APRIL 5TH, 2018

Project Overview: Ambrosus

Predictions Accessible for all

Project Name: Ambrosus
Token Name: Amber
Ticker: AMB

Project Synopsis

One of the most disruptive applications of blockchain technology in the supply chain management would be to allow mutually mistrusting entities to exchange records on a shared ledger, without relying on a trusted third party and at the same time, giving transparency and accountability to all of their members in both food and pharmaceutical industries. Currently, there are several projects working with their own innovations and ideas and managing product information in a way in which several industry partners would question the integrity of their products. For this document, we will focus on Ambrosus; a swiss startup that claims to bring transparent traceability with a combination of high tech sensors and blockchain technology in order to reliably record the entire history of the products from farm to fork.

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Specifications

- **Algorithm:** As for now Proof-of-Authority
- **Technical layer:** Non-native token (ERC20), will have its own blockchain on the medium term.
- **Purpose:** Network Token intended to be used within Ambrosus' own specific system with added functionality.
- **Underlying Value:** Token tied to the value generated and exchanged on the network.
- **Utility:** Usage Token, grants access to the functionality of the network, but eventually will also give the right to make contributions with master nodes.
- **Legal status:** Utility Token, offers well-defined utility within a network and explicitly avoids security-like features. Regulatory compliance as a priority.

Website:
https://ambrosus.com/

Whitepaper:
https://ambrosus.com/assets/Ambrosus-White-Paper-V8-1.pdf

Technical Documents:
https://ambrosus.com/#tech-docs

Roadmap:
https://blog.ambrosus.com/ambrosus-network-amb-net-road-map-2018-83a436d59562\

Developer's Portal:
tech.ambrosus.com

Gateway API:
dev.ambrosus.com

Team Overview

The core team and advisors is quite extensive and they are constantly finding new talent. Because of this, it would be better to check the team's updated profile here. However, we made a brief of the most notable team members:

CEO Angel Versetti – Angel previously worked at the United Nations, World Resources Forum, Bloomberg and was trained at Google. He was the youngest project leader and lead published author at the UN. Through his partnership with Versetti & Co he led investments in startups, social projects and early cryptocurrencies.

CTO: Dr. Stefan Meyer – Stefan has over 20 years of R&D experience in food analysis, ultrasound sensors and data encryption. Previously, Stefan led R&D projects at Nestlé, MHM Microtechnique and Vitargent Biotech and also sold two projects to Maersk Group and Perrot GmbH.

CPO: Dr Vlad Trifa – Vlad is the Founder of "Web of Things" and former Head of Digital Lab at Swisscom. As Co-Founder of "EVRYTHNG", he has designed and built large-scale IoT platforms used by Fortune 100 companies (incl. Coca Cola, Unilever, LVMH, GE).

Dr Joseph Chen-Yu Wang - Project Manager of Ambrosus. Chief Scientist at Bitquant Research Laboratories. He previously served as Vice President at JP Morgan in New York and Hong Kong (Quantitative Analytics & Equity Derivatives) and also served as Lead Dev at Pointserve and Landmark Graphics. Dr. Joseph holds a BsC in Physics from MIT and a PhD in Astrophysics from the University of Texas at Austin.

Prof Roger Wattenhofer – He is the Head of the Distributed Computing Group at ETH Zurich. An acclaimed computer scientist whose 20 years of expertise spans wireless networking, wide area networking, mobile systems, social networks and physical algorithms. Prof Roger has authored more than 250 peer-reviewed publications in reputed journals on a variety of topics like "Distributed Computing.

1.   What is Ambrosus?

As the world moves more towards the development of technologies in which IoT and sensors ensure information transparency, business will have to adapt to be able to provide real time data to those interested in an industry as fragmented as the supply chain management.

At its core, Ambrosus seeks to fill this gap by creating a data management ecosystem on the blockchain, which will enable seamless interoperability and transparent controlled data availability on demand between various organizations. The goal is to set up a network where the need for trust between all the suppliers, manufacturers, distributors, retailers and even end consumers is removed.

While it can be used in multiple industries, Ambrosus primary focus is both the food and pharmaceutical industry, in which they directly affect the health of consumers that are now more than ever conscious of what they want, which normally has several issues with regulations regarding data storage and compliance.
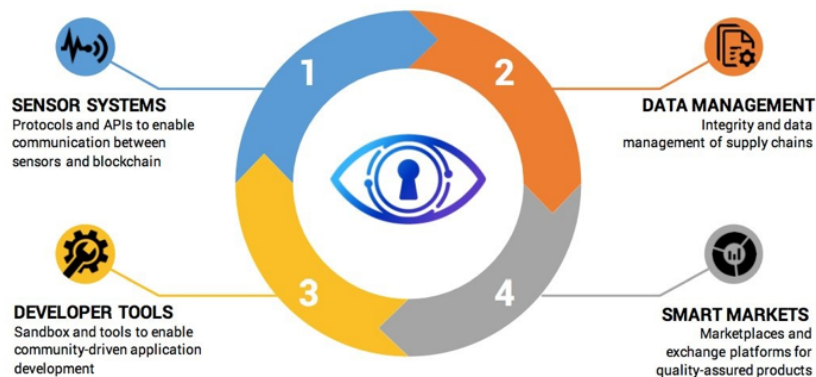
Ambrosus is developing sensor systems through partnerships with sensor manufactories around the world. They do this to help industries get as much real-time data online as the can, regarding food quality and storage conditions. This will help to create applications with the developer's tools they are currently working on, giving solutions to both consumers and businesses. Lastly, they will develop smart markets where various members of the supply chain could establish business relationships in an automated way and with full assurance of the quality of the goods purchased.

2.   Needs Aimed to be Solved

Ambrosus has many use cases where they could develop a base infrastructure to solve unique problems that the whole industry is facing. Despite the huge advances in technology and the critical aspect of human health that the Food and Pharmaceutical industries bring, they have failed to keep up and still manage data in an archaic way. The problems Ambrosus is addressing are:

• **Data Silos:** Companies today have silos where data is stored in local databases and excel sheets. In case that a process analysis or any type of new regulation is needed, it turns expensive and cumbersome to cross the data due to the existence of multiple storage standards. Integrating this information so that supply chains could have real time tracking, quality, and product related updates between multiple organizations is the key to succeed in the new supply chains.

• **Poor cross organizational communication:** Various industries find it hard to share and trace products related information leading to a lack of real time traceability, low quality control and even theft or loss of products.

• **Lack of trusted information available to the consumer:** Some consumers are not well informed about the origin, conditions of storage, actual nutritional information or quality of the product other than the advertised, nor can they communicate complaints effectively to those responsible of the production. There have been several cases in recent years of food and pharmaceutical products that turned out to be fake, contaminated, or of inadequate quality. Therefore, providing the end consumers the ability to verify the authenticity of the package or to be able to search the source and quality of their food or medicine with grated transparency, allows them to make informed opinions and to determinate bad practices and counterfeits.

• **Increasingly strict regulatory rulesets imposed by governments:** Following users concerns, Ambrosus offers a way to appease regulators, cutting down most of the cost spent on audits each year by giving verifiable data in all the processes of the products.

