

# Exploring traceability & decentralization in supply chain management:

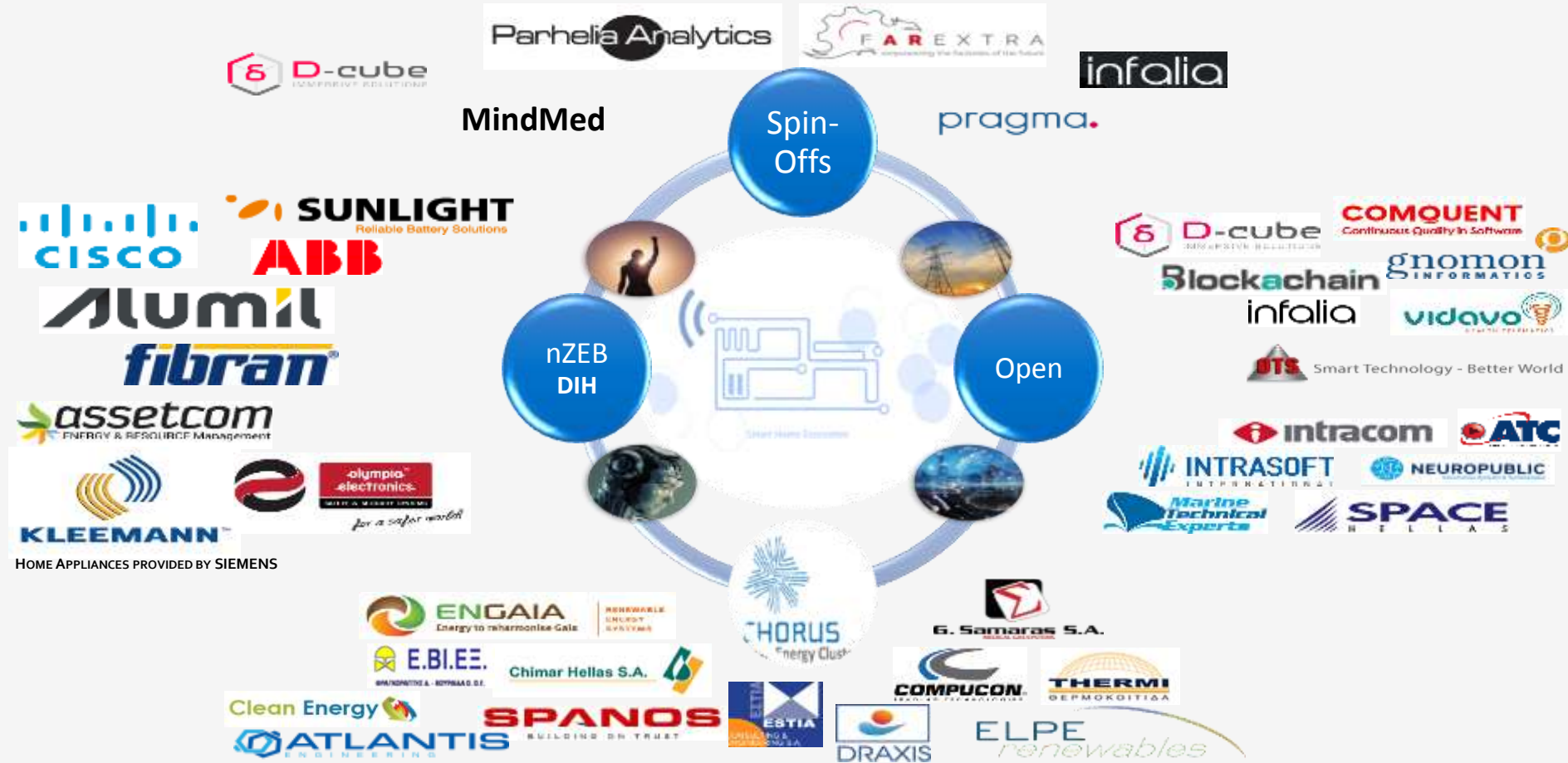
## The case of Central Macedonia

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# CERTH-ITI Centre of Excellence

