

Primas

Restoring Health to the Internet



White Paper

(version 1.4.1)

Abstract

Primas is an open ecosystem for the consumption, publication, and recommendation of content. This white paper outlines how Primas enables this production and selection of content, making use of blockchain technology, social recommendation and token incentives.

The Primas team is committed to using blockchain and other technology to restructure the online content market, so as to solve the problem of quality content being lost, plagiarized or partially reconstructed. The decentralized content sourcing and recommendation mechanisms ensure quality content for users. A brand-new content evaluation system ensures direct benefits to the producers of quality content whilst the inherent tamper-proof properties of blockchain provide copyright protection for the original creators. Finally, the decentralized data storage and management system offers better protection for users' privacy and security.

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Preface

Over the past decade, the Internet has developed rapidly as a result of an economy model based on traffic. In this model, user traffic is converted into capital through advertisements. The increasingly innovative, competitive and lucrative industry of advertising has allowed the public to access information and services at very low or no cost. Today, along with our rapid transition from an age of information scarcity to an age of information overload, the problems brought by the traffic economy are becoming apparent. Due to the information overload, our eyes have become a highly contested resource. In the struggle to get our attention, content platforms utilize complex psychological techniques to drive clicks. As raw views are the accepted currency, these platforms focus on quantity over quality. The result is large amounts of low quality content being created and plastered over our screens. This industry is unregulated and fueled by human emotion; as such it lends itself to plagiarism, partial quoting, content tampering, outright misinforming and fake news. Over time, this system has been squeezing out producers of quality content. The content ecosystem of the Internet is in grave danger.

Who and what can we trust on the internet today? Are we still providing value? Who is responsible? Before the advent of blockchain technology, no centralized entity could offer a practical solution to these challenges.

By utilizing the Decentralized Trusted Content Protocol (DTCP), every piece of digital content will have a unique digital identity called 'Primas DNA' and be permanently affixed to the Blockchain network. Primas constructs a revolutionary evaluation system for credible content, bringing high quality content to readers through content sourcing, and reviewing free from traffic manipulation traffic and with additional community incentives.

Primas Team

Primas was created by the core team of Yuanben (means “Original” in Chinese), a leading copyright service platform based on blockchain. Committed to applying blockchain technology to digital copyright, over the past year Yuanben has gained widespread industry recognition for its professional approach, experience with blockchain technology and commercial achievements. It was also the first blockchain product in China to focus on copyright. In 2016, Yuanben received investments from Wanxiang Blockchain and Fenbushi Capital.

Over the course of Yuanben’s development, we realized that the power of a single team alone is not enough to drive changes across the whole industry. We hope to create a fully independent open-source platform to benefit the content industry as a whole.

Apart from an in-depth understanding of blockchain technology, the core team has also accumulated years of experience in the development and operation of mobile browsers. Browsers are primarily responsible for content aggregation and recommendation. In this regard, the Primas team also has in-depth knowledge of media, big data and recommendation algorithms.

Product level application has long remained the biggest challenge in the blockchain industry. Years of industry and product experience of the Yuanben team will serve as an important guarantee for the successful operation of the Primas project.

Problems with Current Internet Content Ecosystem

Below, we have listed some of the major problems facing the online content industry. These are the problems Primas seeks to resolve.

1. Credibility Problem Due to Information Overload

Internet enabled new media has improved the efficiency of information diffusion to the extent that information, a once rare and expensive resource, has become freely available and in excessive quantity. The ability to filter relevant content out of the mass has created a new kind of scarcity.

Search, recommendation and subscription are the most common methods of content retrieval. No matter how the appearance of these tools changes, they are all solving the problem of “retrievability” of information, making it easier to organize information and create order from disorder. Although these tools make information easier to access, they fail to deal with the problem of credibility. Most information on the Internet only consists of a URL and the information itself. A single story or piece of information can be spread across many thousands of news outlets, each time being intentionally or unintentionally distorted. In many cases, these distortions may even lead to a conclusion that is the opposite of what was intended by the original information.

In real life, when faced with several pieces of similar information, we find it difficult to distinguish between credible original information and the tampered false copies.

Solution: Primas DNA

The Primas network generates a unique digital fingerprint known as Primas DNA for each original piece of content. Primas DNA is constructed by compiling metadata such as the author, the publication time and the content hash. When we see a piece of information, we can establish who created it, when and who distributed it. By using metadata, we will be able to make the information itself more valuable and even affect our judgment on the quality of information.

2. Rampant Plagiarism and Piracy

Because digital content is so easy to copy, it becomes very difficult to protect the rights of original creators. Plagiarism and piracy have been persistently haunting the digital content industry and greatly hindering its development. The primary issue with the current situation of rampant plagiarism and piracy is the impossibility to trace information back to its original source. Once published online, digital content tends to spread quickly, becoming even more difficult for those reprinting the content to find the author and source. The second issue is the lack of an automatic authorization mechanism. Even if the party reprinting the original content manages to find the original author, without a standard authorization process, the cost of communication would be too high to warrant any meaningful authorization. The third problem is the difficulty in proving ownership or piracy. Often, plagiarism and piracy are hard to detect, and the cost of evidence collection and prosecution is very high.

Solution: Primas DNA, Smart Contracts and Blockchain-based Proof of Existence

Primas DNA ensures that the origin of the digital content can be traced even despite partial tampering. Smart contracts can achieve automatic authorization without human intervention and proof of existence based on blockchain can greatly reduce the cost of evidence collection in the case of piracy

3. Poor Content Quality Due to Economy of Attention

The concept of “free” has been a long standing feature of Internet services. As large numbers of users are being attracted to using free products and services, advertisements are introduced to create revenue for the platform. Incorporating advertising has become the most persistent and mature business model for generating revenue on the Internet, it is now the standard method for valuation. Advertisements are a typical result of the Economy of Attention which can generate revenue through providing traffic. Propelled by self-serving interests, many content producing platforms have emerged on the Internet; working in a pipeline, these platforms vie for the attention of users with fake, misleading titles and indecent content. They even resort to stealing and using other content producer’s work to gain traffic and profit. In the year of 2016, it was reported that the number of WeChat Media infringements totalled a shocking 3.5 million. This bad behavior has seriously impacted the ability for producers of quality content to earn a living online and in doing so, saturated the market with poor quality content.

Solution: Primas Content Evaluation System and Incentive Mechanism

Primas establishes a content evaluation system free of traffic manipulation to measure and improve the quality of digital content across the whole community. It achieves this by giving Primas tokens as rewards to producers and distributors of quality digital content.

4. Manipulation of Content Displayed on Centralized Platform

As mentioned above, there are two predominant means for obtaining digital content today: searching and recommendation.

