White Paper

Version 3.0

CrowdPrecision

CrowdPrecision

CP Token for Quality Crowdsourcing

Quality Crowdsourcing on Blockchain

Chapter 1: Team

1.1 Team Members

Thomas Tran-Gia (Project Leader)

Thomas has five years of experience working in Crowdsourcing Technology. He was a programmer of Microworkers.com, where he worked on various aspects of Crowdsourcing, including worker quality control, security enhancement and Crowdsourcing task management. Since joining the Crowdsourcing business, he has become used to working in globally distributed international teams, making him the perfect team leader.
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Leng Yaw-Owe (Business Manager, Asia-Pacific)

Leng Yaw-Owe is a Singaporean Entrepreneur in Information Technology. He has started and owned many companies, including the access network platform ASI and the network management software company Infosim Asia-Pacific. His vision is to broaden the use of Crowdsourcing in Asia-Pacific area and to achieve multi-language support for Crowdsourcing.
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Phuoc Tran-Gia (Scientific Advisor)

Prof. Phuoc Tran-Gia is a professor of Computer Science (emer.) at the University of Würzburg, Germany, where he held the Chair of Distributed Systems and Computer Networks. He pursues research on performance analysis of Peer-to-Peer mechanisms, Future Internet Architecture and Crowdsourcing Technology. He is a cofounder of several companies, including Infosim and Weblabcenter, and he helps to run the Crowdsourcing platform Microworkers.com.
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Matthias Hirth (Crowdsourcing Expert)

Dr. Matthias Hirth is head of the Future Internet Research group of the Chair of Communication Networks at the University of Würzburg. Since 2010 he has been focusing on the optimization of Crowdsourcing workflows and processes. His work has been published in more than 50 articles in internationally recognized journals and conference publications. He is an active member of the Crowdsourcing research community. Besides his academic activities, he works as a scientific advisor for Crowdsourcing companies.
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Alex Lin (Business Advisor)

Since 2014, Dr. Alex Lin has been inspiring, investing and co-building startup accelerators in Singapore and the region. These accelerators have groomed over 380 startups, more than 170 of them have raised series-A funding. He is currently, as a cofounder of ICOra Asia, advising companies on structuring fundraising strategies via blockchain crowdfunding. He is in active collaboration with regulators to enable startups, SMEs, and listed companies to raise project funding via an ICO. Previously, Alex managed corporate (e.g. ST Engineering Ventures) and government venture funds (e.g. Infocomm Development Authority, Singapore), where he was Head of Infocomm Investments (IIPL, Singapore) that was pivotal in developing Singapore into a global vibrant startup hub, by investing and building startup accelerators, strengthening the links into the ASEAN, Asia, North America, and Europe ecosystems. Alex was also a member of the Monetary Authority of Singapore (MAS) Fintech Office, where he worked to make Singapore the Fintech hub of Asia. He obtained his Electrical & Computer Engineering degree at the University of Wisconsin (Madison) and PhD at Stanford University.
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Alexandra Dmitrienko (Blockchain Development Advisor)

Prof. Alexandra Dmitrienko is a Professor at the University of Würzburg, where she is leading the Secure Software Systems Research Group. She combines an excellent academic track record in system security and privacy with extensive industrial experience in leading many successful industrial technology transfer projects. Over last 10 years, her research interests focused on various topics in secure software engineering, system security, and security of cyber-physical and distributed systems. As of today, topics related to security of blockchains and smart contracts are an important part of her research agenda.
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Wolfgang Stegmann (Business Advisor)

Wolfgang Stegmann is a Statutory Auditor and Tax Consultant in Germany. From 1996-2014 he was Vice-Chairman of DATEV, a major German Tax Consulting Software Company. Previously, 1982-1996, he was a Partner in Ernst & Young, Germany (Audit). Since 2014, he has been an Auditor, Tax and Business Consultant, and since 2017 a Consultant on Tax and Legal Aspects of Blockchain Applications.
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Paul Müller (Communication Advisor)

Paul is a Professor of Computer Science at the University of Kaiserslautern, Germany. He was also Director of the Regional Computing and Data Center of Rhineland Palatinate. He was responsible for the nationwide G-Lab testbed working on Future Internet. This led him to research on Peer-to-Peer systems and Blockchain Technologies. Since 2017 he has been Blockchain consultant of various banking and governmental organizations.
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Karl Klug (Intellectual Property Advisor)

Karl Klug is an expert on Information & Communication Technology and Security Architecture, a technologist with a multidisciplinary background. He works as a high-tech consultant and adviser on patenting and patent strategy. For many years he was responsible for the patents and intellectual properties at Siemens ICN corporation based in Munich area.

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Nicholas Gray (Software Architecture Advisor)

Nicholas has an M.Sc. in Computer Science and had the lead of numerous software projects. He enjoys the design of secure software architectures in general and especially for distributed systems. He has given talks about his security related work at several international conferences such as Black Hat USA and has consulted broad spectrum of companies on how to achieve a higher quality standard for their products and services by implementing a secure software life cycle.

Initial Partner Company:

microworkers.com

Microworkers.com is one of the largest microtasking crowdsourcing platforms, with an international workforce of over 1.2 millions. It started operations in 2009 and supports various types of tasks, such as consumer surveys, tagging and categorization of content, data extraction and enrichment, and individual self-service. One unique aspect of Microworkers.com is its extensive 24/7 international customer service that supports employers and helps them create successful and cost-effective crowdsourcing-based solutions, but also guarantees fair payment and working conditions for the international workers. Microworkers has access to a large and diverse workforce and aims to provide every worker with equal opportunities, regardless of a worker's country of origin. At the same time Microworkers ensures the highest possible level of security for all

crowdsourcing participants and implements all the regulatory standards to detect fraud and money laundering. This unique combination of sophisticated technical solutions and customer support by crowdsourcing experts is one important reason for the steadily increasing commercial success of Micoworkers itself and also of its employers and workers, as demonstrated by the many successfully completed tasks.
https://www.microworkers.com

1.2 Team Expertise

Various members of CrowdPrecision have worked as back-end programmers or system administrators for established Crowdsourcing platforms, such as Microworkers.com. As a consequence, they are experienced in dealing with all aspects of today's Crowdsourcing technology, including efficient workflow design, process and cheat detection, and quality enhancement techniques. With this experience, the team is well aware of Crowdsourcing's customer needs. This is reflected in the CrowdPrecision concept that a certain level of administration is required to guarantee quality of modern Crowdsourcing. Besides the practical expertise the team has a profound theoretical background in Crowdsourcing documented by extensive peer-reviewed publication records in leading academic journals and conference publications.

