SMART AGRIFOOD observatory

break with tradition

12th *December 2017*

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PARTNER

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SUPPORTER WT DAIRY 4.0

DIGITAL DAYS

POLITECNICO MILANO 1863 SCHOOL OF MANAGEMENT

OSSERVATORI.NET digital innovation

RISE Research & Innovation for Smart Enterprises www.rise.it

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Smart AgriFood observatory
About us

RISE

RISE *Research & Innovation for Smart Enterprises* is a research laboratory at the University of the Brescia. It carries out research activities and spreads the know-how to the companies

OSSERVATORI *Digital Innovation*

The Digital Innovation Observatories of the School of Management of Politecnico di Milano were set up to raise cultural awareness in all the principle areas of digital innovation

Smart AgriFood observatory
Vision

Smart AgriFood observatory
Research topics

Agriculture 4.0

- ***Precision farming and Internet of Farming***
- **Supply mapping**
- **Case studies (demand)**
- **Quantifications**
- **Working table**

Dairy 4.0

- ***Smart Dairy Value Chain***
- **Case studies**
- **Cost-benefit analysis**
- **Working table**

Traceability, Quality and Sustainability

- ***Traceability: a tool to support the quality***
- **Spheres of applications**
- **Supply mapping**
- **Research about impacts on supply chain**

Data ownership

Internet of Things & other Key Enabling Technologies (KET)

- **Sensors**
- **Cloud Platform**
- **Big Data Analytics**
- **Drones**
- **Blockchain**
- **…**

Agrifood start-ups monitoring

AgriFood digital innovation
Impacts on supply chain

Production	Transformation	Distribution	Use
- Sensors (field and machines) - Drones - Satellite images - …	- Production sensors - Stock monitoring - Dematerialize - …	- Logistic e-commerce - Food delivery - Smart packaging - …	- Smart tagging - Digital Marketing - Social dining - Meal kits - …

Innovation to boost:

