



A geolocation-based, value transfer platform.

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Abstract

Broad adoption of cryptocurrencies is hampered by many factors, including a steep learning curve for end-users and a shift in mentality required to “be your own bank”¹. At the same time, cryptocurrencies are, by design, geolocation agnostic. Meaning they can be mined, staked, or transferred regardless of user whereabouts. However, we believe there are benefits to predicating some of these actions on geolocation. In this paper, we describe **Geon Network**, a location-based cryptocurrency reward system which addresses some of the issues by providing an innovative, intuitive user experience. The service does not reveal a lot of details related to the underlying blockchain technology to the user, which makes it more approachable to a broader audience. We introduce a new concept called **geomining**, which is based on **proof-of-location** and allows users to ‘mine’ a cryptocurrency based on their geolocation. We believe Geon Network is a platform that will host a whole new category of applications in many industries, including marketing, entertainment, and philanthropy.

¹ The necessity to take custody of private keys that control a cryptocurrency wallet requires that users have to put a lot more thought into operational security than it is the case with traditional financial systems (e.g. a bank account).

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Introduction

Blockchain and cryptocurrencies enable new business models that were not previously feasible or known. There are many industries that will benefit; a major vertical that has been heavily impacted is finance and accounting. The first blockchain-based currency, Bitcoin, has changed how value is transferred securely across borders and jurisdictions without the need for a broker or custodian (e.g. a bank or another financial institution). This is significant, because it removes points of failure between two transacting parties, lowers the cost, greatly improves efficiency, and removes the possibility of censorship.

However, many blockchains powering the most popular cryptocurrencies today have drawbacks that impact mass adoption. First, there is a learning curve to acquire, use, and store a cryptocurrency. The software tools require a level of know-how as well as a new responsibility that comes with being the sole custodian of the cryptographic private keys. This creates a barrier to entry for many, especially those unfamiliar with the technology. Second, the intrinsic property of the most popular cryptocurrencies (e.g. Bitcoin, Ethereum) is low transaction throughput and limited scalability. This is important for applications with a large number of users, but also to ensure smooth user experience. While there is a considerable amount of work being done to address these problems, it is not clear when the solutions will be production-ready and available to everyday users.

Lastly, there is usually a cost associated with transaction fees whenever a user interacts with a blockchain. The way this works depends on the platform, but there is always a cost someone has to bear. Again, this can impact user experience.

Geon Network is a platform that attempts to push away these issues from the end-user by adding an abstraction layer between the blockchain and the application. It uses blockchain to enable immutable and trustless value transfers and user rewards, but does so in a manner invisible to the user. Also, it introduces a new class of applications based on geolocation. Today, this is essentially rewarding users for physical presence at a location, but we anticipate this will evolve into a richer ecosystem, in which 3rd parties will build their services. We believe there are many industries that will benefit from this innovative approach.

Geon Network and its Goals

Similar to existing cryptocurrencies, the Geon Network enables value transfer between individuals. However, the unique innovation of the Geon Network is that the recipient does not have to have an address stored on the blockchain in order to receive funds. Instead, the recipient simply provides proof-of-location, in order to validate any transaction on the network. The goals of the project intend to tackle the issues described in the previous section:

Ease of use

Geon enables frictionless transfer of value between users of the network based on their geolocation. Users can re-

ceive funds without having to generate and store a cryptocurrency wallet or mine a cryptocurrency the traditional way, computing a proof-of-work. The user simply agrees to the transfer by being present at a specific location.¹

Efficiency

In the Geon Network, many users can transact, or 'geomine', at a given location. The system will optimize geominning requests on the underlying blockchain to enable **hundreds of thousands of transactions per second** globally (please see section titled Transaction Throughput below).

The transfer of value is implemented with **Geons** – virtual beacons planted in specific geolocations – which hold **Geon Coins**. Users can acquire the coins either by converting fiat or crypto currency, or through the process called **geomining**, during which the coins are transferred to an auto-generated wallet on the user device. Geon Coins can also be transferred between Geon Network users without limit. To participate, the only requirement is that the recipient owns and carries a mobile device connected to the internet (see section titled The Recipient Device for details), e.g. a smart phone.

¹ Global Geons do not have that restriction. See the section titled 'Geon types' for details. and acknowledging a notification on their mobile device. This results in a low bar for participation and should accelerate adoption across all types of users.

The Geon Network is built on smart contracts, which govern the geomining rules and execute transactions. It is important to note, that the platform allows for instant transfer of value to any place in the world **without the need to specify the recipient's address**, as would be the case with traditional cryptocurrencies. Instead, the sender creates or identifies an existing Geon and transfers the funds to this beacon. The recipients use the Geon much like a standard Automatic Teller Machine (ATM), but with additional attributes. The Geon can drive people to certain locations and motivate certain actions (via affinity or entertainment) that provides value to the sender.

Vision

Geon Network's long term vision is to provide a service that incentivises individuals to explore the world around them and rewards them for presence and other activities at specific locations. We want to take localized offers to the next level, where physical places become interactive through Geons and the cryptocurrency reward system bridges the gap between mainstream and the crypto world. We believe that in the future Geon will be your first-choice companion DApp every time you leave home.

Geon & Geomining

The innovation revolves around two ideas; Geons and geomining.



Figure 1. Sample Geon rendering.

Geon is a virtual beacon placed either in a specific location on Earth or bound to another Geon or a mobile device (e.g. a smartphone or a wearable). Geons can be discovered via the **Geon App** – a client application that runs on a smartphone. Geons can hold Geon Coins, which can be mined using the Geon App. An ATM is a good analogy here – it holds cash, which users can withdraw when they physically locate and operate the ATM. Geons are used in the same fashion – users identify a Geon, either using their phone app or via a link shared by another user. If necessary, they travel, and once within the Geon range, they start mining coins stored in that Geon. This process is called **geomining**.

Any user can create a Geon and place it at any location on Earth. There is also a special type of Geon, which is not bound to a specific location, called **Global Geon**. Users can geomine coins stored in this type of Geon from anywhere in the world, but usually they will need to provide additional information required by the Geon creator (like fill in a survey or solve a puzzle). We expect Global Geons to be used by various companies to perform tasks important for their business, e.g. market research. There will be a limited number of Global Geons. Geons can hold arbitrary amounts of coins. They can be topped up at any time or removed entirely.

The Geon creator can customize a Geon in many ways, which allows for multifarious use cases. Apart from basic properties, like name and location, Geons can have the following features:

- specialized visualizations, which will be viewed by the miners before and during geomining,
- custom geomining policy (mining rate, limits per user, etc.),
- Geon type (stationary, mobile, global),
- social engagement, i.e. in-app comments and user-to-user communication, all associated with a specific Geon.

Some of these will be paid features. Please see the Technology section below for more details on Geon and geomining properties.

Geon is an **Augmented Reality** application. When in range, miners will be able to use their smartphones to see the visual representation of the Geon within the context of its surroundings. Custom imagery (still or moving) will be superimposed on the user's view of the real world at the Geon location (either on the Geon itself or within a certain range). This feature will be useful for branding or promotional campaigns (see fig. 2).

In summary, Geons can be viewed as virtual Automatic Teller Machines that can be customized to engage users in ways that have not been previously seen in the market. Geomining is the mechanism that **allows users to be rewarded for their presence and engagement at a specific location.**

Future Directions

We envisage Geon Network as the location-based platform of choice for user-to-user and business-to-user interactions. The overarching goal is to enable the future of “smart places”. In the next iterations, we plan to invest in the following enhancements:

- Ultimate **gamification** of the user experience to accelerate participation and engagement.
- Make Geons more interactive and integrated with more data streams to realize the **“smart places” vision.**
- Enable Geons to share information, thus creating a **fully-fledged Geon Network** where value can flow from one location to another, depending on various social and market conditions.
- Add **virtual Point of Sale (POS)** functionality. User will not only be able to receive funds by geomining, but also pay for products and services by sending funds to a Geon. This requires integration with merchant payment systems and third-party payment providers.
- **Real-world Geons** – deploy physical Geons, e.g. in the form of a custom-built device, that will mimic the functionality of a virtual Geon. This will be especially important with high-value Geons, where a strong proof-of-location is critical. The hardware will drastically improve location verification and reduce chances of dishonest geomining.



Figure 2. Example of a Geon with custom brand material.

- **Enhance core Geon functionality** to cover new use cases invented by the users (we are sure there will be lots).

Applications

The proposed platform is not limited to a particular use case, but rather it is an enabler for many applications. This section enumerates some of the use cases that the Geon Network community will adopt.

Solutions include: marketing targeting, effectiveness and measurement, location verification (proof-of-location), social engagement, brand or product promotion, direct charity impact funding, wealth transfer. It is solutions such as these that will drive increased broad-based cryptocurrency adoption.