• **Sensor Technology:** Current generation of sensors is not capable of making a real-time food quality tracking for various applications, such as meat or fish measurements.

• **Showcase Market:** Allows farmers and producers to display more verifiable information about their food products, such as organic farming, treatment of animals, and low ecological impact, which provides competitive advantage.

3.   How Will they Adress these Needs?

Their mission is to transform supply chains so they can become a smart automated process that replaces the manual, time consuming sampling and auditing with noninvasive sensors that are both reliable and tamperproof.

Some examples of what they are developing are:
• DNA profiling applications
• Smart packages
• Tamper Proof sensors

This kind of development involves a massive disruption of the way that data is currently collected, stored and utilized. Instead of solving problems in situ, Ambrosus is trying to provide an integrated solution all the way across the value chain from farm to fork. This will improve efficiency and transparency within the existing supply chain, but also leading an integrated app development ecosystem that would open a plethora of new services and opportunities for other startups. The project consists in four different components:

Ambrosus Data Ecosystem

App Development Kit

Smart Commodities Market

Sensor Technologies

a.   Ambrosus Data Ecosystem

Ambrosus is creating an open scalable management protocol that integrates different data sources across multiple organizations in the ecosystem. Key features in this network are:

• **Standardized data architecture:** To allow storage of diverse kinds of data, depending on the type of product.
• **Data Permissions:** Companies can be assured that their data will be protected by a permission-based system, which classifies publicly available data, data available for companies and even for different levels of management within the company.
• **Data Access API:** Allows data access whenever there is a requirement of audits, data analysis or certifications.
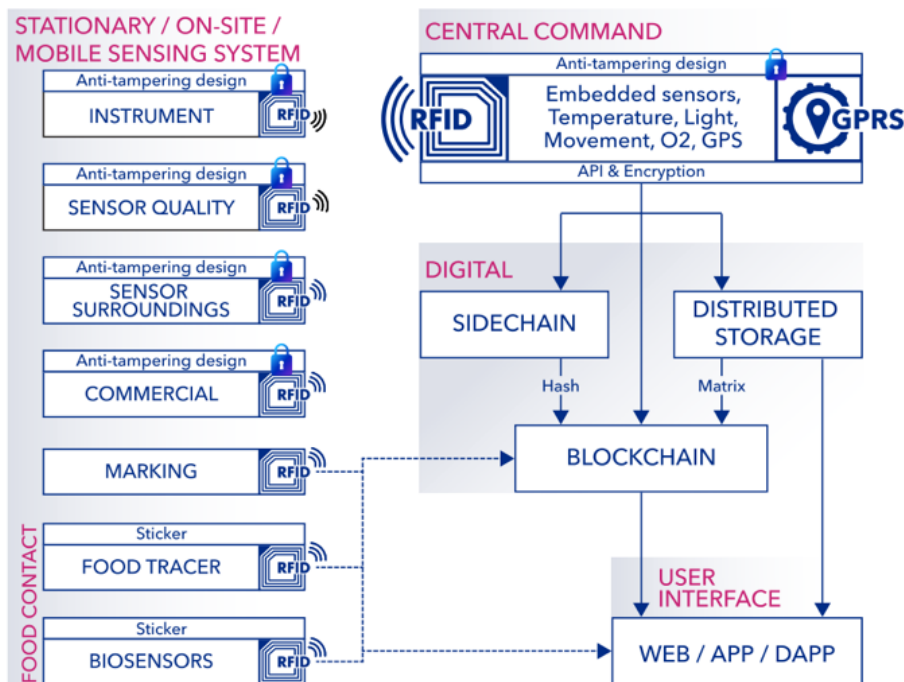

Figure 1: Overall architecture diagram

b.   App Development Kit

One of the main value propositions is the development of mobile and desktop applications for a variety of use cases by connecting to the data stored within the ecosystem.

Types of Apps:

Consumer Related Apps: A structure of mobile apps created by third party developers that use the data provided by the ecosystem. Some examples could be:

• Consumer directly giving product reviews, complaints and feedbacks that go directly to the manufacturer and the staff responsible during the shift when it was manufactured.
• Local farmers and dairy manufactures giving pictures of the product and the environment where it was made.
• Loyalty programs based on consumption.
• Calorie and Nutrition counters linked to product specifications.
• Tracing the entire history of the product that the consumer is buying.
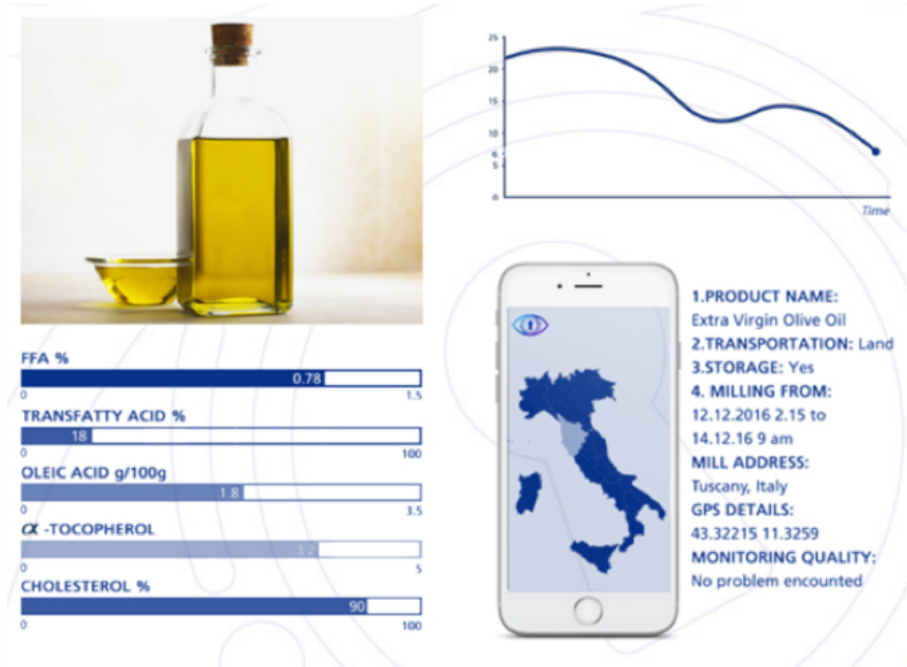• Medicine authenticity checker.

Enterprise Apps: These are designed and built for a variety of data management applications within the different supply chain ecosystems. Some examples could be:

• A logistics company building application using Ambrosus data to offer services to enterprise clients.
• A pharma company using Ambrosus for serialization and printing of labels for integrated tracking.
• Internal Inventory Management.
• App for farmers to tag their products prior to shipping.
• App by insurance companies to calculate premiums based on the data feeds from Ambrosus.