...from DIH, to industry and beyond



# CERTH-ITI & Distributed Ledger Technologies

*...enabling technologies*



## Research

Leverage DLTs and Blockchain technologies for research in application fields such as **Value Chains, IoT, Drones, Energy, Health, Transport**



## Products/Services

**Blockchain-as-a-Service (BaaS)** for identity management, permission handling, transactional logging & auditing, asset binding, data sharing...



## Market

Outsourced R&D for market-driven projects in **IoT applications, Mobile Wallets, ICOs**



## Training

Training in Ethereum and HyperLedger via regional and national events like the **DEVit conference, Decentralised...**



## Affiliations

Member of **Hyperledger.org**, **Phuse (Pharma industry)**, **EU Blockchain Observatory and Forum**

# Enter ORION-CM

... strengthen CENTRAL MACEDONIA's Agrifood Value Chains

## Exploring traceability & decentralization in supply chain management

### *Mission:*

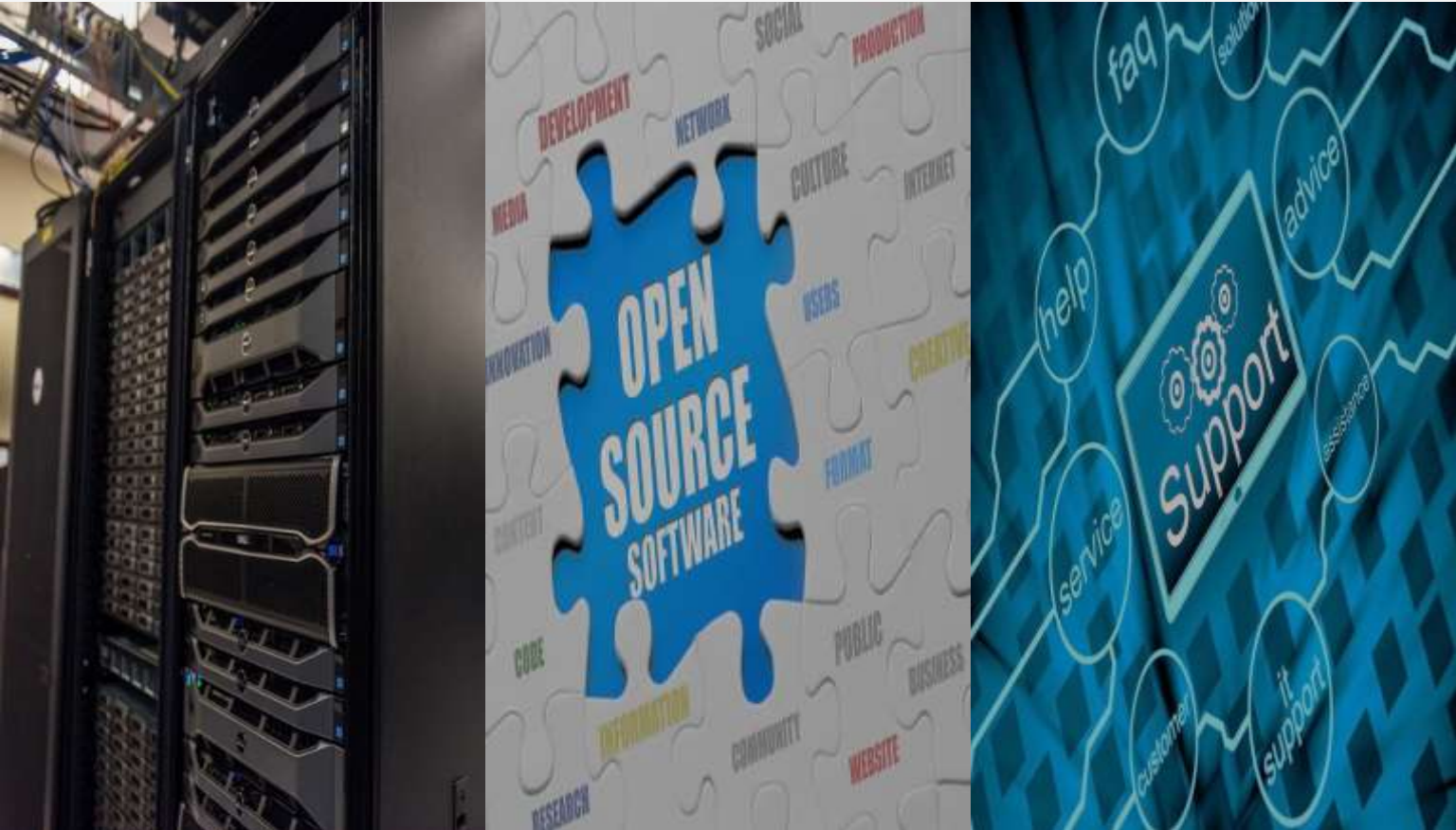
To investigate, digitise, optimise and support the complete range of activities present in the Agrifood Value Chain. These include:

