

GEAR

GearChain White Paper

**Reinventing Inventory Supply
Chain with Barcode Scanning
Synchronized Blockchain**



INDEX

	Disclaimer	3
01	Executive Summary	4
02	Introduction	5
03	Current State of Global Supply Chain Management	7
04	Problem statement	10
05	Blockchain Solution	11
06	Vision	15
07	How will GearChain be Successful?	17
08	What is it that Gear Chain is offering?	21
09	Digital Ecosystem and Token Distribution	25
10	Roadmap	26
	References	27



Disclaimer

This document is only used to convey the information. The participants in the buying please carefully read the white paper and the official website of the relevant instructions and comprehensively understand the blockchain and digital assets. Please notice the potential risks and thoroughly assess your risk tolerance and actual Situation to make rational decisions.

The information contained in this whitepaper is for general understanding purposes only. This whitepaper is for discussion and presentation purposes only. The proposed blockchain platform "GearChain" does not guarantee the accuracy of the conclusions reached in this whitepaper.

Nothing in this White Paper shall be deemed to constitute a prospectus of any sort or a solicitation for investment, nor does it in any way pertain to an offering or a solicitation of an offer to buy any securities in any jurisdiction. This document is not composed by and is not subject to any jurisdiction laws or regulations designed to protect investors.

Certain statements in this Whitepaper constitute "forward-looking statements" that are used on the beliefs of the Company and reflect their current expectations. Such statements reflect the views of the Company at the time the statements are made concerning future events based on information available at that time, and they are subject to risks and uncertainties that could cause actual results to differ materially from those contemplated in those forward-looking statements.

The Company assumes no obligation to update or revise these statements to reflect current information, events, or circumstances, including changes in any risks or uncertainties that may impact them.



01. Executive Summary

The inventory system is one of the most fundamental systems in any business. It's critical for the smooth and efficient operations of any company that needs to keep track of physical goods such as vehicles, products, parts, raw materials, or food.

Blockchains are a type of distributed ledger technology (DLT) that records transactions in chronological blocks. Blockchain technology is the foundation for cryptocurrencies like Bitcoin and Ethereum. Using a distributed ledger to record can ensure data integrity besides making it easier and cheaper to verify records of inventories.

In a blockchain-based inventory system, each item is assigned a unique ID which can be used to identify and authenticate each item in the network. This creates an accurate record for each item which can then be updated in real-time so that every user has access to it. This way, companies can have visibility into their supply chain, avoid mistakes and errors, and save money by eliminating costly manual intervention.

The GearChain platform links the physical world of inventory and supply chain with the blockchain. Through the GearChain platform, Supply Chain Management (SCM) and Inventory Management can be carried out quickly. There are many participants in charge between supply chain and inventory management – suppliers/producers, transporters, distributors, buyers, and end-user customers – that have information about where their products are located as well as how much product they have available at any given time. By sharing this information it is possible to create Just-in-Time (JIT) supply chain innovations.

GearChain's foundation is based on two main pillars – the first pillar being the cloud-

based mobile inventory application builder allowing for various parties to make an app without any coding knowledge and manage inventories of physical goods via the built-in barcode scanning with the user's smartphone as an IoT device.

The second pillar is the smart contracts: those can be used as just an electronic means of recording the whole process through the GearChain's smart contract – it is a unique blockchain solution that uses barcode scanning as a blockchain and shares that with all key participants such as suppliers, distributors, shippers, receivers and even the end-users via a distributed ledger.

GearChain is designed to attract a wide user base from individuals (B2C) to multi-billion dollar B2B marketplace by introducing and implementing software as a service (SaaS) with permissionless layer 2 blockchain technology.

GearChain platform users' interactions with the platform's services sections create demand for the platform's smart utilities. These smart utilities are facilitated by GearChain tokens. The platform provides transparency and traceability on asset movements using blockchain, so players in the supply chain can instantly verify an asset's status and forecast. By using our platform, we will be able to create an Internet-level consensus; the ability of a network of agents to agree at intervals on the true state of a shared database – is a hallmark of blockchain technology.

Our goal is to maximize the value of GearChain tokens in the ecosystem, by giving our supporters a more valuable token and increasing its demand. This will also contribute to building a better network for future use cases with this utility token.



02. Introduction

Internet proliferation triggered digitization which in turn gave rise to e-commerce — a massive opportunity back then for businesses to scale operations like never before. This ability to reach out to a wider audience created an influx of commercial activities, compelling businesses to switch from manual inventory management systems to spreadsheets, and eventually to ERP systems.

Apparently, most ERP solutions don't serve the purpose and in 29% of the cases, the product fails due to implementation-related errors (360 Cloud Solutions, 2019[1]). Yet, businesses choose to use this for their business because of compatibility with the rest of their IT infrastructure and run into problems.

Changing any large organization's inventory management system can cost an average of \$100 million US Dollars, so businesses seldom make the shift until they've run into major losses (CIO, 2020[4]). The GearChain is an innovative blockchain-based cost-efficient solution that organizations can easily deploy through a cloud-based application connected to a smartphone. Furthermore, the sharding of files and the strong encryption accorded by the blockchain make the records tamper-proof and ensure data security.



**29% of Organizations
using ERP Solutions**

for inventory management
succumb to implementational
failures.



**ERP failures cost large
organizations an average of
\$100 Million.**

**GearChain is a cost-efficient
alternative that overcomes**





Why Use Blockchain?

The blockchain is the next iteration of digital technology and a much-needed transformation to overcome the irregularities caused by internet-based solutions that store data on centralized servers.

The GearChain makes that possible in the supply chain landscape by overcoming a score of inefficiencies like inaccurate inventory tracking, inconsistent barcode and computer records, limited visibility into real-time data, and a lot more that directly impacts the profitability of businesses.

A Word About GearChain

GearChain is on a mission to turn smartphones into barcode-scanning IoT devices that store inventory-related data at each point to create Just-in-Time (JIT) supply chain innovation by making real-time product data available.

It converges smart contracts with a cloud-based mobile inventory application builder to make this possible and has the potential to disrupt the world of inventory management.

In doing so, multiple cryptographic standards would be utilized to create digital assets like NFTs and crypto tokens that we shall discuss elaborately in this white paper. Furthermore, we shall also delve deeper into the current supply chain management challenges, their impact on businesses, and how GearChain aims to resolve them. We shall therefore discuss the GearChain ecosystem, particularly the utility token and its future potential. Let us now begin by elaborately discussing the current state and the problem areas of global supply chain management.





03. Current State of Global Supply Chain Management

Over time, the commercial landscape has metamorphosed from family-owned organizations to corporate multi-location chains. This transformation demands a robust inventory management system that feeds data into a secure database in real-time. Now that is precisely what GearChain aims to do in order to ensure consistency and accuracy.

Unfortunately, the current inventory management systems are centralized and deeply flawed. Their failure rate is very high because inventory management is not given the kind of attention it deserves. Most businesses don't realize its significance and deep impact on profitability until it's too late.

A recent survey conducted among top supply chain executives of 200 organizations with over a billion in revenues concluded that only 2% were prepared for a pandemic (EY, 2021[8]). Also, it was found that 72% reported losses due to wastage, idle resources, and other serious disruptions resulting in loss of revenues. Since another pandemic is anticipated, businesses are heavily investing in making their inventory management systems more resilient.



Only

02% of large organizations were prepared for the pandemic and 72% reported adverse impact on revenues due to inventory management problems.



05%
reduction in supply chain costs can increase profits by 40%.

As a matter of fact, Industrial Suppliers struggle with huge supply chain costs, and optimizing them by a mere 5% could result in a 40% increase in profits (Zippia, 2022[16]). The supply chain costs of a business can be influenced by internal business decisions and working on them gives the organization an edge over its competitors.