The advisory board consists of a group of academic scholars with backgrounds in various fields of Discrete Mathematics and Computer Science, including Peer-to-Peer and Blockchain Technology. Some are renowned experts in smart-contract testing and securities. Others are managers and entrepreneurs of large IT organizations and computing centers as well as executives of large enterprises, and tax advisory companies, fintech advisers and start-up accelerator organizations with international experience.

Chapter 2: CrowdPrecision Mission

2.1 Introduction

With the fast evolution of information and communications technology, the Internet has become available almost anywhere and at any time. Smartphones and similar devices have become increasingly essential in everyday life and various kinds have been made readily available in large numbers. The ease of access to such devices has had an immense impact on the number of people around the globe who are interconnected. These global connections enable people to communicate and collaborate across borders instantaneously and at a low cost. That would have been challenging or even impossible a few years ago. Besides enabling easy and fast transfer of information, the Internet has also generated an incredibly huge potential labor force that is available 24/7, globally distributed, and has a highly diverse set of skills.

One approach to access this labor force consisting of global Internet users is Crowdsourcing. Instead of delegating large tasks to dedicated employees, the work is broken down into smaller jobs that can be accomplished independently and are distributed via marketplaces to a large number of online workers. On the one hand, the parallelization leads to a much faster achievement of the tasks. On the other hand, the approach helps to reduce the overall labor costs due to the inclusion of global workers of different salary expectations. Additionally, it further facilitates the flexible scaling of human crowd resources based on current demands, similar to technical cloud infrastructures.

Besides economic aspects, Crowdsourcing also offers a great opportunity for individuals from developing countries, as it introduces channels for safe and well-paid online labor. With its new possibilities for increasing productivity and redefining ways by which businesses carry out projects, Crowdsourcing is already successfully applied in various fields of traditional work, including text production, logo design, programming, and even research and development tasks. Furthermore, it also makes possible the cost-efficient and timely

completion of vast numbers of so-called microtasks, which non-expert crowdworkers can complete within a few minutes and without any prior knowledge but which are impossible to perform using algorithmic means. Micro-tasks exhibiting interesting patterns and worker behaviors, for example labeling or tagging a set of objects, are utilized for machine learning and could be used in deep learning. The current approach to understanding crowdsourced human input is vital for the further development of machine learning models and approaches.

The rapid rise in the use of international platforms like Amazon Mechanical Turk (MTurk) and Microworkers demonstrate the considerable growth of Crowdsourcing in recent years. Consequently, CrowdPrecision aims at combining the success of these traditional Crowdsourcing platform providers with the benefits of current developments in Blockchain Technology and using cryptocurrencies.

2.2 Challenges of Crowdsourcing

More precisely, CrowdPrecision tackles two of the most significant challenges in current Crowdsourcing applications - quality control of the work submitted and fast and cost-effective payment mechanisms. Due to the large number and the anonymity of the huge group of Crowdsourcing workers, it is often difficult to identify the skill set of individual workers and to track down workers with deliberately malicious behavior, a factor which often leads to a great waste of time and money by all parties involved:

- **Employers** must devote additional efforts in the development and implementation of effective quality control mechanisms themselves.
- **Workers** need to acquire additional unpaid qualifications or to complete test tasks to show their diligence.
- **Platform Providers** need to employ additional staff and to develop new algorithmic approaches to support employers in designing their quality control tasks and to maintain workers' work profiles.

2.3 CrowdPrecision's Solution

To address those problems, CrowdPrecision uses Ethereum-based smart contracts between employers and workers. By issuing CrowdPrecision Tokens (CPT), CrowdPrecision provides a complete ledger of a user's Crowdsourcing history – whether as employer or worker – and makes it available across multiple Crowdsourcing platforms. Therefore, it features:

- Transparent and straightforward display of a worker's qualifications and diligence for an easy distinction between high and low quality workers.
- Track record of a worker transferable across multiple Crowdsourcing marketplaces.
- Facilitated identification of fair employers through their payout profile.

The introduction of CPT enables all Crowdsourcing parties to build up a trust-based marketplace system which considerably reduces the overhead of quality control mechanisms and qualification tests. Consequently, the CrowdPrecision marketplace offers higher quality results at lower costs and at a faster pace. On top of providing a comprehensive employment history, Ethereum-based smart contracts also ensure a fast and cost-effective payment channel. In contrast to traditional Crowdsourcing platforms that rely on classic payment channels such as credit card deposits or bank transfers, CrowdPrecision's CPT-based remuneration system offers workers and employers a multitude of benefits including:

- **Instantaneous payment** of workers through the smart contract that releases the payment upon positive rating by the employer.
- **Reduced fees** and overhead costs due to highly automated processes and the absence of exchange fees between local and foreign currencies.
- **Greater legal security** as the token-to-currency exchange is provided by dedicated external platforms, reducing the risk of money laundering and identity fraud.

All of the above is advantageous for the large number of users from developing countries, who still have difficulty accessing the global online labor

market. Furthermore, the bank infrastructure in most of these regions is not yet well developed, thus posing numerous challenges of access to bank accounts or ATMs for the purpose of collecting and withdrawing earnings from online labor. With this in mind, cryptocurrencies are a promising approach to overcome these limitations.

