TREPCO WHITEPAPER v1.0

TRUST REPUTATION PROTOCOL

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INTRODUCTION – OUR VISION

We are building an open security protocol for the Internet relaying trust and reputation information about Uniform Resource Identifiers (URIs) including domain names, applications, bots, crypto wallet addresses, Application Programming Interfaces (APIs), and content classification. The Protocol's registry is machine-readable and queryable for use by Internet Service Providers (ISPs), routers, crypto exchanges, Wi-Fi hotspots, mobile devices, browsers, websites, and applications to help address cyber threats such as phishing, malware, brand protection, child safety, and news credibility.

INTRODUCTION – ABSTRACT

Not a week goes by without news of a crypto exchange being hacked [1], a major corporation or public institution suffering an Internet security breach or innocent victims falling prey to phishing scams [2]. Internet security is a critical necessity for organizations and individuals, but remains one of the most difficult problems to contain because threats continue to evolve. Trepco, is a group of individuals driven by our collective passion to protect people from personal and financial losses and give guardians the chance to protect children from inappropriate content. Trepco will introduce an open protocol called the Trepco Protocol ("the Protocol") that will improve the Internet's trustworthiness and reputation. Using distributed ledger technology, Trepco will decentralize its categorized and currently centralized registry of URIs to democratize the submission, validation and dispute processes for URIs. To enable the growth, development and utility of the Protocol, we are launching the TREP Coin (the "Coin"). Once the Protocol is operational, Trepco will be the foundation of a Tokenized economy that incentivizes users to behave appropriately, mitigating the risk of bad actors and reducing community security vulnerabilities.

INTRODUCTION – WHAT MOTIVATE US

We believe in a free, open and safe Internet for everyone where the public can access the resources they want while avoiding content they prefer not to see. You should feel confident identifying and avoiding dangerous links and be empowered to safeguard yourself and your children from links with inappropriate or distasteful content. We believe it should be easy for people to avoid phishing scams, malicious software (malware), and other fraudulent, intrusive, and deceptive ploys. We believe it should be easier to tell the difference between what is real and what is fake news, so society can make better informed choices about who they vote for. And we believe brands should be protected so their consumers don't become victims of online fraud.

PROBLEM 1.1

Is this app safe to download? Does this website contain JavaScript that will hijack my computing resources for crypto mining [4]? Is this content safe for kids? Does this news article come from a reliable source? Has this crypto wallet address been verified? Is this a fake Twitter account?

Each of these questions implicates an important aspect of the Internet -- Uniform Resource Identifiers (URIs). URIs are used to identify resources such as domain names, social media accounts, news articles, apps, bots, crypto wallet addresses, APIs, or IoT devices, but can you rely on the safety of a URI before opening it? The general issue with trust and reputation on the Internet is a question of checks and balances: who checks the checkers and who decides who can be trusted?

Until now, users have had little choice but to trust centralized organizations with an almost monopolistic grip on what is considered trusted. Even open source, transparent lists are just arbitrary lists of URIs that are considered good or bad. Where's the guarantee each item on these lists is error free and genuine and if users rely on them, where's the guarantee they will remain up-to-date? What about Extended Validation (EV) certificates? These types of certificates require a more rigorous vetting process for verifying ownership of a domain, confirming the physical location and the asserted identity of the legal entity requesting this form of certificate.

PROBLEM 1.2

Despite good intentions, recent research has shown that EV certificates can be abused by bad actors [5]. In short, users don't know who to trust. Opening the wrong URI can result in users logging into a phishing website, having their personal information stolen, or losing their cryptocurrency. Users may also end up downloading malicious software (malware) or ransomware onto their devices.