- Tracking, logging and auditing of supply chains transactions from production-to-consumer
- Secure the process of product analysis against tampering and counterfeiting
- Safeguard product quality and competitiveness
- **Leverage Blockchain technology to foster trust among producers, consumers and all stakeholders in between.**



# CERTH-ITI's HPC Blockchain Infrastructure [ORION-CM]

*...strengthen CENTRAL MACEDONIA's Agrifood Value Chains*



**01.**

## **10 x HPC Nodes**

6 Compute nodes, 2 Mgmt nodes, 2 Storage Nodes

**02.**

## **Open Source Software**

Red Hat Enterprise Linux, Ethereum, Hyperledger

**03.**

## **24/7/365 Support**

operational support, scientific and technical expertise

A close-up photograph of a person in a dark suit jacket holding a dark wine bottle in their right hand and a black smartphone in their left hand. The person is looking at the phone. The background is a wine shop with shelves of wine bottles and a wooden counter. A blue semi-transparent banner is overlaid across the middle of the image.

# ORION Case Study

Building trust in the wine value chain

# Wine value chain

*...on trust and quality*

Every year more than 24.5b litres are consumed worldwide. **Top quality wine** is however an asset either directly consumed, collected or traded. Wine value/valuation is however largely affected by quality, trust and traceability.



## Production quality

From vineyard to winery, wine quality is characterised by lack of transparency of product and production data, aging processes, bottling techniques etc.



## Supply chain provenance

Even if vineyard and winery conditions are pristine, supply chain conditions of transport and storage could affect wine quality seriously affecting a brand



## Counterfeiting

For collectible wines, track and trace mechanisms are failing and fraudulent attempts are commonly recorded



