Cyborg Network: Unlocking the Web 2.5 potential of polkadot with blockchain powered Edge Computing

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: 13.08.2024

Requested allocation: 182,275 USDT

Project Category/Type: Software development

1. Executive Summary

Polkadot, as one of the most technically advanced blockchain ecosystems, holds immense potential for modeling enterprise-ready applications. This can attract a significant influx of users and developers. Our goal is to leverage this technology and introduce a new wave of web2 and enterprise users into the Polkadot ecosystem. We plan to achieve this by building industry-ready infrastructure that facilitates AI adoption.

We are developing a platform for managing AI compute resources (both training and inference) with strategic partnerships across web2 and web3 domains. Our vision is to launch the Cyborg parachain as **Polkadot's web2.5 hub**. This will empower developers to build, deploy, and scale web2.5 applications on our parachain with dedicated business development support and mentorship.

Additionally, we are launching a Polkadot-centric product line called **JAM-Boost**. JAM-Boost will enable the deployment and management of Polkadot edge nodes (low-latency collators and validators). This will facilitate infrastructure decentralization for new technologies like async backing and JAM. JAM-Boost will be offered as part of the IBP bounty program.

We are seeking **182,275 USDT** to build and launch the Cyborg parachain on mainnet.

2. Context

From our knowledge and experience working across the Polkadot ecosystem as developers to founders, our curiosity and entrepreneurial spirit led us to explore the potential of integrating enterprise users into the Polkadot tech stack. We investigated various verticals with substantial potential and, leveraging our experience with the Polkadot ecosystem and edge computing, we identified a promising intersection between these two technologies. Thus, we began pursuing a blockchain-enabled edge computing platform that integrates traits like security (cryptographic encryption), governance, and state management into a web2-like compute service tailored for low-latency-dependent applications.

This idea was supported and incubated by the guidance from the Polkadot Blockchain Academy in Berkeley and was accelerated as part of the PBA Hong Kong to a more tangible business approach.

Despite theoretical evidence supporting the synergy between blockchain and edge computing, practical implementations were scarce. Recognizing the potential of edge computing, we engaged with companies that could benefit from this solution. Through these discussions, we gained insights into their data management and operational workload requirements.

We proposed an initial solution with a UX demo, which successfully garnered significant interest. Subsequently, we developed an initial Proof of Concept (PoC) using Substrate and K3s (Lightweight Kubernetes) workers, funded by a Web3 Foundation grant. Following the successful delivery of this PoC, we are now seeking funding to advance the development of Cyborg Network. Our goal is to transform this prototype into a practical application that meets the needs of enterprise clients which will onboard a fresh wave of users into the Polkadot Ecosystem.

3. Problem

Though there is immense technical potential in the Polkadot relay chain, with greater technical feats like Coretime and JAM coming soon, there is a significant gap for an enterprise-ready parachain that can offer services to web2 companies and projects. With AI infrastructure being in high demand right now, it's high time that the Polkadot ecosystem has projects effectively addressing and capturing these markets.

Subsequently, The edge computing market is fragmented, with numerous providers offering solutions specific to certain regions due to varying regulations and infrastructure challenges. While new edge data centers are emerging, there's no single platform uniting this distributed infrastructure into a cohesive global network. The lack of coordination among smaller data center

owners prevents an "AWS for Edge Computing". Enterprises face challenges finding a scalable, reliable way to distribute workloads across geographically dispersed servers.

Research from Gartner, STL Partners, and Schneider Electric indicates a trend towards moving data management from large, centralized cloud data centers to smaller, edge-based ones. This is driven by the growing integration of AI into applications, which requires faster processing closer to the data source. The next decade is expected to be a significant period for edge computing, although much of its potential remains untapped.

This landscape highlights the need for a solution that seamlessly orchestrates workloads across diverse edge locations, regardless of ownership, to unlock the full potential of edge computing and meet the demands of the evolving technological landscape.

4. Solution

With the aim of onboarding the next million active users into the Polkadot ecosystem, we are building an appchain-governed edge computing platform that integrates numerous edge data center providers into a unified network. Our platform enables users to deploy applications, execute batch jobs, and store large volumes of data.

