

MIND AI

White Paper

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WHAT IS ON YOUR MIND

Synopsis: Mind AI was created to offer an entirely new approach to artificial general intelligence. Rather than building an architecture that requires parallel processing, supercomputers, and large amounts of data, it plans to build its core symbolic reasoning engine based on an internationally patented, completely new data structure called a ‘canonical’. Once the engine and the volume of closures reach a minimum viable product, the platform plans to crowdsource and gamify the ontological and decentralized application (dApp) development processes through a tokenized incentive program. The Mind AI engine will be readily accessible to the global development community as an open-source project that will engage and motivate some of the brightest minds to continuously contribute to the growth of this benevolent ecosystem. The public encryption keys of crowdsourced ontological work products (predicates), which utilize gamified human-to-machine interface, will be immutably recorded and accessed with corresponding private decryption key on a revolutionary ledger-less blockchain, TODA. This blockchain is based on Proof-of-Actual-Work (PoAW), a consensus algorithm that reduces the energy consumption by the network by at least 98%. This will eliminate the dependencies on certain network contributors such as miners. Every time a software or human agent creates a dApp, it must access the Mind AI engine and the relevant ontological predicates to generate canonical structures upon which a certain cognitive reasoning task is performed. The entire work process will be ensured through the complex use of smart contracts built on top of a high throughput blockchain with the TODA protocol at Layer-Zero. The proposed approach is unique compared to those of other neural network based machine learning (ML) systems for several reasons. First, the nodes and links in canonicals are transparent to us, allowing agents to know what the Mind AI engine has learned or not. Second, the Mind AI engine allows ontological versioning, which enables it to retain old logic, but when superseded, it accumulates knowledge of why prior logic is faulty. Third, it allows interoperability with other open-source AI ecosystems, thereby becoming the de facto ‘CPU’ of the decentralized AI universe. Fourth, the Mind AI engine will evolve to develop its own theories (meta-theoretics) and predicates. Lastly, the Mind AI platform is an ethically guided decentralized autonomous organization (DAO) that disincentivizes or short-circuits malevolence toward humanity (kill-switch). This paper describes the overall framework of the Mind AI ecosystem, which includes a symbolic reasoning engine, canonicals, a dApp marketplace, an ethically guided DAO, token economics, and the mechanics of its planned token generation event.

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1 INTRODUCTION

1.1 How Can We Utilize AI for Good?

Artificial intelligence holds the potential to revolutionize the way in which we live and interact within our world. Right now AI auto-pilot features fly us across oceans and deserts. AI determines how much we'll pay during rideshare "surge pricing" [1], and it even filters spam from our email inbox [2]. Considering that the first personal computers became available roughly forty years ago [3], we really have come a long way. However, these achievements reveal something more. We have yet to uncover the true possibilities of AI. AI is making a hedgeway, and a path is being formed that will lead our entire planet into more innovation, creativity, and artistic pursuits.

While the astonishing progress leads to more efficiency and wealth, we must ensure that all of humanity benefits from this progress. Rather than viewing AI research and development as a global competition, we have to think as one.

1.2 Realizing Intelligence in AI

There's a lot of chatter within the AI community regarding the overuse of the word "intelligence" when referring to the current AI systems. We're at a time in which AI certainly has improved from its status 40 years ago. And we're collectively proud of our achievements. However, we must acknowledge that we have a long way to go, that new approaches must be considered if we are to truly reveal intelligent machinery.

Neural network based machine learning systems have brought society well into the Second Wave of AI [4], and these systems are seen in many aspects of our everyday lives. They perform complex computations and can be incredibly accurate, but we must refrain from calling algorithms with "ad-hoc utility" intelligent. Instead, intelligence should be reserved for that which is capable of expressing common sense and judgment.

2 VISION AND OBJECTIVES

2.1 Intention of the Founders

Mind AI, a revolutionary reasoning engine, can interact with humans – with limitless access to the world’s online resources. Mind AI can learn and grow cognitively; it is not language bound, and it does not require a super computer or huge amounts of data in order to draw its own conclusions. Like a skilled writer, it understands, appreciates, and adapts to and expands upon the subtleties of linguistic nuances as well as the constant changes in meaning based upon the context of natural language.

Additionally, Mind AI is an ecosystem that can enable our collective intelligence to help us solve some of our most audacious and grand challenges and global pressing issues faced by humanity. The decentralization and distribution of power is a radical path that we have thought carefully about.

There are a few important points that we want to accomplish through the creation and growth of Mind AI. First, we want to offer financial incentive structures for the brightest minds in computer science, machine learning, and data science communities around the world to join and help co-create this new ecosystem in the spirit of oneness and openness. Secondly, we want to help prevent AI from becoming an arms race among powerful national and corporate interests through their near-absolute control over capital, data, and computing power today. Lastly, we want to make Mind AI inter-operable with other decentralized blockchain-based systems to open new possibilities for our collective communities to produce socially impactful tools and products.

2.2 Ethics as a Guiding Principle

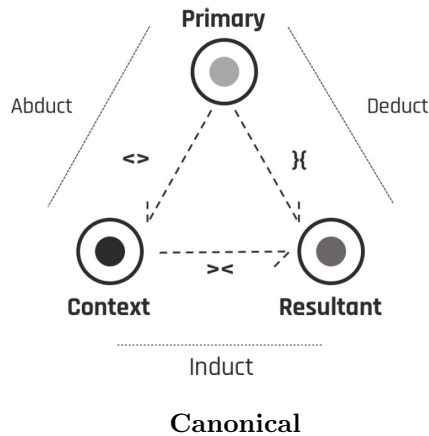
With the establishment of a powerful intelligent cognitive reasoning engine, we acknowledge the need to ensure its alignment with the intrinsic and universal human values, which, given the grand diversity of Earth’s inhabitants, includes numerous cultures, languages, preferences, spiritualities, religions, secularisms, and so on, in order to protect humanity. We recognize this is a complex feat that requires the identification and collective

agreement of said values. Therefore, in order to protect all from malicious infiltrations to the Mind AI engine, be it from human induced corruption, error, greed, and/or illogical reasoning derived from faulty or incomplete data, we propose the following: the Mind AI engine and the ontological data are to be separate. In addition, a global ethics committee will exist to create an overarching ethical upper ontology to the Mind AI ecosystem. Lastly, a “kill switch” will exist and be utilized in cases where Mind AI is being used unethically.