Searching is the most direct way of obtaining digital content. One can just input keywords into a search engine and quickly obtain results. Yet, search engines themselves are not without fault. Typically, users will only pay attention to top of the first page of results, this renders other sources of information without viewers. Due to the economy of attention, search engines are increasingly incentivized to manipulate the search results. As an example, on June 27 2017, the European Commission imposed a €2.44 billion antitrust fine on Google, who were accused of abusing search advantages on their search engine by recommending their own services whilst burying competitors.

Recommendations are a natural developmental aid to adapting to new environments or the knowledge of a new skill or theory. The modern content recommendation engine can collect and analyze a user's personal preferences, predict their preferred content, and proactively recommend digital content to them. This kind of "learning" engine, whilst greatly reducing the difficulty threshold for accessing relevant information, also brings about a number of other problems. Using algorithms, it recommends content that we would "like" and screens away content that we would "dislike". The eventual effects of this

manipulation lead to the resulting information increasingly narrowing in scope, trapping us within a small “information bubble”.

Whether it is searching or recommendation, centralized entities select and screen information using machine algorithms. As these platforms are the creation of humans, intentional intervention and programmed bias is unavoidable. Despite this, the large-scale application of machine algorithms will unavoidably lead to the Matthew Effect, where “the rich get richer”, leading the content displayed to follow the “power law distribution” at an even faster rate.

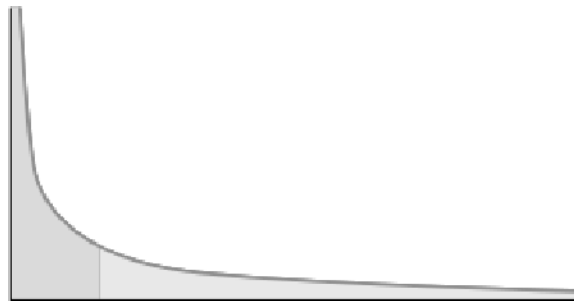


Figure 1. Power Law Distribution, by which 20% percent of the content are dominating

Solution: User Self-governance

On Primas, users are free to choose to enter groups that interest them, all of which will be under the governance of the collective, free of any control by a centralized algorithm. All algorithms related to the displaying of content are open-sourced and transparent; users can also choose to contribute to the creation of these groups by designing their own set of laws.

5. Privacy Problems and Data Abuse

When we use search engines and content platforms, our data usage habits and personal details are being collected by background programs. For example, a user’s habits can be recorded using account registration information and data

procured from the browsing history. It is not only the content producers who benefit from collecting the results of these data sequences, but also the platforms itself. With this data, a user's identity and online habits can be easily analyzed in order to improve advertisement recommendation, and may even be stolen by platform staff to be subsequently sold on the black market.

Solution: Full Protection for Data Privacy Using Blockchain Technology

On Primas, information that must be disclosed will be available in a public and transparent manner; it will also be recorded on the blockchain. This information includes an author's username and relevant transactions etc. Information on a user's browsing history and private information will never be recorded and uploaded.

System Design

Overall Architecture of the System

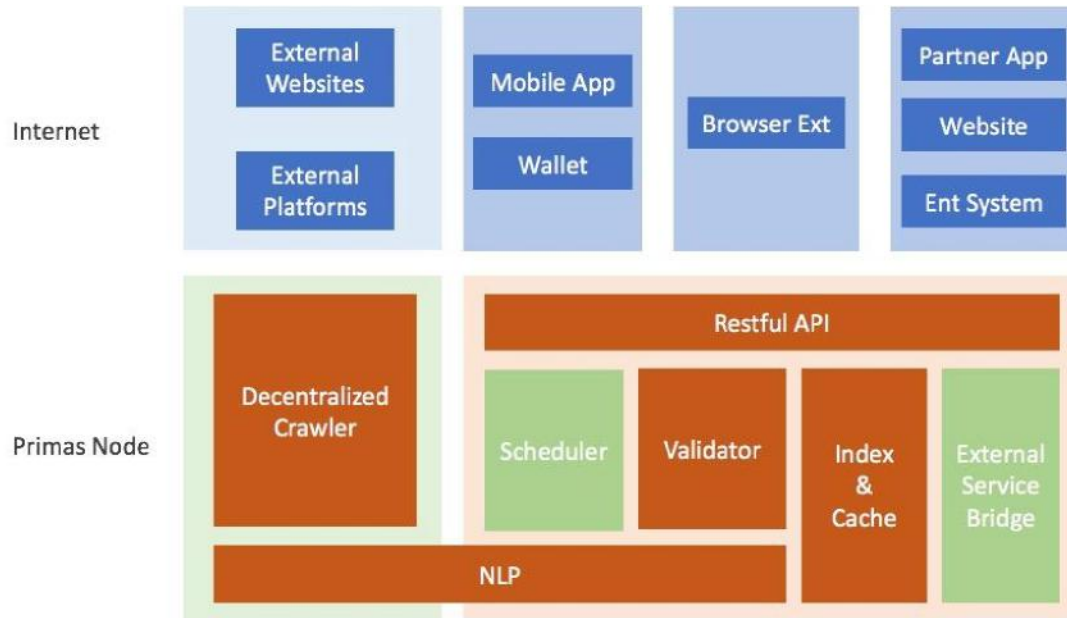


Figure 2. Primas System Overall Architecture

Our blockchain-based solution is built on top of Ethereum and shares the same key logic of smart contracts. Core data is written on the blockchain and content data is then stored using the IPFS. Primas Nodes act as a common middle layer on the public chain running decentralized crawlers, DApp state cache, external services and other functions. On top of the Primas Node is our DApp. Other content platforms can also be linked to the Primas Ecosystem through this Node. For example, it can connect with Yuanben's services to achieve accurate proof of existence, collect electronic evidence and ensure legal validity. The Primas Node also offers Restful API for all clients and speeds up client access with functions like distributed data caching and indexing.

In the layer above the Primas Node exists the clients directly used by users. This include the Primas mobile decentralized application and browser extension, etc. In addition to the Primas client, any entity or individual (third

party applications, WeChat Public Accounts, websites, enterprise systems, etc.) can connect with the Primas Node to join the Primas ecosystem.

DTCP and Primas DNA

Trust is a critical component that is missing in the existing digital content ecosystem. Primas essentially builds a new layer on top of the Internet to solve this problem. This layer contains blockchain based infrastructure and a new protocol named the DTCP. The aim of the DTCP is to become the standard of content metadata that will be used by the whole digital content industry. By adding immutable metadata to digital content using blockchain, the DTCP provides a more complete overview of online information. This enables the tracing of sources and distribution to create an ecosystem of trustworthy and responsible content creators.

DTCP metadata contains properties such as time of publication, author's details and original content hash. There are also features enabling peer recommended information to more easily spread, such as automatic authorization licensing, and the similarity fingerprint. Other properties such as content categories are also recorded in the DTCP since they are important in content accessibility and can often be lost during the spreading of content.

