Leveraging Blockchain To Bring Transparency In Food Supply Chains

Case study by

CIED

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About Fairfood International

The challenge of catering for the exploding world population — in a sustainable way, with a fair distribution of value in the supply chain —is seeding a revolution in fixing the global food systems. For the Amsterdam-based NGO <u>Fairfood International</u>, their contribution to this revolution translates to research, technology and advocacy towards a fair and transparent supply chain. With this powerful trio, the organization not only champions food security but establishes a system that provides the farmers and workers who are active in the chain with a living wage or income.

An approach that can only be sprouted on the imagination of futurists, Fairfood now assists sustainability leaders in the agri-food sector in ensuring transparent and fair-paying supply chains. While their tool Trace helps in discovering producers and suppliers spread across the world, <u>ALIGN</u> provides these companies with one-stop information into sustainable measures that they can adopt in their value chains.

The Traceability Challenge

Agri-food brands today are striving to facelift their supply chains with transparent information. And the market is cumulating a consumer base who are willing to spread the word and even pay more for the products to support the company's goodwill. What persisted as an interstice between these goals was the lack of suitable technology that would assist the human efforts in fixing the supply chains.

Discovering the possibilities of blockchain, the Fairfood team found themselves looking at their possibilities in a whole new light. While many blockchain solutions are capable of mapping out supply chains, there is still a gap in making this transparency into good use for the farmers. To win this challenge, a partnership is ineluctable with a company who can assist the team not just with technical infrastructure but understands the importance of a traceability system in supporting their farmers.

"Blockchain was the right way to go but we needed a partner who would understand Fairfood's vision in giving back to the farmers. CIED's portfolio is an attestation to their closeness to projects that aim at societal good"

– Marten van Gils, Tech Director

Fairfood collaborated with CIED to devise a perfect traceability solution that would encourage more brands to follow this path – an experience that would take advantages of digitization to every actor in the supply chain to benefit from transparent information, inventory management and storytelling features that is appealing to consumers.

Attaining Traceability With Innovative Solutions

CIED's role as a technical partner began with big decisions that went beyond technical application and knowledge to achieve the objectives. Our team worked with Fairfood throughout the planning, forecasting and managing all stages of the product cycle.

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"The team stayed with us through iterations and was not reluctant to dip their hands into something completely new"

– Marten van Gils, Tech Director

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Together with Fairfood, we started to build a traceability system that would assist Fairfood's client, Verstegen Spices and Sauces B.V, to trace their nutmeg supply chain, starting from their farmers in Indonesia up until the final point in the supply chain, i.e, to the racks of COOP supermarkets where the product is sold to the consumers

From our first milestone of an MVP in a month, to iterative improvements with multiple brands and their supply chains, here are some of the key features that we built on Trace to advocate for transparent supply chains:

Secured and verified transactions

Built on AWS infrastructure and Topl blockchain technology, Trace allows companies to onboard the farmers and suppliers as a single entity or a group, with high anonymity to the data. The record of every transaction made in the ledger is stored in the system. Any such transaction can only be approved if a farmer/supplier verifies the details of the transaction that is sent as an SMS in the receiver's local language.

Being a blockchain-based database, Trace stores relevant data from all your partners, giving your company a 360-view of the total volume of purchases activities. Individual users are saved from the hassle of constantly sharing the operational data and procurers are freed from cross-checking the data as audits will be conducted automatically, eliminating the resource-heavy processes such as extra price verification. For easy retrieval and analysis of data, TRACE categorizes each transaction based on supply chain movement – from procurement to stocking to processing to even stock mergers and losses.
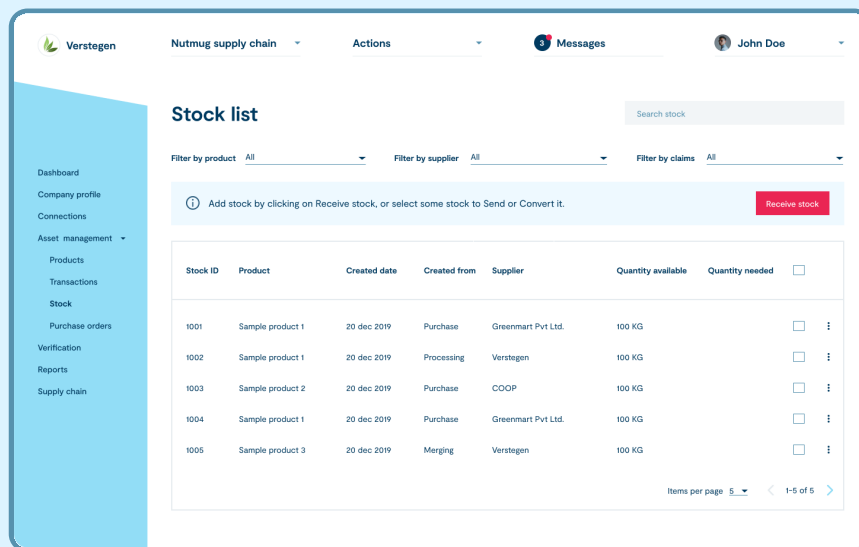
The lack of intermediary in the blockchain system results in faster and more transparent settlements, as the ledger is updated automatically. The flow of information can be pre-programmed so that it can only be visible to authorized participants. All transactions are password-protected, unique for each user and never stored in the servers.

