check first

Fact-checking, blockchain powered

Bluepaper

Abstract

This paper introduces the FACT network, a new blockchain with a token-based incentive mechanism for a decentralised global information verification system and database network. The FACT network aims to solve various challenges the information industry faces today.

Firstly, tokens on the FACT blockchain will be used as an incentive to encourage individual users to share their information with organisations for verification. This will improve the quality and the relevance of the verified content while accelerating disinformation detection and response.

Secondly, with sufficient network density the majority of claims could be handled, reducing significantly the possible spread of disinformation.

Thirdly, by involving all the disinformation actors within the same ecosystem, the FACT network will facilitate the dissemination of verifications rather than disinformation.

More importantly, by introducing tokens to enable a multi-level incentive mechanism the FACT network allows organisations to drive revenues and possible new revenue streams while focusing on producing content tailored for their audiences.

The FACT network will introduce the following main concepts :

- Multi level Byzantine Fault Tolerance Algorithm (BFT): A modified BFT consensus mechanism allowing thousands of nodes to participate in the consensus process. The core idea is to have a small set of nodes which form the publishers committee, produce a chain of blocks as fast as possible using a BFT-like process. The name multi level BFT consensus mechanism reflects the fact that the investigator/publisher discrimination provides multiple levels of guaranteed security. The curators provide the first level of consensus. The investigators pool forms the second layer of security while the publishers committee is the third. With thousands of nodes, it is substantially more difficult for attackers to compromise the integrity of the network and thus provide a much higher level of security.

This blue paper will describe these concepts and the FACT blockchain. The FACT network will be launched with ERC-20-compliant tokens. The FACT blockchain mainnet code will be released on Github. The first live mainnet implementation will implement a 1:1 FACT token swap.

Background

In 2019, a report by the Israeli cybersecurity firm CHEQ and the University of Baltimore reveals that fake news cost the global economy $78 billion a year[1]. Disinformation affects therefore both the economy and citizen's lives: a study published in the American Journal of Tropical Medicine and Hygiene suggests that coronavirus-related "fake news" have caused the death of around 800 people and the hospitalisation of 5 800 individuals worldwide[2].

Check First (the company) has been at the forefront of the development of next-generation verification processes for small to large organisations. It is also the parent company of The FACTLab Inc. Check First is today among cutting edge companies offering verification tools and processes. Check First is also involved with policymakers helping them to support fact-checking initiatives and understand their work.

The company was formed during the pandemic as the result of a fact-checking initiative born spontaneously in France and Belgium. Its three founders met online while developing and implementing an open newsroom of fact-checkers, uniting at its peak 140 citizens, journalists and developers to collaborate on debunking Covid-19 disinformation.

The second main step of the development of Check First was the creation of a centralised fact-checking ecosystem uniting citizens, media organisations and researchers against disinformation : Canopy. Canopy is a technological hub based on an API that allows its users to work in a transparent, collaborative, secured platform. FACT would be the third step and the achievement of the creation of a decentralised system for people who fight against disinformation.

Check First have accumulated remarkable knowledge as regards the needs of entities fighting disinformation worldwide, as founders of ODIL, the observatory of initiatives tackling disinformation in the Francophonie, an initiative of the International Organisation of the Francophonie. The observatory's task is to list fact-checking initiatives throughout the French-speaking world in order to provide them with a network of best resources, tools and techniques.

Check First's projects have received attention and interest from organisations such as the European Commission, CIRCOM, BBC, France Télévisions, La Sorbonne University, the University of Essex and others.

More encouraging signals are coming from the cryptocurrency field. Coinbase has announced the launch of its initiative « Coinbase Fact Check » to combat misinformation and mischaracterisations about Coinbase or crypto being shared in the world. The release note starts as follows: "As Coinbase and the crypto economy grow, we've seen more interest from the media, government, and the general public in our business and in crypto overall. This increased awareness has been great. Unfortunately, we also see misinformation published frequently as well, whether in traditional media, social media, or by public figures."[3] Check First is sure that that

[1] https://www.cheq.ai/fakenews

[2] https://www.ajtmh.org/view/journals/tpmd/103/4/article-p1621.xml

[3] https://blog.coinbase.com/announcing-coinbase-fact-check-decentralizing-truth-in-the-age-of-misinformation-757d2392d61a

those worlds (crypto economy and fight against disinformation) can be gathered and useful to one another, not only working side by side.

The academic field is also interested in the link between citizens, disinformation and fact checkers. As a matter of fact, a recent study from the MIT demonstrated how fact-checking could be scaled up using “Wisdom of crowds”[4]. The outcome is that small groups of laypeople can match professional fact-checkers when evaluating URLs flagged for checking by Facebook. It means that citizens have their say on the information they see, and how it is presented. That constitutes another reason why we firmly believe there is a need to gather stakeholders in a same secure environment, working in collaboration.

