Table of Contents

Notices and disclaimers

Please read the following notice carefully before proceeding to read this Whitepaper document issued by VANIG, Ltd. (hereinafter referred to as "Distributor").

This notice applies to all persons who read this document.

Please note this notice is subject to alteration or update. The Whitepaper does not constitute any relations between you (hereinafter – "you" or "Holder") and the Distributor. The acquisition of the VANIG tokens is available only after accepting the Terms of token sale (hereinafter referred to as "T&C").

The acquisition of VANIG cryptographic tokens does not represent an exchange of cryptocurrencies for any form of ordinary shares of the Distributor, and a Holder of VANIG cryptographic tokens is not entitled to any guaranteed form of dividend. Holders of VANIG tokens are only entitled to certain rights within the T&C. VANIG tokens do not constitute securities in any jurisdiction.

This Whitepaper does not constitute a prospectus or offer document of any sort, and does not constitute an offer of securities or a solicitation for investments in securities in any jurisdiction. This Whitepaper is for information purposes only. The contents of this Whitepaper are not a financial promotion.

Therefore, none of the contents of this Whitepaper serves as an invitation or inducement to engage in any sort of investment activity.

Prospective acquirers of VANIG tokens should carefully consider and evaluate all risks and uncertainties relating to cryptocurrencies, VANIG, Ltd., its respective businesses and operations, the VANIG tokens and the VANIG Initial Coin Offering.

Familiarize yourself with all the information set out in this Whitepaper, Risk Notice and the T&C prior to any purchase of VANIG tokens. Ensure that you are aware of all would-be risks prior to obtaining VANIG.

The Risk Disclaimer details all potential risks that you should consider. We recommend that you seek out independent financial advice before engaging in any sort of business endeavor.

1. EXECUTIVE SUMMARY

The world is changing, and fast. In less than 20 years, the number of people living in extreme poverty is expected to reduce from 30% to 15%. In the next few years, over 75% of the world's population will own a mobile phone and have internet access. Middle classes around the world are becoming the dominant class and their spending power is projected to grow 3x before 2030. Billions of people live better and have the means to participate in the digital economy . But, despite the evolutionary changes at the bottom of the pyramid, our top down systems and processes seem to be stuck with inflexible technology that struggles to meet the increasing demand of the newly emerged classes. We have a solution for that - enter VANIG.

"Our mission is to push the boundaries in innovation through the integration of supply-chain and E-commerce by leveraging the latest in Blockchain technology."

VANIG is a timely and ambitious project: we are sitting at the nexus of two of the most impactful forces in today's businesses: e-commerce and supply chains. We are deploying blockchain technology in novel ways to sort out some of the typical issues that hamper businesses, frustrate consumers and impede growth and economic opportunities for everyone. Our proposition is drawn from years of experience and exposure to large scale e-commerce systems, running and maintaining global supply chains and niche expertise with blockchain technology.

We aim to build the world's first integrated e-commerce supply chain ecosystem. Blockchain technology is at the core of what we do. In particular, the effective use of smart contracts and configurable blockchains will help us alleviate five core challenges faced by any large scale, global supply chain:

1. Complete visibility and transparency of the entire chain.
2. Eliminating intermediaries.

3. Less transaction fees.

4. Effective Track and Trace mechanisms.

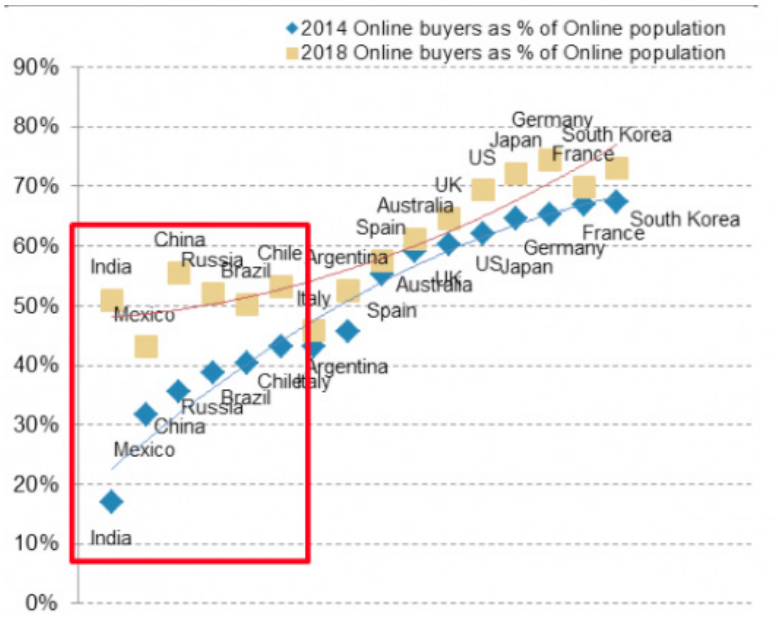
5. Efficient recalls.

We are also building a working ecosystem around VANIG. We aim to on-board businesses and consumers seamlessly. The utility of the VANIG platform is anchored on the provision of a unique e-commerce system where different users, such as vendors and consumers, meet and transact at a global scale with ease, security and transparency. Consumers and businesses alike can benefit from economies of scale with the VANIG ecosystem at times when economic activity amongst us is at all-time high.

We couldn't be more excited to launch Vanig now!

2. Introduction

E-commerce is a global activity amounting to trillions of dollars' worth of trades. Middle class spending will triple by 2030; the sharing economy could top $300 billion by 2025; more than 1.4 billion people purchased a product or service online in 2017; the gross total value of B2B e-commerce topped $20 trillion the same year. We are addressing a global market with potential outreach to emerging and established economies.



E-commerce is quickly taking over in emerging markets and it's predicted that this year the majority of large emerging markets will have more online buyers than offline. The message is clear: e-commerce becomes the new channel in both developed and emerging markets.

Despite the remarkable growth, the global E-commerce industry is still typified by two large and interrelated problems - supply chain inefficiencies and e-commerce shortcomings. We aim to solve these problems with VANIG.

2.1 Supply chains inefficiencies

1. **Lack of transparent and fully visible supply chains**

   At any point in time during a typical supply chain process, it would be ideal if all participants, from manufacturers to consumers can inspect and get informed about the status of their product or service. This is challenging in today's supply chain as provenance and origin information is often hidden in data silos, most times in incompatible or inappropriate formats (non-digital forms).

2. **Intermediation**

   This is one of the unwanted necessities of supply chains: on one hand, we have to find practical ways to cope with complex supply chains with multiple participants each, and with a different stake in the product lifecycle; and on the other hand, we have to have a way to reconcile disputes, make the flow of products and services as trustworthy as possible and reduce counterparty risk. Intermediaries, or in simple terms middleman, play that role. They are the custodians of trust on the supply chain ensuring that everybody plays by the rules and facilitate the flow. They can play different roles, from custody banks and clearance agents, to brokers and dealers. But, each of them charges a fee to offer their services. And for a long and complex supply chain these fees add up, to the point that the end consumer purchases a product that is marked up by a huge margin due to the intermediaries' fees.

3. **Static or non-existent inventory management**

   Real-time inventory management is more difficult to achieve. Especially for large, global supply chains, it's challenging and expensive. It needs a whole re-design of existing IT systems and expensive retrofit solutions, which are not available or affordable by all participants in the chain. For example, a large manufacturer might have the means to implement a real-time inventory management system but in a complex supply chain, just one node using legacy technology is enough to break the flow of information and negate the benefits of implementation

4. **Inefficient tracking of product or services**

   This is an issue that affects producers, wholesalers, and retailers. Especially during a product recall, the track and trace mechanism needs to be fast, reliable and transparent. And cost is a key issue affecting everyone on the chain: a manufacturer is keen to reduce recall cost while maintaining market status and reputation intact; a wholesaler is seeking to reduce unsold products and reimburse recall cost to their networks to maintain their position; a retailer wants to address recalls fast and effective, keeping their customers satisfied; and finally, the end consumer may want their defective product replaced at no cost and as fast as possible.

