



Ambrøsus

The Crypto for IoT

SITE

ambrosus.com

GENERAL ENQUIRIES

info@ambrosus.com

INNOVATION LAB (HARDWARE)

innolab@ambrosus.com

AMBROSUS INNOLAB

Rue des Remparts 5
1400 Yverdon-les-Bains
Switzerland

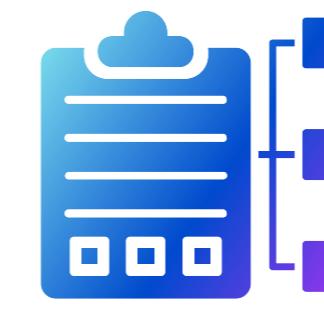
THE NEW ROLE FOR DATA IN AN INTERNET OF VALUE

Data bonded Tokenisation: The Future of Cryptocurrency



Secure

Reliable and Immutable
– data cannot be edited,
modified or deleted



Efficient

Automatised via smart contracts,
and visible to any designated third party,
data can be sent or accessed at any time



Configurable

Data can be configured for financial,
regulatory, or marketing purposes,
and integrated into applications
for intuitive displays

Cryptocurrency: Powering The Cities Of The Future

Why Cities?

Exponential Urbanisation
and Digitalisation in the future

Why Cryptocurrency?

A decentralised foundation
for managing city life through automated
processes and trustless information sharing

Putting the ‘Smart’ in Smart Cities



**Clean
and Quantifiable
Energy**

From Turbine, Panel,
Hydro-plant,
or Geo-Thermal System



**Automatic
Public Management**

Waste Management,
Water Quality, Crop
Irrigation, Air Pollution



**Infrastructure
Monitoring Systems**

Bridges, Buildings, Ports,
Forests, Farms



**Traffic and Port
Congestion
and Custom Controls**

Responding to accidents,
traffic jams, and optimizing
the flow of goods

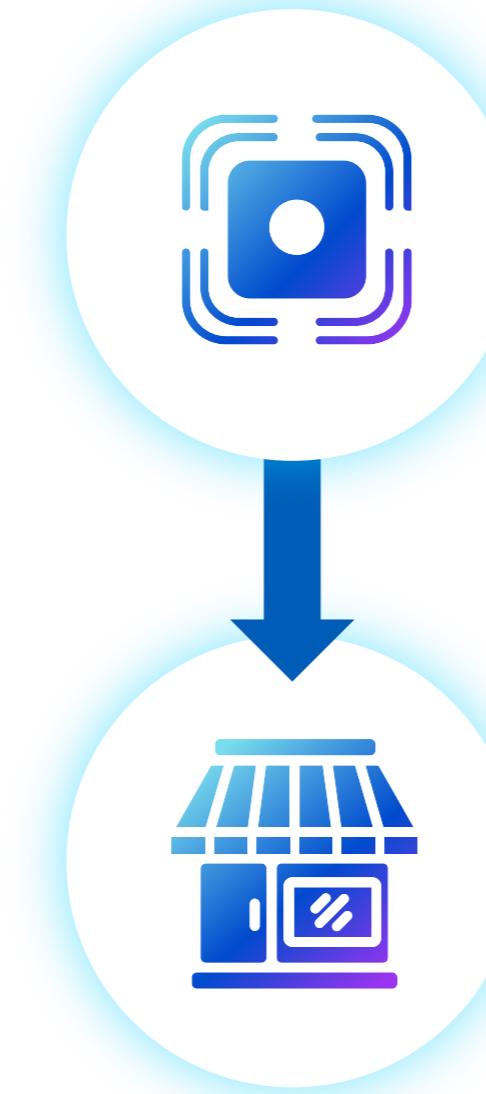


**Public Safety
and Security**

Improving emergency
response time,
and managing crime

A NEW KIND OF MARKETPLACE: SENSOR GENERATED DATA

10 billion
IoT devices by
2020



**The Need for Reliable
and Accessible Data**

**Digital Marketplaces
for IoT Sensor Generated
Data seek to monetise
streaming and sourced data**

20 billion
IoT devices by
2025

WHY MARKETPLACES FOR DATA?

Real-time-data = Real-Time Insight into Problems and Procedures = Specified and Practical Solutions for Real World Problems



Predictive and Prescriptive Analytics

Understanding what is likely to happen and how to react



Research and Scientific Development

Pooling information and access for innovative and scientific breakthroughs



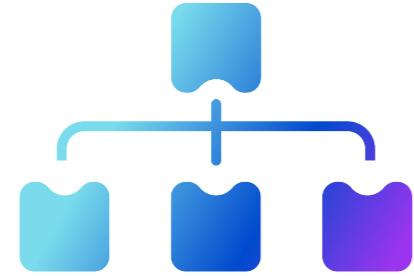
Decision-Making

Business modelling, city planning, public policy and crisis responses

Smooth Logistics • Traffic Congestion and Planning • Sustainable City Management • Secure Infrastructure
Safe Homes • Efficient Energy Production and Consumption • Health Care Information • Clinical Test Trials
Pollution Levels • Natural Disasters • Climate Change • Soil Sedimentation • Flight and Port Customs Checking

THE CONVERGENCE OF BLOCKCHAIN AND THE INTERNET OF THINGS (IOT)

Secure Sensing Networks, Transparent and Distributed Data Management:



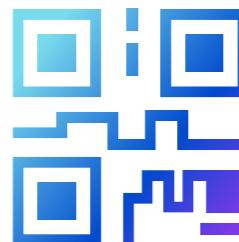
Complete Data Flows

End-To-End management of the entire journey
and evolution of a product



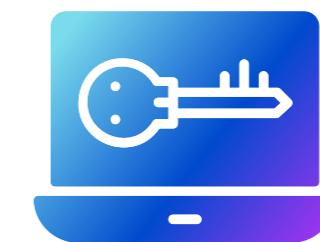
Real-Time Access to Information

Enhanced planning, delivery, harvesting,
reaction-time, and process management



Insight into the Physical Process via Digitalisation

End-To-End management of the entire journey
and evolution of a product



Optimised Security and Fraud Detection

Enhanced planning, delivery, harvesting,
reaction-time, and process management

A Blockchain made for Enterprise Grade Data Collection, Storage and Configuration