For every piece of original digital content published with the DTCP, a "Primas DNA" code will be generated as its unique ID. Together with the content, Primas DNA will be spread across the whole network as a guarantee for content credibility. Any reader can conveniently verify the consistency between the content and its DNA to make sure that what is being read is an original piece of digital content, free of any tampering.

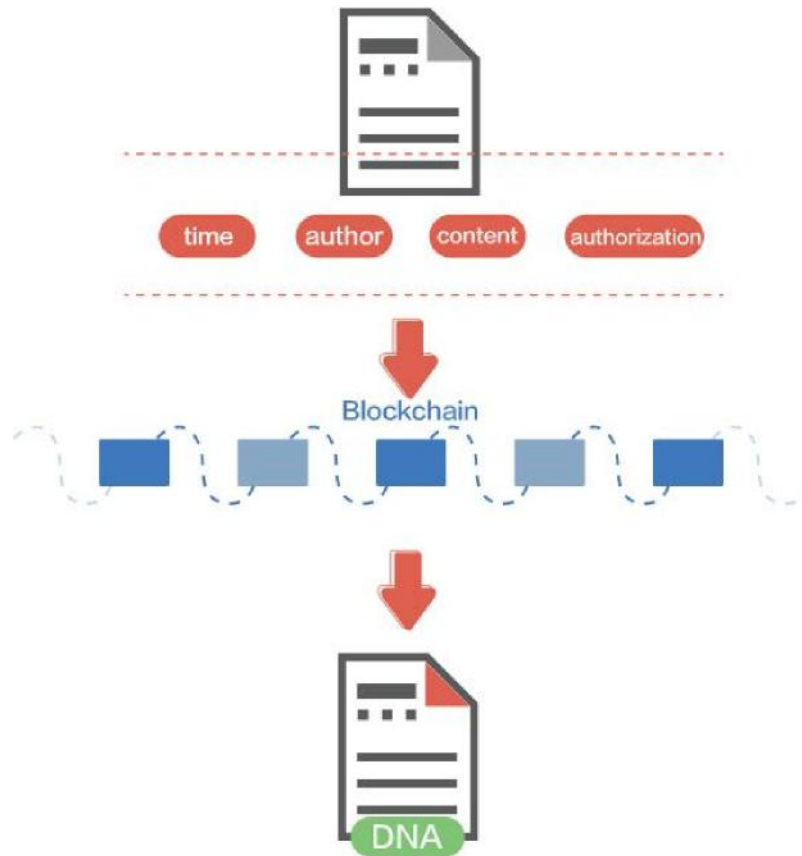


Figure 1. Primas DNA

Primas DNA is proof of originality. It can work with an author's secret key to prove his/her content ownership, and can work with block data to prove that a piece of digital content was published earlier than any other unauthorized reproduction. Together they can prove the originality and ownership of the digital content in question because of these immutable properties.

Primas DNA is a decentralized interface for content sourcing. Despite numerous reproductions to other places, readers can still use this DNA to track the complete reproduction path, see the authorization license of the original content, and obtain new authorizations.

Even if DNA is lost in the process of spreading (e.g. intentionally deleted), the original content can still be found on the blockchain through analyzing content fragments. Primas browser extensions and mobile clients can help users solve this problem quickly; when a browser with such extension is used to view content, or when Primas mobile clients are used to read shared content, all the origin-tracing information will be shown immediately as long as the content

has been registered on Blockchain, regardless of the presence or absence of DNA. Primas will also provide various SDKs and APIs so that any third-party websites, platforms and mobile clients in the ecosystem can quickly acquire the functions to generate DNA, protect content and trace its origin. Primas is committed to adding the DTCP to all quality content on the Internet and solving the problem at its source, so as to address credibility challenges for Internet content due to the absence of information ID.

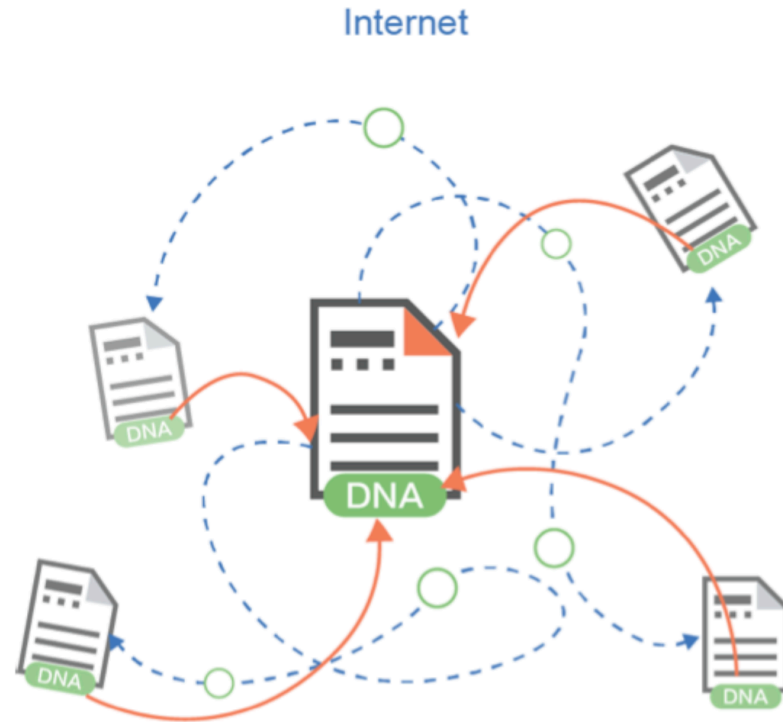


Figure 4. Origin Tracing in an Open Ecosystem Using DNA

User Identity and Credit Rating

Every user has a unique identity in the Primas network. This unique identity ensures the construction of a credit system which is an indispensable step for the protection of original content. It is also very helpful in building a community with quality content, reducing the spread of fake information and curbing irresponsible posts

Primas aims to construct an open ecosystem for valuable content that covers not only end users such as original authors and readers, but also media entities, enterprises and other media platforms. Primas supports account namespace which properly addresses identity issues faced by authors on other media platforms.

For every account, Primas will calculate the author's credit rating, which will be decided by a combination of factors such as the number and quality of published content, and number of Primas tokens in holding. The credit rating will also be part of the indicators used for evaluating an author's published content.

One of the applications for credit rating is to handle content infringement. Primas has designed a function for reporting content rule infringement. Reports will be processed by several verification nodes elected by the community, if and infringement is confirmed to have taken place by the verification nodes, certain number of locked Primas tokens will be deducted from the infringer's account as punishment. On top of this, adjustments will be made to the infringer's credit rating to affect future content publishing and the earning of PST.

Group Economy

Due to the complex and subjective nature of defining and quantifying quality, is it very difficult. In practice, social recommendation is a method that is more efficient than recommendation based on algorithms. Aside from introducing multidimensional metadata to improve information quality, Primas will establish social groups to bring together those with shared interests, shared values and shared expectations, to further evaluate information credibility inside the system.