2.2. E-commerce shortcomings:

Supply chain inefficiencies have a direct impact on e-commerce platforms. Imagine if the sleek and intuitive shopping experience on Amazon wasn't matched by a timely and effective shipping process. Unfortunately, not every manufacturer and vendor in the world has the resources and expertise of Amazon. Building a truly global e-Commerce system is expensive and exclusive. Most manufacturers can't build or join one. Therefore, the following problems are inherent in the global E-commerce industry:

Lack of full visibility for an end-to-end customer journey

Online e-commerce is fiercely competitive. Customers are used to nothing less than 100% satisfaction guarantees with their purchases and your competitor is always one click away – in such an environment is crucial to maintain and reward a customer using a multitude of information gleaned not only from their online shopping experience but critically on what happens after someone placed an order. Most e-Commerce platforms lack that visibility to a customers' end-to-end journey. Often, delays in shipping or anything else concerns customers post purchase is not captured in detail or integrated with other customer experience data. This is where integration with an efficient supply chain and an effective shipping experience can win or lose customers.

Replenish inventory challenges

Typically, most e-commerce stores don't stockpile all products displayed. It's an ever-growing challenge to make the right decisions at the right time to meet peak demand during surge times (e.g., festive season) or discount overstock at downtimes to maintain a healthy balance sheet. On the consumer side, this is challenging too, as they don't know how much is left in the shelves, or when will the replenishments arrive. And this often leads to missed cross selling opportunities or buying out of fear of missing out.

Operating in a global ecosystem

An e-commerce's online store might be universally accessible but the procurement and shipping channels need to accommodate different import and export tariffs, custom regulatory scrutiny, trade agreements, etc. And at the same time maintain a competitive price structure to stay relevant to their demanding clientele.

Authenticity and reviews

Social e-Commerce is important and on the rise. People buy a product based on what their closed social network recommends. But how do we know the origins of a product and whether it was manufactured in ethical ways, if we paid the right price, whether it has been damaged in any way during shipping or if it is authentic indeed? We would also like to have a way to verify the authenticity of reviews or at least an authoritative verification that they actually bought and used that product. This is important in the era of fake news and viral marketing.

2.3 Market opportunity and validation data

Supply chains and their digital transformation provide plenty of opportunities for cost savings and new markets: for example, according to studies, product tracking and trace could unlock a potential value of about $52 billion annually [3] for consumer electronics and household appliances alone.

We believe that the problems outlined above are addressable. Our solution is founded on blockchain technology by virtue of its inherent characteristics which we highlight below:

Supply chain inefficiency	Blockchain characteristics
Tracking *Data hidden in vertical silos, no visibility to all parties*	Distributed nature of the ledger and chained blocks topology offers automatic track and trace at any point
Static inventory management *Most information relayed after the event, not in real time*	Dynamic inventory management thanks to smart contracts self-executing orders and connecting to IoT sensors (e.g., oracles) for real time information relays
Transparent supply chains *Origins and provenance information is sparse*	Public blockchain architecture with peer-to-peer topology and immutable nature, allows for transparency of transactions, and historic traces for all nodes at any time.
e2e customer jaurney *Little information available post purchase event*	Fully distributed ledger with real-time information on product provenance providing peace-of-mind and visibility over purchased items
Replenish inventory *Stockpiling resulting on overstock or understock*	Effective track and trace providing valuable pattern data for planning and analytics to aid decision making for just-in-time replenishment of inventory.
Operating globally *Efficiency and cost-effectiveness problems*	Configurable ledger with chain participants automatically transacting at the point of value exchange – customs, tariffs – providing the e-commerce owners with efficient management of operating capital.

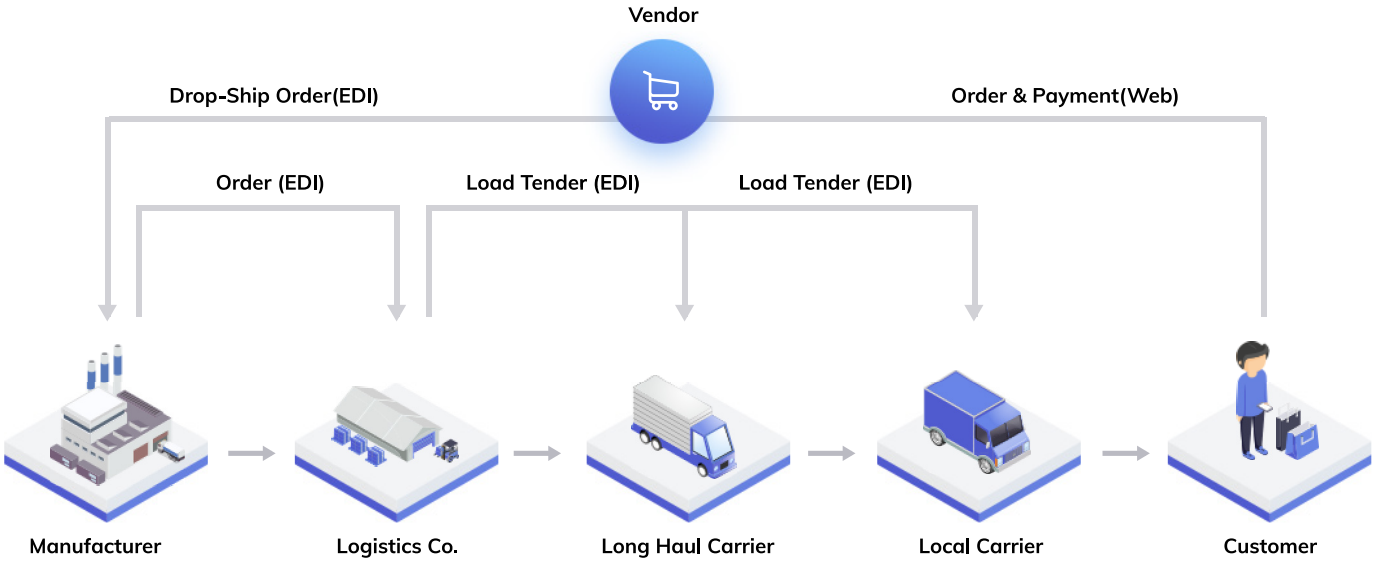
3. The VANIG Project

The VANIG project uses blockchain technology to offer the world's first integrated E-commerce platform with supply chain. The integration of e-commerce and supply chain that makes VANIG unique. At its core, we have proven blockchain technology that has been developed by the world's largest blockchain technology consortium, Hyperlegder . We target the inefficiencies of modern e-commerce and supply chains and will utilize smart contracts and the reputable ledger of a blockchain

To understand the benefits Blockchain brings to the Supply chain, let us look at a very common Supply Chain scenario that e-commerce retailers handle day to day, managing and controlling a complex chain of third-party vendors, logistics carrier providers and suppliers.

A customer places an order, the order is passed on by the manufacturer to the retailers who dropships the goods through a third-party logistics provider. The product is then transferred by a long-haul carrier who passes it to a local carrier for final delivery.

This scenario is illustrated below, the green arrow depicts the flow of information (custom and successive purchase orders through the supply chain) and the blue arrow shows the product flow.