WIDESPREAD APPLICABILITY

An ‘Asset’ and ‘Event’ Based Model capable of digitizing any physical object

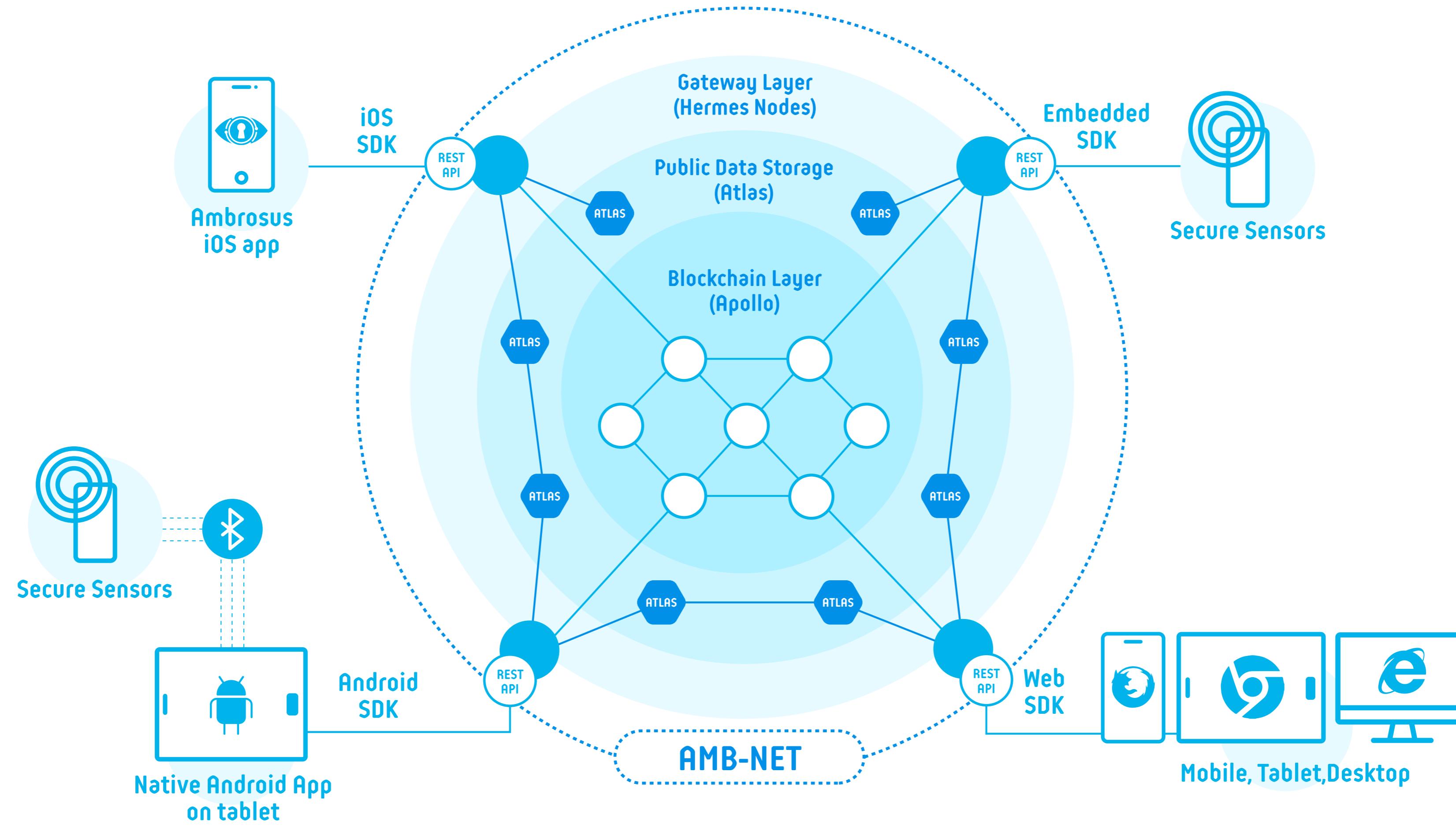
INTEROPERABILITY

Existing Software and API’s allow any company to connect and share information with other companies on the distributed network

SERIALISED DATA

All ‘Assets’ are automatically assigned an ID and made compatible with GS1, GLN, GTIN, SSCC so as to be practically relevant for modern traceability standards

SDKS TO ACCELERATE ADOPTION



AMB-NET: AN ECOSYSTEM BUILT FOR INTEGRATION

The Foundation for Secure Data Management Across Industries



Enterprises



Developers



Consultants



Entrepreneurs



Governments



Trade Organizations

PROBLEMS ADDRESSED BY AMBROSUS

PROBLEMS



Counterfeiting



Product quality



Traceability



Supply chain inefficiency

SOLUTIONS



Digital + physical anti-counterfeit measures



Quality control and compliance

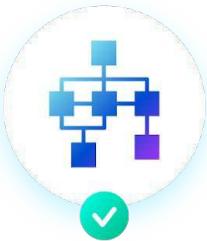


Origin of products
Conditions of transportation/
storage



Real-time data
Data sharing across stakeholders

AMBROSUS CAPABILITIES



BLOCKCHAIN

Scalable and efficient blockchain-based platform that can be easily integrated with existing IT systems, data repositories and hardware



SENSORS

Cutting-edge R&D laboratory in Switzerland that creates a range of secure IoT devices and sensors to assure data integrity from source



SMART CONTRACTS

Self-executing contracts are faster, more secure, and have lower transaction costs. A range of applications is built upon them

Combining **high-tech sensors**, **blockchain protocols**, and **smart contracts**, Ambrosus radically improves **supply chains** and **information systems** by reliably collecting and recording product information

BENEFITS OF BLOCKCHAIN



ENHANCED SECURITY

Immutable, tamper-proof database guarantees security of information



LOWER TRANSACTION COSTS

Drastically reduce back office expenses by cutting overhead costs and intermediaries



IMPROVED TRACEABILITY

End-to-end visibility and tracking of supply chain process in real-time



INCREASED EFFICIENCY

All information is digitized, eliminating the need for manual documentation



TRANSPARENCY

Data on the blockchain is complete, accurate and visible to all authorized participants



FAILURE-RESISTANT

Even if a large number of participants fail the blockchain remains available

Blockchain is an incorruptible digital ledger that can be programmed to record virtually everything of value

HOW WE ARE DIFFERENT



OPEN-SOURCE ECOSYSTEM

Growing developers community
Tools, APIs & SDKs for custom solutions

Publicly audited security and gateways



IOT-READY ARCHITECTURE

Sensor laboratory in Switzerland
Hardware R&D partnerships

Decentralized, modular and scalable architecture



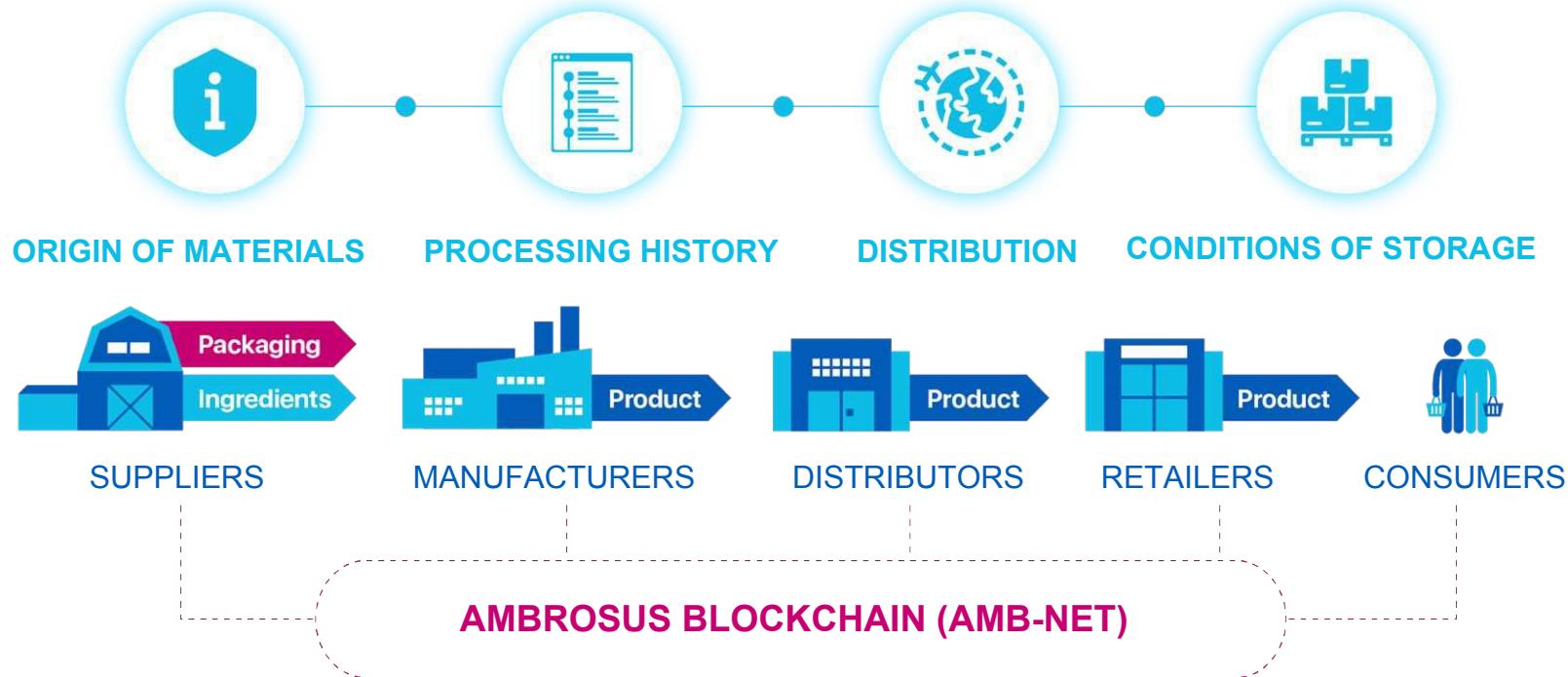
SECURE END-TO-END SOLUTION

Seamless integration of software and hardware (Blockchain-as-a-Service)

