
Cyborg Network: Unlocking Polkadot's Web2.5 Potential through Blockchain-Powered AI Inference – Milestone 2

Short description: *A web2.5 centric parachain to onboard a fresh wave of enterprise and web2 native users into the dotsama ecosystem.*

Proponent/DOT Address: 13mrRC7BgZzK8yhr7e1XxDZc5PRTJxvVfVzz93TxugSC1yJr

Date: 20.06.2025

Requested allocation: 136,780 USDC

Project Category/Type: **Software development**

1. Executive Summary

Polkadot is one of the most technically advanced blockchain ecosystems, and its modular, secure design makes it an ideal foundation for powering real-world, enterprise-grade infrastructure. At Cyborg Network, our vision is to leverage Polkadot to build decentralized, high-performance infrastructure for AI inference, a domain experiencing rapidly growing demand and enormous real-world potential.

Following the [successful delivery](#) of a previous Treasury milestone, two completed Web3 Foundation grants, and four hackathon wins within the Polkadot ecosystem, we are now seeking Treasury support to complete prototyping and live testing of our AI hardware. This work is a critical step toward launching Cyborg Network as a dedicated AI inference parachain on Polkadot.

Our product, the [Cyborg Miner](#), is a custom-built AI hardware unit designed in partnership with [Nvidia OEM partners](#) through the [Inception Program](#), optimized for running real-time inference jobs across a decentralized network. We are proud to include Polkadot branding on our hardware, and all Cyborg Miner operators will be able to **redeem rewards in DOT** and **pay for inference services using DOT**, increasing DOT utility across our network applications.

This proposal focuses solely on delivering the core infrastructure needed to support decentralized AI inference and marks the next milestone in our commitment to bringing real-world adoption to the Polkadot ecosystem.

We are seeking 136,780 USDC to complete prototyping and launch Cyborg Network as a Polkadot parachain.

2. Context

Our [previous Treasury proposal](#) was rooted in our early exploration of how Polkadot's technology could enable real-world enterprise adoption. As developers and founders in the ecosystem, we investigated multiple verticals and identified a compelling opportunity at the intersection of blockchain and edge computing, specifically, the need for low-latency, Web2-like compute services backed by decentralized trust. This vision was shaped and validated during our time at the **Polkadot Blockchain Academy in Berkeley**, where we received technical and strategic mentorship, and was further accelerated at **PBA Hong Kong**, where we refined the idea into a tangible product roadmap. Building on this, we delivered a [UX prototype](#) and a functional [proof-of-concept](#) using Substrate and K3s (lightweight Kubernetes), supported by a **Web3 Foundation grant**. The success of this foundational work led to the approval of our **first Polkadot Treasury proposal**, which marked the beginning of Cyborg Network's journey toward real-world decentralized infrastructure.

Since receiving our previous Treasury grant, Cyborg Network has undergone a strategic pivot to focus fully on the growing AI inference market. We identified the need for a robust, low-latency AI infrastructure layer that could integrate both custom hardware and blockchain-based orchestration, while remaining enterprise-ready and privacy-compliant. This focus has led us to develop a vertically integrated solution, combining AI-optimized edge hardware with a decentralized network, built on Substrate.

During this period, we also successfully delivered [NeuroZK](#), a zero-knowledge-based model encryption layer for Substrate parachains, enabling privacy-preserving AI verification. This product reinforced our technical positioning in the intersection of AI and Web3 infrastructure. Our expanded vision was further validated by our acceptance into the Nvidia Inception Program, marking a key step forward in our hardware development journey.

We're also in discussions with Microsoft to list Cyborg's AI inference solution on the Azure Marketplace as an [ISV \(Independent Software Vendor\)](#), which would open the door for Web2 enterprises to consume blockchain-secured AI services - driving real adoption into the Polkadot ecosystem. Additionally, we've established a strategic partnership with [CESS Network](#), whose high-performance decentralized storage solution will support the Cyborg inference layer.

To make this vision operational, this proposal includes the creation of an **XCM channel to the Polkadot Asset Hub**, enabling users to **pay for AI inference services in DOT** and **receive miner rewards in DOT**, alongside support for fiat and BORG (our native token). This integration

increases DOT utility across Cyborg Network’s applications while providing an on-ramp for institutional and infrastructure-driven use cases.

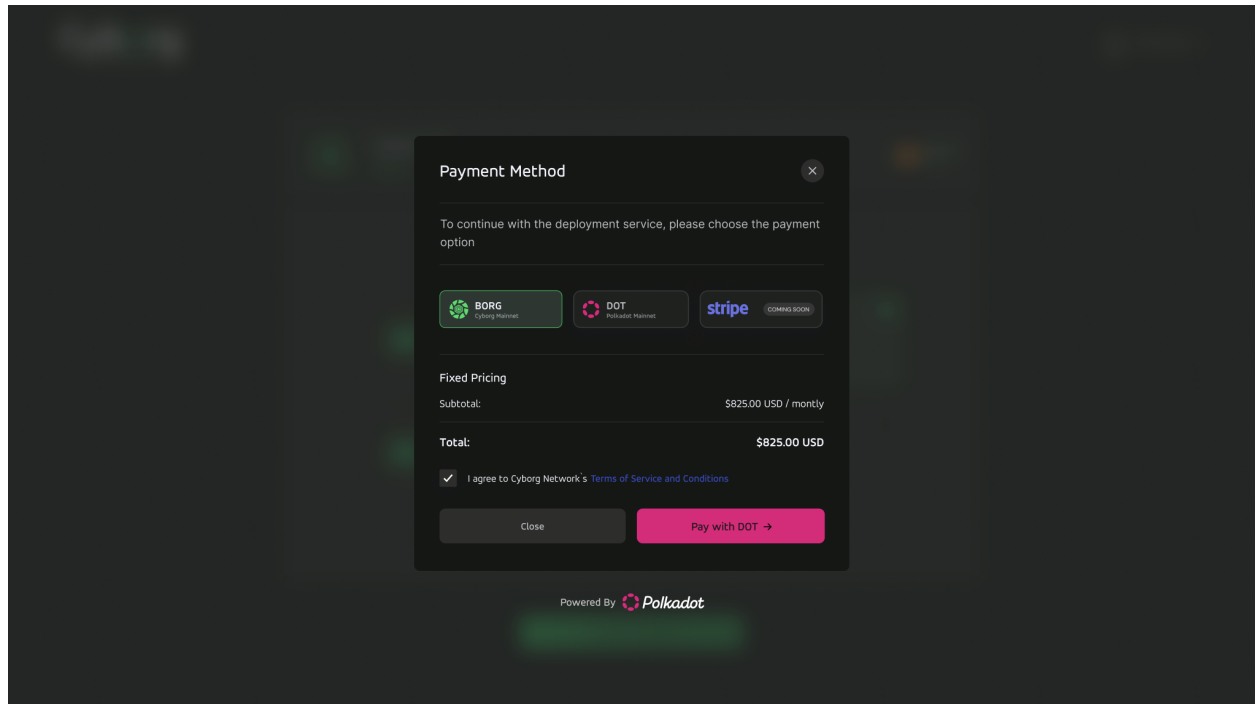


Fig. 1.0. The DOT payment feature

3. Problem

Despite Polkadot’s advanced architecture and upcoming features like Elastic scaling, Coretime and JAM, there remains a critical gap in enterprise-ready infrastructure - especially for serving the growing demand for real-time AI inference. The Polkadot ecosystem lacks a dedicated platform that enables governments, enterprises, and developers to run low-latency, privacy-compliant AI workloads on-chain, powered by decentralized infrastructure. This limits Polkadot’s ability to capture meaningful adoption from real-world AI applications such as robotics, mobility, smart surveillance, and machine-to-machine intelligence.