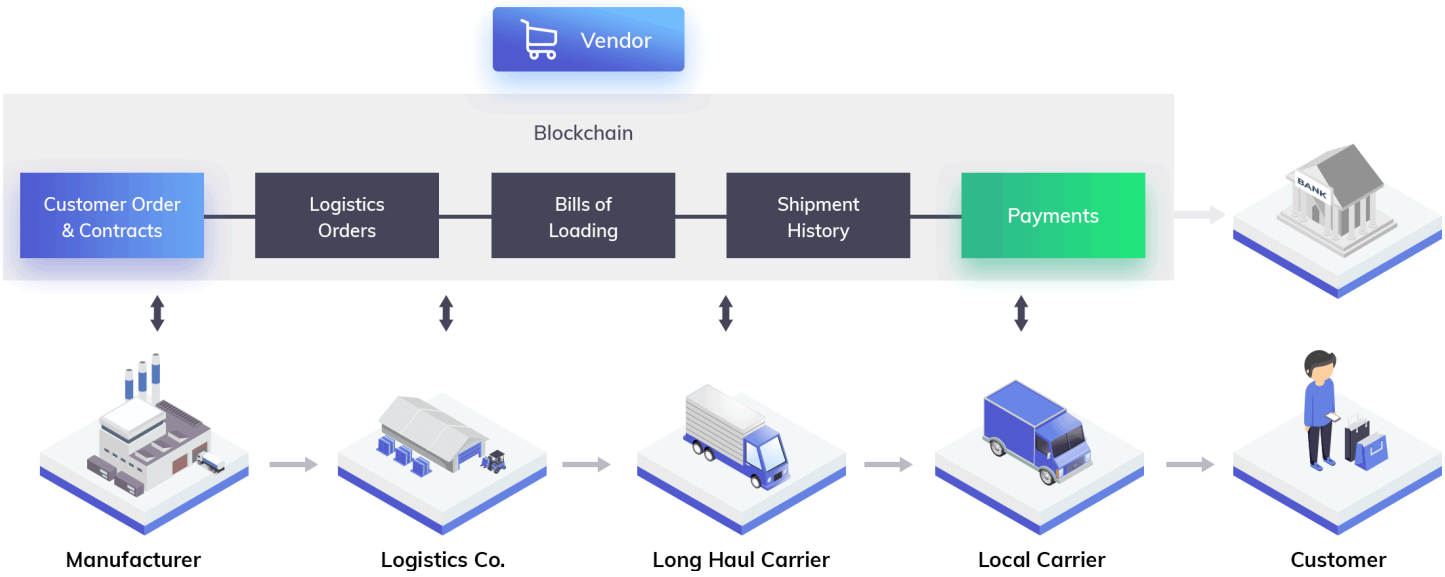


LONG AND UNNECESSARY PROCESS OF GOODS DELIVERY

This long chain of delivering goods also include several parties, their commissions and negotiated shipping rates. This starts from ordering the goods, the tendering of the load, shipment tracking, delivery confirmation, and settlement of the extra charges in an heterogeneous environment.

Today, therefore, to capture the ordering details, shipment confirmation, likely events of return, and settle the charges with minimal opportunities for dispute, a blockchain of the entire transaction, including the details, commission, and negotiated fees can be used. The public-private nature of blockchain technology means that each participavting merchant can make data visible to the other members. All the merchants have visibility into the transaction and no custom interface is required between the participants.

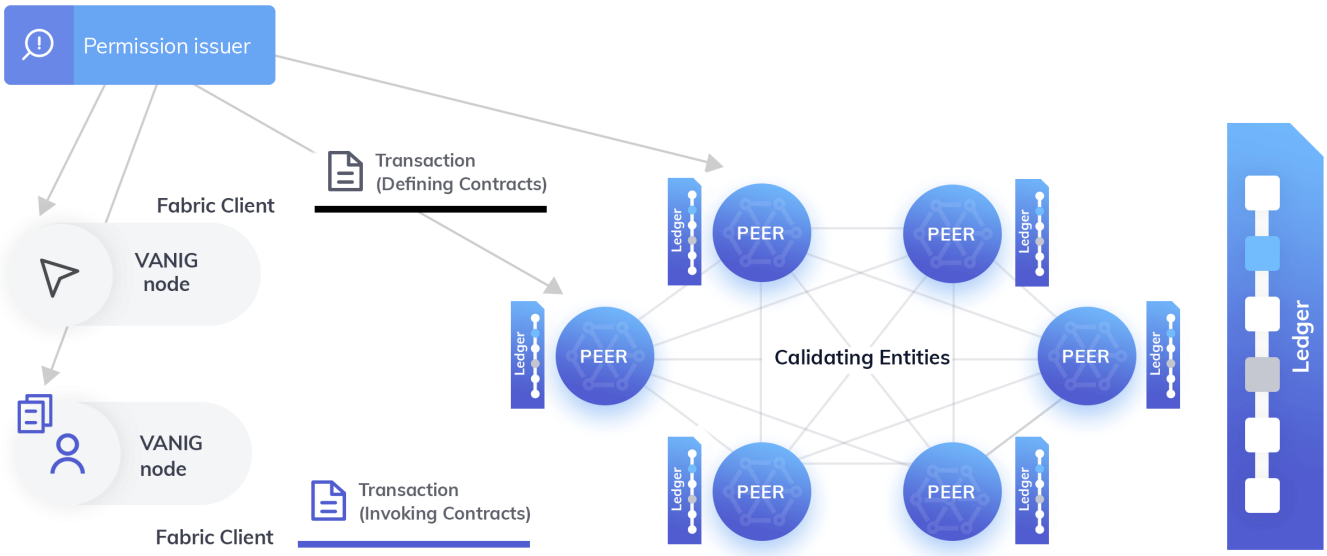
The image below shows such a process. The blockchain is initiated by the online retailer with a block for the order, the smart contracts is electronically signed to negotiate the fees, rates or commissions by the parties to signify the approval. The parties involved then add transactions and blocks to the blockchain since the bills of landing, load tender, and other new documents are developed to keep the record of the shipment status.



The system of record for the whole transaction is the blockchain. It doesn't only drive the whole process but also record the transaction. The purple block represents how the financial settlement is initiated in the blockchain and a payment processor or bank carries out the transactions. Over all, all the participants will be able to see the records of payments and reconcile against the smart contracts in the original block.

While utilizing blockchain technology is a step in the right direction, the choice of blockchain technology itself is crucial here. We can chose to use one of the popular public blockchain platform, such as Ethereum or Bitcoin, and build on top of that. However, having considered carefully the desired functionality and sensitivities with supply chain participants, we chose to work with the ***Hyperledger Fabric***. This is a well-supported blockchain ecosystem with over 140 companies participating and contributing to the development and maintenance of the Fabric project. It includes interesting technological features which are suited to our needs.

For example, with Hyperledger Fabric we can take advantage of channels (or side-chains in other terms) that live off the main chain and provide certain degrees of privacy to its admitted members. Hyperledger Fabric also gives us the option to configure membership in the blockchain, which is an important characteristic with supply chains (not everyone should have access to all the supply chain information). Finally, we can choose the consensus protocol of choice, and not having to compromise speed and capacity, as with proof-of-work blockchains.



- Permissioned system; strong identity management
- Distinct roles of users, and validators
- Users deploy new pieces of code (chaincodes) and invoke them through deploy & invoke transactions
- Validators evaluate the effect of a transaction and reach consensus over the new version of the ledger
- Ledger = total order of transaction + hash(global state)
- Pluggable consensus protocol, currently PBFT & Sieve

In Hyperledger Fabric, we can work with proof-of-elapsed-time (PoET) consensus protocol which provides scalability and byzantine fault tolerance -assuring that we will have a consensus in reasonable time – or we can work with PBFT which provides fault tolerance and finality of the number of transactions that can happen in a matter of seconds. Other choices are Kafka which provides crash fault tolerance and finality in seconds, which is an interesting option when monitoring goods in low signal areas (e.g., a cargo ship in the middle of the ocean) or at times of high probability of network outage (e.g., during peak shopping season).

3.1 Key advantages of the Vanig ecosystem

- **Competitive pricing:** as a blockchain-powered ecosystem, VANIG doesn't have the notion of an intermediary, hence every key stakeholder in the supply chain - from the manufacturer to the end consumer – will have a direct, peer-to-peer communication. That allows producers to cut down costs on brokering fees, and the end consumer gets a better deal. Price is driven by market demand and production cost rather than mark up to go above a break-even point;

- **Shorter recall process:** when a recall needs to be initiated the whole experience is sleeker, faster and cheaper. Information about the recalled product is quickly propagated through the nodes in the blockchain and registers in the immutable ledger for track and trace. This alleviates the situation with information asymmetry which typically occurs when the recall process information is not distributed equally or on time to all stakeholders. This creates a backlog of cases to be investigated and acted upon, higher cost of storage, re-shipping and clearance, and ultimately a possible loss of business with dissatisfied customers. A blockchain solution makes it possible to eliminate some of these unnecessary steps during a recall.

- **Security:** it goes without saying, that since we chose to use blockchain technology for VANIG, we get the benefits of cryptographic hashes and secure transactions amongst participants in the supply chain. It is worth noting that our smart contracts, also live on the blockchain, have their own encryption too. And finally, our choice of consensus mechanism enables a permissioned blockchain, where only vetted participants can participate, not everyone as in public blockchain transactions. The combination of these features makes Vanig a secure platform.

