PAI³

PAI3: Artificial Intelligence that Belongs to the People

PAI3 Decentralized Autonomous Organization LC
Wyoming, USA

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<div align="center">**Executive summary**</div>

PAI3: The Future of Decentralized AI

PAI3 is a decentralized AI ecosystem designed to democratize artificial intelligence by shifting power away from centralized tech giants and into the hands of users. Built on a global network of user-owned devices, PAI3 enables secure, scalable, and personalized AI experiences while ensuring data privacy, transparency, and economic incentives for participants.

Key Features & Innovations
- **Decentralized Supercomputer**: PAI3 leverages a global mesh of user-operated nodes to create an AI network that is more resilient, cost-effective, and transparent.
- **AI Personalization:** Users can train, deploy, and monetize AI models tailored to their needs while maintaining ownership and privacy.
- **PAIneer, AI Agents & AI building:** Intelligent AI agents streamline workflows, automate tasks, and provide personalized insights across industries.
- **Deflationary Tokenomics**: A 4-year halving schedule reduces emissions over time, while a progressive burn rate increases token scarcity, ensuring long-term sustainability.
- **Community-based Governance:** Quadratic Voting ensures democratic decision-making, preventing centralization of power within the ecosystem.
- **Monetization Opportunities:** Users can earn revenue by running compute nodes, leasing processing power, selling AI models, and contributing data.

Use Cases & Market Impact
- **Personal AI Assistants:** AI-powered digital twins for productivity, healthcare, and finance.
- **Enterprise AI Solutions:** Scalable AI models for research, finance, and decentralized applications (dApps).
- **Marketplace Economy:** Users can buy, sell, and trade AI models, datasets, and computing resources.
- **AI Infrastructure-as-a-Service**: Cost-effective alternatives for AI training and model hosting.

Roadmap & Growth Strategy
Phase 1: Node sales, smart contract deployment, and marketplace launch.
Phase 2: PAI3 WebApp, MainNet integration, and decentralized data management.
Phase 3: Network scaling, and custom PAI3 computer launch.
Ongoing Innovation: Continuous AI model updates, decentralized computing research, and community-driven enhancements.

Why PAI3?
Unlike centralized AI models controlled by corporations, PAI3 is built for the people—ensuring privacy, ownership, and economic empowerment while harnessing the full potential of AI. By integrating blockchain, decentralized storage, and community governance, PAI3 is reshaping AI into an open, secure, and accessible ecosystem for all.

Join the decentralized AI revolution. Build, own, and monetize AI with PAI3.

Abstract

The current landscape of artificial intelligence (AI) is dominated by a few major players who wield control over vast amounts of data and computational power, leading to significant challenges such as privacy risks, limited access, and monopolistic control. PAI3 seeks to transform this centralized paradigm by creating a decentralized AI platform that empowers individuals, enhances data privacy, and democratizes access to AI technologies.

PAI3 utilizes a decentralized computing network of user-owned AI containers to form a global supercomputer that performs large-scale AI tasks, including data processing, model training, and personalized inference. By leveraging blockchain technology, PAI3 ensures secure, transparent, and equitable management of resources, using node tokens to represent ownership stakes in the network and provide guaranteed returns to early adopters and contributors. Quadratic Voting (QV) is employed as a governance model, allowing all token holders to participate in decision-making while preventing centralization of control.

The platform offers multiple earning opportunities for users, including running compute nodes, staking tokens, selling AI models and datasets, and participating in governance. This comprehensive approach incentivizes active engagement and fosters a vibrant ecosystem where users can monetize their contributions and influence the platform's future direction. Additionally, PAI3 prioritizes data privacy and security by using decentralized identifiers (DIDs), verifiable credentials (VCs), and end-to-end encryption to protect user data.

PAI3's tokenomics model supports sustainable growth, with a total supply of 3.14 billion PAI3 tokens allocated to node rewards, community, ecosystem development, and team and advisors,. The marketplace facilitates buying, selling, and trading of AI assets, providing revenue streams for all participants.

By combining advanced AI capabilities with decentralized governance and equitable access, PAI3 positions itself as a leader in the next generation of AI technology. It offers a unique opportunity for investors, developers, and users to participate in a decentralized AI ecosystem that prioritizes transparency, security, and user empowerment. The PAI3 platform invites stakeholders to join this transformative journey to reshape the future of AI.

1.0 - Introduction

Decentralized AI (DAI) represents a paradigm shift in how AI is developed, trained, and controlled. The rapid evolution of artificial intelligence (AI) has transformed industries, economies, and societies worldwide. But this transformation is not merely a story of progress and innovation—it is a tale of domination and oppression. As AI systems become increasingly sophisticated and omnipresent, we face a dire reality: AI's future and governance are being determined by a cabal of corporate giants. The centralization of AI development and resources in the hands of a few powerful corporations has given rise to a monopolistic stronghold over our digital lives. Sensitive information is sequestered within the walls of centralized servers controlled by a select elite, creating a fortress of data silos that shields their power while stripping us of our privacy and autonomy. While this centralization can pose a threat that challenges our freedom (Jones 2019), it can stifle innovation, relegate advanced technologies to those with immense financial and technological resources, and perpetuate a cycle of inequality.

Recent developments in the AI industry underscore the urgency of this battle and highlighted a future especially in America that favors companies over the people (Orlick 2024). The current AI landscape is dominated by a few major players who control vast computational resources and financial power, leading to several critical issues. Centralized AI systems store user data on centralized servers, increasing the risk of privacy breaches and unauthorized access. High-profile data leaks and misuse scandals have highlighted the vulnerabilities of these systems, where users have little control over how their data is used, stored, or shared (King and Meinhardt 2024). Additionally, the reliance on proprietary, large datasets limits data sharing, introducing biases and reducing the effectiveness of AI applications across different domains. Moreover, centralized AI often fails to deliver personalized experiences tailored to individual users' needs, as these systems are primarily designed to serve the broad requirements of large corporations. The high costs associated with developing and deploying advanced AI models also create significant barriers to entry for smaller players, stifling competition and innovation.

The AI arms race is not a mere contest of technological prowess—it is a high-stakes struggle for control over our future. Figures like Sam Altman and Elon Musk are not merely advancing their interests without guardrails; they are architects of a new world order where the few dictate the terms for the many through public manipulation and seeding doubt in election integrity(Jingnan 2024) The relentless pursuit of the most powerful AI models, driven by these influential figures, is a race towards unchecked power and societal upheaval. As highlighted by *The Washington Post,* this race threatens to spiral out of control, leaving us vulnerable to unbridled AI advancements (Letters to the Editor 2024). Moreover, corporate behemoths like Google, as reported by *The New York Times*, have leveraged their dominance to quash competition, undermining fair market practices and stifling innovation (McCabe 2024). Nvidia, the gatekeeper of AI hardware, wields its power to limit public participation, creating a digital divide where only a select few have access to the future of AI (Mashable BrandX and NVIDIA 2023). This gatekeeping of the compute resources and access can lead to a vulnerability where the people's access to the newest powerful tool can be denied by singular controlling entities. As seen in 2010, Sony Computers disabled "Install Other OS" feature on PlayStation 3s and denied average people from building affordable super computers (Ganapati 2010).

As the compute power for AI and deep learning increases in accordance Moore's law (The Physics ArXiv 2022), the people's barriers to entry to AI future should decrease resulting in the democratization of AI. The current centralized control is not just a threat; it is an existential crisis that demands a resolute stand. There is a clear need for an alternative approach to AI development and deployment—one that prioritizes its primary users and their data privacy, security, and empowerment. We, at the PAI3 Foundation, hope to encourage people to contribute and promote diversity to AI's future.

1.1 PAI3 Foundation vision for the future of AI
In this context, the People's Artificial Intelligence for a Web3 world or "**PAI3**" represents an alternative against these monopolistic AI giants. PAI3 presents a revolutionary solution to these problems by offering a decentralized AI platform that belongs to and serves the people. Unlike the current centralized models, PAI3 is designed to democratize access to AI, sharing AI modeling and computing power, making advanced technologies available to everyone, regardless of financial resources or technical expertise.

Our decentralized computing network, bolstered by PAI3 node tokens, represents a paradigm shift towards democratizing AI access and empowering individuals. Each PAI3 node tokens ensures guaranteed monthly revenue, preferential processing rates, and access to exclusive features, effectively dismantling the data silos controlled by the tech elite.

As we confront the centralized tyranny of today's AI landscape, PAI3 stands as a revolutionary force dedicated to reclaiming our digital future and ensuring that the benefits of AI are shared by all, not just a privileged few. PAI3 envisions a world where AI is not controlled by a select few but is accessible to everyone. Our goal is to create a decentralized AI platform that prioritizes user privacy, security, and control. By harnessing the power of decentralized technology, we aim to provide a secure, efficient, and user-centric AI experience that empowers individuals to take ownership of their data and computing power. We foresee a grassroots movement of individuals who refuse to submit to the AI monopolies. This legion of "Free minds" will fight back by a World Computer that is a decentralized mesh designed to shatter the chains of centralized AI. Node tokens are keys to the World Computer, empowering the holder to join the resistance.

To realize this vision, PAI3 aims to launch the largest supercomputer owned and operated by the people. This initiative will be powered by a mesh of user-owned computers, each contributing to the collective computational power needed to train and run AI models. To support this, PAI3 will issue a limited number of node tokens that represent ownership stakes in the mesh. These tokens will be sold at a fixed price for early adopters, with subsequent auctions to follow. This model not only incentivizes participation but also ensures that the benefits of AI are distributed more equitably across society.

1.2 - *Call to Action: Be a part of a decentralized future of AI*
In summary, PAI3 represents a groundbreaking shift in the AI landscape, offering a decentralized, secure, and user-centric platform that empowers individuals and democratizes access to advanced AI technologies. This white paper will explore the technical architecture, tokenomics, and key benefits of PAI3, providing a comprehensive overview of how this platform can reshape the future of AI for the better.

Become a co-owner of the future of AI by securing your place in the PAI3 decentralized network through the purchase of a Node token. This simple step not only grants you ownership within the PAI3 Network but also empowers you with the ability to protect your privacy and ensure that AI agents serve your needs—not those of Big AI. By owning a Node, you gain the opportunity to train and sell your own AI agents, fully tailored to your individual requirements. These agents are yours to control and monetize within the PAI3 marketplace. In essence, by owning a "brick in the wall," you are actively contributing to the construction of a robust, user-driven AI ecosystem that stands as a defense against centralized AI monopolies, ensuring that the power of AI remains in the hands of the people.

2.0 - *Decentralizing AI*

In 2021, Sir Tim Berners-Lee, the inventor of the internet, proposed a paradigm shift to a digital world with people in control of their data instead of gatekeepers (Lohr 2021). Now, this paradigm is being considered for AI. DAI refers to the integration of AI and blockchain technology toward a democratization of AI, ensuring individual users are guiding this technology's future. AI technology has multiple complex components, each playing a crucial role in shaping how these systems operate and impact our lives (GaiaNet 2024). Among these, there are specific parts of AI that people need to own and control to ensure that AI serves the public interest and remains safe and secure. One of the most critical aspects is the ownership of AI agents—these should be built and controlled by individuals to ensure they operate with honesty and transparency. PAI3 empowers users to build their own AI agents, running them on neutral models like large language models (LLMs) or small language models (SLMs). However, the real risk lies in the inference processes, RAGS, and vector embeddings. These elements are where data is interpreted and decisions are made, making it essential that they are controlled by the users who rely on them. To mitigate these risks, it's crucial for people to have ownership over the compute space and inference engines that power these AI systems. If users control the environment where computation occurs and how inferences are made, they can ensure that AI operates safely, without being co-opted by centralized entities or manipulated for purposes that do not align with public interest. This approach aligns with the broader goals of DAI, where the distribution of AI components across a mesh—and under the control of the people—enhances privacy, security, and user autonomy. By decentralizing AI and giving people ownership over critical components like AI agents, compute resources, and inference mechanisms, PAI3 aims to create a safer and more equitable AI ecosystem that truly serves the needs of individuals (Oodles Blockchain 2024).
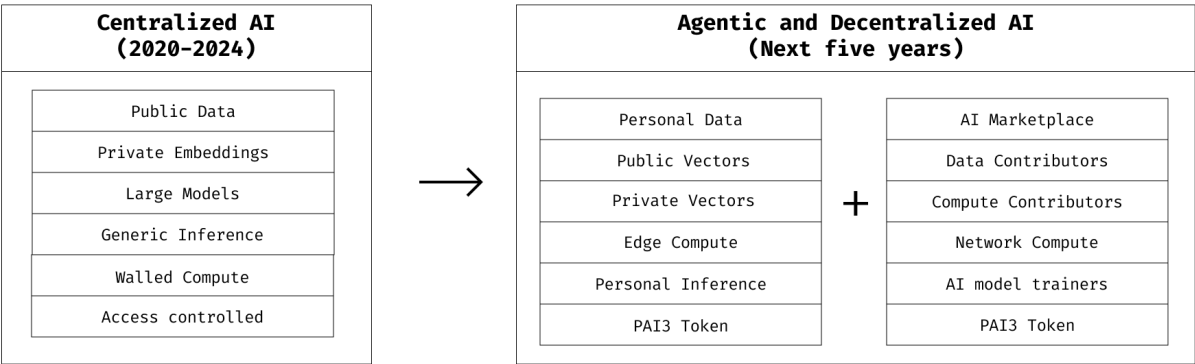
Centralized AI (2020-2024)		Agentic and Decentralized AI (Next five years)	
Public Data		Personal Data	AI Marketplace
Private Embeddings		Public Vectors	Data Contributors
Large Models	→	Private Vectors +	Compute Contributors
Generic Inference		Edge Compute	Network Compute
Walled Compute		Personal Inference	AI model trainers
Access controlled		PAI3 Token	PAI3 Token

Figure 1: Focus is shifting from infra to specialized models

DAI offers a promising solution to these challenges and is suitable for organizations and individuals that own their data and do not want to share it, particularly for medical, banking, surveillance, and data mining sectors (Singh et al. 2024). By leveraging blockchain and federated learning technologies, DAI can provide secure, efficient, and user-centric AI platforms. These platforms empower individuals by giving them control over their data and AI interactions, thereby ensuring privacy and fostering trust. Blockchain technology plays a crucial role in this process. By providing an auditable trail of data access and modifications, the blockchain ensures that users can trust the system. Every interaction with the data is recorded on an immutable ledger, making it impossible to tamper with the information without detection.