Military-grade security and data integrity
Hybrid Public-Private Data Storage

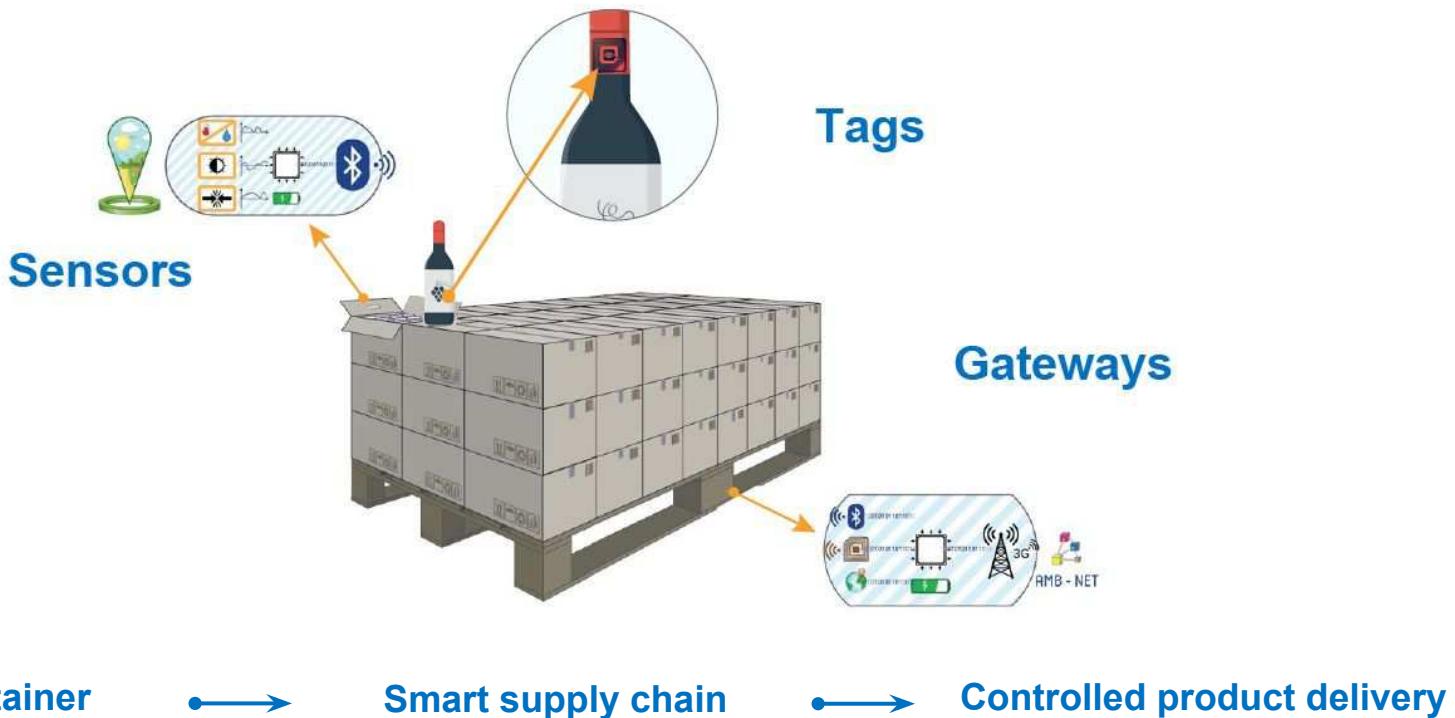
IOT TECHNOLOGIES & AMB-NET FOR SUPPLY CHAINS

Integrating cutting-edge IoT devices into products and containers along the supply chain allows one to track and trace the origin, journey, and quality of the products as they move to the end consumer



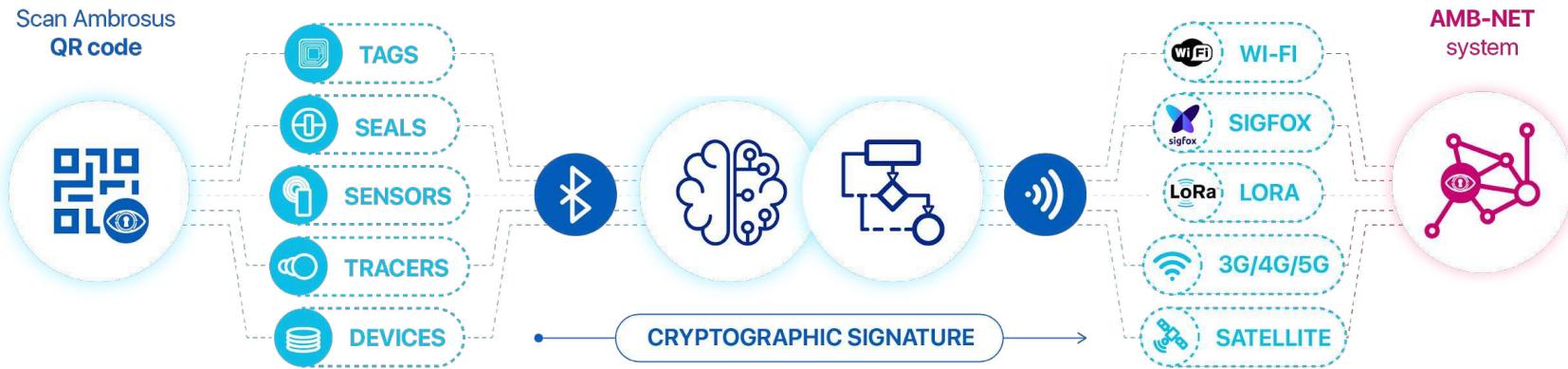
SUPPLY CHAIN INDUSTRIALIZATION 4.0

Digitizing supply chains by integrating smart devices into product packaging and onto the products themselves



AMBROSUS ELECTRONICS MONITOR ALL STAGES OF THE SUPPLY CHAIN

All data is sent to the **AMB-NET**, our **Blockchain**, ensuring: **safety, traceability & transparency** of consumer goods

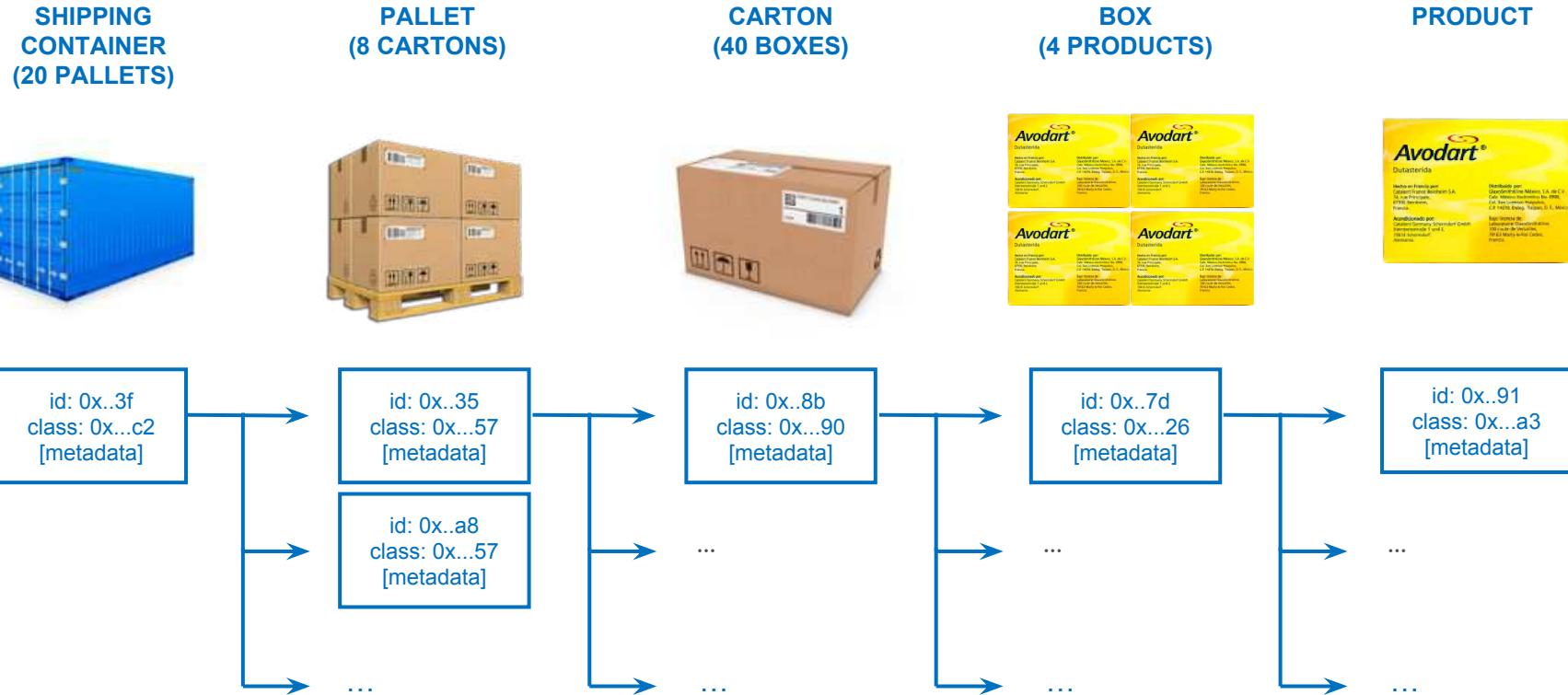


SENSING



Our L1 Battery powered/Bluetooth
Sensor for Temperature, Humidity,
Light & Shock, Positioning

IDENTITY OF ASSETS



DATA COLLECTION

TAGGING AND IDENTIFICATION

ID (serial number, 1D/2D bar codes, RFID, NFC) and tracers

MONITOR ITEM SURROUNDINGS

Location, GPS positioning, temperature, movement, light, oxygen



DATA TRANSMISSION

GSM / Wi-Fi / RFID / BLE

TRACK QUALITY OF ITEMS

Non-invasive analysis
Ultrasound sensors
Printed electronics

ENSURE ITEM INTEGRITY

Ensure physical integrity, packaging and sensor integrity

DATA MANAGEMENT AND SDK DEVELOPMENT

DATA COLLECTION

Devices, sensors,
printers, etc.