During the COVID crisis, supply chain bottlenecks ruined countless businesses and led to massive losses across the globe. While thousands of small and midsize businesses were wiped out entirely, those with over \$1 Billion in revenues also suffered the wrath of unpreparedness.



Pre-Pandemic Supply Chain Concerns

The pandemic was a force majeure and therefore many blamed their supply chain crisis on the sudden turn of events that were temporary like social distancing and logistical barriers. Therefore, it is inevitable to introspect the pre-existing problems within the supply chain landscape to get to the bottom of the problems faced in managing inventories through the present-day software applications. Below are some of the common roadblocks that have always been there.

System-Related Errors

Many times, businesses suffer due to inefficient or incompatible systems that do not work as intended. In fact, Target's coast-to-coast launch in Canada was disrupted because of a supply chain crisis caused due to barcode-computer record mismatch. This gradually led to overstocking and hammered its operations considerably, resulting in cumulative losses exceeding \$2 Billion US Dollars (Reuters, 2014^[13]).

Such errors would be entirely wiped out by synchronizing barcode scanning with blockchain from the moment the goods leave the manufacturer's premises up to the point where the end-user purchases it and that is precisely what GearChain does. The project creates a Just-in-Time (JIT) supply chain innovation by making real-time product data available. The project aims to be the go-to inventory management solution built using reliable technologies.



**Target's barcode-computer
record mismatch resulted
in losses to the tune of
\$2 Billion
US Dollars.**

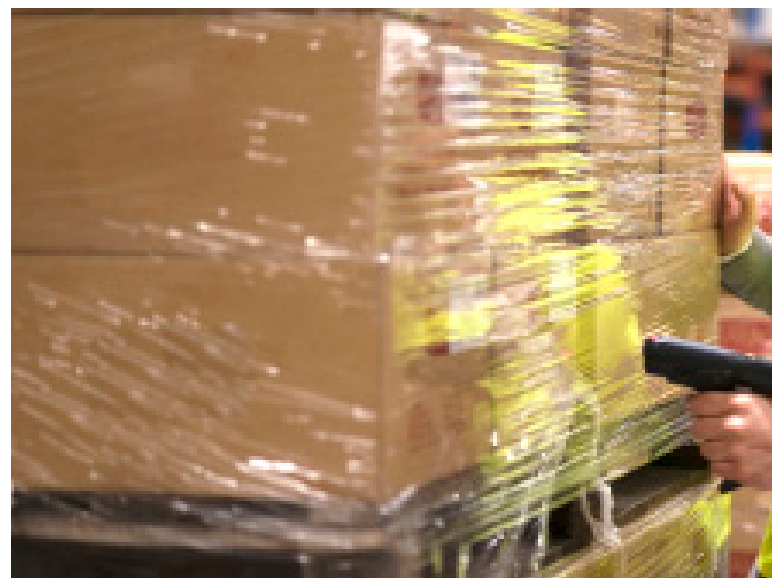
Inefficient Processes

Managing inventory with paperwork and manual processes is tedious and not secure. This can lead to long work hours, inaccurate inventory tracking, and missing insights to make critical business decisions. These factors can lead to overstocking of goods and increase the overheads considerably.

Overstocking freezes the cash reserves and adds up to the overall costs of a business, which decreases its profit margins considerably. Furthermore, these archaic systems are non-scalable and fail to track real-time inventory-related data from multiple warehouses. In fact, this is one of the most common inventory problems that retailers are facing today.

Limited Visibility

Businesses fail to ensure deeper visibility into their inventories due to their siloed systems, historical data, and inefficient inventory and warehouse management practices. Without the ability to visualize a complete picture, it's impossible to answer critical questions like how many orders get processed or to determine the safety stock levels. Accurate data is critical because these insights lay the foundation for decision-making and forward planning, which is critical for managing the organization's resources efficiently.





Lack of traceability

Inept inventory management practices can lead to wastage or loss of physical goods, and this could be disastrous for businesses dealing in perishable goods. For example, if warehouse clerks missed counting or mishandled the driver of an item, it's very difficult to locate lost items and even spoiled products due to exposure to vermin and pests. Loss of inventory can be a serious concern for businesses dealing in perishable goods or those with shorter shelf life. In fact, Walmart experienced this problem way back in 2014 and incurred \$3 billion worth of losses (Forbes, 2014^[9]).



Untraceable stocks can lead to wastage, spoilage, theft, and overstocking. In fact, this costed Walmart \$3 billion in losses.



Market Volatility

In the face of uncertainty, we have strived to adjust our strategies to avoid stockouts and overstocks. We've also found comfort in near-shore or local suppliers that demonstrate a degree of resilience. Previously, many businesses prioritized efficiency and cost savings over resilience; since the pandemic occurred it's been evident how important it is for us to focus on mitigating supply disruption risks by switching suppliers closer than before, establishing risk management teams and procedures, investing in technology like transparency so as not to disrupt distribution processes.

Secure Storage

Despite all the technological innovations, managing inventories can be overwhelming for large businesses without secure and reliable data storage systems. In times when cyberattacks have become a regular occurrence, there is a heightened possibility of inventory management record disruptions (Supply Chain Dive, 2020^[14]). This can be overwhelming without a robust inventory tracking system connected to a tamper-proof secure database.

GearChain as a Solution

The 29% ERP failure rate, 40% hit on profitability, and losses worth billions of dollars due to inventory record mismatch highlight the absence of a resilient inventory management system in the market. These concerns arise from the absence of real-time data stored on tamper-proof servers that are free from the possibility of cyberattacks.

GearChain addresses the deficiencies present in the current inventory management systems through its fully customizable cloud-based application. It enables organizations to efficiently use their resources by providing deeper insights into the inventories, which enables them to maintain the right stock levels. This prevents wastage, idle labor, and other overheads incurred due to overstocking or understocking.



04. Problem statement

During the pandemic, the supply chain market turned into a whopping \$18.6 billion dollar industry that is growing at a 10.7% CAGR (Allied Market Research, 2021[3]). This tremendous growth can be attributed to the fact that organizations have realized the vulnerabilities present in their supply chains, and many are revamping their inventory management systems. However, this costs an average of \$100 million for large businesses and a proportionate amount for small and midsize businesses also.

The need of the hour is a cost-efficient customizable inventory management system that makes real-time data accessible. For ease and convenience, most businesses utilize the inventory management applications that are part of their organization's ERP suite. However, none of those are fully customizable to industry-specific requirements — a reason why 29% of all ERP implementations fail (360 Cloud Solutions, 2019[1]). GearChain's cloud-based mobile inventory application builder overcomes this concern by allowing users to customize the application according to their needs.

Overall, the project would counter the pre-existing inefficiencies of legacy systems through its two pillars — cloud-based mobile inventory application builder and smart contracts — to create a Just-in-Time (JIT) supply chain innovation that makes real-time product data available. These work in tandem with each other to overcome the current supply chain management concerns that we have briefly discussed.



Pandemic turned the supply chain market into a

\$18.6 billion dollar industry that is growing at a 10.7% CAGR.





05. Blockchain Solution

GearChain is a fast, affordable, and scalable platform that leverages the strengths of multiple chains to create a robust ecosystem. The result is a network of verification services that communicate with each other through our layer 2 solutions. The platform is versatile and user-friendly, so developers can create apps without any expertise in blockchain technology. Let us now understand the key components of GearChain and how it works.

5.1. Rule-Based Computer Program

A whopping 85% of Americans use smartphones and this creates an opportunity for businesses to cut their hardware costs by turning their employees' smartphones into inventory tracking IoT devices (Pew Research Center, 2021[12]). This is a cost-efficient approach adopted by several businesses that have employees on the go because the smartphone is the most pocket-friendly IoT device.

