CLUB OF BOLOGNA

strategies for the development of agricultural mechanisation

FEDER UNACOMA
Italian Agricultural Machinery Manufacturers Federation

31th Members' Meeting of the «Club of Bologna

The challenges for Agricultural Mechanization

12-13 November 2022

Bologna, Italy

Traceability status and trends.

Raffaello Prugger

r.prugger@tecnoalimenti.com

Raffaello Prugger: Director General of Tecnoalimenti S.C.p.A. since 2016, a R&I consortium of 30 food industries. He studied at the University of California UCD, Davis and holds a University degree at the Faculty of Agriculture of the University of Padova, a Masters degree SMEA in agricultural economics and a post-graduate degree in Management of Technology. He worked for over 30 years in agrifood research and innovation co-ordinating a large number of European and national research and innovation projects. He provides the institutional link to networks such as the food industry associations in Confindustria, the food clusters CL.AN and CAT.AL, the think tank European House Ambrosetti and the Ministry of Research.

MEMBERS ACCOUNT FOR 12% OF FOOD SALES IN ITALY

RESEARCH & TECHNOLOGY ORGANISATION
FOR THE FOOD INDUSTRY

TECNOALIMENTI

- NO PROFIT
- 40 YEARS IN THE BUSINESS
- CLOSE TO INDUSTRY
- TECHNOLOGY FOCUSED
- NATIONAL AND INT.L PROJECTS
- WIDE NETWORK
- THINK TANK STUDIES

Our network


IMG-S
INTEGRATED MISSION GROUP FOR SECURITY


CAT.AL
cluster alta tecnologia agrofood lombardia


EXPO
MILANO 2015
1 MAY • 31 OCTOBER
FEEDING THE PLANET
ENERGY FOR LIFE


Italian
Food for Life
CAN


ARITEC 4.0
Alleanza dei centri di ricerca italiani per le tecnologie 4.0
ERIT
Security research in Italy