- **Real-time tracking:** manufacturers, wholesalers, retails and consumers can track the product in real time. We are implementing an open ecosystem where external data feeds from sensors, data oracles, and other popular trackers will be easy to connect to via VANIG;s APIs. That way, the journey of a product will become open and visible in real time giving greater assurances about the security of a transaction.

- **Transparency:** Consumers are able to track products with ease and information about defects are stored permanently in the blockchain, resulting in fraud detection and tamper proof transactions. For example, if a defect or fraudulent product enters the marketplace, and is detected, all information pertinent to that product will be registered in the VANIG platform and accessible for all interested parties. That information transparency gives greater confidence to consumers and wholesalers that they can trade in trust;

- **Demand / Supply equilibrium:** as consumers have full visibility on product availability and procurement; it provides a safety mechanism for the marketplace to avoid artificial price adjustments - no more overstock or empty shelves. Pushing out uncleared stock cannot be justified in today's inventory systems as these are open and visible to consumers. The choice of purchase is not influenced by fear of missing out or panic buying during peak times;

- **Product listings:** we plan to operate one-click product listings from popular e-commerce stores such as Amazon, Walmart, and platforms such as WooCommerce and Shopify and BigCommerce. This is an important step for a quick onboarding process of products from other marketplaces and gives consumers access to millions of products; this function will enable a CSV File bulk upload, a robust API connection and automatic retrieval and upload of products;

- **Multi-party contracts:** VANIG is an ecosystem powered by blockchain smart contracts so processes will be faster as a result of contracts between multiple parties executed on the blockchain with smart contracts; for example, the smart contract between a consumer and the VANIG marketplace (via website, mobile) is different from the smart contract between a manufacturer and the wholesaler's depot. But they all serve one purpose: to automate transactions and record terms on immutable ledgers.

- **Provenance:** VANIG will enable full origin and trace information providing unique-in-class provenance information. So key interested parties can perform audit trails at a click of a button to trace a product all the way back to its origins. As our provenance trace will make use of Internet Of Things (IoT) sensors so they can inspect any modifications or changes that could have taken place during its journey to a consumer.
- **Real time transaction:** The VANIG ecosystem users will make use of the native VANIG cryptocurrency, VNG tokens to make real time money transactions and money transfers. This is uniquely different from current e-commerce platforms where the transactions aren't real-time for all stakeholders; for example, a consumer's credit card might be charged at the point of sale but the retailer, manufacturer and distributor could clear these funds days later. That will not be the case with Vanig.

3.2 VANIG E-commerce features comparison

In the table below, we list VANIG's e-commerce features:

Type	Amazon	Walmart	Ebay	Vanig Ceyptocurrency	Vanig Fiat Currency
Ticker Symbol	$0 to $40	$0	Per listing - $0.05 to $0.20	**$0**	**$0**
Seller Fee	6% to 20%	6% to 20%	10%	**8%**	**8%**
Affiliate Referral Commission	5%	4%	5%	**5%**	**5%**
Average Seller Fee(Includes Referral Fee)	15%	15%	9%	**7%**	**7%**
Payment Cycle	15 to 20 days	15 to 20 days	15 to 20 days (Excludes Paypal)	**Real Time**	**2 to 4 days**
Shipment	Seller or Amazon fulfilment	Seller	Seller	**Seller**	**Seller**
Seller Criteria	Anyone	Established Seller	Anyone	**Verified Seller(Anyone)**	**Verified Seller(Anyone)**
Competitive Price and Product Listing Incentive	1.5% to 3.5%(Covered in	1.5% to 3.5% (Covered in	1.5% to 6% (NOT Covered in	**None**	**1.5% to 3.5% (NOT Covered in**
Total Average Fee(Includes Shipping)	17% to 20%	17% to 20%	15% to 20%	**8% to 11%**	**10.5% to 12.5%**
Competitive Price and Product Listing Incentive	None	None	None	**VNG Tokens**	**VNG Tokens**
Real Time Shipment Tracking	No	No	No	**Yes (above $50 Purchase)**	**Yes (above $50 Purchase)**
Blockchain Protection	No	No	No	**Yes**	**Yes**
Track and Trace(Recalls)	No	No	No	**Yes**	**Yes**
Product Listing Seller Incentive	No	No	No	**Yes**	**Yes**
Buyer Review Incentives	No	No	No	**Yes**	**Yes**

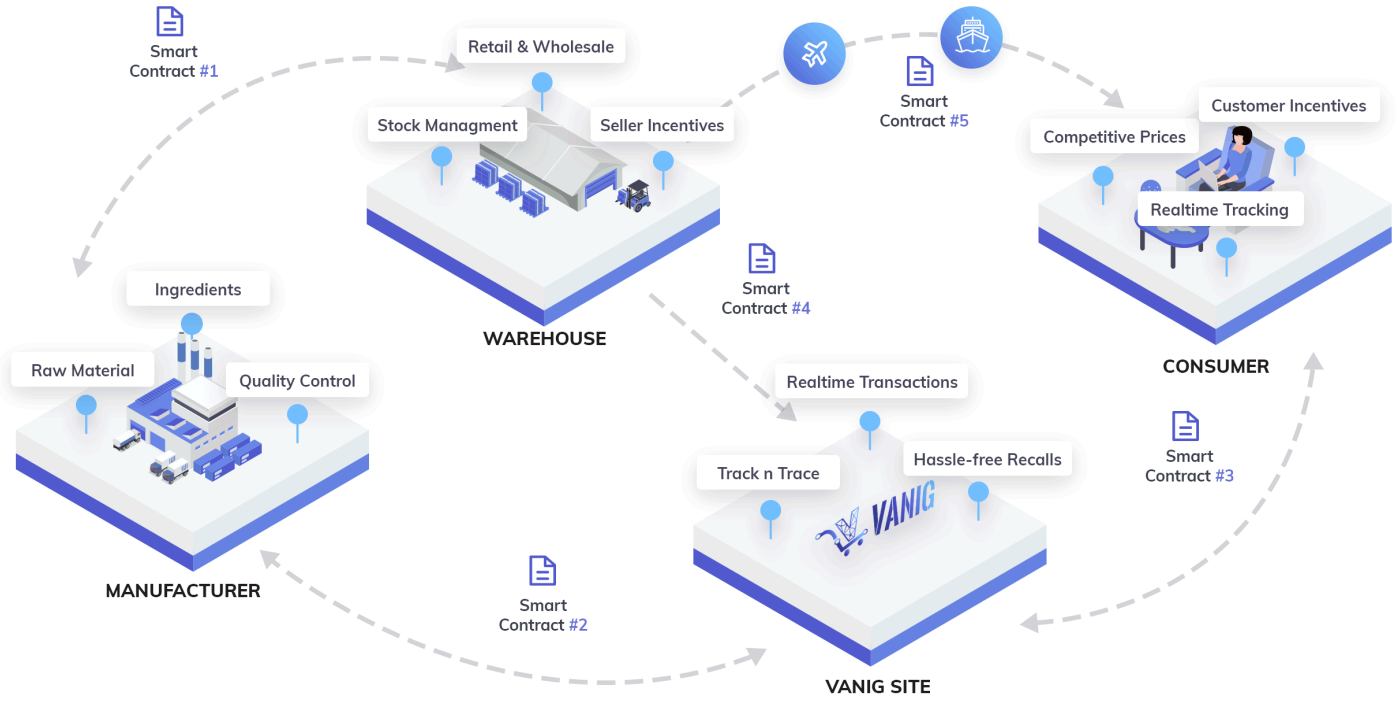
Ecosystem mechanics:

The VANIG ecosystem will be robust, scalable, permission-based decentralized blockchain.

We anticipate the following participants;

- Manufacturer
- Retailer
- Delivery/Distribution Agent (DA)
- Consumer
- Sensor Tracking

In the diagram below, we give a pictorial representation of the VANIG ecosystem participants.