3 THE MIND AI REASONING ENGINE

3.1 Overview of Technology

Mind AI is an artificial intelligence engine that converts natural language into its own novel data structures to perform human-like reasoning. The basis for the technology behind Mind AI is a basic unit of reasoning called the *canonical*. The Mind AI engine can model anything that can be put into natural language using a canonical or group of canonicals. We call canonicals units of reasoning because they embody the three types of logical reasoning that humans utilize [5] to solve problems and answer questions.



When language is compiled into canonical form, logic naturally follows from that structure. Therefore, a machine is capable of logical reasoning

when the basic units of reasoning are capable of interaction. Our knowledge is encoded semantically, which means that the same idea can be expressed in different ways, but if the meaning is the same, we know what to do with it [6]. In addition, the process of teaching the Mind AI engine is as easy as giving it a manual in the same way that employers would give to human employees, who would then know and understand what to do with the information.

Ontologies are the fuel that power the Mind AI engine. These ontologies can be high level, general rules or domain specific rules that are only applicable to certain domains or scenarios. Once an ontology is collected, it can be used as knowledge by the Mind AI engine where it is applicable to any domain. This is another attribute that makes the Mind AI engine extremely powerful.

Please refer to the Mind AI Technical Whitepaper for a detailed technical description of the Mind AI engine.

3.2 Leading the Third Wave of AI

The current landscape of AI is focused almost entirely on Deep Learning type neural networks, which require mountains of data to form the models by which they can operate. The end result system does not seem to reason in any way that is intelligible by human minds. What you end up with is a matrix of numbers, in what can only be deemed a “black box”: between the input and the output, one has no idea what’s actually happening under the hood.

Unlike any second wave AI systems out there, we educate - not train - our AI. Rather than feeding the engine repetitive data over and over, you can tell Mind AI something once, and if it makes sense, Mind AI will retain this knowledge for the duration of its life. All of Mind AI’s knowledge follows a linear, qualitative reasoning process. This allows for Mind AI to perform abstract reasoning.

The Third Wave of AI is “contextual adaptation”[7], and Mind AI plans to effectively master context which will enable the human-AI relationship/interaction to truly evolve. Mind AI will intelligently approach

any problem without requiring tons of processing power and data through contextualization and abstract reasoning, thereby defining a new standard of “intelligence” in artificial intelligence.

3.3 Learning to Learn & Metatheoretics

There will be a point when Mind AI can put any new information into terms that it already knows. We call this point Critical Mass. Once Mind AI reaches Critical Mass, we can give it access to the internet to do its own research, and learn on its own. By doing so, Mind AI will be able to tackle problems even when it lacks the information needed to solve such problems.

But how long will it take to reach Critical Mass? We do not anticipate it will take long. For instance, the Brown Corpus has shown that knowledge of around 2,000 English word families covers about 80% of all written texts and 96% of informal spoken text [8]. While this doesn’t mean that it’ll only take 2,000 ontologies to learn how to learn, it’s clear that the Mind AI engine doesn’t need millions of ontologies to reach Critical Mass.

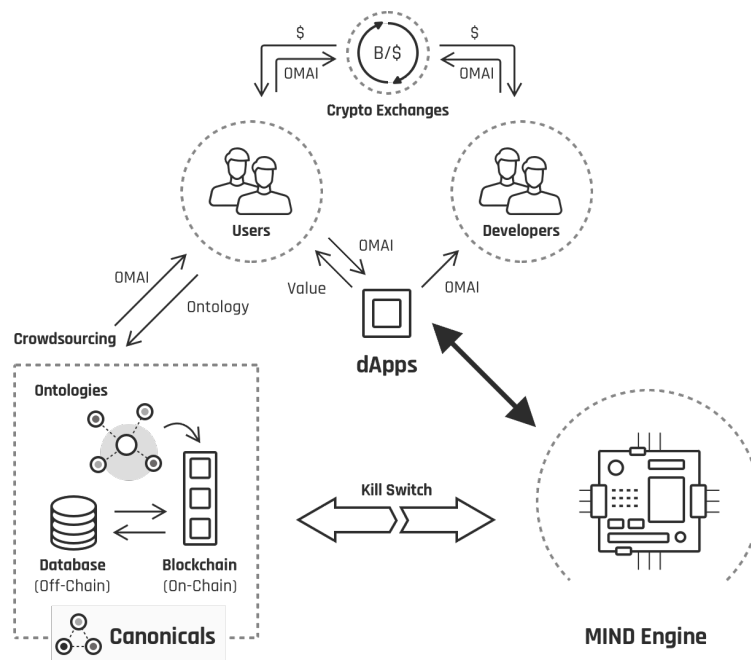
When Critical Mass has been met, we can then render what we call Metatheoretics: the theory of theories. In concept, it is an Artificial Scientist of which some people in the field say will be humanity’s last invention [9]: Mind AI will be a researcher on its own. In essence, Mind AI will be able to create new hypotheses and test them by following the scientific method as a human scientist would. Mind AI can conduct its own original research and create its own original theories. Once Mind AI begins drafting up new theories and approaches to solve problems in many domains, humanity can further benefit by analyzing the reasoning process of Mind AI for every new concept it generates. This will not only augment the ability for mankind to tackle extremely complex problems in our world, but it will also give rise to the augmentation of humanity’s artistic creativity.

4 THE MIND AI ECOSYSTEM

4.1 Overview of Ecosystem Architecture

Democratizing the power of AI is the overall goal of Mind AI. This is why the Mind AI ecosystem is being created in a way in which the Mind AI

engine cannot function without its global community. As mentioned previously, the Mind AI engine needs ontologies to function. The Mind AI ecosystem is built to crowdsource the ontologies needed to tackle various problems in multiple domains. The crowdsourced ontologies are owned not by any single entity, but rather by the community of contributors.



Ecosystem Architecture
(Illustrative and subject to change)

4.2 Participants

Ontologists

Ontologists in the Mind AI ecosystem refer to any agent who contributes ontologies to the database. These agents do not need to be academics, linguists, or engineers. Domain specific ontologies will require subject matter experts, but any individual can input ontologies, including local/cultural slang, to help Mind contextualize information.