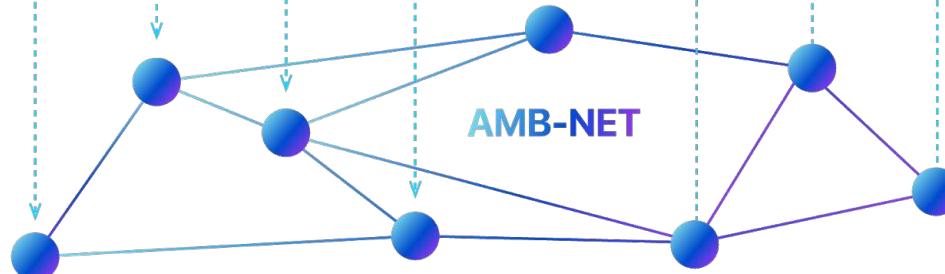


DATA MANAGEMENT

User/app/device
authentication, digital
ID storage & serialization

APIs + Developer SDKs

AMB-NET

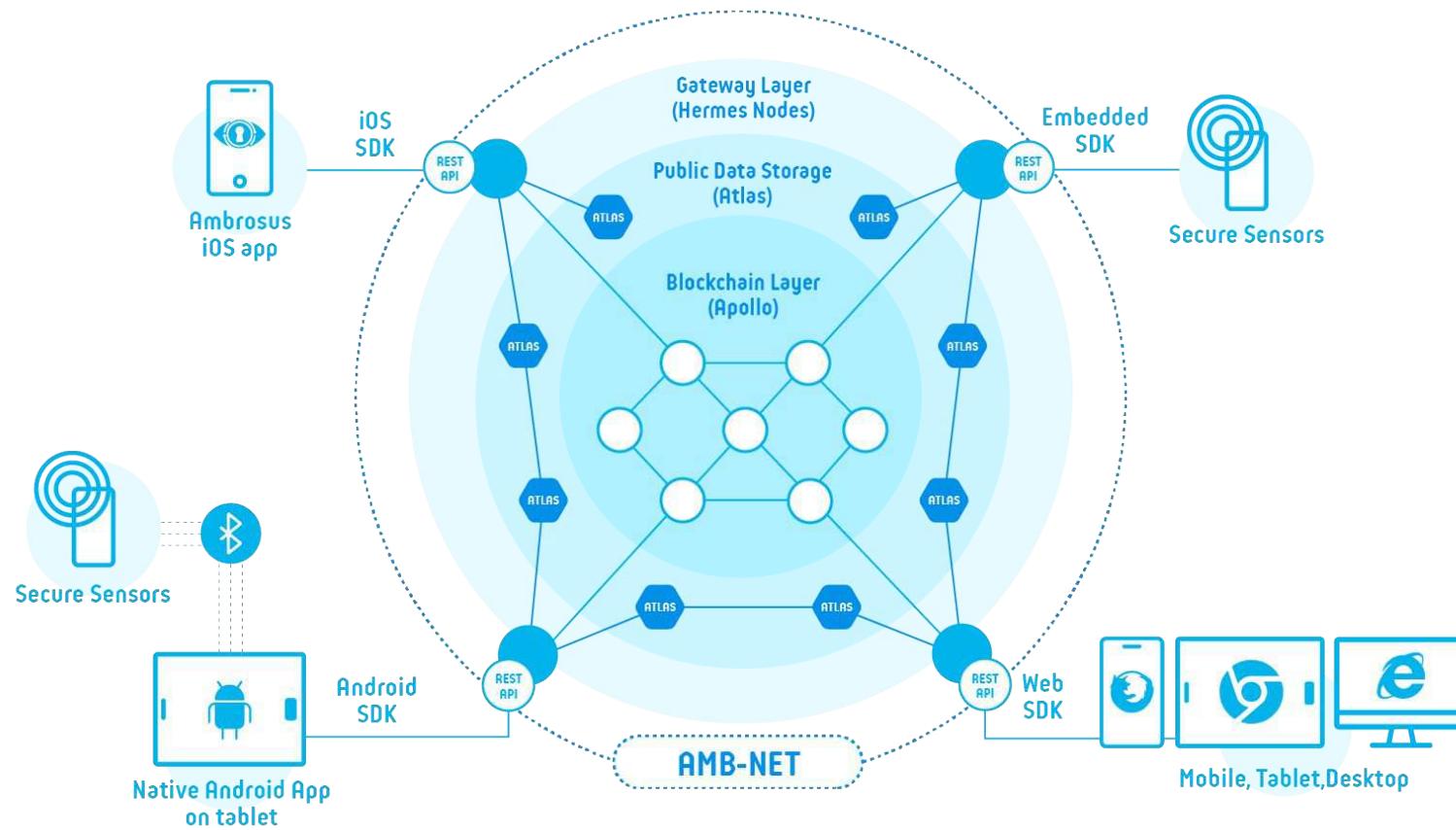


DATA INTEGRATION

ERP Integration,
dashboard,
field & consumer
apps, etc.



