vechain

Business White Paper

Five Products

Nine Solutions

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Content

About Us

Launched in 2015, VeChain Technology is a global leading eco-friendly enterprise-grade blockchain company which aims to connect blockchain technology to the real world by providing enterprises with sustainable blockchain solutions suited to their business needs.

It offers VeChain ToolChain™, a one-stop blockchain-based data service platform that allows enterprise clients to rapidly build and drive digital transformation on a global scale, enabling the evolution of a trust-free and a distributed ecosystem.

VeChain Technology is a pioneer of real-world blockchain applications, with international offices in China, Singapore, Luxembourg, Japan, France, Italy and the United States. With strong independent development capabilities, combined with the professional
compliance guidance of our strategic partners, PwC and DNV, VeChain has established partnerships with many leading enterprises in various industries, including Walmart China, Bayer China, BMW Group, BYD Auto, PICC, Shanghai Gas, LVMH, D.I.G, ASI Group etc.

Industry Partners

Major Achievements

2022

- The Republic of San Marino releases national digital vaccine passport through VeChain public blockchain.
- VeChain introduced brand new Digital Carbon Footprint SaaS Service.
- One of the compilation units of Shanghai <Standard of Blockchain Services Certification>
- One of the compilation units of<Industrial Blockchain Application Development White Paper in Jiangsu Province>
- A leading company with a sense of social responsibility on World Consumer Rights Day
- One of the compilation units of<Regulatory Standards for Food Traceability Blockchain Applications>
- Member of The Consumer Goods Forum

2021

- Member of Climate Chain Coalition
- Member of Green Fashion Alliance（GFA）
- Member of China Non-staple Food Circulation Association (CNFCA)
- Member of China Food Safety Traceability and Co-governance Alliance
- An AAA rated company in Enterprise Credit Risk Evaluation
- VeTrust is adopeted as 2021 Global Blockchain Innovation Application Demonstration Case Collection
- Participate in the compilation of <Technical Specifications for Online Testing Business Services and Support Platforms>

2020

- The world's first 5-Star-Rated Blockchain Service Certificated by TÜV Saarland
- A Leading Model Case of 2020 Industry Blockchain Application
- Council member of China Animal Health&Food Safety Alliance
- 2020 China Logistics and Supply Chain Industry Blockchain Application Award
- 2020 China Green Technology Innovation Award
- 2020 Best Retail Technology Innovation Award
- Green Chemical Innovation and Entrepreneurship Competition Designated Proposition Award 2020 Blockchain Technology Influencer

2019

- One of the first 197 blockchain service providers approved by the CAC
- Director's unit of the Trusted Blockchain Promotion Program initiated by CAICT
- VeChain is ranked in the "Top 5% of Global Startups" by Early Metrics
- “Best Competitor” of BMW Demo Day
- A runner-up for the LVMH Innovation Award at VivaTech in Paris
- 2019 Blockchain Application Pioneer
- Influential Blockchain Innovation Application of the Year 2019

Sustainability Track & Trace SaaS

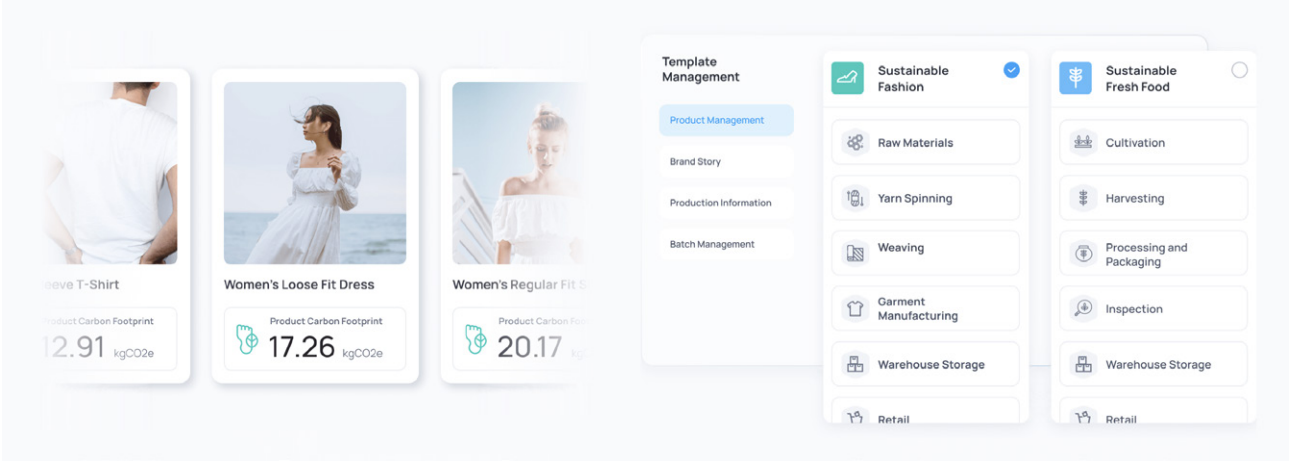
A lightweight and rapidly deployable sustainable traceability application that allows brands to record all their sustainable footprints throughout their supply chain, including but not limited to the usage of recycling raw materials, green production processing, green packaging and logistics, product carbon footprint etc. The blockchain technology provides a solution to make sustainability transparent and trustable.

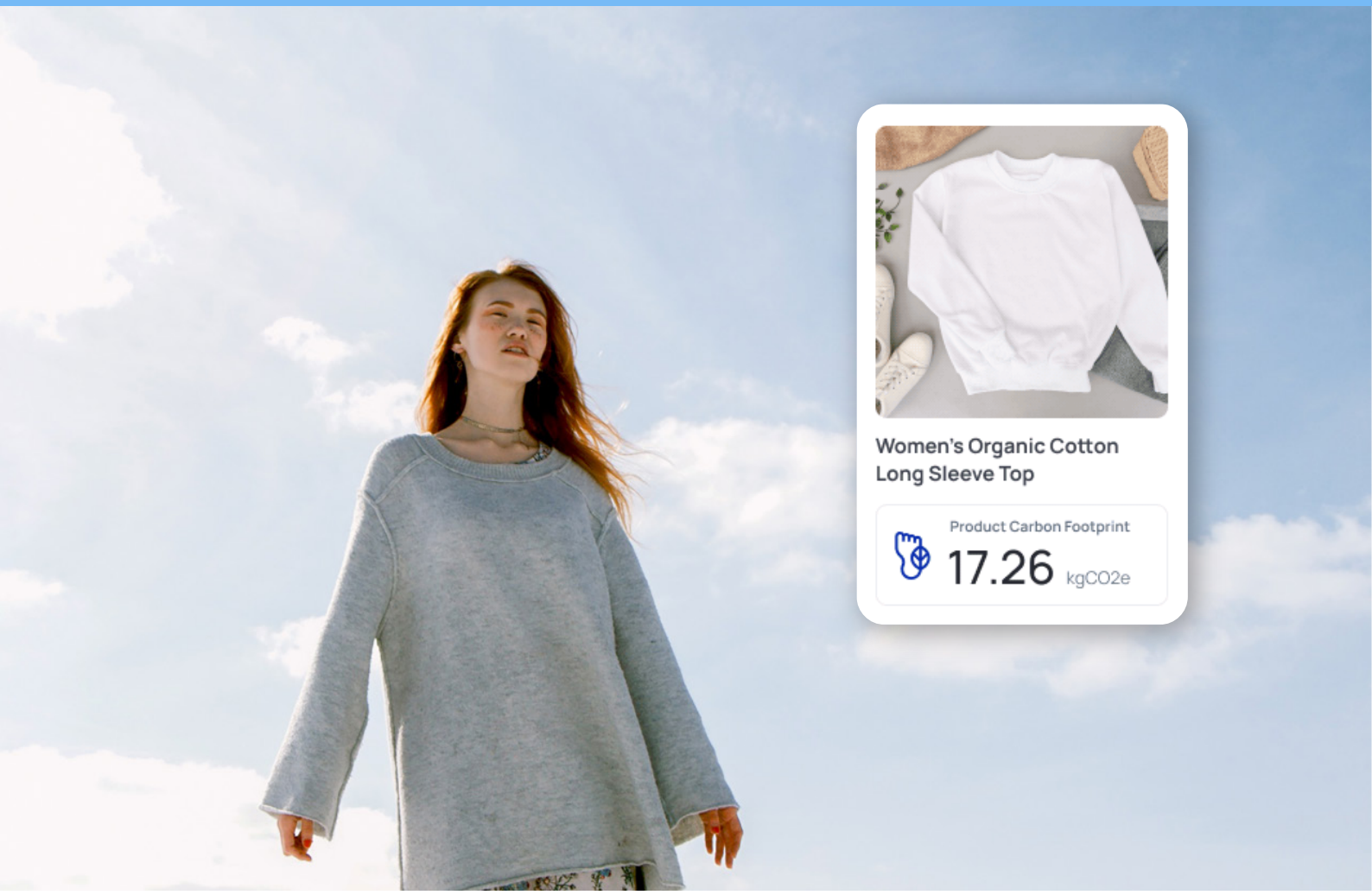
- Standard Sustainable Traceability Template
- Customizable Carbon Footprint Template
- External Link Supported for Branding Display
- Rapid Data Uploading to Blockchain
- Both QR Code and Chips Supported

Target Users

Sustainability Brands | Green Product Producers | Circular Economy Players

Enterprises such as sustainability brands, suppliers of innovative environmental materials, production and processing enterprises, circular economy players, and other sustainable brands. that want to start to practice the concept of the sustainable development from utilizing lightweight solutions.





Transparency for Sustainability

Seeable Sustainability Footprints Trust Data

Sustainability efforts cannot be revealed without transparency. With this blockchain-enabled sustainability solution, companies could easily create visibility of its sustainable-oriented actions throughout every aspect of its value chain.

Standard and Lightweight

Standard Template Ready-to-use

Standardized traceability templates enable companies to quickly and efficiently share sustainable production and visualize results. The ready-to-use tool minimizes the deployment costs and project lead time for enterprises.

Carbon Footprint Calculation Service

Quantify Carbon Footprint Scientific Methodology

Customized product carbon footprint calculation service is available for wide range of products. The platform supports to integrate scientific calculation methodology for product carbon footprints provided by experts specializing in ISO14067.

Credible Brand Declaration

Trustable Declaration Consumer Trust

Blockchain technology is a powerful tool to help companies to build a sustainability brand image. By logging critical sustainability records on blockchain, brands are capable of making strong declaration for their sustainability efforts to all interested parties, including consumers and downstream clients.

Food Safety Track & Trace SaaS

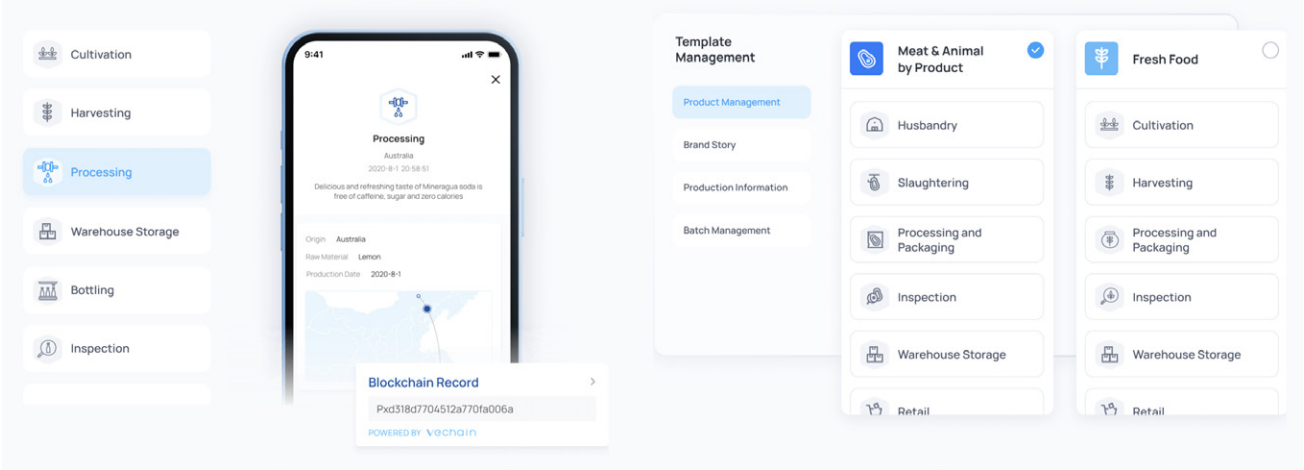
A blockchain-enabled food traceability platform that provides the food and beverage industry with various traceability functions that are readily deployable, including product provenance and quality certificates etc. It creates a brand-new consumer interaction that allows food and beverage companies to communicate and build brand awareness in a trustworthy manner.