In the evolving landscape of AI, decentralization offers a promising approach to enhancing privacy, security, and user autonomy. DAI involves distributing various components across a network rather than relying on centralized entities.

Several aspects of AI can be decentralized:

- *Decentralized Computation and Inference:* One of the most challenging aspects of decentralization is the distribution of computational tasks. Each PAI3 device will act as part of a decentralized computational mesh, where processing power and access are managed through node and utility tokens. Users could lease their computational resources, with time and resource restrictions managed via smart contracts and verifiable credentials (VCs). A critical challenge will be ensuring parallel processing with consensus while maintaining confidentiality. A potential solution is to compute data locally on the user's device, sharing only the resulting vector embeddings and models rather than raw data.

  AI model inferences and user data can be decentralized by running both on the same hardware, allowing the model to be augmented with personalized user data. The augmented models could then be shared or monetized without revealing the underlying dataset, preserving privacy while enabling distributed AI capabilities.

- *Data Storage and Management:* Primary user data storage can be decentralized using PAI3 hardware, which will serve as the foundational layer for data storage and processing. This data will be integrated into a computational mesh for decentralized computing. To ensure user privacy, data will need to be end-to-end encrypted and tokenized, allowing personalized data to be concealed yet usable. Additionally, decentralized identifiers (DIDs) could be implemented to manage user identity securely. For secondary storage, platforms like InterPlanetary File System (IPFS) (e.g., IPFS Kubo) could be used to store summaries of previous data, adding an extra layer of decentralization and redundancy. Control over the data used in the model is controlled by a mesh of individuals rather than the bigger monopolies.

- *Personalized Model Training and Deployment:* The best AIs start with the best data (Ibarra 2024). Thus, utilizing a distributed framework will enable each user to contribute their data to a successful future for AI. Decentralized training frameworks allow multiple parties to contribute to the training of an AI model without sharing their raw data. Techniques like Federated Learning enable the training of models across decentralized devices, aggregating updates while keeping data local. AI models can be deployed in a decentralized manner where different parts of the model or different models are hosted across multiple nodes. This can improve robustness and reduce the risk of a single point of failure.

- *Decentralized Vector storage*
  Vector embeddings generated by LLMs or RAGs will be stored in a decentralized manner within PAI3's Vector Package. Like user data storage, DIDs could be employed to securely manage and identify these vectors, ensuring that users retain control over their data while enabling decentralized AI operations.

- *Consensus-making and governance:* Decentralized AI systems can use smart contracts and decentralized autonomous organizations (DAOs) to govern AI models and their updates, ensuring that decisions about the AI's behavior are made collectively rather than by a single entity.

- *Monetization and Incentives:* Decentralized AI systems can incorporate token-based incentives, where participants are rewarded for contributing data, computing power, or other resources to the AI system. Furthermore, a marketplace can be developed where each contributor can get a fair reward for their contributions.

These components, when decentralized, create a robust and secure AI ecosystem that leverages the power of distributed computing and data management while addressing privacy and security concerns.

3.0 - Key Benefits and use-cases of PAI3 Network
3.1 - *Key benefits of PAI3 Network*
One of the key benefits of PAI3 is its focus on data privacy and security. User data remains local, reducing the risk of breaches and increasing data ownership and control. Blockchain technology provides an auditable trail of data access and modifications, ensuring trust and security (Nakamoto 2008). Unlike centralized AI, PAI3 offers user-owned computers with inexpensive personal AI machines that interact with big models, execute small models locally, and protect user data and identity. There is no transfer of data to centralized servers or the cloud, and PAI3 Computers generate revenue from paid nodes. Users own their models, which can be confined to curated data sets, and their data, which can be sold for training purposes while maintaining 100% privacy.

Data Privacy and Security- One of the most significant advantages of PAI3 is the emphasis on data privacy and security. In a world where data breaches are becoming increasingly common, PAI3 offers a solution where user data remains local, significantly reducing the risk of breaches. By keeping data on the user's device, PAI3 ensures that individuals maintain full ownership and control over their information.

3.2 - *Key Differences from Centralized AI*
PAI3 distinguishes itself from centralized AI models in several critical ways:
- *User-Owned Computing in PAI3 Network:* PAI3 allows users to own and control their computing power. This ensures that users can run AI models on their devices without relying on expensive cloud-based solutions. PAI3 offers an affordable AI computing device that interacts with large models while executing small models locally. This design protects user data and identity by keeping information on the user's device rather than transferring it to centralized servers.
- *User-Owned Models:* Users can create and train their models on PAI3, tailored with specific data sets. These specialized augmented models can be developed for specific fields such as healthcare, finance, education, or coding. This gives users full control over their AI models and ensures that their data is used only for their benefit.
- *User-controlled Data-* Users can own and control their data on their local PAI3 computer to preserve privacy and confidentiality. Furthermore, PAI3 computer owners can permission their data and embeddings for model training.
- *Revenue Generation:* PAI3 provides an opportunity for users to generate income by running nodes on their devices. Users can sell their data for training, participate in the network, and earn PAI3 tokens, all while maintaining 100% privacy.

3.3 - *Key use-cases and Consumer applications*
As AI continues to integrate into various aspects of our lives, it is crucial to address the dangers associated with centralized AI systems that often prioritize corporate interests over individual rights. The PAI3 platform offers a decentralized alternative that empowers users by enabling the creation and ownership of personalized AI agents tailored to their specific needs. These agents, whether personal, professional, or enterprise-level, are designed to serve the individual user, ensuring that AI systems are trustworthy, transparent, and aligned with the user's goals. The core philosophy behind PAI3 is that AI

agents must do no harm, and this is achieved by placing control over key AI components—such as inference engines and data processing—in the hands of the users themselves.

PAI3 provides users with the tools to create *Personal AI Agents* that enhance daily life, from managing tasks and productivity to offering personalized advice and support. These agents operate on neutral models but are owned and controlled by the user, ensuring that they serve the individual's interests. For professionals, PAI3 enables the development of *Specialized AI Agents* that can be tailored to specific industries like healthcare, finance, or education. These agents can provide industry-specific insights, streamline workflows, and even be monetized through the PAI3 marketplace. At the enterprise level, *Enterprise AI Agents* built on PAI3's decentralized mesh can handle large-scale AI tasks, from data aggregation to complex model training, all while maintaining the privacy and security of proprietary data. Finally, *Community AI Agents* allow for broader collaboration and data sharing within the PAI3 ecosystem, enabling communities to collectively build, manage, and benefit from AI technologies.

Through PAI3, users can own a piece of the AI infrastructure itself, contributing to and benefiting from a decentralized supercomputer network. This ownership model not only democratizes access to advanced AI technologies but also ensures that AI development is guided by the collective interests of its users rather than a centralized authority. Whether creating personal digital assistants, professional tools, or enterprise solutions, PAI3 empowers users to harness the full potential of AI in a way that is safe, secure, and beneficial to society.

Each agent group and its potential descriptions are described below:
- Personalized AI Agent to "Live Smarter" -PAI3 enables users to "live smarter" by providing access to advanced AI technologies that enhance their daily lives, from personal productivity to health management. PAI3 offers several consumer applications, such as personalized AI agents for tasks like email management and finding lost items, and AI-powered life coaches and IQ managers, enhancing everyday life and personal productivity. Consumers can leverage PAi's capabilities to shift power to the individual, using AI to "live smarter." Users can leverage PAI3 to create personalized AI agents that act as their "Megamind," helping them manage their intellectual property, make informed decisions, and improve their overall intelligence.
  - **People seeking personalized digital assistants** - A busy people can use the PAI3 platform to create a personalized AI agent, known as their "Megamind," which helps them live smarter by managing daily tasks, enhancing productivity, and supporting personal growth. This AI agent handles everything from organizing emails and scheduling appointments to tracking goals and intellectual projects, freeing up the professional's time and reducing stress. It also acts as an AI-powered life coach, providing tailored advice for decision-making and continuous learning, enabling the professional to make informed choices and improve their overall quality of life.

- Specialized AI agents for Professionals- PAI3 will offer a generalized model for users that can be augmented with data contributed by PAI3 members. PAI3 will support the development of specialized augmented models that can provide guidance on fields such as healthcare, finance, and coding. These models will be designed to deliver enhanced and context-specific insights and apply them to each user's data. For instance, in healthcare, the model could assist in providing guidance toward better outcomes, while in finance, it could analyze market trends or optimize investment strategies based on the user's financial data. In coding, the platform might streamline software development by suggesting code snippets or debugging. These models can be sold and shared on the PAI3 marketplace for user revenue. To augment these models further, the system will deploy intelligent agents capable of searching the internet in real-time, gathering the most relevant and up-

to-date information. These agents will enhance the accuracy and comprehensiveness of the model's outputs by integrating external data, making the platform adaptable to rapidly changing environments. Users will have the option to access these specialized models at an additional cost, allowing them to tailor the platform's capabilities to their specific needs. This approach ensures that the PAI3 AI hardware can provide powerful, industry-focused solutions that are both flexible and scalable. This specialized AI agent would be valuable resources for professions such as educators and researchers that require unique and catered datasets.

- **High school teacher -** A teacher can use the PAI3 platform to enhance personalized learning by deploying a custom AI agent tailored specifically to their course materials. This AI agent adapts to each student's needs, offering personalized quizzes, assignments, and feedback that align with the curriculum. Running on a secure PAI3 Computer, the AI also helps prepare lesson plans, significantly reducing the teacher's workload. By keeping all sensitive student data encrypted and stored locally, the teacher ensures privacy and security, avoiding the risks associated with centralized servers. Additionally, the platform allows for collaboration with other educators to share and refine course materials securely, further enriching the teaching process.
- **Researchers** - A researcher could utilize the PAI3 platform to analyze their datasets using advanced AI tools to run complex analyses and simulations, with the AI assisting in identifying trends and generating insights from their unique unpublished or sensitive datasets. Through PAI3, the researcher can securely share AI models and datasets with collaborators, ensuring data integrity and fostering innovation without the risks associated with centralized data storage. This secure, collaborative environment accelerates research discoveries while maintaining control over their sensitive data.

- "Personalized AI agent and Digital twin"- PAI3 empowers consumers by shifting the power dynamic away from large corporations and towards individuals. With PAI3, users can create personalized AI agents, manage their data, and improve their daily lives through AI-powered tools. PAI3 offers a personalized Ai agent that helps users manage their daily tasks and enhance their decision-making capabilities based on specialized or personalized AI models.
- **Patient seeking whole-person care** - A patient could use the PAI3 platform to create a personalized AI agent and digital twin that assists in coordinating their healthcare and providing tailored medical advice using a whole person perspective with their clinical and non-clinical data. This AI agent can analyze the patient's medical history, tracks appointments, manages medication schedules, and ensures that all healthcare providers are informed and up-to-date. A digital twin could allow for potential simulations and projections based on the most recent data. By integrating all aspects of the patient's care, the AI agent helps streamline decision-making, offering consistent, personalized advice based on the latest data and treatments. This approach empowers the patient to take control of their health care, be informed, and ensure that their care is well-coordinated.