Smart contract #1 metadata captured

Consumer ID
Verndor ID
Purchase Date
Product ID
SKU
Number of units
Amount paid, delivery date
Delivery address
Set of hash keys

Smart contract #2 metadata captured

Consumer ID
Verndor ID
Distrubution agent ID
Date shipped
SKU
Number of units
Delivery address
Set of hash keys

Smart contract #3 metadata captured

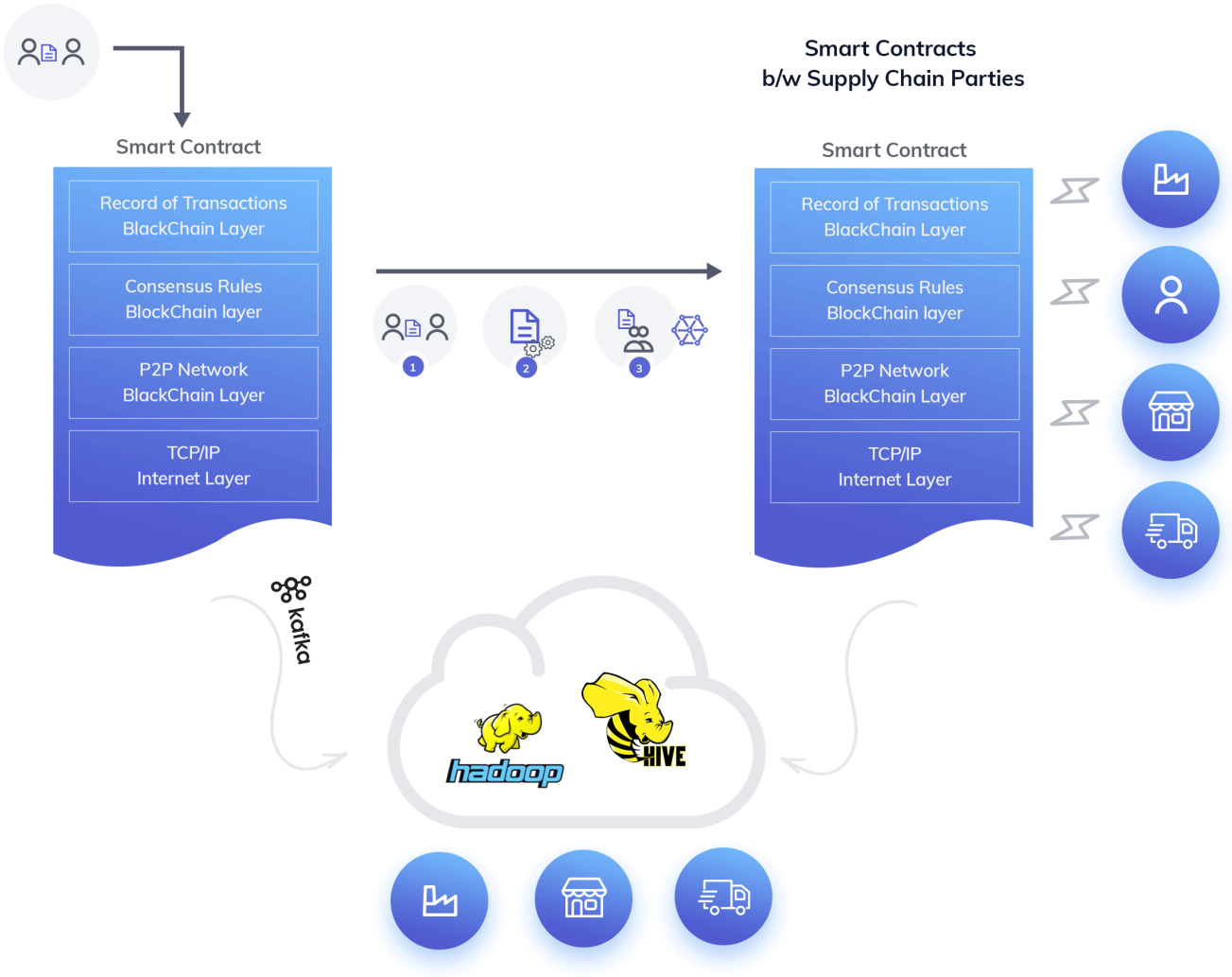
Consumer ID
Distrubution agent ID
Date shipped
Acknowledgement
Number of units
Set of hash keys

Smart contract #4 metadata captured

Invoice #
Purchase #
Quantity
Unit price
Tax %
Date
Retailer ID
Retailer address

VANIG Process Flow

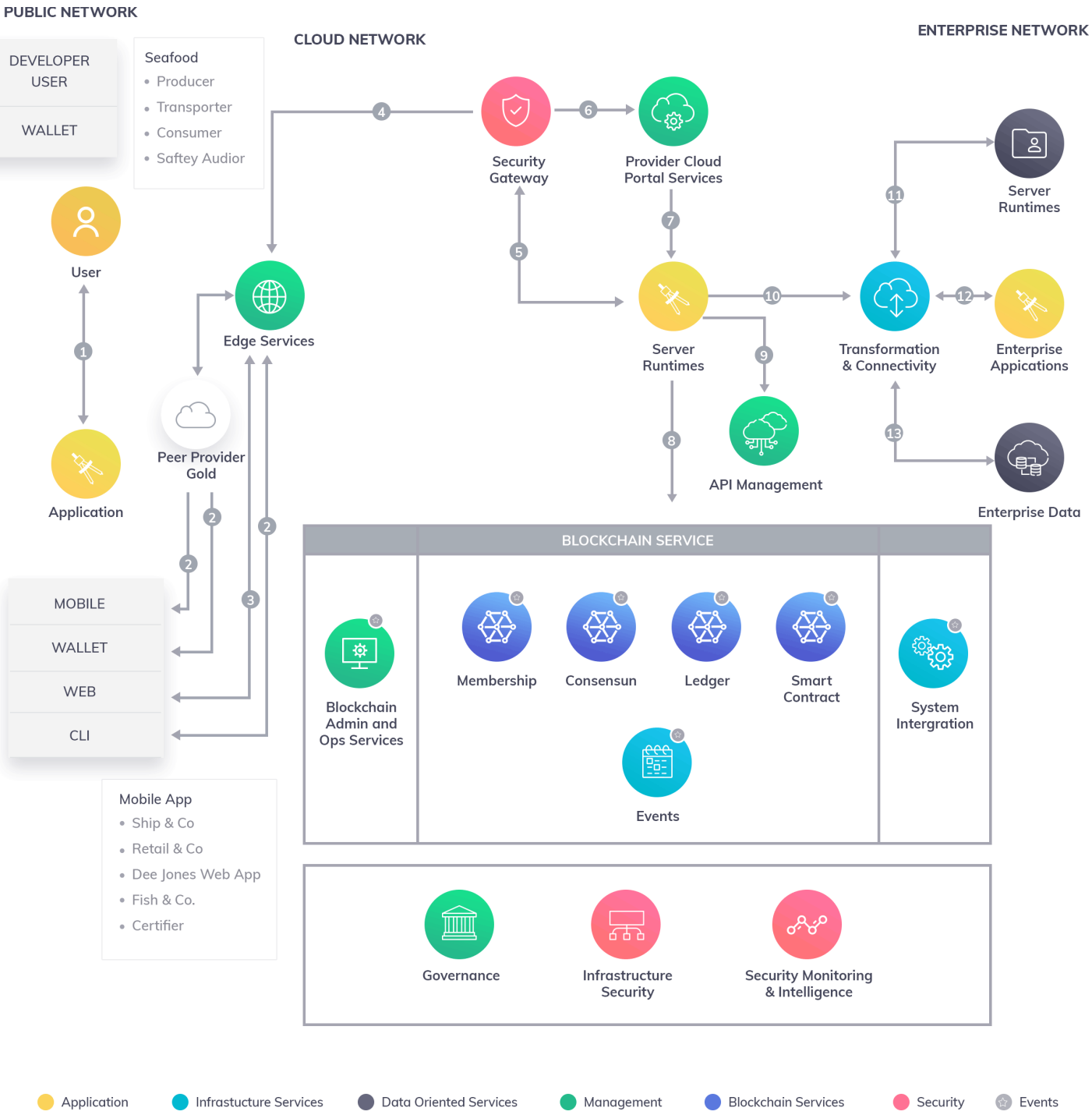
1. Consumer places an order using the VANIG Website or VANIG Mobile App.
2. Smart contract #1 gets written automatically and captures the details of the order between the consumer and VANIG and is stored in VANIG's blockchain ecosystem.
3. Manufacturer/retailer ships the product from their location which triggers another Smart contract #2 between the manufacturer and it's distribution agent.
4. Distribution agent picks up the order from manufacturer and delivers it to the consumer.
5. Delivery acknowledgement from the Consumer will trigger another Smart contract #3 between the distribution agent and the consumer.
6. Finally Smart contract #4 is created to capture the transaction ledger between the wholesaler and the manufacturer.



