Interlock

Interlock Team

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Abstract

The web requires *trust* between many participants to reach its fullest potential. However, we (as in humanity) have centralized the trust-rating function to a handful of gatekeepers, who themselves have questionable credibility and competence. We propose a solution that uses blockchain and other technologies to increase security, privacy, and trust and bypasses those gatekeepers.

Introduction

The thing about these kinds of papers — whitepapers — is that they are supposed to be confident, authoritative, and seductive. Why, we hear you ask? Because stringing together words that create an impression of authoritative and seductive confidence is what often convinces people to buy whatever it is you are selling. Everybody wants to invest in the impossible-to-miss certainto-win solution to some problem that the market has. We have gone through a lot of whitepapers written with the confidence and certainty of a devout missionary seeking converts and, of course, donors. We are not going to do that to you.

Make no mistake, we are trying to convince you of the merits of our vision and idea — we just have no interest in hypnotizing you into agreeing with us. If you believe that the Web is not living up to its founding promises — and you want to change this — then please read on.

The Problem

History

The writers of this paper, fellow traveler, are old enough to remember the following: napster, gnutella, bit-torrent, Usenet, slashdot, RSS Feeds, Tor, Google before it became evil, and Open Source before it became cool. We remember an internet where nobody knew that you were a dog and, more importantly, nobody cared. We remember when being social on the internet meant that you had a blog, read (and shared files on) USENET, and participated in Slashdot discussions and flame-wars as an "Anonymous Coward". We remember that being informed meant that you used Google Reader (RIP) to read RSS feeds which were absolutely everywhere. And if you really wanted to stick it to The Man, you installed Linux on your second-hand beige-box and Firefox on your folks' Windows computer — we still have vivid memories and strong feelings about MSFT, and quite a bit of residual PTSD and mental scar-tissue. But, somewhere along the way, the internet took a turn. Now people use Facebook instead of USENET, Twitter instead of RSS, and Netflix, YouTube, and Spotify instead of BitTorrent. Also USENET, Slashdot, and friends are all ghost-towns — while their nearest equivalents have been overrun by trolls, catpictures, memes, advertisers, and cybercriminals. Oh, and Microsoft is an increasingly popular and increasingly open-source company — which is as inconceivable as Ghengis Khan becoming an exemplary Red Cross volunteer.

Clearly, there has been a pendulum swing from a decentralized and democratic internet to one that is significantly more centralized and autocratic. A significant driver of this centralization has been the insight that the majority of people are busy enough that they will give up control for convenience — especially if that convenience has a price-tag approaching zero. With the increase in convenience, things like web-pages and blogs could be created by people who did not know how to program or administer computers. Even if you did have this skill-set, chances are you would apply it to a virtual computer in the cloud rather than a physical one in your closet. This centralization of computing was not sinister or evil — far from it — but it was,

rather paradoxically, a leap towards making the web accessible and useful to more people than ever before. In other words, centralization did democratize participation in the web, but it came at the expense of freedom, control, and privacy. The web that you see today, is the web that Google wants you to see when you use their search, that Facebook, Twitter, and Instagram want you to see when you scroll through "your" feed. And what they want you to see, is whatever will make you re-share the content or click on an advertisement. You are, in effect, plugged into The Matrix — the entire cyberpunk oeuvre is not merely dystopic fiction, it is part prophesy and part warning.

Maybe you are thinking, that does not sound so bad — maybe we have to sacrifice freedom, control, and privacy to democratize participation in the web. Maybe. Maybe not. Maybe that is exactly what the feudal Serfs were thinking while they were working the fields of their lords — maybe we have to sacrifice control over our bodies, our labor, and the (literal) fruits of that labor to democratize participation in agriculture. After all, what is the alternative? Starvation?

We sympathize, fellow traveler. We sympathize with you, because it is a perfectly reasonable question to ask. Yes, being excluded and isolated from the means of production of our era, is infinitely worse than having our every action tracked, classified, and monetized. But unlike the quarries, mines, farms, plantations, factories, and refineries of previous eras — which all required capital to establish and maintain and upgrade — the means of production of *our* era is, well, **us**.