To see more information about this check on Ambrosus Alpha:
Gateway API and Developer Portal https://blog.ambrosus.com/ambrosus-al-pha-gateway-api-and-developer-portal-launched-689dec5d9fab

FFA %
0.78

TRANSFATTY ACID %
18

OLEIC ACID g/100g
1.8

α -TOCOPHEROL

CHOLESTEROL %
90

1.PRODUCT NAME:
Extra Virgin Olive Oil
2.TRANSPORTATION: Land
3.STORAGE: Yes
4. MILLING FROM:
12.12.2016 2.15 to
14.12.16 9 am
MILL ADDRESS:
Tuscany, Italy
GPS DETAILS:
43.32215 11.3259
MONITORING QUALITY:
No problem encounted

c.   Sensor Technology

The entire Ambrosus Ecosystem rests on high quality reliable data and measurements. This is especially true for both the food and the pharmaceutical industries, as the two of them require sensors that can correctly measure the parameters for quality and to guarantee certain certifications to ensure the reliability of the products.

The sensor technology will automatically check such products and could be integrated with related equipment; for example, on tractors and pumps that spray pesticides. These can all be tracked remotely and stored in the data ecosystem. With large-scale data integration, continuous quality assessment and assurance of authenticity will become a reality.

Ambrosus ensures traceability, proof of origin and quality of products moving though supply chains, which means combining both hardware and software to ensure data integrity. They make sure that the product has not been altered, verifying the product quality without being invasive, making manual testing and providing the industry with automation and smart contract implementation. Of course, sensors are only a part of the dynamic; once the reliable data is there, it needs to be stored in a manner that guarantees data integrity, reliability and verifiability.

To sum up, compared to others supply chain projects, the sensors specifications are still for the most part unknown. While they have already announced their crypto-economic update, we are still waiting on more information about the sensors and how do they plan to make this come to fruition.
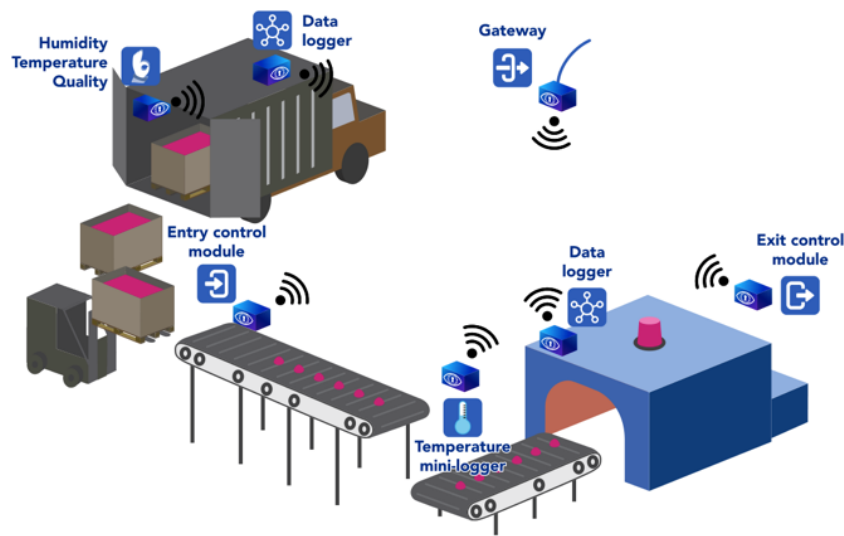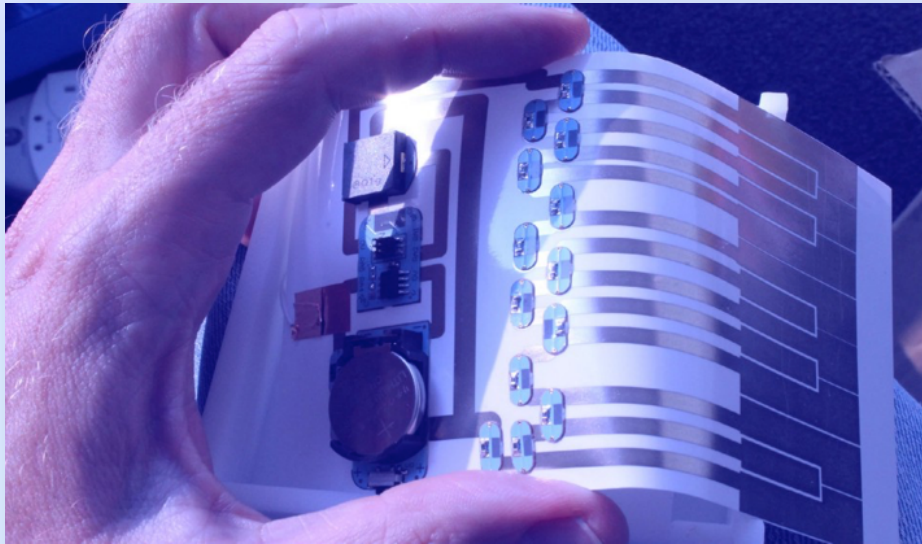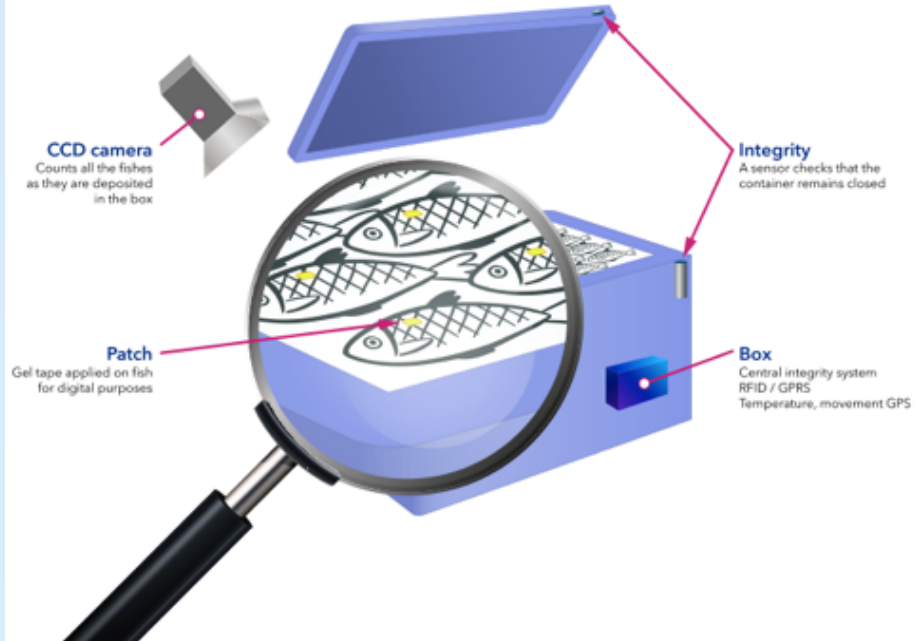
Figure 2: Mobile monitoring for certified temperature sensors, humidity and light interconnected through gateways. Any in-place system can be connected and direct visual information can be collected at transmission download in order to have rapid access to out of range data for the man handling the goods.