SDKS TO ACCELERATE ADOPTION

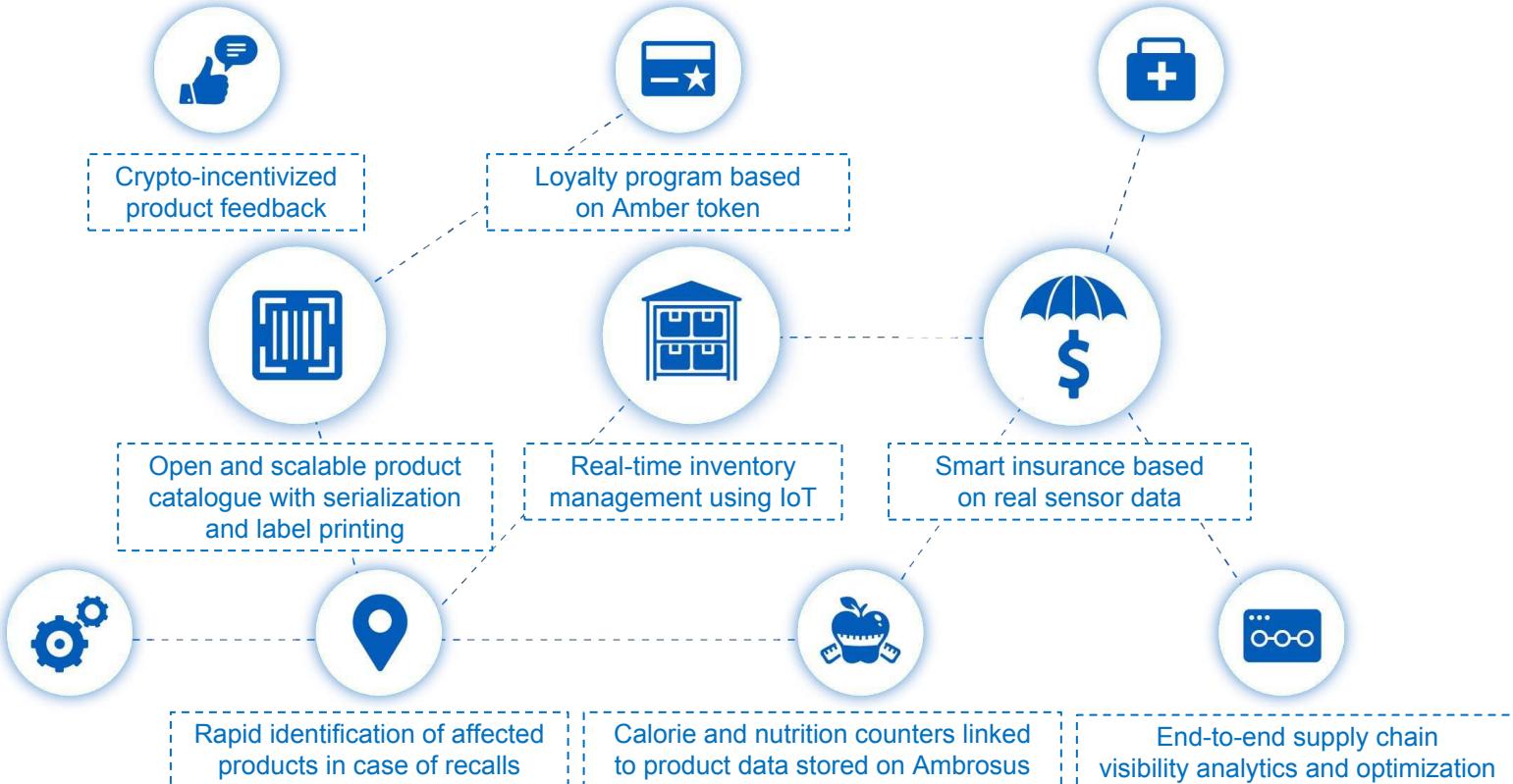


WE BRING A VARIETY OF USE CASES TO LIFE

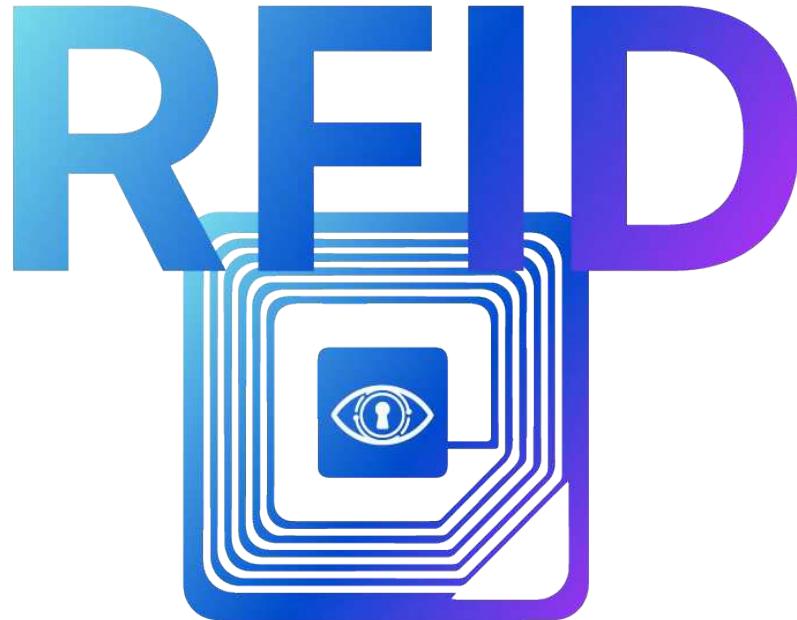


SOLUTION MARKETPLACE

We provide you with Software Development Kits (SDKs) so you can build your own industry-specific applications (or dApps). Below are some examples:



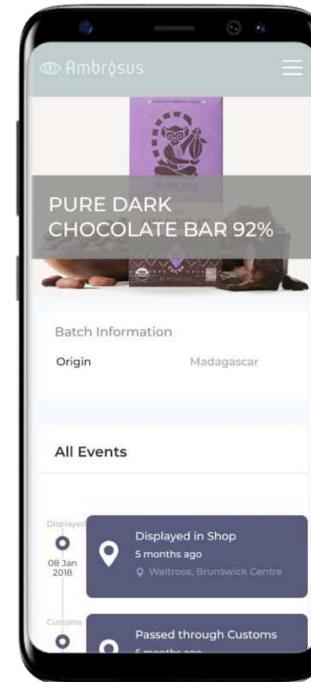
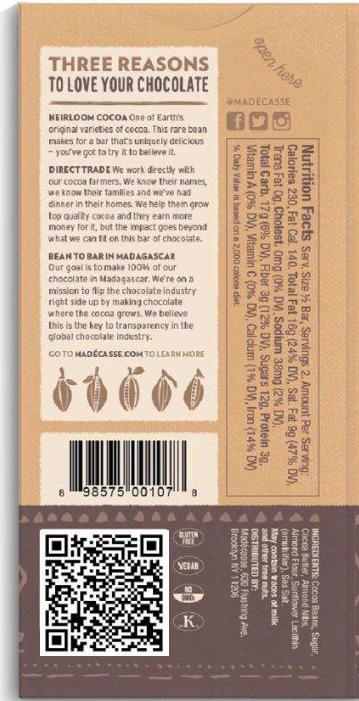
AMBROSUS: MARKETING POTENTIAL OF IOT SOLUTIONS



AMBROSUS RFID TAG

- ✓ Fully automated collection and recording of data
- ✓ Integrated data management into an easy-to-use and intuitive dashboard fit for product managers and developers alike
- ✓ Dashboard configuration can be customarily designed for industry specific quality parameters (i.e. allergens, inventory levels, raw materials, etc.)

USE CASE: QUALITY ASSURANCE CHOCOLATE



USE CASE: SMART CONTRACT + IOT

Smart contracts are self-executing contracts where the terms of the contract are directly written into lines of code



A unique shipping ID for each box is combined with an Ambrosus sensor recording temperature, humidity and location.

Acceptable measurement ranges are written into a smart contract that serves as an agreement

During transit the Ambrosus sensor tracks the relevant quality parameters and sends the data in real time to AMB-NET.

If any parameters go outside the stipulated range, a notification is sent and smart contract executes an outcome (e.g. reimbursement or insurance claim)

If the quality ranges are not exceeded the logistics provider gets automatically paid by the smart contract at the moment of product ownership change.

If not, a penalty (e.g. rebate) written into the smart contract is automatically applied, or an insurance claim is opened

USE CASE: TRACEABILITY AND QUALITY ASSURANCE IN RETAIL



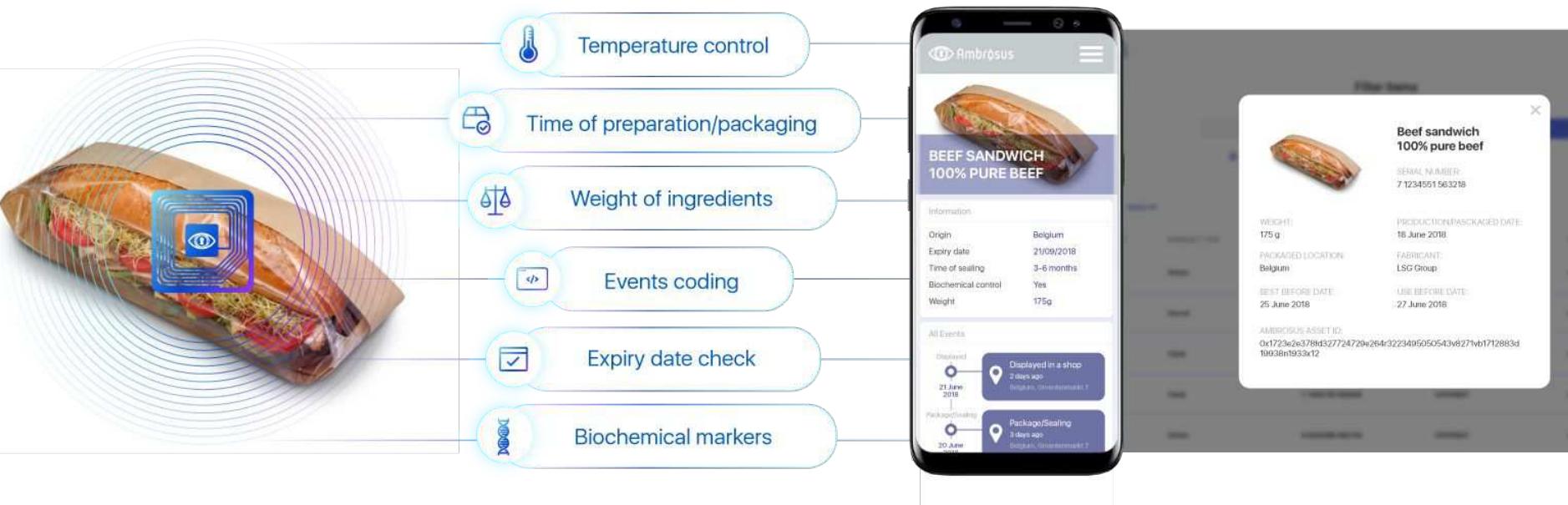
Management & Monitoring of Supply Chain Processes