- Enterprise AI agents with decentralized supercomputer -By connecting PAI3 Computers across the globe, users contribute to a decentralized supercomputer that can tackle large-scale AI tasks. This mesh enables the training of AI models, processing of complex data, and execution of AI applications on a massive scale, all while maintaining individual privacy and control.
- **Data scientists and managers-** They will be able to use the PAI3 platform to connect to a global mesh of decentralized supercomputers, enabling large-scale AI tasks with enhanced privacy. They aggregate and curate datasets from diverse sources through the marketplace while maintaining full control over their data while training AI models and processing complex information. This decentralized system allows them to execute AI applications on a

massive scale, collaborate with peers, and share curated datasets securely, all without relying on centralized servers.

- Computer AI by owning the PAI3 Network - Users can own a portion of the PAI3 Network and contribute to its growth by running PAI3 Computers and Nodes, building models, and selling data.
    - **AI enthusiasts-** They can leverage the PAI3 platform to actively participate in and own a portion of the decentralized AI mesh. By running PAI3 Computers and Nodes, they contribute to the mesh's growth and functionality, directly influencing the development and evolution of AI models. These enthusiasts can build and fine-tune their own AI models, utilizing the collective power of the decentralized mesh to enhance their creations. Additionally, they could monetize their contributions by selling curated datasets and refined models within the PAI3 marketplace. This ownership and active participation allow AI enthusiasts to be at the forefront of AI innovation, shaping the future of AI while benefiting from the rewards of their involvement in the decentralized ecosystem.

4.0- PAI3 Network and Ecosystem – Technical description
The PAI3 Network is designed to distribute computing power in a mesh configuration to decentralized AI while isolating highly sensitive data on secure hardware computers. PAI3 Network is a collection of PAI3 Nodes that include personal user devices and computers that host a personalized instance of the large language model for each user's queries that can utilize their secured data on their node. Collectively, this mesh will become the foundation for the People's supercomputer. Each Node represents an opportunity to contribute computing resources with access granted via an PAI3 Node token purchase or lease.

The PAI3 ecosystem is a decentralized AI network designed to provide a personalized and inclusive experience for all users. At its heart is the **PAI3 Nation**, a global community fostering collaboration and innovation. Key components include **PAI3 dApps** such as **PAIneer Chat**, the **Marketplace**, **PAI3 Wallet**, and **AI Tool Builder**, enabling seamless interaction and tailored solutions. Intelligent **PAIneer Agents** act as adaptive AI assistants, delivering personalized workflows, task automation, and insights tailored to each user's unique needs. The ecosystem is **powered by data and computing power on Local Nodes**, ensuring high performance, security, and decentralization, all secured by the transparent **PAI3 Blockchain**. This ensures cutting-edge AI is accessible to everyone, everywhere.
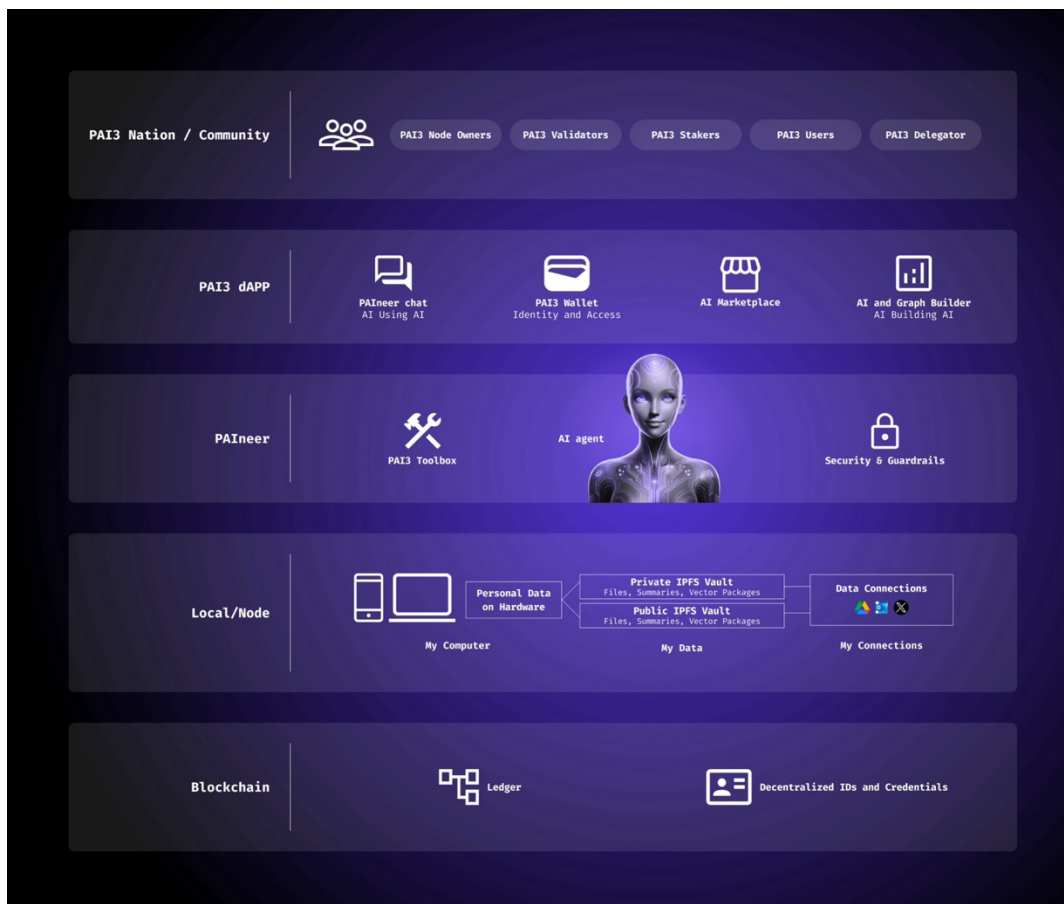
Each PAI3 member will engage the PAI3 Network using a digital wallet via their personal devices including mobile phones or personal computers, and each user interaction, task, and query will be coordinated by a personal AI agent that can navigate the mesh for the appropriate resources to each query. AI modelers and Data curators with powerful computers can further train the PAI3 AI model to

handle specialized needs, tasks, and subjects. Each Node is verifiable by a DID on an identity blockchain enabling secure peer-to-peer communication within the Network. (Figure 2). Furthermore, an index of vector embeddings is also stored on the blockchain. The development of a blockchain-based decentralized computational mesh (Muthe, Sharma, and Sri 2020; Asharaf and Adarch 2017) will allow resources to be shared among PAI3 devices, optimizing processing and data management(Oodles Blockchain 2024; LAMPORT and LYNCH 1990) . Users of the PAI3 Network can include Contributors that consent access to available de-identified datasets and vectors to 2) Data Curators that are building customized and specialized vector packages for the PAI3 AI engine to use.

4.1 - *PAI3 Nation and Roles*
- **PAI3 Node owners** - They hold a node token to participate and own a part of the PAI3 Network. They can engage with the PAI3 Network via their PAI3 computer and provide their own computer. PAI3 owners can present prompts to the PAI3 Network.
- **PAI3 user -** A PAI3 user who presents queries to the PAI3 Network, AI models, apps, chains, and other network resources for a membership due. PAI3 users can present prompts without contributing compute resources to the PAI3 Network.
- **PAI3 Staker –** To join the PAI3 network and earn revenue, PAI3 users can stake some PAI3 tokens.
- **PAI3 Delegator-** PAI3 Node owners or stakers can sponsor PAI3 users to enable their addition to the PAI3 network,
- **PAI3 Validator -** A PAI3 Node operator who ensures the integrity and security of the network.

4.2 - *PAI3 Nodes and Network environment*
The PAI3 Network is a decentralized network where multiple PAI3 devices collaborate to provide distributed computing power and data storage. Each PAI3 computer or node contributes processing resources and storage capacity, creating a resilient and scalable system. Data is securely stored across the mesh on each user's computer or other technologies like IPFS, with encryption ensuring privacy. Artificial agents plan, coordinate, and execute sequences of actions on each user's behalf within each user's node and between the nodes in the mesh. Consensus mechanisms and smart contracts manage resource leasing and access permissions, ensuring secure and efficient operations (Asharaf and Adarch 2017).
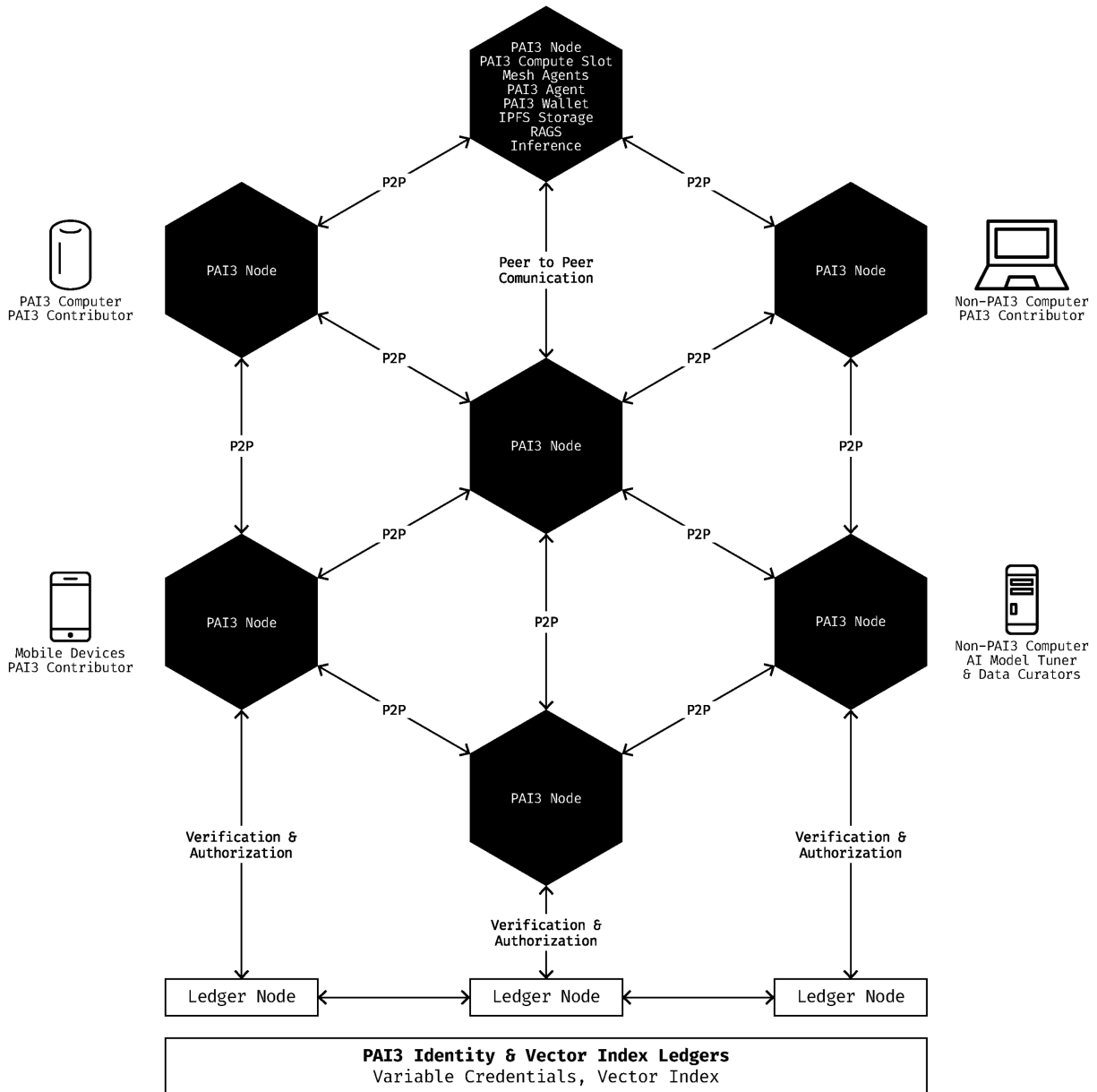
Figure 2: PAI3 Network - A distributed network of Nodes