Do you post on reddit? You are creating the value, they are capturing it. Do you make videos for YouTube? You are creating the value, they are capturing it. Do you create content for OnlyFans? You are creating the value, they are capturing it.

They conceive of a world where they data-mine — yes, the exploitative nature of their business models is even reflected in their jargon — everything we do, turn that data into money, and we get (basically imaginary) shares, retweets, mentions, likes, so-called-friends, and so-called-followers. They have even removed negative actions such as dislikes for fear that it will drive users — another revealing bit of jargon — away. Their mission is to keep us happy and cheerful while we (happily and cheerfully) make them money. You know who also does this? Farmers. What does that make us? Livestock. Are you tired of being milked yet?

It Gets Worse

The previous section was a little bleak — we will give you that. But — as you can probably surmise from this section's title — this paper is going to get bleaker before it gets brighter.

If the end of the previous section has you feeling like you have been conned, like you are — sooner or later — going to be the eventual victim of an unsustainable and tenuous pyramid scheme, well, that was our intent. To be clear, we are not trying to scare you with ghost stories. We wish these were just ghost stories — the exaggerations of a handful of nerds, hackers, and cypherpunks trying to shock you into listening. But the pyramid is built on a shaky foundation and the dangers are real.

How could it get worse? Well, in addition to being exploited, and metaphorically robbed, by the feudal lords of the internet, you are also being exploited, and *literally* robbed, by the scammers and criminals that have a growing presence on the internet. We have a multitude of delightful statistics that back up this claim. The areas of cybercrime, fraud, and identity-theft are so ripe and pregnant with opportunities that even nation-states are eager to get in on it—and they are not even trying to conceal their involvment. Yes, they give zero fucks, because they are confident that the majority of the populace is too distracted and too impoverished to actually—in the words of Morpheus—wake up.

The obvious question is, why are there so many scammers and cybercriminals. What is there to steal? Is it worth the risk? What are the risks? Well, the modern cybercriminal is not like a

bank-robber or hostage-taker. The bank-robber or hostage-taker uses coercion and intimidation to steal money. The modern cybercriminal is more like the mythical japanese creature nopperabo. This creature is a faceless ghost that steals the faces of humans. Cybercrime is about stealing people's faces and using them as masks — it is about deception more than it is about coercion or violence. The faces in this metaphor are usually authentication-credentials that may lead the criminal to their ultimate goal, currency, crypto or otherwise.

And that is just the most obvious form of theft; material theft. Once business, politics, and religion enter the equation, lines and categories start to get blurry very fast. For example, can truth be stolen? If so, does that make a flat-earther a criminal? What about the corporate marketing department that uses flawed benchmarking methodologies to convince you that their product is superior to the competition? What about alternative or traditional medicine books? What about the hundreds of pseudo-historical, pseudo-scientific, and pseudo-sociological narratives that are weaved every election cycle to convince people that their neighbors and fellow citizens are the cause of their anguish — rather than the massive institutions, corporations, and beaurocracies that have every incentive to profit from and perpetrate anguish and tragedy across continents and across generations (you do not have to look further than McDonalds and Phillip-Morris)?

The point is, the truth is very important, but it can be hard to pin down. Very few things can be considered absolute truths. The web — under its current commercialized and oligarchic stewardship — perpetuates, exacerbates, and profits from, vanity, greed, delusion, ignorance, envy, hatred, and outrage. Instead, it should give users the tools to better understand themselves, human nature, and our connectedness to all things — an ancient idea that is in fact more relevant to the modern world than it ever was to the ancient world.

Criminals and tech corporations both see the internet-user as something to be exploited. The former seeks to attack and corrupt the state of your bank account, while the latter seeks to attack and corrupt your state of mind. You will find it easy, even effortless, to be angry with the former, but you may find it difficult to be angry with the latter. You cannot be angry with the tobacco company for selling you exactly what you asked for.