When used in connection with the GearChain ecosystem, it would be used to record critical information like data points, real-time location and what you do with it, and everything else. All of those data feeds can be used to make a service provider more secure and ensure data integrity throughout.

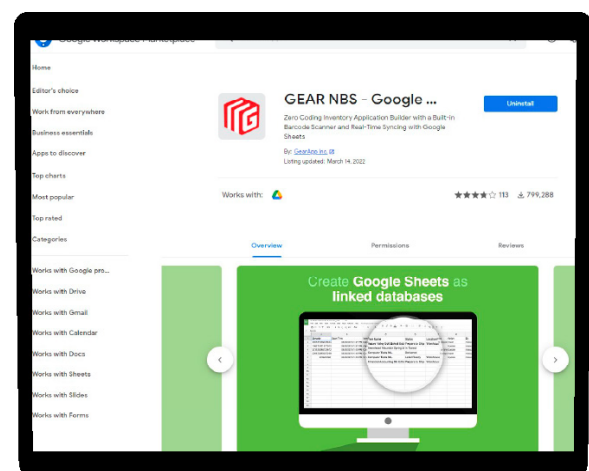
The GearChain team consists of seasoned professionals who already have inventory app builders in the market. The current product is a Google Sheets-based inventory app builder and works with barcode scanning on iOS, Android, or desktop. This program helps you build an inventory app for things like physical goods, parts, or even real estate and it's just as easy as building a google form.

You can create multiple inventory management projects and when a user submits new essential inventory data, it's automatically recorded into the Google Sheets spreadsheet and synchronized with the app. So, when they recover that same barcode later on, your server is pulling in updated information from connected google sheets.



Companies can use DApps to turn their employees' existing smartphones into barcode scanning IoT Devices. There is no need to incur additional hardware costs as

85% of Americans already have a smartphone and a similar trend is witnessed worldwide.





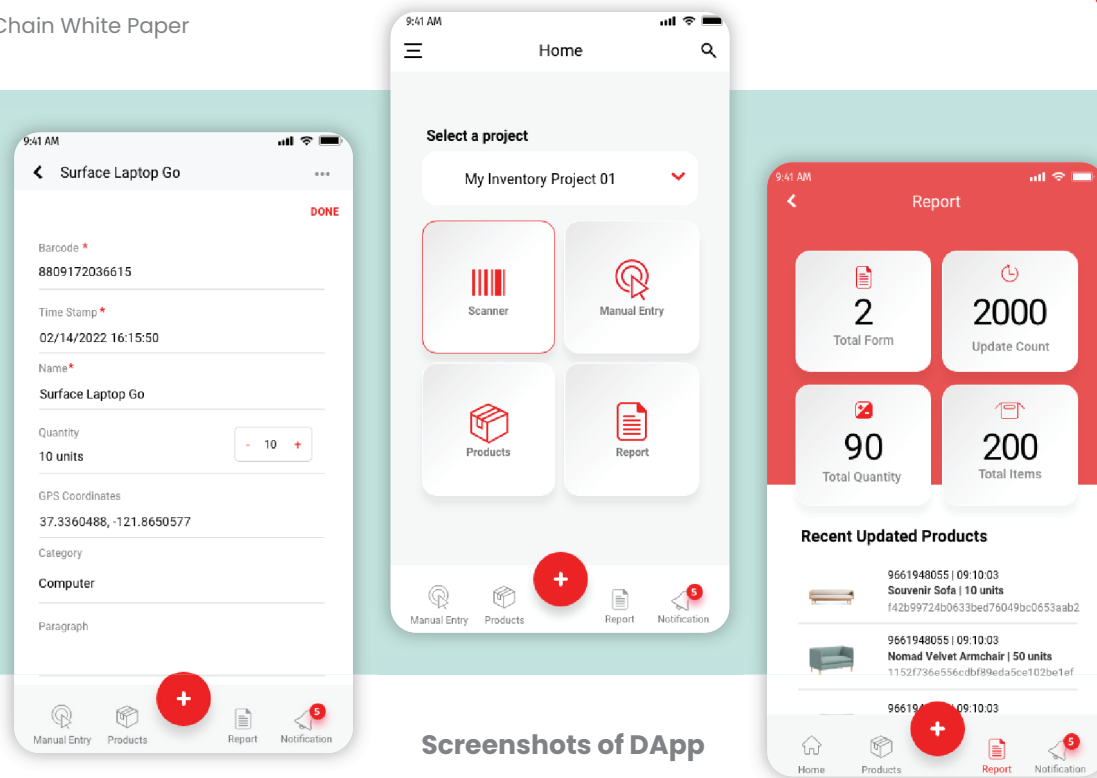
5.2 The DApp

The GearChain DApp can be installed on both Android and iOS devices for inventory management use cases. Users can build a customizable form with available form fields designed specifically for supply chain needs.

Some of the form fields are:

- **Date:** This field is for dates from the calendar.
- **Short Answer:** This field is for a short title, such as product, or item.
- **Paragraph:** This field is for a more detailed title.
- **Dropdown:** This field is for a dropdown list and can be used as a category. For example, title "Location" and add options such as "Warehouse", "Main Office", "Parking Lot", and "Conference Room".
- **Checkboxes:** Multiple Selection Checkboxes.
- **Number Count:** Users can click plus or minus to adjust the quantity. It is useful for the volume of the same barcode.
- **Cost:** This field is for the cost of an item.
- **Radio Button:** Radio buttons can be designed to select options on the form.
- **GPS Coordinates:** A field to record a scanned location. It will create two fields - Longitude, and Google Maps link.
- **Secondary Barcode:** When a user scans the second barcode, it will register in the same row on the database.
- **Hidden:** A hidden field will not be displayed on the form but shown on the database.
- **Image:** A field to upload or take a picture from a mobile phone. NFT can use this field to verify unique items.
- **Stock:** This field is for controlling stock with restocking and reorder values.
- **Current User:** Current user's email is recorded upon submit. It is useful if multiple users work together on the app.

The built-in barcode reader function allows users to scan any type of barcodes with the DApp, including UPC-A, UPC-E, EAN-13, EAN8, ISBN5, ISSN5, CODE39, CODE128, ITF14, CODE93, QR CODE, DATAMATRIX, PDF417, AZTEC barcode formats



Screenshots of DApp

Users will be able to select their projects and scan a barcode or complete non-barcode items when their inventory app build is finished. Users can then enter and/or update inventory essential data, submit an entry to the database, and view their entries on a Google Sheets export. Upon entry, a block hash is generated and transmitted to a distributed ledger. In Inventory Supply Chain participants recognize transactions based on consensus shared protocol.

5.3. Technology

GearChain is built on multiple blockchain networks with Layer 2 technology that can scan or non-scan regular items and unique or high-value ones. To reduce network costs, it can also be batched daily for onchain. The DApp can be incorporated with the blockchain to manage restocking levels. Let us now discuss some of the technologies used by GearChain.

Algorand

Algorand is a high-speed token that produces blocks every 4.5 seconds and can currently process up to 1,200 transactions per second. According to Algorand, its technologies are being further optimized and soon the blockchain would process 3,000 transactions per second (Algorand, 2021[2]). This makes it the ideal solution for scanning and catching the items being sold at checkout. Besides speed, Algorand also ensures cost efficiency and the average transaction cost of this Layer 2 blockchain is nearly zero.



GearChain makes use of two blockchains —

Algorand which can process

1,200

transactions per second and Klatyn for the NFTs.