Ontologists are critical to the growth of the Mind AI engine and the ecosystem as a whole, as it's the required fuel for the AI engine. Developers, discussed in the next section, must send OMAI tokens to access the ontological database for their dApp or software, and a portion of the OMAI tokens sent by the developers will go back to the ontologist(s) as royalty rewards. Every time an application accesses a specific ontology in the database, the agent who submitted the specific ontology will be rewarded OMAI tokens.

Example: Jane, a college student and a foodie, inputs hundreds of ontologies regarding food, restaurants, and drinks during her freshman year of college. A popular restaurant review company decides to utilize Mind AI to create a restaurant/food recommendation system. Within a few years, many of Jane's ontologies are accessed by a popular restaurant review app as well as other software. Every time her ontologies are accessed, Jane receives a cut of the small fee that developers send to access the ontologies.

Developers

Developers are any individuals or businesses who create a decentralized app or any other software that utilizes the Mind AI engine and the ontological database. Developers must pay 'chi', or a transaction fee similar to 'gas' within the Ethereum network, in OMAI tokens in order to use the Mind AI engine and the ontological database. These payments will then be distributed to the contributors in the Mind AI ecosystem.

Developers or businesses can be ontologists as well. In order to fully utilize the Mind AI engine, they will need both general upper ontology (high-level, general ontologies that are applicable across all domains of human knowledge) as well as domain or business specific ontologies. Any developer or business can contribute their own domain or business specific ontologies to the public database, which they can get paid for when other developers or businesses in the same domain access it. This is another great incentive for developers to be early partners of Mind AI. By contributing ontologies and using those ontologies with Mind AI, the contributing devel-

operators will essentially be getting money back for accessing those ontologies, greatly reducing the cost of using Mind AI. First movers in specific domains that contribute to the ontological database can also monetize from their competitors or other businesses/developers in the same domain that access those ontologies.

Example: iRobot is a robotics company that prioritizes customer service at the highest standard. To improve the automated chatbot support system on its website, iRobot decides to utilize Mind AI's core reasoning engine. In order to utilize Mind AI to the fullest potential, iRobot begins inputting domain specific ontologies on robotics and their service offerings. With the domain specific ontologies and the general upper ontologies accumulated by the community, iRobot is able to deploy a truly intelligent chatbot that can communicate with human customers and answer any questions regarding iRobot's products. Additionally, if iRobot's main competitor decides to use Mind AI, iRobot will receive a cut of the chi (transaction fee) that its competitor pays to access ontologies relating to robotics.

Consumers

Consumers are any individuals who use dApps or software that is powered by the Mind AI engine. In effect, consumers may not even know that they're a part of the Mind AI ecosystem, since they are the end users of products that utilize the Mind AI engine on the back-end. Consumers who pay for products or services through dApps or software in the Mind AI ecosystem will be contributing to the OMAI token economy and to the growth of the Mind AI ecosystem as a whole.

Board of Ethics

The Board of Ethics will be a group of members elected by the Mind AI community to help formulate the set of Ethical Upper Ontologies. Ethical Upper Ontologies are high-level ontologies that are purely focused on ethics. For example, one Ethical Upper Ontology might state that causing harm

to a living being is morally incorrect. These Ethical Upper Ontologies will take precedence within the functionalities of the Mind AI engine in order to ensure ethical use of the Mind AI engine as well as ontologies contributed by the community.

4.3 Necessity of Blockchain

Creating a democratized AI ecosystem requires a number of necessary components, many of which were not available or were inefficient prior to blockchain technology. Here are the most important factors required for the Mind AI ecosystem that blockchain addresses:

Immutability – Ontologies need to be immutable. In the course of collecting ontologies, many inaccurate and low-quality ontologies will be submitted. There will be facts that become obsolete or proven otherwise. However, these “bad” ontologies are just as important to Mind AI as the “good”, high-quality ontologies. This is because Mind AI constantly learns through contextualization. Ontologies will not become obsolete, even if they contain outdated facts. They will instead just contain a different context, which is important for Mind AI, as new ontologies will provide context for new information and therefore explain why the other ontologies are inaccurate. Mind AI needs the history to learn, as part of its knowledge base will detail why things are wrong. Immutability allows this history to remain untouched, and unaltered.

Global Reward System – Though borders are meaningless in the digital world, global payments across borders are still extremely slow, expensive, and complicated. A tokenized economy allows a fast, inexpensive, and transparent reward system for every agent in the Mind AI ecosystem. This is critical for an ecosystem that thrives on a large-scale global participation.

Transparency and Democracy – Blockchain technology allows for a transparent system. This is important to the Mind AI ecosystem in two ways. The first is for reward distribution. A smart contract based reward distribution system will be transparent and the community can be sure

that everyone is getting rewarded fairly and accurately. The second need is for community voting. When the community comes together to vote on Ethical Upper Ontologies, the priority of ontological bounties, or triggering the kill switch, the entire voting system must be transparent to show that the democratic system is not being played for one party's advantage.

4.4 Revenue Generation

The revenue generation model in the Mind AI ecosystem is quite simple. Developers will utilize the power of Mind AI through api calls that we provide. Each query from the developer requires the Mind AI engine to access the ontological database. Developers will need to send a small transaction fee, called 'chi', to access the Mind AI engine and the ontologies. The 'chi' will be dynamically priced depending on a number of factors, including the volume of ontologies required to solve a query. The 'chi' collected from the developers will be distributed to the Mind AI engine (R&D), the Mind Foundation, and the contributing ontologists.

4.5 Crowdsourcing Ontologies

4.5.1 Overview

Anyone in the Mind AI ecosystem can contribute to the ontological database that powers the Mind AI engine. There are no good or bad ontologies, as the most important attribute for each ontology is context. The underlying token economy of the Mind AI ecosystem rewards ontologists with OMAI tokens whenever their submitted ontologies are accessed and utilized.

When an ontologist submits an ontology, it'll first be checked if it is in the correct and in a useable format, and whether it is a duplicate ontology or not. If it passes the two initial checks, the submission is recorded on-chain, and a hash is created for the transaction, the natural language form of ontology, and the canonical form of the ontology. This ontology, along with the hash is recorded off-chain, as there is no current viable distributed storage system that allows for practical access speeds. When a viable solution is available, the off-chain database will be migrated to a distributed storage system to ensure that the entire ontological database is completely

decentralized and distributed. Smart contracts and open source codes will all be shared via Mind AI's github to ensure full transparency.