EFFICIENCY **PRODUCTIVITY** **ANTI-COUNTERFEITING** **QUALITY** **SUSTAINABILITY**

Agriculture 4.0
Two key components

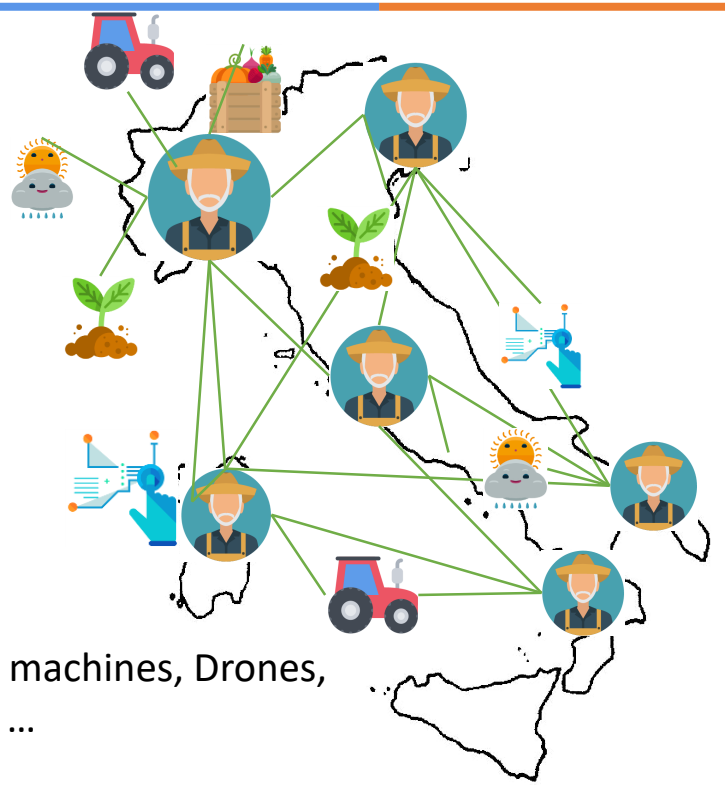
AGRICULTURE 4.0

Precision agriculture

Focus on **field dimension**

Efficiency, **productivity** and **quality**

Prescription maps, autonomous machines, Drones, Smart machines, smart sensors, …



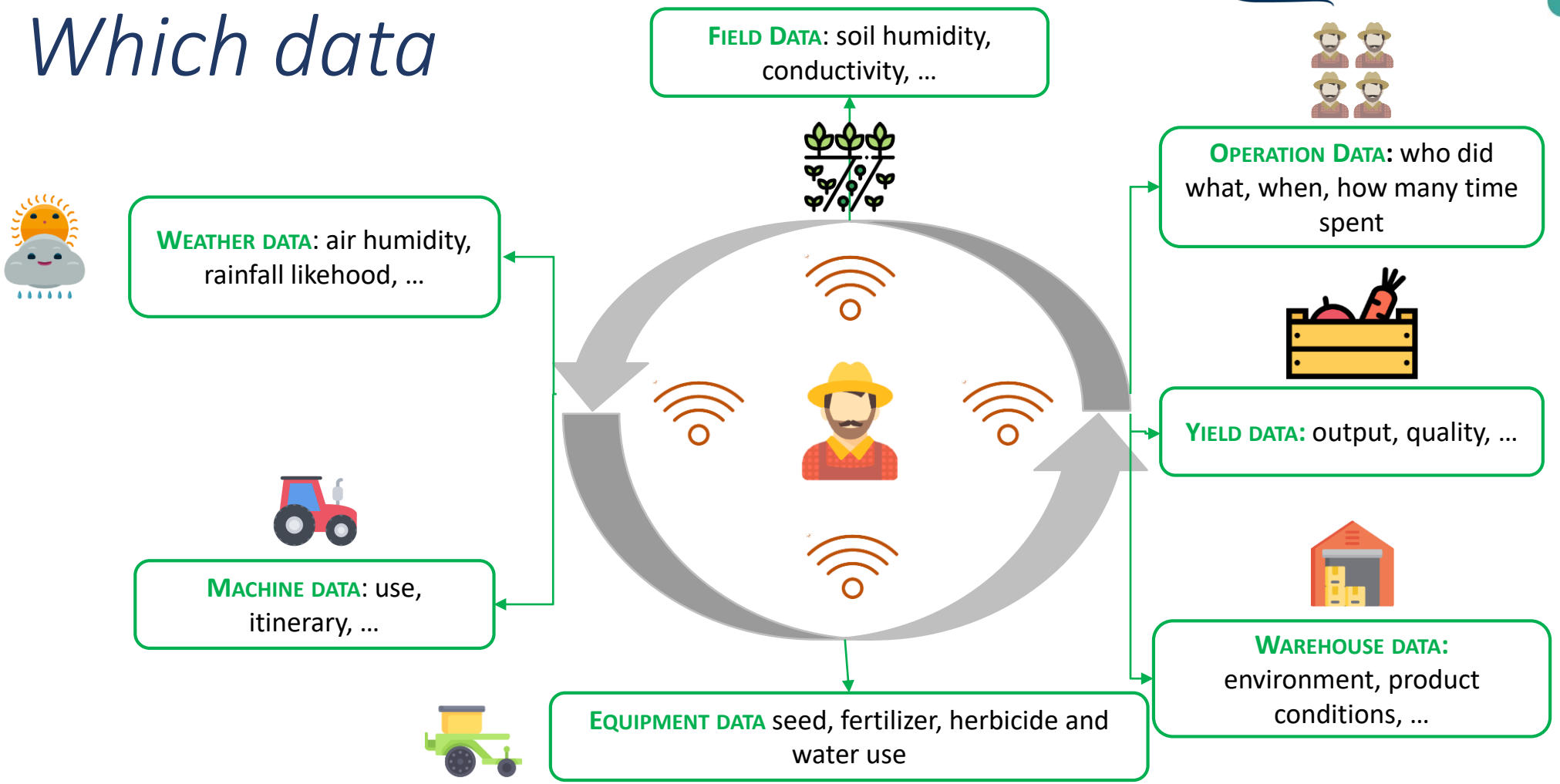
Focus on **farm dimension**

Efficiency, supply chain integration, Data valorization