There are several targets to control the CPT money flow

1) There should be enough liquidity in the market to keep the operation running
2) The short-term volatility of CPT should vary in a tight tunnel, such as the exchange rate CPT-to-Etherium and Etherium-to-Fiat money during a campaign run-time shouldn't affect the business operation too much
3) In long-term, investors expect a significant growth of CPT value, additional to the initial bonus. There should be no artificial limitation.

To take care of 1) only a small amount (⅙) of all available CPT will be sold in the Initial Private Token Sale Period. The remaining token (⅚) will be used in the future to stabilize the CPT money flow and to enable further Private and Public Token Sales if necessary. Participants in the Initial Private Token Sale should not suffer any disadvantages by those subsequent actions. In the beginning, only bonuses will be paid. Prepaid advances from team members will be reimbursed by funds raised. They will get market-conform monthly allowances.

To cope with 2) CrowdPrecision reserved the right to purchase and sell token if the short-term variation would exceed a predefined limit. Given the campaign duration is typically 10 min to one week, this can be done e.g. if the exchange rate varies more than 20% during a week.

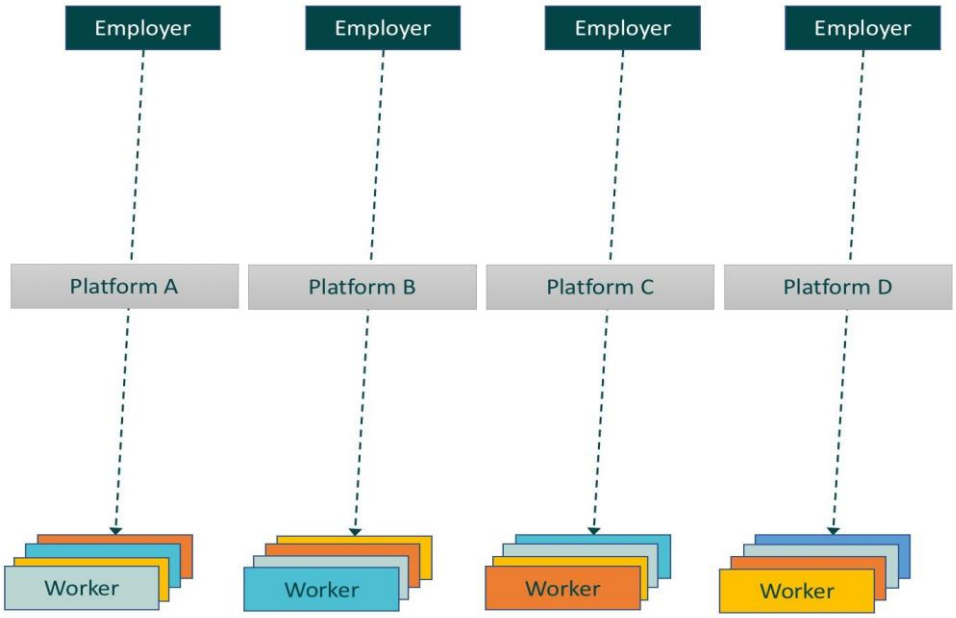
Chapter 3: CrowdPrecision Architecture

3.1 Building a Trust-based Microtasking System

Most Crowdsourcing platforms maintain their own workforce and give employers access to these workers through their own interfaces as illustrated in the figure depicting the Classic CS Structure. This results in numerous restrictions for both the workers and the employers.

Workers registered on multiple platforms inconveniently have to maintain different work records on each platform. There are no ways to link these records across different providers to produce a unified profile. As a result, even experienced workers have to undergo qualification tests for a second or third etc. time when registering on a new platform and, therefore, have to rebuild their reputation from scratch.

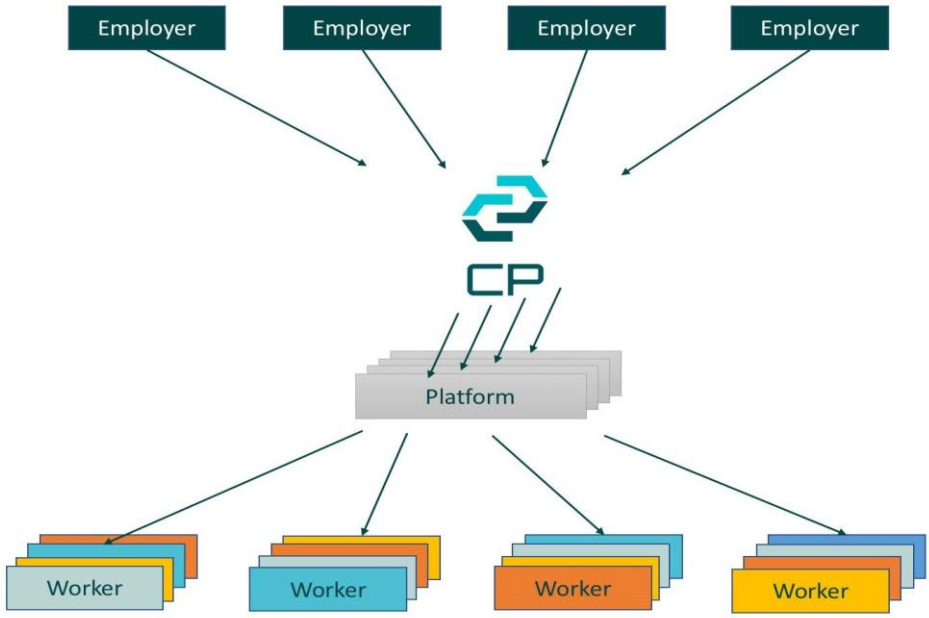
Accessing a worker's cross-platform record is virtually impossible for employers because the data are spread over several platforms. Therefore, employers would need to have an account at every platform and would need to find a way to match users. From the employer's point of view, there is a restriction in terms of the selection of workers, as they only have access to the workers of the platform they are currently logged in at. If a large group of workers or workers with a very specific set of skills are required, crowdsourcing tasks, have to be separately launched on multiple platforms in order to acquire the required number of participants or workers with the necessary skills.