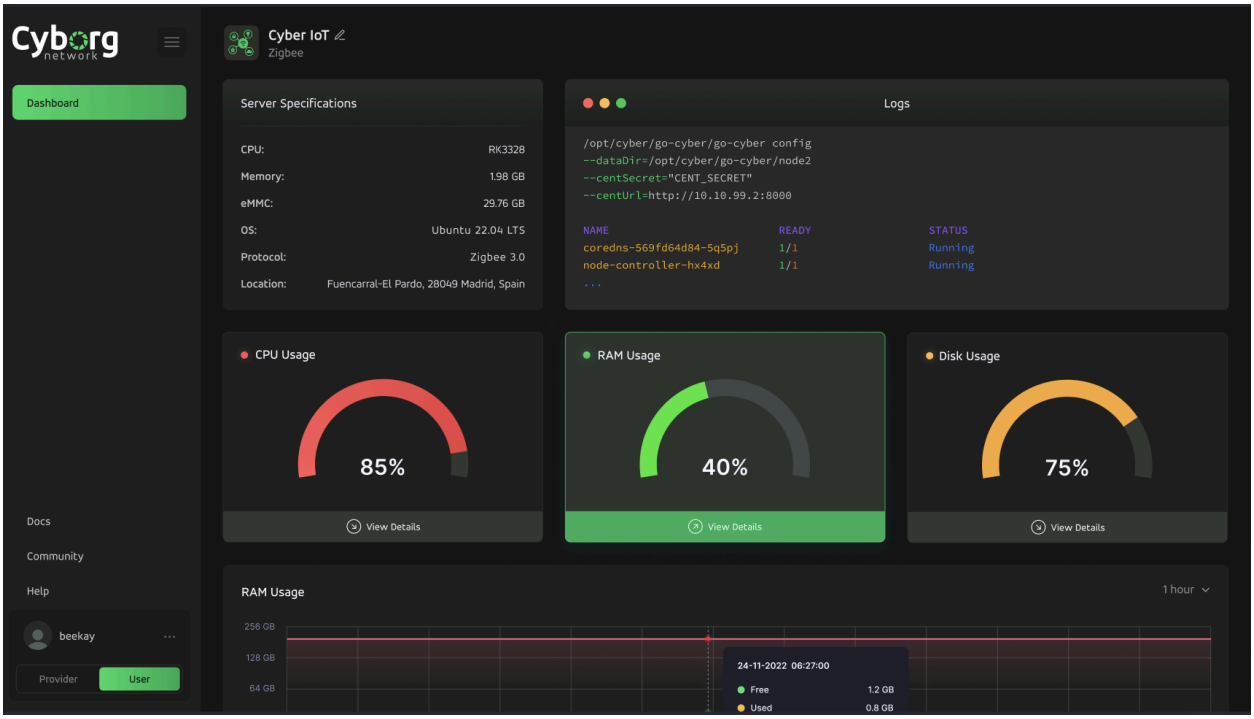

Fig. 1.0. User Dashboard (Usage Metrics and Logs)

While developing core solutions in-house, we leverage existing projects within the Polkadot ecosystem wherever possible to reduce development time and enhance system capabilities. This approach allows us to avoid redundant work and take advantage of well-established functionalities. For instance, our user verification system will utilize Peaq Network's Decentralized Identity Pallet (DID), and our bucket storage solution will integrate with Flostream's pallet infrastructure via XCM calls, enabling gas-less cross-chain communication.

The availability of such composable components within Polkadot, accessible through XCM without incurring gas fees, is a key factor in choosing this ecosystem for our platform's development.

4.1. The Infrastructure

After extensive discussions with potential users, we have opted to prioritize partnerships with established data centers over crowdsourced compute power. This decision stems from user concerns regarding data security and privacy when using machines hosted by unauthorized parties. However, our roadmap includes plans to invite interested community members to contribute to the network by purchasing a Cyborg Miner. This pre-configured edge computing server will connect directly to the Cyborg parachain as a worker node, enabling it to process tasks assigned by users.

We envision two distinct models for Cyborg Miner participation, each catering to different needs and preferences:

Data Center Hosted (Colocation Facility):

- **Target Users:** Enterprise users prioritizing reliability and security.
- **Cost:** Higher upfront and operational costs.
- **Time to Market:** Faster deployment due to existing infrastructure.
- **Reward Ratio:** Higher reward potential due to increased reliability and performance guarantees.

Self-Hosted (Beta):

- **Target Users:** Technically proficient individuals or smaller organizations seeking cost-effective solutions.
- **Cost:** Lower upfront and operational costs.
- **Time to Market:** Longer deployment due to setup and testing requirements.
- **Reward Ratio:** Lower reward potential compared to data center-hosted miners.