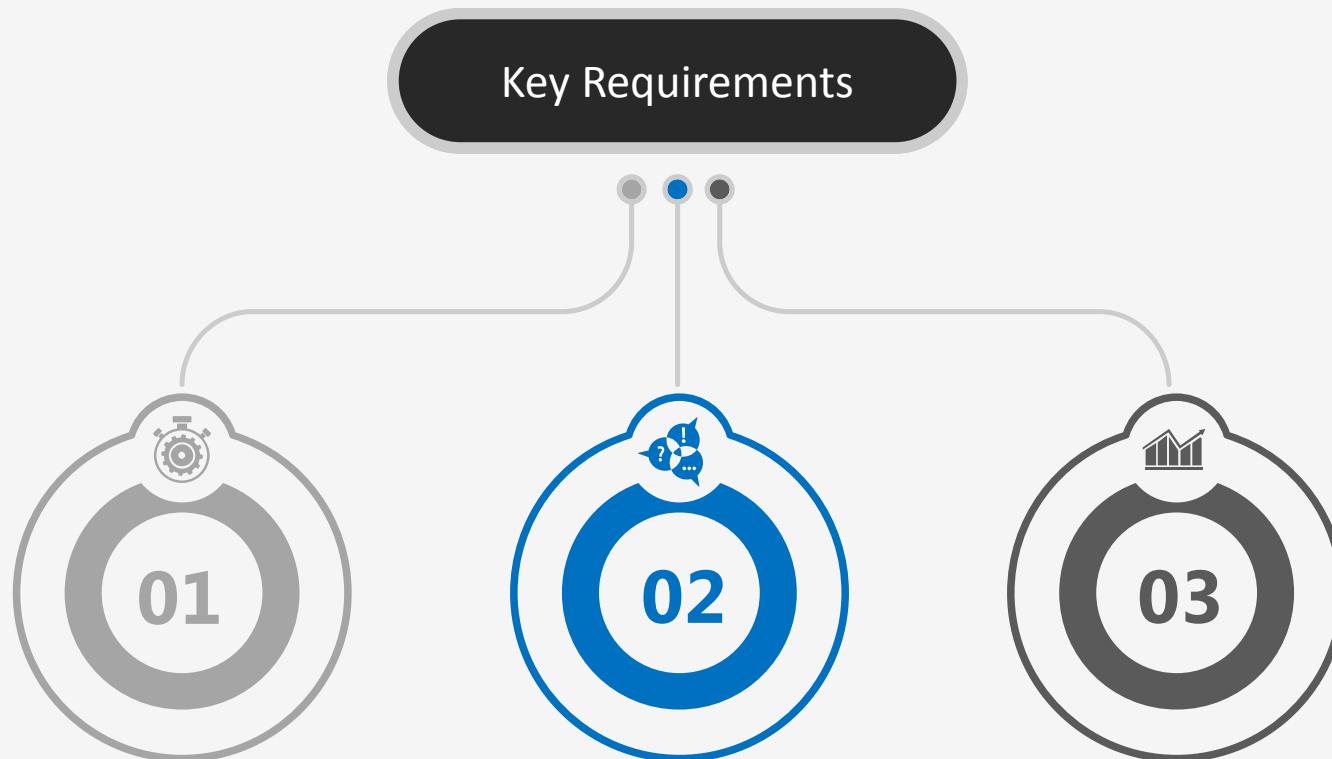
## Customer experience

Informed customers, high-end restaurants and wine bars, opt for wines which origin or social acceptance is granted reducing the chances for new entries uptake



# Addressing the challenges

*...of value chain verification*



## 01

### **Rich, transparent and accessible data**

From vineyard to consumer more transparency is required for all stages of a wine's lifecycle, with direct access to more insightful data

## 02

### **Reduced bias in data collection**

Data points need to be increased. Smart sensors technology can provide unbiased data collection at all stages of the production and distribution process

## 03

### **Trust and immutability**

To build consumer trust and brand loyalty, all data and stakeholders must be accountable. Blockchain technology is currently the only solution to support immutability of records