Classic Crowdsourcing Structure

CrowdPrecision aims at developing a meta-platform at a level above the existing commercial providers as illustrated in the figure below showing the CrowdPrecision Archirecture. This provides **employers** with a unified interface for distributing tasks to workers across platforms without the need to access a number of different user accounts and deal with a number of different user interfaces. Additionally, all task ratings are accumulated in CrowdPrecision, enabling the platform to build sophisticated worker profiles including their skill sets and demographic properties as well as giving employers ways to ascertain qualifications and verify their profiles. As CrowdPrecision also enables workers to build a unified profile on the platform, **workers** can register at different Crowdsourcing platforms but still keep their unified CrowdPrecision task record. This allows them to work on CrowdPrecision tasks on multiple Crowdsourcing platforms without having to undergo new qualification tests.

Existing Crowdsourcing platforms would also benefit from collaborating with CrowdPrecision, as new tasks will be routed to their platform even if only a few workers match the demographic or skill-requirements requested by the employers, as CrowdPrecision will form cross-platform groups.



CrowdPrecision Architecture

The integration of existing crowdsouring platforms and other crowd providers will be possible by CrowdPrecision's API. This API will allow current providers to enhance their services easily with the benefits of cryptocurrency payments and without major changes to their existing code base. Benefits for the platform providers include an increase in their user base as new tasks can be submitted to their platforms via CrowdPrecision's unified employer interface. Additionally, collaboration with CrowdPrecision will result in a better utilization of their available labor force as even small groups of workers with specialized skills can find appropriate tasks thanks to cross-platform task scheduling. This, in turn, offers great opportunities for CrowdPrecision to quickly develop the kind of huge worker base required for a stable mode of operation. Here, Microworkers.com - a large Crowdsourcing platform with almost 1.2 million registered users processing about 9000 tasks per day and having delivered more than 28.9 billion successful tasks so far - has agreed to be our first collaboration partner and crowd provider. CrowdPrecision will provide API to all partner platforms and develop a scheme to share the tasks and worker fees accordingly.

The implementation of CrowdPrecision’s trust and reputation system will be based on the Ethereum Blockchain. All relevant task information, including

type of task, remuneration, employer, workers competing for the task and the final assessment of a worker's submission will be permanently stored on the Blockchain, while sensitive task information is stored on our centralized database. This gives both the employers and the workers a deeper insight into the working and employment history of the other partner. This transparency will encourage both parties to work and act more diligently and reliably as their past behavior will have a significant influence on the future availability of new tasks to individual workers or the willingness of workers to accept jobs offered by a particular employer. Despite their work and employment history being made transparent and public, our infrastructure preserves the privacy of workers and employers by keeping sensitive data private, e.g. detailed task descriptions or the concrete data submitted by the worker in response.

3.2 Cryptocurrency-based Payment

In current Crowdsourcing systems, the processing of task payments represents a significant source of inefficiency. New financial services such as micropayment services, e.g. PayPal, were the initial payment options for Crowdsourcing and especially microtasking, as they charge significantly lower fees for processing payments than wire transfers. However, fees for transferring money across country borders remain high, and even micropayment systems often rely on traditional bank accounts that run in the background, thereby excluding people without access to them. Moreover, due to governmental restrictions, current Crowdsourcing systems also often incorporate sophisticated security systems to prevent money laundering or credit card fraud, leading to additional administrative costs, which in turn results in a considerable financial overhead for employers and lower wages for workers, especially as every Crowdsourcing platform currently runs its own validation and security mechanisms.

With the use of the CP Token cryptocurrency in CrowdPrecision, these issues can easily be overcome: Firstly, the fees for Etherium-based transactions are low and country-independent. Secondly, no additional bank or service account is needed to receive or issue transactions. This 1) opens up the micro-tasking labor market of CrowdPrecision to a vast number of potential workers in developing countries and 2) helps to increase the workers' rewards by

decreasing overhead costs of the employers and platforms. Lastly, the payout system of CrowdPrecision uses well-established cryptocurrency market places and exchanges with the highest security and regulatory standards. By introducing cryptocurrencies to the field of Crowdsourcing, CrowdPrecision dispenses with the need for detection systems for sophisticated custom fraud and money laundering, while still being able to fulfill current and future governmental regulations.

Chapter 4:
CrowdPrecision Token Distribution Strategy

Initially, CrowdPrecision was prepared to launch an Public Initial Token Sale in July 2018. Due to the difficult crypto market conditions, after a thorough analysis, it was decided to freeze the smart contract and the token issuing process and postpone the ITS launch. To keep the momentum of the flourishing crowdsourcing business and respond to urgent customer need to blockchainize the crowdsourcing platform, CrowdPrecision decided to launch a Private Token Sale instead.

The total CrowdPrecision Token (CPT) supply is 3.000.000.000 CrowdPrecision tokens, respectively ERC20 tokens on the Ethereum Blockchain.

There are several ways to obtain CPT (CrowdPrecision Tokens)

- participating in the initial private token sale period (until March 2019) with significant bonuses (c.f. the listing below)
- participating in subsequent private token sale periods (with less bonus level, to be announced) or public sale period (to be announced)
- anytime to run crowdsourcing tasks, after the platform is operational and the CPT is listed on exchanges

Initial Private Token Sale Period (IPTS)

(until March 31, 2019)

The conditions for investors to participate in the Initial Private Token Sale are as follows:

- Up to 1/6 of the total token supply will be sold in the Initial Private Token Sale, which makes up to 500.000.000 CPT offered in the initial sale (until 31st of March, 2019)
- with the estimation of 100 CPT per SGD, the target of 5.000.000 SGD should be raised during the IPTS period. Since the tokens will be held in the Ethereum Blockchain, only ETH is accepted as payment,
- Each investor must purchase a minimum amount of 5.000.000 CPT and can buy up to 50.000.000 CPT.