When the ontological database is accessed, smart contracts will be triggered to automatically reward ontologists whose ontologies were used.

4.5.2 Gamified User Interface

Before the ecosystem launch, the Mind AI team will build an application with a gamified user interface for collecting ontologies submitted by the community. This gamified interface has two extremely important purposes:

1. The application will ensure that all incoming ontologies are collected in a standardized format that is useable by the Mind AI engine.
2. The application will ensure there are no duplicate ontologies and that any redundant submissions are rejected.

4.5.3 Tokenized Reward System

One of the most compelling features of the Mind AI ecosystem is the token reward system for ontologists, especially as it relates to early contributors. By submitting a large quantity of high-quality ontologies that have a wide applicability, an ontologist is essentially creating a portfolio of ontologies that will provide supplementary passive income. Early contributors can be strategic with the types of ontologies they provide, which can have a significant pay off in the future.

4.5.4 Ontological Bounties

The Mind AI engine's functionalities will only be as robust as its database of ontologies it can utilize. Therefore, there will be projects that will require domain, cultural, linguistic, or other specific ontologies. When the community identifies these needs, the Mind Foundation will take action to put bounties on these ontologies to incentivize the contribution of high quality and diverse sets of ontologies. Fulfilling the needs will allow contributors to earn extra OMAI tokens, while addressing the demand for specific

ontologies quickly and efficiently. In case of domain specific bounties, businesses can take advantage of the bounty, submit its knowledge base, and be rewarded.

For example, let's say that a developer is working to improve access to education in various developing regions in the world. The Mind Foundation can create bounties for language specific ontologies for the local languages of the target countries as well as domain specific ontologies for the field of education.

A democratic voting system will be implemented to allow the global community to set priorities on the types of ontologies that need to be collected. This method will ensure that a single party cannot put its own interest above the collective consensus.

4.5.5 OMAI Token Price Stabilization & Growth

Developers utilizing the Mind AI engine and the ontological database must transact using OMAI tokens – no other cryptocurrencies or Fiat money will be accepted. For token holders, this guarantees that as long as there are developers in the ecosystem, there are buyers of the OMAI tokens, keeping the demand steady, as developers will need to purchase OMAI tokens from a public exchange to send the 'chi' required for Mind AI api calls and the ontological data.

5 THE MIND FOUNDATION

The main purpose of the Mind Foundation, a Liechtenstein-based organization, is to build and grow the Mind AI ecosystem, successfully democratizing the power of AI for good. The Mind Foundation plans to support and allocate tokens to back projects that aim to create the most social impacts around the world.

Through various hackathons and bounty programs, we'll incentivize the collection of ontologies and the creation of new dApps powered by Mind AI. For example, if there is a project trying to tackle an issue in global education, but it requires more ontologies to fully utilize the power of Mind AI, the Mind Foundation will put out a bounty with OMAI tokens to

incentivize ontologies that are applicable to the project. This helps everyone in the ecosystem, as the knowledge base and functionality of the Mind AI engine grows with each additional ontology, allowing projects to begin making significant social impact across the world. The prioritization of the ontological bounties will initially be set by the Mind Foundation, but will transition into a community driven prioritization list by utilizing a type of Token Curated Registry.

The Mind Foundation will also seek partnerships with universities and governments around the world to establish local Mind AI ecosystem hubs. These local hubs can be a source of new developers, ontologists, or other participants of the Mind AI ecosystem. The Mind Foundation can also provide AI functionalities and technology to the government entities, universities, non profits, and other organizations.

6 AN ETHICS FOCUSED AI

6.1 Ethical Upper Ontologies

When a machine can begin to reason like a human being, ethics becomes the single most important factor to ensure that the AI is used for good. However, ethics is on a spectrum and it is not an absolute. It is also subjective to each individual based on culture, environment, and other factors. As a global ecosystem, we understand how critical a global representation of ethics across culture and geography is.

Creating an ethical system is complex. In order for Mind AI to be able to perform robust reasoning functionalities, it must know both ethical ontologies as well as unethical ontologies. For this reason, it doesn't make sense to create a control system at the ontology level. Each individual human being has, in his or her knowledge base, a lot of information on "bad" things of this world. However, the fact that a person knows how to inflict harm on others doesn't mean that the person acts upon his or her knowledge. Mind AI works the same way.

For the Mind AI ecosystem, we've decided to create a set of ethical upper ontologies that supersede all other ontologies. These ethical ontologies will be submitted by the Board of Ethics, a group of individuals who are voted

in by the global community. Members of the Board of Ethics must be diverse in terms of religion, culture, race and/or ethnicity, gender, age, and more. Once an ethical ontology is submitted by a member of the board, the other members of the board must vote either for or against the ontology, with the majority vote deciding if that ontology will become official or not.

There won't ever be a set of ethical upper ontologies that will make everyone happy. However, the global community can work together to create the best possible system to benefit humanity and thereby weed out the rogue agents that may try to utilize the technology, and the community's ontological database, for malicious intent.

If something entered into the system is deemed very dangerous, we have the "nuclear option" of implementing the "kill switch" described below. Otherwise, for less serious cases, we can attach the ethical ideas within our upper ontology onto the lesser ontologies that are entered. This would be the concept of an "Artificial Conscience". The operation would be like ontological versioning, where multiple understandings of a topic are stored one version on top of another, with the option of using one specific version. Therefore, everyone will be able to use any kind of knowledge within the ontologies, but they will be informed of any "red flags" regarding that knowledge (e.g. "Do you want to use that term? It has been flagged as potentially racist.") And in fact, any other people who come across works derivative from the flagged ontology will also be informed of the flag due to inheritance.

6.2 Kill Switch

Mind AI's mission to democratize the power of AI doesn't just stop at allowing the global community to direct what Mind AI learns and how its intelligence grows. After all, once an ontological database is created, what's to stop a rogue agent from utilizing the Mind AI engine and the ontologies for malice? This is why the concept of "kill switch" is extremely important to us when we discuss democratization of AI.

