Hydra Hexcore

Tool for Deployment Multi-Hydra Head

APPLICANT	DURATION	CHALLENGE
Vtechcom Labs	**Aug 2025 – Feb 2026**	**Developer Tools**

🎯 Challenge & Funding

🚩 The Challenge

Cardano Open Developers - Simplify Hydra node deployment with full automation, saving time and optimizing infrastructure.

✓ High technical barriers for adoption
✓ Lack of developer-friendly tools
✓ Complex multi-party coordination

🎯 Goals & Funding

Funded: **95,000 ADA**

✓ Manage multiple Hydra Heads on same server
✓ Intuitive UI + CLI tools
✓ Security & scalability

💡 Technical Solution

🔧 **NestJS** API Backend	🐳 **Docker** Deployment	💻 **Nuxt 3** UI + CLI	🔒 **NGINX** Gateway

01. Executive Summary

Hydra HexCore is a **NestJS backend service** to manage **Hydra Heads**—Layer 2 scaling for Cardano. Provides APIs for node management, transactions, and multi-party operations.

🎯 Challenge KPIs

✓ Reduce Hydra Head setup time
✓ Increase developer accessibility
✓ Improve documentation
✓ Ensure security & scalability

✅ Project KPIs (Achieved)

✓ NestJS Backend + Docker
✓ Responsive UI with RBAC
✓ Gateway & CLI Integration
✓ Open Source (MIT License)
✓ Mainnet ready

02. Milestones Delivered

1   Core System

✓ NestJS Backend + Docker
✓ MySQL/Redis state management
✓ RESTful APIs

2   User Interface

✓ Responsive Nuxt 3 UI
✓ Management dashboards
✓ Real-time tracking

3   Gateway & CLI

✓ NGINX reverse proxy
✓ JWT authentication
✓ hexcore-cli tool

4   Final Report

✓ Documentation
✓ Video recap
✓ Public GitHub repo

03. Project Team

🏢 Project Manager

✓ 10+ years experience
✓ Oversees execution & delivery
✓ Stakeholder coordination

💻 Core Developers (4)

✓ **Frontend:** Nuxt 3 (5+ yrs)
✓ **Backend:** NestJS (6+ yrs)
✓ **Blockchain:** Cardano (10+ yrs)
✓ **DevOps:** CI/CD (4+ yrs)

🎨 UI/UX Designer

✓ 3+ years dApp design
✓ Intuitive dashboards
✓ User testing & iteration

🔍 QA Specialist

✓ 8+ years in QA testing
✓ Unit, integration, E2E tests
✓ Preprod & Mainnet verified

🏆 Team Strength

7 specialists • **40+ years** combined experience • Agile methodology • Passionate about Cardano Layer 2

04. Key Achievements

✓ **First open-source tool** for automated multi-Hydra Head deployments
✓ **Secure & scalable** management with accessible UI/CLI
✓ **Comprehensive documentation** and rapid onboarding
✓ **Direct contributions** to IOG Hydra team via GitHub
✓ **Integration** with Vtechcom products (Hydra Wallet, FastPay)

💡 Key Learnings

✓ Robust error handling required
✓ Contributed fixes to IOG
✓ Performance optimization critical
✓ UX feedback integration

📊 Impact Metrics

✓ 100% milestone completion
✓ Open-source MIT license
✓ Active IOG collaboration
✓ Production-ready Mainnet

05. Collaboration

🤝 Hydra Core Team (IOG)

Active collaboration via **GitHub issues**, submitting bug reports and feature requests. Direct contributions improved Hydra ecosystem stability and functionality.

🌐 Cardano Community

✓ Forum posts & discussions
✓ Discord engagement
✓ Developer feedback

🔧 Open Source

✓ Public GitHub repository
✓ MIT License
✓ Ecosystem support

06. Future Roadmap

🔧 Technical Enhancements

✓ Advanced multi-party modes
✓ Local Hydra cluster deployments
✓ Continuous compatibility upgrades
✓ Enhanced monitoring & analytics

☀️ Ecosystem Growth

✓ Hydra deployment academy
✓ Tutorial series
✓ Expanded CLI functionality
✓ Community workshops

🎯 Long-term Vision

Position Hydra HexCore as the de facto standard for deploying and managing Hydra Heads on Cardano. Act as complementary infrastructure enabling users to become Hydra Node providers, fostering a decentralized, scalable Layer 2 ecosystem.

07. Evidence Links

📽️ Close-out Video

https://www.youtube.com/watch?v=VXRY2HokP-4

📚 Documentation

https://github.com/Vtechcom/hydra-hexcore/blob/master/README.md

💻 GitHub Repository

https://github.com/Vtechcom/hydra-hexcore

🚀 Catalyst Proposal

https://projectcatalyst.io/funds/14/cardano-open-developers/hydra-hexcore-tool-for-deployment-multi-hydra-party

🔗 Hydra Contributions

https://github.com/cardano-scaling/hydra/issues?q=author%3Aaniadev