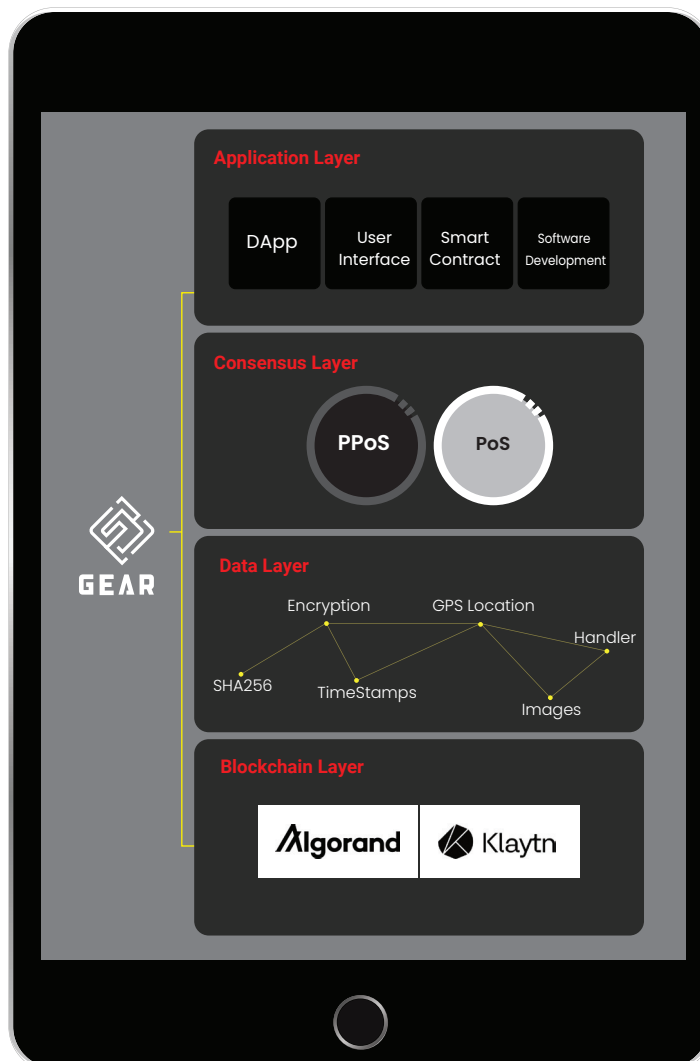


Klatyn

The Klaytn is an ERC-721 compatible token that conforms to Non-fungible Token standards. It's not just another cryptocurrency, but a proposed standard that defines how developers can create, manage, and exchange their tokens called cryptocurrencies. One of the functions of this proposed standard is designed for making it easier for developers to create non-fungible tokens (NFT). If you scan an item that has high value and needs photos to improve the density of the product, then you can incorporate NFT with the Klay token.

Application Layer	DApp User Interface Smart Contract Software Development
Consensus Layer	PPoS PoS
Data Layer	SHA256 Encryption TimeStamps Images GPS Location Handler
Blockchain Layer	Algorand Klaytn

GearChain Ecosystem Layer





06. Vision

To create an affordable blockchain solution dedicated to optimizing supply chains through a universal communication protocol that connects intermediaries.

Building a Universal Communication Protocol

Every product out there has an untold story — some were hard to produce while others required longer warehousing. Nevertheless, it cannot be denied that everything came from somewhere, and for a business to remain profitable, it is this 'somewhere' that determines the further course of action.

The current problem with global supply chains is that every intermediary is operating under their individual protocol — be it the producer, distributor, warehouse clerk, or anyone else. This lack of a standardized protocol leads to tremendous economic costs and time-consuming processes for everyone involved — producer/manufacturer, distributor, and even the final consumer.

GearChain's vision is to change the status quo and lay down a standardized universal supply chain protocol that is efficient and affordable. This feat is achieved by building a trustless protocol and a decentralized ecosystem by leveraging multiple blockchains to create a reliable inventory system in which all the intermediaries can participate. The blockchain is immutable, so one can be sure that the data shared is untampered since being recorded.

The GearChain decentralized application (DApp) is designed to create a collaborative ecosystem for businesses by ensuring transparency and traceability for everyone involved in the supply chain. Most

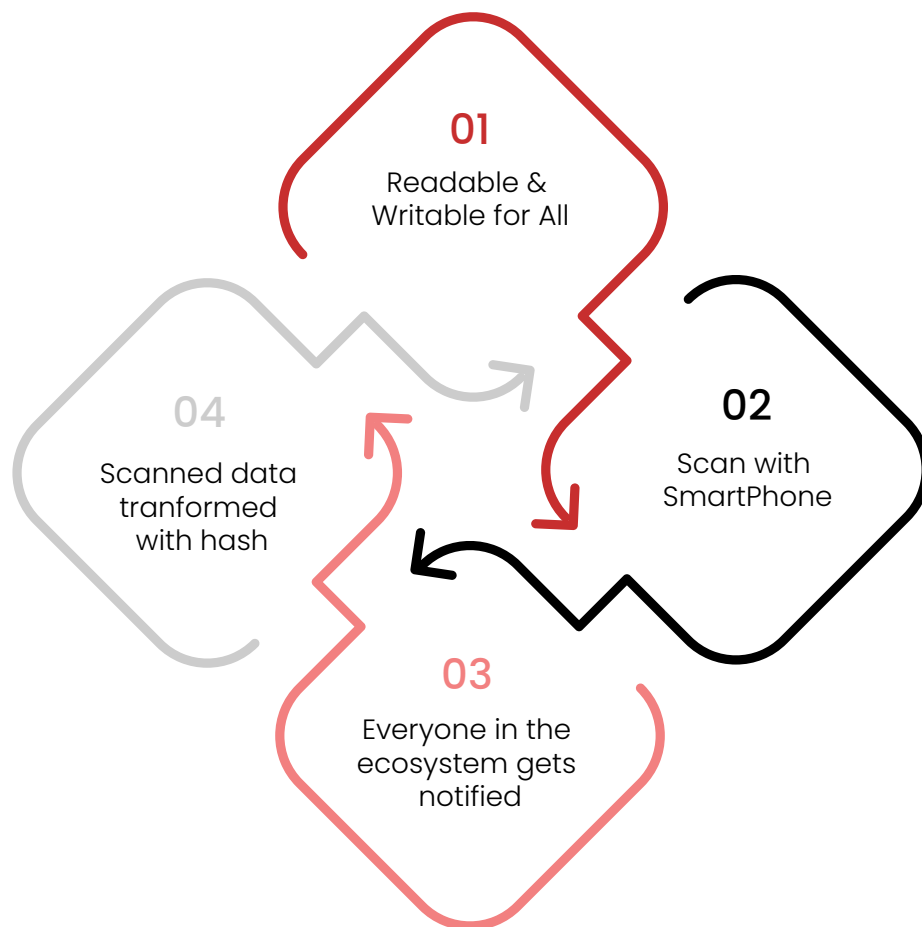


importantly, without any centralized authority controlling the records, which eliminates the chances of manipulation.

Affordable and Reliable Solution

GearChain turns smartphones into IoT devices that can scan barcodes and record data onto the blockchain. The scanned barcode is then transformed into a hash and is recorded on the blockchain after which everyone within the ecosystem is instantly notified; it's readable by all, writable by all, and tamper-proof for all.

The GearChain DApp is customizable for any use case and can be used by everyone. It launches a blockchain-worthy transaction with a layer 2 solution, giving the user the ability to choose which assets they want to track in their supply chain. When you launch your blockchain, all participants of this ecosystem know that there's been an asset change and so they prepare themselves accordingly.



DApp Function

GearChain allows its participants to create and use a better product with the help of tokens. The platform creates win-win solutions, which are powered by blockchain technology. As the ecosystem grows, it becomes more beneficial for everyone involved because it standardizes the process through a secure and well-defined mechanism.