Source: VANIG Flow Diagram

All these transactions get recorded and are linked as blocks in the VANIG ecosystem. This creates a traceable chain of blocks that shortens the track and trace process in terms of recall from weeks to just a few hours. And since all the blocks are interconnected we have real time inventory visibility to both consumers and supply chain participants. The VANIG ecosystem will also accommodate sensor tracking using IoT devices which will provide regulatory compliance information, and temperature and product location during transport between end points in the supply chain (e.g., between producer and consumer).

Below architecture explains the implementation of VANIG ecosystem in Blockchain



VANIG Solutions :

With VANIG, Mr. John can instantly check the order status, confirm the delivery of the order, and enjoys the full benefits of effective and efficient supply-chain management for his E-commerce store. The stages, as a VANIG user include:

1. Mr. Michael needs a digital product (cell phones). The user in this scenario is a consumer and VANIG user using the VANIG wallet

2. The user, Michael, has a VANIG wallet with a wallet cloud provider. He logs in to the wallet cloud with his credentials and authorizes the blockchain cloud service to access his digital cash with the peer wallet cloud provider.

3. The operator of VANIG wallet handles the request and routes it to the security gateway, such as request originating from Mr. Michael smart phone QR code scan. As a supply-chain platform built on the smart contracts blockchain, VANIG services include a domain name server, content delivery network, firewall, and load balancers.

4. The security gateway establishes user identity, in this case, of Mr. Michael and provides for authentication, authorization, and integration capabilities. The security gateway ensures that Michael as a participating user is authorized and has the entitlements granted based on his roles in the blockchain trading network. The user is allowed to participate in a trade using the VANIG web APIs.

5. From a VANIG ecommerce site Michael connects to the blockchain service of VANIG cloud portal service.

6. An application request using the hyperledger fabric client (HFC) SDK, on behalf of Mr. Michael, goes to the membership services component of the VANIG ecosystem. The membership services provides security, privacy, and protection for the participating E-commerce stores on VANIG platform.

7. The HFC SDK runs in a server side web tier in the server runtimes. The request interacts with the hyperledger fabric membership services component used by VANIG, again on behalf of Mr. Michael.

8. The blockchain service receives the trading participant transaction request. The trading participants in the supply chain scenario are: Mr. John retail outlets, Ship & Co, Retail & Co, Mr. Michael, and Certifier. The transaction is validated, the smart contract agreements evaluated and enforced, and the validated transaction committed to the ledger. The provider cloud portal service enables trading partners to exchange digital assets in a self-service, interactive manner using blockchain service. Events are generated from runtime at appropriate state changes to provide for integration and notification handling. Ship & Co participant has an ability to claim, transfer ownership of produce digitally and ensure the quality of produce in transit. Retail & Co participant can provide provenance and inventory details of produce. Mr. Michael can review the provenance of produce supplied by MR. John Retail outlets to make informed decisions. Certifier can ensure the compliance of produce in supply-chain by making use of blockchain technology.

9. Smart contract provisions, backend business data and business logic are accessed in backend systems by the VANIG API management capability. Smart contracts in supply chain scenario ensure that only quality produce is sold to end consumer Mr. Michael and he has an ability to review the provenance of produce prior to deciding to purchase or not purchase produce from Mr. John Retail outlets. Smart contracts ensure contract enforcement of all elements of contractual terms and conditions for all participating stakeholders in addition to Mr. Michael in the supply chain scenario.

10. The messages and data for the enterprise database are transformed from web formats as they originate from Mr. Michael smart phone mobile application to database formats. A secure reliable and messaging app is used to access the enterprise backend system.

1. The consumer, Mr. Michael is authenticated in the user directory and permission rights are validated for smart contracts enforcement before access the backend systems. Typically this is part of a login process that establishes a session used for a series of requests on the VANIG platform.

2. The enterprise application uses data from the client application being used by Mr. Michael, logs and analytics based on smart contracts and attributes. The client application being used by the consumer updates the data and the enterprise applications process the changes.

3. Data is queried from the database to generate the requested response to be returned to Michael smart phone mobile application. The data is transformed appropriately to allow use by the application. The enterprise data includes logs and databases for analytics.

Use cases

One can consider a number of blockchain use cases pertinent to supply chains and e-commerce. We have in fact a number of them on our pipeline for implementation but the below are a noteworthy sample:

Toys' track and trace

The global toys' market is growing constantly and its valued at over $90 billion. Especially, the online toys' market place is experiencing a period of rapid growth given the modern life conveniences for e-commerce. However, as the toys' market grows, so does the ever-complex ecosystem of toys' manufacturers, wholesalers, distributors and retailers. And with that growth we have the ever-increasing parental oversight and alertness to the quality of toys used by their children.

A toy that has hazardous plastic covers, for example, can cause havoc to a child's health and parents are all too alert to these dangers thanks to the Internet and the constant information flows in our lives. For example, there have been reported cases of hazardous chemicals, such as phthalates, present in toys. On other occasions hormone-altering brominated flame retardants were used in significant proportion of toys, such as toy robots. Although the use of fire retardants is welcome, the use of dangerous chemicals to achieve a fire-proof status is not. The problem with these findings is that they are post-mortem, that is, the toys were already bought and used by children, an accident happened and then investigation to the causes of the accident revealed the use of dangerous chemicals.

This where the VANIG platform comes in. We are leveraging the use of blockchain ledgers to record and save, forever, all the parts and materials that were used to produce a toy. In the unlikely event that such materials are deemed to be dangerous – cross referencing scientific information and national safety databases – then an automatic smart contract can trigger an exclusion clause whereby the toy product at question cannot be registered for sale due to its hazardous materials. So, we prevent an accident before it even happens. This preventive action can be inspected at any time by prospective consumers and the information can be shared with law enforcement authorities.

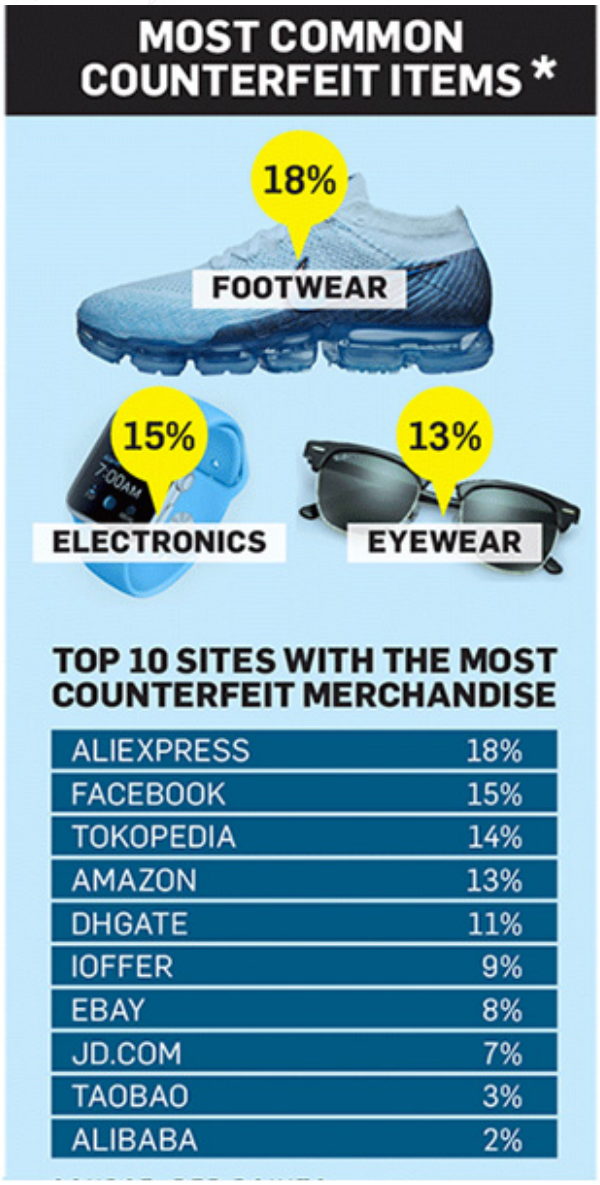
4.2 Logistics' universal track and trace

The logistics industry is accustomed to using high tech for track and trace. For example, RFID (radio frequency identification) market has grown to an industry of well over $5 billion from a mere couple of hundred million a few years back. There are well over 90 million RFID sensors in use and the technology is constantly maturing. Although the technology provides an instant checkpoint to track the position of the object that is affixed onto, it has its limitations. There are many different vendors and types of RFID sensors. Some are not compatible with each other's platforms. There is also the most pressing issue of information permanency. RFID signals and geo-position information is not stored long term and the data formats tend to differ from platform to platform.