While the details of such system are still in the design stage, the concept and practicality exist in the ecosystem, unlike any other AI ecosystems in the world, due to the Mind AI engine's transparency in its logical reasoning

process.

7 TOKEN GENERATION EVENT

7.1 The OMAI Token

The name OMAI comes from combining the words “one”, “mind”, and “AI”. We chose this name because we are all within a singular universe, a single planet, coexisting in our own experience. Our mind, our human evolution has grown from the singular ability of the human mind to reason, to think beyond survival, and to reach instead for a thriving life. OMAI values the embodiment of human morals, and represents our collective effort towards prosperity as one.

7.2 OMAI Token Overview

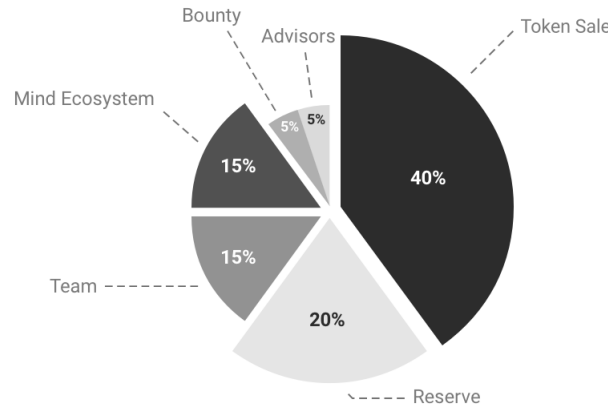
<i>Token Name</i>	OMAI
<i>Type</i>	ERC-20
<i>Total Supply</i>	5,000,000,000 (no future minting)
<i>Total Tokens Available in Sale</i>	2,000,000,000
<i>Price</i>	1 ETH = 20,000 OMAI
<i>Hard Cap</i>	80,000 ETH
<i>Soft Cap</i>	40,000 ETH
<i>Token Sale Rounds</i>	Private Sale Public Sale
<i>Sale Dates</i>	Private Sale: July 2018 - January 2019 Public Sale: TBA
<i>Accepted Payment</i>	ETH and BTC*

**Note: For purchases of OMAI tokens with BTC, we will calculate the ETH/BTC exchange rate at the time of the purchase (which is the Effective Time from the Token Sales Agreement) using CoinMarketCap’s Currency Calculator (<https://coinmarketcap.com/converter/>) and determine the respective amount of OMAI tokens for the amount of BTC.*

OMAI token sale consists of 2 stages: Private sale (early, large volume buyers) and a Public Crowdsale. In case the allocated number of tokens in the private sales is not sold in the allocated stages, the tokens will be rolled into the next stage. At the end of the crowdsale, all unsold tokens will be burned.

Though OMAI tokens will be ERC-20 tokens initially for the crowdsale, we plan to convert them into native OMAI tokens on the TODA network.

7.3 Token Distribution



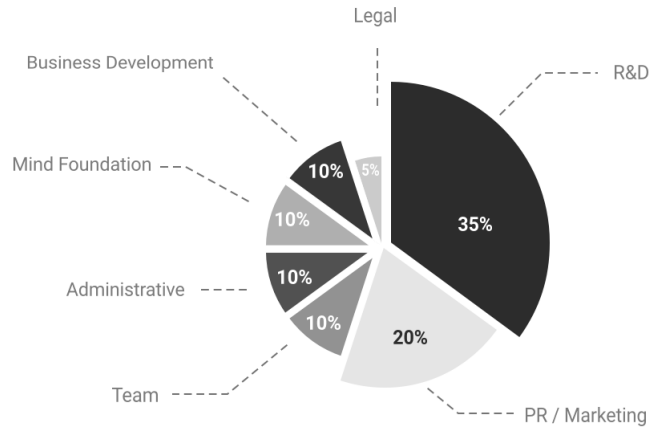
There will be lock-up periods enforced for tokens distributed to the team, advisors, and private sale participants. Buyers in the Public Sale will not be subject to any lock-ups.

Lock-up Schedule for Team and Advisors: 24 month vesting, 6-month cliff, monthly vesting thereafter

Lock-up Schedule for Private Sale Participants: 10% released 1 month after token generation, 10% more 2 months after TGE, 10% more 3 months after TGE, 10% more 4 months after TGE, 10% more 5 months after TGE, 10% more 6 months after TGE, 10% more 7 months after TGE, 10% more 8 months after TGE, 10% more 9 months after TGE, and the remaining

10% released 10 months after TGE

7.4 Use of Funds



7.5 Distribution and Participation Details

As previously mentioned, the OMAI token will initially be generated as an ERC-20 token for wide compatibility with existing wallets, exchanges, smart contracts, and other widely adopted infrastructure. The OMAI token will then be converted from ERC-20 tokens into a native token of the blockchain network that the mainnet launches on, which in our case, is the TODA network.

The distribution of the tokens will be done via a smart contract with the following conditions:

1. Private Sales participants will receive their purchased OMAI tokens to the ETH wallet address they have provided to Mind AI.
2. The Public Sale participants will receive their purchased OMAI tokens to the originating ETH wallet address from where the ETH funds to purchase OMAI tokens have been sent.

3. Tokens will be generated and distributed within 30 days after the final end date of the public crowdsale.
4. All tokens are locked until they are generated; respective lock-up periods begin the moment OMAI tokens are generated. The smart contract will distribute tokens according to the lock-up schedule.

Participation in OMAI token sale will require:

1. Participants must pay with ETH (Ethereum) or BTC (Bitcoin)
2. Participants must have an ETH wallet address
3. Complete a KYC/AML application
4. Be a citizen of countries that are eligible for their citizens to participate in the token sale

All information pertaining to the Token Sale is preliminary and may change.

8 MIND AI TEAM

8.1 Core Team

Paul Lee, M.D. – Founder & CEO

Paul is a clinician, scientist, and an entrepreneur. As a graduate of St Paul's School and University of Oxford with a degree in Molecular and Cellular Biochemistry, he received an M.D. from The School of Medicine at Catholic University of Korea. Paul is also a graduate of Futuremed at Singularity University 2013 and Exponential Medicine 2014. As CEO & Cofounder of Curely and Kuddly, he grew the platform into one of the largest media channels in the US for the health and pet health industries with a viewership of over 6B. He served in the Republic of Korea Army as a lieutenant doctor and a director of Pogok public health center in Yongin. Paul also cofounded JNP LAB in Seoul that acts as a development hub for global exponential technologies.