The PAI3 Node is the environment within the Network where AI models are executed, and training data is submitted. Nodes include PAI3 AI agent, RAGS operations, AI and models to coordinate and respond to the requests. Each node is designed to be controlled from PAI3 Computers or other hardware, such as PAI3 computers, personal computers, and mobile devices that contain PAI3 identity wallet and data storage. The PAI3 user's mobile device or PC interface with external systems such as approved IOT devices and the PAI3 Node that is controlled by PAI3 Agent. The Agent orchestrates the connections and data flow within the PAI3 Node, ensuring secure and efficient interaction within the ecosystem (Gabriel et al. 2024). Each PAI3 Node can query a blockchain for decentralized identity's each PAI3 computer, user, agent, and node to verify assets access using zero-knowledge proofs (ZK).
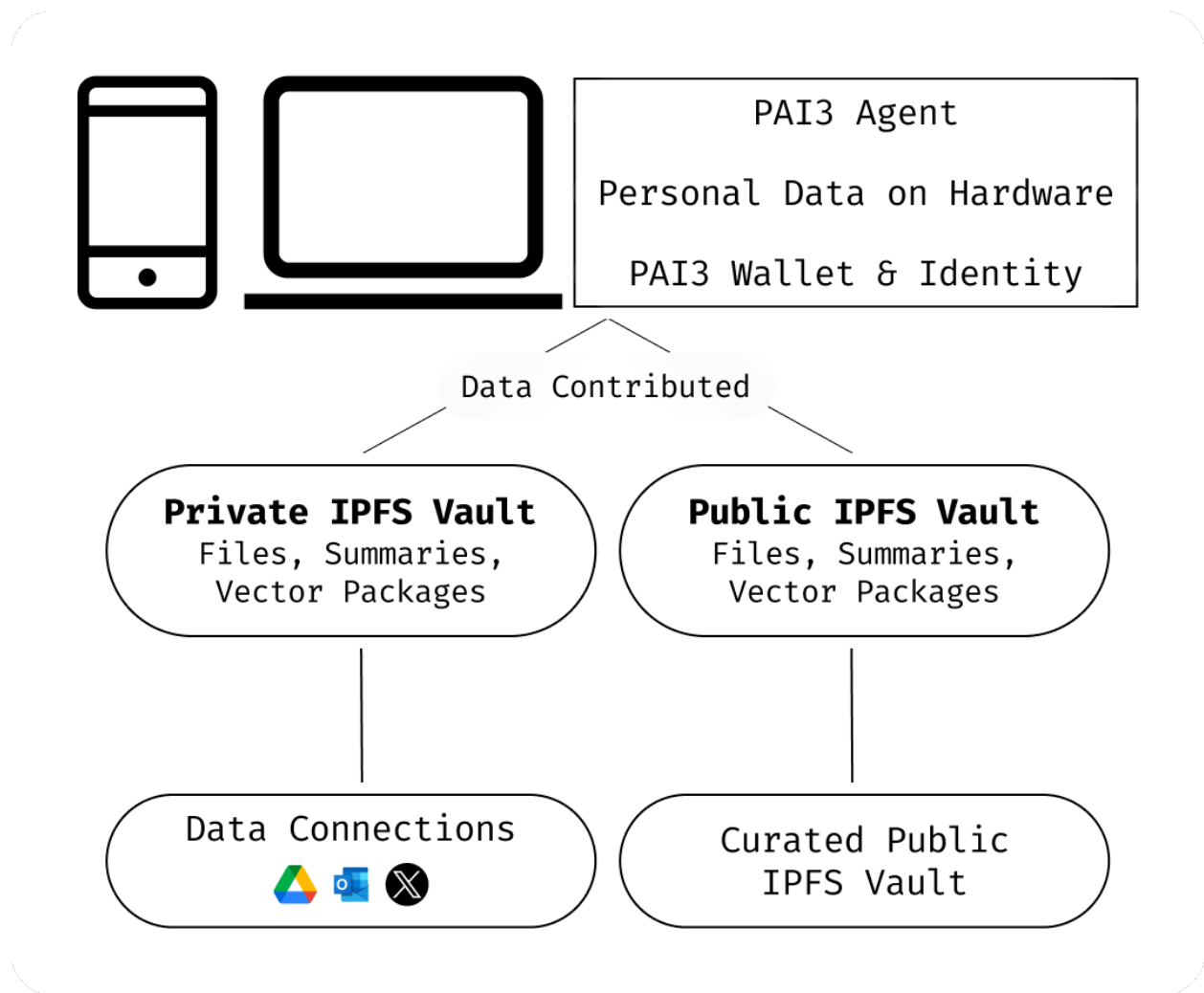
Figure 3: PAI3 Node

User data lies on a spectrum between personal data with high sensitivity to curated data available for contribution to the PAI3 Network. Thus, an anonymizing process will be developed to transform raw personal data into curated data and to minimize inadvertent disclosures to the network. Given the sensitivity, the PAI3 Node will have a public and private IPFS vault for user files to balance the need for privacy and confidentiality, while encouraging data contributions. Users can create custom datasets or redact personal or sensitive data elements for curation in their public container. Only curated data including data files, inferences, and vector embedding can be sold to data "Curators" to form bigger datasets or AI "Tuners" to augment or train specialized AI models.

4.3 - *PAI3 Wallet*
The PAI3 Wallet is the main interface for users to interact with the PAI3 ecosystem via their personal devices. The wallet is an identity and self-custody wallet that holds the PAI3 token, manages earnings, and provides access to the PAI3 marketplace. Users can stake their tokens, receive earnings, and manage their tokens through the wallet. Additionally, the wallet controls the PAI3Computer, manages prompts and the data ingest pipeline to the PAI3 Network.

As a digital identity wallet, the PAI3 Wallet is also a crucial component of the PAI3 ecosystem, designed to securely manage user identities and ensure privacy within the decentralized AI platform. This self-sovereign identity wallet allows users to control their digital identities independently, utilizing blockchain technology to protect personal information and data. The Identity Wallet is integrated with DIDs and VCs, enabling users to authenticate their identity, manage access to specific resources, and interact securely with the PAI3 Network. With the PAI3 Identity Wallet, users can seamlessly take part in the PAI3 marketplace, manage their tokens, and interact with AI models, all while maintaining full control over their identity and personal data. This ensures that every transaction and interaction within the PAI3 ecosystem is secure, transparent, and user-centric, reinforcing the platform's commitment to privacy and user empowerment.

4.4 - PAI3 Models: LLMs, RAGs, Vector Embeddings, and Inferences
PAI3 will model agnostic and support a variety of AI models, ranging from large language models to specialized small models tailored to specific domains. Users can configure their nodes to access multiple models such as GPT-4o, Claud 3.5, and DeepSeek-V3. Furthermore, new models can be trained and conditioned using computing resources and data within the PAI3 network. The marketplace will continually evolve, offering new models and tools as the network grows. The PAI3 platform will leverage advanced AI models, specifically focusing on LLMs and RAGs, to deliver specialized and contextual solutions across various industries.

AI integrates various technologies to simulate human intelligence in machines. At its core are LLMs, which are advanced AI systems trained on extensive datasets to generate and understand human-like text. PAI3 will use an open-source LLM to be a base LLM. RAGs enhance LLMs by combining them with retrieval methods, accessing external data for more accurate and contextually relevant outputs. Vector embeddings are numerical representations of language elements, crucial for tasks like semantic search and natural language understanding, as they capture relationships and meanings in a multi-dimensional space. Inferences refer to the application of learned knowledge by AI models to make predictions or decisions, enabling real-time tasks such as fraud detection and personalized recommendations. These foundational concepts are essential in the development and application of AI technologies.

LLMs on the PAI3 platform will serve as the foundation for generating human-like text and understanding complex queries across a wide array of domains. These models can process and generate text at scale, making them suitable for diverse applications, from customer service automation to advanced research in various fields. The PAI3 foundation will tune the base LLM toward a PAI3 language model with PAI3 inferences.

To enhance the contextual relevance of these models, the platform will integrate RAGs. RAGs combine the generative power of LLMs with the precision of retrieval systems, enabling the models to access and incorporate specific, up-to-date information from external sources like databases or the web. This capability will be particularly beneficial for industries that require real-time, accurate information, such as finance or legal services. Vector embeddings will further augment the PAI3 models by enabling efficient and effective handling of high-dimensional data. These embeddings will allow the models to represent words, phrases, and concepts as numerical vectors in a multi-dimensional space, facilitating more accurate and context-aware responses. The use of vector embeddings will also improve the model's ability to search and retrieve relevant information, enhancing the overall performance of the RAG system. Vector embeddings will be stored on PAI3 hardware or on each user's IPFS.

Each user will have multiple vector packages that can include vectorizations of their private and sensitive data within each PAI3 node that can be used for each user's AI queries. In addition, curated vector

packages can be created via a de-identification mechanism or a curation of a unique data set for subject specific content for specialized searches with specific content. These curated datasets can be made available for sale to the PAI3 Network on the PAI3 Marketplace.

Inferences on the PAI3 platform will enable real-time application of AI models for decision-making and predictions. These inference capabilities will be crucial for scenarios requiring immediate responses, such as real-time fraud detection in financial services, predictive maintenance in manufacturing, or diagnostic support in healthcare. By enabling models to perform inferences on the edge or in the cloud, PAI3 will offer scalable and efficient AI-powered solutions across multiple sectors.

4.5 – *PAIneer : AI using AI for personalized experience*
In the PAI3 ecosystem, an AI Agent is a sophisticated artificial intelligence entity designed to autonomously plan and execute sequences of actions on behalf of the user across the decentralized PAI3 Network (Gabriel et al. 2024). PAIneer coordinates user prompts into agentic collection of specialized agents powered by Langraph (OSHIN 2025). These agents act independently, receiving high-level instructions from users and translating them into detailed, actionable tasks that align with the user's goals and expectations. Through this symphony of agents, PAIneer produces a unified and personalized inferences that considers the user's personal data and experiences such as their calendar. The PAI3 Agent will have guardrails to do no harm to the user and be loyal to its controller while not benefiting unauthorized PAI3 users.
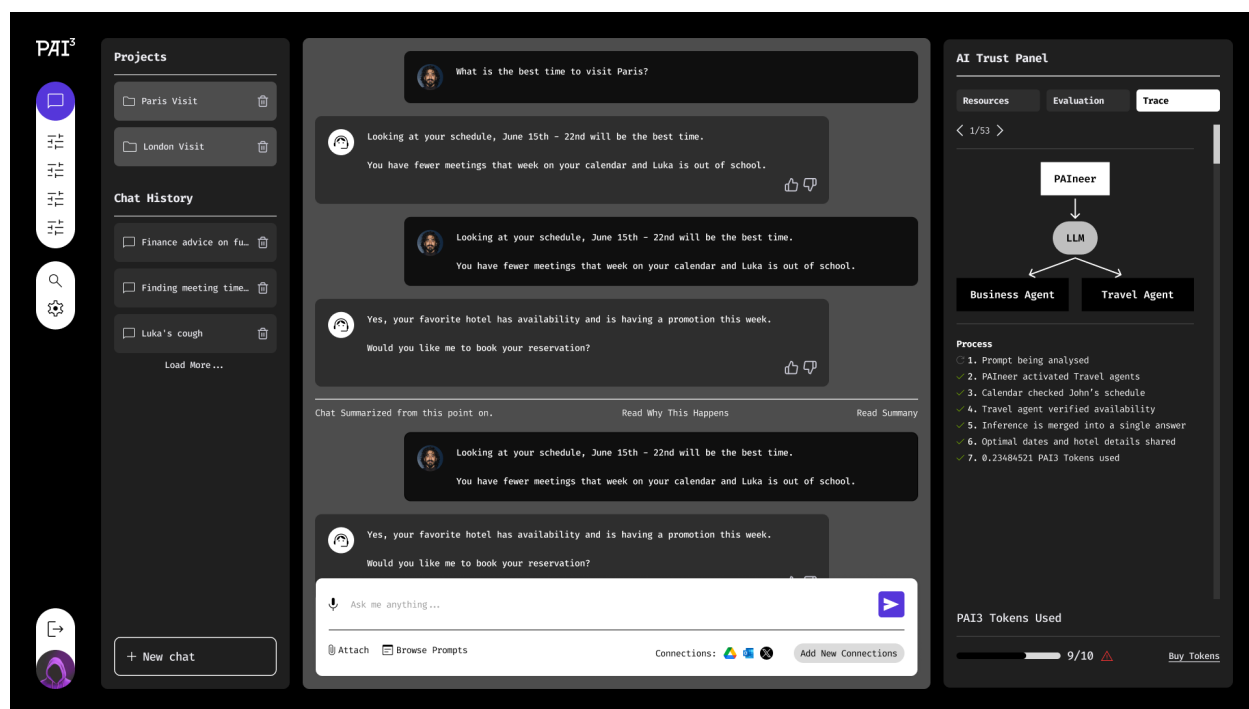

Figure 4: PAIneer Web application

A crucial role of the PAI3 AI Agent is its ability to coordinate a personalized AI experience by integrating and managing user data within the distributed AI network. By leveraging the decentralized nature of the PAI3 platform, the AI Agent ensures that the user's data remains secure and private while still providing the necessary inputs to tailor AI responses and actions to the user's specific needs. This personalized

experience is further enhanced by the AI Agent's seamless coordination with the user's connected IoT devices, files stored on the IPFS, and cloud-based services for prompt augmentation.