This standardization would expedite the inventory management process and lower the transaction costs considerably. Also, it would create a reliable ecosystem in which all the stakeholders – manufacturers/ producers, suppliers, and distributors – share data through consensus among themselves while adjusting inventory levels or production based on real-world transaction data. Participants are incentivized to participate actively in discussions where they can earn

credit points which can be converted into tokens as well.

Identity

GearChain creates a profitable ecosystem for its stakeholders, besides overcoming key industry concerns like transparency, traceability, and data security. It is a user-friendly platform and building inventory systems with it is as simple as designing Google Forms.

It is affordable because of the low transaction fee, plus users can use their mobile phones as barcode readers and the data is stored straight onto the blockchain. This innovative solution leverages blockchain technology's immutability, traceability, transparency, and strong encryption to optimize supply chain operations.



07. How will GearChain be Successful?

GearChain is all set to be a disruptor in the inventory management landscape with an innovative business model fueled by the GearChain tokens. The project lays down the foundation for an ecosystem that overcomes the supply chain industry's preexisting challenges and creates a market for itself. With that said, let us now evaluate the project's potential.

7.1. Strengths

Innovative Solution

Every third project in the blockchain industry is an emulation of a pre-existing project – the reason for the high failure rate in this industry. Unlike those, the GearChain is an innovative solution that solves a real-world problem – inventory management inefficiencies. Furthermore, it is developed by those who have been in the inventory management space and understand its needs and demands.

Growing Ecosystem

The GearChain Project is built on the blockchain and is fueled by digital assets that are structured to grow in value. The ecosystem and its functionalities require the exchange of its native token and since that is limited in supply, its value is poised to grow.

Multiple Income Streams

GearChain creates multiple sources of revenue for stakeholders within the ecosystem. First off, the DApp would be purchased with fiat currency and then on,

the user would require scan credits, which can be purchased with the proportionate number of tokens. Also, users would be able to earn rewards redeemable as tokens, which offers an additional source of income and creates a more collaborative and engaging platform.

Strategically Planned Customer Segments

GearChain is a disruptor that can help individuals and businesses manage the verification process. Users sign up for GearChain's DApp or application, which enables them to customize an inventory management project. This application works by sending transactions through blockchain – allowing users to send them to different individuals such as warehouse employees, vendors, and distributors.

Small and medium businesses benefit from blockchain in that it is what carries out physical goods, and it requires transparency and accountability for items of high value like luxury items or time-sensitive products like food. When scanning with a Blockchain SHA256 every participant becomes aware of the status of an item, which changes accordingly.

Furthermore, compliance in supply chains for blockchain can be a great use case with GearChain. The regulation by FDA will introduce the blueprint for a "New Era of Smarter Food Safety" sometime this year which will require supply chains in food/agricultural products to be mandated with blockchain-based technology to reduce the risk of foodborne illness.



7.2. Weaknesses

Lack of Awareness about Blockchain

Web 3.0 has made headlines but there is a clear lack of awareness about this technology and its potential. As most businesses are accustomed to centralized solutions, it would take some time to create awareness about the benefits of GearChain, which is a blockchain-based solution.

Regulatory Complexities

The GearChain ecosystem requires the use of a crypto token, which brings about a plethora of opportunities, but it cannot be denied that legally it is a gray area in many countries. However, as governments are opening up to blockchain solutions, this barrier may not be a roadblock for the GearChain token, which is a utility token.

7.3. Opportunities

Let us now evaluate opportunities available in the present market and how GearChain can tap into its potential.



Pandemic turned the supply chain market into a \$18.6 billion dollar industry that is growing at a 10.7% CAGR.

Ready Market

Post pandemic, businesses have realized the significance of optimizing their supply chains and bringing warehouses closer to the next intermediary or end-user. This has turned the supply chain market into an \$18.6 billion dollar industry that is growing at a 10.7% CAGR (Allied Market Research, 2021[3]). As another pandemic is anticipated, there is immense potential for inventory management solutions like GearChain.

Crypto Frenzy

The world of cryptocurrencies has taken over and even banks and financial institutions have begun investing in digital assets, so it is the future. The GearChain is a cutting-edge inventory management solution powered by the GearChain tokens. As the ecosystem grows, this native token is bound to gain traction and increase in value.

Also, the interest in digital currencies and assets is likely to pump up their value. For instance, the NFT trade volumes exceeded \$25 billion US Dollars in the year 2021. Also, the cryptocurrency market witnessed tremendous growth of \$2.3 Trillion US Dollars but post market correction, it plummeted by \$700 billion dollars (CoinDesk, 2022[5]).



In 2021, the NFT Trade volumes exceeded

\$25 Billion
and Crypto Markets
hit \$2.3 Trillion.



Low Competition

The GearChain is a novel concept that converges inventory management with blockchain. The absence of competitors in the market provides a ready opportunity to capture a larger market share, but that would only be possible with the strong support of the investor community.

Absence of a Reliable Solution

The current supply chain solutions have a high failure rate, and this is quite evident from the 29% of ERP implementations that have failed to serve the intended purpose. The alarming point here is that the 29% failure rate solely refers to implementation-related failures and there are several others that go unreported to avoid tarnishing the organization's image.

GearChain is a fully customizable solution that does not require any technical expertise or experience to deploy. This serves the purpose for small and midsize businesses which constitute a vast majority of the commercial landscape. Currently, the average cost of ERP implementation for midsize businesses ranges between \$150,000 and \$750,000, but GearChain would cost only a fraction of that (ERP Focus, 2021^[7]).



29% of ERP implementations fail despite the high average implementation cost which for a midsize organization range between \$150,000 and \$750,000.

Collaborative Environment

The establishment of a universal communication protocol in the supply chain landscape lays the foundation for a collaborative environment in which all the intermediaries can coexist without the need for any specific group of intermediaries to monitor or keep a tab on the integrity of the supply chain records. As everything is recorded on the blockchain, all the participants can be assured that none of the records are tampered with. Moreover, the app builder is fully customizable allowing each intermediary to tune it according to their individual requirements.

7.4. Threats

Now that we are done with evaluating the strengths, weaknesses, and opportunities of the GearChain project, let us move forward and focus on the threats.

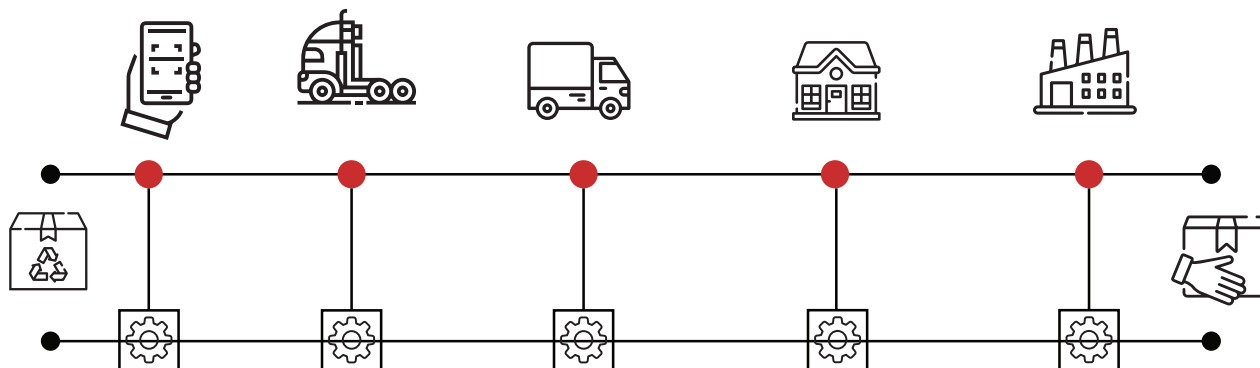
Competition

Potentially, big companies like Amazon and Walmart could hop into the blockchain bandwagon and grab a sizable market share. Though they are more likely to offer a horizontal platform due to regulation and antitrust, we hope they will instead partner up with us in our ecosystem.