IT management systems, Big Data Analytics, IoT, Cloud, …

Internet of Farming

Agriculture 4.0
Which data

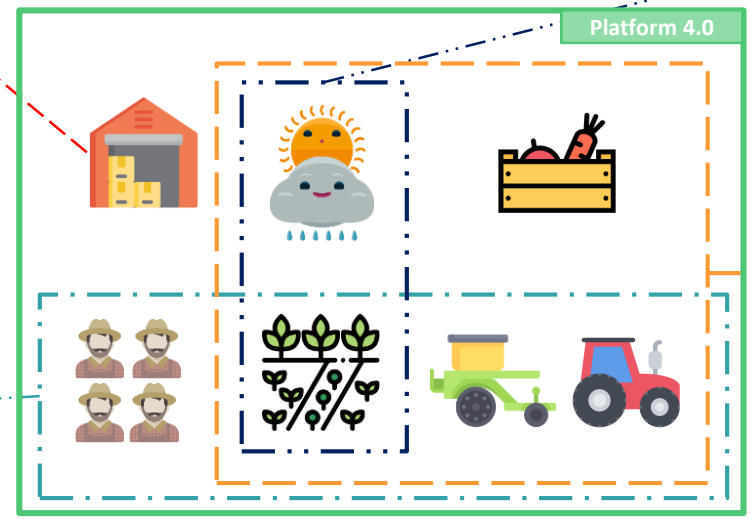


PLATFORM AGRI 4.0

Design an **integrated decision support** system, such as a unique platform for the farmer able to acquire, process data originate from several sources

WAREHOUSE CONDITIONS MONITORING AND CONTROLLING
IN_FARM A.M.A

SUPPORT AGRICULTURE DECISIONS
IN_FIELD A.M.A.