Identity, Trust, Belief

Before 1971, if you held a dollar in your hand and examined what was written on it, you would see "Exchangeable for Gold". After 1971, it would only say "In God We Trust". We believed in the dollar because we believed in gold — now we believe in the dollar because we believe in the dollar. This is what some historians would call a revolution, others would call it a paradigm shift. Paradigm shifts, and for that matter paradigms themselves, are — and please do not mistake this for belittlement, quite the opposite in fact — entirely imaginary. You cannot measure or touch a paradigm. A paradigm does not emit heat or have mass. Yet paradigms have been the organizing principle of society since humanity learned how to speak and write things down. A paradigm is a shared hallucination.

Every paradigm contains the seeds of its own destruction. The bible was the first book that was mass-printed — shortly after that the catholic church lost half of its believers to the various protestant denominations. The feudal and heriditary paradigms of Europe were eroded and overthrown by the steady growth of capitalism. The industrial capitalist paradigm had (after the Great Depression) given birth to both fascism and communism. And the surviving contenders of the Second World War, created the Cold War (i.e. bipolar) paradigm. This paradigm collapsed into one of globalisation and informationalism. Trading new gods for old.

Trust, just like a paradigm, is powered by *belief*. You cross the street with minimal anxiety because you trust the drivers to be sober enough to obey the traffic laws (also another good

example of a paradigm). You use the same two passwords on every site because you trust that the programmers that made the site have a minimal level of technical competence and a minimal regard for your security and privacy. Some Runescape-playing twelve-year-old kid drops all their hard-earned loot in front of another player and presses Alt-F4 because the other player told them it was a glitch that would duplicate all of the items in their inventory — that kid trusted someone who was untrustworthy, and learned a painful but important lesson about trust. The internet is basically like that Runescape example. The entire system depends on trust to get anything done, but there are too many people and you cannot trust them blindly. What to do? Well, we did what we have always done, we created institutions (i.e. social networks and banks) and placed our trust and our faith in them. It sounds perfectly reasonable, doesn't it? Sure. But such institutions are powered by people, and the people — just like criminals and liars have to respond to market-pressures. We used to trust our credit-rating-agencies to tell us which financial entities were creditworthy — and then we had an economic meltdown in 2008 that destroyed the trustworthiness of those institutions themselves. Centralizing trust in a handful of institutions will work in a pinch but it could eventually, and without warning, fail — every paradigm contains the seeds of its own destruction.

The Internet's Paradigm

Status Quo

The internet, and especially the Web, are either the result or cause — hard to tell really — of a paradigm shift. The mass on-lining of humanity has shifted the power (i.e. the value or economic surplus) from the previous power-holders (i.e. the mass media, the industry, the publishers, etc). Think about it, more people watched the Fortnite tournament than actual sporting events. In fact, viewership of the Olympics has started declining towards the end of the last decade — after a half century of growing viewership. Book stores are no longer mainstream, and the internet's pre-eminent book store has evolved into a titanic giant that sells everything and delivers it to your residence within 2 days — and they also collect rent for roughly one third of all computation and storage that is provisioned on a Cloud. A ride-sharing company has displaced local taxi-cab companies in the entire world — not merely in a city or a state or a nation. Video rental stores are few and far between, but the internet's pre-eminent video rental store, Netflix, has emerged as a formidable cultural force spending tens of billions of dollars per year producing original and highly regarded, or at least highly viewed, films and television series.

This is how paradigm shifts work. Companies try to build modest businesses in the not-too-contested corner of the marketplace. The paradigm starts shifting in their favor and they find themselves capturing more surplus than they know what to do with. They slowly wake up to the realization that they are at the top of the pyramid — not by any strategic brilliance of their own, but rather, because the pyramid shifted and contorted itself and they happened to be at the right coordinates at the right time. Western Europe provides an interesting case study — the place was a backwater far away from any action until some adventerous sailors and navigators found sea routes to Asia (that let them by-pass the Eastern Mediteranean middle-men) and to the Americas (which would eventually house the worlds most successful and likely last ever hegemon — as always, every paradigm contains the seeds of its own destruction).