At the same time, the global AI infrastructure landscape is highly fragmented. Centralized cloud providers struggle to meet the latency requirements of next-generation AI applications, while decentralized networks have mostly focused on idle GPU marketplaces, not purpose-built compute for inference. There is no unified platform that offers hardware-anchored, scalable, and trustless AI inferencing at the edge, especially not one aligned with open governance and sovereign control.

According to Gartner and Schneider Electric, the future of AI lies in running workloads closer to the data source, in edge environments. However, this shift requires coordination, infrastructure, and protocol-level orchestration that current solutions do not provide. Without this, enterprises and governments are forced to choose between speed and control, often at the cost of regulatory risk or performance bottlenecks.

This underscores the need for a privacy-preserving, scalable AI inference layer built on decentralized hardware and governed by open systems. Polkadot, with its composability, XCM-based interoperability, and secure consensus model, is uniquely positioned to power this next layer of sovereign AI infrastructure, and Cyborg Network is building exactly that.

4. Solution

With the aim of onboarding the next million users into the Polkadot ecosystem, we are building an AI inference-focused parachain powered by real hardware and backed by a decentralized protocol. Our platform enables developers, enterprises, and institutions to run low-latency, privacy-preserving AI workloads on edge devices distributed globally.

To enhance system capability and accelerate deployment, we leverage existing Polkadot ecosystem infrastructure where relevant. For instance, our storage layer is integrated with CESS Network, providing a decentralized, high-performance solution to handle large AI model outputs and intermediate data.



Fig. 2.0. Cyborg Miner Rendered Image with Polkadot Branding*

*This image is for representation purpose only and the original product may slightly vary

To promote real-world utility of DOT, we will establish an XCM channel with Polkadot Asset Hub, enabling users to pay for inference services in DOT and allowing miner operators to redeem rewards in DOT. This also enables us to convert earned USDT into DOT, increasing DOT velocity through real usage.

Additionally, our globally distributed Cyborg Miners - AI hardware devices, will feature Polkadot branding, physically representing the ecosystem's presence in real-world infrastructure and helping push DOT adoption across non-Web3 markets. Through these integrations, we not only avoid redundant development but contribute meaningfully to DOT utility and visibility in the broader AI ecosystem.

4.1. The Infrastructure

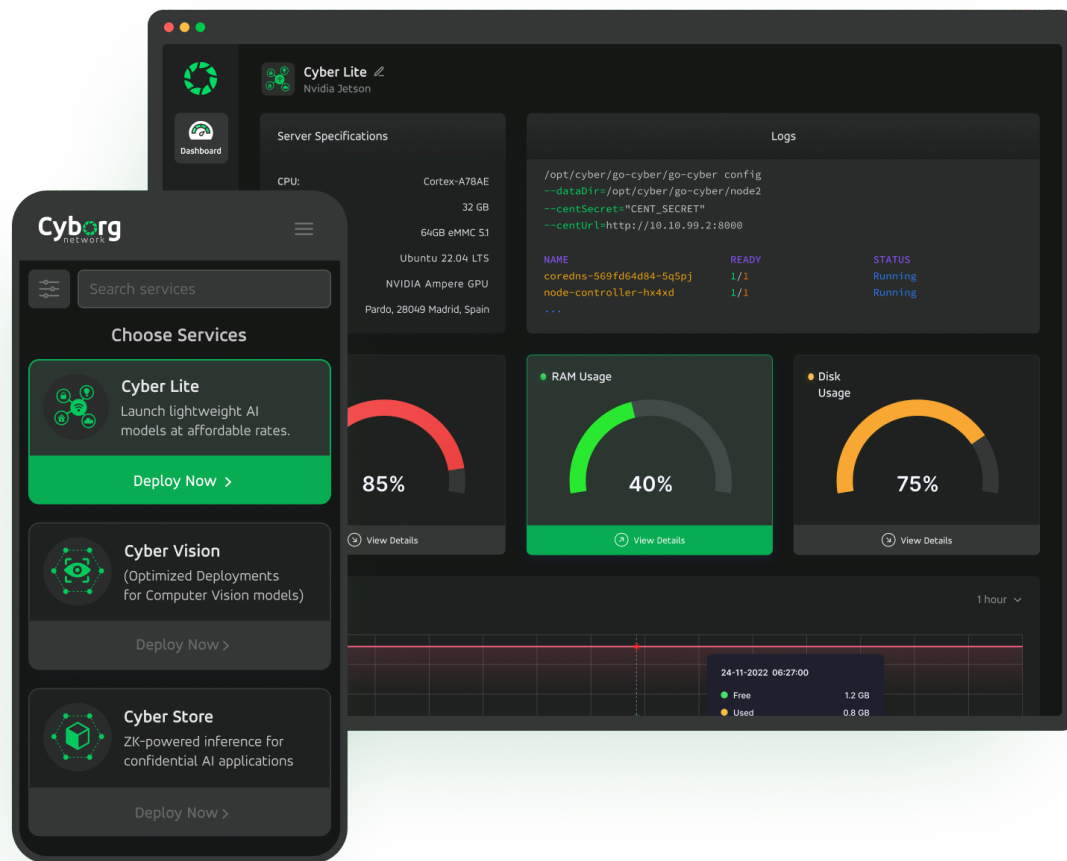


Fig. 3.0. Cyborg Connect UI

After careful consultation with prospective users, we've shifted our focus to prioritize Cyborg Miners as the primary source of compute power for the network. This decision reflects both user enthusiasm for direct participation and our commitment to decentralization. While partnerships

with established data centers are still part of our strategy, they will be introduced initially through a limited beta program to assess performance and integration viability.

Cyborg Miners are pre-configured edge computing servers that connect directly to the Cyborg parachain as worker nodes, enabling them to process compute tasks assigned by users. This model allows community members to contribute computing power securely and transparently.

We are offering two deployment models to suit different user profiles and operational needs:

Self-Hosted Cyborg Miner (Primary Model):

- **Ideal For:** Technically capable individuals and smaller organizations looking to actively participate in the network
- **Investment:** Lower upfront and operational costs
- **Deployment Speed:** Moderate, with some setup and validation required
- **Earning Potential:** Scales with uptime and reliability

Data Center Hosted (Beta Program):

- **Ideal For:** Enterprise users requiring high availability and minimal maintenance
- **Investment:** Higher costs due to colocation and operational overhead
- **Deployment Speed:** Faster due to pre-existing infrastructure
- **Earning Potential:** Potentially higher due to optimized performance, pending beta results

By leading with a self-hosted model and carefully testing institutional partnerships, we aim to create a resilient, community-powered edge network that balances decentralization with performance. The data center model will undergo rigorous evaluation before full-scale integration into the Cyborg ecosystem.