Integration into SAP and legacy software

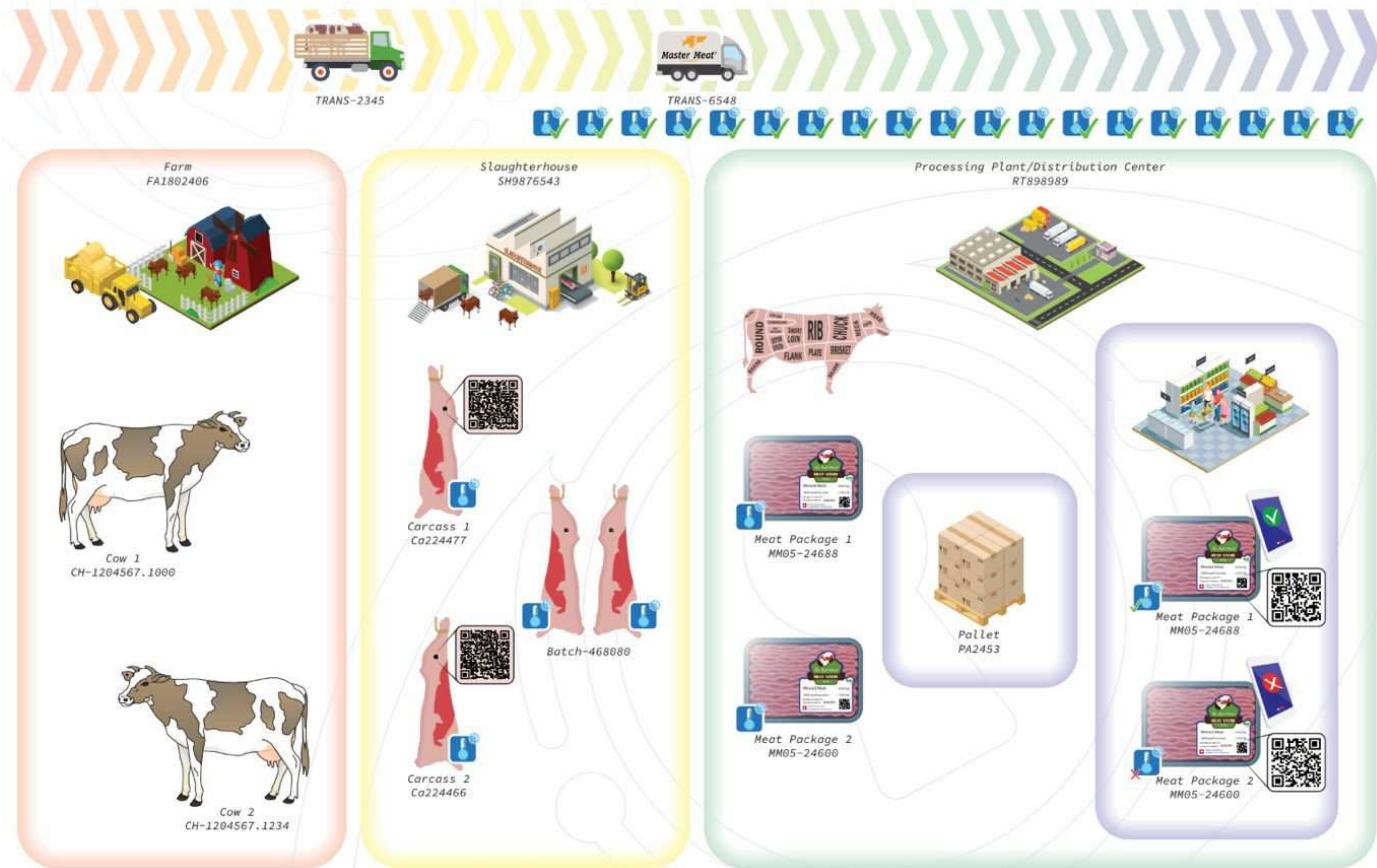


Customised dashboards, data analytics, visualisations or machine-learning tools can be built on top of the foundational blockchain layer of the AMB-NET



USE CASE: MEAT TRACEABILITY

- Farm-to-Fork Traceability
- Key stages of lifecycle recorded
- Full-data shared with retailers; partial data shown to consumers
- Tagging of cows and subsequent packages of meat
- Tailor-made apps



USE CASE: QUALITY ASSURANCE IN MEAT PRODUCTION

The diagram illustrates a supply chain timeline with five stages: Farm, Production, Transformation, Company, and Shop. A central vertical timeline shows dates: Departure (12 Feb 2018), Arrival (13 Feb 2018), Arrival (12 Feb 2018), On the shelves (17 May 2018), and Departure (13 Feb 2018). A QR code at the bottom left links to the product's digital history.

Premium Minced Beef

Switzerland, Vaud
Outdoor grazing
Bio Suisse

Overall rating: ★★★★☆
Consumer rating: ★★★★☆
About our rating | Rate this product

Departure: 12 Feb 2018

Ingredients: Beef, 502 gr, less than 12% fat content
Farm: Anna Bonjour, Chemin des Prés 14, Sotterns - VD, Switzerland
Storage: Max 5°C
Report an issue

Cold chain: Verified, Certified

Consume before: 28 May 2018, (in 3 days)

Storage at max 5°C
Original, Pastured, Transformed and Processed in Switzerland

Farm

COW 1: Angus, 16 months old
COW 2: Angus, 17 months old

Cow birth date: 12 Oct 2016
Farm name: Ferme Bonjour
Address: Chemin des Prés 14, Sotterns - VD, Switzerland
Certification: Organic
Surface: 8ha
Husbandry: Outdoor grazing

Arrival: 13 Feb 2018

Production

COW 1: Cold chain: ✅
COW 2: Cold chain: ✅

Name: Coop City Lausanne
Address: Rue du Boeuf, 1001 Lausanne, Switzerland (VD)
Date of production: 14 Feb 2018
Date of packaging: 14 Feb 2018
Expiration date: 20 Feb 2018

TÜV SUD certified: ✅
Labs: Italie
Date of testing: 14 Feb 2018
Microbiologi testing: within limits

Departure: 12 Feb 2018

Transformation

COW 1: Organic, Vet check: ✅
COW 2: Organic, Vet check: ✅

Name: Abattoir de Clarens
Address: Rue du Collège 42, 1815 Clarens, Switzerland (VD)
Date of transformation: 12 Feb 2018

TÜV SUD certified: ✅
Labs: Italie
Date of testing: 14 Feb 2018
Microbiologi testing: within limits

Arrival: 12 Feb 2018

Company

Transport SA

On the shelves: 17 May 2018

Shop

PACKAGE:
Premium minced Swiss beef
Premium Organic
Cold chain: ✅

Name: Coop City Lausanne
Address: Rue du Boeuf, 1001 Lausanne, Switzerland (VD)
Certification: Organic
Expiration date: 20 Feb 2018

TÜV SUD certified: ✅
Labs: Italie
Date of testing: 14 Feb 2018
Microbiologi testing: within limits

Departure: 13 Feb 2018

Freeze Truck

QR code linking to the product's digital history.

USE CASE: SUPPLY CHAIN DASHBOARD

- The most important information immediately visible
- Demonstrated ownership and timestamp record of each asset stored on the blockchain
- Data can be easily and customarily configured for end-consumers, regulatory authorities, and enterprise partners

The screenshot displays a supply chain dashboard interface. At the top, there's a header with a user icon and a dropdown menu. Below the header, a modal window titled "Filter Items" is open, showing a detailed view of a "Flank" cut of meat. The modal includes a thumbnail image of the meat, its serial number (7 1645199 563048), and various metadata fields such as weight (572), production date (18 Apr 2018), and fabricant (Central Meat Processing). It also shows the Ambrosus Asset ID (0x5254 9705ce) and a unique identifier (67bc2). The background of the dashboard shows a list of other meat products: Sirloin, Round, Flank, and another Flank entry with different details. The bottom right corner of the dashboard has a "Actions" button.

