

# A blockchain-based system for food traceability and food safety



# WHAT ARE THE **TECHNOLOGIES USED ?**

In this technology, all stakeholders can monitor the production, process, storage and transportation stages in the food chain in B2B and B2C trade which ensures food safety and reduces food waste.

From farm to fork, our technology makes every step of food (fresh produce, tomato paste, tea, pasta, mayonnaise, oil, fat, rice, dairy products, meat etc.) production traceable and measurable.

By tracking pesticide residues, harmful additives, pathogens and expiration dates, our technology reduces the production costs and increases the product quality as well as the transparency.







The indirect but profound contributions of this technology to sustainability are (1) the accumulated data, obtained by tracing the effects of the variabilities in production parameters (climate, plant nutrition elements etc.) on the quality and quantity of the product, make it possible to form a model for future production planning; (2) The reduction of food waste through this traceable system reduces the negative impacts of food production chain on climate change by decreasing the carbon emission rates.

In summary, with this project, we have created a platform that ensures food safety, reduces food waste and provides consumers healthy and high quality products by making each step of the food production chain traceable and transparent for everyone. This technology involves the concepts of green consensus, global climate change and carbon footprint which enables the development of the industry in harmony with the ecology. Moreover, this system can easily be adapted to other industries.

In order to transfer all agricultural trade to digital platform and facilitate innovation, Microsoft .Net Core language was used for software development, and vue, react, CSS3 and HTLML5 codings were used in the interface development. Microsoft server software and AWS infrastructures were preferred as server systems. IBM's Hyperledger library was used as the blockchain technology. Our platform is a SAAS-structured platform and data exchange can be done easily with API services.



All stakeholders in agricultural and food industries: Farmers, cooperatives, agricultural suppliers (seed-fertilizer-pesticide producers, irrigation system producers etc.), agriculture engineers, accredited laboratories, storage companies, packaging companies, transportation companies.

### **WHO IS OUR TECHNOLOGY TARGETED FOR?**

Due to the fact that our technology involves the concepts of green consensus, global climate change and carbon footprint, it can provide services to other industies in the future as well.



Markets, hotels, restaurants, catering companies and B2C online sales applications that purchase/sell agricultural products.



**End consumer** 



It is a market place (Market Place) where producers can deliver their products directly to buyers. It supports agricultural production by providing sales gurantee to the producer. On the other hand, agricultural product suppliers can directly reach the information about the origin of the product, harvest times, quantities, product price and the farmers. Supporting banking information is also provided through our platform. Suppliers can make their purchases by filtering in many categories from the packaging type to the product sub-types. Our system provides value creation at all levels: producer, supplier, distributor and end consumer.

#### **BUSINESS PROCESS**



All processes from farm to fork are transferred to blockchain-based servers using RFID systems which enables the monitorization of the entire food chain system with information security provided. Consumers can instantly access many information about the products such as origin, analysis reports, growing methods and logistics details by simply scanning the QR code on the product.

# **OUR CUSTOMERS**

![](_page_0_Picture_27.jpeg)

MIGROS

![](_page_0_Picture_29.jpeg)

A101

![](_page_0_Picture_31.jpeg)

CARRREFOUR

**OUR PARTNERS** 

![](_page_0_Picture_33.jpeg)

ISTEGELSIN

![](_page_0_Picture_35.jpeg)

**OPET** 

![](_page_0_Picture_37.jpeg)

![](_page_0_Picture_38.jpeg)

![](_page_0_Picture_39.jpeg)

![](_page_0_Picture_40.jpeg)

# **THANK YOU**