Transactions view in TRACE

Request or receive new stocks in a click

Keeping track of stocks has always been a challenge for businesses. From knowing what's on sale to what's on the shelf, and how much and what is procured to how much storage space is available, stock management is nothing but a demanding play of data analytics and operational skills.


Transactions view in TRACE

To assist in the process, Trace lets users manage good, despite their geographical dispersion. The distributed ledger technology also makes it possible to distribute the data to multiple parties.

Connecting the links and nodes

A great difficulty that companies face in tracing supply chain is to pinpoint their nodes as often these chains are comprised of many undisclosed indirect suppliers. This results in broken links, devoid of transparency and impotent of making data-driven claims.

Acknowledging this obstacle, we built the feature 'connections' where verified users in the system can invite their direct as well as indirect suppliers to engage in the process.

Members of a supply chain can also ascertain the source and quality of their inventory. Consequently, only known parties can be allowed to participate in the blockchain, which means that companies or suppliers must receive permission to join the system
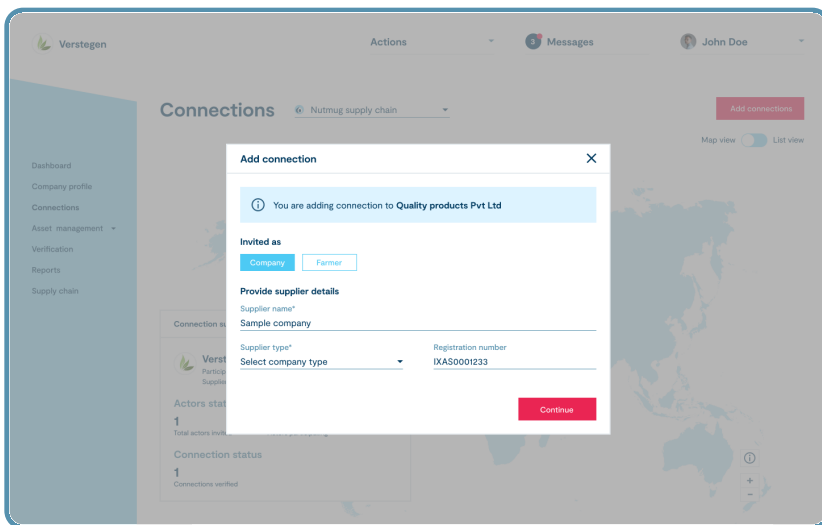
New suppliers can be invited to be part of the system
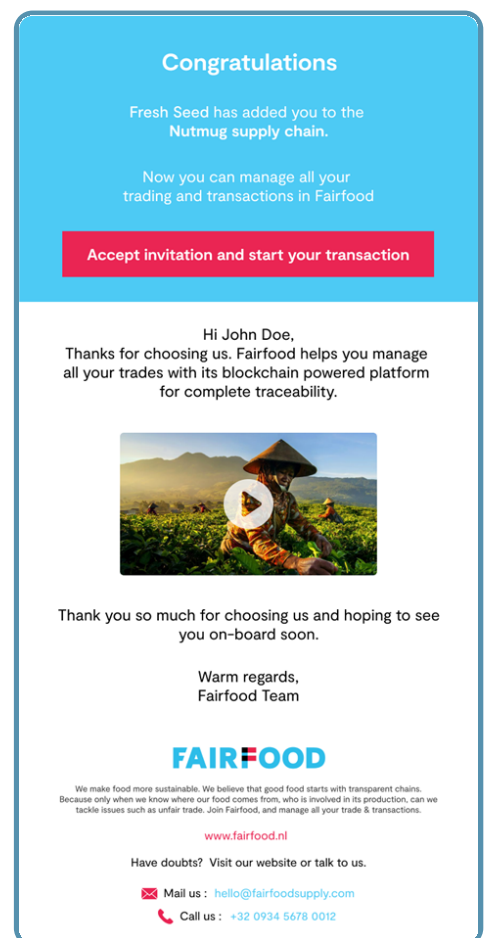
Emails are automatically sent upon adding a new connection

To protect the data of the users against privacy issues and competitive intelligence, nodes are pseudonymised. This means that while they do have unique identifiers associated with them, the actual identities associated with those identifiers are not discernible based on information on the blockchain.