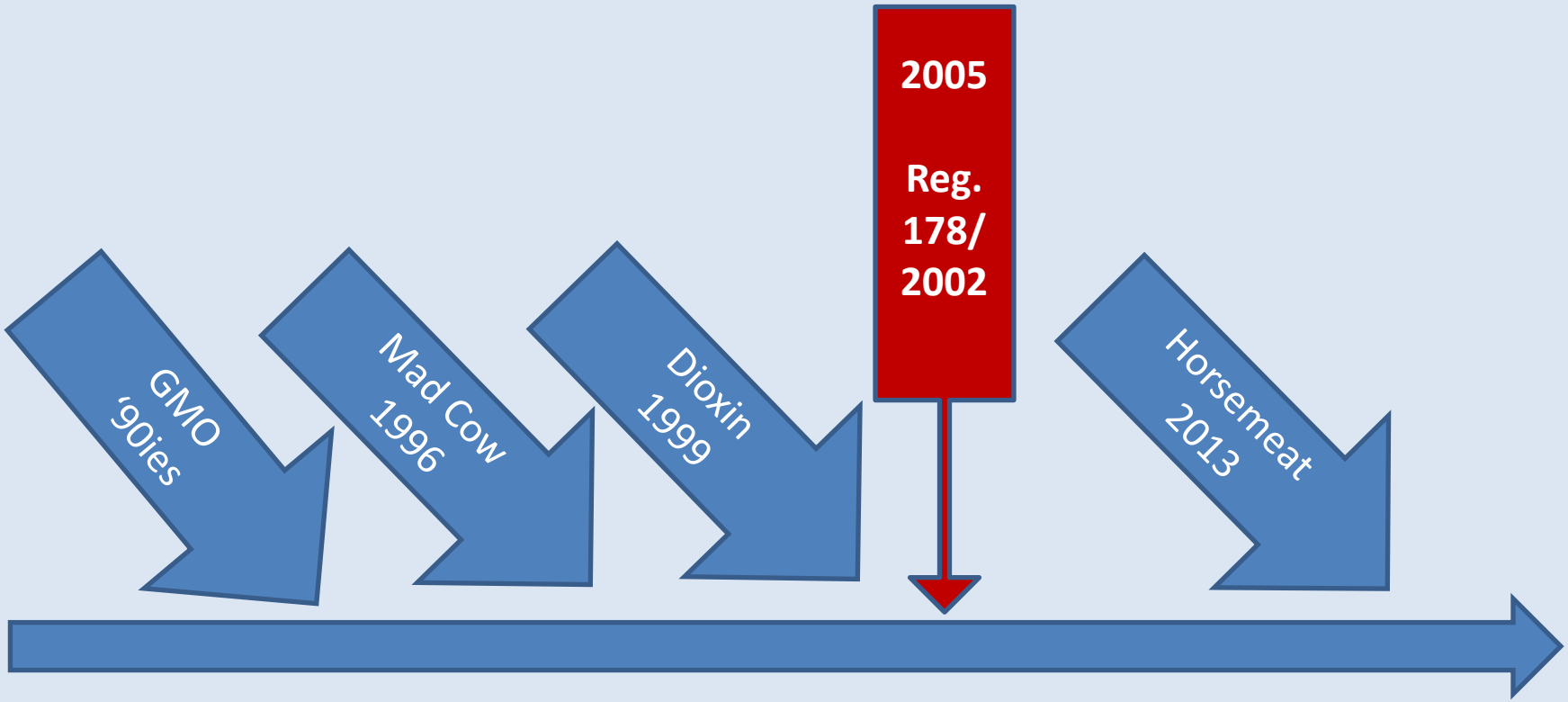

what's
for lunch ?

AFIL


fabbrica intelligente
Socio Ordinario


The European House
Ambrosetti

The origin of the traceability need



The purpose of traceability

The purpose of traceability is **to keep track of and record the history of an item** — which is often used to comply with regulations and minimize risk.

Traceability is the ability to formally identify the provenance, motivation, and **relations between components of a product.**

The ability to ensure the tracking, if possible in real time, of activities and of information flows linking activities. The basic principle consists in **linking information flows to the physical flows** and activities of a given process.

A key method to counter the **growing complexity of product development.**

The current food regulatory framework

Related to traceability

The benefits of traceability

Cost and speed of recalls
Public health
Food safety
Brand image
Inventory tracking
…

Average cost of a food recall is 1-8 Million EUR

Approx. 1400 food products are recalled from the EU market every year (2020 RASFF)

Counterfeits
Client confidence
Protect sales
Customer service
….

5-7% of EU produce is counterfeited = 500 Million EUR (Intellas, 2022)

The market value of traceability

PDO - Protected Designation of Origin is a EU product quality scheme identifying products that are produced, processed and prepared in a specific geographical area, using the recognized know-how of local producers and ingredients from the region concerned.

PGI - Protected Geographical Indication is an origin trademark attributed by the European Union to those agrifood products for which a specific quality, the reputation or other characteristics depends by the geographical origin, and whose production and or processing happens in a specific geographical area.

Origin linked products represent 5.7% of European food and beverage sales in 2010 and 58% of respondents were willing to pay a premium price of more than 20% for these products
(AND International, 2012)

Tecnoalimenti's participation to EU and National projects revolving around traceability concepts (2005-to date)