Within the PAI3 framework, the AI Agent interacts with IoT devices to gather real-time data, integrates this information into task execution processes, and accesses files on IPFS to retrieve critical data securely. For complex prompts, the AI Agent leverages cloud-based AI services, accessing advanced models to augment the prompt and deliver highly accurate, contextually relevant results.

AI tools are specialized software platforms that can supplement along AI models and agents to perform a wider range of tasks, from generating content to analyzing data and assisting with decision-making. These tools include chatbots and virtual assistants, data analytics frameworks, and content creation tools for visual and written outputs. They simplify complex processes, making AI more accessible and useful for industries like healthcare, finance, and education. These tools can perform tasks that require beyond generative AI such as searching the internet for solutions or managing personal accounts and calendars. These tools often depend on advanced language models and frameworks to deliver user-friendly solutions, leveraging cutting-edge AI technologies like machine learning and natural language processing. In PAI3, the integration of AI tools plays a critical role in enabling personalized AI inferences. By using secure, distributed nodes, PAI3 connects private user data with AI models and tools, allowing tailored, privacy-preserving insights. This synergy ensures efficient AI interactions, empowering users to leverage powerful AI tools while maintaining complete control over their data.

PAIneer and AI Agents Use Case: Personalized Travel Planning: The PAIneer ecosystem leverages AI agents to deliver highly personalized and context-aware solutions for everyday tasks. In this use case, a user asks, "What's the best time to visit Paris?" The PAIneer Travel Agent collaborates with the Calendar Tool to analyze the user's calendar, school schedule, and travel preferences. Based on this data, the AI agent suggests an optimal travel window—June 15–21—and identifies promotions at the user's favorite hotel in Paris.
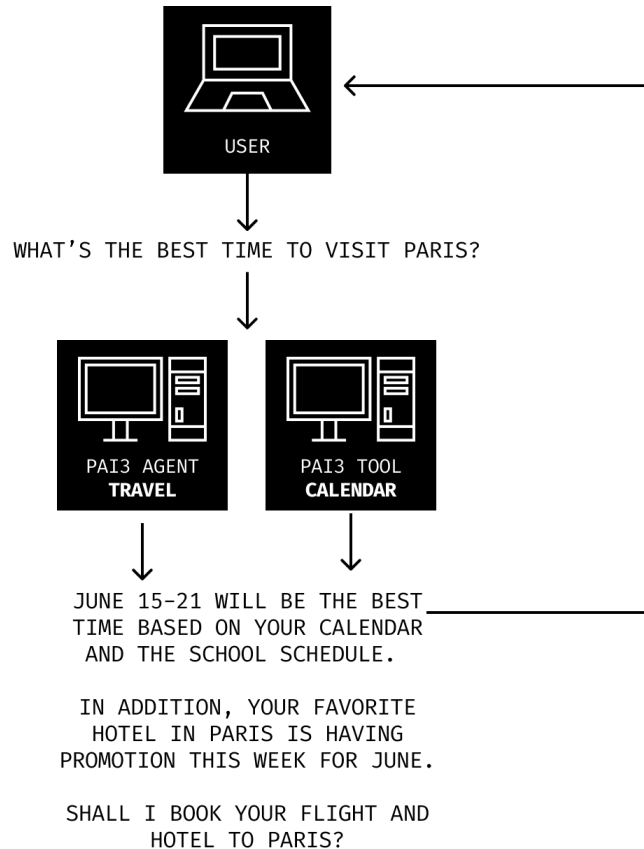
WHAT'S THE BEST TIME TO VISIT PARIS?

PAI3 AGENT
TRAVEL

PAI3 TOOL
CALENDAR

JUNE 15-21 WILL BE THE BEST
TIME BASED ON YOUR CALENDAR
AND THE SCHOOL SCHEDULE.

IN ADDITION, YOUR FAVORITE
HOTEL IN PARIS IS HAVING
PROMOTION THIS WEEK FOR JUNE.

SHALL I BOOK YOUR FLIGHT AND
HOTEL TO PARIS?

Figure 5: Specialized PAI3 agents providing personalized responses

Beyond providing recommendations, the AI agent takes the next step, offering to book the user's flight and hotel. This seamless integration of data-driven insights and proactive automation demonstrates how PAIneer AI agents enhance convenience and decision-making by tailoring solutions to individual needs. This level of personalization and efficiency is a hallmark of the PAI3 ecosystem, redefining how users interact with AI-powered tools.

This integrated approach with AI models, agents, and tools allows for a PAI3 ecosystem to function as a personalized powerful, and adaptive tool that not only operates within the PAI3 Network but also extends its capabilities to the user's broader digital ecosystem and services available on the internet. By coordinating these various elements, the AI Agent ensures that each user enjoys a truly personalized AI experience within the distributed mesh, all while maintaining control and privacy over their data. This capability is central to PAI3's vision of a decentralized, user-empowered AI ecosystem, bridging the gap between advanced technology and individual user needs.

4.5 – *"AI Building AI" in the PAI3 Ecosystem*
The PAI3 ecosystem enables **AI to build AI** by leveraging the **computing power and data available on the PAI3 network**. This decentralized infrastructure allows developers and users to create advanced AI models tailored to specific needs, combining local data, existing AI models, and additional data sources.
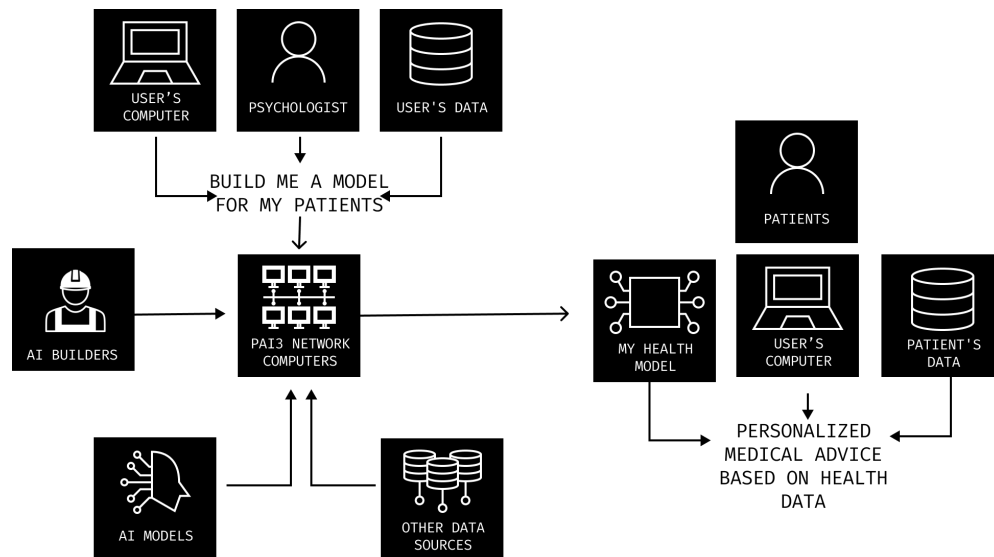
Figure 6: AI building AI

AI Model Builder Use Case: A psychologist can use the PAI3 network to build a specialized AI model for their patients. By inputting their data and requirements into the PAI3 AI Model Builder, the system utilizes the vast computing power and data resources of the network to create a customized AI model. The resulting model is deployed on the psychologist's system, analyzing patient data to provide personalized medical advice. This showcases how PAI3 empowers professionals to securely and efficiently create, customize, and deploy AI solutions, revolutionizing workflows across industries.

4.8 - *PAI3 Marketplace*
The PAI3 platform will feature a dedicated marketplace for buying, selling, and trading everything related to our decentralized AI platform. From models and nodes to computers usage and tokens, the marketplace provides a platform for users to monetize their assets such as computing resources, data sets, models, and vectors with others in the PAI3 Network. Users can also sell their data sets for training, participate in the Mesh's governance, and access various tools and resources to enhance their AI experience.

Additionally, the marketplace will support the sale of customized vector embeddings and augmented models, allowing users to purchase add-ons that enhance the performance and relevance of their existing systems. By fostering a robust ecosystem of AI models and tools, the PAI3 marketplace will drive innovation and make advanced AI technology accessible to a broader range of users and industries.

4.9- *Blockchains for PAI3 Decentralized AI*
To effectively leverage blockchain technology in the PAI3 decentralized AI ecosystem, several key components and mechanisms will be employed. Blockchains will enable robust consensus management, efficient parallel process management, and enforceable smart contracts. These features are critical for ensuring transparency, security, and coordination across the Mesh. Additionally, self-sovereign identity systems utilizing DIDs, and VCs will provide secure and autonomous identity management (Tobin and Reed 2017). Finally, Node tokens will be used to establish membership, manage resources, and facilitate transactions within the PAI3 Network, linking users to specific computational resources and data assets.

● *PAI3 Node token and PAI3 utility tokens*

Node Tokens will play a crucial role in establishing membership and managing resources within the PAI3 Network. The Node token will serve as proof of membership, linking users to specific PAI3 computers and their associated files. These Node tokens can be used to grant access to the mesh, allocate computational resources, and facilitate transactions within the decentralized AI ecosystem. By pointing to a specific PAI3 computer, node tokens help manage ownership and access rights, ensuring that resources are allocated efficiently and transparently across the PAI3 Network. PAI3 utility tokens facilitate AI related activities within the network including The PAI3 tokens will utilize the blockchains such as BNB chain("BNB Chain - Build Web3 DApps on the Most Popular Blockchain") and Ethereum blockchain (Buterin 2014).

- *Consensus Management, Parallel Process Management, and Smart Contracts*
  Blockchain technology can be integral to managing decentralized AI within the PAI3 platform. By using blockchains like BNB Chain("BNB Chain - Build Web3 DApps on the Most Popular Blockchain") or Ethereum (Buterin 2014), consensus mechanisms can be employed to validate and synchronize the parallel processing tasks across the PAI3 Network. Smart contracts can automate and enforce the rules governing computational tasks, resource allocation, and reward distribution. These contracts ensure that each task is executed as agreed, with outcomes verified through the blockchain, promoting transparency and trust within the decentralized system.

- *Self-Sovereign Identity and DIDs with VCs*
  To manage identity verification, access control, and permission leasing within the PAI3 ecosystem, blockchains can be used to create a self-sovereign identity framework. Platforms like Hyperledger Indy (Hyperledger Foundation) provide the necessary infrastructure to implement DIDs, which enable users to control their digital identities independently. VCs issued through the blockchain can be used to verify user identities, manage access to specific resources, and authorize or revoke leasing privileges of computational power or data (Tobin and Reed 2017). This system ensures that only verified entities can participate in the PAI3 Network, enhancing security and privacy.

Through these mechanisms, blockchains will provide the foundational infrastructure for a secure, transparent, and decentralized AI ecosystem in PAI3, enhancing both functionality and user autonomy.

4.10 - *Requesting PAI3 Computing resources*
PAI3 users can submit computer requests for queries and prompts such as "Find me the best flight to Paris" to an AI model to develop an inference indicated in the black arrows in Figure 3. The prompt is augmented with further context security and utility guardrails by the RAGS on the Node. The PAI3 Agent identifies the best available node to compute the inference, the best AI model and vector embeddings via the vector index on the blockchain. Each computing node's AI model produces an inference, and the resulting vector embedding is returned to the requesting node. (Figure 3 A) Every operation will be conducted on multiple nodes in parallel to achieve consensus and accuracy. Resulting AI inferences and vector embeddings from each compute request are returned to the original requesters Public IPFS vault indicated in the green arrows in Figure 3. Additionally, the Agent will manage the decentralized data storage of user files, summaries, and vector packages on the PAI3 hardware and the IPFS.