By offering these two options, we aim to cater to a wider range of users and create a more inclusive and decentralized edge computing network. The self-hosted model will undergo rigorous testing to ensure its viability and security before being fully integrated 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 fundamentally changing how data is processed and analyzed, opening up significant opportunities across industries. While still in its early stages, the market's growth potential is undeniable. Fortune Business Insights predicts the Edge AI solutions market will expand from its current value of $20.39 billion to $186.44 billion by 2032, achieving a compound annual growth rate (CAGR) of 27.5%.

Immediate Opportunities

There are potential opportunities in the following sectors, where companies can see significant improvements in their operations through our solution:

- **Decentralized High Performance Blockchain Infrastructure**
  - **JAM-Boost:** Launch low latency JAM nodes/clients from a secure pool of crowdsourced servers around the world.
- **Smart City Solutions:**
  - **Video Surveillance:** Intruder detection, traffic violation detection, automated police alerts.
  - **IoT Sensor Data Aggregators:** Pre-processing and filtering of sensor data, optimizing transmission to the cloud.
- **AI Applications:**
  - **Chatbots:** Model training, inference.
  - **Home IoT Networks:** Automation for security and energy management in smart homes.
  - **High-Frequency Trading Bots:** Signal alerts, market analysis, insight generation.

Expansion Markets

In addition to these current opportunities, our solution holds significant potential in the following markets:

- **Automobile Industry:** Autonomous vehicle navigation, real-time decision-making for safety and efficiency.

- **Industrial Automation:** Predictive maintenance, anomaly detection, real-time process optimization.
- **AI Inference Engines:** Accelerated AI inference for real-time insights and actions in various applications.
- **Healthcare:** Remote patient monitoring, wearable health trackers, real-time data analysis for personalized medicine.

Key Market Drivers

The growth of the edge computing market is fueled by several factors:

- **Need for Real-Time Processing:** Many applications, especially in IoT and AI, demand immediate data analysis and response, often not feasible with cloud-based processing.
- **Bandwidth and Latency Concerns:** Transmitting large amounts of data to the cloud can be expensive and slow. Edge computing reduces bandwidth usage and minimizes latency.
- **Data Privacy and Security:** Processing data locally at the edge can enhance privacy and reduce the risk of data breaches during transmission.
- **The Proliferation of IoT Devices:** The increasing number of connected devices generates vast amounts of data that can be more efficiently processed at the edge.

By focusing on these immediate and expansion markets, and by addressing the key market drivers, our edge computing solution is well-prepared for success in this rapidly growing industry.