This is where the VANIG blockchain platform comes in. We envisage a powerful synergy between existing RFID sensor networks, and the VANIG platform. As products are shipped from place to place within the VANIG ecosystem (manufacturer to wholesale depot, to distribution agent, to consumer), they are RFID tagged as with normal logistics procedure. But, in addition, we store RFID tracking information on the blockchain so that at any point in time, we can retrospectively trace back the journey of a particular product, by way of piecing together the data records from each RFID sensor. This undisputed proof of origins and whereabouts of product movements could bring efficiencies and cost savings to the logistics industry.

4.3 Counterfeit product detection for delicate 3D printing raw materials

The International Trademark Association reported about $460 billion worth of counterfeit goods were bought and sold in 2016. This is, however, not surprising as most of these purchases were over the internet. The Red points, a leading research company in Barcelona, Spain, revealed the top 10 lists of websites where fake products are often bought and sold using the data provided by its custom-developed web crawlers. Aliexpress, the leading Chinese marketplace, tops the list.



In reality, six of the top 10 sites have their headquarters in the Far East—China, a region known for its age-long reputation for counterfeit production and a relaxed attitude regarding intellectual property. As the expensive products that draw much attention from the consumer, handbags and footwear are also identified as the most often counterfeited products bought and sold online.

This is where the VANIG blockchain platform comes in. As the smart contracts governing the flow of products amongst different stakeholders register and store any product information, the source of raw materials used for shoe production is captured and then apply a powerful track and trace as we will know in advance the whereabouts of its parts. Any part that is not coming from a certified source – information that can be fetched from and validated through off-chain oracles – we can flag it up and alert law enforcement agencies and the stakeholders affected.

5. VANIG E-Commerce platform

PRODUCTS

All the VANIG actions on the platform revolve around the Products or goods in the E-commerce industry. To make the process of finding and choosing products for ordering convenient and simple on the VANIG platform, all the products traded on the VANIG platform have been defined by several parameters like the description, price, volume, name, and category assignment.

PRODUCT LISTING

There are varieties of products listed on the VANIG platform and consumers choose the type of products to buy, select the details of delivery, and pay in ETH, BTC, fiat or VANIG tokens. The consumer will be able to go for different rewards and prices.

Finally, we will include product listing and customer reviews as part of the information registered on the blockchain which will enable of more trusted trading environment. The following incentives apply for manufacturers:

- Verified Product Listing: 4 x VNG token or $1 worth of VNG tokens whichever is lower;
- Product listing and complete 5 sales: 100 x VNG token or $6 worth of VNG tokens whichever is lower;
- Product listing and lesser than market price including shipping and complete 5 sales: 20 x VNG token or $2 worth of VNG tokens whichever is lower.

PRODUCT SEARCH

We will use the decentralized file storage network to manage the updated databases of products listed on the VANIG platform. Through this, consumers can use filters and product sorting to choose what they want to buy. We understand the difficulties inherent in searching tens of thousands of retail products and we aim to make your shopping experience easy and convenient. For example, we will adopt the use of catalogue filters for the different product attributes and categories.

One of the unique product search feature is international food catalogue which is the right place to find your packaged goods and ingredients inspired by our international food supplier and cuisines. The VANIG vast array of international food community is bound to please you. Explore our catalogue of international food and embark upon a new adventure. We invite you to explore, seek out your family favorites, or embark upon a new adventure. Enjoy!

Today's consumers have an array of E-commerce options to choose from and sellers need to convince buyers with competitive rewards and discounts in order to win their trust and loyalty. Especially in the competitive E-commerce environment, discount and reward programs incentivizes customer and give them more reasons to come back again. In the VANIG ecosystem, our retailers will be able to use the any of the smart contracts logics to develop bespoke reward and discount programs for buyers shopping with the VANIG tokens.

INCENTIVES FOR CUSTOMER

Consumers will also be incentivized to write product reviews; the following incentives apply:

- Text review: 1 x VNG tokens or $0.25 (whichever is lower) per verified purchase;
- Images added to review: 2 x VNG or $0.50 (whichever is lower) tokens per verified purchase;
- Videos added to review: 4 x VNG or $1 (whichever is lower) per verified purchase.

SEAMLESS INTEGRATION WITH AMAZON AND ALL MAJOR PLAYERS

- VANIG provide ways of listing products in the sites
    - One click product listing from Ecommerce platforms, Amazon and Wal-Mart stores Get all the products from Amazon to your VANIG store with just a single click. This single click captures everything you need from the other E-commerce stores like Walmart and Amazon, for a complete product listing in VANIG, including but not limited to the descriptions, prices, and hi-resolution images of the products. With this feature, you can push some or all of your Amazon products with variants to

- One click product listing from Ecommerce platforms, Amazon and Wal-Mart stores

  Get all the products from Amazon to your VANIG store with just a single click. This single click captures everything you need from the other E-commerce stores like Walmart and Amazon, for a complete product listing in VANIG, including but not limited to the descriptions, prices, and hi-resolution images of the products. With this feature, you can push some or all of your Amazon products with variants to VANiG with a single click.

- CSV File Bulk Upload

  Importing your products into the VANIG platform is useful if you switched to VANIG from another E-commerce store or if you want to make many changes to your products or inventory. When importing, VANIG converts the data from the CSV file into products.

- API Connection

  Through the integration of the VANIG platform using API, we will be able to search the web for the best product images and detailed descriptions. Using your own merchant identification and signature, we make sure that your prices and ongoing inventory levels is synchronized your inventory at VANIG.

- Integration with Ecommerce platforms, Amazon and Wal-Mart stores

    - Automatic retrieve and upload of products from Amazon store to VANIG
    - Automatic retrieve and upload of products from Wal-Mart store to VANIG
    - Automatic retrieve and upload of products from Shopify, Bigcommerce, Woocommerce

LOYALTY

One of the best ways for retailers to easily set up loyalty reward program for their customers is through the loyalty reward mechanisms which ensures that discounts are tied to every purchases and their friend's purchases too when buying through VNG tokens.

With the loyalty program of VANIG, the smart contracts process the transaction and this ensures that customers present a proof to guarantee their eligibility for the discount and reward program. Also, the retailers set the rules like the product lists, expiration date, type of the reward, and the amount of tokens to spend before the customers are eligible

MVP WEB SCREENS

- Screenshot and quick walkthrough of web version of the product. I will add it later as soon as MVP is ready

MVP MOBILE SCREENS

- Screenshot and quick walkthrough of web version of the product. I will add it later as soon as MVP is ready

6. VANIG ICO

VANIG is an ambitious and bold project aiming to revolutionize the world of e-commerce with a robust supply chain support system. Vanig is getting all the resources necessary together, from developers and marketing personnel to a high level legal team, designers and many other talents. The option of going for an ICO, rather than the traditional seed and series A funding through traditional venture capital roots, means that we enable community participation to VANIG's success and an opportunity for ordinary people to have a stake in the future of VANIG. It's a pure play investment. It is a direct vote of confidence and interest in our project. It enables ordinary people to become part of a larger community of like-minded individuals, rather than limiting it to a small, selected number of traditional venture capital fund investors. Furthermore, by giving VANIG tokens to ICO contributors, they will benefit from VANIG's future success. An ICO is fast, transparent and efficient for exactly this purpose.