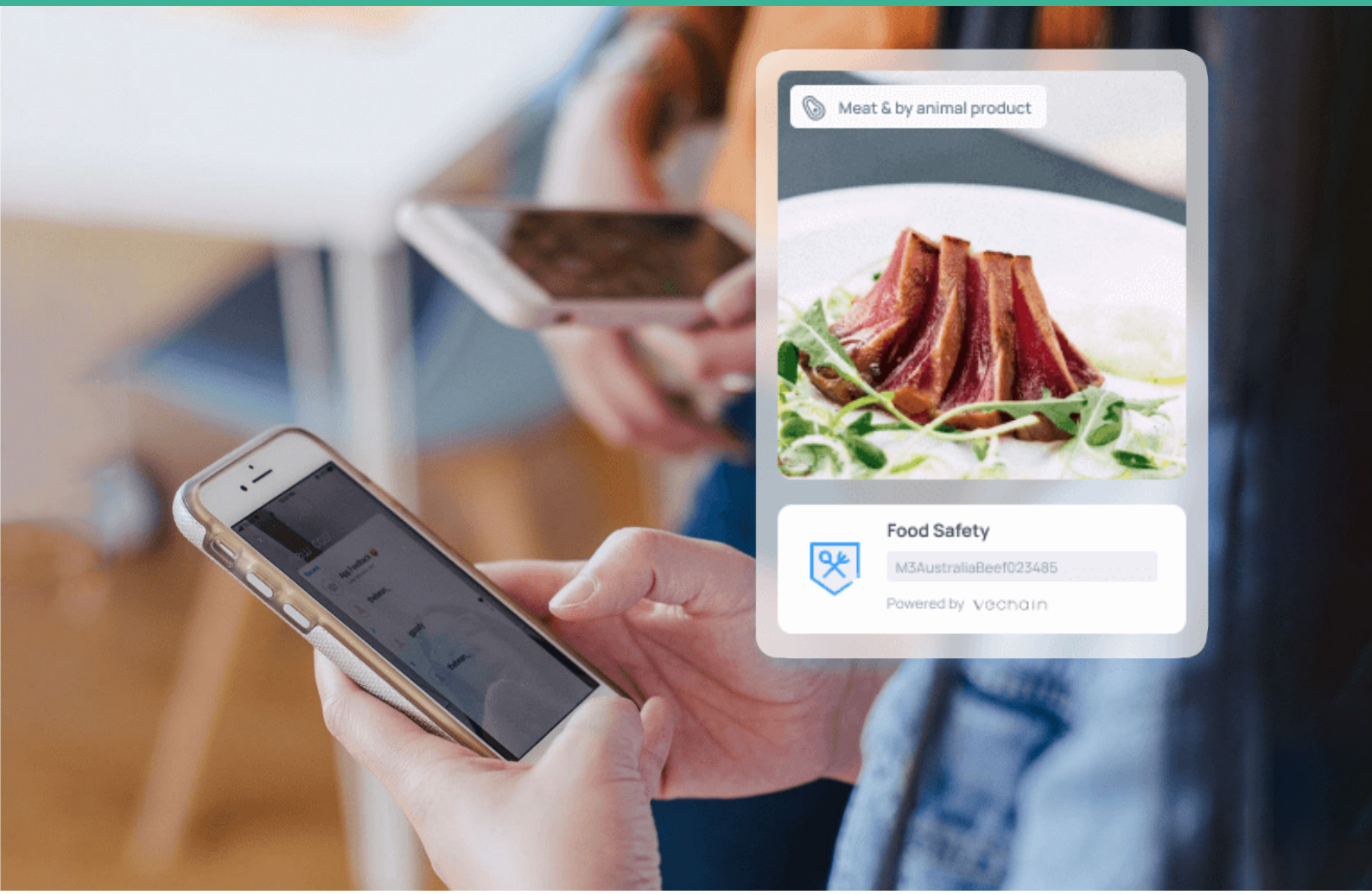
- Standard Template for Food Safety Traceability
- Enterprise and Supplier Management
- Rapid Data Uploading to Blockchain
- External Links Supported for Branding Display
- Both QR Code and Chips Supported

Target Users

Food Producers | Manufacurers | Ingredient Farmers | Food Importers and Exporters

Food producers, manufacturers, ingredient farmers, ,importers and exporters, and food companies that are committed to ensuring the quality of materials, safety of production processes, and promoting brand awareness.





Trust in Food

Traceability Transparency

By capturing key product data on the blockchain, such as provenance, ingredients, batch numbers, production dates, logistics etc., food and beverage companies can ensure the data immutability and transparency, achieving source quality control and bringing trust to consumers.

Off the Shelf

Standard Template Ready-to-use

The product comes with ready-to-use food traceability templates, abstracted from more than 100 real life adoptions in the food and beverage industry. It maximizes the success of Proof of Concept implementation for large players and minimizes the development pressure for small and medium-sized companies when they decide to integrate blockchain into their businesses.

Low Cost

Short Lead Time Low Barrier

We greatly shorten the lead time of a food safety tracing project with ready-to-use templates lowering the entry barrier and the costs of blockchain implementation, especially for small and medium size companies.

New Brand-Building Method

Telling Brand Stories Consumer Trust

We provide food brands with a new way of telling your brand stories with on-chain data, which could significantly improve the consumer trust.

General Supply Chain Track & Trace SaaS

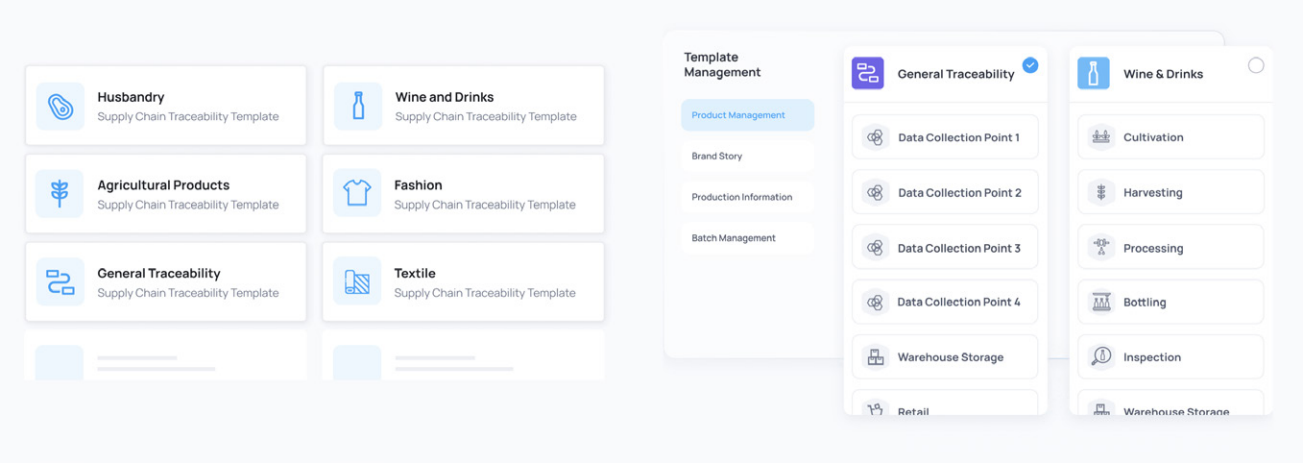
With300+ enterprise cases, General Supply Chain Track & Trace Software-as-a-Service ("SaaS") covers the traceability needs of various business scenarios and industries, giving the fastest path to a consumer-facing blockchain solution. The standardized templates for various industries are available out of the box, improving production, marketing and brand building.

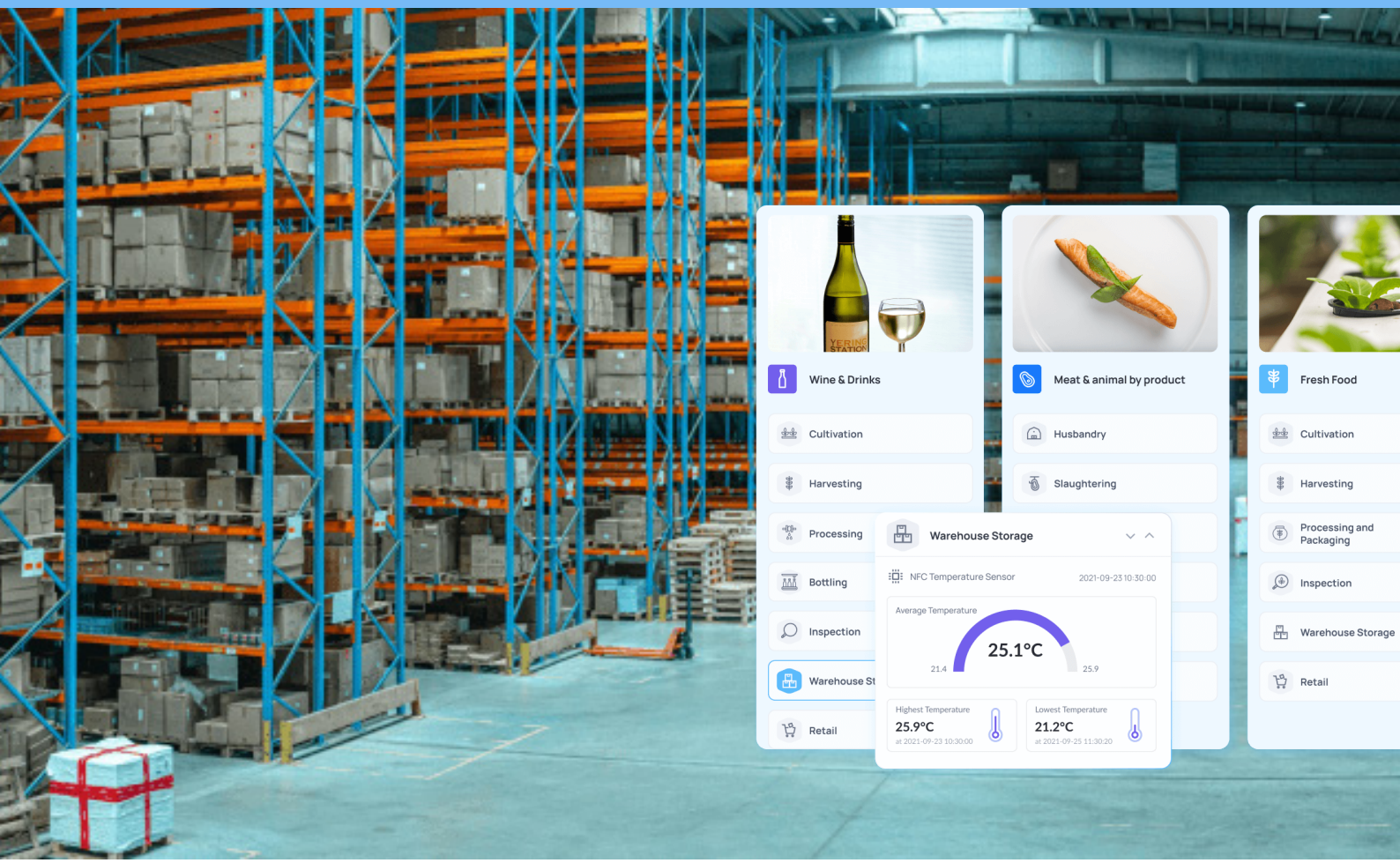
- Multi-industry Traceability Templates
- Multi-user and Access Management
- Rapid Data Uploading to Blockchain
- Customization of Client Data Entry Entries
- Configurable end-consumer facing landing page
- Supply Chain Management

Target Users

Supply Chain Digitalization | Strenthen Brand-Customer Communication

Companies of all sizes aim to provide consumers with transparency of its value chain and supply chain processes, digitize its value chain and supply chain processes, enhance their supply chain management, and strengthen the brand by communicating directly to consumers.





Multi-industry Validation

300+ Use Cases Based Multi-industry Proved

The know-how in our product is based on 300+ use cases learned from real enterprise adoptions in various industries, including agricultural, animal husbandry, alcoholic beverages, garment industry, and the textile industry.

Standardized Templates

Multi-industry Templates Ready-to-use

Proof of Concept and project implementation success is maximized by providing standardized and ready-to-use traceability templates for multiple industries. Enterprises can implement a market proven traceability solution without further development.

Cost Effective Solution

Cost Saving Short Lead Time

Standardized information collection processes significantly shorten the project launch time. Communication costs can be heavily reduced and companies can implement the blockchain solution on-budget and on-time.

Value Chain Visibility

Transparent Data Consumer Engagement

Relevant parties of the supply chain can share consistent and transparent information to fully explore the business value of points along the entire value chain to reshape business models, meet and interact with consumers in a more transparent way, and enhance the brand reputation.