SUPPORT AGRICULTURE DECISIONS
IN_VEICHLES A.M.A.
SDF

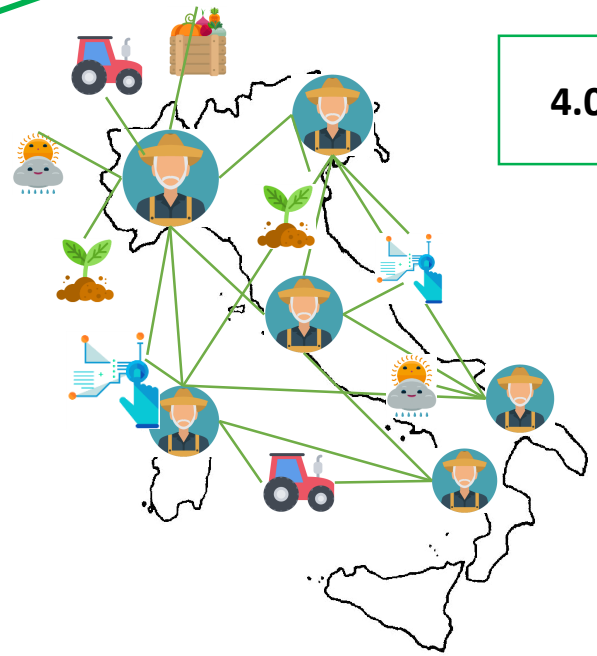
CONNECTED VINEYARD
SDF

Agriculture 4.0
It is a long way away

Experience-based decisions

Traditional approach

Gap to fill

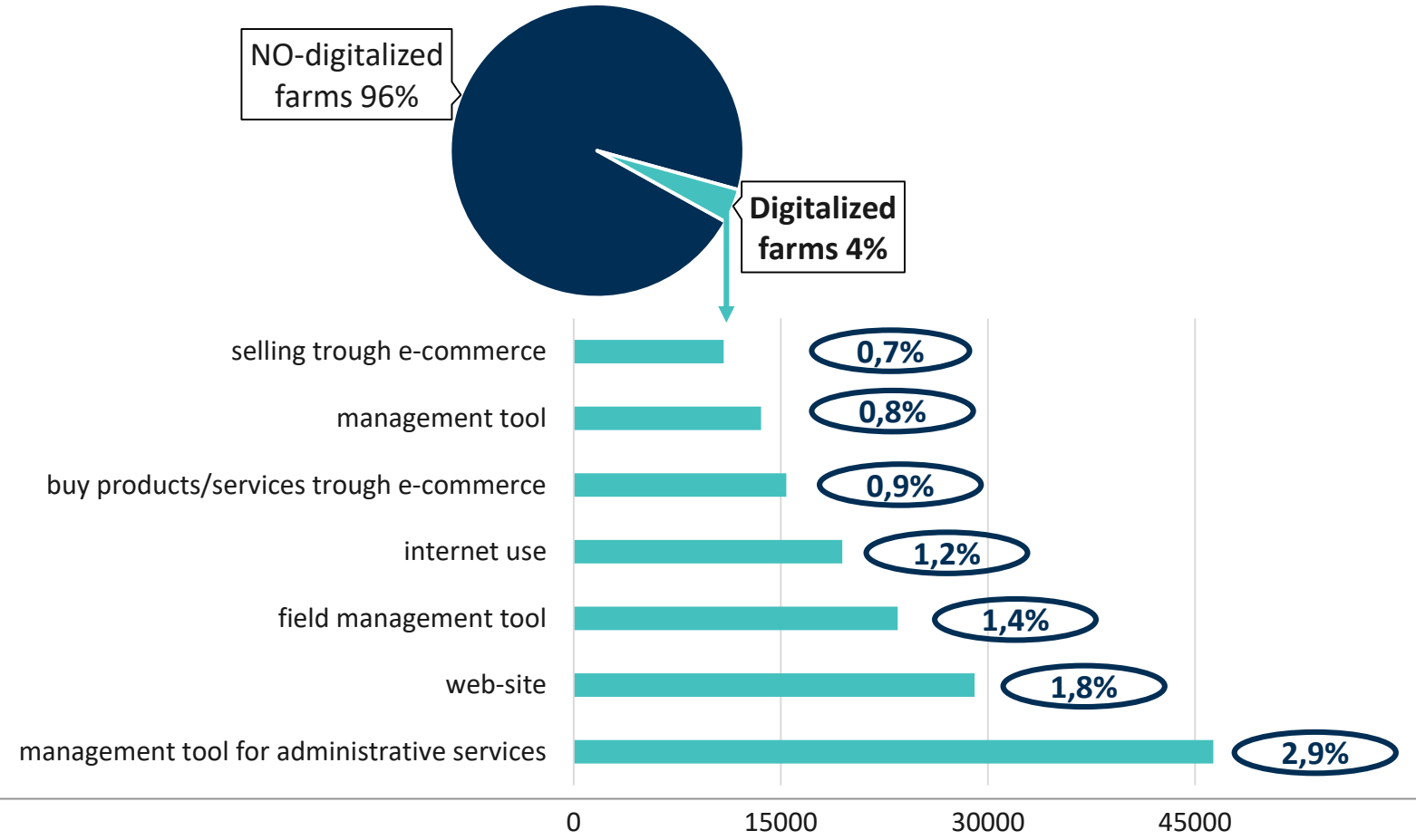


4.0 approach

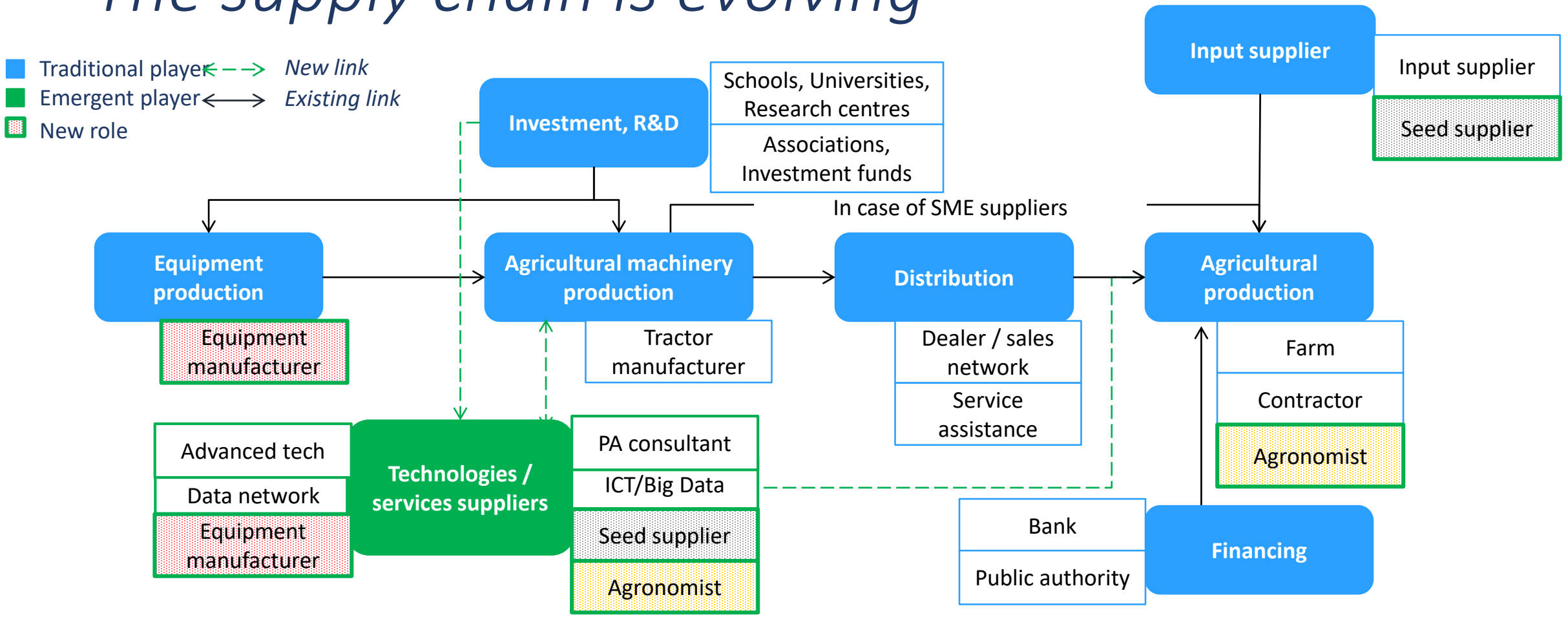
Experience-based decisions
AND
Exploitation of data originated from several sources

to enhance performances and mitigate risks

Agriculture 4.0
The demand is immature



Agriculture 4.0
The supply chain is evolving



Agriculture 4.0

Misalignment between Supply and Demand

	SUPPLY	DEMAND
AGRICULTURA 4.0: SCOPE	• Cost reduction • Increase in production • Soil variability management • Resources optimization • Automation and simplification	• Cost reduction
KET	• Technology available with different readiness level • It is a way to the means	• Difficulties to search, inform and make a decision • First contact is own trusted supplier
TRAINING NEEDS	• *"2 days are enough"* • *"Remote assistance is only what they need"*	• *"Training is poor"* • *"Dealers are not enough prepared"*