CCD camera
Counts all the fishes as they are deposited in the box

Integrity
A sensor checks that the container remains closed

Patch
Gel tape applied on fish for digital purposes

Box
Central integrity system RFID / GPRS Temperature, movement GPS

d.   Smart Commodities Market

The Final pillar that the revolutionary Ambrosus aims to bring would be the establishment of a decentralized market that enables different parts of the supply chain to create transparent and fair contracts. You can see a live demonstration of their progress here:
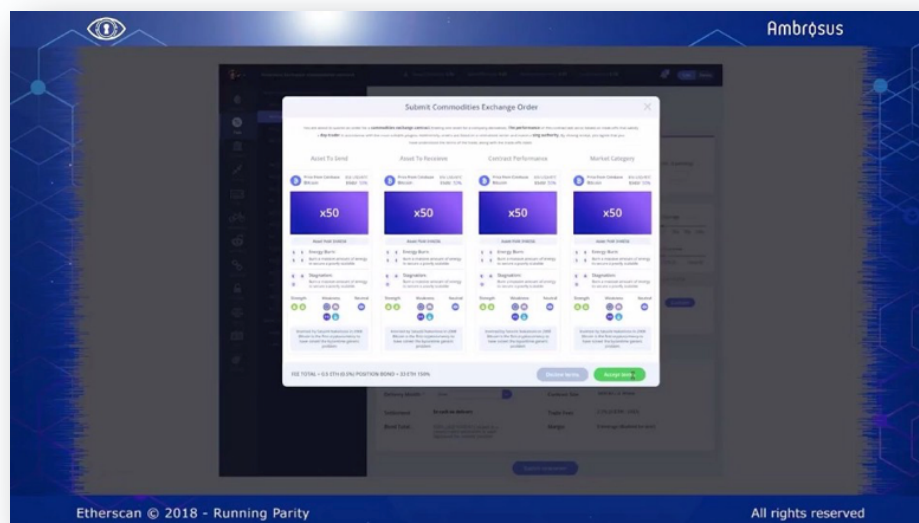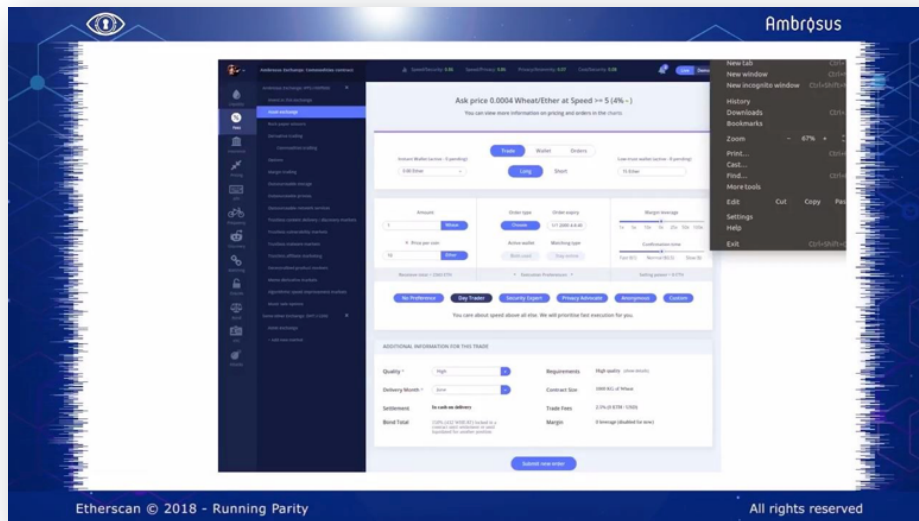
4. What does the token do?
   Is it necessary?

Ambrosus has recently announced an official date for the release of their crypto-economic model during the Community Ethereum Development Conference (EDCON) on May 3-5, 2018, after the date of the speech is finalized.

They have also mentioned that they will extend the lock up period for their core team, partners and advisors for and additional six months, until at least October 22, 2018, and that those that held AMB since the token generation will have an incentive, which will be revealed on April 26th. Furthermore, they will be expanding their operating footprint to new markets, with the intention to announce it in the upcoming weeks.

All of this will finally explain the value proposition of the tokens to their ecosystem. At least some of the key features that the community have expected until now, which include:

- Multi-Tiered Masternodes
- Proof-of-Stake Model
- Token-Burning Features
- Incentives for long-term AMB network supporters

Until now, Ambrosus has not rushed to give information on masternodes or token economics, considering it is a very sensitive legal issue for them. As seen in many different projects lately, tokens that wander into the security realm or without a specific functionality are having setbacks with regulator, which are becoming more aggressive. Even yet without the full picture, we can speculate about some of the expected features of the token with the information that the team has mentioned until the moment, and also make our own conclusions for the short-term and medium-term potential.

Simply put, Ambrosus provides a flexible data model that enables the frictionless onboarding of all real-world supply chain entities (product, batch, box), the measurement of their attributes, and the tracking of related logistical events. You can use their API to create unique digital identities for every item you want to track and analyze along the way. This identity and history will be stored permanently and immutably on the Ambrosus blockchain. Moreover, AMB-NET has 3 key components:

Assets: A digital identity for any physical or conceptual element in your supply chain. It can be an individual pot of yoghurt; a 6-pack of craft beer bottles; a pallet filled with various cases of medicine; a truck; or a box filled with sensors. Every Asset has a globally unique Ambrosus ID (AMB-ID) that is crypto-secured on AMB-NET's distributed database. Developers can also use any external identifiers for assets, such as GS1's GLN, GTIN, SSCC, and others.

Events: Record any relevant and time-stamped information that happened to one or multiple assets. Events should always contain the following information: WHAT (assets concerned), WHERE (location such as lat/long or GLN), WHO (the device/application/user that created the event), WHEN (timestamp) and WHY (business process step). Ambrosus events are 100% compatible with GS1's EPCIS format, allowing you to easily integrate any existing tracking system with it.

Accounts: Every request on Ambrosus, such as creating or reading assets or events, must be cryptographically authenticated. Applications or devices talking to Ambrosus need an account, with corresponding private and public keys to verify their identity. Every request to the Ambrosus network needs to be signed using the private key, which is then matched by AMB-NET to the entity's public key, in order to be approved by the system.

First, it must be understood that the services offered to users will be tied into EUR/USD prices, not in AMB. For example, creating an identifier or storing data for a product that costs 10 cents, could be 0.1 AMB in the beginning and later 0.01 AMB in case of a price increase. This ensures that the token price increase does not affect the users directly, but by free market dynamics.

Additionally, Ambrosus does not intend to replace the current industry standards like HACCP or existing IT systems, but to integrate data from various legacy solutions and ultimately get more benefit out of them. The idea is to use blockchain, data measurement and storage techniques to guarantee and enforce standards and guidelines. Explaining and adding this kind of models to standard setting bodies like ISO, which are very cautious and conservative, requires to continuously demonstrate the value this brings and to push closer to partnerships with different kind of institutions.