For Primas mobile users, social groups are the main organizational structure for information. After content is published within a group, its authenticity, reliability and quality will be evaluated by group members collectively. The quality of a group is dependent on content within it, therefore members have a responsibility and motivation to maintain standards. To avoid quality deterioration, all users must have a small amount of Primas tokens in reserve before joining a group. The minimum number

of Primas tokens required will be decided upon the establishment of the group, or can be decided by voting amongst group members.

Social groups are self-governing organizations in which all members share in the interests of the group. The group receives Primas tokens as a reward from the system for development and improved quality. These are in turn distributed amongst the group members based on their personal contributions. Any destructive or disruptive behaviors risk facing resistance from group members and may result in expulsion from the group.

Traditionally, online social groups are largely ineffective as they can be easily used by individuals to spread fake information or spam. The inherent trust properties of Blockchain can resolve this issue to prevent malicious information or spam clogging up the group. Primas also applies this concept of economic concept within social groups to enhance the potential for self-improvement.



Figure 5. Content group governed by its own members

Content Quality Evaluation

Primas designs a completely new system for content evaluation. Under this system, value of a piece of digital content is not just determined by views or clicks, but through a series of comprehensive measures. Factors such as social recommendation, forwarding and an author's credit rating will be used to determine value.

Based on the intensity of readers' responses, content can be ranked in an order that displays the most relevant or popular pieces in ascending order. The higher the intensity of reader interaction, the bigger its contribution to the content evaluation process. Reposting is a better demonstration of content value than several likes, and so is reproduction compared to reposting. To accurately assess content quality, all these factors must be comprehensively measured. The Primas evaluation system adopts interactive indicators of like, review, reposting and reprinting:

$$V_c^t = \sum_{i=1}^3 \sum_{j=1}^{c_i^t} \alpha_i HP_j \Gamma_j + \beta \sum_{j=1}^{d^t} HP_j \Gamma_j S_j$$

In this formula, V_c^t is the value of content c at the time of t ; α_1 , α_2 , α_3 and β respectively represents the weight of likes, reviews, reposting and reprinting; c_i^t is the number of the i type interactive operation at a given time window of t ; and Γ_j is the user's credit rating at the j^{th} interactive operation. Similar to the Voting Power idea of Steemⁱⁱⁱ, HP_j is the value of users' power during interactive operation.

$$HP_j = PST_j / \left\{ \frac{C_j}{1 + e^{\theta - C_j}} + \theta \right\}$$

In this formula, Primas Token_j is the balance of unlocked Primas Token in user's account at the j^{th} interactive operation; C_j is the total number of user's interactions within a given time window at the time of the j^{th} interactive operation; and θ is a threshold. In case of frequent interactive operations within a certain period, HP will keep decreasing and consequently the influence of this user's operation on content evaluation will also keep diminishing. After frequent activity, HP will recover over time. For reproduction, additional consideration needs to be given to quality factor S_i of the reproduction activity:

$$S_i = \frac{s_i}{\sum_j s_j}$$

$$s_i = \sum_{i=1}^{C_a} \left[\frac{1}{C_i} \sum_{C_i} V_{C_i} \right] \cdot C_a C_p^2$$

S_i is obtained after determining the quality value s_i of reposting, while s_i is obtained after the calculation of content value, author number and total number of crawler involved in all the reposting activities. In this formula, C_a is the total number of authors while C_p is the total number of crawlers. At the same time, s_i is used to prevent cheating by an individual author or individual crawler which may dishonestly gain reward through automatic reprinting. Since the definition of s_i includes the content value of V_{C_i} , the calculation of s_i is a process of repetition. For a new reprinting, the value is initially set at a small fixed number. As more reprinting takes place from this base number, the quality value will be updated continuously and will finally influence the evaluation rating of a new content.

Indicators such as numbers of likes, reviews and shares are measured in the Primas mobile application. Content reproduction is difficult to measure as this takes place outside the system. Primas has designed a system to address this called the decentralized crawler system; which is capable of measuring the extent of content diffusion across the whole network and the influence of media involved. By introducing the indicator for reposting, Primas will be able to conduct a more comprehensive and objective assessment of content quality.

Decentralized Crawlers

Primas has implemented the first decentralized crawler system on Blockchain. Distinct from their counterparts, the crawler system of Primas is used to track every reproduction of an article across the whole network. Together with Primas DNA, it can provide unprecedented copyright protection for original authors. At the same time, it offers content origin traceability, reliability and a degree of content authentication to readers.

To help original authors track the spread of their digital content on the Internet, Yuanben has designed the Hawkeye whole-network reproduction monitor system. Using the crawler system and Natural Language Processing (NLP) technology, we can identify the reproduction of content originally published on Blockchain across the whole network (including but not limited to Twitter, WeChat Public Account, personal blogs, etc). Regardless of any amendments, additions, deletions or paragraph rearrangements to the content, Hawkeye can still find the edited and reposted articles by comparing text similarities. Hawkeye is one of the most robust and widely adopted core functions of Yuanben.

To bring benefits to more users, we will use Hawkeye as the basis for the Primas decentralized crawler system. Combined with community incentives, Hawkeye will have a greatly boosted capacity, promoting content traceability and copyright protection to a new level.

Worth noting is that the decentralized crawlers are just an automatic tool for tracking reproduction. For Primas, the core value lies in the verification and recording of reproduction. In addition to the decentralized crawlers, several other methods can also be used to report reproduction. For example, Primas

has designed a browser extension, which, among its core functions, can help readers trace the content origin in an open environment (e.g. when a user reads an article, the extension can give an alert using data recorded on Blockchain that the article has been tampered with. This function is also capable of marking reproduction. If a user reads a reproduced article which is not marked as so on blockchain, this article will be automatically submitted to blockchain for verification and marking. This way, all the browsers with this extension are converted to nodes capable of tracking reproduction.

In addition, a task scheduling system is embedded into the decentralized crawlers to minimize the waste of resources caused by crawlers competing for tasks. Though this task scheduling system can greatly reduce the waste of resources, due to the nature of the decentralized system, some waste is unavoidable.