Low-code Deployment PaaS

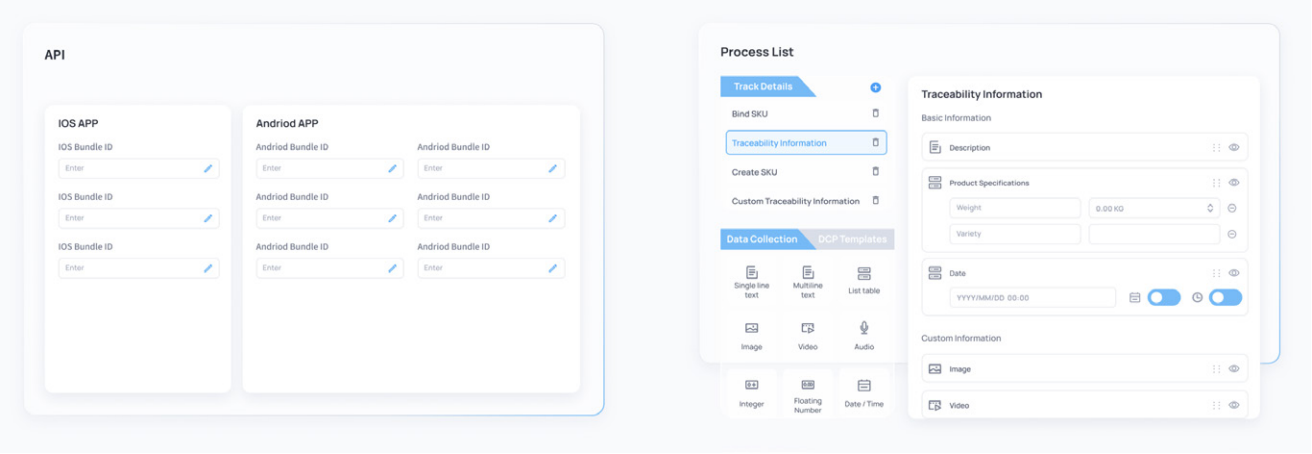
Low-Code Deployment Platform-as-a-Service ("PaaS") provides clients with flexibility to create process templates and use provided powerful tools to easily build their own blockchain applications within specific scenarios.

- Low-code development platform
- Data collaboration and sharing service
- Professional verification and certification service
- Visualized process builder

Target Users

Flexibility Requirement | Partially Customization | Data Collaboration

Companies that do not find SaaS service offerings flexibility for their processes;
Companies that want to build their own blockchain-enabled system quickly and at a low cost;
Companies that already have some existing systems in operation, and are looking to blockchainize the existing ecosystem by breaking down data silos across players.



Flexible Business Process Design

Flexibility Developer Friendly

Clients can quickly integrate existing business applications with high-quality and developer-friendly APIs and SDKs, complete development documents, and building-blocks to help blockchainize their own applications with flexibility.

Customized Tools to Adapt Business

Visualization Customization Scenarios Fitting

The Process Builder allows clients to create business processes and customize data visualization forms, which can quickly adapt to different use cases and align with their business requirements.

Visualized Data Sharing and Collaboration

Ecosyste Building High Efficiency

The PaaS platform provides data sharing and collaboration to build strong ecosystems. Parties can collaborate in an efficient and cost effective way based on consistent and transparent data.

Blockchain as a Service

BaaS is an expressway to connect with the underlying blockchain and is used as a gateway service to access on-chain smart contracts with a traditional restful API. It is available for independent deployment to build out a functioning application with multidimensional customization to meet diverse business demands and provide a more immediate end-user experience.

Data storage service

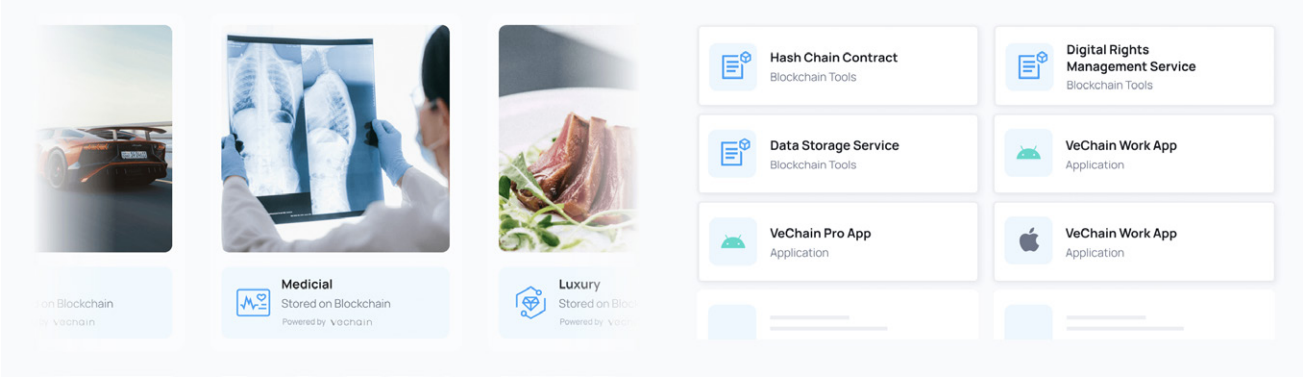
Digital rights management service

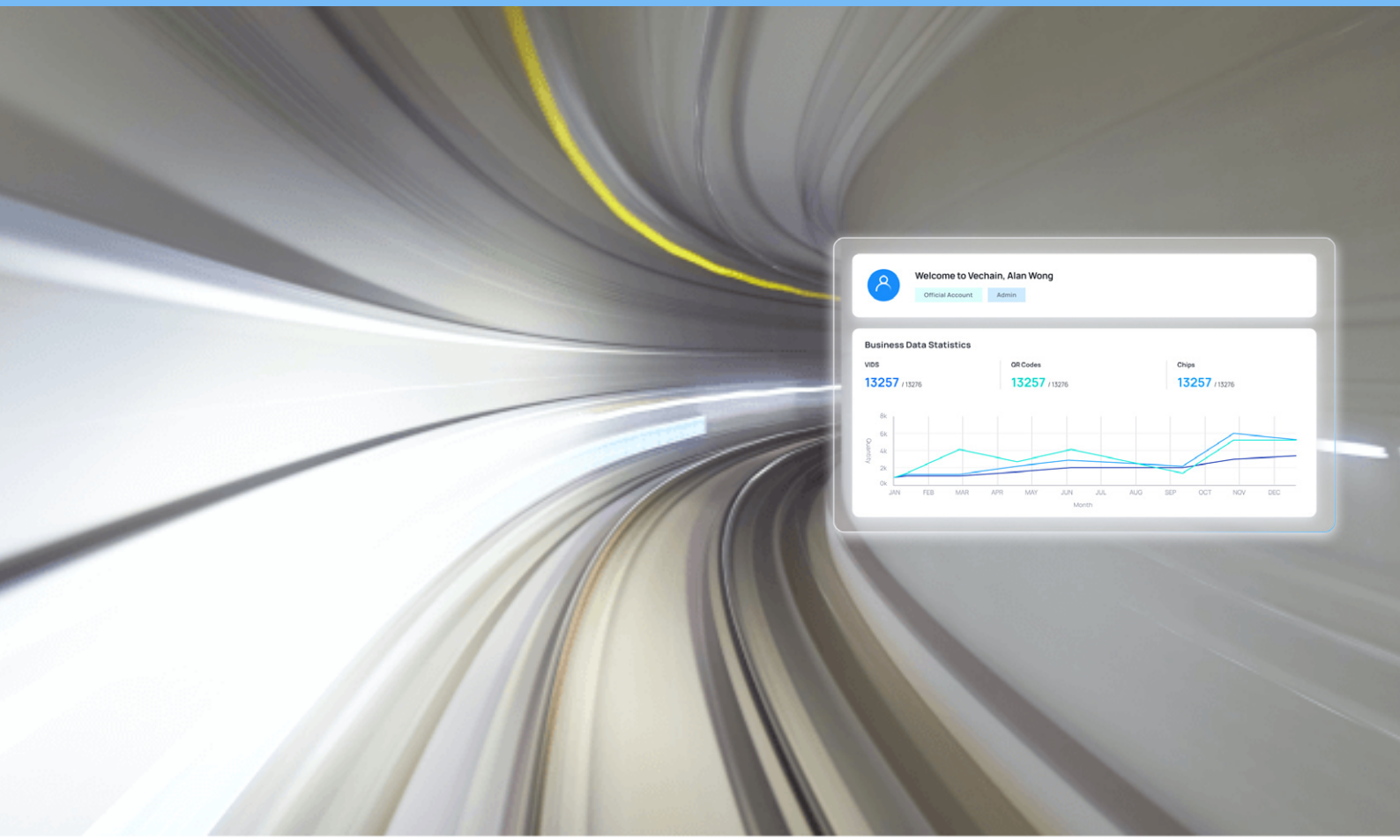
Target Users

Large Enterprise | Companies with In-house Developers | Fully Customization

Large enterprises that have in-house systems, with the demand to upload the data onto the blockchain can develop sophisticated applications with a set of defined business logic that is tailored-made for how enterprises run their business.

Companies of all sizes aim to keep business raw data confidential within its own applications.





Rapid Data On-chain Storage

Fast Trust in Data

It provides a rapid and qualified on-chain storage service for a wide range of industry clients, such as retail, luxuries, logistics, pharmaceuticals, and automotive.

Diversified On-chain Tools

Mature Infrastructure Not From Scratch

Standardized smart contract services are provided with a restful API. Blockchain explorer is developed to provide developers with a convenient, high-performance blockchain ecosystem and support service.

Controllable Usage Costs

Low ON-chain Costs Massive Scale Supportable

It provides a pay-as-you-go payment method, to allow clients to easily forecast the blockchain usage costs based on the actual number of blockchain data transactions. Extremely low unit costs allow clients to build blockchain applications at massive scale.

Eco-friendly Blockchain Network

Efficient and Stable Green

In pursuit of our goal to cultivate a healthier planet through green technologies, the blockchain provides truly sustainable infrastructure for companies to build their smart contract solutions. The largest problem facing energy use of the blockchain platform is largely solved by using a highly effective and stable PoA consensus mechanism.

Food Safety Traceability Solution——Industry Status

Increasing Regulatory Pressure

Regulatory standards, especially in China and the US, are increasing strict for food quality standards and supervision. Food companies or brands are facing unparalleled food compliance risk and ubiquitous social media pressure. Actions should be immediately taken in food safety traceability management to confront regulatory challenges.

Strong Food Transparency Demand from Consumers

As the economy and people's consumption power is growing, consumers require more healthier and better quality of purchased foods. Lacking transparency between food brands and consumers, makes it harder to earn their consumer's trust.

Lacking Digitization

Many food enterprises are still at a low degree of digitalization in production management, and the cost of IT infrastructure transformation is extremely high. Without a proper digital management tool, it is difficult to execute quick and accurate recalls when the problems of food safety occur. It is also hard for management to monitor and supervise the daily operations.

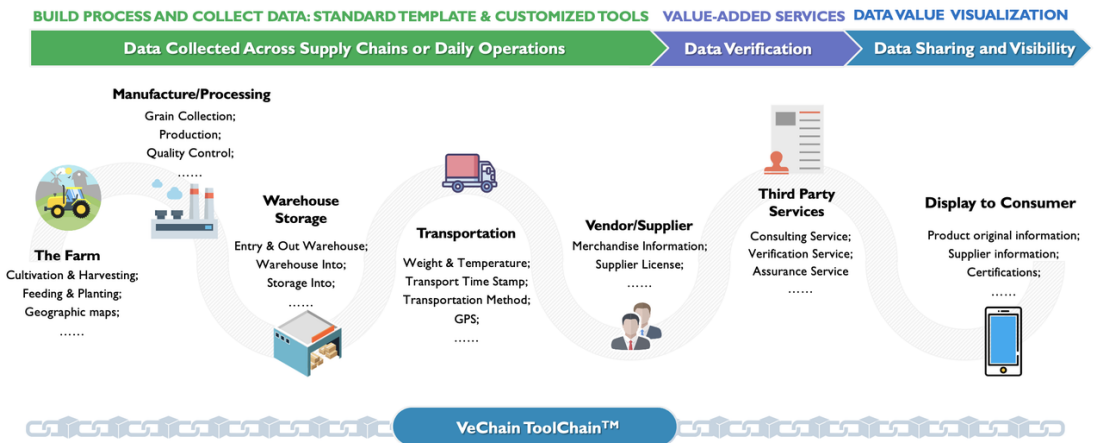
More Complex Supply Chain

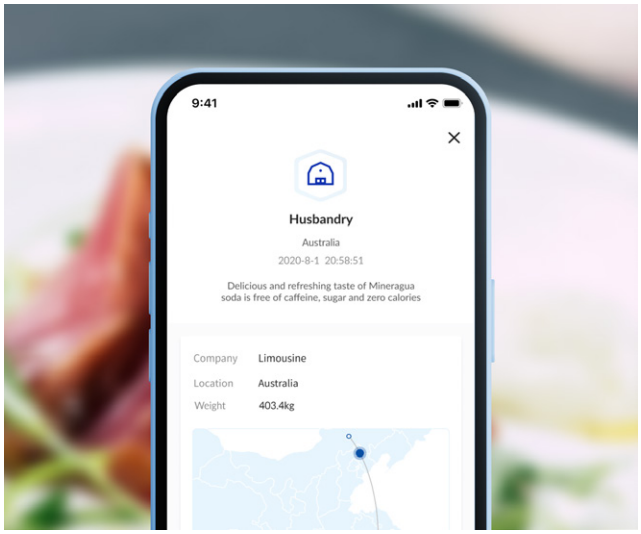
The food supply chain is one of the most complex and fragmented supply chains. There are 70% of the companies that have a "visibility gap" between the initial supplier and internal customer systems, making tracking of supply chain sources challenging. Lacking sufficient data synergy, makes it even difficult to transform the supply chain and monitor the food safety issues effectively.