Supply chains are mapped based on the connections. Each supplier information is pseudonymized and non-verified nodes are represented in dotted lines.

Easy auditing and provable claims

Transparency in supply chains provides accountability for trading transactions and farming practices, which supports claims like organic, freshness, and superior quality. With Trace, brands can reveal these claims to their consumers with a scannable QR code.
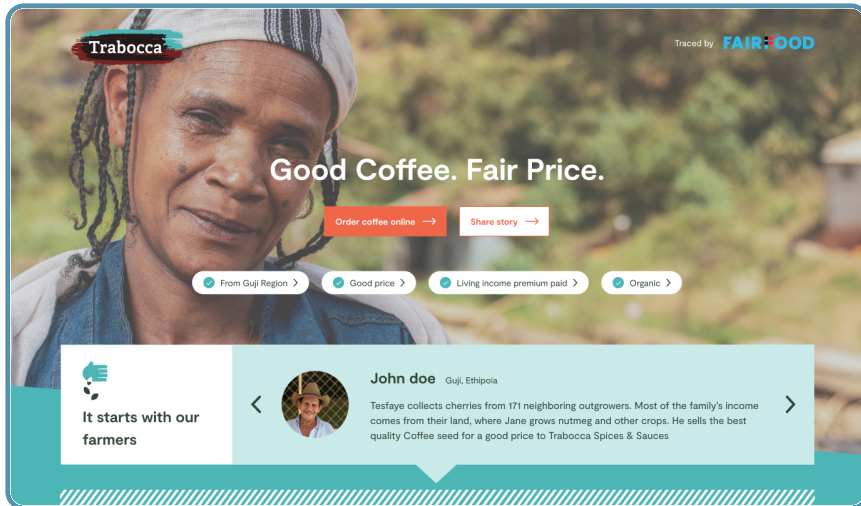
Visit Trabocca's supply chain on Trace to know more

Companies/suppliers can also request other members for information on their products. The provided information is either accepted or rejected by manual verification. Companies can also check for transferrable claims and inheritable claims when produce moves into further stages of the supply chain such as processing. New claims can also be made if it can be verified by the system. For example, claims such as the origin of the product, days in the process can be verified by the data provided during transactions.
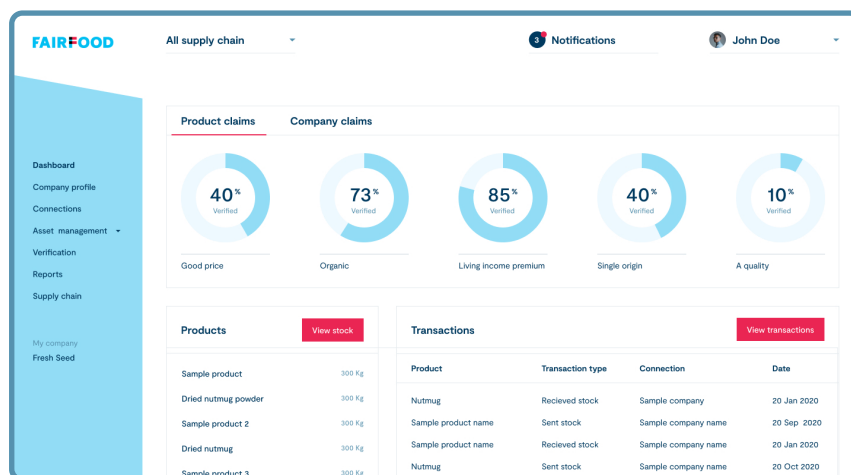
Claims can easily be made, proven and shared with suppliers and consumers.