Marketing and Advertising

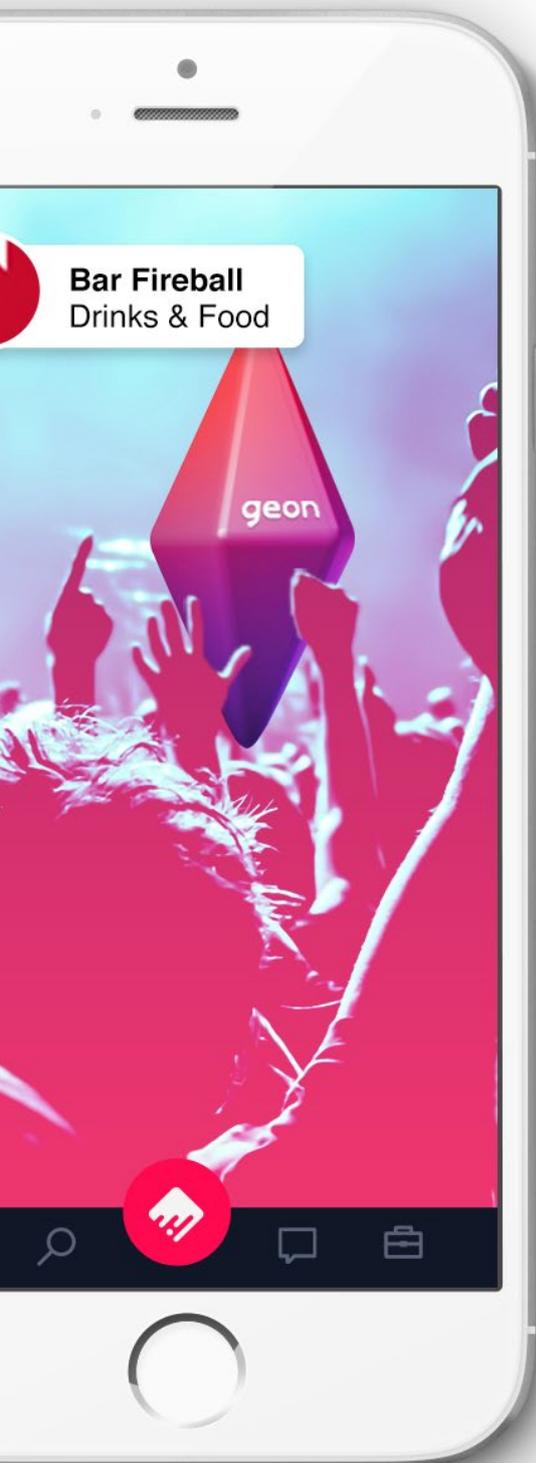
A business creates one or more Geons to attract customers to their location and/or to build brand awareness. The Geons can have a brand or product logo which will be visible to target customers in the AR application. Each Geon becomes a loyalty beacon that is loaded with Geon Coins. The coins can be either **convertible to other currencies or redeemable for products or business specific rewards** (e.g. similar to the way traditional coupon or loyalty point is used today). For example, a coffee shop may provide a discount to customers who redeem Geon Coins at checkout. The coins are burned in this scenario and the shop owner needs to buy new coins to top up the Geon, if they wish to attract more customers to their location. To acquire Geon Coins, the store either converts fiat currency or Geon Tokens [GEON] for Geon Coins [GC] (see section titled Geon Economy for further details under Geon Coin Redemption).

Geons can be placed in high traffic areas, such as shopping malls, musical concerts, movie theaters, or commuter hubs, to promote a brand or a product.

Charity Impact Funding & Distribution

A group of individuals or a legal entity can set up a Geon at a location that has been hit by a natural disaster or is a war-zone. They load the Geon with Geon Coins and set a geominig policy, which allows for quick and easy distribution of funds among people in a given geography. All that is





required is access to a smartphone and network connection which is pervasive in most locations globally. In the case that a Geon Coin is not easily convertible to local currency, it may be used as a voucher that can be exchanged for goods and services. Geon Coins will always be redeemable for Geon Tokens in the Geon Network (see section titled Geon Economy for further details).

Social Engagement

Geons can be used to drive participation in social events, such as parades, festivals, flash-mobs, blood donations, and more. For example, parade organizers create mobile Geons tethered to smartphones carried by the parade leader and appointed participants throughout the length of the parade. Simply set a geomining rule, which may allow anyone in certain range to mine Geon Coins at a continuous rate, thus encouraging stickiness and consumer participation.

Conferences, Trade Fairs, Concerts

Organizers set up Geons at the event to attract attendees. Geon Coins, mined by the attendees, can be redeemed for product samples or snacks. Again, in this scenario, the event organizer first buys Geon Coins and transfers them to the Geons. When the coins are redeemed, they are burned. Alternatively, attendees will be able to keep the coins for future use, e.g. they can create their own Geons and use the coins to top them up.

Terrain Games, Fun & Lifestyle Applications

Mobile Geons bound to a moving target, e.g. a tour guide, can be used to implement “follow the leader” type of events. Various competitions or games can be devised. One example is geocaching, an outdoor recreational activity, where the goal is to locate items hidden in specific geolocations. Instead of using physical items, participants can use Geons, which eliminates the need for the geocacher to physically travel to a location where they want to hide the item. Game participants can attach logs with dates and names in the Geon comments section.

Crowdfunding

Verified non-profit organizations, public benefit institutions, or NGOs can raise funds using Geons. For example, a foundation can place a Geon at an event or outside their office building. Participants will be able to send Geon Coins to the Geon, which can only be withdrawn by the foundation or beneficiary (as per the geomining policy).

Market Research

A market research company needs to gather information from individuals in certain geographies. The agency sets up Geons in a location(s)-of-interest, loads these Geons with funds that will serve as a reward for participation, and set a geominig policy, which requires the miner to complete a questionnaire. In this manner the research can be conducted more efficiently and across any geography.

Attendance Verification

A Geon can be placed at any location where presence needs to be managed and verified. For example, an employee or school principal may create a geominig policy which allows for mining between 8:45 am and 9:00 am. Employees or students who come to work on time automatically geomine coins and record a proof of presence at a specific time.

Tourism

Travel marketing can sometimes be seen by tourists as irrelevant, false, or exaggerated. To change this perception, marketing agencies must develop innovative marketing solutions. It is hard to grab the attention of the new crop of travelers who are becoming more discerning and informed. Geon can be used to mark places worth visiting and to educate visitors about their history, values, services they offer, and more. Tourist organizations and agencies can use Geon Network to encourage visitors to explore specific regions and reward them.

Business Strategy

Location-Based Marketing

The Geon Network is a location-based network designed on three pillars:

- **Location** -The network triggers actions based on predefined business rules when a user enters or exits a geolocation.
- **Augmented Reality** - The network uses virtual beacons to bridge the physical and the digital worlds
- **Coins** - The network provides an exchange of value in the form of GEON COINS to move and retain consumers.

The Power of Location Data

Location-based targeting improves response rates by up to 5x. According to data published in the Good Push Index report, influenced opens are 293% higher in highly targeted location-aware campaigns vs. broadcast messages. With an average 62% location opt-in rate and an average 51% of users opting in to receive push notifications, most apps can reach more than half of their users with location and proximity-triggered push messages. Location-based advertising is a way to bridge the gap between online and physical customer experiences¹.

The location-based advertising is expanding rapidly. According to research firm BIA/Kelsey, local advertising on mobile devices sold by pure-play mobile providers will rise this year to \$19 billion². With the Geon Network, brands, retailers and mall owners can motivate customers to move to virtual locations in the network and intelligently engage and retail them based on their history in the network.

1 <https://www.urbanairship.com/location-based-marketing-explained>

2 <http://www.biakelsey.com/biakelsey-sees-significant-growth-local-mobile-ad-spending-2018-beyond-advertisers-embrace-location-targeted-social-web-platforms/>

Location data is often referred to as the tracking “cookie of the real world”. It is one of the most important data points that a retailer has to engage their mobile consumer. Companies can use Geon beacons to target consumers, measure success, build loyalty and gamify their experience. Companies can no longer afford to ignore the power of location-based marketing combined with AR. Industries that are slow to adopt will lag behind their competitors.

Retailers and mall owners can use the Geon Network as their primary location-marketing tool. This includes shopping locations, restaurant chains, and transportation hubs. The Geon Network is also ideal for sports venues, events, expos and fairs. The Geon Network is easy to implement and provides instant ROI for all stakeholders.

Personalised Geons and Geon Coins

Geon Network will allow brands to personalise Geons and Geon Coins (GC). Geon beacon can be customised to reflect business’ branding and visual identity. Geon Network provides a 3D skin of the brand on a Geon beacon as well as customer POI on the GEON map. The company can run a local or global campaign via their company account inside the Geon app.

Geon Coins and Geon beacons can also be white-labeled to fit the needs of a particular brand. Branded Geon Coins can be minted with a customised name and design and retain the same value, functionality and transactional value as all coins on the network.

As part of the campaign a brand may allocate a certain number of coins for users to mine to receive additional discounts or to get access to front-of-the-line services. While the user can hold different branded coins in their wallet, the back-end system will manage these coins across the network as fungible assets across the network standard. The consumer’s total balance will be shown as standard Geon Coins.

It will be possible to create special coins that would be offered as collectibles. Such coins could be exchanged for premium services and could have a rarity value. These non-fungible assets can be exchanged or traded by users within the app.

Geon Business Services will provide a web panel for in-depth analytics, invoicing, survey creation, multi-geon set-up, and more. It will provide anonymized data on the number of people geomining a given Geon, the time spent and amount of mined coins. Additional data may be obtained by setting up a Geon survey as a prerequisite to begin the geomining process.

Consumer privacy is a primary concern when it comes to location-based targeting and advertising. We want to give users full control over the data they share and allow them to choose how frequently they want to receive messages and/or notifications and via which channels.



Go-to-Market Strategy

The Geon Network's initial strategy is a B2B2C (business-to-business-to-consumer) model. The goal is to create a mutually beneficial relationship between suppliers of goods and services and retailers. B2B2C can assist and accelerate the Geon marketplace. It is essential that the Geon Network seek partnership with brands with existing affinity communities.

Our main target markets are divided in two groups:

- Developing countries with high internet, mobile penetration and low income per capita such as: India, Vietnam, Indonesia, Argentina, Chile, China, Brazil, Mexico,
- Developed countries with high crypto adoption: USA, Japan, Germany, South Korea, Netherlands, Canada, United Kingdom, Spain

Geon will grow organically into all markets based on the network nature of the business model. The larger the network, the more value to the Geon community. The more community, the more resources assigned to the campaigns.

Impact Funding

Impact funding is an exciting and rapidly growing marketplace. It's powered by a new generation of investors or donors who are committed to generating social and environmental impact through their contributions. Geon Network is a perfect platform for this.