We believe the problem can be distilled into three main issues:

1. Users are not adequately capable of detecting and avoiding security threats due to ineffective threat identification and categorization

2. Detected threats are often incorrectly categorized

3. Users and service providers aren't properly incentivized to fix the existing detection and categorization issues

SOLUTION

Trepco is building a query and response protocol on the blockchain that stores open sourced and community verified information on resources such as domain names, IP addresses, social media accounts, bots, applications, crypto wallet addresses, or autonomous system identities. The Protocol stores and delivers content in a human and machine readable format. The information stored on the Protocol can be used by anyone to build products or services to address issues such as phishing, malware, brand protection, child safety, and news credibility. Using the blockchain, it is now possible to create new open systems that curate data sets through rewards, incentivize good behavior and mitigate the risk of bad behavior using fairly applied counter-measures and punishments. Once structured and populated on the main blockchain or its side chains, these curated data sets become immediately eligible for global distribution on a mass scale.

The Protocol is a special case of this incentivized curation and distribution network, extolling security, openness, and transparency across the entirety of its operations. The Protocol will contain the world's foremost high-quality information and determinations on URI reputation and it cannot be edited without an audit trail for all to see. With the Protocol, the trust and reputation of the Internet is placed back into the hands of everyday people. It will be enabled through a system of checks and balances to ensure high quality participation and authentic behavior that is incentivized by a Tokenized economy.

THE TREPCO PROTOCOL – PARTICIPANTS

The Protocol will be accessible to any user anywhere in the world. All these users will need is access to a computer or smartphone to submit, review and validate information about URIs. This user reporting will then be permanently stored in the Protocol. Through the Protocol, behavior that results in higher quality URI reputations will be rewarded while behavior that subverts or under-mines integrity will be punished. At the core of this is an incentive system backed by the Coin, which may be staked to "claim" and validate the membership of a URI to a specific category and be further applied as tender for access.

– PARTICIPANTS

Participants are generally passionate about a particular subject matter. For instance, crypto enthusiasts are keen to avoid online fraud and phishing scams that can lead to the theft of their crypto assets, or guardians using parental controls to prevent kids from accessing adult content on the Internet.

These users are incentivized to report suspicious links so the security tools they use for protection are improved by their participation. Some people are simply passionate about helping to make the Internet safer for everyone. While we anticipate that new classes of participants will emerge as dictated by the evolv-ing practices, dynamics and needs of the community, we have identified at least four primary classes of participants that will interact with the Protocol, namely Submitters, Validators, Purchasers and End Users.

THE TREPCO PROTOCOL – SUBMITTERS

Submitters are a class of participants that identify URIs that have yet to be categorized by the Protocol, or require updated classification information. They are able to use a web interface or mobile app to submit information about URIs, which is then placed into a queue for validation. This information could include classification of a domain, ownership of a domain, its contact information and more. Resource owners are a unique example of Submitters who also play an important role in the Protocol. Unlike other Submitters, resource owners initiate the validation process for their domains, crypto wallet addresses, social media accounts, and other internet resources by paying Trep Coins. The validation process is in turn funded by the Coin resource owners pay, helping to form the backbone of the Protocol's economic engine. Once a submission from a resource owner is approved, they will be notified, and the validation process will commence.

THE TREPCO PROTOCOL – VALIDATORS

Validators are a class of participants responsible for reviewing URI submissions before they are added to the Protocol. They are awarded the "Validator" status if they attain a high quality of accuracy, determined from repeated successful reviews pertaining to the categorization of these respective submissions. They can also achieve this if they're considered "experts" for a respective category, for example an "anti-phishing" expert.

THE TREPCO PROTOCOL – PURCHASER & END USER

Purchasers

Purchasers are a class of participants that purchase access to the Protocol for inte-gration into their own products or services. Purchasers have the ability to pay for access to the entire Protocol, multiple categories or a single classification type. Access can be obtained by making a payment for monthly access or annual access, which includes a discount.

End Users

End Users are a class of participants that are the primary beneficiaries from the avail-ability of the Protocol. These include users of products or products that have yet to be created by developers, companies or any other type of Purchaser.