While Google and Microsoft have more of a monopoly on the market right now (due to their size) it is possible that smaller firms such as GearChain can outshine them by being agile; starting small-scale so we can work towards transparency and speediness for individual users up through businesses within an ecosystem.



7.5. The Last Mile



- Bridging the last mile gap between offline and online worlds -

The GearChain is a platform that uses blockchain and smart contracts to provide transparency and tracking. It addresses core concerns in the inventory supply chain function such as inefficient processes, limited visibility, loss of inventory during manufacturing and shipping processes, etc... The system also tackles issues connected to market volatility by providing participants with detailed insights about all the products which are in circulation at any given time.

One of the most significant aspects of this platform is its ability to reduce verification costs because all you need for verified entry are things like barcodes or submitting your information automatically when restocking thresholds are reached. The DApp on their website also makes it easy for users.

GearChain has a zero-network fee and can also scale to other types of tokens like non-fungible tokens (NFTs) for rare items that verify their rarity. We believe this will make GearChain the most affordable, fast, transparent, and scalable crypto platform available today.

Solving the last mile problem is also an issue of incentives to bootstrap its network. If you need a trusted intermediary to play along so that the ecosystem and your digital platform develops, you need to make sure that it's in their best interest to contribute information reliably and with integrity. So, as you think about the last mile problem, think about also what are the frictions, what are the incentives that may stop a trusted intermediary from collaborating with you and contributing to your mission.



08. What is it that Gear Chain is offering?

GearChain is a powerful solution that solves the pressing problems in the supply chain industry by leveraging blockchain technology to create a decentralized universal communication protocol. It is architected to distribute the control to everyone involved in the ecosystem, so as to ensure that no specific person or group of persons has any control over it. This is done to garner the trust of all the intermediaries, which would increase the demand for the utility token and make the platform more profitable for investors and other stakeholders.

Although Web 3.0 has not received the widespread adoption it deserves, the year 2021 witnessed an NFT Trade volume of over \$23 billion and massive cryptocurrency growth in several emerging markets despite the regulatory restrictions (Forbes, 2021[10]). For example, Nigeria and Kenya witnessed around 880% growth in the crypto markets (CryptoSlate, 2021[6]). So, Web 3.0 and its iterations are no longer limited to developed countries and that highlights the horizons to which GearChain can expand. Since decentralization is the key concept here, let us delve deeper into it.



The year 2021 was a breakthrough for Web 3.0 and its increased adoption was evident from the \$23 Billion NFT Trade volume and

880% increase of crypto markets in developing nations.

GearChain's Decentralized Network

The GearChain protocol works on the principle of decentralization. This means there is no central authority or system which lies in the center of command and control. Most Supply Chain Management systems out there have a central authority or to be more specific, a central server and system that processes and stores every transaction and data.

Being centralized, these traditional systems are susceptible to cybercrimes and insider threats. Also, they are often not very scalable or cost-efficient. This is a serious concern, because in the US alone, 2500 insider security threats are reported on a daily basis. Globally, 34% of businesses are said to be affected by these threats every year. Surprisingly, these are only 30% of the threats because 70% go unreported (Techjury, 2022[15]).

GearChain offers a new way to process and store data transactions. Being decentralized there is no central storing and process point. As described earlier in the whitepaper, a blockchain consists of a series of nodes that combine to form the network. The data is distributed on the network and removed from the central data storage. Also, the transaction on the network is processed combined by the nodes and every participant on the network can access the data.

This brings to the fore three major points of discussion — Data Storage, Data Retrieval, and Incentive system which explains why participants would dedicate their resources to maintaining the ecosystem. To get a better understanding, let us further evaluate these three key concepts.

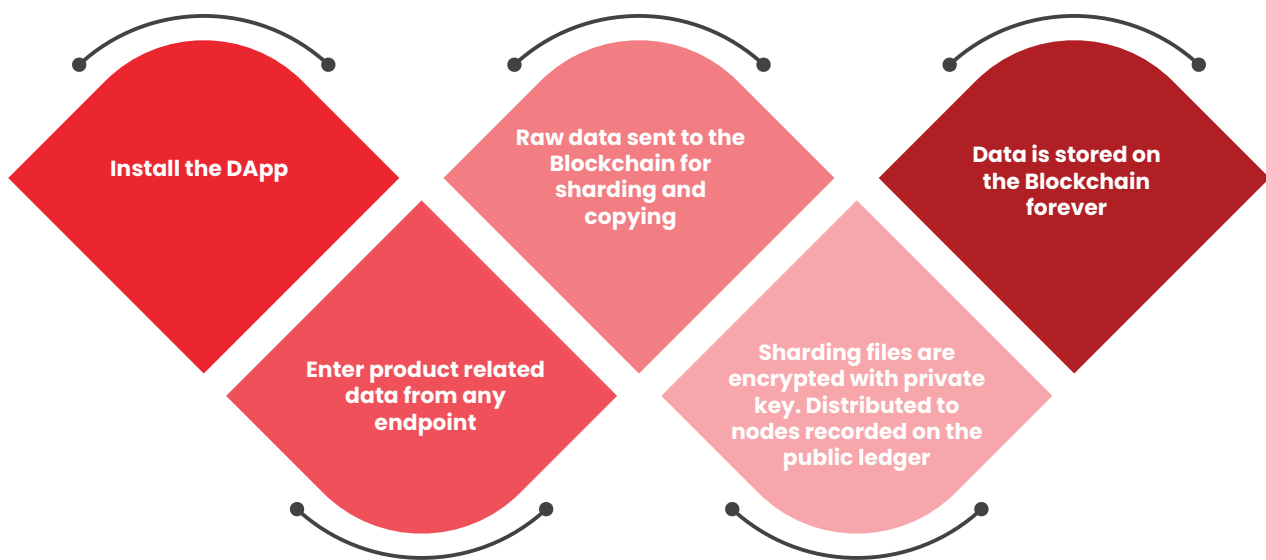


Data Storage on GearChain

Data storage can be expensive and complex because multiple locations and endpoints are involved, which makes onsite storage cumbersome, and although the cloud is 60% more secure than onsite solutions, it is undoubtedly expensive (Microsoft, 2020[11]).

Therefore, GearChain offers a straightforward solution through a systematic process flow. Let us assume that an employee at the warehouse wants to record data about a certain product on the GearChain blockchain. To do that, he has to do the following.