Impact Geons can be created by verified NGOs (Non-Governmental Organisations). These beacons can be placed anywhere where financial support is required. Any group or individual globally can fill these Geons with Geon Coins. Impact Geons can be placed outside of an NGO's office or at an event to collect funds. Geon Coins can be used directly in crisis zones to allow consumers to establish a marketplace for the exchange of goods and services.

Impact funding appeals largely to younger generations, such as millennials, who want to give back to society in a transparent and efficient manner. This marketplace is growing. By impact investing, individuals or entities are supporting the message and mission of the company in which they're contributing to, and they have a say in the company's welfare.

User Retention via Gamification

Success of the DApp depends on the size of user base. We anticipate that rewards for visiting places will organically drive users to the application. However, to accelerate participation and engagement, Geon Network integrates game mechanics. Users are rewarded for various actions with Experience Points which are needed to achieve higher levels and climb the ranking ladder. Reaching every level unlocks special badges and additional rewards.

Users can compete in the following two categories: number of visited Geons and most popular Geons. There is also Friends Ranking that allows users to compete with friends within the app. Every month, the top 3 ranked users are rewarded with Geon Coins and Experience Points.

In the future, we plan to enhance gamification with Quests, Achievements, and more.

Geon Store

Geon Store is an in-app marketplace where users can spend Geon Coins they geomined or bought. This way users can choose whatever the reward for their physical presence and attention can be, while Geon Coin is the financial vehicle that allows them to do that. Examples of items to choose from the store are listed below:

- PayPal gifts,
- Vouchers,
- Steam gifts,
- Coupon codes and discounts,
- Game and software keys,
- Localized offers,
- Other digital and physical goods.

Please note that the store can include virtually any service or goods offer and we anticipate that as the user base grows more 3rd party merchants and service providers will want to be featured in the store.

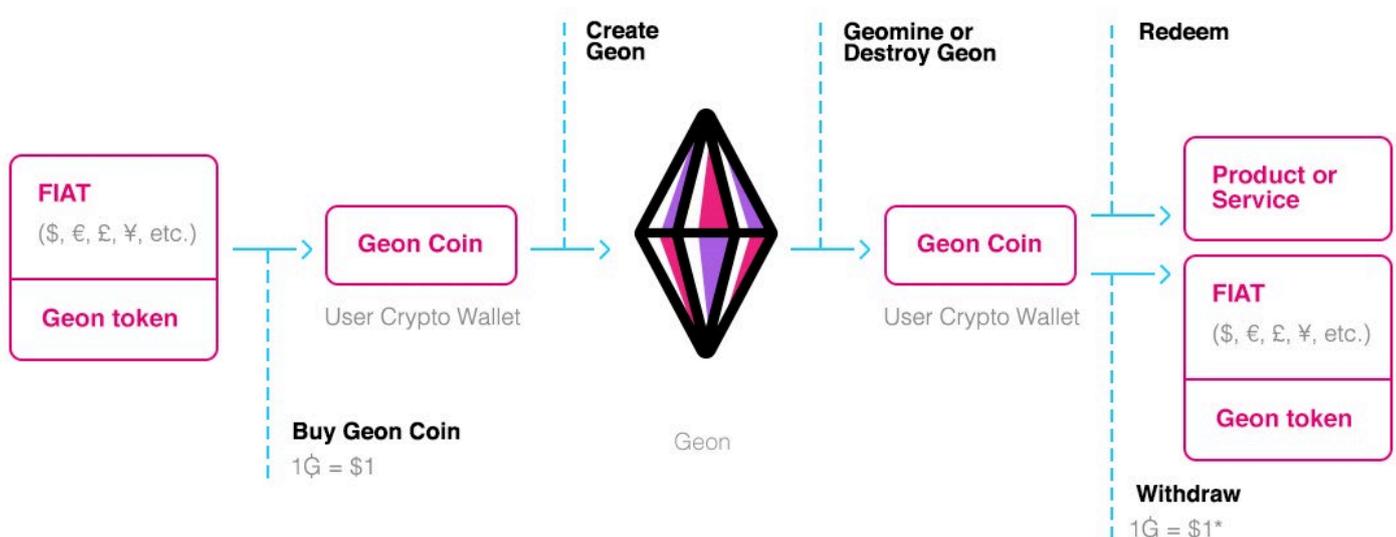
After reaching a certain critical-mass, Geon Store will be used as an advertising platform where businesses can present their products and services. Geon partners' offers will be promoted in a regionalized weekly reward section of the Geon Store. Ten offers from each region (e.g. country or city) will be available each week.

Geon Economy

Geon Network's native currency is the Geon Coin (GC). It is an in-app value carrier that can be geomined or transferred between users. The coin can also be bought for fiat currency, e.g. using a credit card. This is helpful in cases where users need to acquire more coins than they can geomine, e.g. in order to buy an item in Geon Store or to top-up a Geon. GC is meant to represent a stable value, meaning the prices in Geon Store, as well as the price

of GC in fiat will not be volatile. Geon Network, however, reserves the right to adjust these prices to ensure their fair value. Overall, GC ensures the value stored in Geons is stable in relation to the currency used by local businesses. GC can be also bought with Geon Tokens, which can be purchased during the initial Geon Token sale or on the market after the sale.

Figure 4. Geon Coin flow.



* Fees may apply.

Geon Token

Geon Token (GT) is a publicly traded token that has utility within Geon Network. It can be used to receive discounts and unlock access to extra features. We discuss the utility in detail below. The supply is capped, resulting in a deflationary issuance model, which may be further limited by token burning. Geon Network Ltd. (the company) may buy GT on the market and/or use its token reserves to burn GT. This will be done to maintain the market price and will depend on various factors, including the company's revenue and the market situation.

Token Utility

Exchange Geon Token for Geon Coin at a discount.

Geon Token can be used to purchase Geon Coin. When paying with GT, users pay less than they would if they paid with fiat currency. For example, if 100 GC costs 1.99 USD when paying with USD, it will cost the equivalent of 1.89 USD (-5%) when paying with GT.

This creates an incentive for users to buy GT on the market and sell it for GC in the DApp. The price of GC in fiat will be stable, as described in the section above, and Geon Network will use the current GT market price to calculate the discount in real time.

Geon Token staking.

Users will be able to stake Geon Token in the DApp, for which they will be rewarded with Geon Coins. Before each staking period (provisionally defined to be one month), users will declare how much GT they wish to stake. The declared GT will remain locked for the duration of the staking period, after which the user will be rewarded with GC, proportionally to their stake. Initially, the reward pool will be determined by the company for every period to ensure stable GC economy. This may be later coded and automated in a smart contract, which will provide security and transparency.

Discounts in Geon Store for staking.

Users who stake GT will avail of additional discounts in Geon Store throughout the staking period. The discount rate will be a function of the staked amount. Below is an example of the discount schedule for staking (real rates may vary):

- 50 USD equivalent in staked GT at the beginning of the staking period - 2% discount in Geon Store
- 100 USD equivalent in staked GT at the beginning of the staking period - 3% discount in Geon Store
- 200 USD equivalent in staked GT at the beginning of the staking period - 5% discount in Geon Store

Discounts in Geon Store for paying with Geon Token.

Users can use GT to buy items in Geon Store. This removes the need of having to convert GT to GC before making a purchase. The conversion will be executed implicitly at the current GC price (as determined by the fiat value of GC in the best value offer in Geon DApp; at the time of writing the best value offer is 10k GC for 159.99 USD). This slightly improves usability, but most importantly allows users to buy items at the best price, without having to buy the best value offer.

Create Geons with cryptocurrency.

Users, who have GT in their wallet, will be able to create Geons that can hold GT. This essentially enables geomining of a publicly traded cryptocurrency, which we anticipate will create even more incentive to geomine.

Premium features for Geon Tokens.

Selected paid features will only be available, or will be available at a discount, when paying with GT. For an individual user, it will be vanity features, including avatars, original profile customization, badges, etc. For Geon creators (individuals or businesses), this will unlock advanced Geon features, including extra geomining requirements, custom Geon range map (see the section titled 'Geomining Policy' for further details), or Global Geons (see the section titled 'Geon Types').

Geon Coin Withdrawal Fees

When a user withdraws Geon Coins stored in their Geon wallet, they can convert them to Geon Tokens or directly to fiat currency. In this scenario 3rd party payment provider fees will apply. The Geon Network will charge a withdrawal fee, and Geon Token holders shall be eligible for a variable and proportional discount on this, depending on the amount of Geon Tokens they have and the duration they have held them for (i.e. the Geon Token holding period). The holding period is the difference between the withdrawal time and the time that the Geon Tokens were transferred to the user's Geon wallet. After the withdrawal, the Geon Token holding period is reset by an automatic send-to-self transaction executed by the Geon wallet.

This discount mechanism is illustrated in Table 1, where discount level 1 shall represent the highest discount amount.

Time that Tokens are held in user wallet	Discount category
at least 30 days	1
at least 5 days	2
less than 5 days	3
No Tokens held	No discount

Table 1. Geon Coin Withdrawal Fee Schedule.

Geon Coin Redemption

Users may be able to redeem geomined coins directly with a 3rd party that participates in the Geon Network ecosystem. In this scenario the coins are burned when Geon Network receives confirmation from the merchant payment system acknowledging that the checkout process completed successfully. This requires integration with specific payment systems or a third-party payment provider used by the merchant.

Cryptocurrency name	Ticker	Description	Number of Tokens
Geon Token	GEON	Utility token that can be purchased during the ICO and stored and exchanged within the Geon App.	850 000 000
Geon Coin	GC	In-app stablecoin, pegged by USD (1:1 ratio).	Uncapped. Every 1 Geon Coin is backed by 1 US Dollar. Geon Coins are also convertible to Geon Tokens and vice versa. In this case, the Geon App will use the current market GEON/USD exchange rate to determine the value of Geon Tokens.