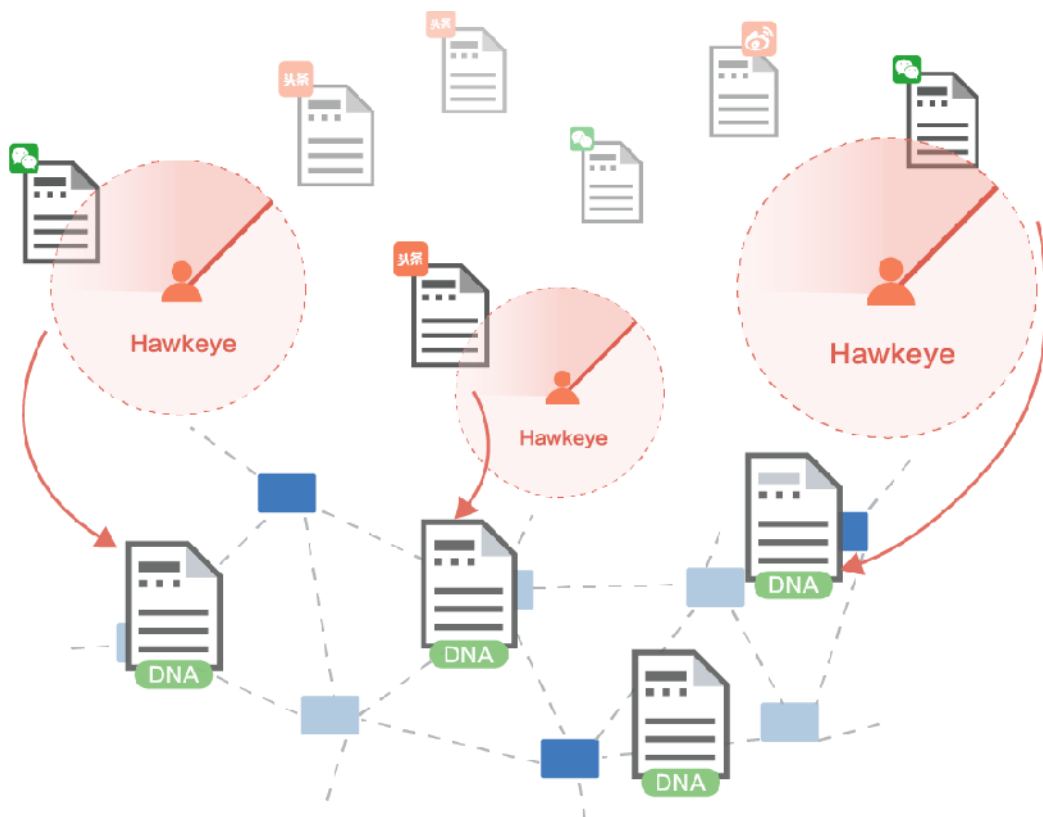


Figure 6. Decentralized Crawler System tracking the spread of content across the whole network

Decentralized Storage

Primas uses the IPFS to store content data, including texts and images etc. This separation of content data from blockchain can effectively save blockchain resources and boost blockchain processing capacity.

Primas Token

One of the ways for ensuring value in Primas is community incentive. In our design, the Primas token is an inflationary system, in which a certain proportion of additional Primas tokens will be issued annually. The inflation rate will decrease every year until it reaches zero. These additional Primas tokens will be added to an incentive pool to be used for rewarding quality content, quality groups, quality recommendations and flagging of unauthorized reproduction. Driven by such incentives, user and overall community created content quality will increase. This is a positive cycle that will in the long run enhance the healthy progress of the community and Primas token holders.

In the Primas system, there is no direct loss of Primas tokens. However, in order to execute some operations (e.g. account registration, content production) some Primas tokens will be locked to restrict the number of allowed operations within a period of time. In some instances, this locking will be permanent whilst majority will be temporary. With the expansion of the Primas community, the total number of Primas tokens locked within a given system time will rise. On the whole, as the community develops, the amount of circulating Primas tokens within the system will keep diminishing.

Another way for increasing the flow of value within Primas is requiring payment for actions, such as paid reposting, liking or other functions to be introduced in the future. For all payments, the Primas token is required and better content will generate more payment transactions. If more frequent operations are needed (e.g. large media planning to simultaneously publish more content, readers intending to join more groups), more Primas tokens would need to be purchased. Inappropriate

Use of the Primas Token

Account Registration

To obtain the right to publish content, a small number of Primas tokens in an author's account must be locked. Such locking is permanent and linked with the credit system of the account. If plagiarism is reported and confirmed, some of these Primas tokens will be deducted by the system as punishment. Authors may unlock this portion of Primas tokens at any time, but upon unlocking, the right to publish content and acquire group benefits will be forfeited.

Authors must also ensure the Primas token balance in their account is above the minimum requirement, so that payment can be made for IPFS storage and other charges.

Content Creation

In order to create and publish an article, a small number of Primas tokens must be locked for 7 days. This will, to some extent, reduce the amount of low-quality content in the community. In addition, individual authors can only publish a limited number of articles within a certain period of time. If large media entities and enterprises need to publish more articles, they can deposit additional Primas tokens into their account in order to do so.

Founding and Joining Content Groups

To found or join a group, some Primas tokens will be locked. These will be released only after the user disbands or the user leaves the group. If a user wants to create or join more groups, more Primas tokens need to be purchased and put into their account. The number of Primas tokens to be locked for joining a group will be decided by the founder during the founding process. To achieve self-governance in a group, its members can initiate a voting to expel a certain individual, whose Primas tokens locked for the group will be transferred into the incentive pool and distributed to the remaining members of

the community.

Like, Review and Reposting of Content

Primas will generate an HP value for every account based on their Primas token holdings. Interaction with content will cost HP but this will recover over time. There is no restriction on how much a user interacts with content. Even if the HP value is zero, users can still review or repost the content, however the HP value will influence the how much a user can contribute to determining content value. The lower the HP value, the smaller the action's contribution to content value, and the less reward earn by the user.

Content Reproduction

If an author requires payment for reprinting their original content, in addition to the cost of HP, an amount of Primas tokens must also be paid to obtain reprinting authorization. This payment will be given to the content producer and others who have made contributions to the content, such as reviewers and crawler operators. In addition, if other users trace the content to Primas through reproduction and also pay for reproduction, a reproduction chain will be formed. Users at the beginning of this chain will receive a certain proportion of Primas tokens paid by those interacting with the content in later reproductions of the original content.

Primas Token Issuance

Initially the system will generate 100 million Primas tokens, of which 51 million will go to the community during the ICO stage. The specific distribution and use of these Tokens are detailed in the ICO Plan part of this document.

To expand the community, reward the production of quality content, and drive long-term and healthy development of the community, Primas tokens will add an additional 10 percent of tokens in the first year. Starting from the second year, additional issuance will decrease by 0.5 percent annually. All the added Primas tokens will be used as rewards for content publication, distribution and engagement, as well as crawler contribution and content recommendation, etc.

Distribution of Additional Primas Tokens

Of the additional Primas tokens, 40 percent will go to content producers at an amount proportional to the value contribution of their single piece of digital content, so as to encourage the publishing of quality content.

The benefits a content producer receives for a piece of digital content depend on not only system reward, but also payment for the content (e.g. paid reprinting). Out of all the benefits (including content payment and system reward) the content producer receives for an article, 10 percent will be given to those contributing to the article, such as those who reprinted, reposted, recommended or reviewed it as well as the contributing crawler operators. Such distribution will bring benefits to every link of the content value chain.