Saying that, it is not unrealistic to associate media and blockchain, as some experiences have proven it right. The Associated Press, for example, used the blockchain technology during the last US presidential elections. AP used Everipedia's OraQle software to publish U.S. election race calls. This project has used the blockchain technology behind the scenes for its own application programming interface (API). This usage of the blockchain allowed anyone tapping into the official AP results to verify their accuracy and traceability by storing immutable data on the blockchain while creating a new revenue stream for themselves.[5] It is more than encouraging to see a news agency using blockchain technology to assess the very fondation of a democracy: election results.

Other media organisations also delved into blockchain technology at the service of the fight against disinformation like the New York Times (associated with IBM). With the *News Provenance Project*, they focussed on visual assets, comparing the content of a media to a database of pictures stored on the blockchain with their associated meta data. On the same field, the BBC, CBC Radio-Canada, Microsoft and the NYT again, have created an end-to-end process for the publication, distribution and presentation of provenance enhanced media based on blockchain technology: *Project Origin*.

Lastly, we can learn from very early projects like *Civil*, a "blockchain-backed attempt to nurture nascent digital news sites" which didn't reach its goals but provided the community with insightful lessons.

[4] https://www.science.org/doi/10.1126/sciadv.abf4393

[5] https://developer.ap.org/ap-elections-api/#election-race-calls-on-blockchain

Intro

We live in a context where media operations are failing to find a new sustainable business model and the spread of disinformation has dramatically ramped up since the COVID pandemic. These two separate facts can be linked by the consequences of the recent rise in usage of social media and asynchronous messaging on the internet, enabling both a quick dissemination of news, true, erroneous or intentionally false and at the same time the dramatic multiplication of publishing entities, from mere individual to entirely new media operations threatening the more than century old economic model of traditional media.

This situation creates a challenging time for citizens, being exposed to an overload of undiscriminated information, and few reliable sources to sort out truth and fiction. The formation of informed opinions among the population is threatened by this recent development, encouraging the creation of thought bubbles where only like-minded people tend to find themselves, being often presented with altered facts, bended to fit their word view. The strong polarisation of the political landscape in many countries, including of course the US, can in part be explained by this factor.

Challenges :

Fact-checking operations do exist, but their financing model is highly dependent on public policies or corporate subsidies generally received from an handful of players. Fact-checking, a time and ressource intensive task, is not today in a fully independent position. Enormous efforts are put into getting access to ressources, mainly submitting bids to calls for proposal. Moreover, these entities must allocate a share of their workforce to look out for new sources of financing and maintain them, mechanically decreasing the amount of ressources put on actual fact-checking.

One of the imbalances existing in the world of fact-checking is the fact that purveyors of disinformation who pursue a nefarious goal often have an economic or political motivation to do so when fact-checkers can hardly make money off of their work. The public does not seem ready to pay at a large scale to access trustworthy information. Good and efficient fact-checking is expensive in both time and money. However, the competitive nature of media organisations and the lack of incentives for real cooperation prevents them to share their ressources and workforce to achieve a common goal: fighting the worldwide spread of disinformation. FACT aims to shift that balance.

There is no system today enabling all stakeholders to securely store and share their assets in full traceability and under the scrutiny of the public. FACT ambitions to achieve this goal through well proven blockchain technologies.

Opportunity

Check First's mission is to leverage blockchain technology to create the first decentralised global verification system and database whereby users are incentivised to share information to address today's disinformation challenges. FACT can be viewed as the « World Fact Database » composed of the information, ressources, archive and storage contributed by users.

Specifically, users around the globe can contribute their information as "curators" whereby they form a monitoring mesh network responsible for catching disinformation threats. Level_0 users can also be graders, rating the proposed claims, who will play a role as a first filter in the selection of the proposed claims. This filter will enable fact-checkers to prioritize the content submitted by curators by its harmfulness. The content available on the blockchain can be used by newsrooms anywhere around the world while still being optimised for their local audience. With a global user base in direct contact with disinformation more than any organisation, FACT will be able to tackle today's challenges while creating new revenue streams and/or savings Most fact-checkers will receive claims from local workers which will help organisations reduce their monitoring costs.

To encourage users to contribute their ressources we will introduce the FACT token as an incentive. Users can earn tokens as they share and rate information with the network. Not only will the FACT token motivate audiences to join the network as curators or graders, it will also greatly improve the efficiency of debunking by streamlining the verification process. The dissemination of tokens would be based on smart contracts to ensure transparency and accountability. The FACT network will allow organisations and users to open new and incremental revenue opportunities to retribute their work.

The full launch of the FACT protocol will introduce a new blockchain and a native token structure where:

- Curators and graders will earn tokens as they monitor, report and rate dubious pieces of information
- Curators and graders might optionally will earn token providing quality data to investigations and/or rating correctly the claim they submit
- Investigators can drive incremental new revenues from the analysis and sale of data
- Publishers can offload their monitoring and investigation costs while being compensated

Vision :

FACT 's ambition is to build a blockchain based fact-checking ecosystem where stakeholders will be rewarded for providing factual information, consensus-approved knowledge and will overall create a system where the motivation to circulate accurate information is greater than spreading falsehoods. The core principle of FACT is to allow for a fast and efficient consensus on the trustworthiness of information, through collective intelligence, crowd wisdom and benevolence. This consensus will be reached at a multiple level, structured in a three-tier model.

