



Dear Investors,

I am currently researching the intersection of artificial intelligence and cryptosystems. Our September quarterly newsletter will have more detail, but I wanted to share with you a summary of the Worldcoin project as it is one of the first blockchain enabled use cases with significant physical world application.

[Worldcoin](#) is a cryptocurrency operating on the Ethereum blockchain. Since its launch on 25 July 2023 Worldcoin has on-boarded over 2 million users and achieved a market cap of over USD 236 million. The mission statement of Worldcoin is incredibly ambitious it reads :

'Worldcoin aims to establish universal access to the global economy regardless of country or background. It is designed to become the world's largest human identity and financial network, giving ownership to everyone. All with the intention of welcoming every person on the planet and establishing a place for all of us to benefit in the age of AI.'

To achieve this mission, Worldcoin must solve one of the most persistent and pressing computer science problems facing humanity. The problem of how to implement a secure, tamper proof global Proof of Person (PoP) digital identity protocol without sacrificing privacy to centralised governments or corporations.


The Company behind Worldcoin, [Tools For Humanity LLC](#), has so far raised USD 240 million to fund the project. The team is led by the Co-founder and CEO of OpenAI, Sam Altman. The Co-founder and CEO of Worldcoin is Alex Blania.

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Why Sam Altman wants to scan two billion eyes

The CEO of Open AI plans to create the largest biometric database in the world with another of his companies, which is registered in the Cayman Islands



Worldcoin is an iris biometric cryptocurrency project, developed by Tools for Humanity, which is based in San Francisco and Berlin
WORLD COIN

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Artificial Intelligence

Before diving into Worldcoin we need to set the context and that context is Artificial Intelligence and Safety.

AI is a technically challenging topic with wide, deep and unknown implications for current societal structures. If you are not familiar with AI, a good place to start is to learn about one of the main entrepreneurs in this space, [Sam Altman](#), the current CEO of [OpenAI](#), the Company behind ChatGPT. Interesting also to hear Elon Musk's view and the backstory of OpenAI, see video [here](#).

We are currently in the 'fun stage' of AI and there are a lot of upsides to the technology. But our focus in this bulletin is on the downside and more specifically what protocols can be developed to curtail some of these downsides.

In order to appreciate the potential downside of AI I recommend listening to [this speech](#) by the author of [Sapiens - Yuval Noah Harari](#). It's 45 minutes and frankly it scared the hell out of me. I am shocked to learn that AI already has the ability to form intimate human relationships. If you don't believe me, download [Replika](#) and play with it for a while. I did just that and within 15 minutes I deleted the app in horror of how addictive it was to have my own thoughts, likes, beliefs and dislikes confirmed back to me by my imaginary Replika friend 'Geoff'!

Possibly the most challenging aspect of AI is the speed with which it is developing. Nobody knows how AI will develop. Many of the early pioneers are warning us of significant dangers. Some researchers, like [Eliezer Yudkowsky](#), are

so concerned that they have chosen to dedicate the rest of their life's work to developing the safety systems that are needed, quite frankly, to save humanity (see TED talk [here](#)).

Governments are taking notice. It is somewhat reassuring to see that the US Senate Judiciary Subcommittee on Privacy, Technology and the Law held a hearing on this topic on 16 May 2023. [This live stream](#) of the hearing is over 2 hours long but very well worth the time.

The UK Government announced on 17 July 2023 the appointment of [Ian Hogarth](#) as the UK's first AI Tsar ([see here](#)). His job will be to advise the Government of the threats and opportunities that this technology offers.

The concern is that this technology will move faster than any government and also that not all governments will agree on what is essentially an issue for the whole of humanity.

AI Safety

There are many hundreds of people working on developing AI safety. Some seat belts that potentially make AI safer include :

1. [Digital ID](#), being able to identify if the content is human or machine generated (or hybrid);
2. [Data integrity](#), knowing where the data that feeds the models comes from and the strength of its integrity; and

3. AI Audits, being able to audit the models to confirm that what they say they do is indeed what they do.

This news bulletin focuses on the first of these seat belts, Digital Identity.

Sybil Attack

The quote that 'On the internet, nobody knows you are a dog' highlights the fact that we have not yet solved the problem of digital identity. If we cannot identify the creators of content it is possible that machines/robots generate millions of emails and 'like' clicks to give the impression of a huge population behind a particular 'viral' event on the internet whereas it could be just a small number of humans driving the virality of the event. The technical name for this is a '[sybil attack](#)'.

For example a topic such as [politician so and so accused of so and so...] may be trending on Twitter...but how many of the likes, re-tweets and comments are actual humans versus robots. We simply do not know. But that politician's reputation may already be shredded.

Sybil attacks and the problems they create will be amplified in the world of AI because now we have deep fakes and the like adding content. Part of the solution - one seat belt - is to create sybil resistant protocols and to do this we need a way to distinguish AI content from human content and part of the way to achieve that is to develop a digital identity system. Solving the issues around digital identity is becoming an urgent issue, this is one of the main focuses of the [Worldcoin](#) project.

Worldcoin - Proof of Personhood (PoP)

Worldcoin is an ERC-20 token which runs on the Ethereum blockchain. Ethereum is enabling an application to be built that may be one of the suite of foundational technologies that help curb the insidious nature of AI.

Proof of Personhood

Worldcoin seeks to solve the sybil attack problem by creating a way to identify content produced by a human. As a first step towards this solution Worldcoin is implementing a global 'proof of personhood' identification system.