PROTOCOL INCENTIVES

Knowing the roles of the participants in the Protocol serves as a starting point to understand the value of the incentives in this system. There are several highlights of this incentive system including:

–URI Submitters and Validators can lay claim to a certain number of URIs. These claims allow Submitters and Validators to collect fees on access to the respective URIs as they are accessed by Purchasers. The amount of allowed URI claims depend on the amount of staked coins. This limit incentivizes Submitters and Validators to claim the most useful and accessed URIs.

–Early Submitters and Validators for a specific URI category will earn a disproportion–ate interest in the fees collected for data access. Early confirmations are typically more valuable than subsequent confirmations.

PROTOCOL INCENTIVES – 1.1

-Submissions and validations may expire or depreciate their owners' fee interest over time or upon some event, as stale data become less valuable. This creates a new incentive for Protocol participants to re-submit and re-validate existing URIs that may have become outdated.

-Stakes can be slashed, such as if the network disagrees with a Submitter or Validator, and all decisions are immutably logged to the ledger for review and identification of bad actors.

-Participants may pay in Trep Coins, fiat, or other cryptocurrencies for access. As part of its technology adoption strategy, Trepco may issue accounts and browser extensions with pre-credited access to the network data.

TREPCOIN MECHANICS – MASTERNODES

Masternodes are essentially nodes on the network running the same wallet software on the same blockchain which provide extra services and features to the network and its users.

Services Offered by a Masternode are:

• Instant transactions • A decentralized governance • A decentralized budgeting system

Participants in the masternode network are each given a reputation score, which is comprised of various behavior signals derived from their participation in the Protocol, including their track record in submitting and validating URIs, level of recorded expertise, and other data points that are defined by the system.
Masternode rewards will be used to incentivize participants to tell the truth when submitting or validating URIs recorded on the Protocol. However, the history of crowdsourcing has demonstrated that it is impossible to rely on good faith alone, so we use software and incentives to help identify trustworthy or unreliable participants and their associated reputation score.

The reputation score will also contribute towards activity within the system. For example, phishing-related submissions from an anti-phishing expert will be more quickly validated and such an expert may also act as a Validator for phishing submissions from non-experts. However, an anti-phishing expert doesn't have much experience identifying credible news sources, so their news submissions require more validation work and they may be unlikely to become a Validator for news submissions.

TREPCOIN MECHANICS – STAKING URI CLAIMS

Submitters and Validators stake the Coin to claim submissions and validations of a URI belonging in a certain category. The number of URIs that a staking amount can claim varies depending on parameters such as the category, link query traffic, and possibly metrics related to reputation. Staked Coins can be challenged and lost if submissions and validations are overturned.

The stakers may earn future revenues on the claimed URIs by successfully identifying, submitting or validating the URIs. They are also entitled to a portion of the URI query fees paid to access the information that they discover. Stakers can only earn revenues based on their own directed efforts and the market's demand for those efforts. The fee amount will depend on a number of factors such as the importance of the submissions and validations, time-value of information, and ease of validation.

TREPCOIN MECHANICS – STAKING URI CLAIMS 1.1

Information about URIs become stale over time and so should the amount of fees collected by purveyors of older information compared to newer information. Additionally, the network collects a marginal fee to sustain its perpetuation and for improvements, but does not seek to earn a profit.

Because a Submitter or Validator can claim a limited number of URIs proportional to their staked amount, the time-value of money creates an economic incentive to pick the best, highest trafficked links for submission and validation. This serves to ensure data quality on the network and prevent market congestion in which URI submissions are brute-forced and the network becomes relatively useless. The primary determinant is the size of the participant's stake, the amount of effort expended by the participant, and the selection of the categories and URIs on which to expend these efforts.