Table 2. Geon Token and Geon Coin summary.

Technology

Geon Network requires the following two participants in the system: the sender and the recipient. The transfer is made possible through geomining, which occurs when the recipient's geographic location meets the criteria specified by the sender. The sender defines the criteria by creating a Geon – a virtual beacon whose coordinates map to a physical location on Earth – and loading the Geon with funds. Once the recipient moves in the Geon's vicinity, they receive the funds¹.

The sender can be an individual or a commercial/legal entity (e.g. a company or charity). Recipients are usually individuals who are incentivized to seek out and travel to Geons to participate in geomining. Geominers receive Geon tokens when in specific geolocation.

The Recipient Device

To enable location verification in Geon Network, the recipient must carry a device that is equipped with common radio receivers (including GPS, GSM, Wi-Fi, Bluetooth, etc.), can communicate with the Internet, and is running the Geon Network client application. In practice, this will be a smartphone, a smartwatch, or any type of a modern wearable device that can run third-party applications² (e.g. a fitness tracker).

¹ The recipient must carry a device with a Geon Network client application.

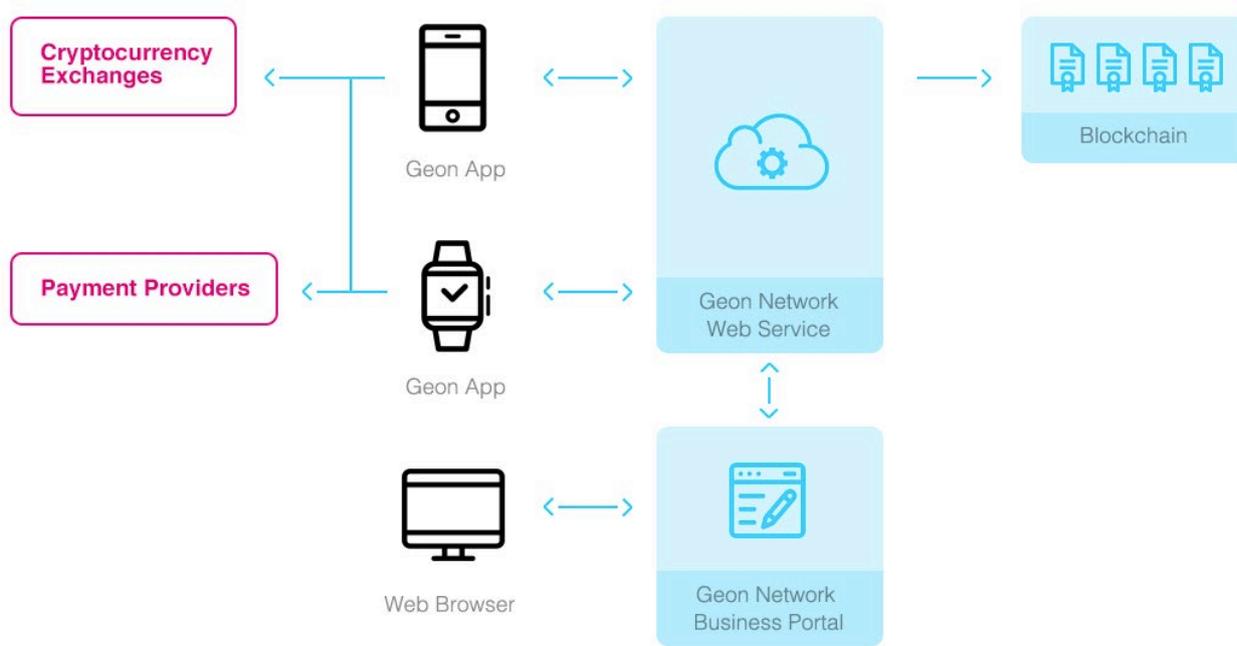
² Subject to Geon Network's client supportability.

Architectural Overview

There are two main use cases enabled by the system architecture:

- **Geon creation** – senders create Geons and define geominig parameters (location, geominig rate, etc.). This can be done in numerous ways; a quick and easy way using the Geon App on a smartphone, or, a more accessible way, using the Geon Business Portal, which provides a richer customization and branding experience.
- **Geominig** – recipients participate in geominig using a mobile device, which communicates with the Geon Network.

Figure 5. Geon Network architectural overview.



Geon App

The Geon Network client app that runs on the recipient device. Responsible for end-user interaction and geominig. The app initiates the proof-of-location protocol by providing geolocation data to the Geon Network Web Service. Also, it contains the user wallet.

Geon Network Web Service

This is the intermediary, thin layer between the client and the blockchain hosting Geon smart contracts. Main responsibilities include:

- Verification of geolocation data for added security (independent from proof-of-location provided by the miner).
- Optimization logic to improve overall system performance and user experience. Examples include batching individual geominig requests (in continuous geominig mode) or request throttling.
- Proxy for Geon App communication with the blockchain, e.g. Geon Coin wallet balance retrieval.

Geon Network Business Portal

A website that provides rich user experience, intended mainly for Geon creators. Used for invoice management or access to Geon Network products like market research reports, survey and poll results, etc. (see section titled 'Applications' above).

Blockchain

Authoritative source of Geon Coin balances and transfers, provides geominig rules enforcement (in the form of smart contracts).

Value Transfer Flow

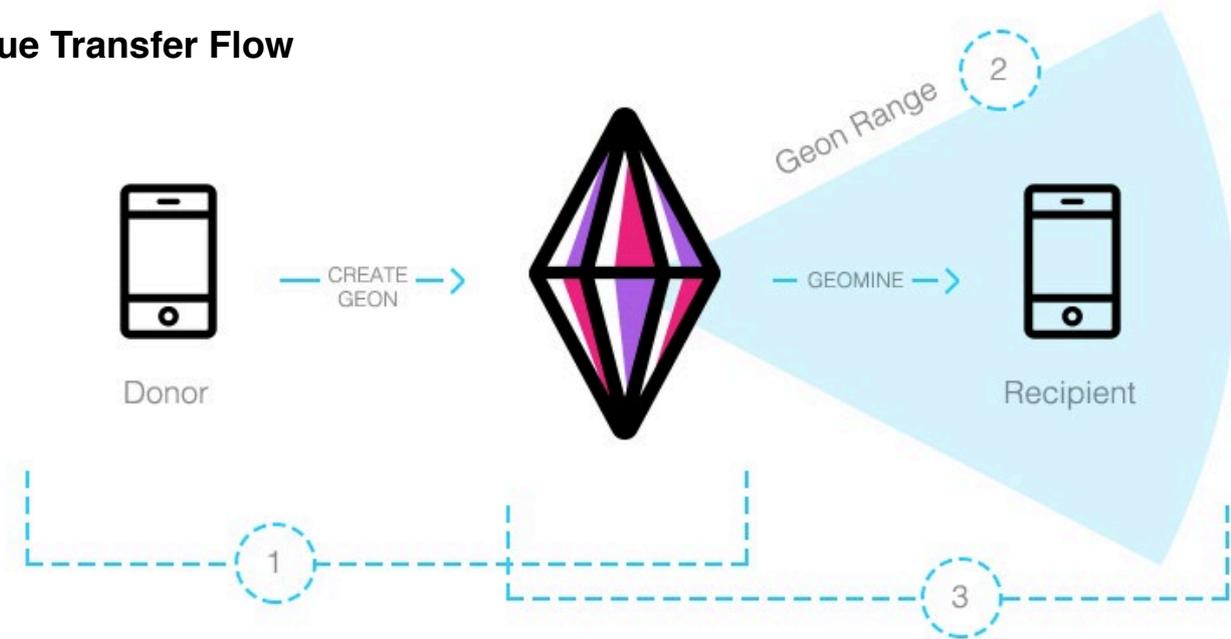


Figure 6. Stages representing the transfer of value in Geon Network.

In figure 6, we see the transfer of value from the sender to the recipient. First, the sender creates a Geon and transfers Geon Coins to it (1). This is a single operation from the user point of view, i.e. no additional steps are needed, although top-ups at any stage, after the Geon has been created and before end-of-life, are also possible. Next, recipient moves sufficiently close to the Geon and starts geomining (2). The coins are transferred to the recipient's wallet (3).

Geon Witness

Before geomining can start, the miner's device needs to be able to prove that its geolocation meets a given criteria, i.e. that it is within x meters from a Geon. This is enabled by the proof-of-location platform, called the **Geon Witness** [1], which is a foundational part of the Geon Network. The platform's main goal is to make it extremely hard for attackers to spoof their location. The mining device utilizes the Geon Witness to create a digital certificate, which encodes its coordinates at a specific time. The certificate

is used as a high-level confidence data point by the Geon Network during geomining.

Geon Witness itself is a blockchain-based solution, which can be deployed on a separate, dedicated blockchain. It provides a verifiable, immutable and trustless mechanism for devices to prove their geolocation, while maintaining user privacy. Eventually, it will be made available to third parties as a platform, independent from the Geon Network.

Security Considerations

Geon Network must be both easy-to-use and secure. The goal is to discourage, quickly detect and prevent any attempts at cheating. Geon Witness takes a number of data sources into account when producing a proof-of-location. In this section we discuss these sources, associated security concerns and mitigations.

Data collected by the recipient device include the following:

- GPS coordinates,
- available Base Transceiver Stations (BTS),
- available Wi-Fi networks,
- available Bluetooth devices,
- available neighboring devices running the Geon App (discovered via Bluetooth or NFC)
- device fingerprint (e.g. MAC address).

The data related to BTS and Wi-Fi networks is cross-verified against known network locations. In the initial phase of the project this reference data is provided by a third-party service (Google Maps Geolocation API [5]). However, in later stages, Geon Network will maintain and use its own database of reference data to remove this external dependency.