Another 40 percent of the additional Primas tokens will be used to reward groups with quality content. The groups will be ranked by their per capita value contribution over a period of time; these Primas tokens will be distributed to the groups accordingly. Inside the group, the Primas tokens will be given to members based on their respective contributions.

The remaining 20 percent of additional Primas tokens will be used as reward for the Primas Node operators. The assessment of the Primas Node contribution covers two aspects. The first aspect measures the contribution of crawler operation. The Primas tokens will be distributed to crawler operators proportional to their ranking of their contribution. This contribution assessment fully considers two primary factors: reprinting number and reprinting quality, so as to prevent crawlers

from cheating with massive auto-reprinting. The other aspect measures the foundational support services of the Primas Node for the system, including the provision of client connection and verification of reprinting, etc. Primas operates on Ethereum and the execution of an Ethereum contract costs [Gas]. All the Gas costs encountered whilst using Primas are paid by Primas Node to ensure seamless and feeless use.

Primas makes a separate arrangement to reward crawler operators that ensure the availability of the entire network of original content producers with medium or small influence. If reprinting rewards come solely from the returns of an article itself, crawler operators will tend to focus on reprinting content made by more reputable producers who are more likely to generate a larger return. In doing this, the content of backend producers who piggyback onto other peoples' work will be ignored, in favor of higher value articles.

Primas Community Governance

Establishment of Primas Management Body

The Primas community will be managed by Primas Lab Foundation Ltd. established in Singapore, which as a legal entity, will have full authority over the development, promotion and operation of Primas and take all related responsibilities. To ensure the openness and transparency of the Primas project, Primas intends to set up a decision-making body - the Decision-making Committee - to conduct management-related activities. Underneath this committee are the following committees: Product Committee, Technology Committee, Financial and HR Management Committee, and Marketing and Public Relations Committee. The management body will consist of developers and functional committees. The tenure/term for members of the Decision-making Committee is two years and the first committee members will include members of the Primas core team, well-known personnel in the Blockchain industry and early-stage investors. Future members of this committee will be chosen by community election.

Governance Structure of Primas Community

The governance structure of the Primas community provides stability and continuity to operational procedures and rules for both routine work and in case of emergency.

The details of Primas' organizational structure are shown in the chart below:

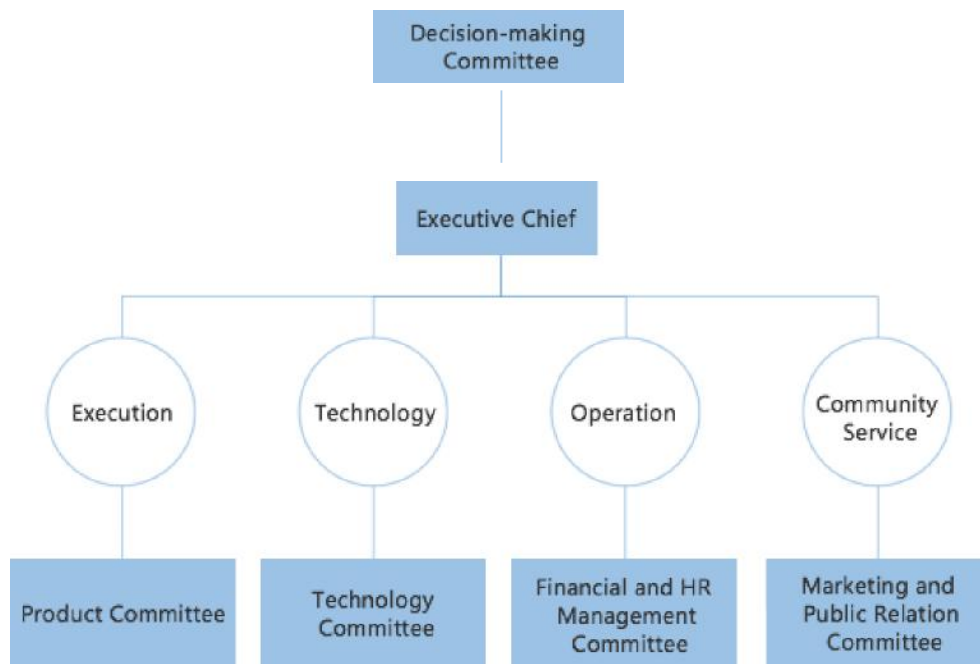


Figure 7. Governance Structure of Primas Community

Decision-making Committee:

Functions of the Decision-making Committee include employing and dismissing executive chief and chiefs of the functional committees, making important Primas-related decisions, and convening emergency meetings. Members of this committee will serve a term of two years.

The first members of the Decision-making Committee have extensive industry experience and connections in both the Blockchain and business sectors. Below are some brief introductions to the members of the inaugural Decision-making Committee:

Shen Bo	Shen Bo is the founder of Fenbushi Capital, committed to investing in Blockchain startups.
Gong Ming	Nicknamed online as Bao zou gong qin wang (暴走恭亲王), Gong Ming is the founder of CHAINB and ICOAGE, an early promoter of the Blockchain community, producer of large amount of articles and information on Blockchain, and is committed to promoting the advancement of Blockchain technology and distributed ledger technology.
Matt Li	Matt has been working in a variety of roles from consultant to COO, within startups to large corporations, such as Accenture, MRI, and Flashdeal Holdings. His 15 years of experience covers a wide range of activities including system design, application consultant, project management as well as company operation. He has always placed a large value on innovation and the adoption of new technologies. He obtained a Masters degree of Information Systems from the Nanyang Technological University. He is also a member of the Singapore Computer Society and has obtained Certification in IT Project Management (CITPM).
Shaofei Chen	Shaofei Chen is a Subject Matter Expert in Geospatial big data integration and modeling. In 2011, he joined Tango Analytics, based in Texas, and first introduced mobile data analytics to the commercial real estate industry. He is responsible for global geospatial data sourcing and analytics. He co-founded GeoHey, an SaaS based Geospatial big data company. GeoHey was involved in many news distribution projects, and its partners include DT and Caixin. He did his PhD training in Geospatial Sciences at the
Yuen Don Ri	Yuen Don Ri has 16+ years of experience in Consulting, Strategy & Program Management, Business Planning & Operation, Consumer & Commercial Brand & Product Marketing (Online/Offline), and Manufacturing & Sales at a leading MNC

Yu Wenbo	Doctor Yu Wenbo is the executive director of Fenbushi Capital, and used to serve as chief scientist of Wanxiang Blockchain Labs.
Chen Yanfeng	Chen Yanfeng is the CEO of Xingyun Digital Asset Trust Co.Ltd., and previously worked with the artificial intelligence enterprise CloudMinds, whose lead investors include America’s National Instruments and SoftBank.
Wu Peng	Wu Peng is an expert on Internet and Blockchain products, with vast experience in product management & operation and in-depth research on Internet media and traffic.
Gan Lu	Gan Lu is an expert on Blockchain technology and is a serial entrepreneur, with in-depth understanding of cryptography, big data and artificial intelligence.