Elaborations based on interviews by Osservatorio

a A.M.A.'s project

inField

Sensor pole system feeding several algorithms. Farmer receives data, or an agronomical advice or a specific consultation.

inFarm

Sensor network involving all productive buildings to optimise productive processes, monitor consumption and manage the quality.

inVehicle

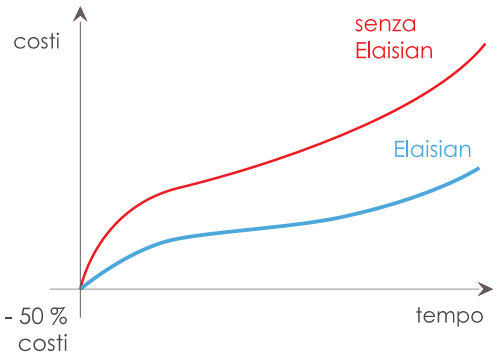
On-board sensors (tractors and equipment) to geo-localize, to measure performances, consumptions, to acquire critical events, associated to field activities.

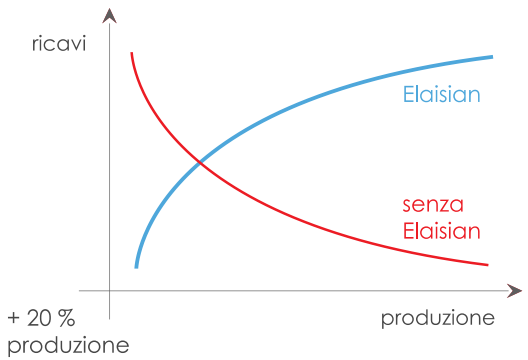
ELAISIAN

System to prevent diseases and optimize cultivation processes

Tools

- Sensors for temperature, humidity, rainfall, weather, chlorophyll, soil
- Real-time access to data