MED FOOD T T HUBS

TRACEBACK

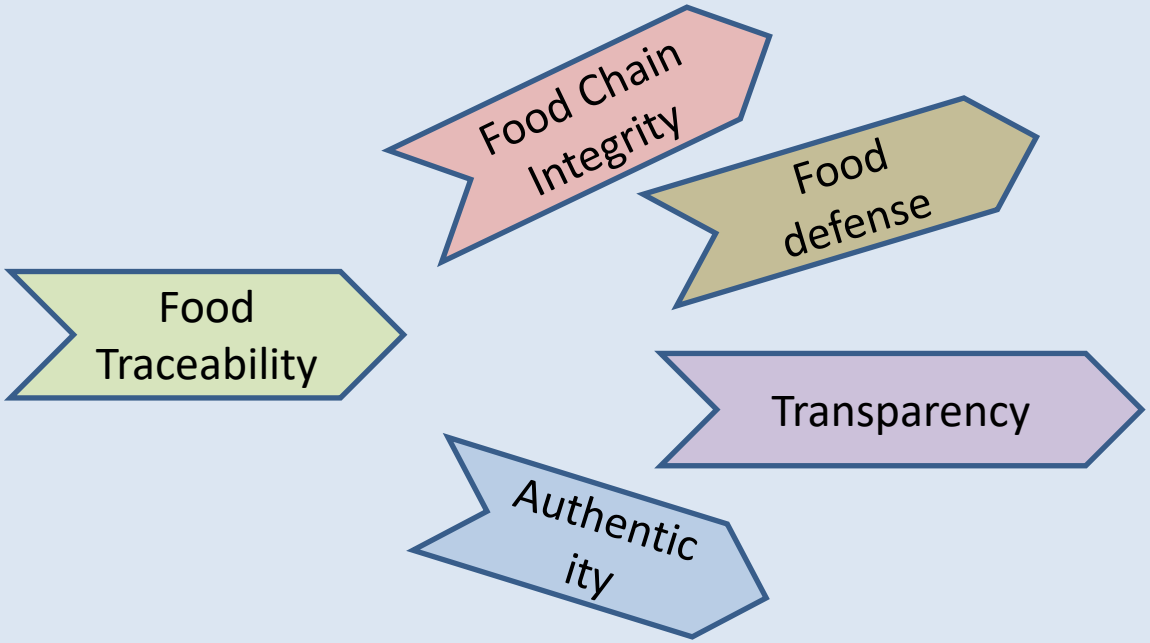
EDEN

BLOCKFIL

AUTENTICapp

OPENDEI

Evolution of the concept in the last 2 decades

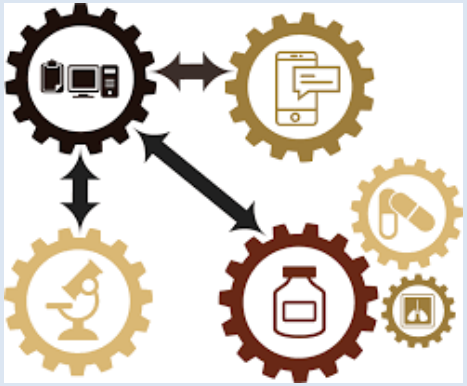


- Mignani A. G., Prugger R. "Photonic Sensors for Food Quality and Safety Assessment" in "Photonics for Safety and Security" edited by Antonello Cutolo, Anna Grazia Magnani, Antonella Tajani, World Scientific Publ. Co. Inc. , Singapore, Nov. 2013
- Hoorfar J., Prugger R. et al "Food Chain Integrity. A holistic approach to food traceability, safety, quality and authenticity" Woodhead Publ.,, Cambridge, 2011
- Holt, G.C, Contini L., Prugger R. et al. "Research agenda for SMEs in electronic platforms for the European food industry" Foresight , Emerald Publ., vol.9, n. 3. 2007

The central issue

Lessons learnt: 1. Data highway

- Infrastructure connecting all players along food chain
- Interoperability of the different systems