Furthermore, operations such as AI model tuning may require supplemental computing resources beyond what is available on the local computer. With the PAI3 Network, AI tuners can request additional nodes for greater compute power indicated in black arrows (Figure 3 B). The vector embeddings are returned to

their IPFS vault indicated with arrow in Figure 3. By combining multiple nodes and utilizing parallel computing, PAI3 will offer a cheaper and more trusted environment for AI tuning. This distributed compute offers an opportunity for PAI3 contributors to earn revenue while their computer is being used in the Mesh.
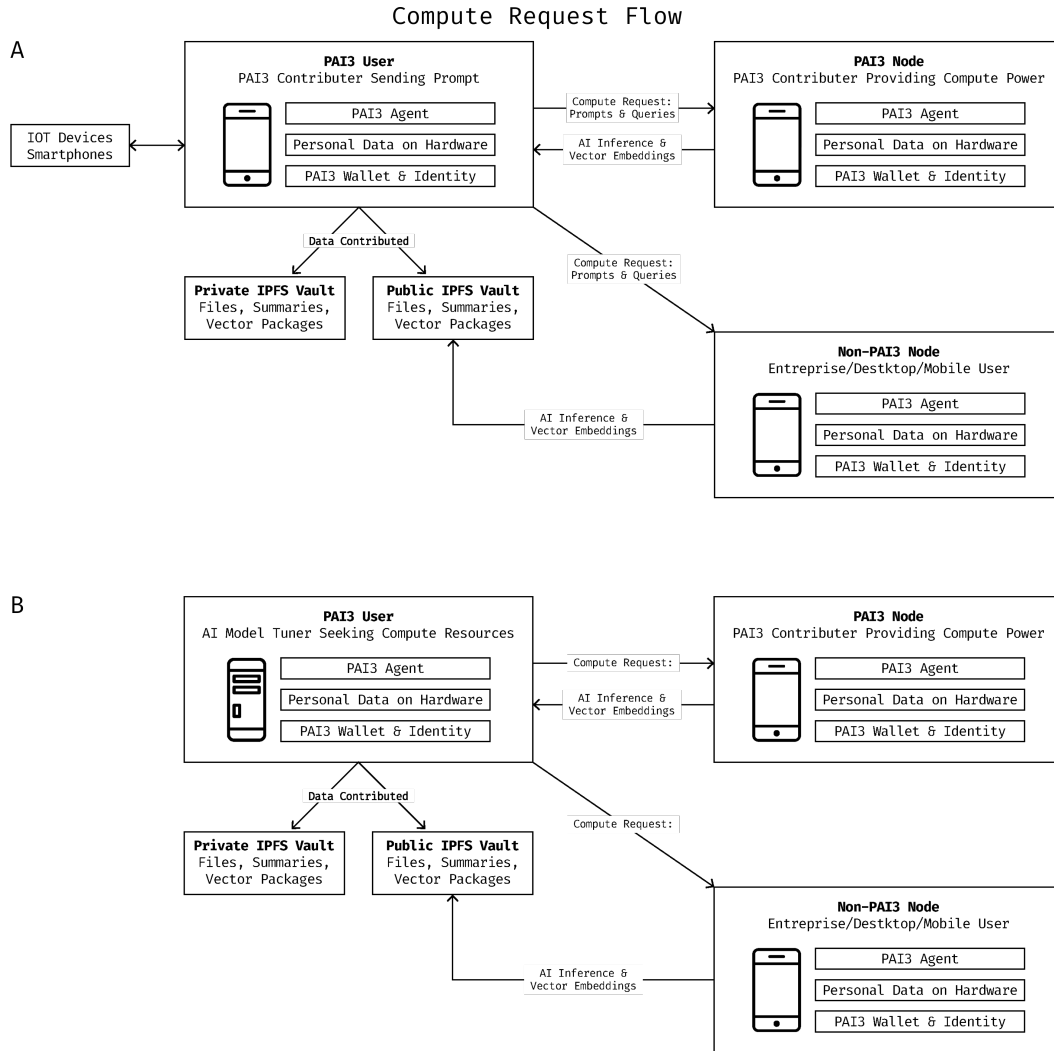

Figure 7: PAI3 data workflows for AI queries and conditioning

To allocate compute workload to multiple nodes based on the given parameters (available node capacity, node reputation, lowest latency, proximity, and location), a weighted scoring approach will be used where each node is assigned a score based on the following factors. The workload is then distributed in proportion to these scores.

To calculate the workload allocation, first we will compute the weighted score (*Score* i) for each node using the following equation

$$Score\ i\ =\ wc\ \times\ C\text{i}\ +\ wr\ \times\ R\text{i}\ +\ wi\ \times L\text{i}\ +\ wp\ \times \text{P}i$$

where: *wc, wr, wi,* and wp are the weights assigned to each parameter based on their importance. These weights should sum up to 1.

The parameters are denoted as the following for each node i:
- C_i = Available node capacity (as a percentage or normalized value)
- R_i = Node reputation (normalized between 0 and 1)
- L_i = Latency (normalized inverse, i.e., lower latency gets higher score)
- P_i = Proximity score (optional, normalized between 0 and 1)
- w_i = Final workload allocated to node$_i$

Total work allocation is determined by:
$$S\ total = \sum_{i=1}^{n} Score\ i$$

Each parameter should be normalized with the following equation.
$$S'i = (S_i - S_{min})/(S_{max} - S_{min})$$

where S_i= actual value of parameter for node.

Finally, the workload allocated to node is given by:
$$W_i = \frac{Score_i}{S_{total}} \times W_{total},$$

where W_{total} is the total workload to be distributed among the nodes.

5.0 - *PAI3 Node Token*

5.1- *PAI3 Node Token overview*

The PAI3 Node Token is the lifeblood of the PAI3 Network representing ownership of a Node. The token provides a mechanism for earning revenue from Node ownership and provides access to computer slots on the PAI3 Network that can generate computing revenue. Possession of a Node Token can be guaranteed weekly revenue in PAI3 tokens for a limited duration. These Nodes can be sold or leased on the PAI3 Marketplace for additional revenue. Nodes can be acquired by invitation, straight purchase, or airdropped during promotion. PAI3 Nodes will be available in open sales on PAI3 website in cryptocurrencies including but not limited to BNB and USDT/USDC. The Node will follow the ERC721 token standard.

These Nodes do more than grant access to the PAI3 Network; they represent a stake in the future of AI technology, offering guaranteed returns, exclusive features, and the ability to participate in a cutting-edge technological ecosystem. Whether you are a professional seeking to enhance your AI training capabilities, or an enthusiast eager to contribute to and benefit from the PAI3 Network, our PAI3 Node offers a solution that matches your needs. The Node can be acquired via invitation, on the website, or airdropped during promotion for the service provided. Node tokens have no vesting period, but are non-transferable for 1 year. The Node holder will be allocated 1) claimable PAI3 tokens, 2) the computer power or data they contribute to the PAI3 Network, and 3) opportunities to sell specialized AI models, computing resources or data through the marketplace. These transactions will be conducted with PAI3 tokens. All claimable PAI3 tokens to Node owners accrue upon the token acquisition and are subject to KYC requirements.

PAI3 Node
Network node token 1 token = 1 network node
Total Supply: 314,159
Initial supply: 314,159
Emissions: None
Open sale
Non-transferable for 1 year, no vesting
Owner can claim 1500 PAI3ut over 3 yrs subject to KYC requirements
NFT standard ERC721
30% of total PAI3 token supply allocated to NFT holders
Voting system based on PAI3 tokens earned

6.0 - PAI3 Tokenomics

6.1 - *PAI3 Utility Token overview*

PAI3 tokens are the native digital token of the PAI3 Network, serving multiple purposes within the decentralized AI ecosystem. They are used as the primary medium of exchange for AI transactions within the PAI3 Marketplace and for staking. Using these tokens, users can buy, sell, and trade AI models, data sets, vector embeddings, and computing resources.
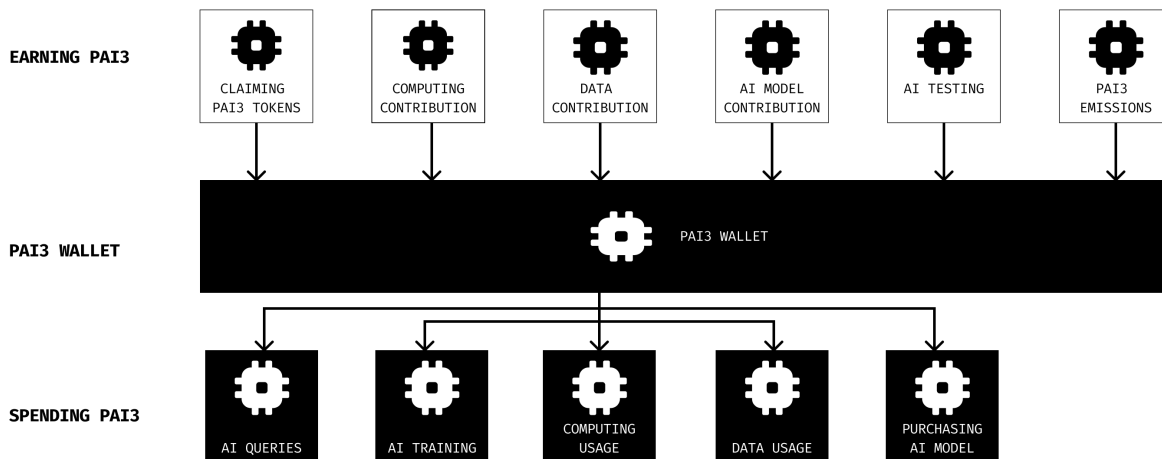
Figure 8: PAI3 trust economy

PAI3 tokens are designed to foster a thriving, user-driven and permissionless ecosystem that supports the growth and sustainability of the decentralized AI platform. The total PAI3 supply will be 3,141,592,653 tokens. Upon launching, an initial supply of 1,162,389,282 (37% of total circulating tokens) will be available utilizing a fair launch. PAI3 tokens are not subject to vesting period. PAI3 tokens will not be sold but earned for contributing to the PAI3 Network. Node owners can claim 1500 PAI3 tokens as a grant over 3 years (41.6666667 per month) subject to KYC requirements. PAI3 token will follow ERC20 standard.

PAI3 Token (Network utility token)
Utility token for PAI3 network. Used for all network transactions
Total Supply: 3,141,592,653
Initial supply: 37%
Emissions: 63% over 25 years
Fair launch, no sale
No vesting
Used for network access, earnings, staking, and rewards
ERC20 standard
Earned by contributing computing power, data, agents, testing and staking

Additionally, PAI3 tokens are integral to the platform's governance system, allowing token holders to participate in decision-making processes related to the Mesh's development and policies. These tokens also incentivize user participation, as individuals can earn PAI3 tokens by contributing computing power, data, or by running nodes within the PAI3 Network.

6.2 - *Allocations*
Overall, PAI3 tokens will be allocated distributed across multiple pools: Node and staking holders (30%), Community Pool (20%), Token liquidity (10%), Team (15%), PAI3 Foundation (15%), and Seed funding (10%) over a 25-year emission calendar.

PAI3 Token overall allocation
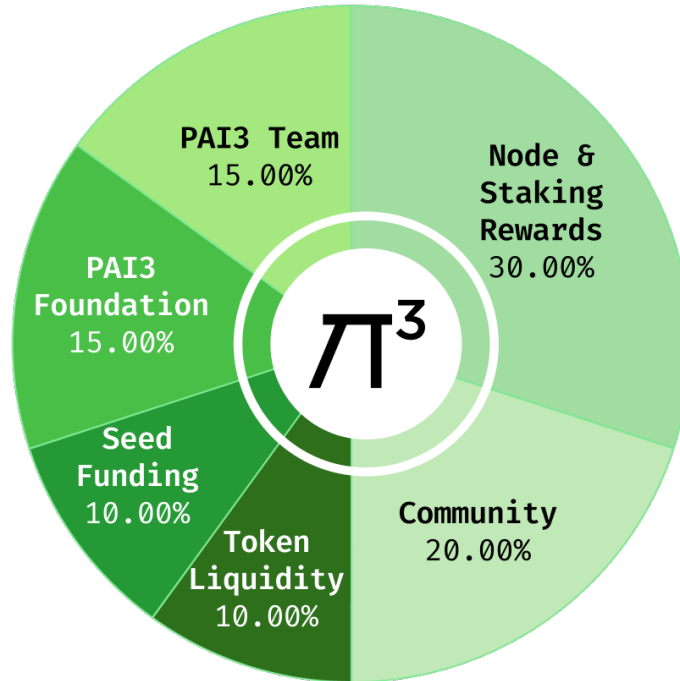
Over the 25-year emissions calendar, the remaining 197,920,337 PAI3 tokens will be allocated to the Node and Staking rewards (32%), Community pool (24%), Token Liquidity (10%), Team (17%), and PAI3 Foundation (17%).