# Stepping stone

*...in a nutshell*



**01.**

## Vineyard production

Record production batch data on blockchain, validate authenticity

**02.**

## Anti - Counterfeiting

Prepare production batch labelling, protect against counterfeiting

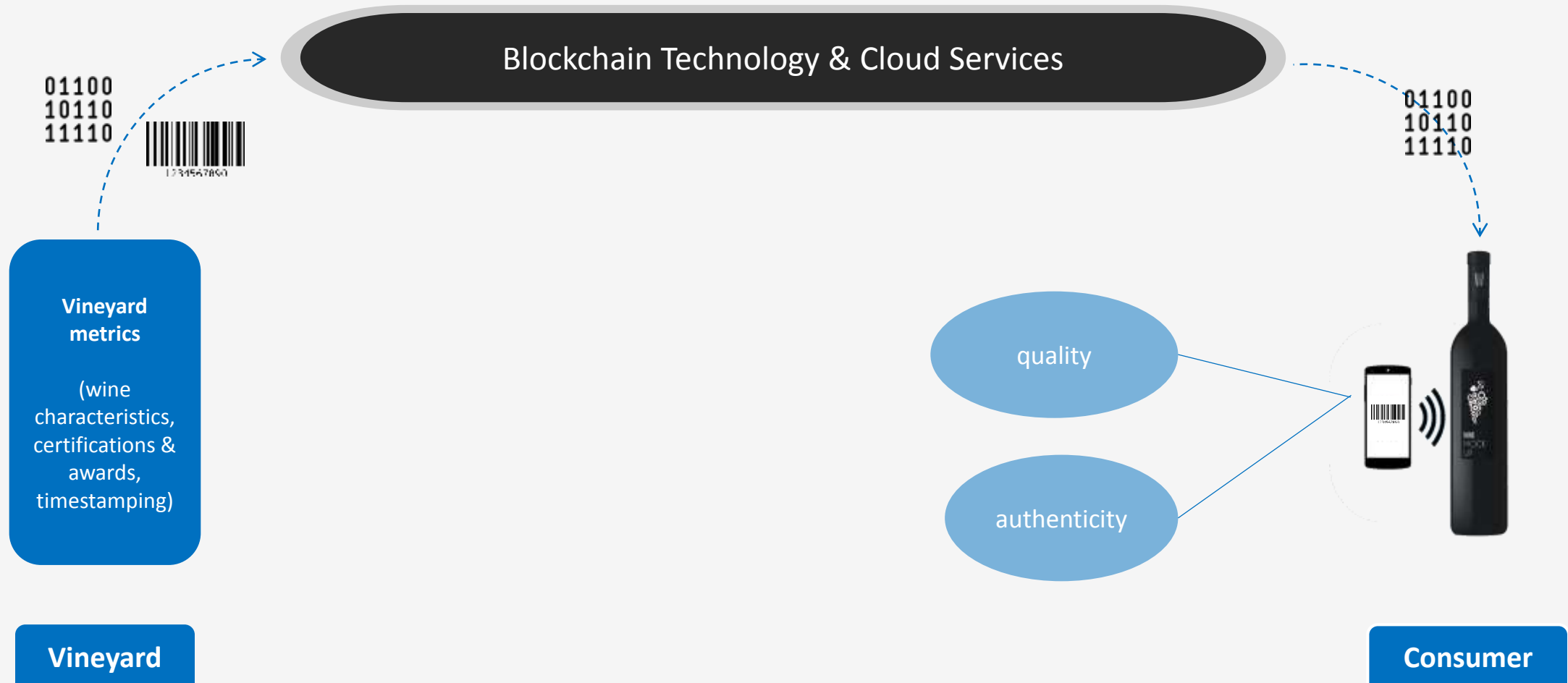
**03.**

## Consumer experience

Empower consumers to access quality data, enhance brand loyalty

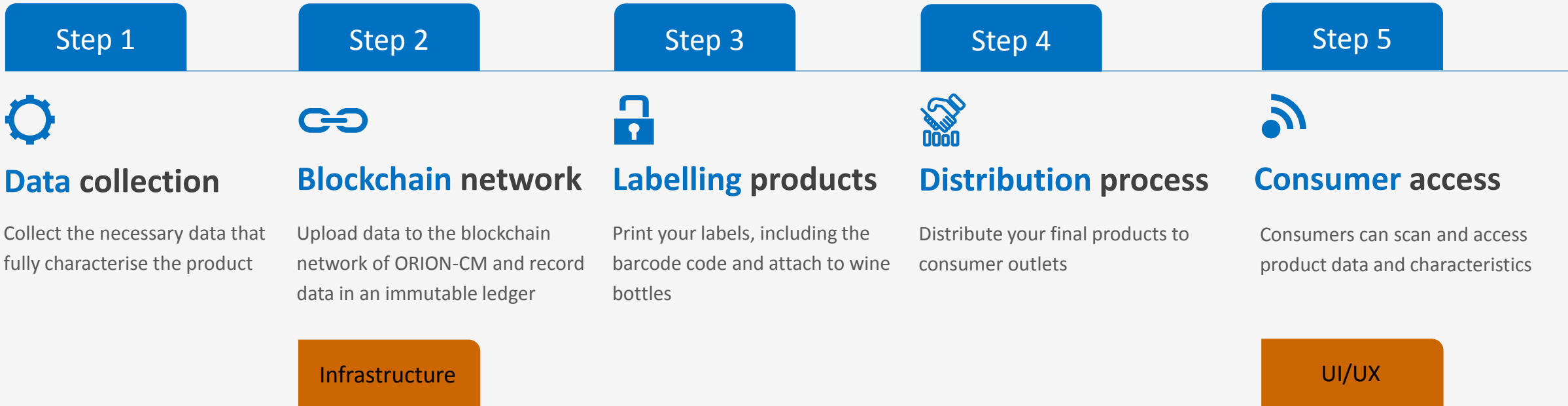