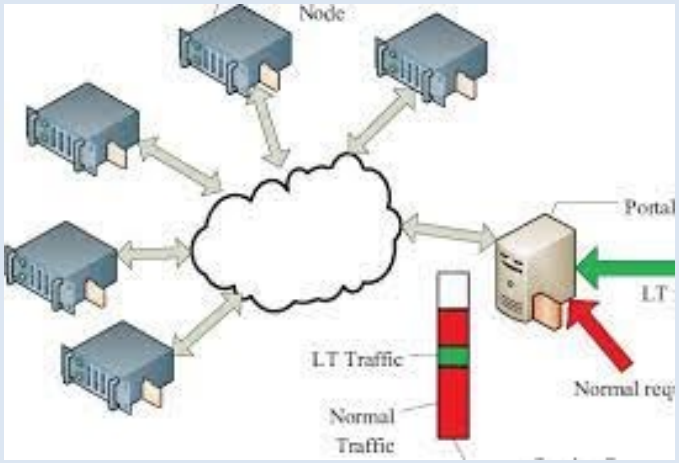


Lessons learnt: 2. Data integrity

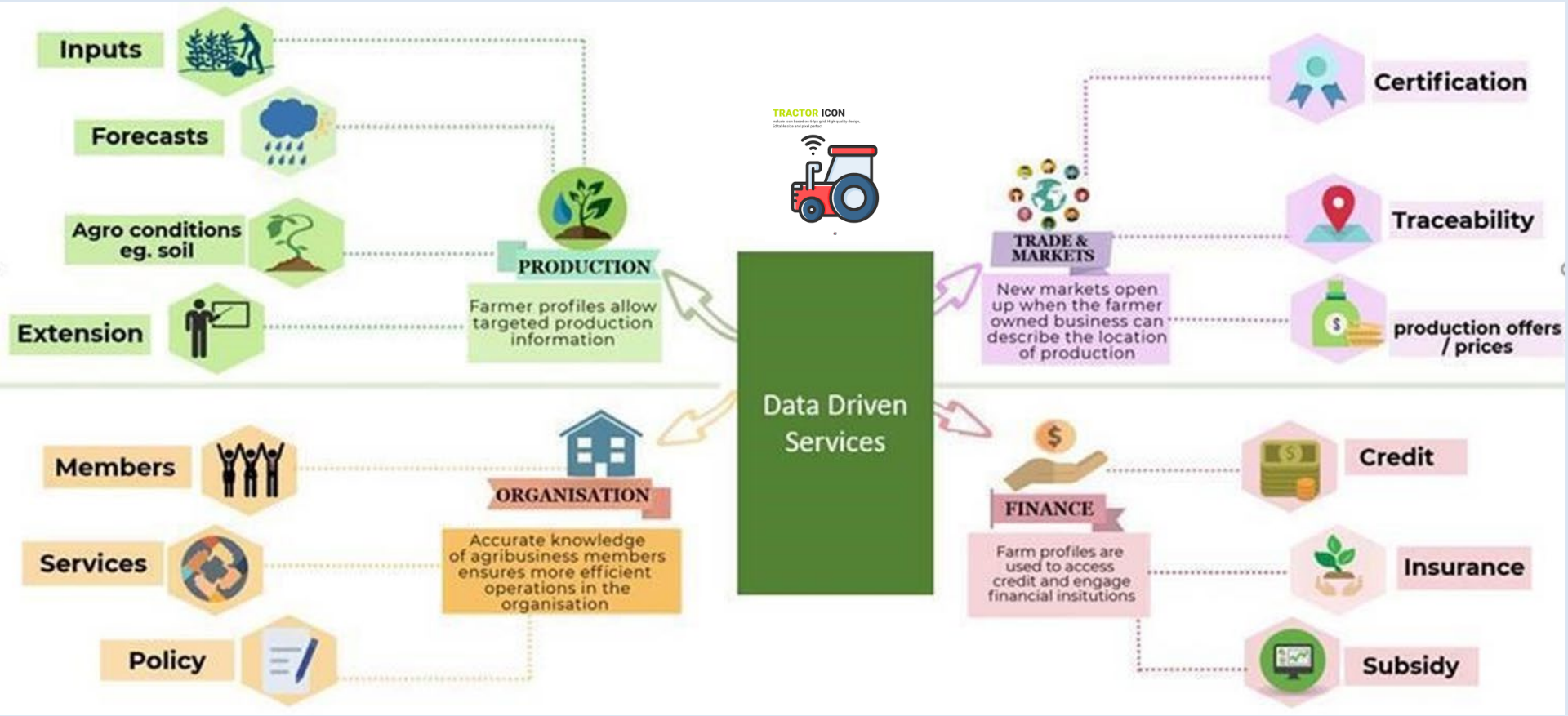
- Reliable data
- Allow flexible data input!