New Paradigm

Different people have different ideas about what the next paradigm of the web is. Web2.0 got us half-way to where we want to be. Its pioneers, however, could not resist the incentives to

maximize the proportion of the economic surplus that they capture — even though these Web2.0 business are essentially built by the users. And what about Web3.0? Depends on who you ask. Right now the mainstream thinks that Web3.0 is the semantic web — a decades-old idea that has always struggled to gain traction. Meanwhile, an increasing number of people believe that Web3.0 will center around blockchain technologies — but they call it web3 (we will call it Web3.0 from now on in this paper).

We believe that the new paradigm for the internet/web is hyper-decentralization. The web is decentralizing the media and the news and the publishing industry. The web is decentralizing geography — two people a million miles away can interact with each other over video-chat or VR. The web is decentralizing finance — even stuffy old banks want to get in on the DeFi bandwagon. The web is decentralizing the nation-state — people often have more in common with globally dispersed like-minded individuals than their fellow neighbors and citizens. The web is decentralizing employment — the number of people working in the gig-economy and the creator-economy is increasing (unfortunately this is another example of users creating a surplus that is captured by online equivalent of a few feudal lords).

We believe that this accelerating trend of hyper-decentralization will also decentralize the parts of the web that have to do with trust. Right now, the intermediary institutions (i.e. Facebook, Twitter, Reddit, HN, and so on) that ascribe credibility and trustworthiness do so in ways that are opaque. We do not know why certain tweets appear in our feeds and others do not — and even if we did, there is nothing we can do to customize our feed (aside from following/unfollowing various accounts). We can see a Reddit user's karma-score as well as the score of their individual posts — which is slightly less opaque than Hacker News's ranking system — but we cannot see who up-voted or down-voted that user's posts. In fact, we have no way of knowing if that karma score has not been accidentally inflated by a random bit-flip on Reddit's servers — let alone if it has been manipulated by an insider or inflated by a voting ring. Similar logic applies to Twitter and Hacker News. Hacker News has surprisingly insightful discussions, in spite of its concealment of vote-metadata for posts, but it is still susceptible to insider manipulation and voting rings. In short, almost everything you see in the walled-gardens of the web — and almost every decision you make — is determined — or at least strongly influenced by — distant, nameless, and faceless product-managers and growth-hackers.

These institutions will tend towards fragmentation and decentralization because, as it stands, they have too much influence over too many people. If they translate their influence into power (i.e. translating technical and economic means into political ends), they make other, more traditional (and better armed), power-holders angry. If they sit idly and collect profits without intervening in the affairs of their users (i.e. translating technical means into economic ends), they make those same power-holders just as angry for not doing enough. All major tech giants, including amazon, apple, facebook, twitter, and google, are being taken to court in nearly every major global jurisdiction — and this is just the beginning, we can expect cases like these to extend and multiply over the next decade, creating what is effectively a power-vacuum that will be filled by smaller, less distracted players.

Economics

Intro: Three Strains of Economic Thought

Before we continue with our proposed solution, we should probably take a brief detour into economics-land and express how our proposal fits into the main frameworks of economics. From the late 1700s up to the present-day three economic schools of thought have shaped societies around the world — namely, the Neoclassical, the Keynesian, and the Marxian. The Neoclassical

school focused on individual freedom and individual incentives, and rejected any form of state-intervention in the economy — in other words they assumed that Utopia was achievable without Leviathan. After the Great Depression set the Neoclassical Utopia aflame, the Keynesian school arose and argued that a Utopia could not be maintained without a Leviathan — they argued that the individual was certainly important, but not nearly as important as the *structure* of the economy. These two views correspond to microeconomics (i.e. reasoning that individuals ruthlessly pursuing their own self-interest will create the most desirable outcomes for all of humanity) and macroeconomics (i.e. reasoning that *tracking* macroeconomic indicators like GDP, unemployment, inflation, and interest-rates and *tuning* those macroeconomic variables will create the most desirable outcomes for all of humanity). Put differently, one school thinks that individual behavior and actions *cause* the economy, while the other school thinks that the economy *causes* individual actions and behavior. To be clear, we are not taking sides, both points of view are correct they just disagree about the *relative* value of one component in relation to the others. And now onto the Marxian school which requires its own paragraph.