4.4. Edge Computing Landscape

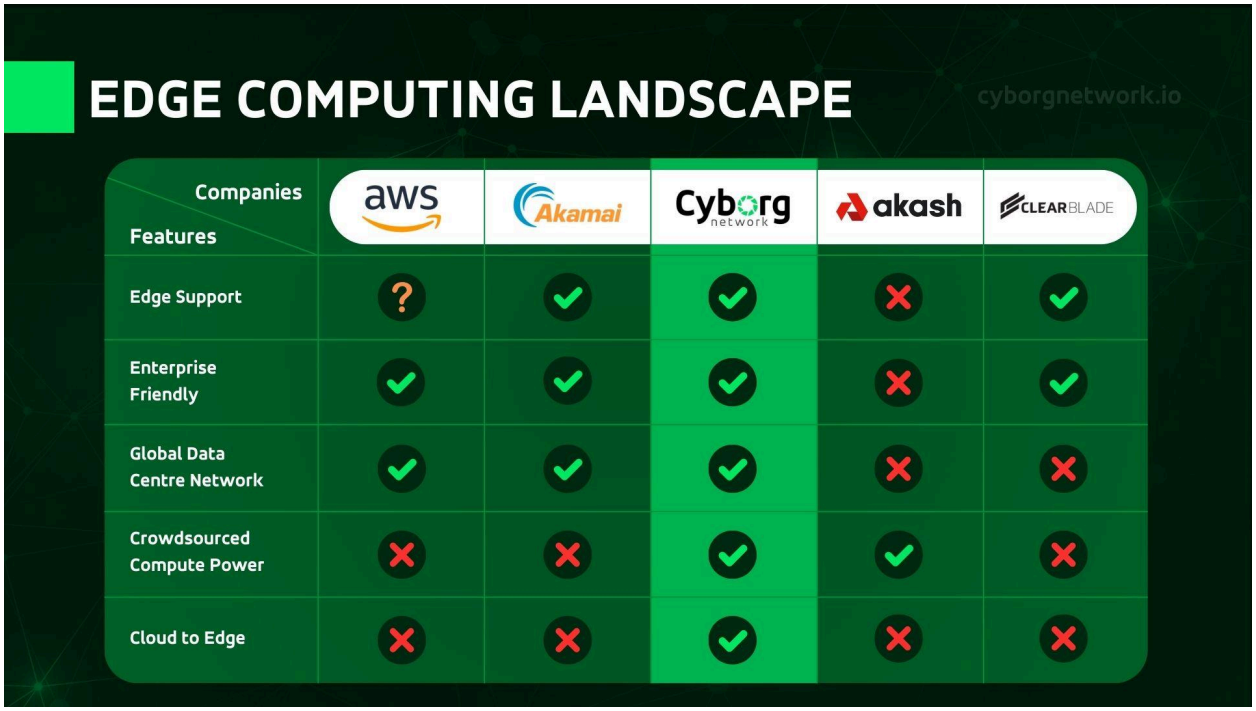

Fig. 2.0. Tangential Projects

While Cyborg doesn't directly compete with the following organizations, this comparison highlights the technical and business approaches of various players in the edge computing landscape. Our product line, **EdgeCloud**, could potentially serve as a valuable service offering to some of the bigger names mentioned below, paving the way for potential partnerships and an expanded user base.

AWS: Operates hyperscale data centers in many regions worldwide, providing cloud computing solutions. Their "AWS for the Edge" offering extends their reach closer to their data center locations but does not have the same density of coverage as some dedicated edge computing providers.

Akamai: A leader in content delivery networks (CDNs), Akamai is expanding into edge computing, leveraging its extensive data center network. They are actively developing solutions to efficiently distribute tasks and manage workload transfers between cloud and edge environments.

Akash Network: This decentralized cloud platform boasts a broad network of compute providers but faces challenges adhering to regulatory compliance standards.

ClearBlade: ClearBlade provides a robust edge computing platform designed for IoT and edge-native applications. Their platform emphasizes security, scalability, and flexibility, allowing enterprises to build and deploy complex IoT systems. However, users typically need to fully migrate to ClearBlade's infrastructure to maximize the benefits of their services, which limits flexibility and increases dependence on their ecosystem.

4.5. Scope of work

The primary focus for the next year will be on the development, testing, audit, and launch of the EdgeCloud product line within the Cyborg Connect edge computing platform. The successful launch of EdgeCloud will mark the completion of Phase 1 of the Cyborg Network mainnet rollout.

Here is our technical roadmap:

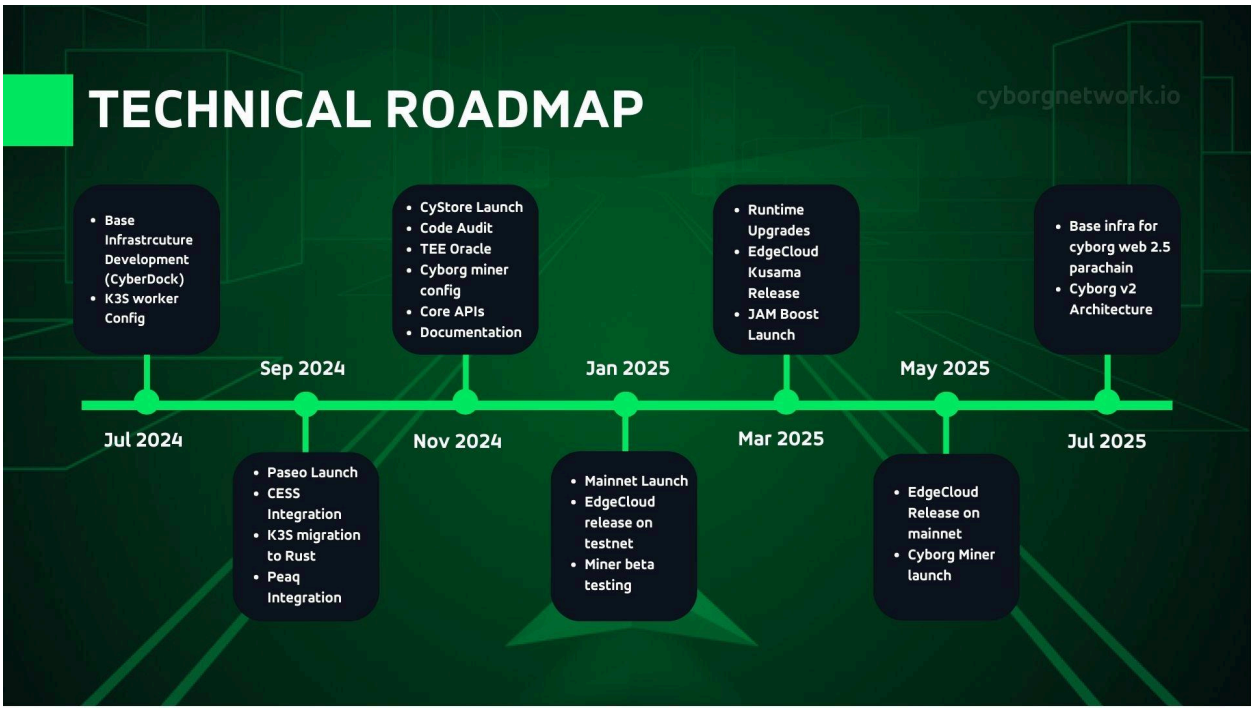

Fig. 3.0. Technical Roadmap

EdgeCloud: A real-time load balancing solution for AI applications running across geographically distributed networks of servers. EdgeCloud will optimize resource utilization and response times for demanding AI workloads.

We have conducted an **AI compute case study** to quantify the impact of EdgeCloud on a real-world scenario. The results indicate that incorporating EdgeCloud into an AI system's architecture can potentially triple latency performance. Additionally, over the long term, EdgeCloud has the potential to reduce infrastructure costs by up to 25%.

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-chain
https://github.com/Cyborg-Network/cyborg-connect
https://github.com/Cyborg-Network/Worker

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 $182,275 (assethub USDT) 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 1 - (6 months)

Milestones	Tasks	Deliverables	Hours	Rate (USD)	Cost (USD)
1.1	Substrate Pallets	- Edge Cloud Pallet - Base rewards Pallet - DID pallet - Price estimation pallet - Reputation pallet - Task Rewards pallet - Geo-location pallet	300	$100	$30,000
1.2	Worker Node implementation	- Pre config for Cyborg miners - Executable file generation for all Linux VM versions	280	$100	$28,000
1.3	Runtime Configs for pallets	- Compatibility for all custom pallets - Unit Testing - Pallet Benchmarking	120	$100	$12,000

Milestones	Tasks	Deliverables	Hours	Rate (USD)	Cost (USD)
1.4	TEE Oracle	- Confidential data exchange mechanism based on ORML - Task metrics and logs feed into Cyborg Connect Dashboard - Embedding API calls for feeds	84	$100	$8,400
1.5	Machine NFT standards	- Unique Digital identifier for all connected worker nodes - Specifications and Reputation in MetaData	50	$100	$5,000
1.6	HRMP channel config for partner integrations	- Setting up an HRMP channel between Cyborg chain and other parachain partners (eg. Peaq)	24	$100	$2,400
1.7	Maintenance and timely upgrades	- Maintenance of substrate code base over the 1 year period	150	$100	$15,000
1.8	Testing infra for cyborg miner	- 10 units of testing infra for cyborg miners (distributed across the core team) - including shipping and handling	10 Units	$1200	$12,000
Milestone 1 Total					$172,275
1.9	K3S worker Config	- Transcribe express codebase to Rust - Master and Worker Scripts - Authentication - Integration Testing	135	$100	$13,500
Fixed Infrastructure Costs					$10,000
Total					$182,275
1.10	Infra setup	- Infrastructure setup in a provider (DB, API, Jobs) - Azure email service setup - CI/CD for deployment in production - DNS hardening (rate limit, WAF, etc) - Database migration to Redis - Cyborg Connect Integration	120	$100	$12,000

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 Polkassembly, LinkedIn, and Twitter (X) to keep the community informed about our progress and milestones.