When the ICO comes to an end, all contributors will receive ERC20 exchangeable VANIG tokens on the Ethereum network. When the VANIG blockchain is launched with its own token mechanism, the ERC20 token will be accepted for exchange to a new token on a one to one basis. The VANIG token is a core component of the VANIG ecosystem and is designed to facilitate all kinds of operations that make the token an integral part of the ecosystem and the driver for its economy. It is fractionally divisible, transferable and fungible. Token balances and transfers will be tracked by VANIG. To mitigate risk from unforeseen circumstances such as large token theft, contract compromise, or a disrupting change in the Ethereum protocol, VANIG may opt to freeze token transfers and issue a new token contract with balances replacing that of the original token registry by a certain date. In the event of an Ethereum fork, the VANIG team will timely announce which branch it will support.

6.1 Allocation / distribution

The VANIG token will have a VNG ticker symbol in the crypto currencies market. We will have three distinct phases for token purchases 1) a private sale 2) a pre-sale and 3) ICO sale event.

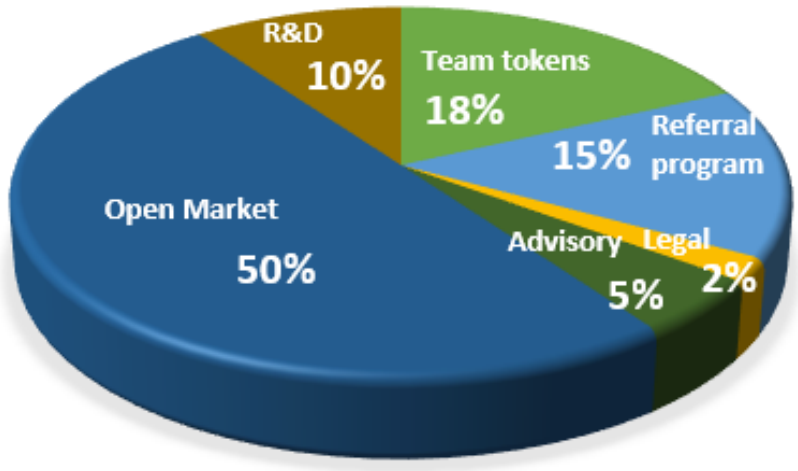
Each of these will have a varying level of discount, rewarding early investors more as a reward for early backing of the project. Private sale and pre-sale participants will get bigger discounts than main ICO participants. We accept contributions in Ether (ETH), Bitcoin (BTC), Litecoin (LTC) and US Dollars (USD). We will have a hard cap for the main sale event, set at $30M. The minimum purchase limit is set at 1/10th of an Ether (ETH). There is no maximum purchase limit. We summarize the general parameters of the VANIG token in the table below:

VANIG Token Description	
Ticker Symbol	VNG
ICO Start	TBA
ICO End	TBA
Total amount of coins	300,000,000
Total amount to be sold	150,000,000 or 50% of total issuance
Private sale	15,000,000
Pre-sale	30,000,000
ICO sale	105,000,000
Hard cap set at	15,000,000
Accepted crypto and fiat currencies	ETH, BTC, LTC, USD
Minimum purchase limit	0.1 ETH
Maximum purchase limit	None

We want reward early backers to the project, so we will have a granular bonus timeline that covers all phases of the VANIG token sale – the table below summarizes our structure:

VANIG pre- and sale bonus timeline				
	Duration (days)	**More than 100 ETH**	**10 to 100 ETH**	**Less than 10 ETH**
Pre-sale	15	30%	27.5%	25%
ICO - 1	10	20%	17.5%	15%
ICO - 2	10	15%	12.5%	10%
ICO - 3	10	10%	7.5%	5%
ICO - 4	10	5%	2.5%	0%
ICO - 5	5	0%	0%	0%

Lastly, we elaborate on how we will use the funds raised. VANIG is an open ecosystem and we want to reward participation and support the organic growth of the ecosystem. Hence, we decided to distribute a generous 50% of the funds raised to the open market. Another 25% goes out to research and development and referral program to bring on board partners and grow the ecosystem, and only a quarter of all funds raised stays with the team, advisors and legal operations. The pie chart below depicts our allocation strategy.



Source: VANIG token distribution

6.2. Utility

The VANIG ecosystem serves a purpose with far reaching implication for our economic systems. It aims to introduce a decentralized consumer marketplace to audiences that have little experience with cryptocurrencies and likely to have little-to-no knowledge of blockchain. The VANIG ecosystem will be expanding beyond the crypto community and focus its activity on broader audiences. Providing services to everyone requires niche knowledge of the ecommerce and supply chain industry and its specifics. Therefore, we plan to make it very simple and straightforward for consumers to buy, earn and use VANIG tokens. The complexities of opening and maintaining a cryptocurrency wallet will be made seamless in the VANIG website and apps.

6.3. Bounty

We will have different styles of bounty programs for our early supporters, we aim to introduce bounties for all popular channels including, but not limited to: Twitter, Facebook, Medium, Telegram, YouTube, Reddit, Instagram. Our bounty programs will also have signature and avatar campaigns for maximum reach out effect. Allocation of tokens for the bounty program will be resourced though our referral program allocation.

6.4. Escrow

TVANIG will operate a transparent and open escrow policy. Funds will only be released from escrow once a milestone is successfully completed. Investors can verify and view milestone progress over time and have fully confidence and trust in the system that funds are used for their intended purpose.

7. Team

We will have different styles of bounty programs for our early supporters, we aim to introduce bounties for all popular channels including, but not limited to: Twitter, Facebook, Medium, Telegram, YouTube, Reddit, Instagram. Our bounty programs will also have signature and avatar campaigns for maximum reach out effect. Allocation of tokens for the bounty program will be resourced though our referral program allocation.

8. Roadmap

Our roadmap is well underway. We kicked off last summer when the VANIG concept was born. We completed the MVP and a whitepaper by December 2017 and in February 2018 we plan our platform launch with a pre-sale event. Our ICO, the public sale event is scheduled for March 2018 and two months' later we plan our supply chain integration with manufacturers, vendors and retailers. In the summer of 2018 we will release the beta version of VANIG 1.0 as an e-commerce platform; and the mobile version will follow by end of 2018. Two major milestones for 2019 is the integration with APIs for Hadoop big data reporting and our global launch in summer of 2019. The diagram below gives a pictorial view of our milestones:

August 2017

- VANIG concept is born

January 2018

- Whitepaper and MVP completion

March 2018

- Launch VNG platform and pre-sale

May 2018

- Acceptance & Distribution of cryptocurrency payments and Tokens
- Listing of Token in exchange system

August 2018

- Launch VANIG eCommerce platform 1.0

December 2018

- Launch of mobile apps for iOS and Android - Go mobile

March 2019

- Release VANIG 2.0 Ecosystem includes smart contracts between all key players

June 2019

- On-board Global Manufacturer & retailers
- Integration for Analytics like BIG Data Hadoop for predictive analytics & reporting

September 2019

- Expand Ecosystem to Global Markets

8. Conclusion

We are building Vanig, the world's first integrated supply chain e-commerce ecosystem powered by blockchain technology. Vanig is set to change the world of supply chains and e-commerce by simplifying processes, creating transparency, reducing costs and eliminating intermediaries, and above all giving customers a very trustworthy shopping experience.

We are not exclusive and disruptive in this endeavour. We plan to integrate and operate with major e-commerce stores and platforms. We also plan to integrate and connect to major supply chains and bring onboard manufacturers, wholesalers, distribution, and retailers. Vanig will thus help more more players participate in the online ecommerce boom, creating wealth and experiences for everyone.

References

1. "4 things to know about the new era of global trade", World Economic Forum, Feb'16, https://www.weforum.org/agenda/2016/02/4-things-to-know-about-the-new-era-of-global-trade/
2. "Impact of the Fourth Industrial Revolution on Supply Chains", Word Economic Forum, Oct'17, http://www3.weforum.org/docs/WEF_Impact_of_the_Fourth_Industrial_Revolution_on_Supply_Chains_.pdf
3. "eCommerce Market Size", US Dept. of Commerce, ITA, Jul'16 https://www.export.gov/article?id=eCommerce-Market-Size
4. "Hyperledger Fabric", Hyperledger consortium https://hyperledger.org/projects/fabric