PROCESS FLOW FOR DATA STORAGE

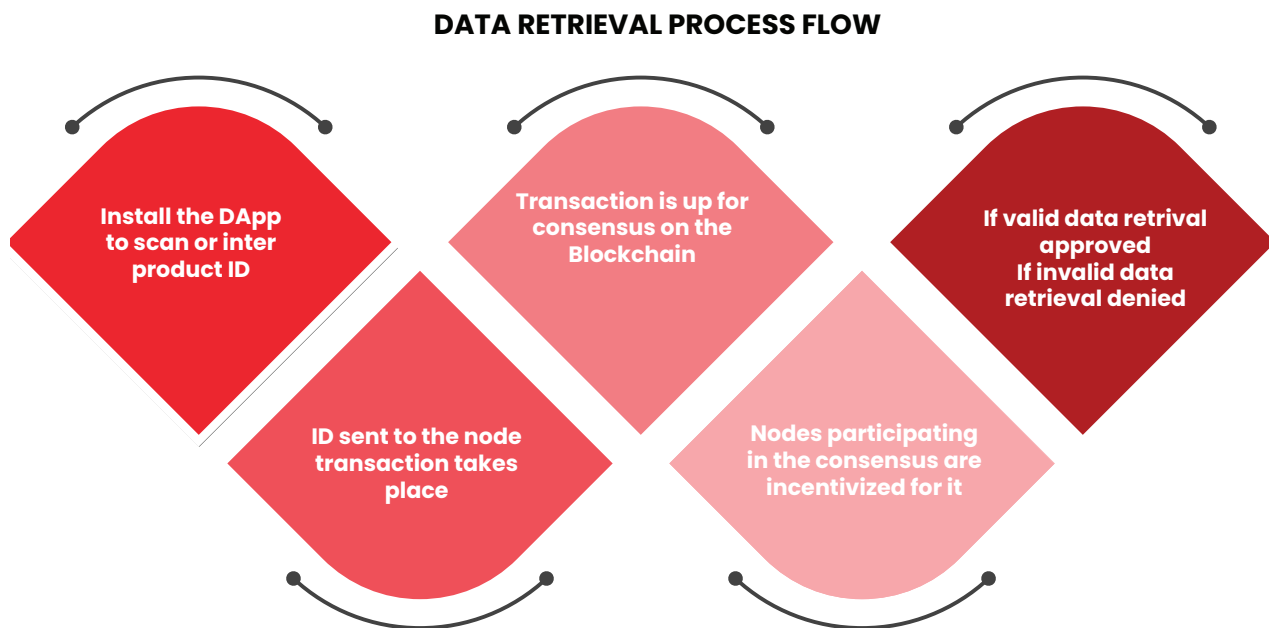


- First off, the user must install the DApp in order to be able to store the data on the blockchain. Through the DApp, the user can fill in the product-related data based on the fields created by the company.
- After the data is filled and submitted through the DApp, it is sent to the blockchain in raw form.
- The data files on the blockchain are first broken apart or sharded and then each shard is copied to prevent data loss just in case an error occurs during transmission.
- These files are encrypted with a private key, which prevents them from being viewed by other nodes in the network. The replicated shards are distributed among decentralized nodes all over the world.
- The interactions are recorded in the blockchain ledger, allowing the system to confirm and synchronize the transactions across the nodes in the blockchain.
- Blockchain storage is designed to save these interactions forever and the data can never be changed.



Retrieving Data

Let us assume that the intermediaries have begun using the GearChain DApp for data storage and now a customer wants to confirm the status of or seek information about a certain item. That requires the following process flow.



- The GearChain DApp is the medium through which customers would be able to scan the ID or to enter it manually into the DApp to retrieve data, so they would also have to install the DApp.
- The ID is then sent to the blockchain node with the ID of the Node as well. This all works as a transaction.
- To confirm its validity, the transaction is listed on the blockchain and there needs to be consensus of all the nodes to validate it. During this process, the majority of the “nodes” (or computers in the network) must agree that the transaction is valid.
- The people who own the computers in the network are incentivized to verify transactions through rewards.
- Once the transaction is verified, the customer can access the data stored on the multiple nodes through the ID provided.
- If the transaction is deemed invalid, the requested data is not shared with the customer. This bolsters the ecosystem’s security.

With the GearChain protocol, we can track the status of the product in real-time. We can retrieve the exact location of our package. GearChain will allow supply chain professionals and courier companies to update a blockchain ledger in real-time, which can help customers to track their products by themselves.



Motivation and Incentive System

Users pay a DApp provider on the platform to process their inventory transaction data. There are two types of blockchain-based data transactions from the user.

First, validate a change status with essential inventory information by scanning an item with blockchain. Second, predefined transactions are triggered when a certain level of restock value is reached on certain specific items.

Users are incentivized when a large number of tokens for blockchain transactions. Users can also be rewarded for the transaction volume, as well as if users allow other participants in the consensus transaction (supplier, shipper, distributor) and it's verified that their integrity and reputation level is high.



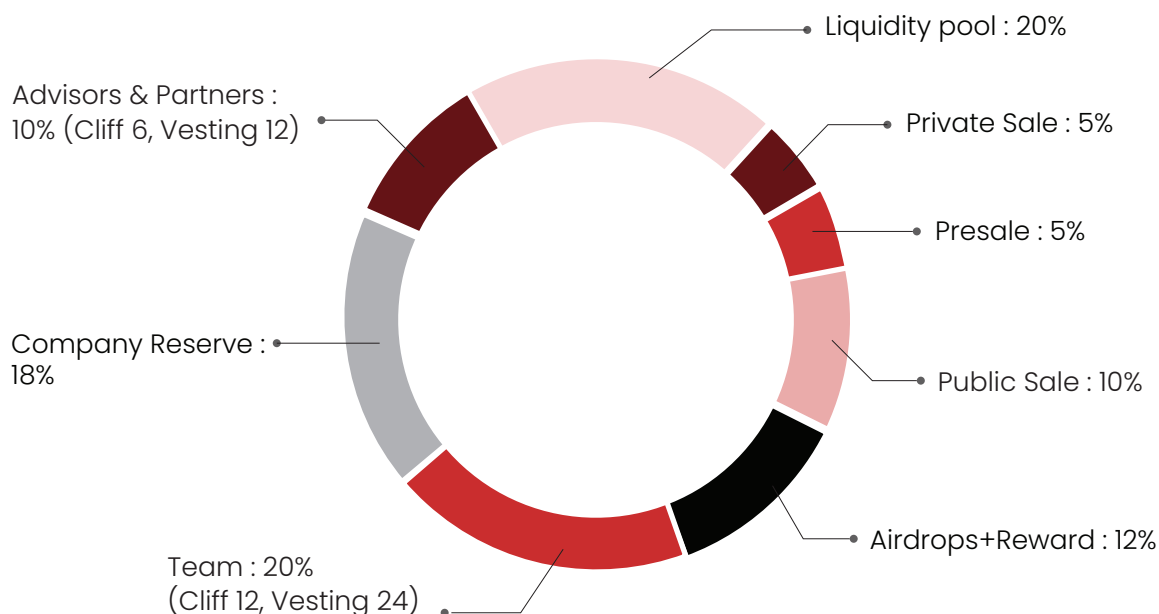
09. Digital Ecosystem and Token Distribution

The GearChain Token (GEGA) is a reliable and scalable crypto token built on the blockchain, which is a trustless and permissionless technology. Once a user submits an entry, it will then be shared with the GEGA nodes within seconds. We intend to deliver the initial offering with the current funds that we have, but to bring the vision to life in its entirety, we would require additional funding from institutional investors and other large investors.

The Token Generation Event or "TGE" will occur in three phases —Private Sale, Presales and Public Sale. We will be selling 2,000,000,000 GEGA tokens (out of a total of 10,000,000,000).

The Private Sale offers a discount and would be the first rollout. After the closure of the Private sale, the next phase which is Presale would commence. One months after the date of closure of Presale, a Public Sale would commence. All tokens will be distributed 2 weeks after the conclusion of the sale.