TREPCOIN MECHANICS – VALIDATION FEES

Coins are rewarded on a sliding scale based on the complexity and importance of the information being submitted and validated. For URIs that are more difficult and time consuming to identify, review and validate, such as a phishing website, users will earn more Coins. Similarly, time consuming verification efforts such as verifying ownership of a resource like a domain name, bot, app, or API will be rewarded with a greater amount of Coins.

Owners of resources will have the option to place bounty incentives so that Submitters and Validators are rewarded for their participation. This creates a signalling mechanism in which URI owners may request the scrutiny of the network's Validators for certain relevant checks. Diverse validations across ownership, domain names, and site content will start scarce and become comprehensive over time, possibly supplanting Extended Validation certificates in both usefulfuness and trustworthiness while extending verification beyond domain name ownership.

TREPCOIN MECHANICS – VALIDATION FEES 1.1

In the future, the number of Coins awarded to participants will be determined by the utility of the category. For example, a URI that is categorized as sports may earn each participant less than a phishing submission due to phishing being more difficult and time consuming to detect compared to sports content. Phishing also requires anti-phishing experts to validate submissions whereas URI submissions for sports wouldn't require an expert in sports to validate it. It may require multiple people who meet a combined reputation score where their category experience isn't a prerequisite.

URIs that require validation will be randomly divided amongst all validating participants to prevent coordinated groups from carrying out centralized voting bias. Furthermore, Submitters and Validators will start with a low reputation score, allowing them to participate with a small number of submissions and validations. As their reputation score increases, the number of URIs they can submit or validate in a given timeframe will increase. For example, new participants will be restricted to 5 URIs per day.

USE CASES – 1.1

The following are a few example use cases demonstrating how Coins are earned and spent by participants in the Protocol.

Example 1: Paying for Services Utilizing the Protocol

The most natural use case for the Coin is the ability for individuals and companies to use them to pay for a variety of security products and services that incorporate the Protocol. In addition to paying for products and services, users will be in a unique position to earn Coins by submitting and validating URIs on the Protocol. Their participation not only serves as a way to help protect themselves as well as others, but also gives them an opportunity to earn and spend Coin for these products.

USE CASES – 1.2

Example 2: Community-Driven Child Protection

Marie has two children, Adrian age 7 and Sophia age 12, so she uses parental control software to prevent them from stumbling upon adult content on the Internet. Marie is also an active participant in our network and submits and validates adult content that her children might inadvertently access. For her efforts, Marie is rewarded in TREP coins which may be used to pay for the parental control software that protects her children or sold to other parents who might wish to pay for the same software themselves.

USE CASES – 1.3

Example 3: Payment For Validation By Resource Owners

An individual, group, or company owns Internet resources. They turn to our verification platform to ensure users are not lead astray when attempting to access these legitimate resources. To fund the validation on the Protocol, resource owners pay Coins. In turn, Validators who participate in verifying that resource are rewarded with a share from the owner's Coin payment.

DESIGN GOALS

The Protocol can become the world's biggest decentralized, categorized registry of URI intelligence with the highest quality of data. If this comes to fruition, we expect the Protocol to be the de facto protocol layer for determining trustworthiness and reputation of URIs. The Protocol will also be designed with ease of use in mind, so participants can contribute to it through any of their connected devices and applications.

The Protocol is being developed to scale faster than any previous or existing threat categorization methods because of its built-in incentives, and it will be infinite because it is hosted on the blockchain. The Protocol will enable participants to contribute to something that is profound, benefiting people today as well as future generations Our Protocol will enable anyone to submit URIs for categorization. The coin allows us to incentivize good behavior while removing the attraction for bad actors to submit poor quality data.

Individuals who are considered experts in their respective fields can quickly become Validators while others that are not classified as experts or experienced in a particular category can submit URIs on day one. They can strive to become Validators once they have achieved "expert level" reputation for categories on the Protocol.

DESIGN GOALS – USER INTERFACE

Trepco is building two user-friendly interfaces, a website and mobile app, that will allow anyone to submit, review and validate information about URIs to help categorize the Internet.