# Solution proposition

*...from vineyard to consumer*



# How it can be done

...the process and the technology



## Hyperledger / Web services

- Blockchain network based on a Hyperledger framework
- Back and Front end services for businesses and consumers
- ORION-CM infrastructure & Cloud based infrastructure & potential client nodes

## Mobile Apps

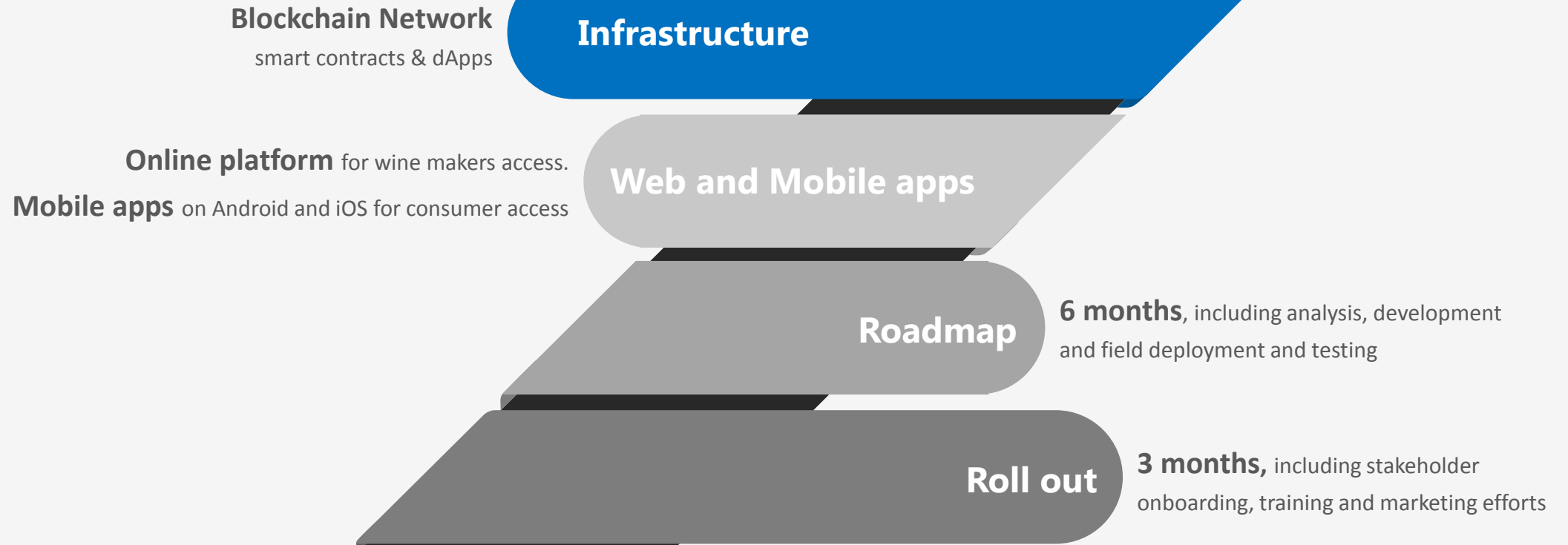
**Now:** barcode scanner, dApps for blockchain data access