Solution

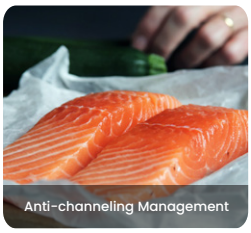
With the blockchain based Food Safety Traceability Solution, food enterprises can achieve full lifecycle traceability for their supply chains, including food origins, processing, packaging, logistics, retail etc., exploit value via on-chain data generated by their own business. The immutable traceability data on the blockchain enables companies to increase the efficiency of food compliance review, quality control, government supervision, supplier evaluation, customer trust engagement and more.

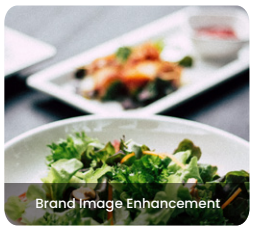
Food Safety Traceability Solution





Applications





Food Compliance and Recall Management

Identify Accountability Comply with Regulation

Each actor along the food supply chain can upload information and data about their products. The transparency of the whole food supply chain improves accountability and trust and helps with compliance in the event of a food recall, allowing them to more quickly access data and detect a problem, including lot codes, production and expiration dates, and product order numbers.

Anti-counterfeiting and Traceability

Tracing the Oringin Brand Trust

Tracing the origin to effectively prevent food adulteration and fraudulently labeled counterfeits. The immutable data on blockchain makes the food supply chain more transparent, and enhances brand responsibility.

Anti-channeling Management

Unique Tracing IDs Identigy Channeling Problems

With traceability records of products attached with unique IDs, the flow of logistics can be precisely identified. Food brands can quickly recognize whether the goods are channeled or not by analyzing the goods data, and take immediate actions to resolve the problems from dealers.

Supply Chain Digitized Management

Transparent Supply Chain Supplier Management

Digitization is an effective way for enterprises to improve their management efficiency and reduce costs, especially for food companies. Enhancing the company's ability to manage multiple suppliers reduces their dependency on single entities and lowers overall risk. The performance data can help reduce risk and allow suppliers to demonstrate their ability to potential clients.

Brand Image Enhancement

Consumer Satisfaction Brand Trust Consumer Engagement

Improving communication and boosting customer satisfaction, retailers can engage with customers by providing access to product information on the blockchain. For consumers, this can provide increased visibility into product origin, producer, and quality.

The Stricter Policy Comes with More Risks

More policies and regulations have been established in last two years in multiple jurisdictions. There have been growing demands for transparency because share-holders and policymakers have been pushing for climate risk disclosure legislation.

Competitive Advantages

With stakeholders holding companies accountable for sustainability, it becomes a competitive advantage for companies to communicate their commitments to sustainability and decarbonization.

Lacking Knowledge or Method to Start

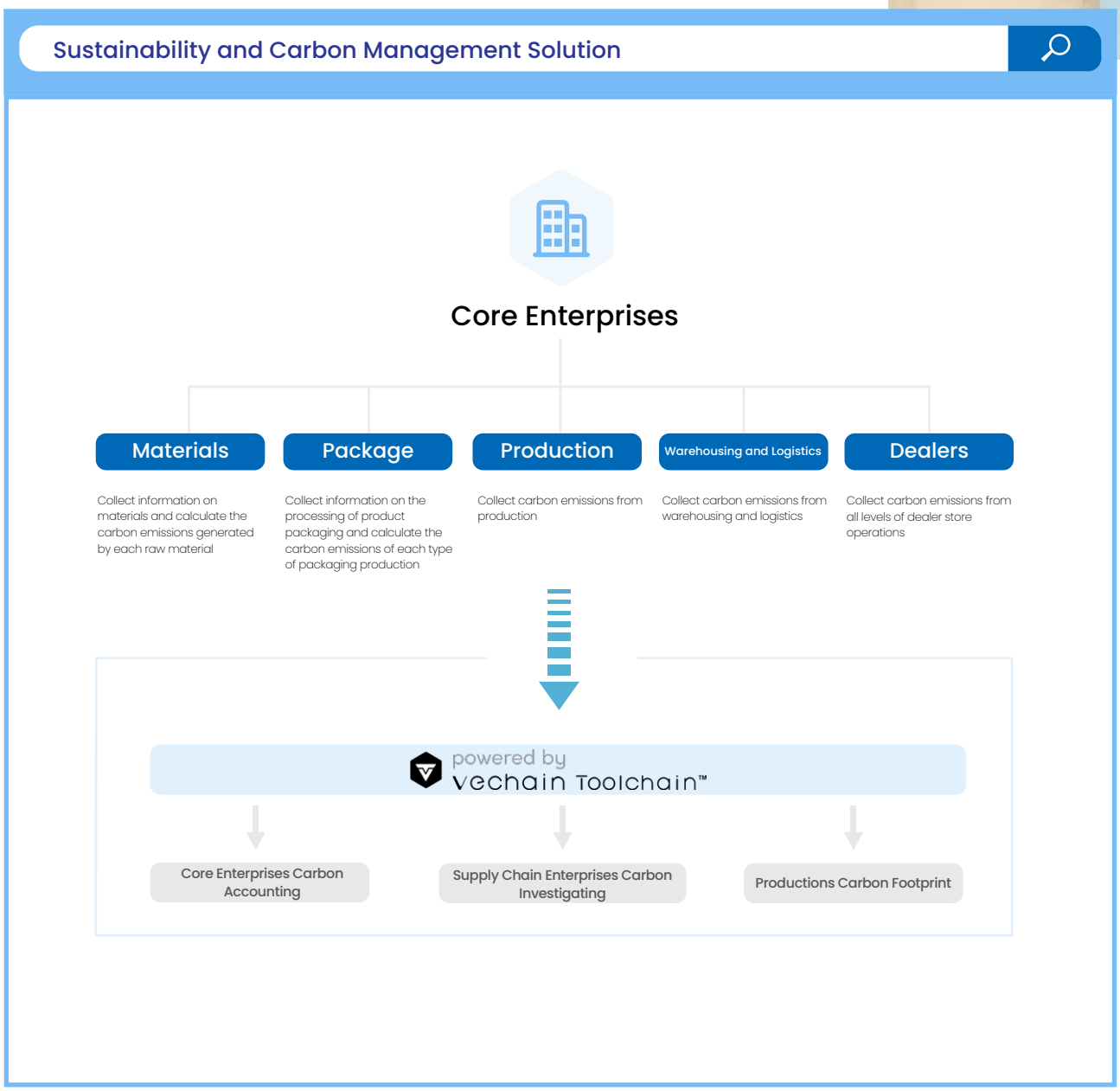
For most companies, carbon management is still a new field. Companies lack basic knowledge and practical tools to start carbon management, to understand their carbon emissions, and to develop a path towards net zero. Establishing a digital carbon management system is necessary.

Struggle with Carbon Emission Data Fraud

Some news indicated that high-energy-consumption companies tend to manipulate carbon emission data in order to comply with the allotted amount of carbon dioxide defined by regulations, and to avoid paying fines. There is a lack of an effective tool to help police the potential data fraud.

Solution

In order to help companies to address climate change, we offer a complete, one-stop solution based on blockchain technology and scientific methodology, covering scenarios like sustainability track and trace service, carbon emission inventory mechanism, product carbon footprint, etc. Third party assurance services are also available within the solution provided by close partners like DNV.



Applications

Digital Carbon Emission Inventory

Fist Step of Carbon Neutral · Carbon Emission Management · Carbon Neutral Factory

The first step towards achieving the "dual carbon" goal is a scientific evaluation and evaluation-based planning. Therefore, carbon inventory would be where enterprises start to go carbon neutral. A digital and effective tool enables enterprises to have carbon inventory capabilities, accurately calculating the carbon emissions based on scientific methodologies, and the results would be digitally visible through reports and dashboards. All critical emission data stored on chain is immutable, transparent, and trustable. The digital platform could help enterprises manage the carbon emission throughout the value chain.

Product Carbon Footprint

"Carbon Tax" · Carbon Neutral Products · Green Consumptions

Researches demonstrate that over 70% respondents would pay a premium of 35%, on average, for brands that are sustainable and environmentally responsible. Providing product carbon footprint calculation helps enterprises to deliver sustainability brand image and provides clear instructions for consumers to quickly identify low carbon products. Also, "Carbon Tax" is proposed by multiple nations to control the carbon emission of import goods.

Carbon Emission Reduction Management

Methodology Developement · Quantify and Manage Carbon Reduction · Carbon Assets

Research and develop carbon emission reduction methodology based on actual reduction scenarios, and embedding into blockchain based system. Reductions could be automatically calculated through smart contract and stored as carbon assets, which could also be monitored through visualized dashboard. Critical data and calculation formulas stored on blockchain to ensure trust, transparent, and verifiable. Closely working with professional partners to provide certification and monetization of digital carbon assets.

Low Carbon Emission Ecosystem

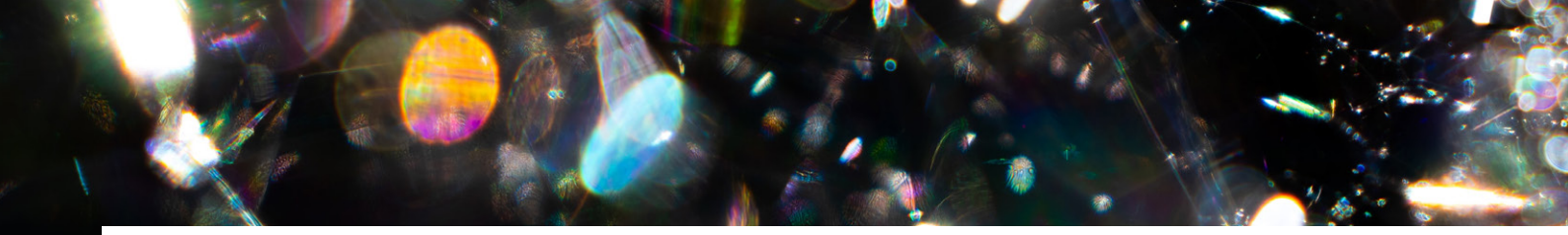
Green Activities Rewards · Carbon Credits

Environmental friendly activities(e.g. low-carbon transportation, recycling, green consumption) can be quantified, rewarded, and certified. Results could be verified by professional third parties and stored on blockchain. Individuals who engage in carbon emission reduction activities can be incentivized with carbon credits and can exchange the credits for services or goods provided in the ecosystem. Carbon emission reduction sponsors can attract more user traffic and demonstrate corporate social responsibilities.

Product Sustainability Track & Trace

Trace Sustainabillity Footprints · Improve Transparency · Enhance Brand Image

Providing a traceability tool that allows brands to record all their sustainability footprints throughout their supply chain paves the way to make sustainability transparent and trustable.



Anti-counterfeiting and digitization for Luxuries——Industry Status

Rise of Counterfeit Return Frauds

Under the Era of Digital Economy, online sales of luxury brands have significantly increased. Meanwhile, a large number of counterfeit products returned impacts luxury brands. It is difficult for sellers to check the products' authenticity when customers return or exchange the products, and they may receive counterfeit goods upon return.

Channel Management Issues

It's impossible for brands to monitor all the channels, thereby leaving room for channel conflict and the proliferation of counterfeit goods. Luxury brands might have to sustain the losses caused by overproduction.