<http://inventory.ambrosus.com/>

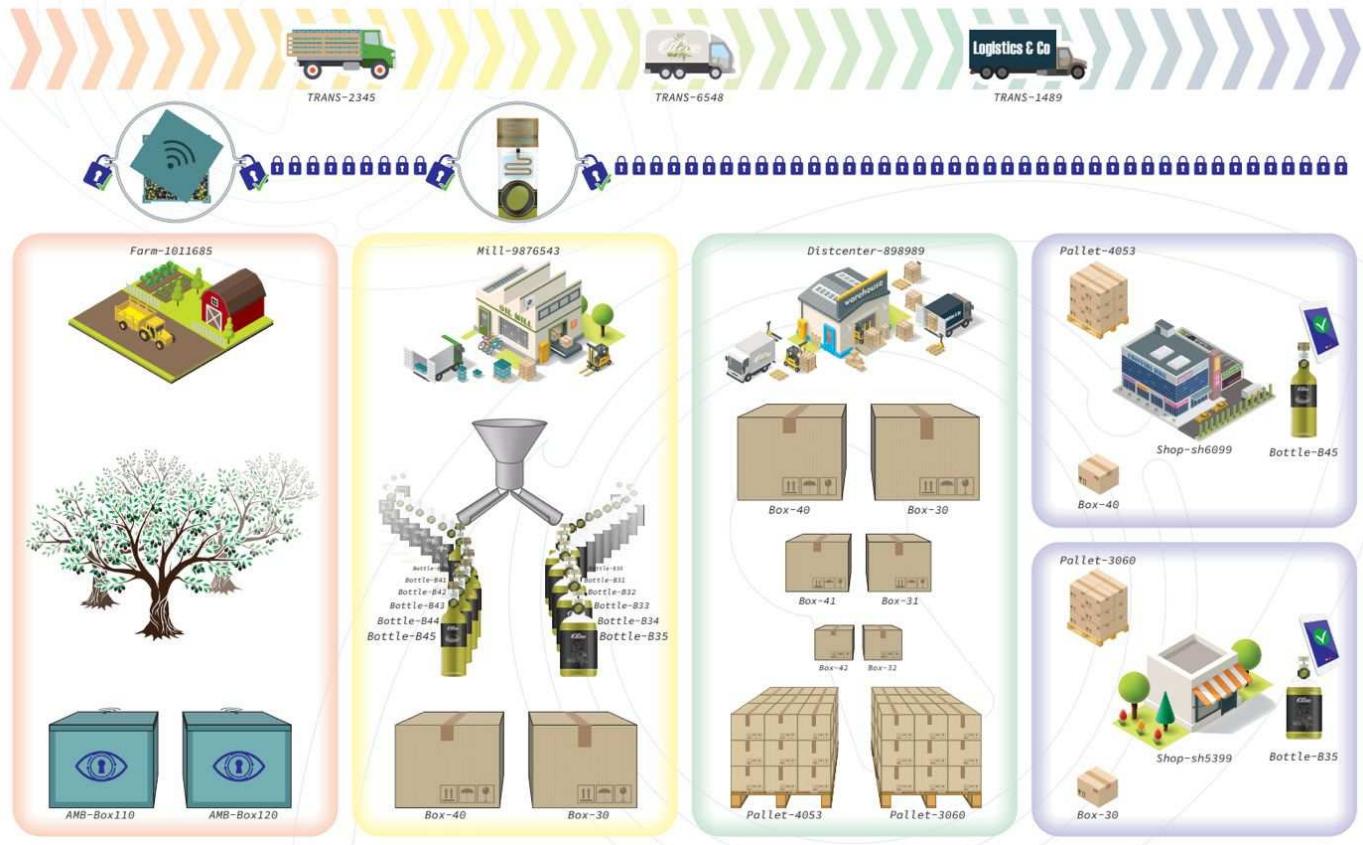
USE CASE: VANILLA TRACK AND TRACE

- Plantation-to-consumer product Traceability
- Pilot project in implementation in Madagascar
- Traceability of vanilla green bean to vanilla extract transformation
- Enabling consumer verification of vanilla origin and natural status



USE CASE: OLIVE OIL TRACEABILITY

- A Holistic end-to-end Solution proving the Authenticity of the Olive Oil
- Dedicated Hardware (AMB-Box) assuring integrity of contents
- Smart Seals on bottle caps, tracking bottles via blockchain
- Quality measurement sensors can be provided upon request



USE CASE: COFFEE TRACEABILITY



✓ Tree-to-Cup Traceability

✓ Key stages of product journey are recorded

✓ Full control of data shared with third parties or consumers

✓ RFID zip tags assuring integrity of contents

✓ Tailor-made apps

USE CASE: AIRLINE CATERING

66,000 MEALS/HOUR

€30/DEVICE

INFRARED/PRE
THERMOMETS

€80/DEVICE

FRIDGE/CHILLS
ALARMSYSTEMS

€20/HOUR

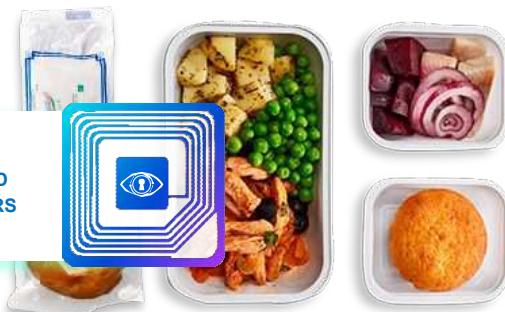
PERSONNEL ENGAGED
IN TEMPERATURE CONTROL

1320 MEALS

FOOD WASTE DUE
TO TEMPERATURE MISFITS
WHILE PROCESSING

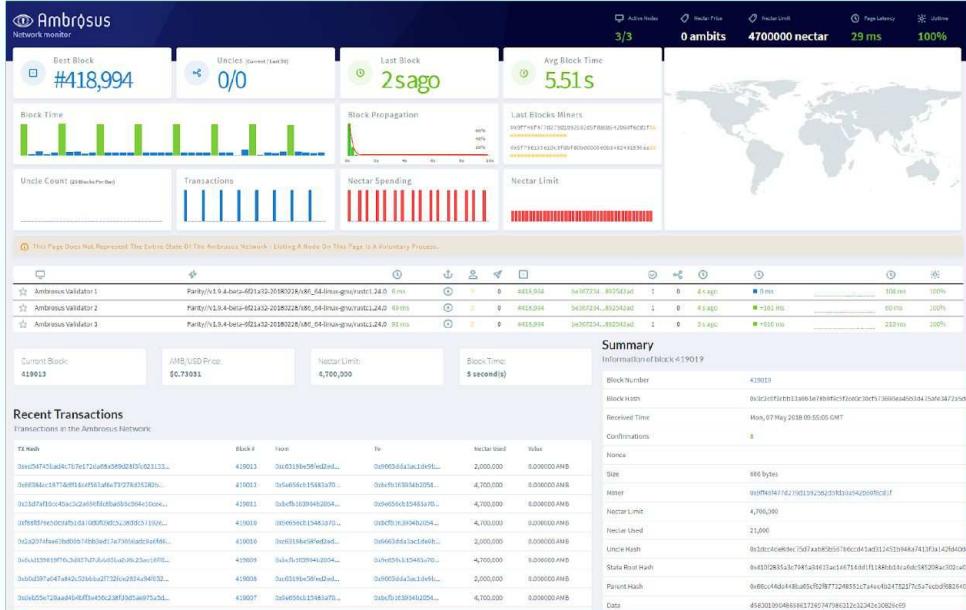
AMBROSUS RFID TAG

TEMPERATURE
MONITORING WITH RFID
TEMPERATURE LOGGERS



- ✖ Inconsistent readings of infrared thermometers ✓ Unprecedented accuracy of better than 0.5°C
- ✖ Manual randomly made collection and recording of data ✓ Real-time tracking during each processing cycle
- ✖ Stationery fridge sensors with auto-alarm ✓ Fully automated collection and recording of data
- ✖ Inefficient paper-based reporting prone to errors and regulatory standards failures ✓ Manage all information with one easy to use dashboard

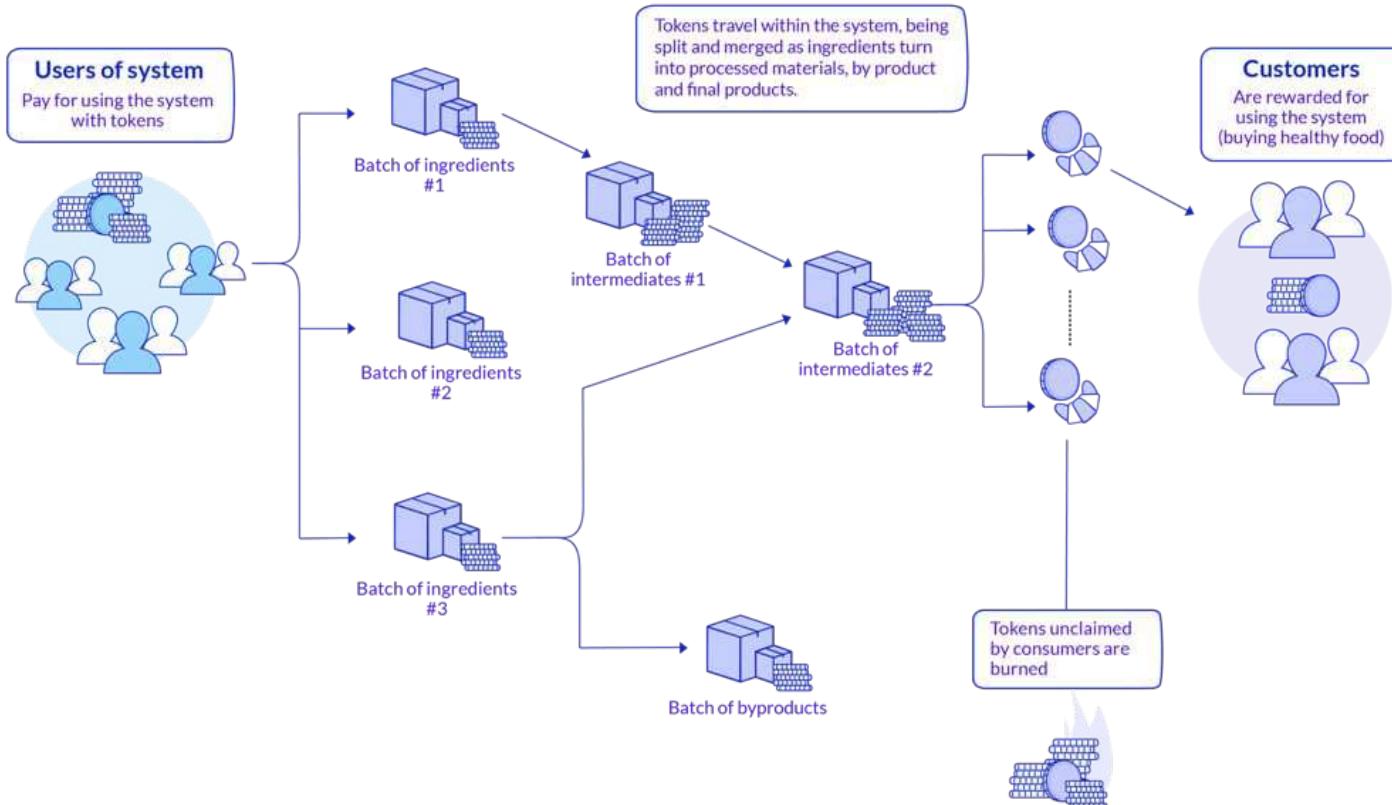
FULLY FUNCTIONAL BLOCKCHAIN (AMB-NET)