4.2. Why Blockchain?

The first question that comes up when we pitch this idea at various hackathons, incubators, etc., is about the necessity of a blockchain in this solution. Our answer aligns with the benefits of blockchain, which are reinforced by the technical capabilities of the Polkadot relay chain (Async Backing) and the upcoming paradigms like Coretime and JAM, making our solution more tangible with a blockchain-based approach.

Here's how the use of blockchain makes our solution more tangible:

Simplified Onboarding and Enhanced Compliance: Our Substrate-based blockchain can streamline the onboarding process for data center providers, reducing administrative overhead

and enabling automated enforcement of regulatory requirements like KYC (Know Your Customer) and AML (Anti-Money Laundering) using on-chain DID (Decentralized Identity) registration. This enhances transparency and accountability for both providers and users. We can also integrate game theoretic concepts to optimize reward distribution among all participants.

Robust Data Ownership and Security: Private key-based encryption, combined with transparent task reporting using oracles within Trusted Execution Environments (TEEs), guarantees that users maintain complete control over their data and that computations are verifiable and secure.

Optimized Performance and Scalability: By leveraging P2P messaging powered by Polkadot's asynchronous backing and sharding capabilities, we can achieve rapid workload transfers between geographically distributed nodes, minimizing latency and optimizing performance. The blockchain architecture ensures the scalability of our network to accommodate growing demand.

Decentralized Governance and Trust: A strict "code is law" governance mechanism ensures fair operation and allows for penalizing faulty providers. Additionally, a reputation system based on unique machine NFTs tied to on-chain scores fosters trust and accountability within the network.

Increased Automation and Efficiency: Blockchain-based automation streamlines processes, reducing manual intervention and optimizing operational efficiency across the platform.

In conclusion, while other approaches to edge computing may exist, the capabilities offered by blockchain technology, particularly within the Polkadot ecosystem, present a compelling case for its adoption. By leveraging these strengths, we can build a robust, reliable, and efficient solution that meets the evolving needs of the decentralized technology landscape.

4.3. Market Scope

Edge computing is redefining how and where data is processed, and nowhere is this shift more impactful than in AI inference. As real-time, low-latency AI becomes a competitive requirement across industries, Cyborg is focused on enabling decentralized AI infrastructure at the edge.

According to Fortune Business Insights, the Edge AI market is projected to grow from \$20.39 billion today to \$186.44 billion by 2032, with a CAGR of 27.5%. This growth is driven by increasing demand for fast, local AI model execution in homes, cities, vehicles, and enterprise environments.

Our Strategy: AI Inference, Distributed

Our infrastructure is built around self-hosted Cyborg Miners, which serve as edge inference engines deployed directly by the community. These nodes are capable of running AI workloads close to the source of data for reducing latency, improving privacy, and lowering inference costs.

While data center partnerships are being evaluated through a limited beta program, our primary compute layer remains community-powered, aligning with our vision of decentralization and user sovereignty.

Primary Market: AI Inference at the Edge

Cyborg enables real-time AI model execution across multiple industries:

- **Conversational AI:** Deploy chatbot models for localized inference with minimal latency
- **Home Automation:** On-device processing for smart security, energy optimization, and sensor fusion
- **Financial Systems:** High-frequency trading bots using real-time signal analysis at the edge
- **Industrial AI:** Predictive maintenance and machine anomaly detection directly on factory floors
- **Healthcare AI:** Private, local inference for wearable health trackers and patient monitoring

Sub-Market: Edge AI Infrastructure

The same platform supports broader edge AI needs, offering low-latency compute capabilities for:

- **Smart Cities:** Real-time video analytics for public safety, traffic enforcement, and event detection
- **IoT Sensor Aggregation:** Filtering and pre-processing sensor data before cloud sync
- **Blockchain Infrastructure:** Instant JAM node/client deployment through Cyborg Miners worldwide

Expansion Markets

As the network matures, Cyborg Miners can support advanced applications including:

- **Autonomous Mobility:** In-vehicle edge processing for real-time navigation and object recognition
- **Industrial Robotics:** Closed-loop control and vision systems with microsecond inference
- **Retail & Logistics:** Real-time customer tracking, supply chain analysis, and smart checkout systems

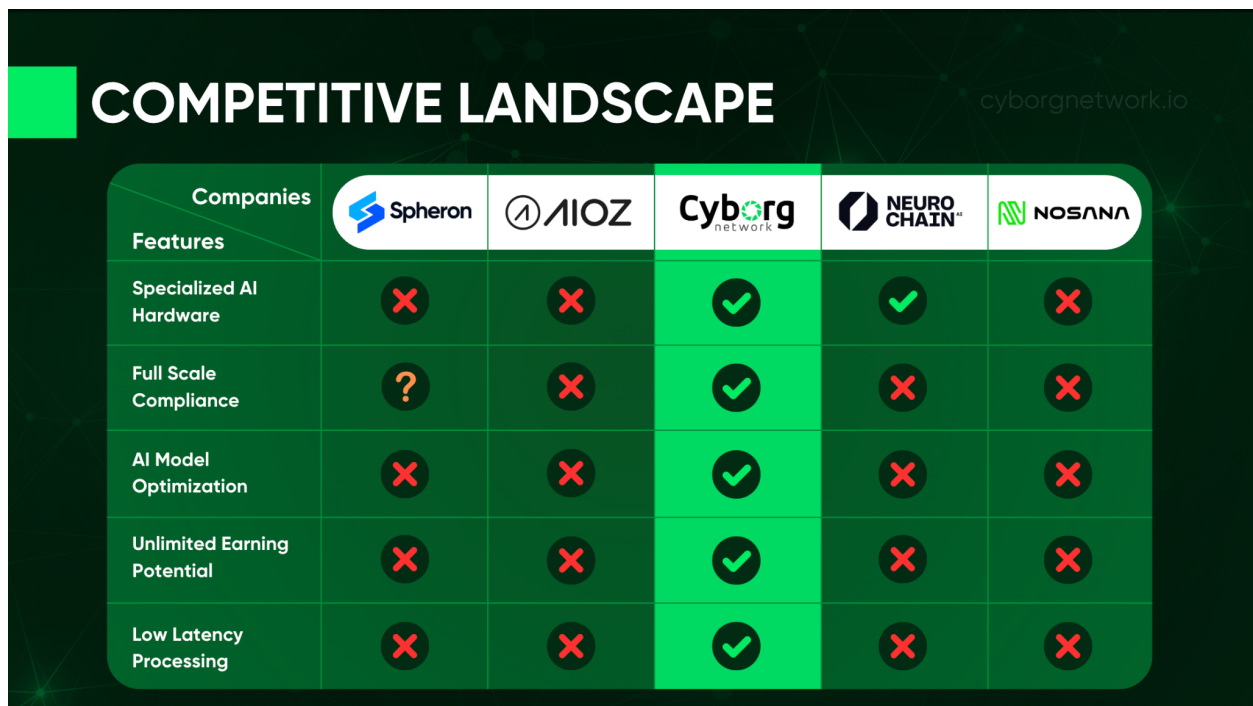
Key Market Drivers

- **Demand for Real-Time AI:** Mission-critical AI systems can't afford the latency of cloud round-trips

- **Edge Cost Efficiency:** Reduces cloud overhead by keeping compute close to data sources
- **Data Privacy & Compliance:** Keeps sensitive data local, essential in healthcare, finance, and government sectors
- **Explosion of Connected Devices:** As sensors and endpoints proliferate, edge-native AI is the only scalable option

By prioritizing AI inference as our core use case, and enabling it through a globally distributed network of Cyborg Miners, we're positioned to lead the next wave of AI infrastructure, decentralized, private, and built for the edge.