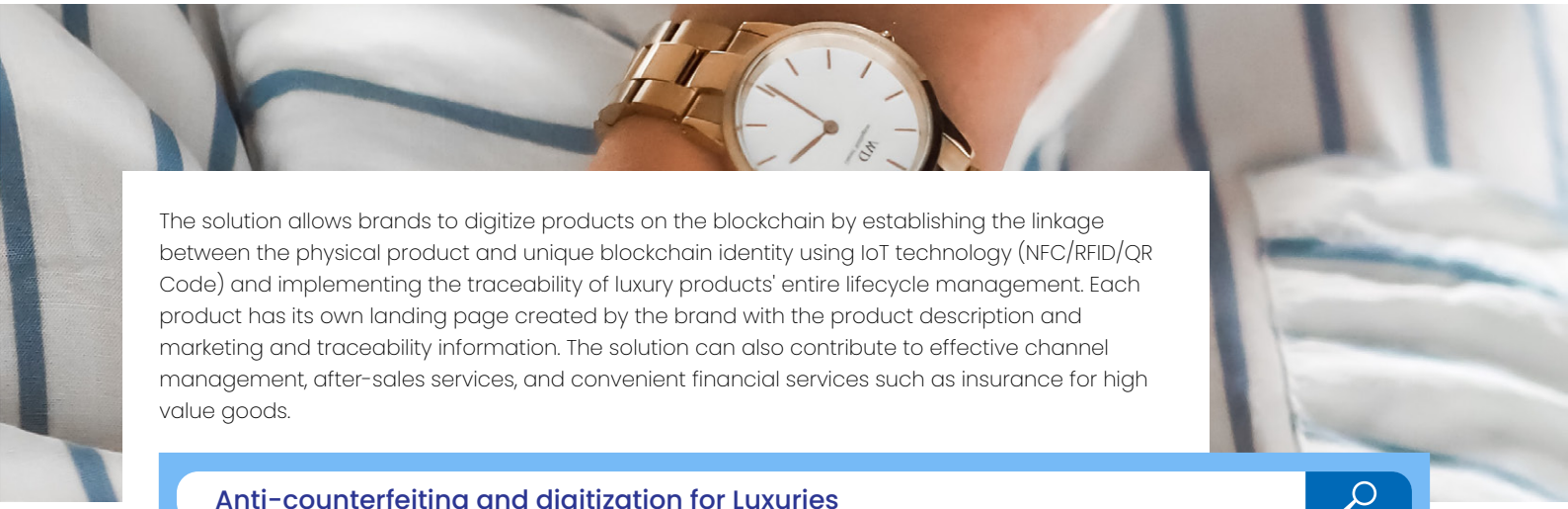
Counterfeits in Second-hand Luxury Market

The luxury resale market currently remains mostly unchecked with no laws enforced. It is mainly the case in the peer-to-peer secondary luxury market where consumers buy items directly from online sellers. Ordinary consumers are incapable of identifying counterfeit products, and the way to demonstrate authentication processes and results is insufficient.

Intensely Personalized Experiences Competing

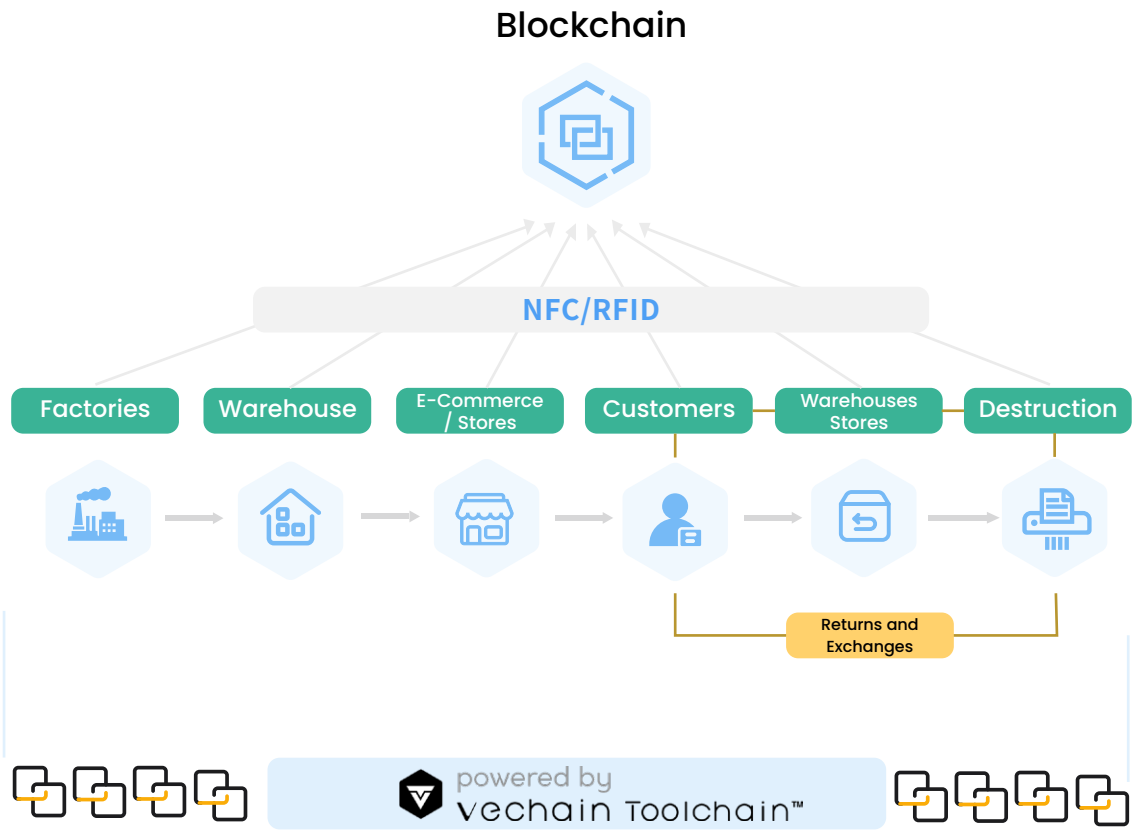
Luxury brands are competing in the digital marketing spending to create a personalized experience for consumers. Many brands are spending billions of dollars in marketing, as consumers are growing more and more accustomed to buying clothes online.

Solution



The solution allows brands to digitize products on the blockchain by establishing the linkage between the physical product and unique blockchain identity using IoT technology (NFC/RFID/QR Code) and implementing the traceability of luxury products' entire lifecycle management. Each product has its own landing page created by the brand with the product description and marketing and traceability information. The solution can also contribute to effective channel management, after-sales services, and convenient financial services such as insurance for high value goods.

Anti-counterfeiting and digitization for Luxuries



Applications

Return Management

High-value products are embedded with RFID/NFC chips or tagged with QR codes during production and allocated a unique VeChain ID to keep track of the product's core data. By scanning chips, sellers can obtain sales and goods information, authenticate the products, and complete the returning process swiftly.

Supply Chain Management

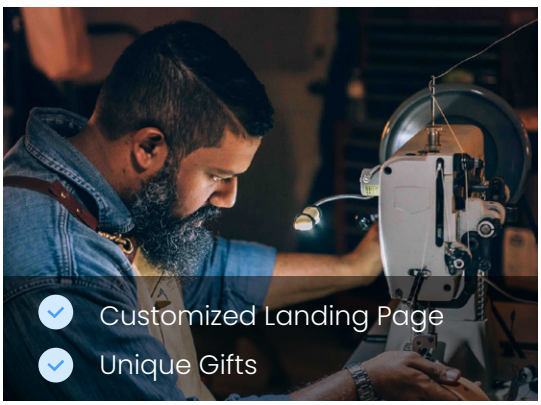
With the immutable nature of blockchain & VeChain's proprietary encrypted smart chips, this solution enables companies to gain the control and efficient management over its fragmented supply chain and hundreds of distribution
channels. Also, through limiting the number of smart chips distribution, brands could manage production quantity efficiently.

Second-hand Luxury Marketplace

On second-hand luxury goods platforms, each resell product can bear a unique smart chip or QR code containing information such as product details, authentication certificates, transaction details and history, and provenance of ownership. Customers can scan the QR codes or chips to quickly and accurately verify the information, and the efficiency and credibility of the platform can be largely improved. Customers could also be able to take advantage of transacting on their own a C2C basis. The digital certificate can serve to verify authenticity and ownership transfer.

Provide Digital Personalized Marketing Experiences

Each product has its own landing page created by the brand with the product description, marketing and traceability information, which is a powerful tool for authentication, traceability, storytelling and digital marketing purposes. In addition, the ownership of the product on the blockchain is tied to the user's account and it provides a personalized experience. For example，consumers could customize contents in LandingPage, to create unique products for themselves or friends.



Sustainable Fashion Solution——Industry Status

Rising Regulatory Pressures

There have been growing demands for transparency from more stakeholders. For instance, recently the French Parliament has approved a law that introduces the mandatory "carbon labels" for goods and services, including clothing and textiles.

One of the Largest Polluting Industry

Fashion industry plays a vital role in the whole economy and it appears to be the 2nd largest polluting industry in the world right after the oil industry. It contributes to 8-10% of greenhouse gas emissions, causing water pollution and creating numerous waste. It is inevitable for fashion and textile companies to take actions to reduce negative environmental impacts.

Shifts In Consumer Behaviors

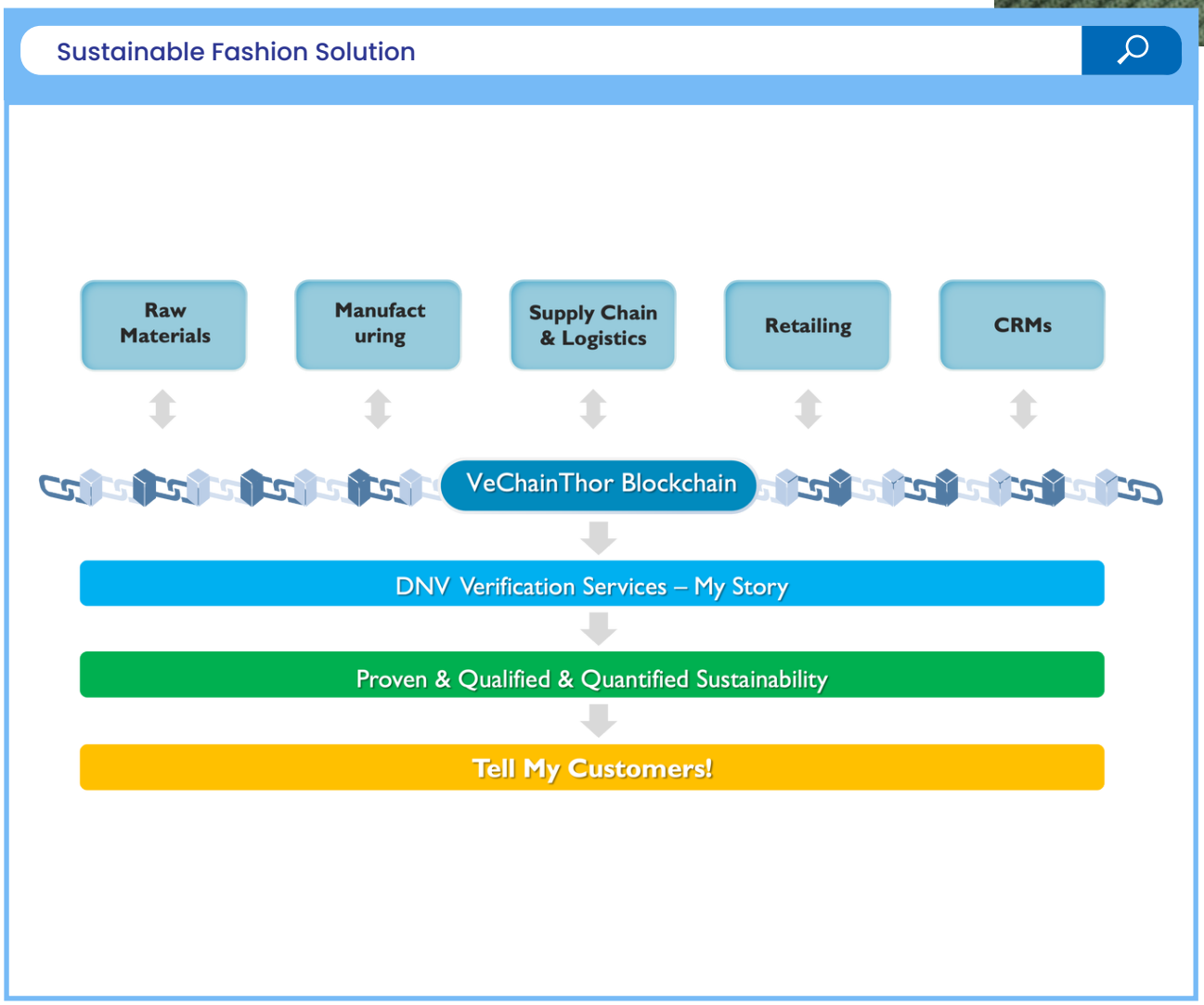
Several recent studies and surveys reveal the trend that customers increasingly consider a brand's environmental actions. Consumers tend to buy more environmentally friendly products, and are willing to pay a premium for brands that are sustainable.