6.3 - *PAI3 emissions over 25 years and halving schedule*
63% of PAI3 tokens (n=197,920,337) will be distributed over a 25-year emission schedule. New PAI3 tokens will be emitted with decreasing emissions each year until all tokens have been added into circulation. The emission protocol is designed so that new tokens will be released weekly.   Each year, emissions rate will halve every 4 years until issuance is halted at 314,159,264 PAI3 tokens.
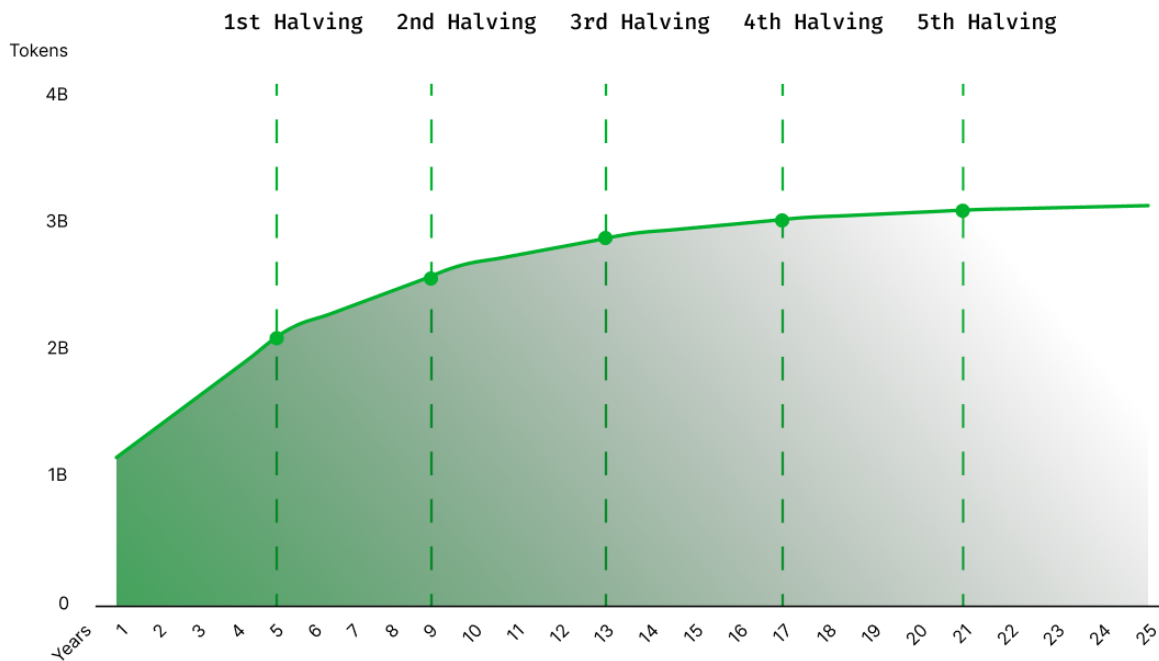
Figure 9: PAI3 emission calendar

The PAI3 tokenomics operates on a 4-year halving schedule after the first halving event, creating a deflationary model to ensure long-term value. Every 4 years, node rewards and emissions rates are halved, reducing token supply and increasing scarcity.

- Burn Rate: Revenue from nodes, agents, data, and marketplace activity is collected into a community pool. Starting at 1% during the first halving, the burn rate increases incrementally to 5% by the fifth halving, automatically reducing supply. The PAI3 community governs this rate, ensuring it stays above a minimum threshold.
- Emission Reductions: Emissions halve every 4 years, with monthly distribution set at 1/12th of annual emissions. After the first halving, the PAI3 community can change the emissions allocations, but will require a 75% supermajority vote, balancing adaptability with deflationary goals.

This combination of halving and burn schedules establishes a robust deflationary framework, enhancing token scarcity while supporting sustainable growth and community-driven governance.

6.4 - *PAI3 governance with quadratic voting*
The PAI3 DUNA and its protocols are governed by a decentralized model, empowering PAI3 token holders to participate directly in decision-making processes. This governance structure is built on the principles of transparency, fairness, and inclusivity, using a governance protocol based on Quadratic Voting system (QV) (Dimitri 2022; Buterin, Hitzig, and Weyl 2019) to ensure all voices are heard proportionately. The key areas that require governance may include Platform Development, Tokenomics Adjustments, and Community and ecosystem growth.

To create a balanced and democratic governance structure, the PAI3 Foundation will use a QV-based system, where each voter power will be determined by a random snapshot before a vote that are valued quadratically depending on their PAI3 tokens holdings. Any token holder can submit proposals for a vote. Proposals are reviewed and discussed by the community before voting begins. Proposals that reach a majority under the quadratic voting rules are automatically executed via smart contracts, ensuring transparency and immutability. This method prevents large stakeholders from disproportionately dominating decisions and encourages more nuanced expressions of preferences by all members. Voting AI agents will be trained to identify improper voting and maintain fairness.

Transparency and Security:
All voting records and decisions are recorded on the blockchain, providing an immutable and auditable ledger of governance actions. Smart contracts automate decision execution, ensuring that all processes remain transparent, secure, and tamper-proof.

By implementing a governance model rooted in Quadratic Voting, PAI3 ensures equitable decision-making and positions itself as a truly decentralized AI platform, where all stakeholders have a meaningful role in shaping the PAI3 Network and AI's future.

7.0 - PAI3 revenue opportunities
7.1 - Earnings opportunities for PAI3 users
PAI3's earning model is designed to be fair and sustainable. The PAI3 token holders and stakers can generate revenue through the Mesh through various channels, including model usage, data sales, emissions, advertising, and selling PAI3 models via the marketplace. The platform's tokenomics are designed to create a self-sustaining ecosystem that rewards participants for their contributions. These opportunities are designed to reward participation, foster innovation, and create value for all stakeholders within the PAI3 network.

1. Running PAI3 Nodes:
   Users can earn income by contributing their computing power to the decentralized mesh network. By providing processing resources for AI model training, data analysis, and other computational tasks, node operators are rewarded with PAI3 tokens based on the amount of computational power contributed and the demand for resources.

   Each PAI3 Node token holder is guaranteed a minimum weekly revenue for the one years. Revenue is calculated based on the number of compute minutes, size factors, and network speed. The model ensures that users are fairly compensated for their contributions to the PAI3 Network.

2. Earning from Nodes Ownership:
   By purchasing PAI3 Nodes, users gain ownership stakes in the network and receive earnings and staking to offset initial cost and support initial AI activities during the first three years. These Nodes provide monthly PAI3 token rewards and additional benefits, such as access to exclusive features, early releases, and participation in beta testing programs, generating a consistent revenue stream.

   Supernode Reward Program
   If a Node runner owns 10 or more nodes, they will get preferential privileges and rewards. Our rewards program distributes 1.25 million PAI3 tokens every week to supernode wallets that meet the following conditions:
   • Any wallet that purchased and activated 10 or more nodes qualifies for rewards.
   • If more than 3,141 wallets qualify, only the top 3,141 wallets with the most nodes will receive rewards.
   The more nodes a wallet has, the bigger the reward it gets. Rewards are proportional to the number of nodes in each qualifying wallet. If your wallet has twice as many nodes as another, you'll receive twice as many tokens.

3. Leasing Computing Power:
   Users with extra computing capacity on their PAI3 Computers can lease this power to other network participants or external entities requiring AI processing capabilities. By leasing out idle or surplus resources, users can earn passive income while maximizing the utility of their hardware. The coordination will be handled by a PAI3 agent.

4. Permitting access to AI Models and Data set:
   Users can develop and sell their AI models, algorithms, or curated datasets on the PAI3 Marketplace. By monetizing their intellectual property, data, or innovations, users can earn revenue directly from other participants, organizations, or developers looking to leverage these resources for their projects.

5. Contributing Data for Monetization:
   Users can choose to contribute anonymized data to the PAI3 network, which can be licensed or sold to third parties, such as research institutions, enterprises, or AI developers. This data contributes to the training of AI models while generating revenue for contributors.

6. Participating in Beta Testing and Research:
   Users can earn rewards by participating in beta testing programs for new AI models, tools, or platform features. Additionally, contributing to research initiatives, providing feedback, or engaging in community-driven development projects may yield additional token incentives.

By offering diverse earning opportunities, PAI3 incentivizes active engagement, supports a vibrant ecosystem, and ensures that all participants can benefit from their contributions to the decentralized AI network.

7.2 - Earning model for PAI3 compute
PAI3 offers a flexible earnings model for users who contribute their computing power to the decentralized AI network. Users running PAI3 Computers can earn PAI3 tokens based on the number of compute hours their devices provide to the network each week. This model rewards users proportionally to the amount of computing resources they contribute, ensuring a fair and transparent distribution of earnings.

Calculating user compute power and duration
This project's success relies heavily on widespread user adoption and active participation. To achieve critical mass, we want to encourage PAI3 users to add high performance computers to the Mesh, while demand is low. Thus, PAI3 users will earn compute revenue based on the user's CPU performance in GHz or FLOPS, GPU performance, Ram capacity, Storage capacity, and Network speed and Duration (Hrs). The computer units are calculated by the following formula:

$$Computer\ Unit\ (CU)$$
$$= alpha \times CPU\ (GHz) + beta \times GPU\ (FLOPS) + gamma \times RAM\ (GB) + delta$$
$$* Storage\ (TB) + epsilon \times Network\ Speed\ (Gbps)$$

Where: alpha, beta, gamma, delta, epsilon are the weights assigned to each component based on their relative importance.

For PAI3, we will prioritize GPU performance, RAM capacity, CPU performance, Network bandwidth, and Storage capacity. Network bandwidth is determined by pinging node every 5 minutes to access network performance. This ping algorithm will also indicate system availability for computing. The Compute unit will be adjusted based on duration of computer availability to promote high performing computers for longer durations of time.

$$Compute\ hour\ (CH) = CU \times Durations\ (Hrs)$$

PAI3 tokens will be earned based on the user's Compute-Hour to ensure that better quality computers and high quantities are being added to the Network during the initial phase of the project. During this PAI3 Network formation phase, PAI3 Node token holders will earn reputation points based on their Its is ok in my version and the pdfscontributions that can be used to unlock benefits and discounts. Once the PAI3 Network achieves 85% utilization, the top 15% of users will receive a higher rate of return on their

computer revenue. This protocol incentives PAI3 members to participate with high-performing computers, while not limiting computer opportunities for users with average computers.

Monthly Earnings Model for PAI3 Compute Based on Compute Hours
PAI3 offers a flexible earnings model for users who contribute their computing power to the decentralized AI network. PAI3 contributors can earn PAI3 tokens based on the number of compute hours their devices provide to the network each monthly. This model rewards users proportionally to the amount of computing resources they contribute, ensuring a fair and transparent distribution of earnings. The monthly earnings for a PAI3 compute contributor are calculated using the following formula:

$$Monthly\ Earnings\ (WE) = Compute\ hour\ (CH) \times Compute\ Rate\ (CR) \times Node\ return$$

Where:
- Compute Hours (CH): The total number of hours the user's PAI3 Computer contributes to the network each month.
- Compute Rate (CR): The base rate of earnings per compute hour, denominated in PAI3 tokens. This rate is determined by the network and may fluctuate based on supply and demand for computing resources.
- PAI3 Node token Return: PAI3 Node holders can receive an increased return on their compute.

7.3 - Revenue Flows for PAI3 Foundation
The PAI3 Foundation is designed to generate revenue through multiple streams that align with its mission to build and sustain a decentralized AI ecosystem. The key revenue flows for the foundation include:

1. Renting AI training resources
   PAI3 offers a cost-effective and high-performance solution for AI training by providing GPU compute resources at significantly reduced costs. With GPU-hour pricing at $32, PAI3 is 66% less expensive than Amazon Web Services (AWS), which charges $98 per GPU hour. This dramatic cost reduction makes PAI3 an ideal choice for organizations aiming to optimize training expenses without sacrificing performance. For example, training a complex healthcare AI model that requires 36,000 GPU hours (Jia et al. 2023) would cost $3,528,000 on AWS at $98.32/hr (GetDeploying 2024). In contrast, the same model could be trained on PAI3 for just $1,152,000, saving $2,376,000. These savings can be reinvested in scaling projects, expanding research, or accelerating development timelines. See the table below comparing revenue for AI training for specific AI models with our decentralized architecture.

Spec. AI Model	User	Training Days	Daily Cost	Training Revenue
Healthcare agent	Patients	36000	$32	$1,152,000
Financial agent	Investors	28800	$32	$921,600
Legal agent	Plaintiffs	25200	$32	$806,400
Personal agent	Everyone	18000	$24	$432,000
Travel agent	Travelers	10811	$24	$259,459
Tutor agent	Teachers	7200	$24	$172,800
Research agent	Researchers	9000	$24	$216,000

PAI3's infrastructure leverages high-performance GPUs, including NVIDIA A100, H100, and other top-tier hardware, designed to handle intensive workloads such as large language models (LLMs), computer vision, and predictive analytics. With scalable clusters and multi-GPU support,

PAI3 can accommodate projects of any size while maintaining high-speed interconnects for low-latency training. Customizable environments allow users to tailor setups to their specific needs, including dependencies and hardware configurations.

PAI3 supports a wide range of use cases, including healthcare model development, NLP fine-tuning, computer vision, and custom AI solutions for various industries. The platform's flexible billing options, including pay-as-you-go and reserved clusters, make it accessible to projects with varying budgets. Additionally, PAI3 offers transparent usage tracking, enabling users to monitor GPU consumption and optimize costs further.

2. PAI3 Computer Sales:
   The foundation will sell proprietary PAI3 Computers that are optimized for decentralized AI processing. Priced at $1,000, each PAI3 Computer sold generates direct revenue and expands the network's computing power, which is critical for achieving scalability and efficiency in the decentralized mesh. This PAI3 computer will be available after Phase 4 of the Development roadmap.
   - Revenue Stream: The sale of PAI3 Computers to users and enterprises at a fixed price of $1,000. Each sale also includes a Node, enhancing the value proposition for buyers.