Cutting complexity in supply chain management

As technical companions, our main goal was to make this complex technology most user-friendly to the company and its nodes. An easy interface that is functional for all of its users was a bigger challenge. With a highly interactive and visual interface that helps in easy navigation and efficient interpretation of data, this goal was attained.
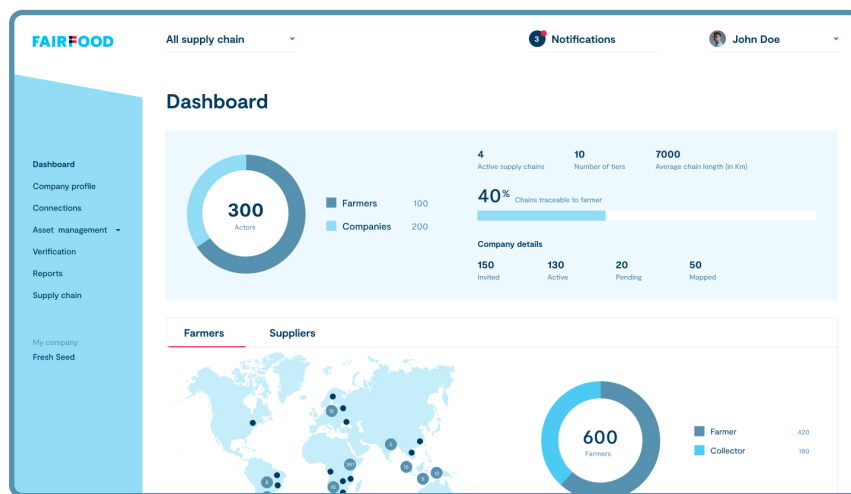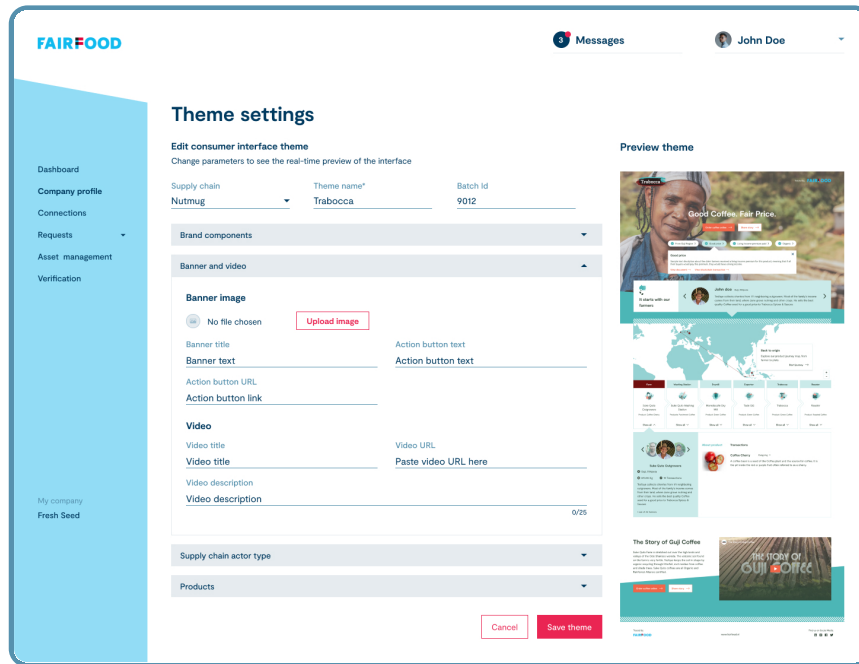

A one-stop dashboard for all your information

"The goal for the minimum viable product was to have all the features ready to onboard our partners. What we lacked then was an easy-to-use, customizable and purposeful interface that is ready for the public without additional help"

– Marten van Gils, Tech Director

Enhancing brand identity with customizable themes

The Trace benefits

Within two years of implementing Trace, Fairfood is working with companies such as Verstegen and Trabocca, for tracing supply chains of a variety of products including nutmeg, coconut and coffee. The organization is ready to start five new projects under 'Cash Back to Farmer' initiative, making sure that farmers spread across the world gain fair wages. With Trace, Fairfood's advocacy has spread beyond the borders of the country to under-developed and developing nations where ensuring transparency and fair wages will create a bigger impact. Last year, Fairfood was also nominated for the Dutch Blockchain Awards under the category of social innovation.

66

"Our revenue basically doubled with Trace. What we got in CIED is a partner who is knowledgeable, capable and affordable"

– Marten van Gils, Tech Director

99

About CIED Technologies

CIED is a group of multinational software companies that focuses on building web, mobile, AI and blockchain based applications. From building apps that were trending at top 10 social apps in India to apps that are used by multinational consumers goods brands, CIED's portfolio defines innovation from a whole new perspective.

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