The Marxians are primarily concerned with the means of production — specifically, what they are, who is the class that owns them, who is the class that operates them, what are their outputs, what is their economic surplus, and who captures what proportion of that surplus. They marvel at the economic efficiency and dynamism unlocked by the transition from feudalism to capitalism, but they believe that any arrangement in which the class that operates the means of production but does not own or control those means is fundementally unjust, and does not fulfil the (false) promises of Humanism (the philosophy undergirding both Neoclassical and Keynesian social orders). They also believe that individuals and economic-structures are always shaping each-other via never-ending dialectics — in effect, they are simultaneously cause and effect. And that is pretty much all of the Marxian school that is relevant to this paper — there is a lot of other stuff (i.e. central planning as a suitable alternative to the market) that is simply not compatible with a globalized marketplace, nor is it compatible with a trend towards hyper-decentralization.

We basically agree with all of these theories, and want to use the three perspectives to construct a globally decentralized network that will give users freedom, control, privacy, and security.

Reputation and Trust

Trying to eliminate the intermediary institutions that ascribe trust is a little bit like trying to eliminate the police or trying to eliminate schools. Obviously policing and schooling are very important and nobody would ever consider decentralizing them, let alone eliminating them. So we should ask ourselves, what kind of people have no need for the police? What kind of people have no need for schools? The answer, fellow traveler, is people that are self-policing and self-schooling. Obviously, such people are very rare, otherwise we would not need schools and police departments. However, a computer that is not under the control of any single individual can in fact be used to implement this kind of flawless self-regulation. If we go back to that earlier Runescape example from Section 4, the game could have been programmed to disallow such acts of deception — whether this makes the game better is another matter entirely.

What we wish to do is to use the decentralized, history preserving, and transactional nature of the blockchain to implement an anonymous trust-network.

Our network associates users with accounts on the blockchain, similar to how a licence plate is associated with a vehicle — though *unlike* a license plate we do not associate the *identity* of the user with the account.

If Web2.0 was about websites and services, we believe that Web3.0 is about people and content and their trustworthiness.

Why Security

Freedom, Choice, and Privacy

Security is a difficult problem — it has always been a difficult problem. Throwing blockchain at the problem won't automatically fix it. If websites were signed using an account-signature from a blockchain-powered reputation-network many phishing attacks — the most common and most successful kind of attack — would be a lot less feasible. However, such a network would only protect the users that have an account on it from websites that belong to other users that have an account on it. In effect, we would have the walled-garden-problem — only users that were inside the walled-garden would get protection. This makes the concept no better than any other walled-garden-approach and would require buy-in from major players on the internet. In short, a blockchain-based decentralized reputation-network is not a good starting point for any entity that is not already very influential (i.e. the existing gatekeepers like facebook, twitter, and reddit).

Our company, Interlock, has developed an extension — a fork of uBlock — that, in addition to the usual ad-blocking functions, can also detect whether a website is fraudulent based on very effective, widely tested, heuristics. When a user opens a webpage that the extension thinks is fraudulent or untrustworthy, the extension will prevent any user input to the page and issue a warning in the form of a large red banner. The extension has already seen use in some large companies that you have definitely heard of — and for most of its life it has been out of the reach of non-corporate users. Our plan is to make this extension available to everyone but to modify it to work with Interlock Network. When the user installs the extension they can open an account on the Interlock Network, link it to the extension, and we will deposite an arbitrary amount of Inter Tokens into their account. As they use the extension they will get a variable-time and variable-quantity reward for using it. If the extension mistakenly locks a page a user can unlock it. If an extension does not lock a page, a user can flag it. Pages that have been flagged or unlocked are designated as grey-area-entities. Users can also get additional Inter Tokens if they are willing to stake a grey-area-entity. If we determine that a staked grey-area-entity is actually malicious, the user will lose the Inter Tokens that have been staked. If, on the other hand, the grey-area-entity is not malicious the user will earn a percent-reward on the amount staked. This risk/reward arrangement incentivises users to only stake on sites that have only been mistakenly flagged by our heuristics or by another user. This staking-information also helps Interlock refine and sharpen its heuristics. And this is just the bare-bones, minimum-viable-product-functionality in later releases, users will also be able to flag webpages as containing malicious content (i.e. a comment on reddit or a video on youtube), effectively crowdsourcing moderation.