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

6. Team

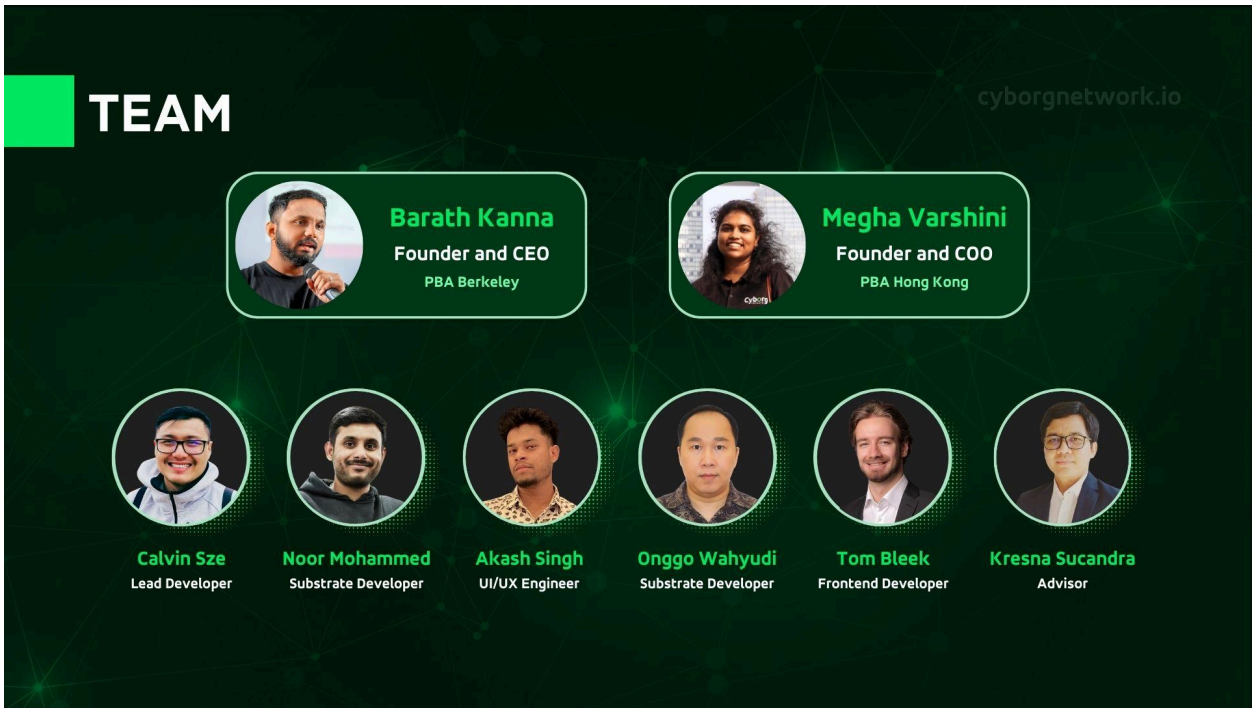

Fig. 4.0. Team

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

Megha Varshini - https://www.linkedin.com/in/megha-varshini-t/
Founder and COO

Calvin Sze - https://github.com/ZCalz
Lead Developer

Noor Mohammed - https://github.com/noormohammedb
Substrate Developer

Onggo Wahyudi - https://github.com/oWahyudi
Substrate Developer

Tom Bleek - https://github.com/tom-blk
Frontend Developer

Kresna Sucandra - https://github.com/SHA888
Substrate Advisor

Akash Singh - https://github.com/AkashSingh9759
UI/UX Engineer

Cyborg Network team is a small but dynamic group with over 3 years of experience in the blockchain industry, particularly within the Polkadot ecosystem for more than 2 years. Most of our team members are alumni of the Polkadot Blockchain Academy. Barath and Calvin 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, Calvin
PBA Hong Kong - Megha
PBA Singapore - Noor Mohammed, Onggo Wahyudi
Winner - Web3 Hack X Hackathon
Winner - Polkadot Hackathon Global Series: NA edition 2024
Winner - Polkadot Prodigy Hackathon
Finalist - Polkadot Winter Hackathon
W3f Grants Program
PBA Finals Pitch
Polkadot Alpha Program
Polkadot Relayers Incubator
Polkadot Encode Accelerator 2023
Polkadot Decoded Viewing party 2023
DMCC TDeFi Accelerator
Polkadot Insider