Lessons learnt: 3. Digitalisation

- Data management platforms
- Regulate ownership, confidentiality and privacy

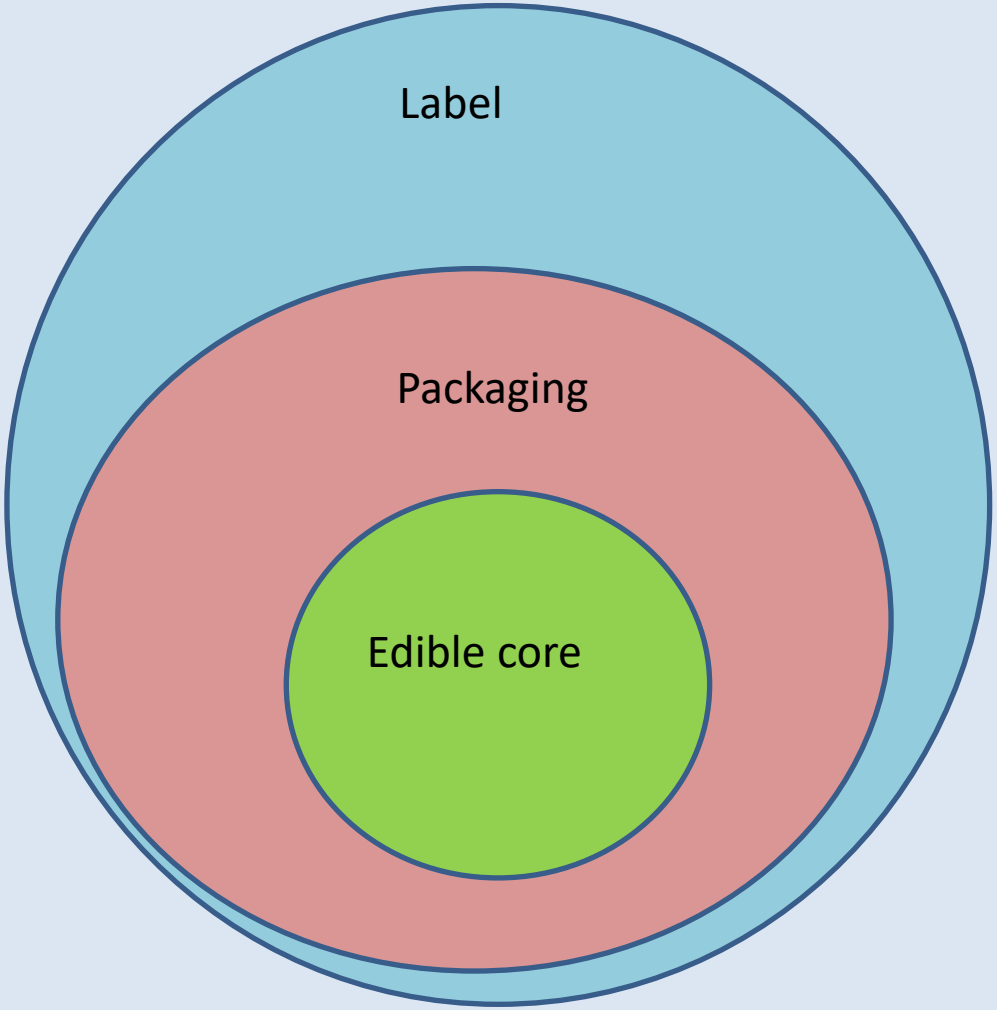


Lessons learnt: 4. Opening of a wider picture beyond tracking and tracing



Source AIMS-FAO, 2020

«Meta Food Product»



Future outlook: 1. Traceability data are important from the very onset of the food chain

To improve internal farming processes and decision making:

- Precision agriculture
- Digital agriculture
- Crop yield prediction
- Crop selection
- Smart irrigation
- Crop disease prediction
- Insurance smart contracts
- Vertical agriculture
- Monitor food safety
- Monitor food defense
- …

Future outlook: 2. Traceability data are a source of data for a fast growing business

Global agriculture analytics market size

- 2020 0,8 Billion USD
- 2025 1,4 Billion USD
- Growth rate 12,2% annually

Source Report Linker, 2021

! Who owns the data owns the power !