"Greenwashing" Risks

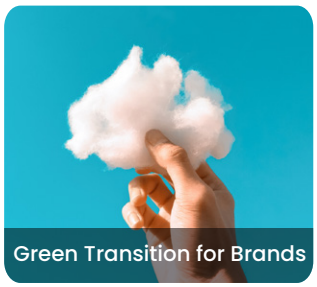
Lack of transparency makes it difficult for the individuals to distinguish fashion brands that are truly environmentally friendly from those that are not. Fashion brands often face risks of being classed as "greenwashing" if they using ambiguous expressions instead of providing supportive evidence to show sustainability.

Solution

The solution allows fashion companies to credibly record the sustainable practices throughout the supply chains and create a visible sustainability picture. By storing the key product traceability data on blockchain, sustainable footprints can be clearly seen. Fashion brands can manage the suppliers based on their sustainability performances, and meanwhile demonstrate the green stories to their clients or regulators with trustworthy data, building strong sustainable brand image to gain competitive advantages in long term.



Applications



Raw Materials Recycling

Recycling to Production Green Production

Cuts and waste of raw materials such as textile wastes can be recycled and re-produced into a new product. The whole re-production processes could be recorded and brands can gain transparency benefits by utilizing Sustainability Track and & Trace SaaS platform.

Circular Economy

Green Raw Materials Circular Products

Utilizing cotton waste to solve water treatment, textile waste to produce insulation materials of carpets, and plastic waste to produce cloth textile yarn, the circular economy has great potential in the various industries. The sustainable actions of developing a circular economy could be tracked & traced on-chain, and the sustainable brand image will be presented intuitively in front of the consumers.

Carbon Footprint Calculation and Carbon-neutral Proucts

Carbon Neutral Products Green Consumptions

The trend that customers increasingly consider a brand's environmental actions prompts enterprises to offer consumers with product specific carbon footprint. Consumers can effectively identify the green and low-carbon products, and make their purchase choices. Furthermore, our professional certification partners can help brands to do carbon offsetting and make fashion products carbon-neutral.

Green Transition for Brands

Green Brand Image New Competitiveness

Sustainable development is critical for enterprises to achieve long-term economic and social benefits. Green environmental protection has become a new fashion. The Sustainability Track and & Trace SaaS platform helps companies to demonstrate the responsible production behaviors to consumers and regulators.

Transparent Supply Chain Solution——Industry Status

Hard to Coordinate Multiple, Divided Supply Chain Players

The world's rapid globalization has resulted in businesses adopting complex global B2B supply chains consisting of producers, processors, third-party logistics firms, distributors, retailers, customers etc., which is hard to coordinate and lacks efficiency.

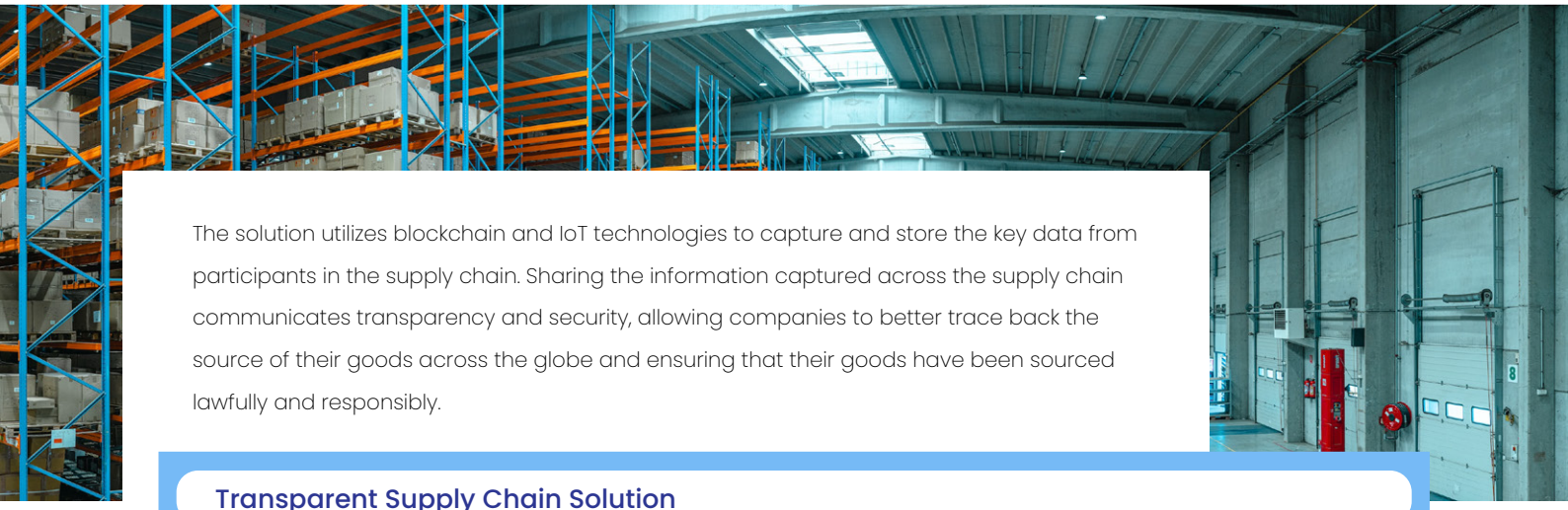
Fragment and Duplicate Data Across the Supply Chain

With current solutions and traditional databases, nearly 80% of enterprise data is siloed and it hinders the supply chain integrity. Failing to provide shared data related to the supply chain reduces trust among players.

Lacking Traceability, Transparency, and Trust

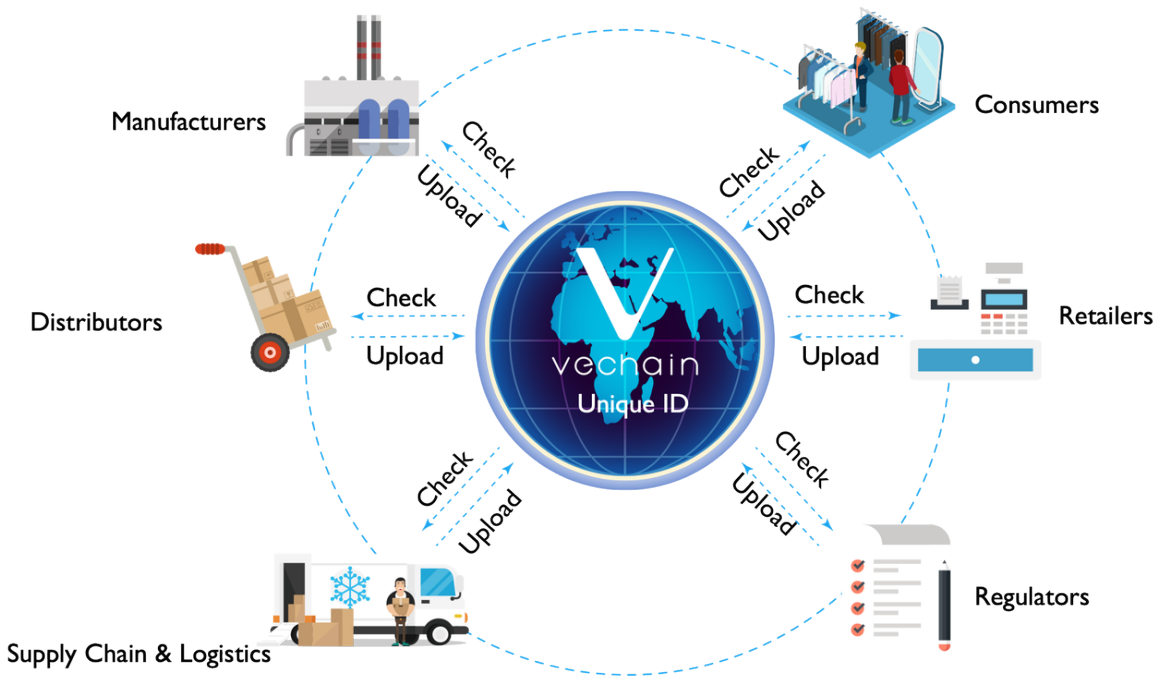
Logging vague, uncertain or even fake product information by various independent parties makes the product hard to trace. Today's consumers want brands to guarantee product authenticity more than ever, and lack of traceability cannot build trust with the consumers or minimize disputes.

Solution



The solution utilizes blockchain and IoT technologies to capture and store the key data from participants in the supply chain. Sharing the information captured across the supply chain communicates transparency and security, allowing companies to better trace back the source of their goods across the globe and ensuring that their goods have been sourced lawfully and responsibly.

Transparent Supply Chain Solution



Applications

Supply Chain Management

Transparent Supply Chain · Collaboration

Enterprises can set up a transparent digital supply chain and key records can be shared among counterparties in an efficient and cost-effective way. It realizes the coordinated management of the upstream and downstream data and helps enterprises to know their supply chains better.

Logistics Warehouse Tracking

Warehouse Management · Logistics Tracking · Trust Records

With IoT technology, enterprises can track logistics and storage information. Collecting and storing critical data on chain such as temperature, humidity, location, and inventory improves the trustworthiness and reliability of the data. Enterprises can trace the sources timely when problems occur.

Product Life-cycle Traceability

Tranparent and Trust · Brand Story · Consumer Engagement

More and more consumers are demanding to know the information of products at a detailed granularity. Enterprises show their consumers the entire production processes to help consumers to know the true supply chain. It traces the information of the products' whole life cycles, and improves the operational efficiency and consumer trust, and builds the brand image.

Smart Agriculture Solution——Industry Status

Answer the Call of National Agriculture Policy

It is mentioned in the <Digital Agriculture Rural Development Plan(2019-2025)> published by the Ministry of Agriculture, that "Accelerate the development of agricultural regions and large-scale breakthroughs in core technologies such as large-scale networking and on-chain/off-chain data collaboration, strengthen research on the standardization of agricultural blockchain and promote the application of blockchain in agricultural resource monitoring, quality and safety traceability, and rural areas."

Lacking Digitization

The operation of the traditional agricultural production is dispersive, and the digitalization level is relatively low. It is hard to manage because of lacking integrity of industrial data, isolated information, data collection difficulties and data facticity suspension.

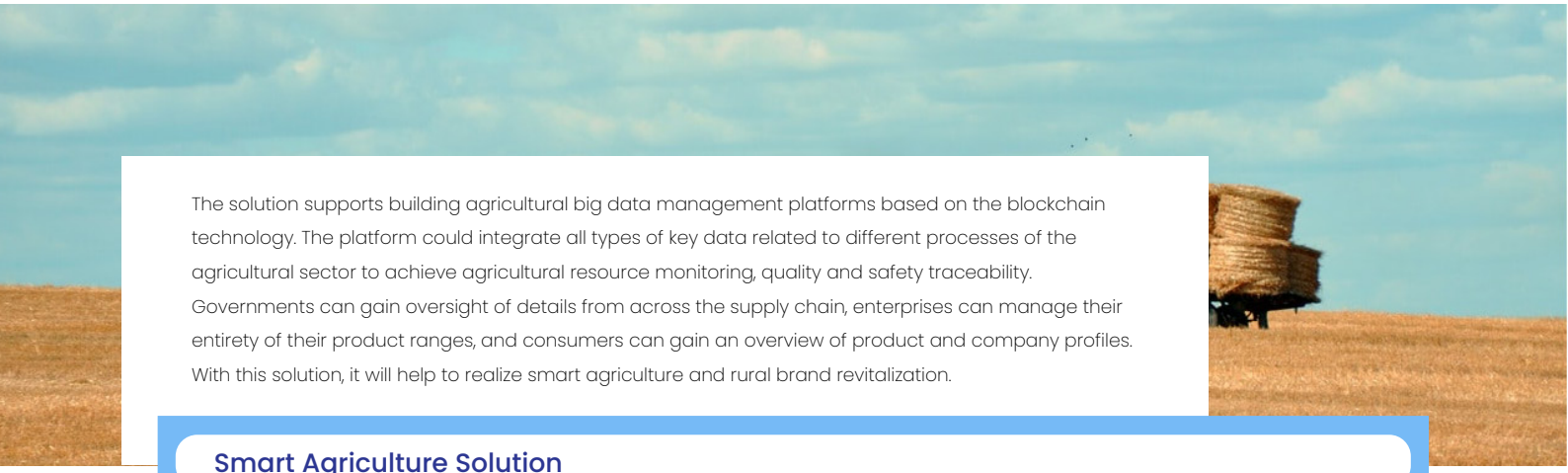
Uneven Quality of Agricultural Products

The quality of agricultural products from rural areas is varied greatly, because of a lack of different production standards, supervision difficulties, and inadequate traceability management.