Token Distribution

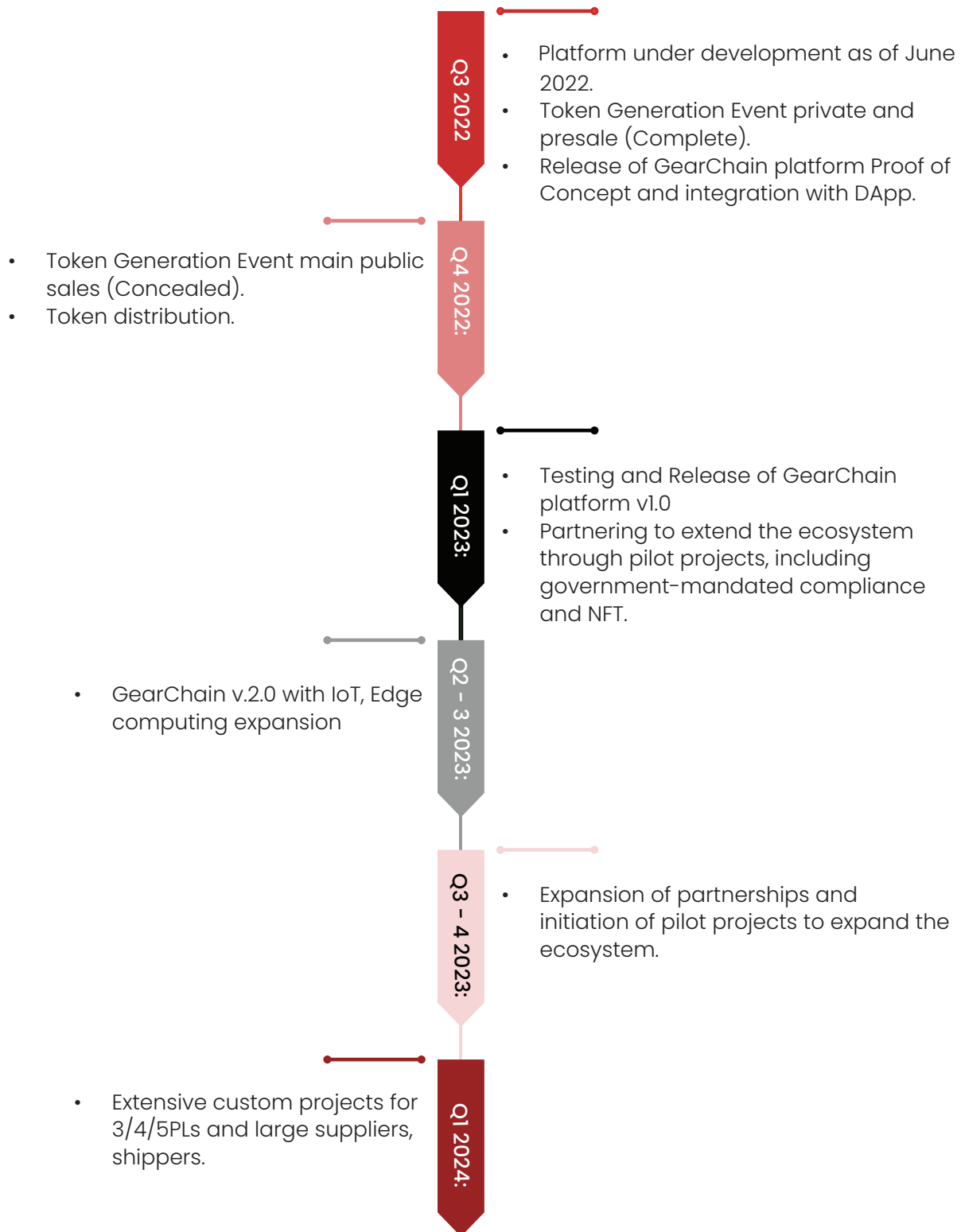


Cliff: It means that the tokens are locked away for X months before they are distributed linearly or immediately
Vesting: It means that the tokens will be distributed linearly over X months.

We will use the funds to build an ecosystem with a stable token and DApp. Also, we would utilize it to promote the ecosystem by encouraging developers, users, industry experts, etc., to join this initiative.



10. Roadmap





References

- [1] 360 Cloud Solutions. (2019). The Top 6 ERP Implementation Failures (and What They Cost). From 360 Cloud Solutions: <https://blog.360cloudsolutions.com/resources/top-six-erp-implementation-failures>
- [2] Algorand. (2021, September 07). How Algorand is Building a Scalable Blockchain Ecosystem. From Algorand: <https://www.algorand.com/resources/blog/algorand-building-scalable-sustainable-blockchain-ecosystem>
- [3] Allied Market Research. (2021, October). Supply Chain Management Market by Component (Solution and Services), Solution Type (Transportation Management System, Warehouse Management System, Supply Chain Planning, Sourcing & Procurement Software, and Manufacturing Execution System), Deployment Mode. From Allied Market Research: <https://www.alliedmarketresearch.com/supply-chain-management-software-market>
- [4] CIO. (2020, March 20). 16 famous ERP disasters, dustups and disappointments. From CIO: <https://www.cio.com/article/278677/enterprise-resource-planning-10-famous-erp-disasters-dustups-and-disappointments.html>
- [5] CoinDesk. (2022, January 25). Crypto Sell-Off Wipes \$700B From Industry Market Cap So Far in 2022. From CoinDesk: <https://www.coindesk.com/markets/2022/01/24/crypto-sell-off-wipes-700b-from-industry-market-cap-so-far-in-2022/>
- [6] CryptoSlate. (2021, August 20). Emerging markets like Nigeria, Kenya led 880% global crypto growth in 2021. From CryptoSlate: <https://cryptoslate.com/emerging-markets-like-nigeria-kenya-led-880-global-crypto-growth-in-2021/>
- [7] ERP Focus. (2021, November 9). ERP Focus. From How much does ERP cost? (Free ERP cost and budget guide): <https://www.erpfocus.com/erp-cost-and-budget-guide.html#:~:text=A%202020%20ERP%20report%20showed,for%20a%20mid%20sized%20business>
- [8] EY. (2021, February 18). How COVID-19 impacted supply chains and what comes next. From EY: https://www.ey.com/en_gl/supply-chain/how-covid-19-impacted-supply-chains-and-what-comes-next
- [9] Forbes. (2014, May 22). How Walmart Could Solve Its Inventory Problem And Improve Earnings. From Forbes: <https://www.forbes.com/sites/paularosenblum/2014/05/22/walmart-could-solve-its-inventory-problem-and-improve-earnings/?sh=5e500d015db1>
- [10] Forbes. (2021, December 23). NFT Market Generated Over \$23 Billion In Trading Volume In 2021. From Forbes: <https://www.forbes.com/sites/ninabambysheva/2021/12/23/nfts-generated-over-23-billion-in-trading-volume-in-2021/?sh=4357ca645f0a>
- [11] Microsoft. (2020, September 26). Cloud storage vs. on-premises servers: 9 things to keep in mind. From Microsoft: <https://www.microsoft.com/en-in/microsoft-365/business-insights-ideas/resources/cloud-storage-vs-on-premises-servers>
- [12] Pew Research Center. (2021, April 07). Mobile Fact Sheet. From Pew Research Center: <https://www.pewresearch.org/internet/fact-sheet/mobile/>
- [13] Reuters. (2014, May 21). Exclusive: Target Canada's supply chain gridlock: how Barbie SUVs snarled traffic. From Reuters: <https://www.reuters.com/article/us-target-canada-exclusive-idUSBREA4K03X20140521>
- [14] Supply Chain Dive. (2020, December 10). Vendor ransomware attack disrupts DSW's inventory management. From Supply Chain Dive: <https://www.supplychaindive.com/news/DSW-Designer-Brands-ransomware-attack-cybersecurity-inventory/591970/>
- [15] Techjury. (2022, April 29). 22 Insider Threat Statistics to Look Out For in 2022. From Techjury: <https://techjury.net/blog/insider-threat-statistics/#gref>
- [16] Zippia. (2022, April 05). 17 STUNNING SUPPLY CHAIN STATISTICS [2022]: FACTS, FIGURES, AND TRENDS. From Zippia: <https://www.zippia.com/advice/supply-chain-statistics/>