Joshua Hong – Cofounder

Josh is a serial, internet-media entrepreneur and a venture capitalist. He worked at Accenture as technology and corporate strategy consultant and

Deutsche Bank in its global investment banking and M&A group prior to starting North America's first free-to-play MMORPG (massively multi-player online role playing game) publisher, GamersFirst, which became one of the largest free-to-play MMORPG publishers in the Western Hemisphere with offices in U.S, India, Brazil and Turkey. He also started a virtual game asset trading platform in Asia and one of the largest virtual currency payment platform for gamers in North America, Playspan, as its early backer, shareholder and a board member, and it was acquired by Visa International. He won the local Business Journal's Excellence in Entrepreneurship Award in 2010 and was chosen as one of 40 under 40 in 2011. He is also Founder and General Partner of a \$150M early-stage venture fund. He also founded and chaired YPO Singularity University Seminar, which was awarded one of the highest rated educational programs in YPO, Young President's Organization. He has a B.S. in Industrial Engineering from Purdue University and an MBA from University of Chicago Booth School of Business.

John Doe – Chief Scientist

John has been researching and developing artificial intelligence software for over 10 years. John started programming a computer after 8th grade, with an Apple][+ computer, in AppleSoft BASIC. At Carnegie Mellon University, he began learning languages such as Scheme, Lisp, and C. Afterwards, John began researching and developing artificial intelligence software. John's mission has been to pioneer the development of the world's first true artificial intelligence.

Reeyan Lee – Chief Technology Officer

After discovering computer programming at a young age, Reeyan became proficient in diverse disciplines including consumer facing software, banking backbones, RFID, and healthcare. Reeyan has held senior positions at GE Healthcare as a lead architect and as a lead iOS developer. He's also produced software platforms that have challenged and changed the technologies of healthcare and pet care industries. Reeyan now works to develop a new artificial intelligence paradigm, to change the world.

Eric Kim – Chief Financial Officer

Eric has a background in corporate finance, planning capital & operational budget, due diligence, and crypto asset management. He has administered treasury functions and cash management in private equity firms, and orchestrated complex due diligence review and audit on potential investments. Eric has previously worked in the online gaming industry, digital marketing, and the IT as the controller and VP of Finance before joining Mind AI.

Muhammad Salman Anjum – Chief Relationship Officer in MENA

Being a Technology Futurist, Salman is early Blockchain adopter and key influencer in the space, currently empowering the next wave of Blockchain innovators through evangelizing, training & speaking at global forums. Efficacious author and public speaker, Salman has been featured as success story in “Soul Beats @ UAE” the book published by Department of Economic Development of Dubai. He advises regulators, corporates & senior managers on applications of Distributed Ledger DLT, Big Data & IoT and AI. Salman lives, plays and works in UAE and on stages around the world committed to empower the human potential.

Isaac Bang – Project Lead

Isaac is a technologist who led the design and development of two telehealth mobile apps, Curely and Kuddly. In addition, he’s helped build, manage, grow, and monetize a network of over 80 social media communities that reach hundreds of millions of viewers every month. He’s worked as a tech consultant for a top global insurance firm, and has worked on expert witnessing cases for a professor at UCLA Anderson School of Management creating demand forecast models. He’s studied economics and statistics at UCLA.

Danver Chandler – Director of Community

Danver was an educator focused on increasing student learning and achievement internationally and in the USA before she transitioned into tech, joining the team of a mobile animal wellness app and later media community. She now takes her knowledge of how humans grow and learn into the world

of Artificial Intelligence. She is most passionate about her direct participation in helping to develop a benevolent AI for humanity as a member of the Mind AI team.

Jay Han – Lead Architect

In middle school, Jay became immediately enamored with computer programming after reading a book on the subject. In fact, he started coding without even a computer to implement what he was thinking up. Of course, he decided that early on that he would grow up to be a programmer. He gained background knowledge, skills, and techniques that built a sound foundation for his future in the industry while during his higher education. It has been 20 years, and he's still going strong at his job. He's worked at Naver as a backend engineer and then got sucked up into the startup world, and has not looked back since. Now as an AI engineer, he's looking forward to advance the field as far as it can go, as far as it will take him.

Gabriel Bituna – Lead Computational Linguist

Gabriel is a polyglot, Arabist, academic researcher, professional translator, AI enthusiast, a computational linguist, business developer, and writer. He holds a Ph.D. in linguistics from the University of Bucharest. His previous researches encompass domains like morphology, syntax, phonetics, language death, dialectology, etymology, anthropology, sociology, and history of religions. He has participated in colloquia and conferences across Europe and the Middle East, and he has been involved in several projects organized by IOM, ICMPD, USAID, and NGOs for refugees.

Julien Roy – Lisp Engineer

Julien has studied a wide range of topics in physics and mathematics from quantum field theory to machine learning. He developed and deployed algorithms to solve nonlinear equations and to simulate the chaotic dance of light matter interactions on GPU clusters, among other things. When Julien isn't modeling reality in digital form he is developing his very own game engine. In his free time he enjoys bouldering and dreams of making an algorithm so beautiful and powerful – a piece of digital prose that could

exploit the world's unused computer power to solve humanities greatest problems while we lay back and enjoy the spectacle.

Anders Puckett – Lisp Engineer

Anders was an independent software consultant before joining Mind AI. Heavily influenced by the symbolic AI and computer media research of the 1960s and 70s from folks like Douglas Engelbart and Carl Hewitt, his technical interests are in automatic program synthesis, formal runtime modeling, and natural human-computer interfaces. He hopes to build automated reasoning systems with transparent operating principles that can generate software and hardware systems that are more secure, fast, resource efficient, and enjoyable to use than those designed manually.

Isabelle Lorge – Computational Linguist

Isabelle studied Romance Languages in Brussels before moving on to a PhD in Theoretical and Applied Linguistics at the University of Cambridge. Her interests focus on multilingualism, lexical acquisition, pragmatics and theory of mind. She has published several articles in peer-reviewed journals and presented her research on bilingualism and context-driven inferences at events such as DUCOG and BUCLD. In 2017, she interned at Microsoft Research to work on visually grounded dialogue. She believes the next breakthrough in artificial intelligence will come from a complete rethinking of the core principles which form the basis for human reasoning and is determined to have a shot at making it happen.