Producers Are Unable to Reach Consumers

Under traditional agricultural management methods, farmers could hardly pass on their products and operation information directly to consumers. Customers and end-users are looking towards digitized platforms to know what they are buying and to distinguish the high quality agricultural products from massive choices.

Solution



The solution supports building agricultural big data management platforms based on the blockchain technology. The platform could integrate all types of key data related to different processes of the agricultural sector to achieve agricultural resource monitoring, quality and safety traceability. Governments can gain oversight of details from across the supply chain, enterprises can manage their entirety of their product ranges, and consumers can gain an overview of product and company profiles. With this solution, it will help to realize smart agriculture and rural brand revitalization.

Smart Agriculture Solution

Public Service Query Portal

External publicity window, including traceability inquiry, policy and regulation, new, local specialties, famous enterprises, complaint and report, etc.

Government Regulatory System

Real-time view of the area planting, farming information, production enterprises processing information, pest and disease information, collection and distribution business information

Traceability System for Production & Processing Enterprises

Traceability of the whole process of product production, quality inspection and sales, including raw materials, production process, code assignment, storage, anti-counterfeiting and anti-falsification

Blockchain Storage Platform

Production process data information is stored on blockchain to improve the credibility of product data

Planting and Farming Base Traceability System

Real-time query of information data of planting and farming products
Disclosure of information to consumers to enhance brand trust

Applications

Brand Revitalization

Transparency of Agriculture **Reach to End Consumer**

Building a transparent agricultural value chain on blockchain technology the agricultural products are traceable from various production processes, helping farmers to promote their products, to bridge the gaps between manufacturers and consumers, and to revitalize the rural brands.

Digital Management of the Planting and Breeding Facility

Digitalization **Fine Management**

The information and the data of the planting and breeding activities can be found in real-time. Setting up the farm management platform to record key farming activities helps to improve and refine the processes. Meanwhile, the disclosure of the information stored on blockchain can enhance consumer trust.

Agricultural Products Traceability

Oringin Traceability **Product Transparency**

Building a traceability platform for agricultural enterprises to record all the key information across the whole supply chain is the fundamental step to manage the entirety of product life cycles on-chain. Uploading data to associate with the operations from across the whole supply chain is an example of the fundamental build.

Government Regulation Enhancement

Real-time Supervision **Regulation and Management**

Providing a digital supervision platform for regional governments allows regulatory oversight of the supply chain, including but not limited to enterprises/factories locations, distribution of products, quality assurance informtaion. When problems occur, regulators could rapidly response and identify accountability.

Blockchain Storage Solution——Industry Status

Paper Documents Are Vulnerable to Counterfeiting

It's easy to forge paper certificates, contracts, and other documents. In the meantime, certification processes can be complex and time-consuming, thus making it possible for criminals to engage in fraud.

Paper documents are vulnerable to losses and damages

Traditional means of document storage such as paper and centralized databases presents a risk of losses or damages, resulting in heavy losses to the document owner.

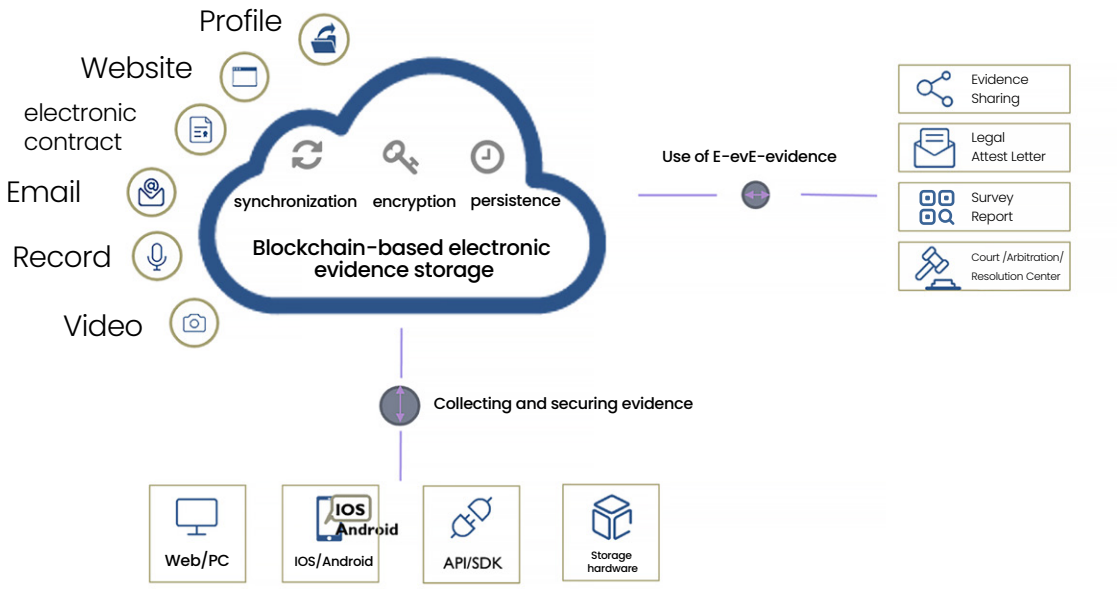
No support for cross-platform cooperation

Each participant contributes its own business data in silos, Cross-platform data sharing presents various problems such as complex administrative processes, ineffective data exchange and sharing schemes, and business delays.

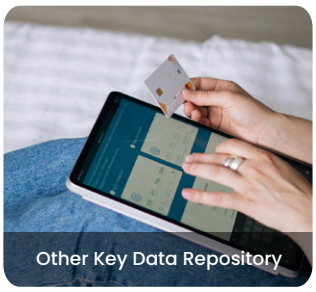
Solution

By utilizing blockchain technology, we can eradicate the malicious intent of paper-based counterfeited certificates, bills, and contacts, and provide authentic data for government agencies and financial service providers.

Blockchain Storage Solution



Applications



Electronic Certificates & Document Storage

Files&Certificates Storage Immutable

Electronic certificates, certifications, electronic contracts, bills and other documents are important and cumbersome, easy to lose and hard to manage. It is difficult to improve the credibility and make each party trust the circulation and use of those documents. VeChain blockchain digitalizes the electronic certificates and documents and they can be audited by a third-party certification authority and stored on the blockchain.

Digital Content Copyright Protection

Content Storage Authentication

Blockchain can show ownership records of digital works, such as pictures, text audio, and video etc.„ protecting the legitimate rights and interests of creators. When a legal issue occurs, copyright information stored on-chain that is immutable and trustable can be rapidly checked and verified.

Electronic Evidence Repository

Evidence Storage Forensic Efficiency

When legitimate rights and interests are infringed, the evidence of infringement is stored on the blockchain and verified by a third-party organization. Online forensics and providing the blockchain electronic evidence, notarization, authentication and other judicial services in one step, which improves the efficiency of safeguarding rights and interests.

Other Key Data Repository

Key Data Storage Immutable

Online transactions, payment vouchers, service instructions, medical data all require transparent and reliable storage. These can all be uploaded to blockchain and timestamped to make the electronic data authentic and trustworthy.

Digital Vehicle Passport Solution——Industry Status

Information Asymmetry

The data related to production, sales, driving and maintenance of the vehicle are kept by different players themselves, thus making it difficult for the other service providers to believe the data instantly when presented with those data.

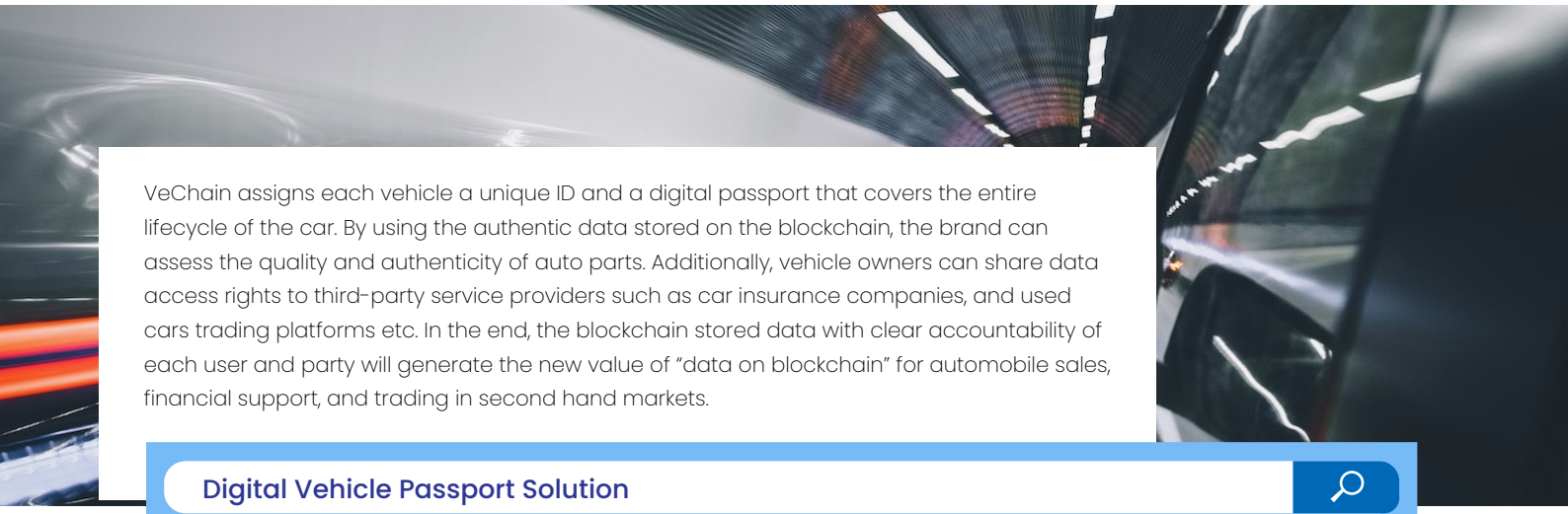
Low Data Reliability

In a centralized system, it's possible for the data to be tampered with. The alteration of core data may hurt the interests of customers and other stakeholders in the industry.

Insufficient Digital Service

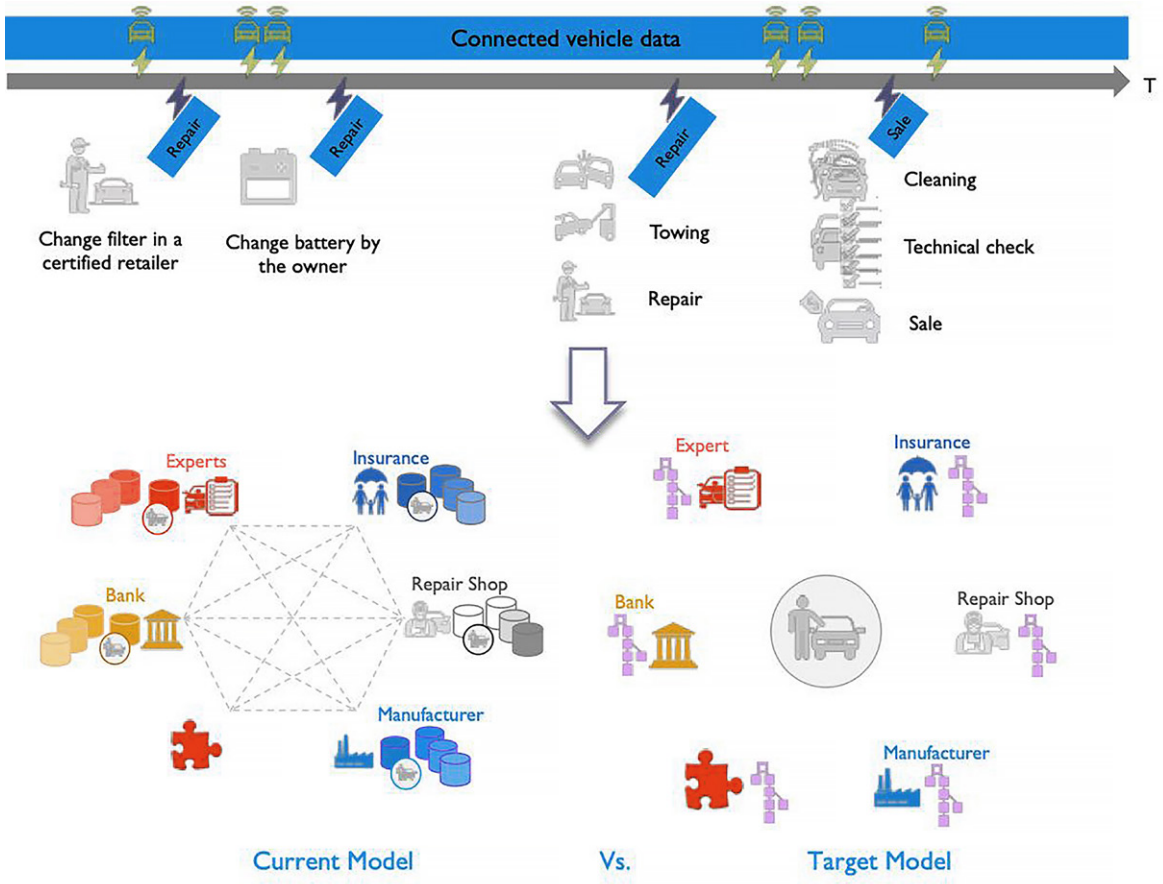
Most brands fail to make good use of the authentic and reliable data to provide value-added services to the car owners. Limited interaction with car owners leads to poor customer retention and a lack of repeat buyers.