Future outlook: 3. Traceability is providing data for the growing data driven consumer preferences

	B Baby boomer 1940–59	X Gen X 1960–79	Y Gen Y (millennial) 1980–94	Z Gen Z 1995–2010
Context	• Postwar • Dictatorship and repression in Brazil	• Political transition • Capitalism and meritocracy dominate	• Globalization • Economic stability • Emergence of internet	• Mobility and multiple realities • Social networks • Digital natives
Behavior	• Idealism • Revolutionary • Collectivist	• Materialistic • Competitive • Individualistic	• Globalist • Questioning • Oriented to self	• Undefined ID • "Communaholic" • "Dialoguer" • Realistic
Consumption	• Ideology • Vinyl and movies	• Status • Brands and cars • Luxury articles	• Experience • Festivals and travel • Flagships	• Uniqueness • Unlimited • Ethical

McKinsey&Company

Future outlook: 4. Traceability data are valuable for the food market

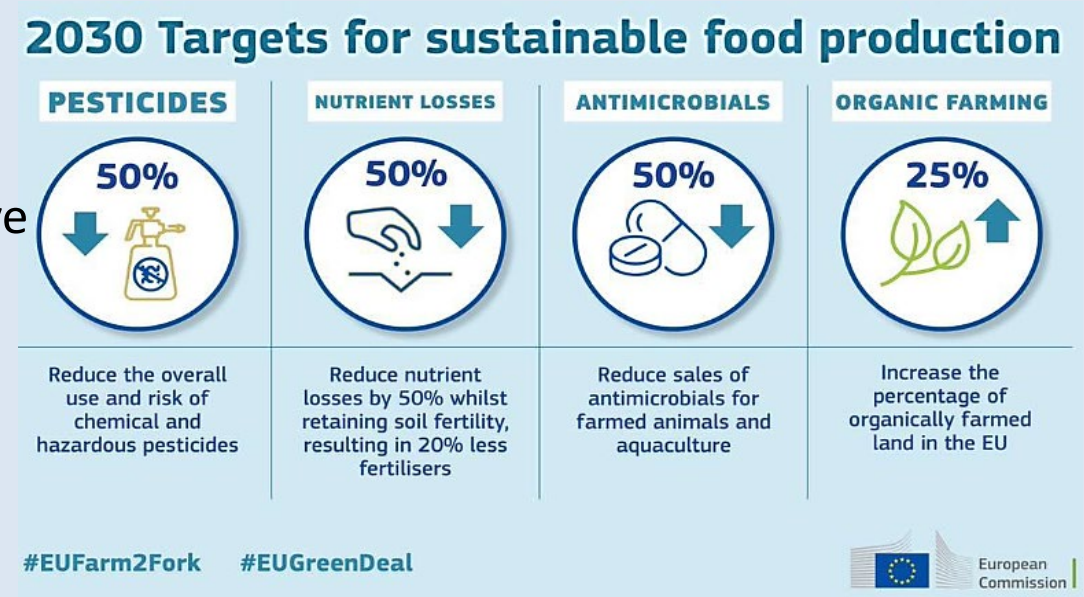
To increase the value of the product in the eyes of the consumer:

- Support evidence for «credence attributes»
  - Environmental concerns of consumers
  - Sustainability
  - Social and ethical concerns
- Support product transparency (consumer trust)
- Market intelligence
- Fight counterfeit
- …

Future outlook: 5. Data are required to evaluate sustainability metrics of agricultural production

Sustainability targets of EU Green Deal require:

- traceable, transparent and trusted data about farming
- what input used? (pesticides/herbicides, fertilizers, fuel, antibiotics…)
- how used? (compliance to good practice, to production protocols, to environmental restrictions)
- where used? (which lots of produce)
- how much used? (quantitative indicators of sustainability)