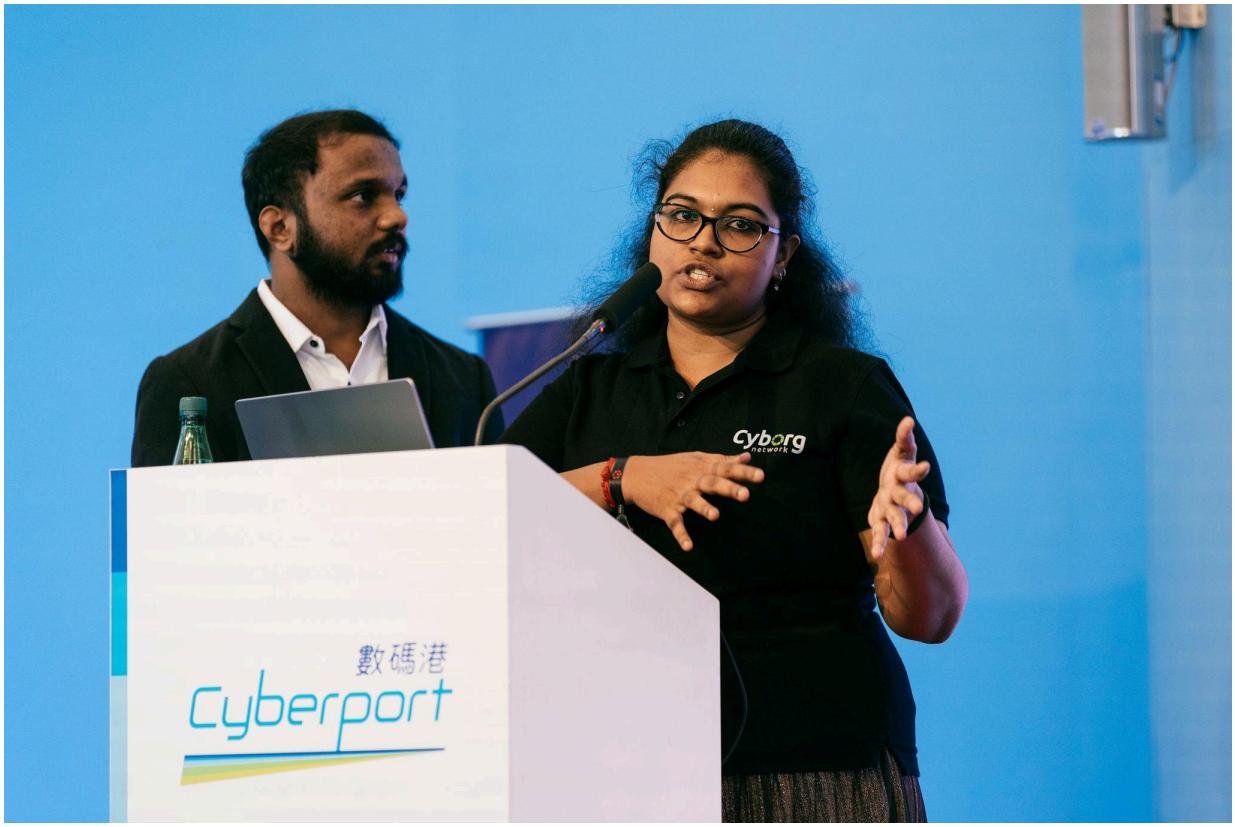

Fig. 5.0. PBA final pitch contest in Hong Kong

7. Ecosystem Fit

Cyborg Network augments the polkadot ecosystem with blockchain based edge computing, addressing the increasing demand for AI and IoT applications. We focus on Web2 application providers, opening doors for new users to join the Polkadot ecosystem and support its growth. We are also integrating enterprises that operate edge data centers into the Polkadot ecosystem. Some of our potential partners include Edge Centres, Deep Green, Heata etc.

Though Cyborg and the Phala Network share aspirations of decentralized computing within the Polkadot/Kusama environment, our technical paths and business aspirations are distinct. Phala Network provides off-chain compute infrastructure for smart contract-based applications by enabling users to integrate 'phat' contracts with their existing smart contract logic. Cyborg is focused on creating utility for web2 applications.

Another related project appears to be Wetee, which employs a comparable technical architecture utilizing TEEs to safeguard user privacy. However, their specific market focus is currently untraceable. We are developing products for a validated market that has already attracted interest from various AI applications and 50 edge data center providers to join the network once it goes live.

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. 6.0. Polkadot Ecosystem Projects

Our ultimate goal is to establish a distributed edge computing network capable of executing targeted low-latency tasks to enhance system performance and efficiency. This approach aims to reduce the overall cloud footprint by providing an edge-to-cloud continuum, allowing users to augment our services with their existing cloud deployments. This, in turn, opens up new markets, particularly in real-time computation for edge AI and edge IoT devices.

The technological landscape sees a plethora of competitors, each carving their niche with unique technical and market strategies. Renowned names include Akash Network, and Golem.

8. Technology

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 computing clusters, 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. Lightweight Kubernetes (K3S)

The Cyborg blockchain will govern numerous K3S clusters formed dynamically based on user requirements. Each cluster will comprise a single master node and any number of worker nodes. The master node will act as the primary point of contact within the cluster, coordinating and distributing tasks among the worker nodes.