Furthermore, many people that investigate these kinds of projects conclude that it makes no sense to add many of the current tracking and measurement methods like RFID to cheaper products. There are many solutions for these products that allow tracing in a very cost-efficient matter. This is one of the expected announcements now being worked on by the CTO Dr. Stefan Meyer, who already has contact with multiple manufacturers of chips, sensors and IoT devices. Consequently, Ambrosus' business strategy so far mostly focuses on higher tier products, where the quality assurance and origins make up a substantial premium add-on to the price.

Even without concrete information, and considering that the team, advisors, partners and core employees all have stake/vesting in AMB, and they have no problem in extending their token lock up period just to dispel most of the FUD that goes around the project, we can conclude that their incentive mechanisms and interests are aligned with the token's growth.

Ambrosus prides itself for their relationships with the public-sector stakeholders, and thus their compliance strategy should be solid by the time they release the token economics. It is important to consider that unlike other blockchains where the ledger is storing financial transactions, their network is designed to store events and assets related to the product, as they pass through the supply chain. Hence, unless they mention something different in the cryptoeconomic model, as they use Proof-of-Authority (PoA), the decentralization is not going to be completed in the first phases of adoption; therefore, these masternodes would only be run by Ambrosus and trusted parties that do not have an incentive to tamper product related data.

On the other hand, AMB-NET 1.0 is their decentralized solution for storing assembly-lines and sensors data about food and pharmaceutical assets. It serves two primary functions: designating asset's identity and tracking the storage, transportation, delivery, and temperature of assets throughout the supply chain. These will be referred as "events".

In the beginning, this network of IoT sensor software will be formed of a dozen masternodes. This model provides an API that sends information to Ambrosus. Then, most of this data would be stored in various repositories like IPFS, cloud or a local private database. Public data would be stored directly on AMB-NET and synchronized with the other nodes, while masternodes enforce the standard ledger consensus though cryptographic-proof mechanisms. This allows Ambrosus to keep a transparent and immutable catalogue of every single asset or event created by any user.

As mentioned before, unless the cryptoeconomic model concludes otherwise, masternodes will be hosted and operated by Ambrosus, costumers, and key partners in a first phase. Only after the stability of the system is established, the opportunity to host a masternode will be given to the broader community. As expected from a masternode, AMB needs to be locked into a smart contract for as long as they plan to operate the node. They also give a sneak peek of the ability to lend tokens to node operators, but its still on an experimental stage and not much has been said about this matter.

The Beta release will use Proof of Authority (PoA), which delegates' block-creation and consensus exclusively to masternodes. This allows customers to segment public and private data. For example, PoA allows Ambrosus clients to query a manufacturer product or to order while only revealing the data that the producer has provisioned for public disclosure. AMB-NET only stores the ID, hash and other encrypted information on its blockchain.

Private data is always stored and managed exclusively by masternodes in the network. Each operator will have the ability to implement his or her storage options freely. Ambrosus enables food and pharmaceutical producers to determine how they want to share product and logistics data with other nodes in a scalable and secure environment.

PoA has the advantage of being much more energy efficient compared to the other distributed network models. Given the concerns specified by their corporate partners and the United Nations about the environmental impact of POW mining networks, they find value in being an eco-friendly solution.

As for the token itself, the purpose of each Amber is to reflect the product's stacking from start to finish. It is a bonded token that collects data as it passes through the supply chain. One could tell that those that use the system the most will inherently need AMB to track large volumes of information. This means that while the end user will not have to pay anything to have access to the information, those that generate traffic on Ambrosus will, giving AMB's token an underlying value in the supply chain.
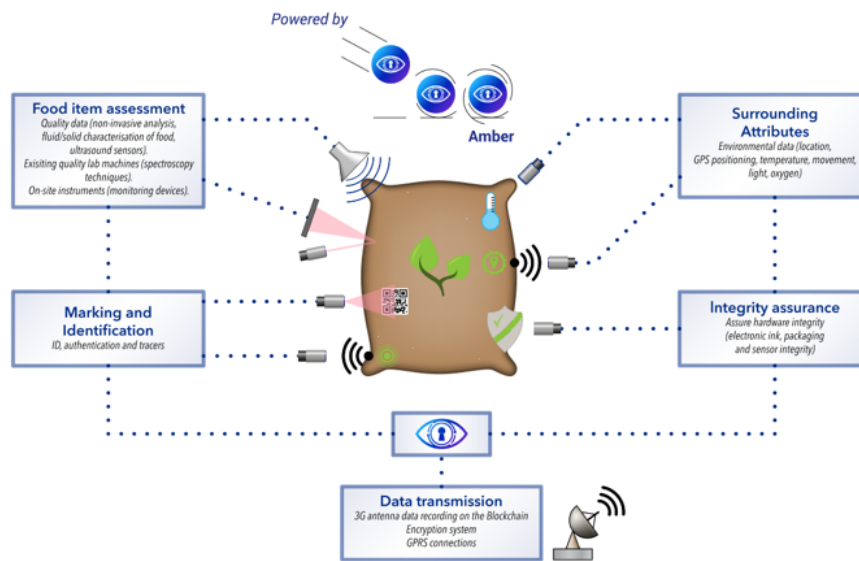
Figure 2: Design of sensing system

Lastly, Ambrosus ensures to communicate that the tokens should not be considered a share in the company, but a part of the ecosystem that can be put to use. The value of the token will increase as demands for its use is increased. While it is bonded to a product, it cannot be traded on exchanges, meaning that the limited circulation could thereby affect the prices, as circulation gets limited.

5. The Team

We provide great attention to the achievements of the team, as we believe this to be one of the major contributions in the success of a project. The group behind Ambrosus is one of the major factors that made us interested in it. The amount of experience they have in all aspects of blockchain, supply chains, business management, hardware engineering, scientific quality control and others is rather outstanding. Many of the senior core team and most of the advisors are pioneers in their own field.

The CEO of Ambrosus, Angel Versetti shows and impressive record of managing and developing startups, and is a leader in technological and economic development, especially if we consider his age. His expertise and close involvement with the UN shows great promise, and his attitude towards regulatory compliance as a priority is one of the best attributes of their team.

Admittedly, there are some concerns about how he expresses himself with the community and the competition. There are some examples where he directly challenges different projects and others in which he responds to the community in an irreverent way. You can even find where he explicitly names and shames the so-called "advisors, sporadic consultants, blockchain gurus, hit and run marketers or outsourcers". All things considered, in this highly volatile and uncertain sector we believe that as long he can value his reputation and gets results with veracity and facts, we do not consider this a negative. Quite the opposite, CEOs in this crypto space tend to be overly diplomatic; they never say anything negative about anyone publicly and even avoid speaking about competitors. This is, of course, assuming he really speaks the truth about the events and expresses certainty.

On the other hand, the CTO Stefan Meyer, has experience with data encryption, food analysis and sensors because he worked at Nestle, MHM, Microtechnique, Vitargent Biotech and the Swiss Federal Office. He also worked as a Technical advisor led by Dr Gavin Woods, cofounder of etherium, Other members of the team include the ex-security manager of ethereum and co-founder of Provenance, an ex-developer of Storj and co-founder of Coinbend, the ex-lead developer of Gamesys, a managing partner of Kenetic Capital, the ex-VP of J.P. Morgan, and the president of a fund's network who has managed 1.5 trillion USD in assets.