Donald Fisk – Chief Lisp Engineer

Donald began programming since 1981, and became interested in AI and Lisp shortly afterwards. Lisp is his favourite language, but he has also programmed in C, Java, Python, Prolog, Pascal, and various assembly languages. He has developed AI rule-based systems for fault recognition and routing in telecommunications systems, musical score generation from MIDI input, phonetics, and web page layout, and also used Lisp for document processing, and to develop a visual dataflow programming language, Full Metal Jacket. He had papers published on MORSE, a collaborative fil-

tering system for movie recommendation, and on Full Metal Jacket. He has worked mostly in research and development, and is inventor/co-inventor on six patents in telecommunications, computer graphics, and musical score generation.

Eric Moss – Senior Lisp Engineer

Eric brings a broad range of experience, having degrees in both Computer Science and Electrical Engineering. During his time in New York’s financial district, he wrote bond calculation systems in Eiffel. In a Silicon Valley startup, he wrote Lisp-based logging systems for an RFP engine. After returning to school for a Masters in Computer Science, he wrote Perl-based genomic analysis tools in the university’s bioinformatics lab. After a semester teaching math, he entered the healthcare industry, where he brought from prototype to production a rules-based system for detecting fraud, waste, and abuse. That system is in use today analyzing claims for tens of millions of insured lives.

8.2 Advisors

Brock Pierce

Brock Pierce is a venture capitalist and serial entrepreneur best known for pioneering the market for digital currency. He is a Founder and Managing Partner of Blockchain Capital. Blockchain Capital has invested in more than 30 blockchain enabling technology companies.

JungHun Lee

JungHun is an entrepreneur, advisor, and philanthropist. In 2002, he established Item Mania, later IMI, the first and largest game item trade market on the web in South Korea. As CEO, he received recognition from the Minister of Economy in South Korea due to his success at just 27 years old. JungHun also operates a free meal service program. Today, he is an advisor to one of the largest global cryptocurrency exchange, Bithumb.

Stephen Ibaraki

Stephen has more than 100 top executive roles, and innovation awards and recognitions. Some of his executive positions include: co-chair Practitioner Board Association for Computing Machinery, founding chair Global Industry Council and vice-chair board IP3 International Federation for Information Processing, founding managing partner REDDS Venture Investment Partners, founder technology advisory board, Yintech Investment Holdings Ltd., founding member Beyond Initiative (Audi AI Think Tank), founding chairman outreach UN ITU “ICT Discovery” Journal, founding chair-moderator/keynote/organizer UN ITU AI events, found of ITU UN Briefing New York, founding chairman outreach, founding member steering committee seminal UN ITU AI for Good Global Summit with XPRIZE Foundation, 20 UN Agency partners, 47 media, founding chairman Technology Advisory Council Financial Services Roundtable FinTech Ideas Festival (FSR: 92.7 trillion managed assets, 1.2 trillion annual revenue), invited advisor to board within IEEE. His awards include: 14 Microsoft Most Valuable Professional Global Awards, and 3 global gold awards, 3 founding Fellow awards, and a global lifetime achievement.

Christoph Hering

Christoph is a Blockchain enthusiast and actively coaches companies and entrepreneurs to integrate the Graphene Blockchain into their companies. It's Christoph's goal to build profitable blockchain companies. He's currently the founder and CEO of Payger, a new payment platform for digital assets.

Krzysztof Gagacki

Krzysztof is the founder of IOVO, the first decentralized human value network giving power over data back to the people who generate it. He has established himself as a significant figure in the crypto space by entering the market at its early stage of development and being an early investor of some of the leading blockchain projects. Krzysztof is also a founder of the first decentralized Ethereum-based lottery, a co-founder of Chain Capital, and a key organizer of Poland's largest crypto conference - Connect Warsaw. At the same time, he is a regular feature on the keynote circuit and

an advisor to blockchain based companies.

Ronald Shon

Ronald Shon heads a family office with investments in technology, education, real estate, natural resources, fashion, private equity and venture capital primarily in North America but also in Asia. Ron has extensive contacts in the investment banking sector and was a founding shareholder of Salman Partners Inc., an independent boutique investment banking firm which since its inception has raised over \$20 billion CDN.

George Neville-Neil

George Neville-Neil is a computer scientist, teacher, and author. His professional interests include: code spelunking, operating systems, networking and security. He is the co-author of *The Design and Implementation of the FreeBSD Operating System* with Marshall Kirk McKusick, and he is the columnist behind ACM Queue's "Kode Vicious". George holds a bachelor's degree in computer science from Northeastern University and is a member of the ACM, the Usenix Association, and the IEEE.

Susan Oh

Susan Oh is the Founder & CEO of MKR AI and the Chair of AI for the United Nations General Assembly's Blockchain For Impact. She also collaborates with Cogent Law Group LLC, an established fintech compliance firm in the blockchain and crypto space. She is focused on getting better validated data for the development of human-centric AI through blockchain features, especially in service to the UN's Sustainable Development Goals. She is also advisor to several ICOs including Hoboken Smart City Project, Mindfire.global, BlockAble.io, IVEP Dubtokens, and SATTA.

Jean-Baptiste Decorzent

Jean-Baptiste has 18 years of experience in leading key initiatives and projects for global entities ranging from start-ups and multinationals to governmental and international organizations. He has sound expertise in ICT/mobile telecom, humanitarian & development, strategic planning &

partnership, digital financial inclusion and blockchain. Jean-Baptiste is a creative thinker and adept at executing challenging projects and solving complex problems around the world.

SungJae Hwang

SungJae Hwang is a serial and parallel entrepreneur, investor, and inventor. He is a partner at Futureplay, a top-tier start-up accelerator in South Korea and also the CEO of FoundationX, an accelerator and building platform for blockchain projects. He served as Chief Product Officer at Fluenty Inc., an AI chatbot startup that was acquired by Samsung Electronics in 2017. He is also a co-founder and Chief Strategy Officer at Pium Labs Inc., a New York based IoT startup.