It will now be possible for anyone anywhere in the world to submit, review and validate URIs into the the most appropriate category type. All that is required to participate and be rewarded in Coins is a computer or smartphone.

Submitters propose a category and other additional information, and Validators review and validate their submissions. Participants will be able to check their coins rewards from the website dashboard or app.

When someone submits a URI for categorization such as "Pornography," crawlers and other tools are used to automatically validate submissions. Each URI that is not cate-gorized is added to a review queue. Validators may access the review queue and earn coins by helping to validate these URIs via the web interface.

DESIGN GOALS – NODES

Organizations with specific expertise will be invited to participate in our Protocol as Nodes. For example, trusted fact checking organizations could become Nodes of News Credibility, being rewarded for the hard work that they already do on a daily basis.

Existing open source projects may wish to become Nodes. In doing so, they could bene-fit from the Masternode reputation system while earning Tokens themselves. At the same time, they would reduce their technical support overhead — all of this while retaining control of their own branded version of the Node.

WHO WILL USE THE PROTOCOL?

We envision the Trepco Protocol as an additional layer to the Internet Protocol Stack. It can serve as an integral protocol on the Internet or it can be integrated within hardware or software that sits on top of the Internet.

The Protocol will therefore be employed by a variety of users, from those browsing the Internet with safety in mind, to developers and companies wanting to purchase access to the data in order to focus their efforts on building their products and services. Information stored on the Protocol and accessible by Purchasers will include (i) ownership identity, (ii) reputation ratings, (iii) content category type, (iv) submission information, (v) validation records and (vi) dispute timestamps.

WHO WILL USE THE PROTOCOL? – 1.1

The Protocol will provide purchasers an opportunity to integrate the data directly into their existing products and allow innovators to create new products that would not have been possible without it. The following are some of problems we believe the Protocol can and will address:

Web Browsers
PROBLEM:

There are a variety of third party blocklists used by web browsers to help identify and block known malicious and phishing websites, including cryptojacking malware and fake cryptocurrency exchange websites. However, these lists are either controlled by a central authority or populated by members as community service without monetary reward. As such, these lists are prone to false positives and these authorities are slow to respond to new cyber threats as they rely on legacy review procedures. Additionally, these browsers do not offer a native way to block content categories, such as XXX, entertainment and others.

Social Networking Services
PROBLEM:

On Social Networks, identity is paramount. Unfortunately, identity remains broken on these services as they are inundated by fake celebrities, influencers and brands that peddle affiliate spam and phishing websites to their users.

WHO WILL USE THE PROTOCOL? – 1.2

App Stores/ Marketplace Integration
PROBLEM:

Authenticity for mobile applications in app stores and marketplaces is a problem facing End Users and developers. Over the last several months, the Google Play Store has been rife with cryptocurrency related scams [27], from fake cryptocurrency exchanges and wallets, gift offers to mobile cryptomining. These fake applications would lead to monetary loss for End Users and tarnish a company's image while cryptomining could damage one's device [28]. Trying to keep up with fake applications is challenging enough for a central authority, verifying legitimate applications is an ongoing process and it's unclear how long verification takes. This leaves a window of opportunity for scammers to take advantage of users.

TECHNICAL SPECIFICATIONS – TECHNOLOGIES

The Protocol's decentralized URI classification registry will be built primarily using Node.js and Python with the following beneficial characteristics:

–High-speed response.

The system will be able to process queries up to 2,500 transactions per second via a sync layer. This enables the platform to ensure real time transaction processing speeds.

–Elasticity.

Blockchain technology ensures continued operation even if up to one-third of the nodes in the blockchain network are disabled.

–Improved security.

Python was chosen because it is designed without segmentation faults which guarantees thread safety. By doing this, we ensure all thread processes occur on the platform in a robust manner.

TECHNICAL SPECIFICATIONS – TYPE OF DATAS

There are three primary types of data across the system network:

1.Proprietary Data:

This is data controlled by a Node Operator and is generally unique to that operator.