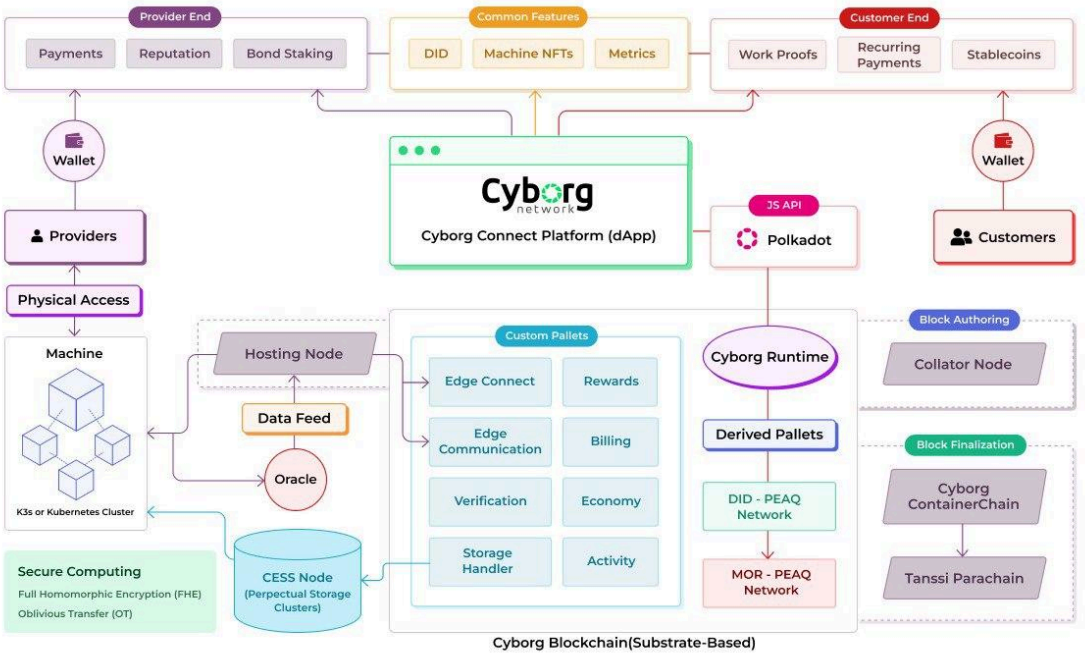

Fig. 7.0. Technical Architecture

8.3. TEE Oracles

Oracles bridge the gap between the on-chain and off-chain worlds. Our oracles will operate within Trusted Execution Environments (TEEs) on Intel SGX-enabled collator nodes, providing an additional layer of hardware-based security and privacy for sensitive data and computations.

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.

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 Zk (Zero Knowledge) proof which will be verified on-chain, ensuring that the results are valid without revealing the underlying data or model parameters, thus enhancing trust and transparency in the computation process.

8.6. Machine NFTs and Reputation

Every connected machine in our blockchain network will be represented by a unique NFT. This NFT will facilitate the server renting process. The NFT's metadata will contain the specifications of the corresponding machine, which are streamed by our Core API upon execution of our worker node template within the machine's virtual machine (VM).

Each machine's NFT will have a reputation field in its metadata, consisting of a score ranging from 0 to 100. This score will be determined based on factors such as past uptime guarantees, user reviews, and, most importantly, the successful completion of user tasks.

NFTs with higher reputation scores will be preferentially recommended to users and will be eligible for bonus rewards in addition to their base earnings. Conversely, machines with lower reputation scores will not be prioritized and, in some cases, may face deductions from or even complete forfeiture of their base rewards.

8.7. Ecosystem Integrations

- **Peaq Network (DIDs)**

To ensure compliance with regulatory standards, all users and providers within the Cyborg Connect app will be required to register Decentralized Identifiers (DIDs) and undergo Know Your Customer (KYC) verification before gaining access to the platform's features.

- **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.

- **FloStream (Bucket Storage)**

The CyStore product line, enabling users to store large volumes of data at more affordable rates with an experience similar to AWS S3 buckets, will be powered by Flostream through XCM integrations between the two parachains.

While these are some of the confirmed ecosystem integrations already in place, we are continuously exploring opportunities to collaborate with other teams within the Polkadot ecosystem. This collaborative approach will enable us to create a more comprehensive and interconnected solution that leverages the strengths of various projects to provide a seamless and efficient experience for our users.

9. Future Plans

Following a successful beta testing round on Paseo and the acquisition of a Polkadot parachain slot via crowd loan, our initial offerings—CyberDock (a serverless deployment tool for containerized applications) and CyStore (a scalable bucket storage solution)—will launch on mainnet.

We will also launch the sale of Cyborg Miners in partnership with SimplyNUC, targeting locations with high demand for edge computing resources. Miners will be incentivized with 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 **EdgeCloud** 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.

10. 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
- 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)

11. Additional resources

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