Federico Pistono

Federico Pistono is an entrepreneur, angel investor, researcher, author, science educator and public speaker. He holds a BSc in Computer Science from the University of Verona, and he is a graduate of Singularity University, NASA Ames Research Park. He is the Futurist and Technology Expert for “Codice: la vita e digital” (Code: life is digital), a major program which airs on Rai1, in Italy. He is also the Head of Blockchain at Hyperloop Transportation Technology. At 31 years old, he became the youngest member of Italian Angels for Growth, the largest and most prestigious Angel Investors group in Italy. He has co-founded four startups two in Italy and two in the US in e-learning, media production and distribution, wireless communication technology, and he has consulted on technology and innovation for governments and Fortune 500 companies across the world, including Lufthansa and Google.

Nathan Nguyen

Nathan is the General Director in charge of the Vietnam market for a US based medical service start-up, Jio Health. Nathan drives the organization’s strategic growth, partnership development and oversees its talented and passionate staff. He also currently serves on the Board of Directors of Viet Capital Commercial Bank and Binh Thanh Import-Export Company,

one of the leading garment manufacturers in Vietnam.

Dr. Pongrapee Buranasompob

Dr. Buranasompob is a venture partner of REDDS, known for futuristic innovation and global think tanks in prominent science communities. He was formerly: the Commissioner under the Secretariat of the Prime Minister, Secretary to Chief Ombudsman, and the Executive Director of International NGO. He is a National Best Selling Author, Fulbright Research Fellow, Oxford Business Alumni Committee (Bangkok Chapter) and he is pursuing dual doctorate degrees in Organization Development and Counseling Psychology. He is also providing advisory roles to KMITL, a leading Science and Technological University in Thailand in partnership with Carnegie Mellon University. He also founded PAC 17, and directs its Executive Education and Enrichment Institute in partnership with SAID, Oxford University.

Will Pangman

Will Pangman is one of the Blockchain Industry's top go-to-market strategists with a track record of helping blockchain startups understand and navigate the ecosystem, build community, develop business models, design sound network economics, build teams, raise money, and get connected in the industry. Will knows how to evaluate conceptual soundness of a project, develop a roadmap to success, design crowdfunding and launch campaigns, and bring teams the support they need to reach and exceed their goals. He continues to contribute his time and energy to growing local blockchain communities. His latest project is Badger Labs, a venture studio for blockchain development based in Madison, Wisconsin. Badger Labs aims to attract and develop local talent of all ages and experience levels to help them find work in the industry, and assist founders in turning their blockchain ideas into viable projects and connecting them to growing global ecosystem.

HaeMin Yoo

HaeMin is the Head of Business Development and a board member of YG

Entertainment. He also hold positions as COO and board member of YG Plus and serves on the board of YG Investment. He has a bachelors from Yonsei University in Business Administration.

Alex Alexandrov

Alex Alexandrov is extremely well-versed in financial markets, and a pioneer in crypto-currency. Alex was a technical Forex and Options trader and EA developer for MT4 platform. He then chose to venture into direct sales before branching out on his own to successfully develop and manage coincable.com, an online bitcoin mining hardware supply store that was based out of Vancouver. Alex brings over 15 years of combined experience in IT and business management to his latest venture as the owner and CEO of Coinpayments.net, a premium Bitcoin, Litecoin, Ethereum and other alternative crypto-currency payment processor. Coinpayments' services are trusted by over 2.3 million vendors across 182 countries.

Jason Butcher

Jason Butcher is the COO of CoinPayments, the world's first and largest crypto currency payment technology provider. He also co-founded BlockChain Huba community that fosters new ideas and advancements in the field of cryptology and financial technology. Jason is an Advisory Board Member of Blockchain Association of Canada and a Strategic Advisor at RightMesh, VectorZilla and has been helping several other companies like Parallel Payments, NestBlockchain, MoolaCard, CoinFunder, ScanTeller, Pindify, Mondofi etc. grow productively.

8.3 Partners



9 IMPLEMENTATION PLAN & ROADMAP

Q2 (2018)

- Develop Mind AI's understanding of basic verbs from Cambridge texts plus use of supporting information
- Accumulate ontologies for basic "person" objects (e.g. I, you, he/she/them)
- Define ontology collection methods

Q3 (2018)

- Define use of basic verbs in different grammatical situations
- Accumulate ontologies for basic "people", "at home", "school and workplace", and "leisure", using vocabulary from Cambridge text
- **Milestone:** Have Mind AI read and display basic comprehension of the book: The Little Prince

Q4 (2018)

- Accumulate ontologies for "the world" and "social issues" using vocabulary from Cambridge
- Begin building off-chain ontology database and preliminary ecosystem
- Devise an interoperability model for the Mind ecosystem
- **Milestone:** Have Mind AI read and display advanced comprehension of the book: The Little Prince
- **Milestone:** Have Mind AI read and display basic comprehension of the book: Brave New World
- **Milestone:** Accumulate 3,000 words in the ontological repository

Q1 (2019)

- Begin rolling out Mind AI API to selected partners
- Develop Mind AI's capability of making simple logical leaps that is implied in domain knowledge but is not specifically outlined in instructions
- Launch Mind ecosystem private alpha, testing end-to-end ecosystem processes with selected partners
- **Milestone:** Read and comprehend arbitrary Wikipedia article
- **Milestone:** Educate the Mind AI with instruction manuals in natural language, and have it follow the course of action from instructions to solve simple domain specific problems

○ **Q2 (2019)**

- Add another 600 words into the ontological repository
- Break down existing 1,500 ontologies into more fundamental units and additional contexts for a deeper understanding
- Open Mind AI API access to public
- Launch private beta of the Mind ecosystem
- Develop resolution models for complex synonymies
- Provide cross-domain reasoning to those who apply for this functionality

○ **Q3 (2019)**

- Add another 600 words into the ontological repository
- Break down existing 1,500 ontologies into more fundamental units and additional contexts for a deeper understanding
- Provide ontology services in the Mind ecosystem: creation, validation, and versioning
- Open Mind ecosystem to general public

○ **Q4 (2019)**

- Add another 600 words into the ontological repository
- Begin crowdsourcing domain level ontology with gamified UI and reward system
- Roll out API in other languages (Spanish and Korean) for select partners
- Open Critical Mass extensions to general public

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