Example: If Cisco wanted to ensure their Submitters and Validators on their Node were registered Cisco users.

2. Regulated Data:

This is data where accessibility is limited generally due to privacy constraints. This data may not be unique and Nodes may choose if it is shared between them.

Example: The participant age verification for validators classifying pornography URIs, DNS records or DNSSEC Records.

3. Common Data:

 This is data that is open for general use on the blockchain. This type of data has no restrictions on its usage.

Example: Transparent event information showing who submitted, validated, or disputed any URI classification submission along with all the URI's ledger history showing reputations of all participants involved in each event.

TECHNICAL SPECIFICATIONS – COIN SPECIFICATIONS

COIN NAME : TREPCO

TICKER : TREP

BLOCK TIME : 2 MINUTES

ALGORITHM: QUARK – PROOF OF STAKE

MASTERNODE SHARE : 80%

PROOF OF STAKING SHARE : 20%

MASTERNODE COLLATERAL : 40 000 TREP COINS

MAX COIN POW Phase : 8 000 000 TREP COINS

TECHNICAL SPECIFICATIONS – REWARD SYSTEM

BLOCK 1 – 200   8 000 000   PREMINE

BLOCK 201 – 65 300   reward – 280   total   18 228 000

BLOCK 65 301 – 130 100   reward – 252   total   16 329 600

BLOCK 130 101 – 194 900   reward – 226.8   total   14 696 640

BLOCK 194 901 – 259 700   reward – 204   total   13 218 996

BLOCK 259 701 - 324 500   reward – 183.6   total   11 897 096

BLOCK 324 501 – 389 300   reward – 165.2   total   10 704 795

BLOCK 389 301 – 454 100   reward – 149   total   9 655 051

BLOCK 454 101 – 518 900   reward - 134   total   8 683 066

BLOCK 518 901 – 583 700   reward – 120.4   total   7 801 800

BLOCK 583 701 – 648 500   reward – 108.4   total   7 024 212

Until block 3 046 101 reward are locked at 2 TREP

TECHNICAL SPECIFICATIONS – ROADMAP

Q1 2018

– PROJECT CONCEPTUALIZED

Q2 2018

- PROJECT CONCEPT FINALIZATION
- COIN DEVELOPMENTS INITIALIZATION
- REWARD SYSTEM FINALIZED

Q3 2018

- COIN LAUNCH
- PRESALE
- WALLET REALEASES

Q4 2018

- EXCHANGE LISTINGS
- PLANNED TEAM EXPANTION

Q1 – Q2 2019

- PROJECT LAUNCH
- PROTOCOL LAUNCH

TECHNICAL SPECIFICATIONS – MASTERNODE PRESALE

In the sense of making this project goes into real world use we do ask the support of our investors to come and take advantage of our live coin presales. Benefiting you from owning a masternode in our network could give our investors not only discounts but mainly take advantage of the rewards at early stages.

Funds from presales are used to get our exchange listings funded and deliver the coin out to the market and start trading them.

Presale specifications

Masternode pricing
Masternodes reserved for presales : 30 Masternodes
Total coins : 1 200 000 TREP COINS
Price : 0.35 BTC
Total BTC target : 10.5 BTC

Staking Packages Pricing
20 000 coins – 0.175 BTC
10 000 coins – 0.0875
Price per coin : 0.00000875 BTC

TECHNICAL SPECIFICATIONS – PRESALE BONUS SYSTEM

Only masternode presale buyers will get the bonus, stacking packages buyers are not eligible for this type of bonuses

1 investor can buy maximum of 4 masternodes.

Buying 1 MN – 5000 trep coin bonus
Buying 2 MN – 6500 trep coin bonus
Buying 3 MN – 7500 trep coin bonus
Buying 4 MN – 20 000 trep coin bonus (Half of a node)