Investors in the Initial Private Token Sale Period will receive an early-buyer bonus as follows:

Cap to reach	Bonus
25.000.000 CPT	25%
35.000.000 CPT	30%
45.000.000 CPT	40%
50.000.000 CPT	60%

We will only issue tokens before the 31st of March, 2019, if one of the following event occurs:

1) The total token sale supply is reached.
2) If we reach more than 2.500.000 SGD at any point before March 31, 2019, we reserve the right to immediately start issuing the tokens.

In the event of issuing the tokens, the following actions will be taken:

1) We will publish the smart contract that creates the CPT and each investor will receive a message, where and how to pay (generally the public key of the contract).
2) The investor's public key will be hardcoded in the smart contract that creates the coins, but they'll have to agree to a Know-your-Customer (KyC) process and pass it.

Token Distribution:

- Future Projects 75% - 80% *
- IPTS 20% - 25% *

* the differences come from the bonuses paid atop the ⅙ of the tokens that are sold in the sale as bonuses.

Founders, Team and Advisors as well as preliminary costs will be paid from the raised funds; some marketing bonuses will be paid in CPT. Direct employees at CrowdPrecision will receive monthly payment in fiat money.

Fund Allocation:

- Business Enhancement 55%
- Marketing & Collaborations 33%
- Legal Advice 12%

The teams payment resides within Business Enhancement.

Chapter 5: CrowdPrecision Operation Mode

5.1 Payment Organization

As with traditional Crowdsourcing platforms, workers will be paid by the employers for each successfully completed task. Employers may choose from various pre-implemented task validation mechanisms, including majority voting or plausibility checks, while maintaining the right to a manual final decision. In contrast to many other platforms, CrowdPrecision follows a service-oriented approach that enables both workers and employers to contact the platform's administrative support to solve disputes.

5.2 Service-oriented Crowdsourcing

Crowdsourcing is the most rigorously consistent realization of the outsourcing approach, minimizing pricing by breaking work down into smaller tasks and reducing administrative overheads. Due to the vast number of potential crowdworkers, different strategies have evolved to crowdsource even the evaluation of work or the design of the Crowdsourcing jobs themselves. This leads to the impression that distributing work via micro-tasking platforms is self-explanatory and self-organizing.

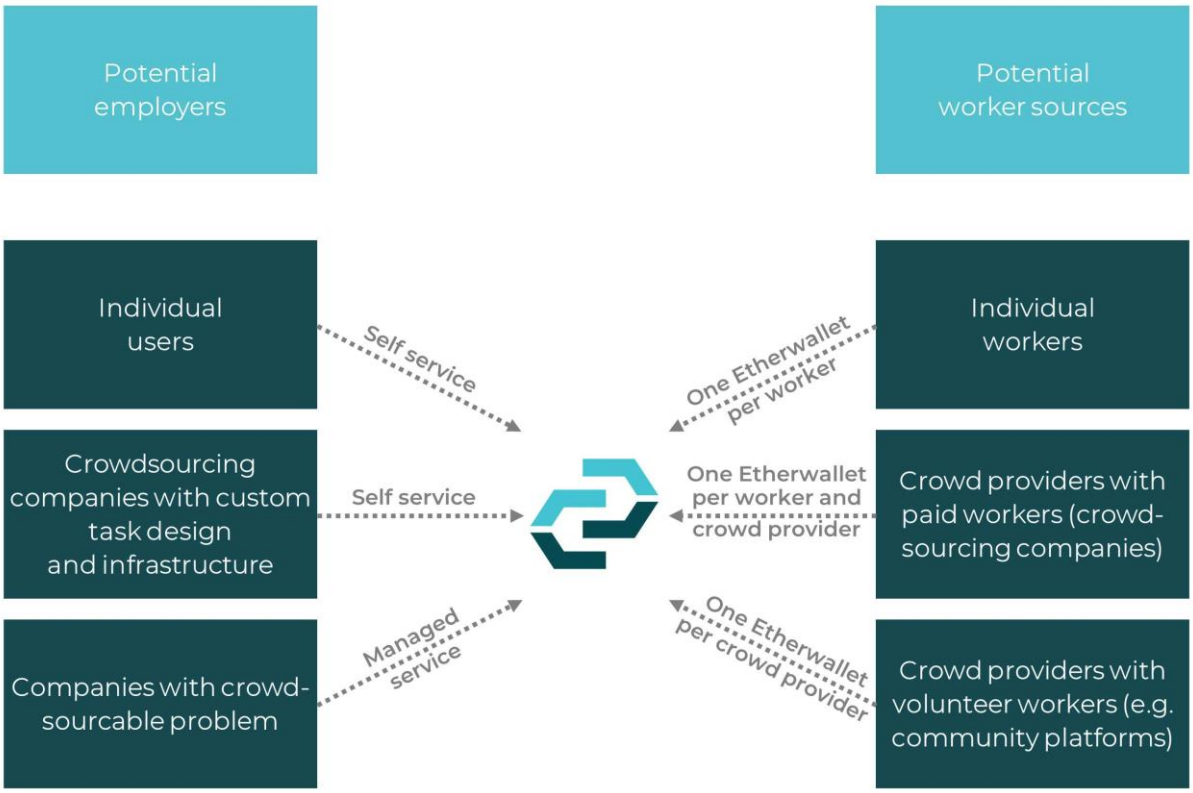
However, evidence proves that designing Crowdsourcing tasks actually requires a significant amount of prior knowledge and an understanding of the workers and existing challenges. This is also proven by the fact that most present-day major platforms have a full service approach which does not require employers to design the Crowdsourcing tasks at all but which levies significant service charges or fees for platform usage.

CrowdPrecision follows an intermediate approach that enables Crowdsourcing specialists to run Crowdsourcing experiments and specialized tasks with a minimum of administrative services and control by CrowdPrecision, while at the same time supporting novice users with guidance during their first steps in Crowdsourcing to maximize the efficiency of the task design and ascertain fair treatment of the workers. Additionally,

CrowdPrecision provides full service models. Here the team's data science and Crowdsourcing experts will take care of pre- and post-processing the submitted data and designing the Crowdsourcing tasks. Customers will then be given the resulting high-quality data. This differentiated service approach results in an optimal Crowdsourcing experience for all kinds of employers using Crowdsourcing for data processing, human computation tasks and tasks involving human judgement.