4.4. AI inference Landscape



The table compares five companies across five features. Cyborg network is highlighted in green for all features.

Companies	 Spheron	 AIOZ	 Cyborg network	 NEURO CHAIN	 NOSANA
Specialized AI Hardware	✗	✗	✓	✓	✗
Full Scale Compliance	?	✗	✓	✗	✗
AI Model Optimization	✗	✗	✓	✗	✗
Unlimited Earning Potential	✗	✗	✓	✗	✗
Low Latency Processing	✗	✗	✓	✗	✗

Fig. 4.0. Tangential Projects

While Cyborg does not directly compete with every organization in this space, the following comparison highlights how different players in decentralized and edge AI infrastructure are approaching the market. Our core products the **Cyborg Miner** and **Cyborg Connect** are uniquely positioned to not only compete but potentially serve as an essential infrastructure layer for emerging decentralized compute platforms, enabling potential integrations or partnerships in the future.

Spheron

Focused on decentralized hosting but lacks specialized AI hardware and real-time processing capabilities. Compliance and model optimization remain unclear or unsupported, limiting its viability for enterprise-grade AI inference workloads.

AIOZ

Offers a decentralized content delivery framework but lacks core AI infrastructure. Its platform doesn't currently support model optimization or specialized compute, making it unsuitable for demanding inference tasks.

Neurochain

Provides specialized AI hardware but lacks broader ecosystem support for compliance, model-level optimization, and earning scalability. Primarily focused on narrow use cases rather than a comprehensive edge AI stack.

Nosana

Targets decentralized CI/CD pipelines and GPU sharing, but misses critical features like full compliance, AI optimization, or low-latency delivery. More suited for dev-focused compute tasks than real-time AI workloads.

Cyborg Network: Full-Stack Edge AI Inference

Cyborg stands apart by offering a decentralized, compliant, and performance-optimized edge AI network. Key differentiators include:

-  Specialized AI Hardware via Cyborg Miners
-  Full-Scale Compliance to support enterprise adoption
-  AI Model Optimization for efficient, low-cost inference
-  Unlimited Earning Potential through user-deployed edge nodes
-  Low Latency Processing for real-time applications

Rather than competing for the same segment, we aim to establish partnerships with various cloud and decentralized computing solutions to create a shared market space that contributes to the greater good for the evolution of futuristic AI paradigms.

4.5. Scope of work

The primary focus for the next quarter will be on the prototyping, development, testing, audit, and launch of the much anticipated Cyborg miner alongside Cyborg Connect App. The successful launch of the miner will mark the completion of Phase 2 of the Cyborg Network mainnet rollout as parachain on Polkadot (Coretime Rollup under the current narrative)

Cyborg Miner: A high-performance, purpose-built edge server that acts as both an AI accelerator and a blockchain-integrated compute node. Optimized for AI inference with up to **200 TOPS** (Tera Operations per Second) and up to **50 FLOPS** (Floating Point Operations per Second) and of AI processing power and equipped with 2TB of encrypted NVMe storage, it enables low-latency execution of large-scale models directly at the edge. Deployed across a globally distributed network and orchestrated entirely through on-chain instructions via the Cyborg Connect platform, each miner serves as a real-time AI execution unit. geo-tagged for optimal model placement and latency performance.

In our [AI compute case study](#), integrating Cyborg Miners into an AI system architecture delivered a 3x improvement in latency performance and showed potential for up to 25% reduction in infrastructure costs over time, demonstrating their value as a next-generation solution for decentralized, privacy-preserving AI workloads.

Here is our technical roadmap:

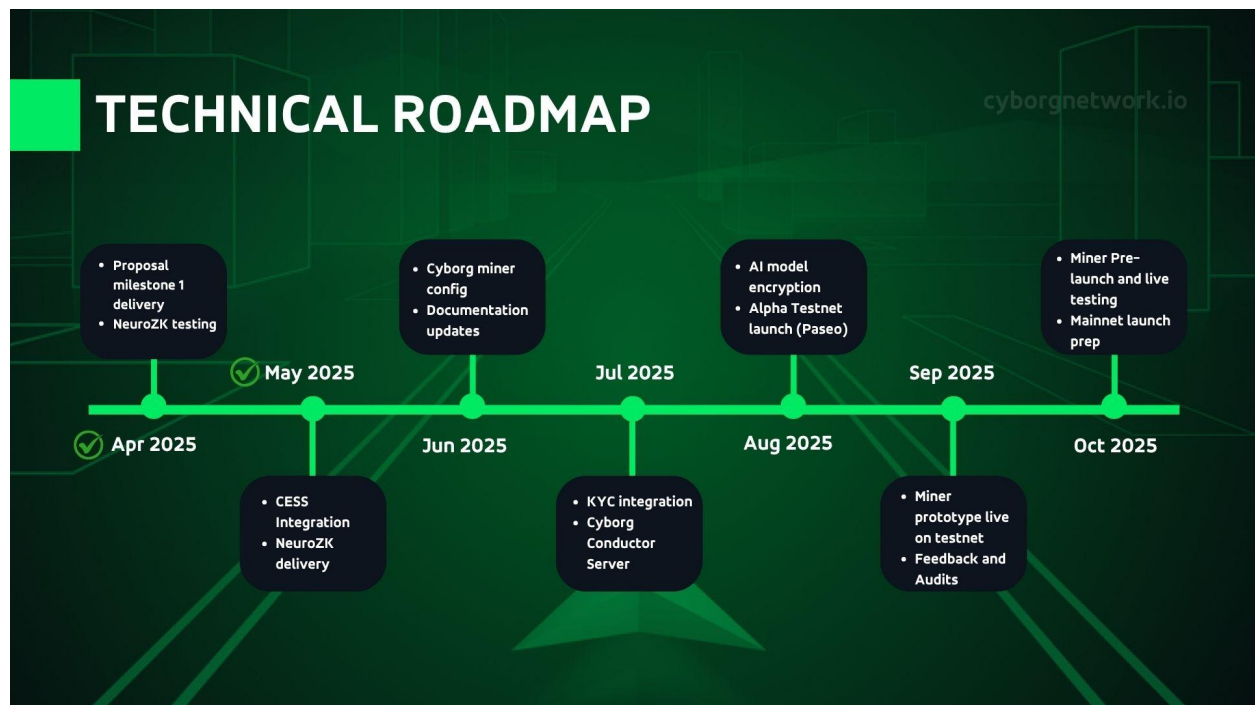


Fig. 4.0. Technical Roadmap

We have defined the essential elements of our architecture in the milestone table below, along with links to the relevant GitHub repositories for each deliverable.

<https://github.com/Cyborg-Network> - Organization
<https://github.com/Cyborg-Network/cyborg-parachain>
<https://github.com/Cyborg-Network/cyborg-connect>
<https://github.com/Cyborg-Network/Cyborg-miner>
<https://github.com/Cyborg-Network/cyborg-oracle-feeder>

All our repositories will be open source under the GPLv3 License. We encourage interested community members to contribute by opening issues and submitting pull requests (PRs) to our repositories. Qualified PRs and issues may also be eligible for bug bounties.