3. Marketplace Transactions:
   The PAI3 Marketplace will facilitate the buying, selling, and trading of AI models, data sets, computing resources, and other digital assets. The foundation will earn a percentage fee from each transaction conducted within the marketplace.
   - Revenue Stream: Transaction fees from marketplace activities, including model sales, data set transactions, and resource leasing.

4. Advertising and Sponsorship:
   The PAI3 platform will offer targeted advertising and sponsorship opportunities to companies and organizations that wish to promote their products or services to the PAI3 community. This could include AI-related tools, software, or hardware that align with the ecosystem's goals.
   - Revenue Stream: * Advertising fees and sponsorships from relevant partners and stakeholders.

5. Token Transactions and Governance:
   PAI3 Tokens, the native token of the ecosystem, will be used for all transactions within the platform. The foundation may earn revenue from transaction fees on token-based activities inside PAI3 Network.
   - Revenue Stream: Transaction fees and token management fees within the PAI3 ecosystem.

By leveraging these diversified revenue streams, the PAI3 Foundation ensures financial sustainability while promoting the growth and development of a decentralized, user-owned AI ecosystem.

8.0 – PAI3 Network Developmental Roadmap

The development of PAi3 Network will unfold in four primary phases, each aimed at enhancing the capabilities and reach of decentralized AI.
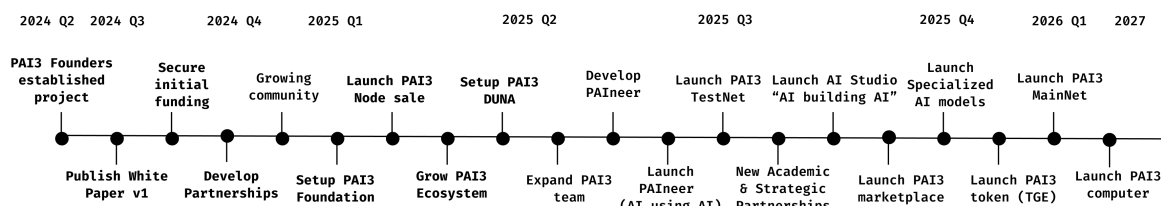

Figure 10: PAI3 development roadmap

Phase 1: PAI3 setup and Node sale

The first phase focuses on establishing the foundational financial and operational framework critical to PAi3's success. This phase will begin with finalizing the tokenomics model, encompassing the design and deployment of PAI3 node and utility tokens and the development of smart contracts to manage revenue generation and mesh participation.

To secure initial funding and attract early adopters, we will launch the initial sale, providing the necessary capital for further platform development. In tandem, the PAi3 Foundation will be created as the governing entity overseeing project progress, fostering strategic partnerships, and ensuring compliance with regulatory requirements across various jurisdictions.

This phase will also include the development and launch of the PAi3 Marketplace. The marketplace will serve as a hub where users can trade AI models, data sets, and computing resources, fostering a dynamic and self-sustaining ecosystem. Additionally, the marketplace will facilitate the monetization of users' contributions, further incentivizing participation. Together, these efforts will establish a solid foundation for the technical enhancements and mesh expansions planned in the next phases.

Phase 2: PAIneer Webapp and TestNet deployment
PAIneer Webapp development

In Q2 2025, the development of the Proof of Concept (PoC) for the PAIneer Webapp will focus on integrating LangGraph, a graph-based orchestration framework for AI agents, to enable personalized AI experiences within the PAI3 network. This PoC will validate the feasibility of autonomous AI agents operating within a decentralized infrastructure, allowing users to create context-aware, multi-agent workflows for tasks such as AI-assisted research, scheduling, and data retrieval. The initial implementation will focus on agent coordination, integrating retrieval-augmented generation (RAG), and developing secure vector embeddings for personalized AI responses. During this phase, the team will also work on interoperability between decentralized identity (DID) frameworks and AI model execution to ensure user-controlled inference within the PAI3 ecosystem.

By Q3 2025, the Minimum Viable Product (MVP) of the PAIneer Webapp will be launched, incorporating key features refined from the PoC. This MVP will enable users to create, train, and monetize personalized AI agents, with PAI3 Nodes handling decentralized computation and storage. The Webapp will provide an

intuitive UI for AI model management, marketplace transactions, and compute resource allocation, ensuring seamless interaction with decentralized AI services. Additionally, this phase will introduce Quadratic Voting for governance, allowing token holders to influence ecosystem decisions. With a focus on scalability and security, the MVP will mark a significant step toward fully decentralized AI ownership, positioning PAI3 as a leader in user-driven, privacy-preserving AI applications.

TestNet & Decentralized Computing
In Phase 2, the focus will shift to decentralizing computing across the PAI3 Network. Integrating vector packages and inferences will enhance AI model performance, while a cloud infrastructure like AWS will be established to host Large Language Models (LLMs) and Retrieval-Augmented Generation (RAGs). To facilitate seamless data flow and processing, robust data pipelines will be developed, supported by cloud storage solutions. To further enhance privacy and data redundancy, decentralized data storage solutions, such as the InterPlanetary File System (IPFS), will be integrated into the network. This phase will also involve the development of a blockchain-based decentralized computational mesh, enabling efficient sharing of resources among PAi3 devices and optimizing data management and processing capabilities.

Key challenges in this phase include maintaining data privacy and security in a decentralized environment, managing coordination and consensus among distributed nodes, and optimizing performance while balancing decentralization. To address these challenges, PAi3 will collaborate with leading research institutions or fund independent projects aimed at developing and implementing decentralized computing mechanisms.

By the end of Phase 2, the PAi3 compute mesh will be fully operational, allowing PAi3 users to submit queries, contribute their computing power, and generate revenue through the network.

Public and Private Data Management & Curation
Phase 2 will focus on decentralizing data storage and management, enabling users to control both private and public data within the PAi3 network. Each user will have access to a public-facing IPFS vault for use in queries, AI agent operations, and model training, creating new monetization opportunities. This data store will enable users to monetize their data contributions while maintaining full control over their privacy settings.

This phase will also introduce new tools for data curation, allowing users to manage their data assets effectively. By enabling decentralized data management, PAi3 aims to create a more secure and user-centric AI ecosystem that incentivizes data sharing while preserving privacy.

Phase 3: MainNet, Network growth, and PAI3 computer
- **Network growth**
  The PAI3 network is designed for scalable growth, leveraging its decentralized infrastructure to expand globally while meeting the diverse needs of developers, businesses, and users. By fostering a robust community of nodes, agents, and services, the network creates a self-sustaining ecosystem that thrives on collaboration and innovation. A key focus is on expanding user groups, targeting strategic partnerships, increasing node deployment, and promoting adoption across industries such as healthcare, finance, and technology. Additionally, the network facilitates the purchasing of computing resources, enabling users to access scalable AI capabilities while incentivizing node operators to contribute computing power. This growth strategy emphasizes accessibility, localized services, and regulatory alignment to establish PAI3 as a global leader in decentralized AI.

- **PAI3 computer: AI on your self**
  The PAI3 Network is a collection of user computers that decentralized the compute and data storage needed for the world's largest supercomputer and AI model. While Mesh users can contribute their personal computers and devices, the PAI3 Foundation will offer a custom computer, called PAI3, for sale. that includes the PAI3 node token. Computers are compact, powerful devices that serve as the backbone of the decentralized AI network. We will design two versions: 1) User-centric design with a human-computer interface and 2) a Mini-computer version to maximize performance and functionality. Designed with a sleek aesthetic, it is intended to be a functional and attractive addition to any home or office. The computer runs various apps, models, and interfaces, all accessible via a mobile application with integrations with IOT devices such as Apple watches. Community-built apps earn money when used on the device, creating a self-sustaining ecosystem. The PAI3 Computer is also designed for future scalability. Users can stack multiple devices to create a more powerful AI computing environment, further enhancing the platform's capabilities. All PAI3 computers will be small, well-designed devices that are field upgraded and stackable for more power.

  PAI3 computers will also connect to an iPFS vault on the PAI3 Node that can handle patient files and summaries that are beyond the capacity of the hardware.

Ongoing Milestones: Continuous Innovation and Development
The PAi3 is committed to driving continuous innovation through two key ongoing milestones:
1. **Continuous AI Model Evolution:** Regularly update and introduce new AI models and tools, driven by user feedback and cutting-edge technological advancements. This milestone ensures the platform remains dynamic, continually evolving, and maintains its position at the forefront of AI innovation.
2. **Research & Development Expansion:** Invest heavily in research and development to explore new decentralized computing mechanisms and enhance platform capabilities. This ongoing effort is crucial for the long-term viability of PAi3, reinforcing its leadership in the decentralized AI space and ensuring adaptability to future technological shifts.

9.0 - Discussion

The emergence of PAI3 as a decentralized AI platform can mark a significant departure from the traditional, centralized models that currently dominate the AI industry. This shift toward decentralization addresses many of the critical challenges associated with centralized AI, including data privacy, security, accessibility, and equitable distribution of resources.

Democratizing AI Access

The PAI3 platform represents a significant evolution in the artificial intelligence landscape by shifting the paradigm from centralized to decentralized AI. This approach addresses many of the critical issues associated with traditional AI models, such as data privacy, security, accessibility, and the equitable distribution of AI resources. In an environment where a few corporations have historically controlled AI development, PAI3 offers a model that democratizes AI, making it more inclusive and accessible to a broader range of users.

One of the standout features of PAI3 is its potential to democratize AI access. By allowing individuals and smaller organizations to contribute their computing power to the mesh, PAI3 lowers the barriers to entry for AI participation. This not only makes AI tools and resources available to a wider audience but also fosters a more diverse and innovative AI ecosystem. As users contribute data and computational resources, they benefit from the collective capabilities of the PAI3 Network, which leads to more personalized and effective AI solutions.

Addressing Data Privacy and Security

PAI3's decentralized approach also significantly enhances data privacy and security. In centralized AI systems, data is typically stored on servers controlled by large corporations, which increases the risk of breaches and unauthorized access. PAI3 mitigates these risks by decentralizing data storage and processing, allowing users to retain control over their data. This model aligns with growing global demands for greater transparency and user autonomy over personal information.

Enhancing Personalization and Reducing Bias

Centralized AI systems often rely on homogeneous data sets, which can lead to biased outcomes and limit the effectiveness of AI across diverse populations. PAI3's decentralized model encourages the use of a wider variety of data sources, enhancing the ability of AI systems to provide personalized and unbiased outcomes. By enabling users to contribute their own data and computing power, PAI3 creates an ecosystem where AI solutions are better tailored to individual needs and preferences.

Furthermore, the decentralized model of PAI3 promotes a more personalized AI experience while reducing the potential for bias. Centralized AI systems often rely on homogeneous data sets, which can lead to biased outcomes that do not serve diverse populations effectively. By enabling users to contribute their own data and tailor AI models to their specific needs, PAI3 ensures that AI outputs are more relevant and less prone to bias, thereby improving the overall quality and fairness of AI solutions.

Economic and Social Implications

The economic implications of PAI3 are equally transformative. By issuing Node tokens as ownership stakes in the mesh, PAI3 introduces a new economic model that incentivizes participation and ensures that the benefits of AI are more evenly distributed. This model not only rewards users for their contributions but also aligns their interests with the long-term success of the platform, creating a sustainable and engaged community.

10.0 - Conclusion

PAI3 offers a revolutionary approach to AI development and deployment, tackling the most pressing challenges associated with centralized AI systems. By decentralizing data storage and processing, PAI3 enhances data privacy and security, making AI more accessible and equitable. The platform's ability to leverage a diverse array of data sources promises to reduce biases and improve the personalization of AI solutions.

As the AI landscape continues to evolve, the need for decentralized solutions like PAI3 becomes increasingly apparent. Centralized models, with their inherent risks and limitations, are ill-suited to meet the demands of a future where AI is ubiquitous and integral to daily life. PAI3 provides a forward-looking path, where AI is not only more secure and efficient but also more inclusive and fairer.

The success of PAI3 will depend on widespread adoption and the active participation of a global community. By launching the largest supercomputer owned and operated by the people, PAI3 has the potential to democratize AI, empowering individuals and fostering innovation. This white paper has outlined PAI3's technical architecture, tokenomics, and benefits, setting the stage for a new era in AI development—one that places people at its core.

In conclusion, PAI3 is more than just an alternative to centralized AI; it is a transformative force that can reshape the future of AI for the better. By embracing decentralization, PAI3 can unlock the full potential of AI, making it a tool that genuinely serves the interests of all people. We invite stakeholders to join us in developing and adopting decentralized AI platforms, fostering a more efficient, secure, and user-centric AI ecosystem.

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