To overcome this problem, CrowdPrecision also supports the integration of existing Crowdsourcing providers or communities in general. In this case, the existing Crowdsourcing provider can decide whether to add an additional service charge to the task or whether to pay the full price to the worker. This integration helps the collaborating providers to increase the number of available tasks on their platforms, and it consequently also increases their revenue. Additionally, we support the integration of non-monetary worker sources, e.g. forum communities. In this case the forum owner as a central entity will receive the reward for the tasks and can then choose how to use the revenue, e.g. to provide advertisement-free content or new community features.

Following the unified interface approach, CrowdPrecision will also include ways in which workers can create a unified account. If, for example, a worker is registered on different platforms that collaborate with CrowdPrecision, his/her trust and skill ratings will be available on all platforms. Due to CrowdPrecision's service-oriented approach, the administrative support protects Crowdsourcing workers in cases of disputes and filters out unsatisfactory or unethical work.



CrowdPrecision Operation Mode

5.3 Service Fees

In order to provide optimal administrative support at minimum cost, a variable service fee system is applied. Depending on the required worker skill-set and the chosen service-level - self-service, assisted self-service or full service - different service charges apply. For self-service and assisted self-service, a fixed charge per positively evaluated task is added, while full service is charged on an hourly basis or a per-project basis and is evaluated for each specific request. For the worker, a service charge applies for each successfully completed task too in order to provide the worker with protection in the case of a dispute with the employer.

Besides the required level of service, a worker’s diligence and an employer’s experience in designing Crowdsourcing tasks both affect the input of CrowdPrecision's administrative support. Aiming at a minimized overhead for employers and a maximized income for the workers, the fees for both sides take into account the user's trust score as a measure of experience and diligence. As a trust score increases, the fees per task will be reduced. Besides

minimizing the overhead costs, this gives an incentive to provide high-quality work (workers) and fair task ratings (employers).

5.4 CrowdPrecision Trust Score (Entropy-Based Ranking)

The CrowdPrecision trust score is an entropy-based measure of a worker's quality and diligence. This can be derived from the number of tasks a worker has completed, their complexity and the tasks' evaluation by employers while also considering the employer's own trust and entropy score.

In the case of the employer, a straightforward approach would be to derive the employer's trust score based on the number of created tasks and the number of undisputed task ratings. Similar systems are already implemented in existing platforms, but have often proven to encourage employers to give only positive ratings, as paying for incomplete or poorly executed tasks is often more cost effective for the employers than writing reviews and justifying the rejection of tasks. Therefore, instead of a rating based selection of workers, Crowdsourcing tasks are usually low-paid in order to compensate for poorly executed tasks. Consequently, in most cases employers will accept all submitted tasks and filter out tasks afterwards in an off-platform post-processing step that hides the actual information about the individual worker's quality from the platform and, therefore, the rating system. This leads to additional overheads for all the other employers, as they need to maintain their individual quality score database, and it also encourages low-quality workers to continue working on the platforms. CrowdPrecision tackles this issue by basing the employer's trust score on the successfully conducted tasks as well as the value of the information about the quality of the workers that the employer gives as feedback subsequent to each task.

Every time an employer rates a worker's task, more information is provided about the quality of that worker. The information, however, is of variable value. Consider a worker constantly receiving ratings. In this case another positive rating does not provide a substantial information gain. However, if an employer detects a recent decrease in the worker's quality, the information is of significant relevance. Similarly, if a worker is new to the system, every new rating significantly increases the information about that worker's quality,

whereas a new rating for a worker that has already completed numerous tasks provides less 'new' information.

In order to quantify the information gained by the employer's rating, CrowdPrecision uses the concept of entropy originating from information theory. For each new rating provided by an employer, we update the entropy produced by the employer, the employer's trust score and the trust score of the worker. While the entropy score of the employer quantifies the diversity of his ratings, the trust score quantifies his fairness and experience on the platform. In order to encourage the employer both to be trustworthy and to be diligent in the rating of the tasks a reward system will be implemented in CrowdPrecision that gives bonuses and discounts to employers depending on their score level. Furthermore, the trust and entropy score are used to weight the employer's rating, which is then used to update the worker's trust score. Similarly to the employer, the worker's profile is also augmented by an entropy score that quantifies the diversity of the tasks completed by the worker and also the diversity of employers the worker worked for. This helps to identify highly trusted workers, e.g. workers that received positive ratings for a large number of different employers, and also workers with diverse skill sets.

Chapter 6: Roadmap

From 2000	Rise of Crowdsourcing
From 2003	Problems emerge in trust and result quality
2009	Microworkers.com started international operations
2014	Idea of building trust-based high-quality Crowdsourcing within the Microworkers.com environment
Q2 2017	Identification of Blockchain as a promising technology toward trust-based quality Crowdsourcing
Q3 2017	Microworkers.com size exceeds 1 million workers
Q3 2017	CrowdPrecision core team forming and team building
02/2018	CrowdPrecision Pte Ltd founded
Q1-Q3 2018	Preparation for public ICO
07/2018	Decision to postpone public sale due to market situation
09/2018	Adjusting CrowdPrecision team
Q4 2018	Starting Platform development
10/ 2018	Starting EBR simulation and development, start scientific cooperation project
Q1 2019	Implementation of Entropy-Based Ranking mechanisms (EBR), Start Microworkers-based operation
Q1 2019	End Initial Public Token Sale Initial building of Specialized Crowds in CrowdPrecision Expansion of CrowdPrecision in other languages and categories
Q3 2019	Integration of Microworkers.com as first external Crowdsourcing platform
Q4 2019	Expansion of marketing in Asia Pacific
2020+	Integration of additional task providers partners Integration of additional Crowdsourcing platforms Optimizing EBR algorithms Expansion to developing countries, creation of dedicated Local microtasking workplaces