The team is also committed to hiring additional technical talent from the Polkadot Blockchain Academy (PBA) talent pool, as well as filling non-technical positions to accelerate our progress.

4.6. Milestones

We are requesting \$136,780 (assethub USDC) to fund the development of the Cyborg Parachain for a period of 6 months to aid us in delivering on the following milestones:

1. Milestone 2 - (6 months) - This is our final milestone

Milestones	Tasks	Deliverables	Hours	Rate (USD)	Cost (USD)
1.1	Miner configurations (Embedded rust development compatible with substrate parachain)	- Attestation - Registration - Reputation - Geo-location config - security bindings	310	\$100	\$31,000
1.2	Cyborg Conductor server	- Development and integration with Stripe and Polkadot AssetHub	280	\$100	\$28,000
1.3	XCM channel config with Assethub	- Buy/Sell DOT from assethub for mining rewards and payments	104	\$100	\$10,400
1.4	Miner prototypes for testing from OCM	- Detailed stress test reports - 10 units of miners - Including prototyping, shipping and handling	10 units	\$2835	\$28,350
1.5	Cyborg Gatekeeper	- Evaluate AI models before launch - ZK environment setup	87	\$90	\$7,830

Milestones	Tasks	Deliverables	Hours	Rate (USD)	Cost (USD)
1.6	Updated UI designs	- Miner App UI designs - Dashboard - Navigation Enhancements - Animations	120	\$60	\$7,200
1.7	Frontend - Cyborg Connect	- AI inference dashboard - updated metrics - Geo-location feature	120	\$90	\$10,800
1.8	Paseo launch optimizations and benchmarking	- Stress testing all system utilities for testnet launch - Benchmarking pallets	80	\$80	\$6,400

Milestone 2 Total	\$129,980
Fixed Infrastructure Costs	\$6800
Total	\$136,780

5. Reporting

Our project's [GitHub repository](#) will be open source and publicly accessible, allowing for transparency and community contributions. We will provide regular updates on OG tracker, detailed monthly development reports on [LinkedIn](#), and [Twitter \(X\)](#) to keep the community informed about our progress and milestones.

Additionally, we have established a monthly email newsletter and publish articles on Medium to share updates on our development, potential integrations within the Polkadot ecosystem, and overall growth.

Any future strategic pivots falling within the scope of this proposal timeline will be implemented after clear documentation and prior approval through the Polkadot OpenGov through the appropriate channels and also presented in one of the AAG sessions to ensure consensus with the community.

5.1. Benchmarks to publicly verify Deliverables

Since the actual mainnet launch date depends on components like marketing and exchange listings, which fall outside the scope of this proposal, we are instead providing a set of

benchmarks that the community can use to publicly verify the completeness of the deliverables related to this proposal apart from the code submission.

1. A live testnet running on Paseo
2. The live Cyborg Connect app (hosted on Paseo testnet) where users can publicly deploy and test ONNX models
3. Clear documentation outlining the steps to deploy models, including pre-trained examples
4. Video updates showcasing the miner prototype, posted on our official social media channels
5. A live presentation of the miner at a public Polkadot event (e.g., Sub0 or Decoded), allowing the community to see the hardware in person without needing to purchase one

6. Team

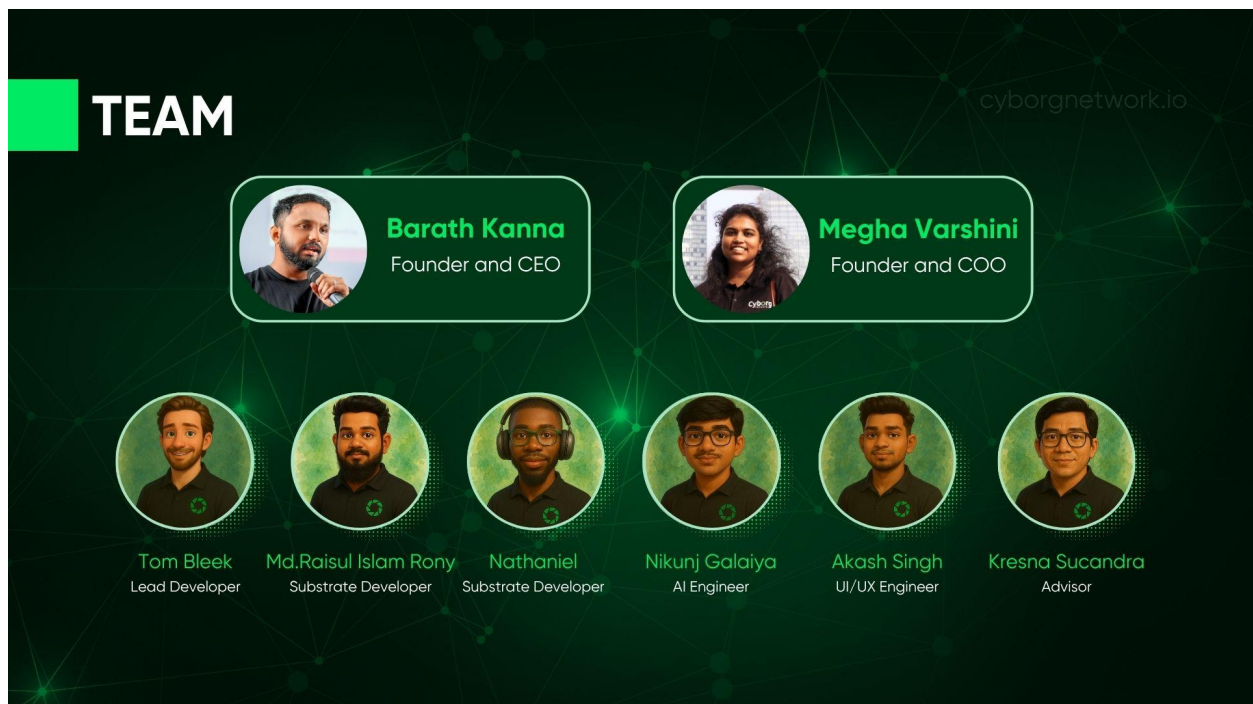


Fig. 5.0. Team

Barath Kanna - <https://github.com/beekay2706>
Founder and CEO

Megha Varshini - <https://www.linkedin.com/in/megha-varshini-t/>

Founder and COO

Tom Bleek - <https://github.com/tom-blk>

Lead Developer

Md.Raisul Islam Rony - <https://github.com/Ronnie-Ahmed>

Substrate and Rust Developer

Nathaniel Bajo - <https://github.com/Nathy-bajo>

Substrate Developer

Nikunj Galaiya - <https://www.linkedin.com/in/nikunj-galaiya-3037031b7/>

AI Engineer

Akash Singh - <https://github.com/AkashSingh9759>

UI/UX Engineer

Kresna Sucandra - <https://github.com/SHA888>

Substrate Advisor

The Cyborg Network team is a small but dynamic group with over 4 years of experience in the blockchain industry, particularly within the Polkadot ecosystem for more than 3 years. Barath graduated from the engineering cohort at Berkeley. Megha completed the founders track in Hong Kong, she also represented Cyborg Network at the Finals (Top 7 teams) of the PBA pitch Contest. Our core team will continue to consist predominantly of PBA alumni in the future. We have also excelled in numerous Polkadot hackathons, winning significant prizes. Additionally, we have participated in several accelerator programs. As part of our contribution to the Polkadot ecosystem, the founders organized a Polkadot Decoded viewing party in 2023 in their hometown. Some of our notable achievements include:

PBA Berkeley - [Barath](#)

PBA Hong Kong - [Megha](#)

OpenGov Proposal 1 - [Successful Delivery](#)

W3F Grants - [NeuroZK W3F 2nd Grant Delivery](#)

Winner - [OneBlock+ Polkadot Hackathon: Bangkok 2024](#)

Winner - [Web3 Hack X Hackathon](#)

Winner - [Polkadot Hackathon Global Series: NA edition 2024](#)

Winner - [Polkadot Prodigy Hackathon](#)

Finalist - [Polkadot Winter Hackathon](#)

[W3f Grants Program - level 1](#)

[PBA Finals Pitch](#)

[Polkadot Alpha Program](#)

[Polkadot Relayers Incubator](#)

[Polkadot Encode Accelerator 2023](#)

[Polkadot Decoded Viewing party 2023](#)

[DMCC TDeFi Accelerator](#)

[Polkadot Insider](#)



Fig. 6.0. OneBlock+ Polkadot Hackathon Finals - Bangkok

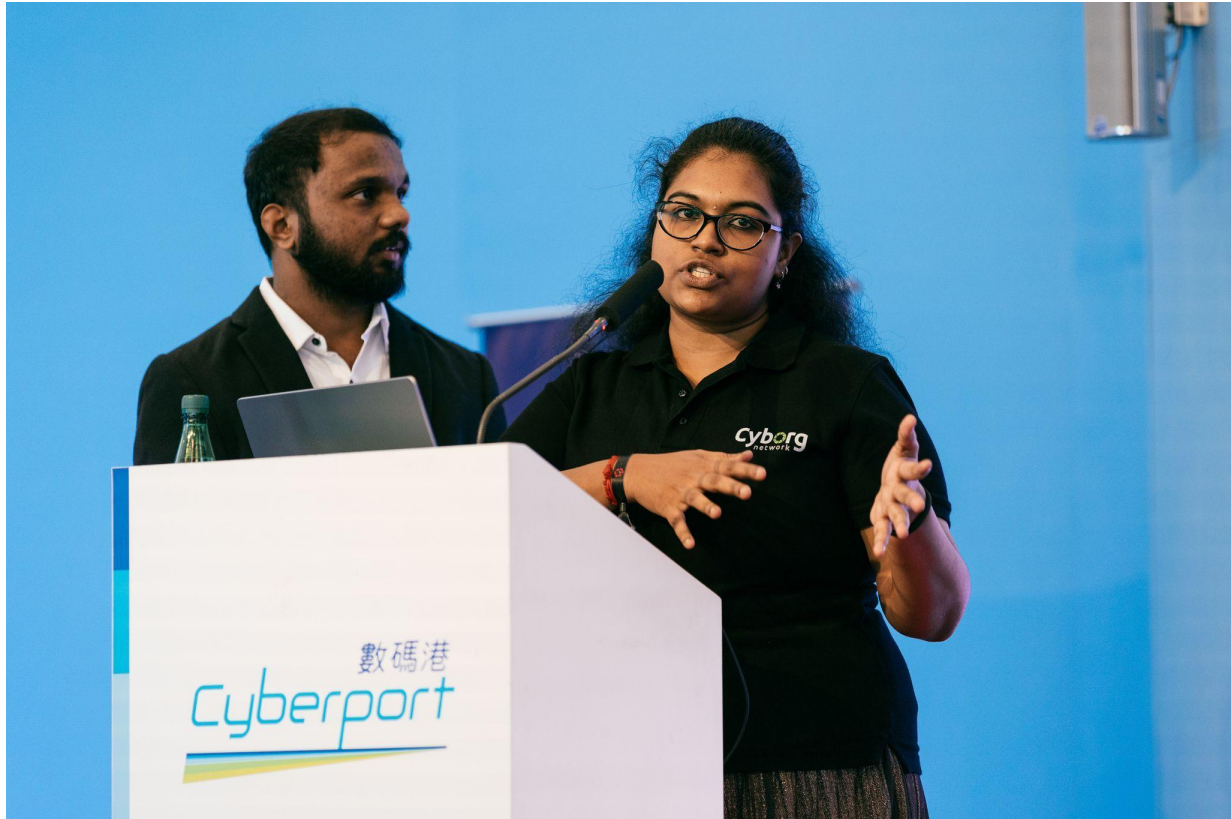


Fig. 7.0. PBA final pitch contest in Hong Kong

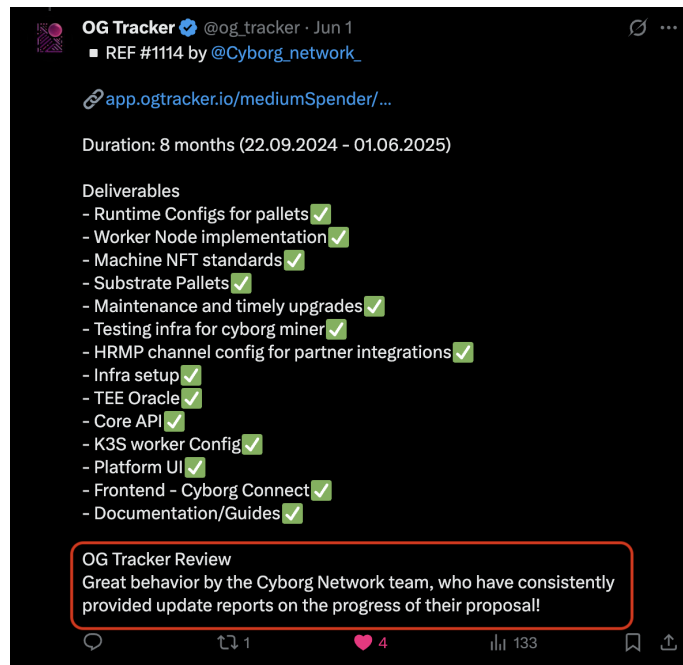


Fig. 8.0. First proposal Delivery Review

7. Ecosystem Fit

Cyborg Network brings a unique and strategic value to the Polkadot ecosystem by being the only project issuing physical hardware (Cyborg Miners) as part of its decentralized AI infrastructure. These devices not only serve as real-world compute nodes but also act as physical branding assets for Polkadot, creating tangible user touchpoints in regions where Web3 adoption is still emerging. This positions Cyborg Network as a gateway for bringing Web2 and real-world users into the Polkadot ecosystem in a highly visible and interactive way.

We're further enhancing DOT utility by enabling users to pay for AI inference services in DOT and allowing Cyborg Miner operators to receive rewards in DOT. This closes the loop between real-world infrastructure and native token economics, driving on-chain activity tied directly to off-chain value.

Cyborg Network serves Web2 developers, AI builders, and infrastructure providers by offering a low-latency, privacy-compliant AI inference platform. By targeting enterprises and edge data center providers, including groups like [Edge Centres](#), [Deep Green](#), and [Heata](#) - we're tapping into a fast-growing market of organizations looking to reduce their cloud footprint and operate at the edge.