Wattenhofer is the latest addition of Ambrosus' team. He will be working on the company's blockchain architecture design, including token functionality, protocol scalability, smart contracts, sensor data 'trust' and users authentication/privacy. He is the head of the Distributed Computing Group at ETH Zurich and is an acclaimed computer scientist. Needless to say, you would struggle to find a more comprehensive and experienced group of people to fulfill Ambrosus' vision.

6.   Partnerships

Non-disclosure agreement

• Agricultural Commodities Company (100 billion CHF+) – NDA
• Food Manufacturer (30 billion CHF+) - NDA
• Food Retailer (25 billion CHF+) - NDA
• Food Manufacturer (10 billion CHF+) – NDA
• Cosmetics and Fragrances Company (4 billion CHF) –NDA (rumored to be Givaudan)

- Food Manufacturer (3 billion CHF+) - NDA
- Food Processing Company (2 billion CHF+) – NDA (rumored to be Buehler)

Confirmed Partnerships

- Partner to United Nations 10YFP Programme
- Swiss Coffee Alliance
- Enterprise Ethereum Alliance

Cooperation/Agreements/Preliminary talks

- Nestle – Preliminary talks on pilot projects; Global R&D Programme Leader (Dr. Fabiola Dionisi) is Scientific Advisor to Ambrosus [link]
- INS Ecosystem – Ambrosus to record INS quality assurance data and establish joint pilot projects
- Trek Therapeutics – Ambrosus to integrate into drug manufacturing process in Trek's clinical development program
- Swiss Canton of Vaud Government – Funding of Ambrosus development
- Ecole Polytechnique Federale De Lausanne (EPFL) – Technology support and management (Stefan Meyer, Vlad Trifa, Esther Amstad, Prof. Jean-Paul Sandoz, Prof. Sandro Carrara)
- Parity – Core Technology Partner (Gavin Wood, Jutta Steiner)
- Wachsman PR – Public relations advisor of Ambrosus
- United Nations – Partner to the UN 10YFP Sustainable Food Systems Program with proposed pilot project
- Bitquant Research Laboratories – Pilot's Project already established and CSO (Dr. Joseph Wang) is Ambrosus' Project Manager
- Lyons Communications – Communications advisor of Ambrosus
- Kenetic Capital – Project Funding; Managing Partner (Jehan Chu) is Ambrosus' Strategic Advisor
- LDJ Capital – Project Funding; President (David Drake) is Ambrosus' Strategic Advisor
- Wageni Technologies – Pilot Project (w/ Bitquant Laboratories) already established
- EIT Food & Swiss Quality and Safety Association – Official endorsement
- Migros – Preliminary talks on pilot projects
- Cantone Group – Established partnership and trials/projects for the hospitality sector
- BioFirm AG – Established partnership and trials/projects for the meat processing sector
- Crypto Valley Association – Official Endorsement; President (Oliver Bussmann) is Ambrosus' Strategic Advisor

7. Product Development Roadmap

Ambrosus recently released their overview of their Ambrosus Network (AMB-NET) roadmap. Please take notice that it only includes the development of the AMB-NET and that there will be separate timelines for tokens economics and sensors in a different update. Also, as they have explicitly mentioned, they work in an agile development environment, so this roadmap can only be considered as a general guidance and not as concrete predictions. It is necessary to pay attention in case that they adapt their strategy.

Due to Ambrosus' serious regulatory compliance, most part of the token economics is still unknown, as it is a very sensitive issue for them and only recently will they share it with the public. Still, we are not expecting the release of a timeline in their next update due after the EDCON conference. On the other hand, the roadmap is divided in three major sections: Q1; Q2 and Q3/Q4. Beyond that, there will be a higher-level overview and more updates as they get closer to those dates.
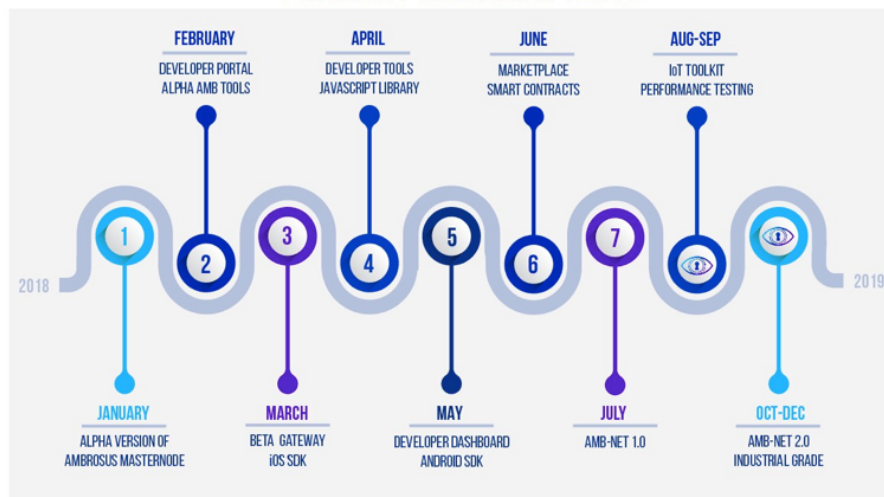
Q1 2018

JANUARY
• Private alpha version of the Ambrosus Masternodes. Used and tested in two different hackathons at Swiss Federal Institute of Technology Lausanne (EPFL) and the other at the Swiss Federal Institute of Technology in Zurich (ETH Zurich).

FEBRUARY
• Developer's portal with the API documentation released. This offers developers' insights to test the alpha version of AMB-NET and the core data model used to describe Assets and Events. Interested developers can get in touch with Ambrosus to test their SDKs.

MARCH
• By the end of Q1, they aim to release the Beta version (v0.9) of the Ambrosus Gateway. This allows any developer to start interacting with AMB-NET, including the Public REST API and updated documentation. Uptime not guaranteed, best effort for SLA.
• Release of the alpha version of their native iOS SDK and a demo application, both open sourced.

Q2 2018

• Release of the Alpha JavaScript SDK (ambrosus.js) to let web developers easily interact with Ambrosus, allowing the design of web apps that integrate Ambrosus with their partners to seamlessly plug their back-end systems using node.js.
• Release of the alpha version of amb.to, their public web based browser that can be used to visualize products. This is a web application that can query information about any asset and its associated events in an intuitive and visually engaging way. This will also be open sourced to allow developers to create their own product viewers.

MAY
• Release of their Developer Dashboard, a web-based interface that allows non-developers to manage their assets within the network. There already is a private alpha version and they are currently trying to make it more intuitive for key users of the supply chain operators, in order to allow rapid adoption.
• Release of their Android Client, an open source SDK to build a variety of apps that connect with AMB-NET. Focus on IOT-Android device communication.

JUNE
• Marketplace Network release, merging the work done on crossroads and its marketplace to present a production-ready platform where suppliers can sell their quality assured goods. It will include simple ready-to-use smart contracts that could easily track the order and define the key assets properties such as temperature, timing or quality assessment. These will be their Smart IoT Contracts.