For an average user it is relatively hard to spoof the radio signals received by the device or otherwise fraudulently report information. Nevertheless, the system applies relevant mitigations in order to produce a high-confidence indication of proof-of-location.

Mitigations

The geominer's device collects a considerable amount of data¹ itemised in the previous section. However, the more data sources it uses to generate the proof of location, the harder it is for a user to fraudulently report their geolocation. To enable extremely high confidence proof-of-location, the system enables the following security enhancements, which are part of the geominer policy (see section titled The Geon Smart Contract).

Passwords / QR Codes

Geon creators can create a password that will be required before geominer. This can be done in a similar fashion the Wi-Fi passwords are shared today in hotels, restaurants and other public places. Alternatively, the miner will have to scan a QR code, which will be available near the Geon location.

Captcha

When the Geon Network detects that a miner is trying to spoof their geolocation data, they may be presented with a captcha challenge. This layer of fraudulent behavior detection will be implemented by the Geon Network by default; however, Geon creator will be able to add Captcha as one of their geominer policies.

Photo taken at the location

Various AI methods exist that allow to identify the location where a photo was taken (see [6]). Miners may be required to take a photo of the Geon location or of some known object nearby. The photo will be submitted to an image recognition service, e.g. Amazon Rekognition [7] or Google Vision [8] which provide landmark detection, for identification. Given that this may incur additional cost, this feature will be optional for Geon creators. Additionally, the object in the photo may be a screen, which will display an ever-changing image that can be used for verification, like a QR code encoding a time-synchronized One-time Password (OTP) [9]. This would be especially useful in case of geominer on a time schedule (see section titled Geominer for details).

Anomaly detection

Apart from location data consistency checks (as mentioned in the paragraph on captcha above), the Geon Network will perform simple behavioral analysis behind the scenes. The details will not be disclosed, but examples include cases where the miner location changes drastically in a short amount of time (e.g. jumping between multiple distant Geons and geominer). If the system determines such behavior, the user account may be temporarily locked or even banned.

Miner² device authenticity

When required by the Geon creator and allowed by the miner, the Geon Network will try to determine whether the miner's device is a "bare metal" piece of equipment and not a simulated or virtual one. For this, additional device properties will be collected:

1 Subject to user settings.

2 Please note that the terms 'miner' and 'geominer' are used interchangeably throughout this document. Their meaning is the same, however the shorter version is used to improve readability.

- IPv4, IPv6 address,
- Internet Service Provider,
- Hardware components properties (manufacturer, model, firmware, etc.),
- Battery level,
- GSM signal variability,
- Accelerometer, gyro and other sensors.

Balance locking

High-value Geons, may require **miner balance locking**. After geomining is complete, there will be a time period (defined by the Geon creator), after which the miner will be allowed to withdraw funds from their wallet. Geons may automatically enter this mode in cases of massive anomaly detection.

User Privacy Concerns

It should be noted that some users may not wish to share so much location related information with the Geon Witness. In such cases the service provides a **graded participation scheme**, whereby user can scale back the amount of data shared in exchange for lower geomining rates. For example, a user may choose to only share the GSM information with the Geon Witness. In this case the Geon Witness will only be able to produce a low-confidence proof-of-location, which will result in a fraction of the standard geomining reward defined by the Geon creator.

Separately, users who will voluntarily take extra steps to verify their identity, e.g. provide Know Your Customer (KYC) [10] verification, will be rewarded extra, per the geomining policy. In addition, the devices owned by such users will be used by the Geon Witness to confirm geolocation of other devices in their vicinity.

The Geon Smart Contract

When the Geon Network Web Service receives a geomining request, it performs initial checks and makes a decision whether the request can be forwarded to the Geon smart contract. Apart from quick and simple checks, such as the geo-location coordinates, there are two main routines that are executed to ensure unnecessary smart contract invocations are avoided.

First, to prevent denial of service attacks, the **requests must be authenticated**. The Geon client app provides multiple ways for the user to authenticate. On the smartphone, the most common ones are through third party identity providers like Facebook [2] or Google [3]. Another option, especially on devices with minimal user interface (e.g. a fitness tracker with small or no screen and/or without a full-size keyboard), will be to authenticate using the Geon Coin private key (i.e. the wallet key).

Second, depending on the blockchain efficiency, the **requests may be batched**. The service will perform batching in the following scenarios:

- Requests that are:
 - from the same client,
 - mining the same Geon,
 - received in short succession,
 will be aggregated and published in one transaction on the blockchain.
- In cases where the client loses network connectivity during geomining, it will send the requests at a later stage,

when the connection is restored. This has implications on the proof-of-location certificate. If the certificate can be produced based on the data provided by the device and the neighboring devices, if any, the geomining requests will be accepted and aggregated accordingly.

- In cases of increased geomining activity, where massive numbers of devices mine the same Geon (e.g. at large social events, like a musical concert), the Geon Web Service will aggregate requests from multiple clients and publish them in a single blockchain transaction.

Once the above routines are performed, the control is passed to the Geon smart contract. The role of the contract is twofold:

- **Enforce the geomining rules** – verify that the user indeed has met all the geomining criteria specified by the Geon owner.
- **Execute the Geon Coin transfer** – the transfer is predicated on the step above. In this step, the wallet stored on the geomining device receives Geon Coins, according to the geomining rules (see section on Geomining).

Geon Creation Request

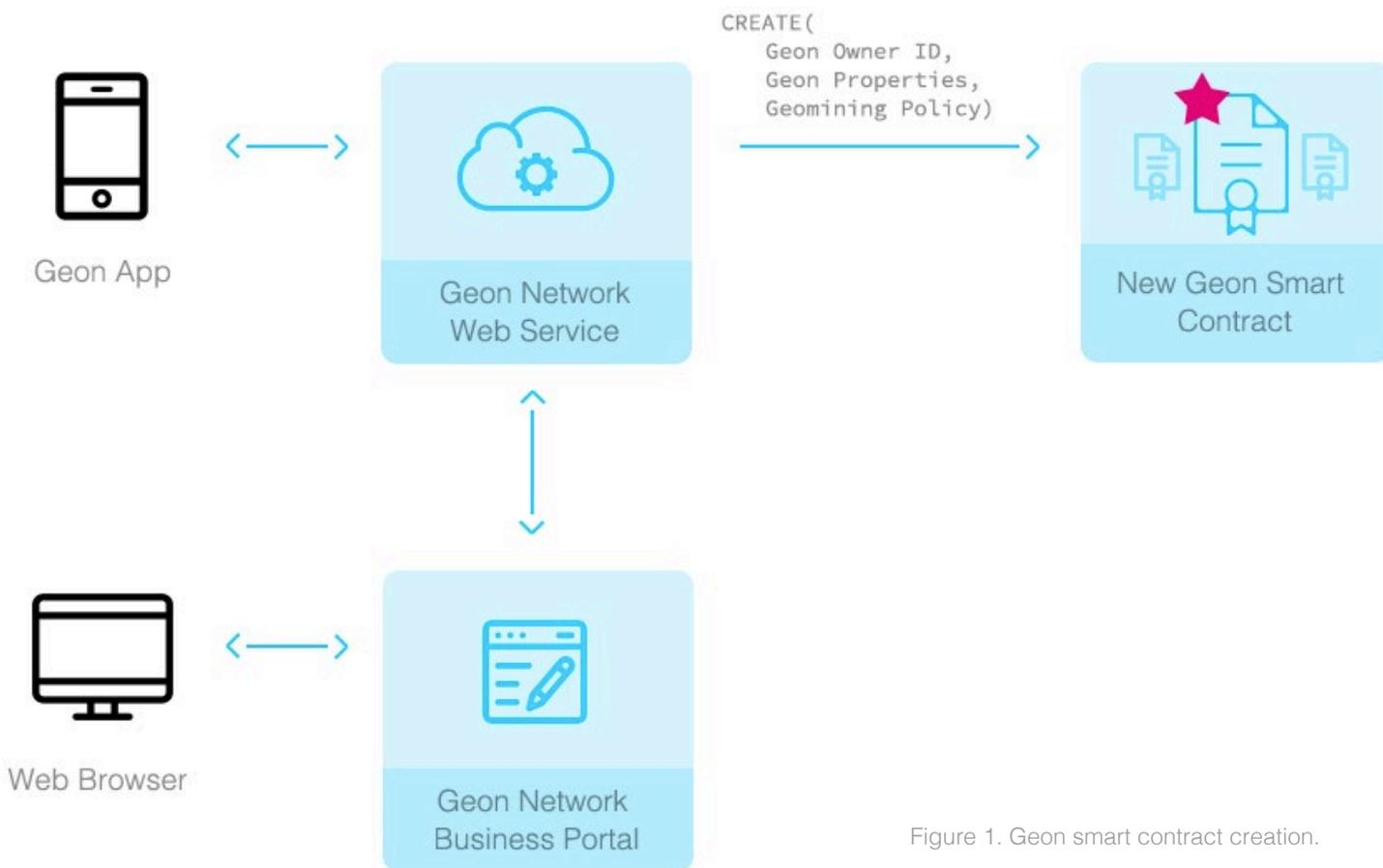


Figure 1. Geon smart contract creation.

When the Geon owner creates a Geon, the service creates a Geon smart contract (see fig. 1 above). The first parameter in the constructor is the Geon Owner ID. This is used to make sure the mutable operations on the contract (apart from geomining) will only be executed by the Geon owner.

In the request we also specify a set of rules that govern geomining on this Geon. The rules are packaged in the Geomining Policy and passed to the Geon smart contract at creation time. For details on different parameters in the geom-

ining policy please see section titled 'Geomining' below. The policy may include references to other smart contracts deployed on the platform, provided by the Geon Network or third-party providers known as **Oracles** [4]. The Geon smart contract will need to call an Oracle smart contract to get proofs regarding additional data submitted by the miners for other requirements specified by the Geon owner (e.g. was CAPTCHA completed correctly, did the user fill in a survey or provided correct photo evidence of location, etc.).