Chapter 7: Legal

IMPORTANT NOTICE AND DISCLAIMER

7.1 Please read this chapter carefully as it contains important information relating to the risks associated with purchasing, holding and/or using digital tokens in general, including CrowdPrecision Tokens ("**CPT**"). If you have any questions or clarifications regarding CPT and its related risks, please contact us at info@crowdprecision.io

7.2 Whether taken as a whole or read in part, this White Paper is not, and should not be regarded as, any form of legal, financial, investment, tax, or other professional advice. You should seek independent professional advice before making your own decision as to whether or not to purchase any CPT. You are responsible for any and all evaluations, assessments, and decisions you make in relation to investing in CPT. You may request for additional information from the Company in relation to this offer of CPT. Company may, but is not obliged to, disclose such information depending on whether (i) it is legal to do so and (ii) requested information is reasonably necessary to verify the information contained in this White Paper.

7.3 The information in this White Paper is current only as of the date on the cover hereof. For any time after the cover date of this White Paper, the information, including information concerning [CrowdPrecision Pte Ltd]'s (the "**Company**") business operations and financial condition may have changed. Neither the delivery of the White Paper nor any sale made in the related Initial Coin Offering ("**ICO**") shall under any circumstances, constitute a representation that no such changes have occured.

7.4 This White Paper is not an offer or an invitation to offer CPT in any jurisdiction in which such offer or sale would be unlawful. No regulatory authority in Singapore, including the Monetary Authority of Singapore ("**MAS**"), has reviewed or approved or disapproved of CPT and/or this White Paper. This White Paper and any part hereof may not be distributed or

otherwise disseminated in any jurisdiction where offering tokens in the manner set out in this White Paper is regulated or prohibited.

7.5 The Company, CPT, and any related services provided by the Company are provided on an “as is” and “as available” basis. The Company does not grant any warranties or make any representation, express or implied or otherwise, as to the accessibility, quality, suitability, accuracy, adequacy, or completeness of the Company, CPT, or any related services provided by the Company, and expressly disclaims any liability for errors, delays, or ommissions in, or for any action taken in reliance on , the Company, CPT, and any related services the Company may provide. No warranty, including the warranties of non-infringement of third party rights, title, merchantability, satisfactory quality, or fitness for a particular purpose, is given in conjunction with the Company, CPT and any related services provided by the Company.

7.6 CPT are not securities, shares, debentures or units in a collective investment scheme or business trust, as respectively defined under of the Securities and Futures Act (Cap. 289) (“**SFA**“). Accordingly the SFA does not apply to the offer and sale of CPT. For the avoidance of doubt, this initial offer of CPT need not be accompanied by any prospectus or profile statement and no prospectus or profile statement is required to be lodged with the MAS.

7.7 Upon purchasing any CPT, you will be deemed as to have reviewed this White Paper (and any information you may have obtained from the Company) in full and have agreed to the terms of this offering of CPT, including the fact that this offering does not fall within the scope of any securities laws in Singapore and is not regulated by the MAS. You further acknowledge and agree that CPT are not securities and are not meant to generate any form of investment return. Persons considering purchasing CPT are responsible for conducting their own due diligence on the Company and CPT, and should ensure that they fully understand and are able to bear the risks of purchasing CPT as set out herein in this section.

Chapter 7a: Risks Notices

RISKS NOTICES

1. REGULATORY RISKS

(a) Regulatory status uncertain in Singapore

The regulation of digital tokens and/or cryptocurrencies such as CPT is still in a very nascent stage of development in Singapore. A high degree of uncertainty as to how tokens and token-related activities are to be treated exists. The applicable legal and regulatory framework may change subsequent to the date of issuance of this White Paper. Such change may be very rapid and it is not possible to anticipate with any degree of certainty the nature of such regulatory evolution. The Company does not in any way represent that the regulatory status of CPT will remain unaffected by any regulatory changes that arise at any point in time before, during, and after this offering.

(b) No regulatory supervision

Neither the Company or its affiliates is currently regulated or subject to the supervision of any regulatory body in Singapore, in particular, the Company and its affiliates are not registered with MAS in Singapore as any type of regulated financial institution or financial advisor and are not subject to the standards imposed upon such persons under the Securities and Futures Act, Financial Advisors Act, and other related regulatory instruments. Such persons are required to comply with a variety of requirements and standards concerning disclosures, reporting, compliance, and conduct of their operations for purposes or maximizing investor protections. Since the Company is not subject to such requirements or standards, it will make decisions on those issues at its own discretion. While the Company will have regard to best practices for these issues, holders of CPT will not necessarily enjoy the same extent and degree of investor protections as would be the case should they purchase products or services from regulated entities instead.

(c) No fiduciary duties owed

As the Company is not a regulated financial institution, it does not owe holders of CPT any fiduciary duties. This means that the Company has no legal obligation to always act in good faith in the best interests of holders of CPT. While the Company will have regard to the interests of holders of CPT, it is also permitted to consider the interests of other key stakeholders and to prefer these interests over the interests of CPT holders. This may mean that the Company is permitted to make decisions that conflict with or are not necessarily in, the interests of CPT holders. Not owing any fiduciary duties to holders of CPT also means that holders of CPT may have limited rights of recourse against the Company and its affiliates in the event of disputes.

(d) Uncertainties in tax characterisation and tax treatment

The tax characterization of CPT is unclear. Accordingly, the tax treatment to which they will be subject is uncertain. All persons who wish to purchase CPT should seek independent tax advice prior to deciding whether to purchase any CPT. The Company does not make any representation as to whether any tax consequences may arise from purchasing or holding CPT.