At the end of each term, community voting will be held to choose 50 community representatives based on a score comprised of the amount of Primas Tokens multiplied by the length of time in possession. Another vote will follow to produce 7 core members of the Decision-making Committee. These elected core members will make important or emergency decisions on behalf of the Primas community. During their term, they will need to accept credit investigations and allow salary to be made public upon community request.

Executive Chief:

The Executive chief is chosen by the Decision-making Committee through election and is responsible for the daily operation and management of the

Primas community, mission coordination for subordinate committees, and chairing meetings of the Decision-making Committee. The executive chief will submit work progress reports to the Decision-making Committee on a regular basis.

Product Committee:

The Product Committee is responsible for the overall design and planning of the community as well as the attraction of relevant cooperation partners.

Technology Committee:

The Technology Committee, consisting of core developers, is responsible for the development and review of bottom layer technology as well as the development and review of Primas products. The committee holds project status meetings weekly to discuss requirements and project progress. Members of this committee need to know community dynamics and relevant topics, have communications with Token holders inside the community, and hold occasional technical seminars.

Financial and HR Management Committee:

The Financial and HR Management Committee is responsible for the use and review of raised project funds, management of salaries for developers, and the expenditure and review of daily operational costs.

Marketing and Public Relations Committee:

The Marketing and Public Relations Committee aims to serve the community, is responsible for the marketing of Primas products and services as well as the promotion and publicity of open source projects. It is also responsible for the release of all community announcements and cooperation with the media.

Primas Financial Management

The Primas Decision-making Committee promises that all raised digital assets will be used solely for the development and building of the Primas community.

Primas Auditing

Due to the unique features of the Primas token, it is difficult for any of the current forms of enterprise to effectively supervise under the existing system. To ensure the responsible governance of Primas and the openness and transparency of the Primas token usage, the Primas Decision-making Committee will employ a professional auditing agency to routinely conduct audits.

Development Roadmap

Dec. 2016

Primas project started.

Aug. 2017

Primas ICO

Solar Systems Stage - Feb. 2018

Test network launched. Community members will be invited to form an internal test group to test and optimize the system.

2017.8 - 2017.10

Protocol layer development: account creation, content publishing and storage, Primas token, content incentive, Primas Node incentive.

Application layer development: IOS & Android clients, account creation, Primas token transfer, content display, content creation.

Primas Node: contract call, client connection, indexing and caching, IPFS storage.

2017.11 - 2018.1

Protocol layer development: group creation, group incentive, incentive for crawling and reprinting.

Application layer development: group display, content recommendation, content interaction.

Primas Node: verification of reprinting, task scheduling, crawling and reprinting.

Galaxy Stage - June, 2018

Official network launched and fully open for use. Operation plan begins.

2018.3 - 2018.5

Protocol layer development: reporting of infringement, voting, credit rating.

Application layer development: browser plug-in, voting.

Primas Node development: connection to external services.

Universe Stage - Dec. 2018

Connection with cooperation partners, expansion of cooperation partnership, and formation of ecosystem.

2018.6 - 2018.8

Personal page named after account, account bonding, third-party SDK connection, public API, identity authentication.

2018.9 -

Introduction of cooperating partners into the community and the continuous expansion of the ecosystem.

ICO Plan

51 percent of 100 million Primas tokens will go to the community during the ICO stage, to be used for Primas development, operation, marketing and fund management.

20 percent of 100 million Primas tokens will go to the founding team, early-stage investors and development team as compensation for their endeavors, resources and technology support.

20 percent of 100 million Primas tokens will be set aside as reserves, which will be used by the Decision-making Committee as incentives for building and developing the Primas ecosystem.

9 percent of 100 million Primas tokens will be used for academic research, education, promotion and legal issues, so as to finance academic research on Primas and educational materials for developers.

Primas Token Distribution



Primas plans to distribute 29 percent (20 percent for reserve plus 9 percent for academic research & education) of 100 million Primas tokens to the community in several phases. Within 4 years, all these Primas tokens will be put into the community to foster a genuine open source community ecosystem.

Auditing reports on the use of these Primas tokens will be publicized every year within the community.

The Primas tokens distributed to the founding team and the development team will be locked for 1 year during which they cannot be put into circulation. After this locking period of [1] year these Primas tokens will be released gradually over a period of 2 years. Primas tokens distributed to early-stage investors will be locked for 6 months, during which they cannot be put into circulation.

(Note: In the design of the governance part of this White Paper, Qtum's governance design and planning has been used as reference with the consent of the Qtum team, to whom we hereby express our sincere thanks.)

Disclaimer

PLEASE DO READ THIS SECTION VERY CAREFULLY. IF YOU ARE IN DOUBT AS TO ANY ACTION YOU SHOULD TAKE, PLEASE CONSULT YOUR LEGAL, FINANCIAL, TAX OR OTHER SUITABLE PROFESSIONAL ADVISOR(S).

No information in this White Paper should be considered to be business, legal, financial or tax advice regarding PLF or the Primas tokens. You should consult your own legal, financial, tax or other professional advisers regarding PLF and its business and operations, and the Primas tokens.

The White Paper is intended solely for general information purposes, for community discussion and is not legally binding.

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Any agreement as between PLF and you as a purchaser, and in relation to any sale and purchase of the Primas tokens, is to be governed by the terms and conditions (the “**T&Cs**”). In the event of any inconsistencies between the T&Cs and this White Paper, the former shall prevail. PLF does not owe the holder any rights or obligations except as expressly set out in the T&Cs.

The Primas tokens are not intended to constitute securities in any jurisdiction and in any manner, including but not limited to, any kind of currency (other than cryptocurrency), debentures, stocks or shares issued by any person or entity, rights, options or derivatives in respect of such debentures, stocks or shares, rights under a contract for difference or under any other contract the

purpose of purported purpose of which is to secure a profit or avoid a loss, units in a collective investment scheme, units in a business trust, derivatives of units in a collective investment scheme or business trust, or any other security or class of securities.

In any case, you acknowledge and agree that you are not eligible to purchase any Primas tokens if you are citizen, resident or domiciliary of the Republic of Singapore.

Primas clearly states that users with relevant intent shall have clear knowledge of risks on the Primas platform.

PLF shall use all proceeds of sale of the Primas tokens to fund the Primas project, and PLF's businesses, team development and operations.

To the maximum extent permitted by applicable laws, Primas shall not be responsible for any direct, indirect, special, incidental, consequential or other losses of any kind, in tort, contract or otherwise (including but not limited to loss of use of data), arising or of in connection with any acceptance of or reliance on this White Paper or any part thereof by anyone.

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The White Paper may be translated into a language other than English and in the event of conflict or ambiguity between the English language version and translated versions of this White Paper, the English language version shall prevail.