Another parameter passed in the constructor is the Geon Properties. This includes Geon customization parameters described in 'Other Geon Properties' section below.

Geomining Request

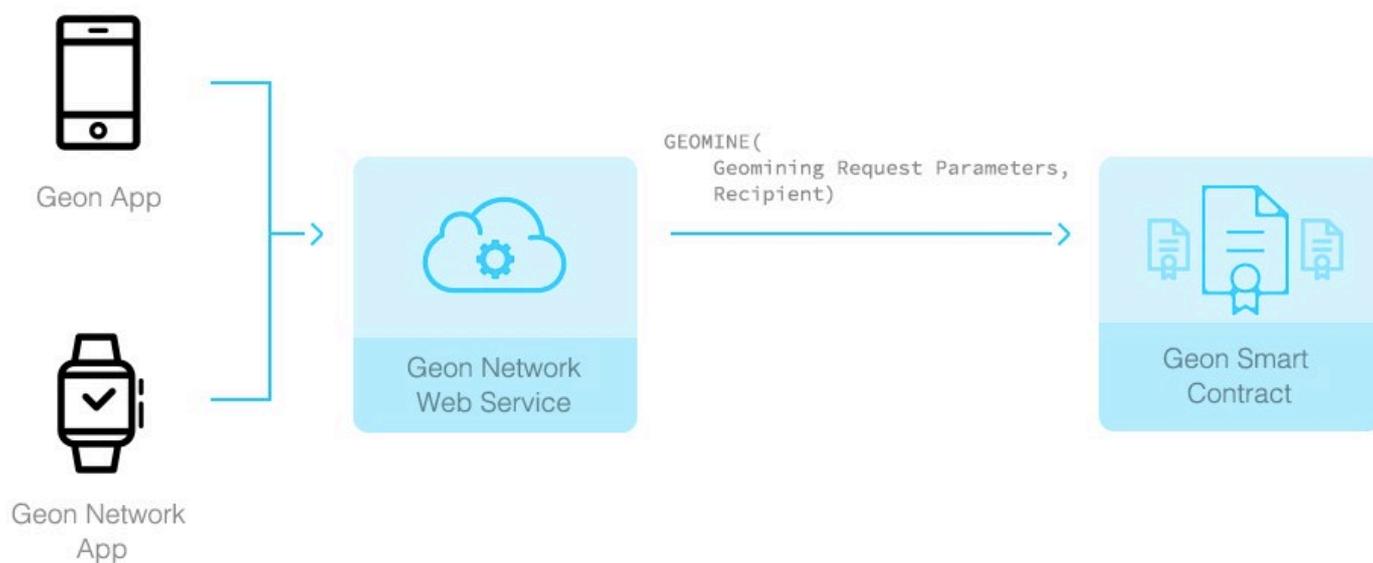


Figure 2. A geomining request on the Geon smart contract.

The figure 2 contains a high-level functional description of geomining. The Geon smart contract receives a geomining request with parameters presented by the miner. It verifies the parameters and if they meet the criteria set in the geomining policy, the recipient receives the Geon Coins stored in the Geon, as per the policy. The geomining request parameters will usually include the geolocation coordinates, but may also include other challenge data generated by the miner (e.g. a reference to a filled in survey, a solved puzzle, or a password).

Apart from the ones described above, the Geon smart contract supports the following operations:

- **CHANGE OWNER (New Owner)**
An owner of a Geon submits this request when they want to make someone else an owner of the Geon. There can only be one owner at any time.
- **UPDATE GEOMINING POLICY (New Geomining Policy)**
Updates geomining policy, e.g. moves the Geon to a new location, changes geomining rate, etc. This can only be executed by the Geon owner.

The contract state includes the Geon Coin balance stored in the Geon and the lifecycle state (see section on the Geon lifecycle below).

Transaction Throughput

A transaction in Geon Network is a single request from a Geon App to perform geominig. In some cases, it will be a one-off invocation of the Geon smart contract, were geominig policy is set to transfer all funds to the first geominer. In other cases, it will be tens of thousands requests sent on a continuous basis (e.g. during a football game at a large stadium). When considering performance of Geon Network as a service, the following points should be noted.

First, in order to ensure reasonable sampling frequency in continuous geominig, and to allow enough time to generate proof-of-location, and finally, to protect the Geon Network Web Service, the Geon App will not send more than one geominig request per minute.

Second, the Geon Network Web Service will be a geo-distributed and highly scalable, multi-instance web service capable of handling tens of thousands of requests per second in a single region (e.g. California). All the requests will be pooled and submitted in a single blockchain transaction approximately every minute.

The potential bottlenecks are:

- Geon Network Web Service throughput,
- maximum size of a blockchain transaction, which will include all geominig requests from the last minute,
- block time.

The first is mitigated by the use of highly scalable architecture of the service (not included in this paper), enabled by most cloud service providers today. The transaction size limit will be addressed by compression at the application layer, when necessary. The block time does not really impact overall throughput, but it does impacts latency, i.e. how long users have to wait until they see an updated balance in their Geon App wallet. The blockchain used by Geon Network will have a block time of 10 seconds or less.

Overall, we estimate that in the first release the service will be deployed to at least 10 regions in the world. Each capable of serving 600,000 geominig transactions per minute, which is 10,000 transactions per second. Globally, we expect the service to handle 1,000,000 transactions per second.

Geon Types

Geons can be classified based on their range and mobility. Here are the Geon types using this classification:

- **Immobile (Stationary) Geon**

A Geon of this type is permanently anchored to a geolocation defined by the Geon owner at creation time.

- **Mobile Geon**

A Geon can be tethered to another beacon, whose coordinates change over time, or another Geon. A beacon in this context is any device, as per the definition in section The Recipient Device, that is running the Geon App. Examples of practical use cases include a smart phone at the head of a parade or a demonstration, or a “follow the leader” terrain game.

- **Global Geon**

Global Geons are not associated with a specific geolocation. They have global presence and infinite range. Usually, there will be additional requirements that users will have to meet before a global Geon can be mined, like fill in a survey, solve a puzzle, provide feedback on a third-party service, etc. Global Geons will be presented in a different section of the Geon client app than location-based Geons, so that users will have to perform an action to start and acknowledge geominig.

Geon Lifecycle

It is important that the Geon owner has full control over the geomining policy implemented by a Geon, as well as over its lifecycle. The owner may want to be able to pause or end the life of a Geon. The Geon lifecycle is defined by the state machine in fig. 3.

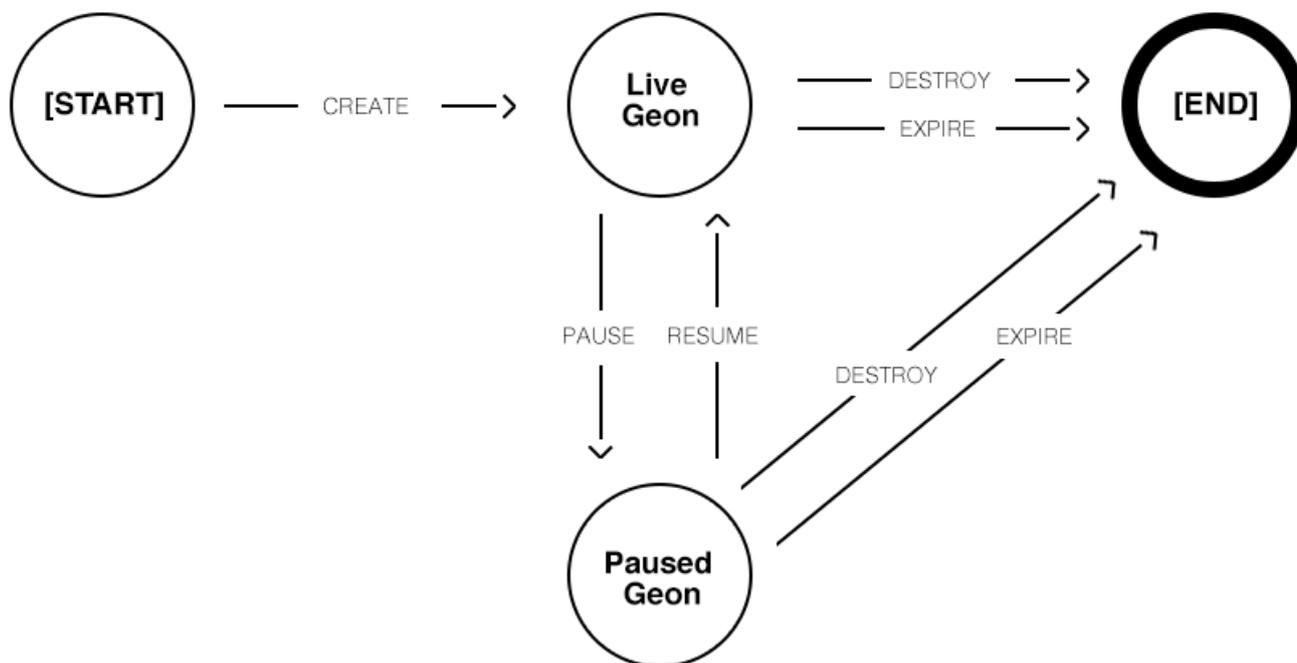


Figure 3. The Geon lifecycle state machine.

The state machine is implemented in the Geon smart contract. All operations that change the state of a Geon (represented by arrows in fig. 3) can be executed on the smart contract by the Geon owner, except for the EXPIRE operation, which is executed by the Geon Network when the expiry date is reached.