While Cyborg and Phala Network both address decentralized compute, our approaches and audiences differ significantly. Phala enables off-chain compute for smart contract logic, while Cyborg focuses on powering real-time AI inference for Web2 and enterprise use cases. Similarly, [Wetee](#) explores TEE-based infrastructure, but its current product-market focus is unclear. Cyborg, on the other hand, is already in conversation with over 50 infrastructure providers and has validated demand from AI use cases that require trusted, localized compute.

Projects	Web3 app Support	Web 2 app Support	Non-TEE support	Target Users	Focus Area
Cyborg Network	✓	✓	✓	Enterprises	Edge Computing Middleware
Phala Network	✓	✗	✗	Web3 apps	Offchain Computing for web3 apps
WeTEE Dao	✓	✓	✗	DAO projects	Web2 App deployment

Fig. 9.0. Polkadot Ecosystem Projects

Globally, we see decentralized compute efforts from projects like [Akash Network](#) and [Golem](#), but few combine custom hardware, DOT-based economics, and Polkadot-native interoperability with a focus on AI inference at the edge. Cyborg's real-world deployments and token integrations

place it in a unique position to expand Polkadot's reach and real-world impact which is not just on-chain, but also in enterprise IT, AI infrastructure, and smart city deployments.

8. Technology

To gain a deeper understanding of our technological architecture and design decisions, we recommend reviewing our [Litepaper V2](#), which provides a comprehensive, research-backed overview of Cyborg Network's technical approach and system components.

8.1. Architecture

The core of our computing solution relies on both off-chain components and substrate pallets that work harmoniously with each other.

Cyborg is a fusion of a blockchain network and numerous hardware nodes, collaborating to offer an effective decentralized solution for verifiable off-chain computing.

Our current goal is to leverage the potential of Substrate to enable coherence among geographically isolated worker nodes. This will create a blockchain-governed task distribution system based on loads in different locations globally.

8.2. Custom Substrate Node (Miner)

Cyborg Network operates a custom-built Substrate-based blockchain designed to coordinate a global fleet of AI miner nodes. Each Cyborg Miner is a dedicated edge hardware unit powered by an [Nvidia Jetson chipset](#), delivering up to 200 TOPS and 50 TFLOPS of AI processing power. These miners are dynamically allocated based on user inference requests and are optimized to run real-time AI workloads, such as computer vision models for live video surveillance, robotics, and smart infrastructure. This architecture ensures low-latency execution and local data processing, all secured and orchestrated via the Cyborg parachain.

8.3. TEE Oracles

Our custom oracle system bridges the gap between on-chain and off-chain environments by operating within Trusted Execution Environments (TEEs) on Intel SGX-enabled collator nodes. This layered use of hardware-based security ensures that both inference tasks and oracle data feeds are protected with the highest level of integrity and confidentiality. We are also experimenting with Nvidia OP-TEE integration within Cyborg Miners to enhance node-level data privacy and secure execution.

8.4. Private MPC Clusters

For performing computation over private data without revealing the data to third parties, users will be able to set up private MPC ([Multi-Party Computation](#)) Clusters from a pool of available worker nodes to securely collaborate on data analysis, machine learning model training, and other computationally intensive tasks while maintaining full control and confidentiality of their sensitive information

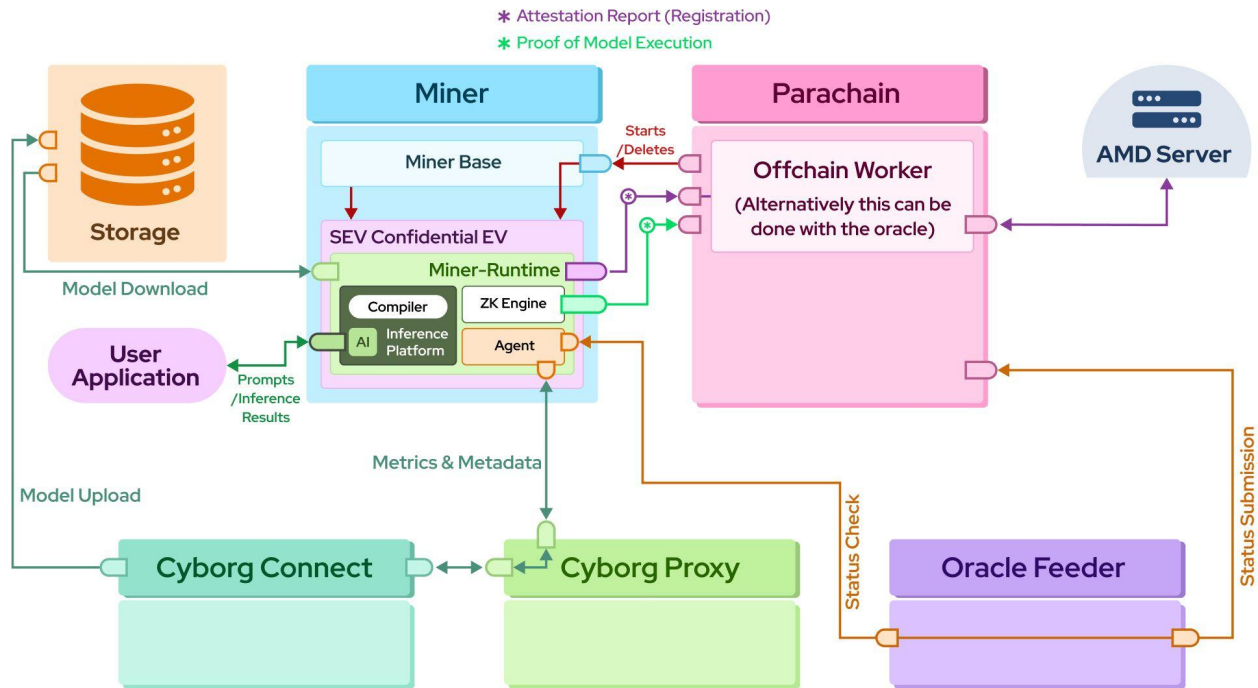


Fig. 10.0. Technical Architecture

8.5. Zk Proof Verification

To preserve privacy of the generated computation results and verify the accuracy of AI inference models, the workers will generate a Zero Knowledge (ZK) proof, which will be verified on-chain. This ensures that the results are valid without exposing underlying data or model parameters, thereby enhancing trust and transparency in the computation process. We have already successfully delivered the prototype for [NeuroZK](#), our ZKML engine designed specifically for AI model verification, marking a significant step forward in enabling privacy-preserving and verifiable AI on decentralized infrastructure.

8.6. On-chain Reputation for off-chain systems

Every miner node connected to the Cyborg Network will be tracked and evaluated using a dynamic, on-chain reputation system—without relying on NFTs. Each node earns a reputation score based on factors such as uptime checks, successful task completion rates, and user reviews.

Nodes with higher reputation are more likely to be assigned new tasks, generate higher revenue, and receive bonus uptime rewards. This system incentivizes reliable performance, enhances trust in the network, and ensures fair resource distribution while maintaining full transparency on-chain.

8.7. Technical Integrations

- [Polkadot AssetHub](#) (Buy/Sell DOT for Miners)

We are establishing a cross-consensus messaging (XCM) channel between our parachain and Polkadot's AssetHub to facilitate seamless DOT transfers. This integration enables miners to automatically redeem their earned rewards in DOT, while users can pay for Cyborg's inference services using DOT. By leveraging native XCM protocols, we ensure secure, low-latency asset routing without relying on external bridges, making DOT a core transaction token across our ecosystem.