**Next:** identity management, gamification, loyalty programs....



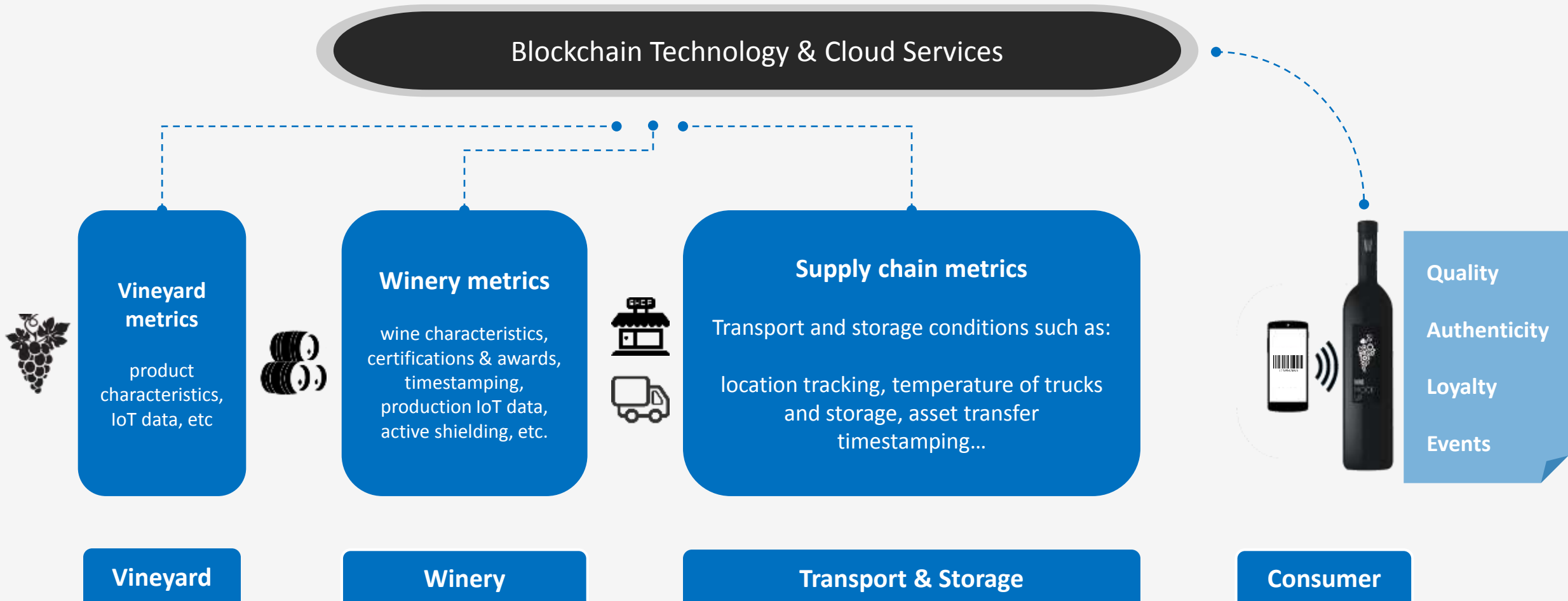
# What it takes

*...ETA for proof of concept*



# Next steps

...wine value chain certification over Blockchain



# Thank you

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