Pausing a Geon

When a Geon is paused, no geomining can occur on the Geon, i.e. geomining requests will be ignored. If the owner set an expiry date, the Geon can expire while it is paused.

It can also be destroyed while paused. In this state all branding and advertiser artifacts (e.g. AR imagery) are hidden.

Destroying a Geon

When the Geon owner decides that the Geon served its purpose or is no longer needed, regardless of the remaining funds in the Geon, they are able to shut it down. This means that the Geon will no longer appear in user searches or on the map, it will not be possible to geomine the Geon, and all funds remaining in the Geon are returned to the owner.

It should be noted, that with this feature there is potential for mischievous behavior, whereby users would create Geons to lure other users to a location, and before anyone starts geomining, they would destroy the Geon. To help prevent this scenario, Geons have a flag that can be seen by all Geon Network users, which states whether a Geon is destroyable or not. The flag will be defined by Geon creator at creation time and will not be mutable (enforced by the Geon smart contract). Potential geominers will be able to check the flag before they decide to travel to the Geon.

Geon Expiry

When the Geon owner sets an expiry date, the Geon will be automatically deleted on that date. As in the case of a standard DESTROY operation, all remaining funds are returned to the owner.

Geomining Policy

The geomining policy supported by the Geon Network is very flexible in order to satisfy many different use cases. Geon owners can specify the following geomining parameters:

- Maximum distance from Geon where miners can geomine, i.e. the Geon range.
- Geomining schedule, i.e. at what times of day, days of the week or month, etc., geomining is allowed.
- Geomining mode:
 - **One-off** – the miners are rewarded only once, when they arrive in the Geon range. There are two variants in this mode:
 - **Hello** – the reward event is generated when the miner enters the Geon range.
 - **Good bye** – the reward event is generated when the miner leaves the Geon range.
 - **Continuous** – the miners are being rewarded as long as they stay within the Geon range. In this mode, the owner specifies the geomining rate, i.e. how many Geon Coins can be mined per minute and, optionally, maximum limit per miner. There are also two variants in this mode:
 - **Constant rate** – the geomining rate remains the same across the Geon range.
 - **Variable rate** – the geomining rate increases as the distance to Geon decreases, i.e. the closer to the Geon, the higher the mining rate.
- Custom geomining map. This option allows for creation of custom Geon range maps (the default is a circle around the Geon with a radius of range). For example, a map can be defined in such a way that it exactly covers the shape of a building (e.g. a rectangle). Once the miner is in the building, they are in Geon range and can geomine.
- Balance lock period, i.e. how long before the mined coins are unlocked for transfer/withdrawal (see the paragraph on anomaly detection in the section titled Security Considerations).
- Who can geomine – a list of approved recipient addresses. This is optional, by default anyone can geomine.
- Extra geomining requirements. These are actions the miner must take in order to geomine. Each requirement can have its own schedule and will be presented to the miner on this schedule. For instance, the policy can say “every 100 Geon Coins mined, ask the user a question. Geomining can continue once an answer is provided.”. The actions are implemented within the Geon Network App and do not require calls to third party services or applications. Examples include:
 - Enter a password,
 - Scan a QR Code,
 - Fill in a survey,
 - Solve a puzzle,
 - Provide a free text answer to a question,
 - Provide ID (name or a digital ID),
 - Take and submit a photo,
 - Record and submit an audio/video recording,
 - Share additional device properties (see Miner device authenticity paragraph in the Security Considerations section).

Other Geon Properties

Apart from the Owner ID and Geomining Policy, there are other parameters that define a Geon:

- **Top-up Whitelist**
A list of users who, apart from the owner, can top up the Geon, i.e. can send funds to it.
- **Personalization**
Allows adding custom branding that will be featured on or near the Geon in the augmented reality application. May include text, images or videos.
- **Geon Type**
As described in section 'Geon Types'.
- **Destroyable flag**
As described in section 'Destroying a Geon'.

Why Blockchain and Smart Contracts?

The Geon Network could be implemented without the use of blockchain or smart contracts and standard client-server architecture could be used to design the service. We could have a number of mobile clients communicating with a web service that executes the necessary logic and persists the state using traditional database technologies. However, this type of solution would be highly centralized. Not necessarily in the technological sense. After all, the system could be implemented as a multi-instance, distributed and scalable cloud service. However, ownership and custody of user data, which in this case include coin balances and wallet private keys, as well as control over the execution of geomining rules defined by Geon creators, would be centralized. This is paramount because the rules should not be enforced by a centralized entity, e.g. a company that hosts and runs the service which the users of the services are required to trust. A centralized entity could misplace the funds stored in Geons or interfere with Geon Coin distribution during geomining. **The goal of the Geon Network is to ensure as much decentralization as possible, while providing a secure and reliable platform that enables transfer of value based on geolocation.** For this reason, blockchain as a technology and smart contracts as policy and management of the network are an optimal design.

The advantage of using a blockchain is that the coin transfers are trustless, immutable and are fully auditable. The users can easily verify where and when the coins have been geomined and by whom¹. Furthermore, by utilizing smart contracts, we make sure that the rules defined by Geon creators cannot be changed by the platform provider or any third party. Geon properties such as location, geomining modes, branding, etc., can only be defined and modified by its creator.

Token Sale

Token Sale

The public sale token will be minted on the Ethereum blockchain and will be transferred to the Gibraltar Blockchain Exchange (GBX), which operates a platform that will be used to run the sale. Geon Network Ltd. may partner with other exchanges or token sale platform providers to expand the reach and remove a possible single point of failure, in which

¹ As much as the pseudonymous nature of most blockchains allow. Also, depending on the policy specified by the Geon creator, geominers may be required to provide certain information that links their identity to their wallet, thus revealing their identity to the Geon creator or an auditor of transactions.

case similar arrangements will be made with these partners. All proceeds will be transferred to the Geon Network escrow, which is a multi-signature Ethereum wallet. Withdrawals from the wallet are constrained as follows:

- withdrawals can only be made to the Geon Network cold storage address (known and set in advance),
- any withdrawal requires two out of three signatures.

The three signature owners are the following Geon Network Ltd. key-personnel:

- CEO, Robert Radek,
- COO, Alek Debski,
- CPO, Maciej Rynarzewski.

Geon token

Token name	Issued tokens	Hard cap	Soft cap	Token price	Protocol
Geon [GEON]	850 000 000	\$35 198 557,50	No softcap	\$0,1 0.0002445 ETH	ERC 20

Market Rounds

Round	Discount	Token price	No. of Tokens
Pre-Sale	50%	\$0.05	112 500 000
Market Round I	30%	\$0.07	105 000 000
Market Round II	15%	\$0.085	67 500 000
Final Round	0%	\$0.1	112 500 000
Total Public Sale Tokens			397 500 00

Further Token Sale Information

Emission Rate	No new tokens will ever be created
Accepted payment methods	ETH, BTC
Minimum amount of participation	0.1EHT or equivalent in BTC
Fractional token purchase	No
Public Sale Terms & Conditions	https://geon.network/Contribution_Terms_and_Conditions.pdf

Further instructions and details related to token sale can be found at <https://geon.network/tokensale>

Vesting for Founders / Advisors:

The Tokens will vest over a minimum 8 periods / 2 years. It is a pro rata quarterly vesting starting on the initial listing date.

Vesting for highly discounted early supporters:

Pro rata quarterly vesting over 12 to 15 months, beginning either on the pre-sale agreement date or 90 days after the pre-sale agreement date.

Company Token Sale Asset Policy

As the Company receives the proceeds, they will be exchanged in full for fiat currency and stored in Geon Network Ltd. bank accounts. The Company will work with its OTC partners to achieve efficient and smooth off-chain transactions.

Total Token Distribution

Public Contributors	47%
Seed & Institutional	29%
Company Reserve	12%
Founders, Current & Future Team, Advisors	12%

Funds Allocation

Product Marketing	36%
Product Development	34%
Global Operations & HQ*	26%
Legal & Accounting	4%

*including admission to exchanges.

Regarding the financing of project development and promotion, our goal is to continue even if hard cap is not reached. In this scenario Geon Network will pursue other methods of funding (e.g. equity sale) to ensure the project success. The team is determined to deliver the product to the market even in face of such difficulties.

Authorized Communication Channels

You can reach and follow Geon via the below communication channels or simply by writing to hello@geon.network.

Facebook	https://www.facebook.com/geonnet/
Twitter	https://twitter.com/Geonnetwork
Instagram	https://www.instagram.com/geonnetwork/
Linkedin	https://www.linkedin.com/company/geon-network/
Telegram	https://t.me/geon_network
YouTube	https://www.youtube.com/channel/UCCewWI9KZpXJabHE9P0QFHA
Angel Lst	https://angel.co/geon-network
Crunchbase	https://www.crunchbase.com/organization/geon-netwo

Development Roadmap

* The Geon Network software development follows the Scrum methodology. "Scrum recognizes no titles for Development Team members other than Developer, regardless of the work being performed by the person; there are no exceptions to this rule," Therefore Developer can be understood as a professional with a background in UX/Graphic Design, Software Development, Software Testing and similar. Even though people mentioned on our website have a speciality next to their names it is not relevant within the team. For further details about Scrum we recommend Illustrated [Scrum Guide](#).

Milestones

1. December 2017	Software development begins.
2. March 2018	iOS MVP delivery.
3. July 2018	Eextending the team from 4 to 8 developers.
4. Q4 2018	Alpha App release on App Store (for iOS) and Google Play (for Android).
5. Q4 2018	Planned recruitment of another 10 developers (including designers and testers), which will bring the total number to 19, divided into three teams.
6. Q4 2018	Beginning of the Geon B2B platform development.

7. Q1 / Q2 2019	Release (on AppStore and Google Play) of the secured dApp with payouts and token/coin economy - other features will be added in due course, according to the feature roadmap and market needs.
8. Q2 2019	B2B platform release - further features will be added based on market needs.