Q3 & Q4 2018

JULY
• AMB-NET v1.0 release. Expected Service-Level Agreement (SLA) to guarantee 99.95% uptime.

AUGUST/SEPTEMBER
• First complete toolkit for sensors & IoT devices. This includes Ambrosus's first embedded gateway that leverages trusted computing environments such as Intel SGX, to ensure that communication between devices and Ambrosus is secure.
• AMB-NET 1.1 released. Enhances the basic capabilities of our solutions, including significant improvements in the performance and security of the network. They will also release their first connectors to key ERP systems used by costumers.

OCTOBER/NOVEMBER/DECEMBER
• AMB-NET 2.0, Industrial Grade Blockchain-IoT Platform
• Fully operational and enterprise-ready blockchain solution. Achieving fully decentralized results to enable both client apps and embedded devices to talk to AMB-NET, without the need to trust any gateway in the system.

2019 & BEYOND
• R&D collaborations with the EPFL and ETH Zurich to expand Ambrosus to other academic institutions.
• Biggest ambition would be to transform their various blockchain and IOT-sensors R&D projects into ready-to-use products.
• Printed electronics and Blockchain secured tags and sensors.
• Zero-knowledge proofs and homomorphic encryption to enable secure decentralized data storage.
• As AMB-NET adoption grows, more companies will host their own Masternodes to reduce their costs. Masternodes will have an internal auction every year for companies to bid in cash how much would they be willing to pay for the network.
• Scaling of their dAPP Marketplace ecosystem, helping developers launch and monetize their solutions on top of Ambrosus Network.

8.   Competitors:

This year has been one of the most impactful moments for blockchain solutions that tackle the issue of supply chain. Many of these projects have different industries, outlooks and visions in mind. Some specialize directly in a single point of the whole network, while others want to become the IoT standard, not only for supply chains, but also for smart cities and for whatever solution they would need with them. We will briefly mention the most renowned and their differences with Ambrosus.

VeChain

VeChain is one of the most promising projects. It is not only specifically a supply chain solution, but also a whole enterprise focused IoT and dApp platform for streamlining most business operations across different sectors, using RFID and other IoT devices. As you can see, it does not limit itself as only a supply chain solution; instead, they aim to have a considerable number of solutions for their different partners. Their strength lies in their business connections and partnerships with various industries, while already having in place a masternode solution for its early investors. Perhaps, it is already overhyped as most Chinese projects present themselves, but it is definitely one of the top contenders in this industry, having an advantage over Ambrosus in both economics and popularity alone so far.

Modum

Similar to Ambrosus, Modum is a swiss startup focused in recording the environmental conditions of pharmaceutical products while they are in transit. Using specialized temperature reading RFID chips that are low-priced enough to be scaled at that level, the data is verified with predetermined conditions in smart contracts. There are, however, some problems in how the token would end up working in the long term; it has no technical utility to the system itself, but works as a security or a stock that gives up dividends. Even taking into account that they have already followed Swiss laws thoroughly, there are still many risks pertaining how would the dividends be paid. They would have to wait many years for it to be a profitable project, so why wouldn't they choose to reinvest in the startup. Despite that, the team does have good pharmaceutical specialists, still the token economics throw us off this project.

IBM (Hyperledger)

While we can't consider IBM a direct competition to Ambrosus, as they are offering the blockchain itself without a cryptocurrency, it is still one of the most experienced projects in IoT, supply chain, manufacturing and technology. With partnerships like Wal-Mart, Maersk, Nestle and other big consortiums, we have to at least pay close attention on how their technology and pilot studies develop.

Waltonchain

Waltonchain uses RFID tags and blockchain technology to track products during each step of their production and distribution. Sensors read the RFID tags on products, and the received data is stored on a decentralized ledger, allowing users to find an item's history by looking up its unique blockchain ID. Similarly to VeChain, Waltonchain plans to become the first platform to have their own "subchain" with their own token for trading and gathering data, this way their companies can adapt to their own blockchain, according to their needs. They recently released their mainet and one click mining within their wallet, so we are cautiously keeping an eye on it during its development.

WaBi

WaBi is a less known Chinese option, focused in the authentication of products, and mainly food safety. Designed by the company Walimai, they link physical assets to digital ones. The products have tamper proof QR labels so costumers can scan them and confirm their authenticity. The token itself serves only as a currency and for benefits such as loyalty points, delivery or discounts. Therefore, we do not consider that WaBi poses a challenge to the overall ecosystem of Ambrosus.

9.   Challenges and Weaknesses

• Already competing with many similar projects and their releases are entering late into the game.
• Project is relatively unknown and has weak public presence.
• Low volume allows easy manipulation of the price.
• Involved industries are very cautious and conservative, value must be firmly demonstrated.
• Highly dependent on regulations between countries.
• Weak low-term opportunities to raise the price organically.
• First release is centralized due to the current limitations in Ethereum.

10. Opportunities and Strengths

• Team with many decades of experience in all aspects of blockchain, supply chains, Business management, Hardware Engineering, Quality Assurance & Sensors, IoT Platforms / Connected Devices, Smart Contracts, Operational Supply Chains, Blockchain Architecture.
• Regulatory compliance as a priority.
• Flexibility to build new proof of concepts in days. Agile business model and Open Source.
• Achievable project deadlines and clear vision on how to execute them.
• Competition is mostly focused on macro level tracking.
• Focused on the two major industries where people truly care of knowing where their products come from.

11. Token Specifics

Ticker: AMB

Token Type: ERC20

ICO Token Price: 1 AMB = 0.30 USD (0.00100 ETH)

Fundraising Goal: 97,800,000 USD (328,103 ETH)

Role of the Token: Utility

Registered Company: Ambrosus Technologies GmbH, Switzerland

Available for Token Sale: 40%

Raised: $32,507,330 OF $97,800,000 (33%)

Token Sale Period: 22 Sept 2017 - 22 Oct 2017

Total token supply: 361,477,438 AMB

Circulating supply: 144,590,975 AMB

Returns since ICO (3/31/2018)
• 0.82x USD
• 0.61x ETH
• 0.71x BTC

According to their latest intended use of proceeds
• R&D Protocol & Ecosystem: 35%
• R&D for Ambrosus Sensor Systems: 25%
• Pilot Projects, Partnerships and Integration into Supply Chains:25%
• Food Quality Research Lab:10%
• Legal: 3%
• Administration 2%

Amber Token Allocation
• TGE: 40$
• Partners development 25%
• Partners and early investors 16.9%
• Team and advisors:16.8%
• Bounty and security audits: 1.3%