Network Consensus by way of the "Wisdom of the Crowd"

The FACT network's philosophy relies on the Rule 110, which is known as the "rule of chaos" elaborated by Stephen Wolfram. It corresponds to "an elementary cellular automaton with interesting behaviour on the boundary between stability and chaos."[6] Applied to our work, it can be summed up in one sentence : "there is more good people than bad".

This idea is also related to the concept of the "Wisdom of the Crowd" for Level_0 stakeholders. The concept was developed by James Surowiecki in the eponymous book. He explains that 5 elements are required to form a wise crowd :

- diversity of opinion: each person should have private information even if it's just an eccentric interpretation of the known facts
- Independence: people's opinions aren't determined by the opinions of those around them.
- Decentralisation: people can specialise and draw on local knowledge
- Aggregation: some mechanism exists for turning private judgments into a collective decision.
- Trust: each person trusts the collective group to be fair

In addition, Oinas-Kukkonen[7] sharpens the concept:

- It is possible to describe how people in a group think as a whole.
- In some cases, groups are remarkably intelligent and are often smarter collectively than the smartest people in them individually.
- The three conditions for a group to be intelligent are diversity, independence, and decentralisation.
- The best decisions are a product of disagreement and contest.
- Too much communication can make the group as a whole less intelligent.
- Information aggregation functionality is needed.
- The right information needs to be delivered to the right people in the right place, at the right time, and in the right way.
- There is no need to chase the expert

Moreover, in the online article Digital Maoism[8] , Jaron Lanier argues that the collective is more likely to be smart when:

- It isn't defining its own questions.
- The goodness of an answer can be evaluated by a simple result (such as a single numeric value),

[6] https://towardsdatascience.com/connecting-biology-and-ai-growing-neural-cellular-automata-fd53f2834ee2

[7] Harri Oinas-Kukkonen, Knowledge Management: Theoretical Foundations, (Santa Rosa, California: Informing Science Pres), pp. 173-189.

[8] https://www.edge.org/conversation/jaron_lanier-digital-maoism-the-hazards-of-the-new-online-collectivism

- The information system which informs the collective is filtered by a quality control mechanism that relies on individuals to a high degree.

Lanier argues that only under those circumstances can a collective be smarter than a person. If any of these conditions are broken, the collective becomes unreliable or worse. Keeping all these guidelines in mind, FACT relies on a collective consensus that incentivises people to work for the prevailing of the truth, pursuing the idea that there would be less incentives to spread disinformation.

This idea has been comforted by the findings of a recent study, "Scaling up fact-checking using the wisdom of crowds"[9]. The study finds that that "small groups of laypeople can match professional factcheckers when evaluating URLs flagged for checking by Facebook". Therefore, citizens have a whole role to play in the FACT network.

Security and transparency

The FACT network relies on the blockchain. Even if a newsroom publishes a story they didn't write or investigate, every investigation element is signed thanks to the blockchain so it is entirely transparent and traceable. The security of the network is ensured by several level of consensus and multisignatures of various stakeholders.

The security and transparency of the network rely on its technology : blockchain functions as a decentralised system. It is distributed all around the globe, thus there cannot be abuse of power of one of the stakeholders. It also reduces the risk of censorship: there is no unique gatekeeper to information.

The content is also easily traceable. It is possible at every step to publicly verify the provenance of original content, its evolution, and who is responsible for those evolutions. The content stays immutable at a precise date and time and is forever stocked on the chain, so it can be retrieved later and traced back if necessary.

Those stored data, more than being traceable, are also immutable and secured.

Governance

FACT governance mechanism is aimed at decentralisation over the course of evolution of the protocol. The goal is to implement mechanisms such as quadratic voting, so that community preferences are fully expressed. The roadmap of the network includes staged deployment which allows transitioning the governance from an initial centralised model to a decentralised one. The decentralised autonomous organisation (DAO) would ultimately have the ability to develop and accept improvement proposals, voting proposals shall implement mechanisms which reduces the changes of governance capture.

[9] https://www.science.org/doi/10.1126/sciadv.abf4393

Treasury

In order to ensure that the FACT network is sufficiently decentralised and its development supported, a treasure function is envisioned to that end. Once the DAO is bootstrapped and the initialisation conditions are met, assets in treasury cannot be distributed or re-allocated without the approval of on-chain governance. Developers can post the proposals in public. The voting of these proposals would happen, as per the governance mechanisms implemented.

Tokenomics

The FACT token ($FACT) is a finite supply fact-checking governance token that represents a right to vote a governance's proposal on the FACT network. It is used in several instances to support the function of the network and provide incentives for its maintenance.

Later on in the process, $FACT is used to reward participants of the network for providing vote to the FACT pool, which could be viewed as a specialized form of liquidity verifying.

The FACT token could be used for the following:

1. To compensate users, fact-checkers and newsroom verifications and discoveries, using open market pricing mechanics, for creating Assets transactions within the FACT network
2. To compensate Publishers for signing verification
3. To compensate data provider for their data
4. To buy factcheck NFT