(e) Failure to Obtain, Maintain or Renew Licenses and Permits

Although as of the date of starting of the CPT pre-sale there are no statutory requirements obliging to receive any licenses and permits necessary for carrying out of its activity, there is the risk that such statutory requirements may be adopted in the future. In this case, the Company‘s business will depend on the continuing validity of such licenses and permits and its compliance with their terms. Regulatory authorities will exercise considerable discretion in the timing of license issuance and renewal and the monitoring of licensees’ compliance with license terms. Requirements which may be imposed by these authorities and which may require The Company to comply with numerous standards, recruit qualified personnel, maintain necessary technical equipment and quality control systems, monitor our operations, maintain appropriate filings and, upon request, submit appropriate information to the licensing authorities, may be costly and time consuming and may result in delays in the commencement or continuation of operation of the Crowdprecision platform (“the Platform“),. Further, private individuals and the public at large possess rights to comment on and otherwise engage in

the licensing process, including through intervention in courts and political pressure. Accordingly, the licenses the Company may need may not be issued or renewed, or if issued or renewed, may not be issued or renewed in a timely fashion, or may involve requirements which restrict the Company's ability to conduct its operations or to do so profitably.

(f) Unlawful or Arbitrary Government Action

Governmental authorities may have a high degree of discretion and, at times, act selectively or arbitrarily, without hearing or prior notice, and sometimes in a manner that is contrary a law or influenced by political or commercial considerations. Moreover, the government also has the power in certain circumstances, by regulation or government act, to interfere with the performance of, nullify or terminate contracts. Unlawful, selective or arbitrary governmental actions have reportedly included the denial or withdrawal of licenses, sudden and unexpected tax audits, criminal prosecutions and civil actions. Federal and local government entities have also used common defects in matters surrounding the token sale as pretexts for court claims and other demands to invalidate or to void any related transaction, often for political purposes. In this environment, The Company's competitors may receive preferential treatment from the government, potentially giving them a competitive advantage over the Company.

2. DIGITAL TOKEN RISKS

(a) Tokens have no rights, attributes or functionalities or features

CPT do not have any rights, uses, purpose, attributes, functionalities or features, express or implied, including, without limitation, any uses, purpose, attributes, functionalities or features on the platform. The Company does not guarantee and are not representing in any way to purchaser that CPT have any rights, uses, purpose, attributes, functionalities or features.

(b) Lack of development of market for CPT

Because there has been no prior public trading market for CPTs, the token sale may not result in an active or liquid market for CPT, and their price may be highly volatile. Even if CPT are tradable in a secondary market, in practice,

there may not be enough active buyers and sellers or the bid-ask spreads may be too wide. CPT holders may not be able to exit their token holdings easily. In the worst-case scenario where no secondary market develops, a token holder may not be able to liquidate his/her token holdings at all. The exchanges or platforms that facilitate secondary trading of CPT may not be regulated by the applicable laws.

(c) Risks related to speculative trading prices for CPT

The valuation of digital tokens in a secondary market is usually not transparent, and highly speculative. The CPTs do not hold any ownership rights to Company's assets and, therefore, are not backed by any tangible asset. Traded price of the CPTs can fluctuate greatly within a short period of time. There is a high risk that a CPT holder could lose his/her entire contribution amount. In the worst-case scenario, the CPTs could be rendered worthless.

(d) CPT are non-refundable

Company is not obliged to provide the CPT holders with a refund related to the CPTs for any reason, and the CPT holders will not receive money or other compensation in lieu of the refund. No promises of future performance or price are or will be made in respect to the CPTs, including no promise of inherent value, no promise of continuing payments, and no guarantee that the CPTs will hold any particular value. Therefore, the recovery of spent resources may be impossible or may be subject to foreign laws or regulations, which may not be the same as Singapore's.

3. BLOCKCHAIN TECHNOLOGY RISKS

(a) Blockchain Delay Risk

On the Ethereum blockchains, which CPT is built on, timing of block production is determined by proof of work so block production can occur at random times. For example, the Cryptocurrency transferred in the final seconds of a distribution period during the token pre-sale or the token sale may not get included for that period. Buyer acknowledges and understands that the Bitcoin or Ethereum blockchain may not include the Buyer's

transaction at the time Buyer expects and Buyer may not receive CPT in this regard.

(b) Blockchain Congestion Risk

The Ethereum blockchain is prone to periodic congestion during which transactions can be delayed or lost. Individuals may also intentionally spam the respective network in an attempt to gain an advantage in purchasing cryptographic tokens. Buyer acknowledges and understands that Bitcoin or Ethereum block producers may not include Buyer's transaction when Buyer wants or Buyer's transaction may not be included at all.

(c) Risk of Software Weaknesses

The concept of token smart contract which creates the mechanism of creation and distribution of the CPT, the underlying software application and software platform (i.e. the Ethereum blockchain) are still in an early development stage and unproven. There is no representation and warranty that the process for creating the CPTs will be uninterrupted or error-free. There is an inherent risk that the software could contain weaknesses, vulnerabilities or bugs causing, inter alia, the complete loss of the CPT.

(d) Risk of New Technology

The Platform, CPT and all of the matters set forth in this White Paper are new and untested. The Platform and CPT might not be capable of completion, creation, implementation or adoption. It is possible that no blockchain utilizing the Platform will be ever launched. Purchasers of CPT should not rely on the Platform or the ability to receive tokens associated with the Platform in the future. Even if the Platform is completed, implemented and adopted, it might not function as intended, and any CPT may not have functionality that is desirable or valuable. Also, technology is changing rapidly, so the Platform and CPT may become outdated.

4. THIRD PARTY RISKS

The tokenized nature of CPT means that they are a blockchain-based asset. The security, transferability, storage, and accessibility of blockchain assets depends on factors outside of CP's control, such as the security, stability, and

suitability of the underlying blockchain, mining disruptions, and who has access to the private key of any wallet where CPT are stored. The Company does not represent or otherwise assure that it can prevent such external factors from having any direct or indirect adverse impact on any CPT. Persons intending to purchase CPT should note that adverse events caused by such external factors may result in the loss of some or all CPT purchased. Such loss may be irreversible. CPT is not responsible for taking steps to retrieve CPT lost in this manner.