- [CESS Network](#) (High Performance Storage)

To support storage-heavy AI inference pipelines, especially those involving large datasets and real-time video streams, we've partnered with CESS Network, a decentralized, high-performance storage solution. By integrating CESS as our storage layer, Cyborg Network ensures scalable, low-latency, and tamper-proof data access that is crucial for running high-throughput AI models across a globally distributed miner network.

- [Nvidia](#) (Hardware and embedded tech support)

As part of the Nvidia Inception Program, Cyborg Network benefits from early access to Nvidia's cutting-edge embedded systems like the Jetson series, along with technical support and AI SDKs. This collaboration empowers our hardware miners to efficiently run complex edge AI workloads with high performance per watt, making them ideal for real-time inferencing tasks in mission-critical environments.

- [EZKL](#) (ZKML Verification)

We are integrating EZKL, a leading open-source ZKML toolkit, into our proof generation pipeline to verify that AI inference was executed using the correct model. This partnership enhances Cyborg Network's trust layer by enabling verifiable AI computations through zero-knowledge proofs, ensuring integrity without compromising model privacy.

- [Tanssi](#) (Appchain Deployment)

The Cyborg Connect appchain will be deployed as a container chain on the Tanssi parachain, leveraging their streamlined infrastructure and development tools. We have successfully launched a container chain on their Dancebox testnet, demonstrating the feasibility and effectiveness of this approach.

- [Phala Network](#) (AI Cloud for Miner Backup) - Beta

We are actively experimenting with Phala Network as a backup AI cloud infrastructure for Cyborg Miners in beta. This integration allows us to offload overflow or fallback AI inference jobs to Phala's decentralized compute when local edge miners are either fully occupied or temporarily offline. By doing so, we ensure high availability and fault tolerance, while maintaining Cyborg Network's real-time performance goals. This hybrid deployment approach also allows us to intelligently distribute workloads between edge and cloud, creating a more resilient and scalable AI inference network.

- [Acurast](#) (Mobile Network Partner) - Beta

We are experimenting with a collaboration with Acurast as a mobile network partner in beta, exploring how Cyborg inference jobs can be extended to trusted mobile devices. Acurast's secure compute infrastructure on mobile enables us to test lightweight AI tasks on phones and edge devices, particularly in regions lacking traditional hardware nodes. This partnership could unlock massive global distribution, making Cyborg's AI services more accessible and decentralized by leveraging consumer-grade devices as supplementary compute nodes.

9. Benefits to Polkadot

Based on early community feedback we are happy to highlight the following points.

- All Cyborg Network users will be able to pay for inference services using DOT, directly increasing token utility.
- Cyborg Miners can choose to redeem their uptime and task completion rewards in DOT, creating continuous buy-side pressure.
- A portion of our revenue will be regularly converted into DOT via Polkadot AssetHub to ensure sufficient liquidity for payments and rewards.
- Cyborg Network will operate as a Polkadot parachain, purchasing coretime as needed, and contributing to the economic activity of the network.

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- We are committed to dedicating a portion of our native token (BORG) supply to the Polkadot Treasury to support long-term alignment and ecosystem growth.
 - **Token Allocation to Treasury:** We intend to allocate a portion of our native token supply to the Polkadot Treasury as a gesture of long-term alignment and appreciation for early ecosystem support. This allocation will be proposed after the completion of our first external fundraising round, with the percentage to be determined based on the FDV at that time. We will return to the community with a follow-up proposal through the governance process, recommending an allocation in the range of 2–3%, or as appropriate, based on market conditions and community feedback.
 - **Revenue Sharing:** We are open to structuring a long-term revenue share arrangement with the Treasury, particularly tied to usage-based metrics such as DOT-denominated inference volume or region-specific adoption. The specific terms will depend on how our systems evolve post-launch and will be formalized in consultation with the community through a future governance proposal.

These steps reflect our deep integration and long-term commitment to the Polkadot ecosystem, both technically and economically

10. Future Plans

Following a successful beta testing round on Paseo and the acquisition of a Polkadot parachain slot via Coretime, our initial offerings—Cyberlite (a serverless deployment tool for affordable deployments) and Cyber Vision (infrastructure optimized for computer vision AI models)—will launch on mainnet.

We will also launch the sale of Cyborg Miners in partnership with [Nvidia through the Inception Program](#), targeting locations with high demand for edge computing resources. Miners will be incentivized with DOT, BORG tokens for maintaining uptime, rewarded for successfully completing batch processing tasks (e.g., data analysis, rendering), and receive a share of rental fees for continuously running applications.

Beyond this launch, our development roadmap includes:

CyberIoT: A platform for managing data from Internet of Things (IoT) devices, including secure data collection, processing, and analysis to support smart city and industrial use cases.

CyberWeave: An infrastructure solution designed to facilitate the creation and management of lightweight device networks, enabling communication and connectivity for wearable technology and other resource-constrained devices.

Our long-term goal is to continue expanding our product portfolio to address the evolving needs of the decentralized technology landscape, focusing on providing efficient, scalable, and secure solutions for Web3 and beyond.

The release of **Cyborg Miner** will mark the beginning of an intense growth phase, during which we will focus on onboarding more users and identifying strategic integrations to expand our network of connected devices and users.

At this point, we envision a strategic split into two distinct branches:

1. **Cyborg Connect Team:** Responsible for business development, growth, sales, and development of the Cyborg Connect application.
2. **The Cyborg Foundation:** Responsible for developing and maintaining the Cyborg parachain, with the goal of attracting Web 2.5 developers to build decentralized applications (dApps) on the platform.

This division of labor will allow us to optimize our efforts, catering to both enterprise and developer communities, and accelerate the adoption of our technologies in both Web2 and Web3 ecosystems.

11. The Web2.5 Vision

We would like to leverage our experience in building a web 2.5 product on Substrate, managing compliance, and onboarding enterprise users to benefit the ecosystem by evolving the Cyborg parachain into a platform that facilitates the deployment of web 2.5 smart contract applications. We will curate a list of use cases based on popular demands from our enterprise customers and invite developers or teams to work on them.

Furthermore, we aim to offer grants and explore other means of economic support for developers deploying applications on Cyborg. We believe that the knowledge derived from the global launch and maintenance of Cyborg Connect will empower our team to effectively guide new developers and founding teams in transforming their ideas and visions into marketable business ventures. The growing importance of enterprise adoption in blockchain will drive demand, attracting more teams interested in building real-world relevant DApps.

A brief list of pre-validated web 2.5 ideas includes:

- Dynamic decentralized database (Non-IPFS)
- Secure communication protocol for autonomous vehicles
- Decentralized telco network orchestration

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- Industrial automation tooling
 - Institutional asset management (similar to LIDO)
 - Real-time data analytics for IoT devices
 - Secure and transparent supply chain management
 - Energy grid management and optimization
 - Renewable energy Financing
 - Decentralized healthcare data exchange
 - Smart city infrastructure management
 - Predictive maintenance for industrial equipment
 - Automated compliance monitoring for financial services
 - Decentralized content delivery networks (CDNs)

12. Contact Information

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