 2

- **Engrave Protocol Digital Identity** - Rebrand + landing page
- **Devnet Public Launch** - SOL/USDC payments go live
- **20+ Bitcoin Endpoints** - Expanded data coverage
- **AVAX Hackathon 11/28/25** - Cross-chain interoperability expansion

🎯 Phase 3

- **Mainnet Launch** - Payments go live

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