Intended Use of Proceeds

- 35%
- 25%
- 25%
- 10%
- 3%
- 2%
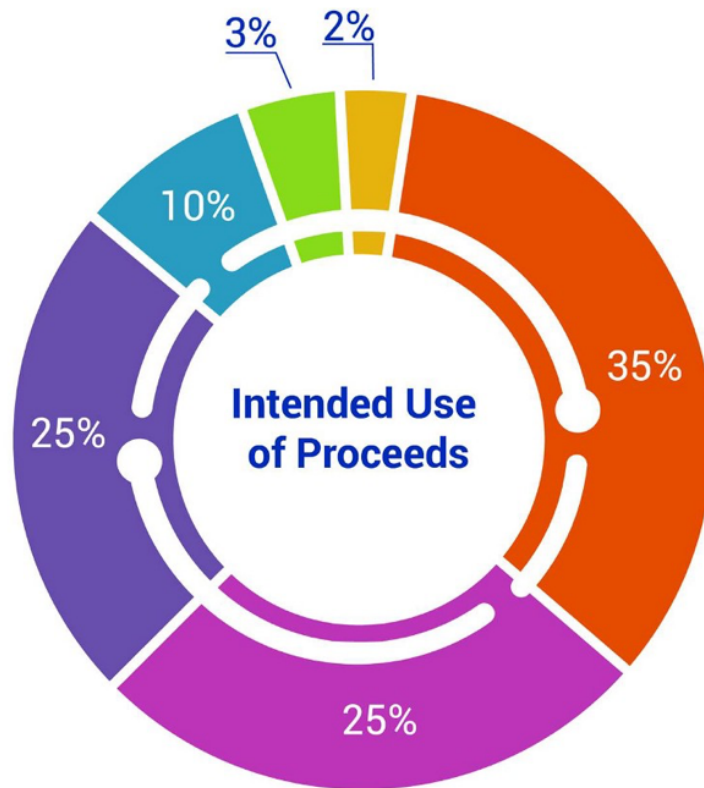
Legend:
- R&D Protocol & Ecosystem
- R&D Sensor Systems
- Outreach, Partnersships and Integration
- Food Quality Research Lab
- Legal Costs
- Administrative Costs

Amber Token Allocation

- 1.30%
- 16.90%
- 40%
- 16.80%
- 25%
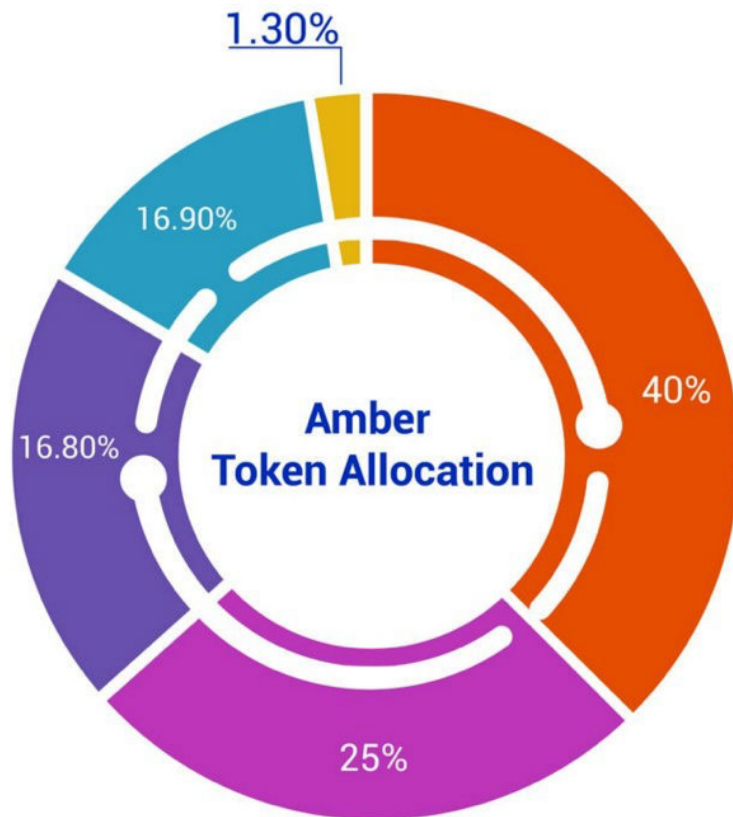
Legend:
- ■ Pre–TGE and TGE
- ■ Partner Development Pool
- ■ Team and Advisors
- ■ Partners and Early Investors (2016)
- ■ Security Audit and Bounty Campaign

12. Conclusions and Investment Considerations

Risk Potential: Medium
Short-Term Investment Potential: Low
Medium-Term Investment Potential: Average
Long-Term Investment Potential: High

In this age, consumers are empowered to demand information about the products they buy; this includes supply sources and manufacturing history. To meet this requirement is either too difficult, not cost effective or even impossible given traditional supply information technology; however, utilizing blockchain could provide the possibility to address this challenge directly.

This technology grants not only the transparency to allow the supply chain managers to obtain the information costumers demand, but also contributes to the companies' competitive advantages. Of course, the development or implementation of Ambrosus or any of the current working projects does not guarantee that the project will succeed. Many existing underlying motivators and barriers will make companies to either adopt them or to discourage their use. By eliminating third parties and automating processes, Ambrosus looks forward to considerably lower the cost of the project as their pitch; however, supply chains are built through networks, so in order to deliver valuable services it would need not only to give a said solution, but for it to be adopted for many if not all the participants.

Crypto-space is plagued with the idea of selling a vision, which in fact can be difficult to be truthful; we consider this to be a big problem. If we leave out the tech-in-tech startups and we blindly defend projects like if they were our favorite sports team, we would find ourselves believing in something that could not be possible. While the pitching and the hype can be extremely important in this industry, the technology must be there, and if it is not, then disclosure is a must. The technology presented must have at least a semblance of reality. Before any real consideration is taken, we must first assess the cryptoeconomic model and the sensor's technology they are releasing on late March or April, as promised.

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Between all the current options, we consider AMB to be the one with more potential in the long run because it represents a solution to the actual problems that the supply chains are facing. Ambrosus never intends to replace standards like HACCP or ISO, on the contrary, it is using blockchain and storage techniques to create the tools guaranteed to enforce the ever-changing guidelines and allowing quick establishment of trust. Leverage is found in data that is often isolated or fragmented. Moreover and as mentioned before, it is focusing on the two major industries where people truly care, as a matter of well being, where do their products come from.

As of now Ambrosus is in a low point of wise price; it is close to the original ICO price, but still in a dangerous position. It has many of the normal red flags for short-term pumps (low volume, low effort shilling, communications groups imploding with users that do not communicate, etc.) so buying now could be risky for both the short and medium term. There are some scenarios that could influence the price during their masternodes announcements, but ultimately the project is still in a very early state and they will probably be in the hands of Ambrosus and their partners until it has stabilized. It then depends on the release of NDA, which we do not have reasons to believe they will soon deny unconfirmed rumors.

Here in Cryptocue we believe that Ambrosus is one of the few crypto startups with a solid long-term vision about their product that does not try to sell themselves only for hype. Even if the whole crypto-space ends up crashing, we believe they can stay resilient and build a sufficiently solid product that could become an industry standard. Of course, this is all considering that all they have said until now holds up, ultimately being that the responsibility of those investing to root out the fiction out of all these projects and to pay attention to the releases of the reports of the technology and real use case applications.

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Further Resources and Sources

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