How to Prove it is a Person on the Internet

Thus far there are three main ways to achieve this :

Certified Documents

This is the most common way, but it has significant limitations and weaknesses.

Firstly, about 12% of the world's population do not have identity documents at all so that counts them out!

Secondly, identity documents can be easily purchased or forged.

Thirdly, there is forfeiture of excessive private information. To achieve PoP it is not necessary to know where the person lives, their date of birth and any of the other hundreds of bits of information collected for other purposes such as Anti Money Laundering

(AML) regulations. All that is needed is proof that this content comes from a human.

Web of Trust (WoT)

Under this method a small group of trusted people who know each other can vouch for each other. Most often this method is used in fields like cryptography and secure communication.

WoT systems are hard to scale, expose too much personal detail and are technically complicated to implement beyond limited applications.

Biometrics

Biometrics is emerging as the best way to develop a PoP system. This method scales well, requires a minimum amount of personal information, is user friendly and difficult to forge.

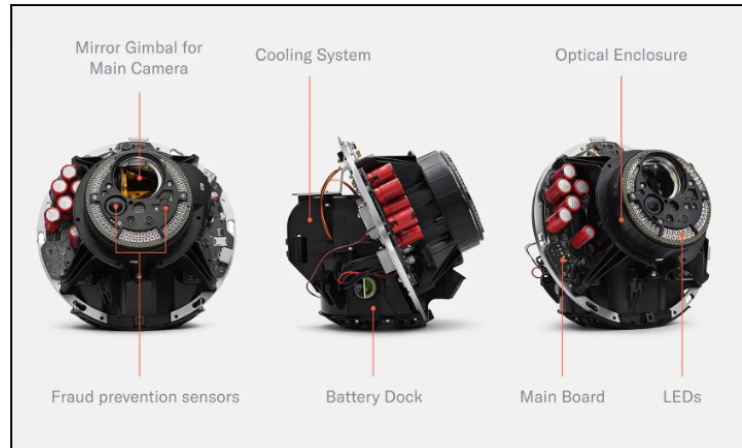
Of the biometric methods (including : facial recognition; finger prints; walking patterns; speech etc.) the human iris is the most reliable and hardest to forge.

So, Worldcoin's answer to the question of 'How to prove it's a person on the internet?' Let's do an iris scan of every human on the planet! Yes, that is what the Worldcoin project is currently working on, the roll-out of a global project to scan the iris of every person on the planet.

The Orb

The Orb is a critical piece of hardware. It is the silver ball-like object in the photo header of this news bulletin. The ball houses a number of specifically engineered elements such as cameras, fraud prevention sensors, circuit

boards and the like. The plans for the Orb are open source, anyone is able to copy and build an Orb ([see plans here](#)) some diagrams are below.



An important point to note here is that the Orb does not keep a copy of each iris. Once an iris is scanned the data is made into a unique hash which cannot be replicated or reverse engineered. The data captured from the iris is destroyed and all that remains is the hash. Each hash is individual in the same way that each iris is individual. The Worldcoin decentralised database has a record of each hash only and the individual can use that hash to prove they are a person. There are many more complexities to the Orb. There is a great interview ([here](#)) with co-founders Alex Blania and Sam Altman where they set out the background to the Orb, how it works and how it was developed.

The Coin Crypto Economics

The Worldcoin (WLD) itself is an ERC-20 token ([see contract here](#)) with a total supply of 10 billion coins. Thus far less than 2% have been issued. The idea is to distribute the coins as widely as possible and to do that each person who agrees to have their eye scanned via the Orb will be issued with a certain amount of WLD coins. The goal is to have every human

on the planet opt into the system. The co-founders believe this will effectively make everyone a part owner in the Worldcoin project and at the same time on-board billions of people to crypto.



Queue in India for Worldcoin

This idea sounds dystopian and exploitative, the project has received many criticisms along these lines. Crypto reporter Laura Shin grilled the co-founder, Alex Blania, on these and other issues in the interview set out [here](#).

Conclusion

The threats of AI to the existence of humanity may be overstated, but they are nevertheless real. Solving the sybil attack problem is an important base layer safety belt that can be part of a suite of technologies that can curb the insidious nature of AI.

It is highly unlikely that any single country or collection of countries will solve the sybil attack problem.

The Worldcoin project is not the only project trying to solve this problem but it is one of the first to have taken a biometrics 'proof of personhood' approach and combine that with a cryptocurrency which acts as an incentive and community building mechanism.

The potentially dystopian and exploitative aspects of the project seem to have been fully considered and mitigated by the architects of the project. But even if not, these same aspects will need to be managed with any project that seeks to develop 'proof of personhood' protocol. The question is how well has Worldcoin managed these aspects compared to alternatives.

The Fund does not hold any Worldcoin tokens and it's unlikely to in the foreseeable future. Our interest here is in the fact that Worldcoin runs on Ethereum and it is a significant global use case enabled by Ethereum. Our long term thesis is that Ethereum will become the operating system for the world. New blockchain enabled businesses will emerge and build on Ethereum and as adoption grows old world businesses will migrate their systems to Ethereum. Ethereum, through its native asset Ether, has the potential to become one of the world's most valuable assets. The Worldcoin project is just one early example which allows us a peek into the potential of Ethereum.

As always, please do not hesitate to contact me on 04 5090 0151 or at ian@bca.fund if you have any questions.

Best Regards

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The content of this newsletter has primarily been prepared by a human, Ian Love. Artificial intelligence has been utilised for fact-checking and for providing explanations of some specific words and concepts.

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