Risk Warning

There are risks in the process of development, maintenance and operation of Primas, many of them are out of PLF's control. You acknowledge that you understand and agree to the assumption of the following risks, including but not limited to:

Risks on Token Sales Market

The environment surrounding the Token sales market is closely associated with the situation of the whole digital currency market. In case of a sluggish overall market situation or existence of other uncontrollable factors, the price of the Primas token may be underestimated over a long period of time, in spite of its good prospects.

- **Supervision Risks**

Since Blockchain is still in the early stage of development, there are still no laws and regulation across the world, including in China, that stipulate requirements for precondition, transaction, information disclosure, and locking, etc. in the process of an ICO. It is still unclear and unsettled as to how the current policies will be implemented. All these factors may bring uncertainty to project investment and liquidity. Blockchain technology has become the main target of supervision in major countries of the world. If there is any intervention or exertion of influence by supervising authorities, Primas and/or the Primas token may be affected. For example, if there is legal limitation on the use and sale of the Primas token, or if it is commercially undesirable to obtain the necessary regulatory approval(s) to operate in such jurisdiction, the development of Primas and the Primas token may be directly terminated.

- **Competition Risks**

With the advancement of information technology and the mobile Internet, digital assets with "Bitcoin" are gradually prospering and various decentralized

applications are continuously emerging, heating up industry competition. With the steady appearance and expansion of other application platforms, the community will face constant operation pressure and certain risks from market competition. It is also possible that alternative networks could be established that utilize the same or similar code and protocol underlying Primas and/or the Primas token and attempt to re-create similar facilities. Primas may be required to compete with these alternative networks, which could negatively impact Primas and/or the Primas token.

- Tax Treatment

The tax characterization of the Primas token is uncertain. Users must seek their own tax advice in connection with the purchase, holding and/or usage of the Primas tokens, which may result in adverse tax consequences to users, including withholding taxes, income taxes and tax reporting requirements.

- Risk of Talent Loss

Primas has gathered a technical team and expert consultants with leading advantage and profound experiences in their respective professional sectors, including professionals with lasting engagement in the Blockchain industry and a core team with rich experience in the development and operation of Internet products. The core competitiveness of Primas in the industry lies in its stable core team and consultant resources, the loss of which may affect the stable operation of Primas or its future development.

- Risk of Development Failure Due to Fund Shortage

The quantum and value of the Primas tokens may be affected by factors, within or outside PLF's control, including but not limited to the supply and demand for Primas tokens in the market. In this regard, the team may face a shortage of development funds and possibly even suffer subsequent serious shortage of funds for all Primas-related activities. In such a case, there will be a risk that the intended targets set out in this White Paper will not be realized.

- Risk of Private Key Loss

After the digital wallet address of Primas tokens is extracted by the buyer, the only means to operate content contained in the address is by his/her associated secret key (private key or wallet passcode). Users are personally responsible for protecting the associated secret keys which will be used to sign transactions and prove their asset ownership. Users understand and accept that if his/her private key document or passcode are respectively lost or stolen, his/her Primas tokens associated with his/her user account (address) or passcode will be unrecoverable and permanently lost. The best method for secure storage of log-in document is to store the secret key separately at one or several places and avoid using a shared computer for this purpose.

- Risk of Hacking or Theft

There is a possibility that hackers, other entities or nations may attempt to interrupt Primas or the function of the Primas tokens in a variety of ways, including but not limited to denial of service attacks, Sybil attacks, guerrilla-style attacks, malware attacks and homogeneity attacks, smurfing and spoofing. Furthermore, there is a risk that a third party or PLF may unintentionally introduce weaknesses into the core infrastructure of Primas and/or the Primas tokens, which could negatively affect Primas and/or the Primas tokens.

- Risk of Absence of Loss Insurance

Unlike bank account or accounts with other financial institutions, Primas account or related Blockchain network are generally without any insurance guarantee. The Primas token is uninsured unless you specifically obtain private insurance to insure them. In the event of loss or loss of utility value of the Primas token, there is no public insurer or private insurance arranged by PLF to offer any recourse to you.

- Risks of Core Protocols

Currently, the Primas platform is developed on the basis of Ethereum. In case of any defect, unexpected malfunction or attack to Ethereum, Primas and/or the Primas tokens may suffer a stop or loss of function in a manner hard to expect, and thus could present unknown risks to Primas and/or the Primas tokens by rendering ineffective the cryptographic consensus mechanisms that underpins the Ethereum-based protocol.

- System Risk

There are risks related to neglected critical defects in open source software or large-scale failure of global network infrastructure. Though some of the risks may drop over time due to bug fixes and breakthroughs in computation bottleneck, other risks are still unpredictable, such as political factors or natural disasters that may interrupt part of the Internet or the global Internet as a whole.

- Risks Due to Bugs or Cryptography Development

Rapid cryptography development and advancement of science and technology such as [quantum computer](#) may bring the risk of cracking to Primas platform, leading to possible loss of Primas tokens.

- Risks of Insufficient Attention

There is a possibility that the Primas application may fail to be used by a large number of individuals or entities. This means that the public does not have enough interest in developing and improving the relevant distributed applications. Such a lack of use or interest may negatively impact the development of Primas, and therefore the potential utility of the Primas tokens.

- Risk of Application Defect

Primas may fail to provide normal service due to defects caused by known or unknown reasons (e.g. large-scale Node crash), and may even suffer loss of user Primas tokens in a serious situation.

- Risk of Application or Product Failing to Reach Their Expectation or Buyer's Expectation

Primas is still under the development stage, and major changes may be made before the launch of the official version. Due to unforeseeable material conceptual, technical and commercial changes before the final release, you understand and accept the risk that the development of Primas may not be executed or implemented as planned, for reasons including but not limited to, the event of a decline in the prices of any digital asset, virtual currency or Primas token, unforeseen technical difficulties, and the shortage of funds for developing Primas.

- Other Unpredictable Risks

The Primas Token which is based on cryptography is a fully new technology that has not been tested. In addition to the risks that are already described in this White Paper, there are other risks associated with your purchase, holding and usage of the Primas tokens, that are not yet mentioned and/or not anticipated by the founding team. Such risks may further materialize as unanticipated variations or combinations of the aforementioned risks.

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Evolution Record of This Paper

Version	Date	Reviser	
1.0	2017/7/10	Primas Executive Committee	First release
1.0.1	2017/7/11	Primas Executive Committee	Value assessment formula
1.1.0	2017/7/19	Primas Executive Committee	Disclaimer and risk warning
1.2.0	2017/7/21	Primas Executive Committee	Detailed ICO plan
1.2.1	2017/7/31	Primas Executive Committee	ICO time adjustment
1.3.0	2017/12/13	Primas Executive Committee	ICO plan adjustment
1.3.1	2017/12/15	Primas Executive Committee	Entity change
1.4.1	2018/06/08	Primas Executive Committee	Legal compliance