History

We started developing our idea of the Geon Network in the middle of December 2017 with funding of around 30,000USD. Two thirds of that went towards the software development and remaining funds were spent on starting the company, office space, etc.

The MVP (a.k.a. a proof of concept) with Geomining and other basic functionalities was built within 3 months. We were fortunate to have had (and still do) access to very skilled and experienced (especially with large scale solutions) developers, who were quite happy to start working with us. They believed in the product from the start and attracted other developers to join us. We've continued to deliver more features within the app since March 2018.

Current state

After receiving significant funding we recruited another 4 developers in July 2018. Even though they were new to the project - they significantly increased project velocity and the "bus factor" was greatly reduced.

We started to catch up on the initial plan (which was created with an assumption of receiving the funding a quarter earlier). We are delivering in sprints, where every sprint delivers a releasable product with added functionality.

Our next milestone is the Alpha App release on App Store and Google Play. This version will not include actual tokens and coins; the tokens and coins built in the Ethereum Testnet will be used instead. No Fiat or crypto payouts and no powerful security features will be available at that point.

The purpose of the Alpha release is to start the marketing campaign and encourage future users and businesses to experiment with it. Also, we think the feedback we will receive will be extremely valuable for future product development. Another goal for the Alpha release is to start scaling the App and identify possible issues which currently may be unknown - we believe that it is better to prepare the product incrementally with a steadily growing user base.

Further plans

Future depends heavily on more substantial funding. If it can be secured before the start of December 2019, our estimates stand as described above. We intend to expand the team. Usually finding the right people in such a specialized area as blockchain and distributed application development is a problem. However, until this point we have been very fortunate to source individuals with the exact expertise we need. More importantly, through intense networking, we

have identified talent pools we can pick from in the future.

Further expansion will enable us to start working on an another milestone - the B2B platform. Delivery of a working solution with most of the features currently seen as significant, is estimated for roughly four to five months - though with a certain level of uncertainty (as this development has not started yet, please consider it an estimate which is likely to change).

The most significant milestone of all - app delivery (estimated for March/April 2019) depends not only on software development itself but also on securing business deals with payment providers and other business partners.

In order to release the App we want to be sure that:

- it is extremely easy to use and intuitive,
- the most important features are completed,
- the app is compliant, safe to use, and secure.

These factors, and more, make a fully working App which (with support of other services) will enable real value transfers as described in the technical section of this document.

Software development of the App and the security platform will be a continuous process. When working on large projects like this one, expanding, maintaining and adapting it to the market needs, it is virtually impossible to accurately predict if and when the work ends.

Progress communication

The development progress will be communicated via release notes available on our website, on social media and in the Geon Network newsletter.

Opensource

The Geon Network [GitHub repository](#) contains implementation of the smart contracts used by the Geon Network service. At the time of writing (9 Aug 2018) it is the initial version of the code that demonstrates the concept and is used in the MVP. It is written in Solidity for the Ethereum platform.

In the long term, the repository will contain all relevant blockchain code (smart contracts and test harness) that will be used in the Geon Network dApp backend. The goal is to get feedback from and contribute to the community, as well as transparency. We wish to demonstrate that the blockchain implementation has no bugs and/or security flaws.

Geon Technical Whitepaper

At this point we provide our Technical Whitepaper - often referred also as Yellowpaper - only per request, if you are interested please contact hello@geon.network

Controllers, Key Personnel, Advisors & Legal Counsel

Company controllers are: Robert Radek, Maciej Rynarzewski, Aleksander Dębski (the **Controllers**). Further details about their experience, other key personnel, senior management and advisors can be found at www.geon.network in the Team section and provided LinkedIn profiles. Geon Network's legal counsel is Ramparts Law - a European law firm based in Gibraltar and the UK. Further details can be found on www.ramparts.eu.

Other items of note are intra-group/third party agreements:

IT Services - LemonUnit - <http://lemonunit.com>,

Accounting Services - Ramparts Legal Firm - www.ramparts.eu

OTC Service Providers - Circle, LBX, DAM - www.circle.com / www.lbx.com / www.dam.gi

Digital Asset Storage

Geon Network Ltd. stores digital assets in an offline hardware wallet protected by a PIN. The PIN is divided into two parts created by two different members of C-level personnel. They do not share their parts of the PIN with anyone. In order to use the wallet, e.g. to withdraw funds, both individuals have to be physically present and enter the full PIN in the wallet. The PIN owners are:

- COO, Alek Debski,
- CPO, Maciej Rynarzewski.

The hardware wallet includes a recovery code, consisting of 24 random English words, which can be used to recreate all private keys in cases where the wallet is lost, destroyed or stolen. Essentially, it provides access to all funds in the wallet. To ensure its security and that it cannot be easily recreated, it was recorded by two different individuals when the wallet was initialized. Each individual recorded half of the code on a separate piece of paper (similarly to how the PIN was created, except the PIN was not recorded anywhere). The code in full will be stored in a safe place (a safety deposit box), access to which requires presence of two out of three C-level personnel:

- CEO, Robert Radek,
- COO, Alek Debski,
- CPO, Maciej Rynarzewski.

This ensures that in case any one of the three persons disappears and is not be available anymore, the hardware wallet can still be recovered.

Also, please note that if the same happens with one of the PIN owners, the wallet will have to be recreated using the recovery code. In this case a new PIN will be created following the same procedure.

Risk Management

Any transfer of funds requires physical presence or authorization of two or two out of three members of C-level personnel. This greatly reduces the risk of fund misplacement and ensures assets can still be recovered in case any one employee is no longer available.

Standard Operating Procedure Maintenance

The procedures outlined in this document will be reviewed every quarter by a team comprising of:

- Geon Network COO,
- Geon Network's Legal Counsel,
- Geon Network Technical Representative.

The goal of the review will be to perform operational audit to date and also to ensure that the highest governance and security standards are in place. Should any changes to the rules be required, they will be documented and made available to partners and other relevant entities.

Corporate Governance

The Geon team is fully committed to ensuring that Geon operates under the principles of good corporate governance to achieve strategic objectives, continuing development, improvement of its business environment and promoting best performance goals and achievements by upholding and maintaining the following elements:

- Ethics, honesty & integrity.
- Risk management & internal controls.
- Disclosure & transparency.
- Conflicts of interest procedures.

Geon also maintains the following internal policies dealing with the following:

- AML/CTF.
- Fraud Management.
- PEPs
- Customer Approval and Due Diligence.
- Fraud and Transaction monitoring.
- SAR reporting.

Legal Disclaimer

This White Paper and any other documents published in association with it, including the related token sale terms and conditions (the Documents), relate to a potential token (Token) offering to persons (contributors) in respect of the intended development and use of the network by various participants. The Documents do not constitute an offer of securities or a promotion, invitation or solicitation for investment purposes. The terms of the contribution are not intended to be a financial services offering document or a prospectus. The token offering involves and relates to the development and use of experimental software and technologies that may not come to fruition or achieve the objectives specified in this white paper. The purchase of Tokens represents a high risk to any contributor. Tokens do not represent equity, shares, units, royalties or rights to capital, profit or income in the network or software or in the entity that issues Tokens or any other company or intellectual property associated with the network or any other public or private enterprise, corporation, foundation or other entity in any jurisdiction. The Token is not therefore intended to represent a security or similar legal interest. Geon Tokens will constitute a medium of exchange and means of accessing the Geon Network: they are not intended to be a regulated financial product of any kind.

The purchase of the Tokens involve significant risks. Prior to purchasing a Token, you should carefully assess and take into account the potential risks including those described in the Documents and on our website. We are aware there may be speculation on the value of the Tokens and disclaim any liability for the use of Tokens in this manner. An active

secondary market in the Tokens may not emerge and there is no guarantee of liquidity in the trading of the Tokens nor that any markets will accept them for trading. We reserve the right to hold additional Token sales in the future.

This White Paper and any Documents, describe a future project and contain forward-looking statements that are based on our beliefs and assumptions at the present time. The project, as envisaged in this White Paper, is under development and is being constantly updated and accordingly, if and when the project is completed, it may differ significantly from the project set out in this white paper. No representation or warranty is given as to the achievement or reasonableness of any plans, future projections or prospects and nothing in the Documents is or should be relied upon as a promise or representation as to the future.

The Whitepaper, in full or part, must not be taken or transmitted to any place where distribution or dissemination of the Whitepaper is prohibited or restricted (with specific selling restrictions where relevant);

Persons into whose possession this Whitepaper may come are required to inform themselves about and observe any relevant legal or regulatory restrictions and seek all necessary professional advice in order to enter into the Token Sale. The Whitepaper is not endorsed by any government authority. We have taken all reasonable care to ensure that the facts stated in this Whitepaper are true and accurate in all material respects, and that there are no other facts the omission of which would make misleading any statement in the document, whether of facts or opinion. The Company accepts responsibility accordingly.

GBX: This Whitepaper has been approved by GBX Limited (**GBX**) in accordance with its Token Sale Rules. The GBX Market is not a 'regulated market' as defined under the Directive on Markets in Financial Instruments 2004/39/EC. GBX is not responsible for the content or accuracy of this Whitepaper or the conduct of the Token Sale in any way, and that neither its admission nor approval of the Whitepaper pursuant to its Token Sale Rules constitutes a warranty or representation by GBX as to the competence of Geon Limited, its service providers or any other party connected with this proposed Geon project, the Token or the Token Sale, the adequacy of information contained in this Whitepaper or the suitability of the proposed project or the Token for any purpose. GBX will not be liable for any false, inaccurate, inappropriate or incomplete information contained in the Whitepaper. The Controllers have no information to disclose under paragraph 2.4(a) of the GBX Whitepaper Guidelines. Geon Limited is a new entity and therefore has no operating history.

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