KYC

The Know Your Customer laws are an interesting example of laws that require establishing the trustworthiness of a customer. In principle it is basically the same concept as checking whether a website is legitimate or fraudulent; or whether an account on the Interlock Network is highly regarded or shunned. Obviously, if all transactions happened on the Interlock Network — or on any blockchain — KYC laws would be trivial to implement. That is one of the nice side effects of complete transparency. We can combine the data collected by the Interlock Network with data — anonymized of course — that we gather from the extension to help the relevant Web3.0 financial institutions (i.e. namely crypto-exchanges and banks that want to jump onto the DeFi train) stay in compliance with the KYC regulations.

half-year	new-tokens	total-tokens
aug-2022	189087820	189087820
feb-2023	161495487	350583307
aug-2023	100483712	451067019
feb-2024	115245098	566312117
aug-2024	75395270	641707387
feb-2025	66876750	708584137

Cryptonomics

Interlock Token

To back our smart-contracts and our token we have chosen the **Solana** blockchain technology as our transaction-processing platform-component and **Ethereum** as the platform-component on which we mint the actual tokens. Solana has addressed many of the outstanding problems found in similar popular blockchains like Ethereum (i.e. transaction-speed energy-efficiency infinite-smart-contract-loops etc), and it has excellent documentation and development-stack that we are quite fond of. Also, building on top of Solana also allows us to (evetually) add transaction-heavy features to the Interlock Network that are simply not feasible on any blockchain that does not have cheap transactions. We had hoped that we would be able to use Ethereum since it has an enormous ecosystem and is very popular, but its transactions are thousands of times more expensive than Solana's. We do however recognize the value of Ethereum's ERC-20 standard and the ability to use existing wallets and to transact with other people on Ethereum — so we are minting the coins on Ethereum but connecting them to Solana using the Wormhole bridge between these two blockchains. However, if the newer versions of Ethereum increase the TPS and decrease their transaction-costs we could see ourselves porting our code over to these future versions of Ethereum — assuming that Solana does not supplant Ethereum in the meantime.

Tokenomics

Token Supply

In short, we plan to emit 1 billion tokens, over an 86-month period. Here are the first 3 years of emission, divided into half-year periods.

We also mint new tokens as necessary to meet staking obligations — which is only necessary after all tokens are emitted, or if all tokens are held but unused by their owners. Most projects try to "control" the price by controlling supply, but we feel that this is a fool's errand, and that it would be much more robust to stimulate demand for the token by making it useful and desirable

Staking and Earning

Even though we touched on it earlier, we feel it bears repeating under what circumstances tokens move across the network. There are 4 categories of Interlock Network participants: extension-users, security-stakers, enterprise-customers, and data-buyers. Extension-Users earn tokens for sharing data and for flagging/unlocking websites. Security stakers earn tokens for staking on non-malicious grey-area-entities (and lose tokens for staking on malicious grey-area-entities).



Enterprise-Customers can buy and stake tokens for licensing discounts. Data-Buyers can buy and stake tokens for data discounts. Visual learners may appreciate the diagram below.

Investing and Governance

We are evaluating different governance models. Stay tuned.

Technical Contributions

Regarding technical contribution we will follow an RFD/RFC model where project design documents are proposed and discussed on various community channels (i.e. github, discord, and discourse). If the project and community get large enough we will likely adopt a governance model akin to Rust's. We do not require separete personal and developer accounts, but we also do not require the same account. Keeping with the theme of privacy and anonymity a developer can have as many accounts as they want and the project/community would have no way of knowing — which is already the situation in the real world (i.e. one can make as many github accounts as they want). Voting is consensus-driven — proposals require unanimous approval. Unanimous consensus is meant to eliminate the competitive nature of voting — all disagreements should be

resolved at the discussion phase before a proposal comes to a vote. We believe that there are very few true and unresolvable contradictions in engineering. Proposals can be resubmitted for voting.

What's Next

security industry and interlock

We are currently migrating this content from the original whitepaper, check back later.

ecosystem and frictions

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phishing statistics

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