Tools are getting available to convert traceability data into product value

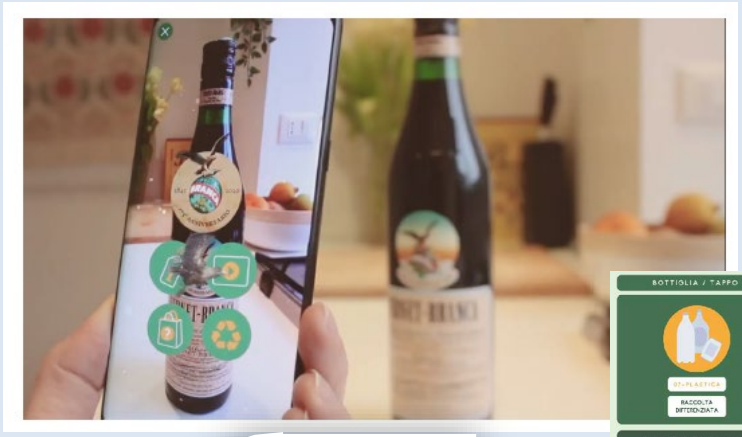
Technologies are getting available to provide real value to data collected for traceability:

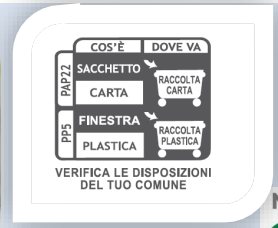
Artificial Intelligence
Data analytics
Machine Learning
IoT
Blockchain
Big Data Analysis
Small Data Analysis
Label 4.0
Algoritms
Decision Support Systems
…

TECNOALIMENTI

Bee2Side

THE DIGITAL WAY TO PACKAGING



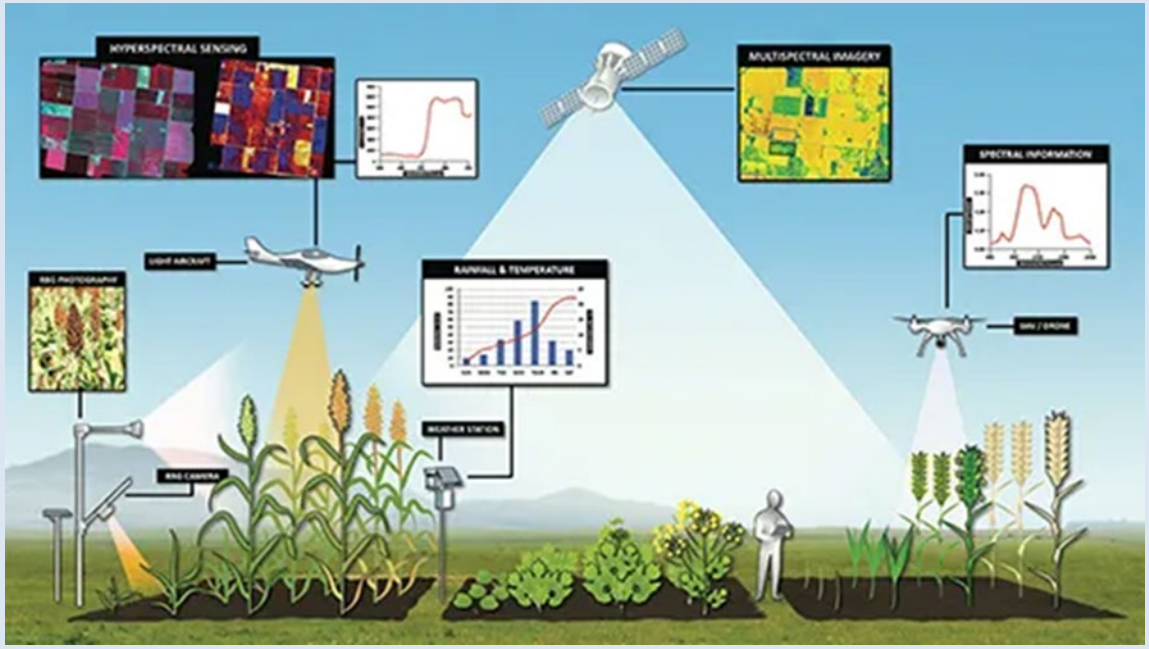


We are always open to new ideas, projects and collaborations!

TECNOALIMENTI

r.prugger@tecnoalimenti.com

Milan and Neaples,IT


HYPERSPECTRAL SENSING
MULTISPECTRAL IMAGERY
SPECTRAL INFORMATION
LIGHT AIRCRAFT
RAINFALL & TEMPERATURE
WEATHER STATION
RING CAMERA