- ✓ Ethereum Virtual Machine at Core
- ✓ Proof of Authority with Delegated Proof of Stake Model (permissioned network governance, permissionless network integrity maintenance)
- ✓ 50-60 Bundles per second (1 Bundle = 10 000 Transactions), highly scalable
- ✓ Solidity Framework (full support of Ethereum based Dapps)
- ✓ APIs for sensors
- ✓ Polkadot Bridge Built-in (Interoperability)

AMBER (AMB): DATA-BONDED TOKEN

Serves as digital birth certificate and history of life for products:



WE ARE 60 AMBITIOUS PEOPLE, AND GROWING

CORE TEAM (former titles):

- Founding Director, EPFL Food and Nutrition Center
- UN Global Project Lead
- VP of Engineering Daftcode
- Cofounder Web of Things / EVRYTHNG, MIT Fellow
- Head of Lab Harvard
- Head Distributed Computing Lab (ETH Zurich), Microsoft R&D
- Business Developer, Nanolive
- Chief Legal Counsel, Terra Food
- R&D Engineer, SenseFly
- R&D Engineer, EPFL/Nestle
- Deputy Chief Mechanic, Geneva Airport

ADVISORS:

- Cofounder (ex-CTO), Ethereum
- Global R&D Lead at Nestle
- Head of Food Analytics Research, University of Leeds



PARTNERS:

- United Nations 10YFP SFS
- EPFL Innovation Park
- Enterprise Ethereum Alliance
- Crypto Valley Association
- Bitcoin Suisse
- Validity Labs
- Swiss Coffee Alliance
- Parity Technologies (ETHcore)
- Trek Therapeutics



VIBRANT COMMUNITY AND OUTREACH

- Twitter: 17'700+ subscribers
- Newsletter: 30'800+ readers
- Facebook: 4'300+ followers
- Telegram: 10'500+ participants (multiple chats)
- BitcoinTalk: 61'000+ views
- Press/Media Mentions: 1'000+
- LinkedIn: 1'500+ subscribers
- Reddit: 5'000+ members
- Events/Cities Visited: 200+



SUPPORT AND PARTNERSHIPS



START
GLOBAL



ENTERPRISE
ETHEREUM
ALLIANCE



Microsoft
BizSpark™



Blendhub



brennpunkt
nahrung



flatev

EPFL
Inno
Park

MME

RIOT



heig-vd



Crypto Valley

PIONEERS
FESTIVAL

MEGA MART



MEDIA

Forbes

VICE



CryptoNinjas
Crypto & Blockchain News



FINANCE
MAGNATES

paymentweek
Money. Made. Simple.

psfk

DIGITAL JOURNAL

start
up
ticker
.ch



Futurism

ETHNews

SCB
SUPPLYCHAINBRAIN



Finextra

Nasdaq



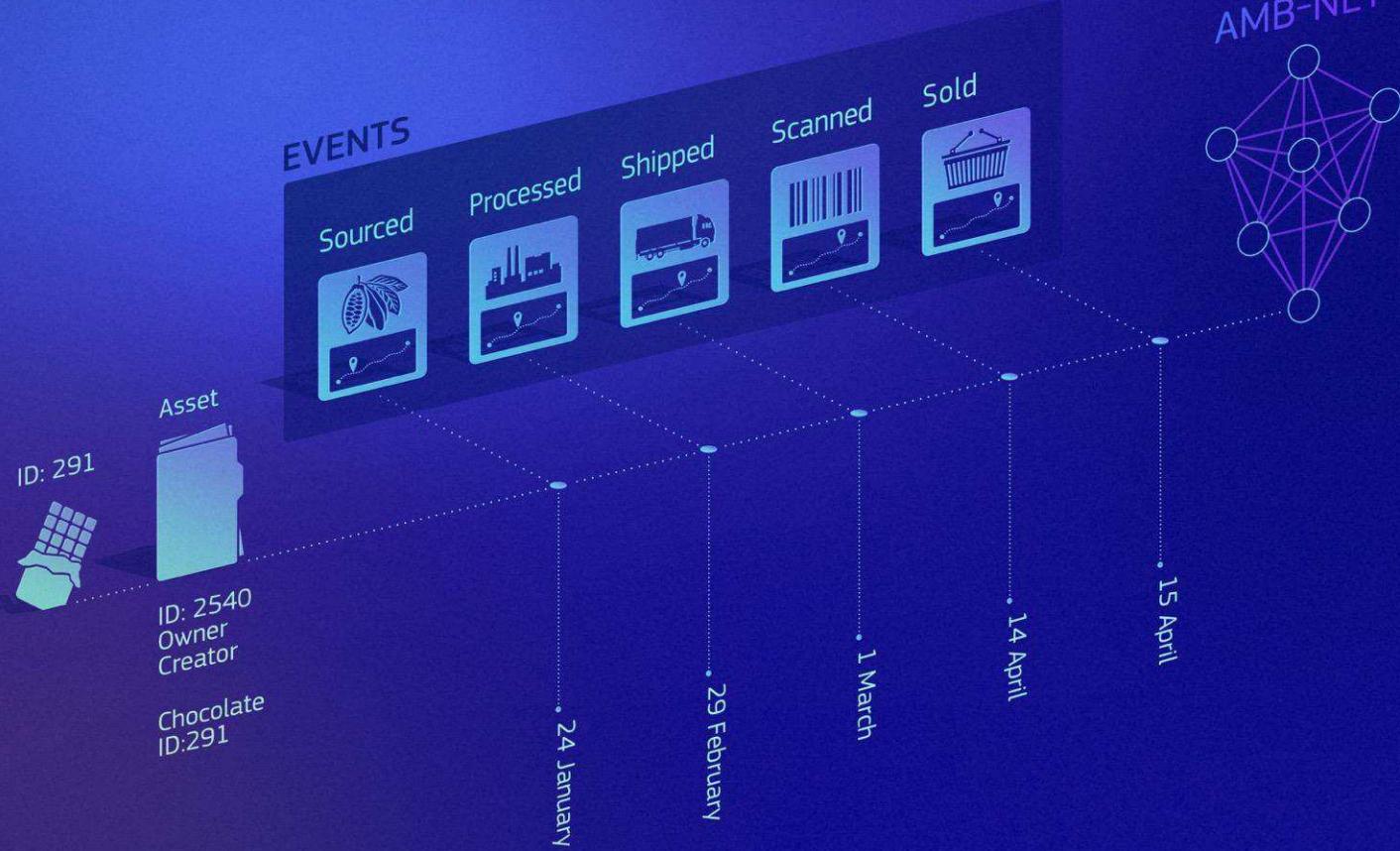
forklog

BExchangE

NEWSBTC

REUTERS

AMB
CRYPTO





Event / Asset
Document

HTTP
API
Call

HERMES

Document Fingerprint Bundle



Local DB



Public
Arbiter

ATLAS

APOLLO

Validator



Bundle written into
blockchain along
with metadata

AMB-NET



10'000 AMB
75'000 AMB
30'000 AMB

Atlas nodes

AMB-NET MASTERNODES

150'000 AMB

250'000 AMB

Hermes nodes

Apollo nodes



Ambrøsus

SITE

ambrosus.com

GENERAL ENQUIRIES

info@ambrosus.com

INNOVATION LAB (HARDWARE)

innolab@ambrosus.com

OFFICES

Dublin / Lausanne / Tallinn / Zug