Solution



VeChain assigns each vehicle a unique ID and a digital passport that covers the entire lifecycle of the car. By using the authentic data stored on the blockchain, the brand can assess the quality and authenticity of auto parts. Additionally, vehicle owners can share data access rights to third-party service providers such as car insurance companies, and used cars trading platforms etc. In the end, the blockchain stored data with clear accountability of each user and party will generate the new value of "data on blockchain" for automobile sales, financial support, and trading in second hand markets.

Digital Vehicle Passport Solution



Applications

Vehicle Life Cycle Management

Data Transparency Data Sharing

Establishing a life-cycle information interaction system for car manufacturers, repair shops, insurance providers, technical experts, second-hand car dealers etc. helps manage different stages of a vehicle and enhance data collaboration among different parties.

Second-hand Car Trading

Vehicle Digital Passport Second-hand Car Transparency

The solution harnesses the blockchain to record vehicle ownership, usage and maintenance logs. Each vehicle has a digital passport and verified mileage recorded on the blockchain. Information is uploaded to the maintenance book by related parties instead of the car owner, and it is time stamped and secured by the blockchain. The real usage condition of vehicles can be declared to buyers. Car owners control the read / write access rights to the digital passport. Data collected can be shared with potential buyers, insurance. When the vehicle is sold, it can be transferred to the new owners.

Key Parts Lifecycle Management

Battery Traceability Key Parts Monitor Multi-party Collaboration

Adopting traceability management for key parts of automobiles like batteries, identifying the best processes to monitor and manage those key parts, and ensuring safety are critical to the safety of drivers. Critical data of key parts stored on blockchain is immutable and verifiable. Data can be shared with other service parties to co-provide comprehensive services to car owners and enhance consumer engagement.

Data Manipulation Risks

There is a lack of transparency during the transportation stage. It is hard for cargo owners to know if the goods are transported under the right temperature, and it happens occasionally that operators could turn off refrigeration equipment during delivery in order to save costs. Also, transition environment data also could be altered in the central data storage system.

Data Fragmentation

With currently available solutions, the data owned by a company is scattered and inconsistent. Multiple parties engaging in the whole logistics process share the difficulty in mutual trust and in data traceability. Data can hardly be shared in a trust, efficient and cost effective way among interested parties.

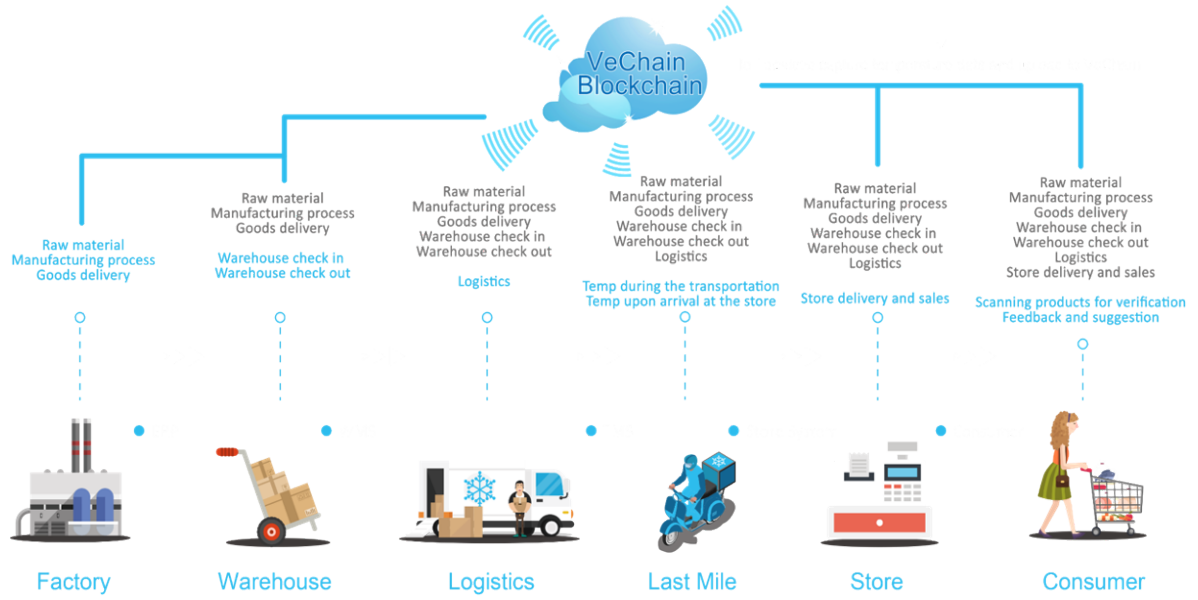
Low Transparency in Medical Sector

Both the openness and transparency of medical information and privacy security need to be taken into account. Open and transparent medical data is an effective way to improve the medical level and alleviate the conflict between doctors and patients. The public hopes to obtain open and transparent data and secure and satisfactory diagnosis and treatment.

Solution

The solution combining blockchain technology and IoT sensors helps to real-time check the temperature or humidity data during storage and in-transit stages of temperature sensitive products like foods, reagents, medicines etc., and visualize the results to monitor and manage the cold-chain logistic status. Moreover, for medical or healthcare companies, they are allowed to track drugs across supply chain including patients side and giving transparency during treatment between doctors and patients as well, establishing smart medical system.

Cold-chain and Smart Medical Solution



Applications


Cold-chain Logistics Traceability


Drug Supply Chain Management


Transparent Healthcare System

Cold-chain Logistics Traceability

Real-data Monitor Transparency in Cold Chain

Use advanced IoT devices to monitor, record and upload temperature, humidity and location data of food or medical products to blockchain on a real-time basis. We embed data management and sharing in every step of the process, making cold chain logistics transparent, regulated, secure and reliable.

Drug Supply Chain Management

Drug Traceability Logistics Management

Durg products could be attached with unique IDs and loaded to the blockchain to track as drugs move through the supply chain and all the data is transparent, trustworthy, and also auditable. Medicine companies could easily track the products and manage the whole value chain among the manufacturer, logistics provider, hospital and even customer.

Transparent Healthcare System

Smart Medical System Reduce Information Asymmetry

A transparent health care system built on blockchain could allow medical records to be shared effectively and securely. With test or treatment results stored on blockchain, patients could access the right information by using private credentials registered in hospitals, creating a trusted and transparent communication mechanism between doctors and patients.

Cases

Walmart China——Supply Chain Management

#Low-code Development PaaS

VeChain's blockchain technology has been enabling Walmart China's traceability strategy for products as well as pioneer the large-scale application of a blockchain traceability system. By scanning desired products, customers can acquire detailed information including the source of the scanned products and geographic location received by Walmart, logistics process, product inspection report, and many more data points. Following its successes with Walmart, Sam's Club China, a membership-only premium shopping chain owned by Walmart China deployed the Sam's Club Blockchain Traceability Platform as well.

Norway in a Box——Cold Chain Traceability

#Food Safety Track & Trace SaaS

VeChain, DNV and Norway In a Box worked together to build a trust platform to empower customers and businesses alike. It enables consumers from China to enjoy high-quality Norwegian products, such as seafood, supplements, mineral water, or home furnishings entering the Chinese market. With the solution, each product is assigned a unique ID, enabling full traceability and immutability of data in the supply chain with data quality being assured by globally renowned third-parties such as DNV.

SHAN——Food Safety Traceability

#Food Safety Track & Trace SaaS

A premium Ginseng Snack Producer Using VeChain Blockchain Technology to trace their new lunched product, Chocolate-Covered Raw Cut Ginseng. The raw material, a rare ginsen kind from Changbai Mountain, China, cultivated by ginseng growing experts for more than 40 years, traced with blockchain technology to achieve transparency. Customers could know the whole production story behind, and have more insights to the brand.

Shokay——Product Carbon Footprint

#Sustainability Track & Trace SaaS

With sustainability now a core focus of the fashion industry, Shokay chose VeChain's blockchain-enabled sustainability solution to create visibility of its sustainability-oriented actions throughout every aspect of its supply chain and business operations. Shokay is able to directly stimulate the local economy and provide an opportunity for over one thousand households to earn a sustainable living. This ethical, sustainable and trustless production cycle drastically enhances Shokay's reputation in the industry and makes them much more attractive to downstream brands.

BYD——Carbon Credits Ecosystem

#Low-code Deployment PaaS

This carbon bank solution rewards vehicle operators with carbon credits based on their vehicles' driving performance and carbon reduction. This solution provides the tools necessary to construct a blockchain-based ecosystem aimed at reducing the global carbon footprint. With the IoT and blockchain technologies make the carbon emission reduction activities measurable and certified with a universal standard by the third party authority, which makes the ecosystem scalable, borderless and sustainable.

VeScribe——Anti-counterfeiting Labels

#General Supply Chain Track & Trace SaaS

VeScribe provides virtual engraving services for fine jewelry and giftware, but with a unique twist. The service allows users to capture a special moment or occasion and permanently embed it into a physical object. Thus, the object becomes a time-capsule just waiting for someone to peek inside to learn about its origin, history, special occasions and unique journey.

Yizhiji——NFC

#General Supply Chain Track & Trace SaaS

For 'small and beautiful' independent brands, blockchain technology can help companies quickly build user trust, create differentiated advantages, and open up new opportunities in digital sales and marketing channels. With the solution, Yizhiji is able to authenticate items and create unique connection between owner, brand and product. Consumers are allowed to customize their own products and create unique messages on blockchain linked with NFCs, making the lipstick unique and special.

San Marino National Green Pass——Digital Rights Management

#Blockchain as a Service

The San Marino Digital Covid Certificate contains two QR codes: the first QR code aligns with the European Union requirements and can be instantly verified by approved member states' entities; the second QR code is verifiable by anyone anywhere. Scanning the QR code with any device provides direct access to a web-app where the certificate validity can be checked. This is enabled by linking to a Non-Fungible Token , i.e. a unique and non-repeatable certificate of digital authenticity guaranteeing immutability and accessibility by being registered on VeChainThor public blockchain.

Renji Hospital——Smart Medical

#Blockchain as a Service

MyBaby is the first service of its kind to combine the merits of third-party assured data verification with the immutability of blockchain technology. All information, imagery and data trails, from imagery produced by medical tools to the delivery of the zygote itself will be securely uploaded on VeChainThor blockchain and only accessible to authorized users of the MyBaby Application.

Ongnuid Banner Traceability Platform——Intelligent Agriculture

#Blockchain as a Service

In early 2021, the rice, millet, sunflower, beef and lamb of Ongnuid Banner region were approved as geographically landmarked products. Accordingly, VeChain's blockchain solution will be applied to these products on an ongoing basis. The Bureau of Market Supervision and the Bureau of Agriculture and Animal Husbandry will also rely on the traceability platform to support outstanding local enterprises, cultivate rural brands and demonstrate the quality of products from the region.

A Well-known Fast Fashion Brand——SuStainability Traceability

#Sustainability Track & Trace SaaS

The brand developed a smart product solution with VeChain to achieve sustainability by reusing the cutting waste of the cloths and converting those waste into new products.
By scanning the tag in the products that are made by those recycling materials, consumers will see the whole story of this product from the very beginning of the production, knowing that it is really a green product.
Not only could the brand provide traceability information directly to consumers about the reusing the cutting waste of the cloths, it actually could create a new seeable sustainable business model. With this platform, more counterparties along the supply chain could onboard this entire new environmental business and market.

2Artopia——Anti-Fake Labels

#General Supply Chain Track & Trace SaaS

2Artopia partners with VeChain to provide a blockchain based traceability platform for Chinese original artworks, telling stories behind the creation. By using NFC chips and blockchain technology, all the information of art works can be stored in a trustworthy way, protecting the mutual trust of artists, dealer platforms, buyers. and create a link directly between buyers and artists.

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Learn more about the cases from our consultant

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