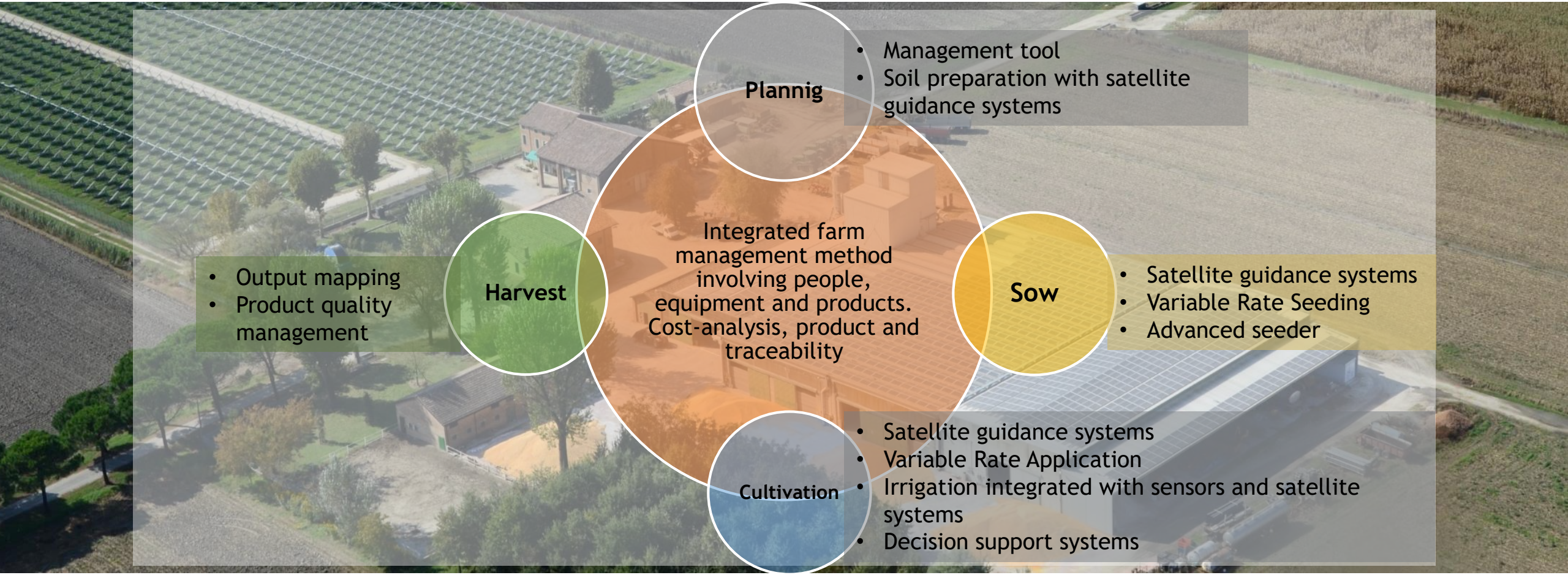


Source: Elaisian, 2017

- Algorithms to elaborate data
- Farmer notifications

PORTO FELLONI

An holistic approach



PORTO FELLONI

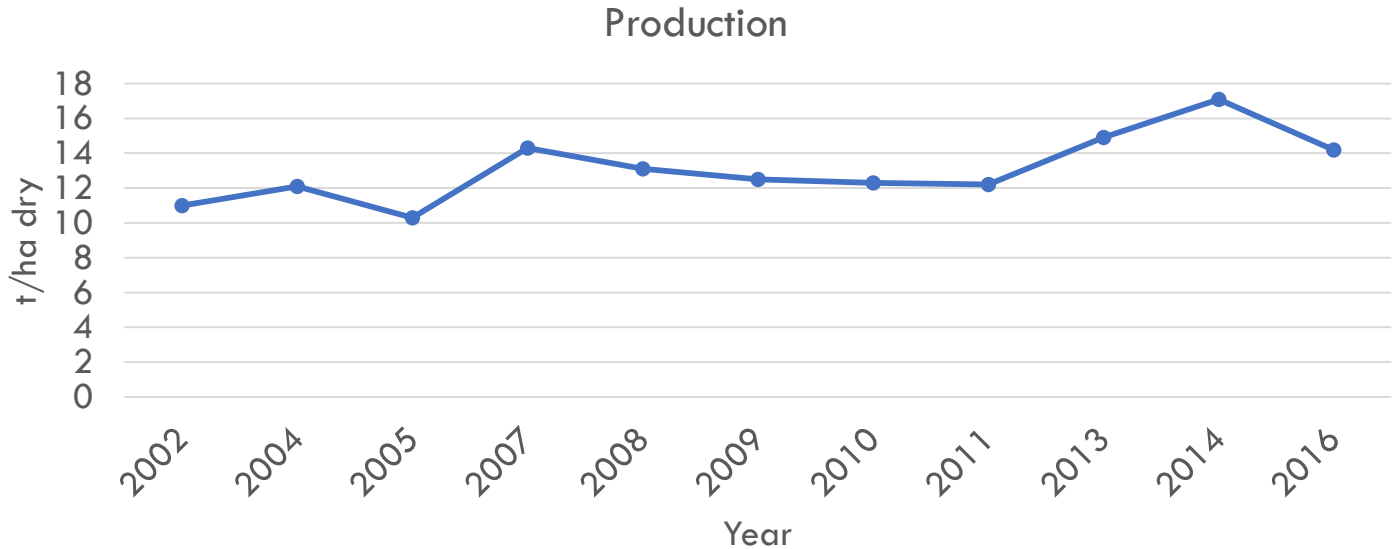
Results

Soil
High Variability

Area
7 hectares

Crop
corn

Fertilizer saving
-53,9 kg N/ha
-343 kg
N= -30%



Before PA

Production
11,13 t/ha

+16%

Variable Rate Application (fertilizer)

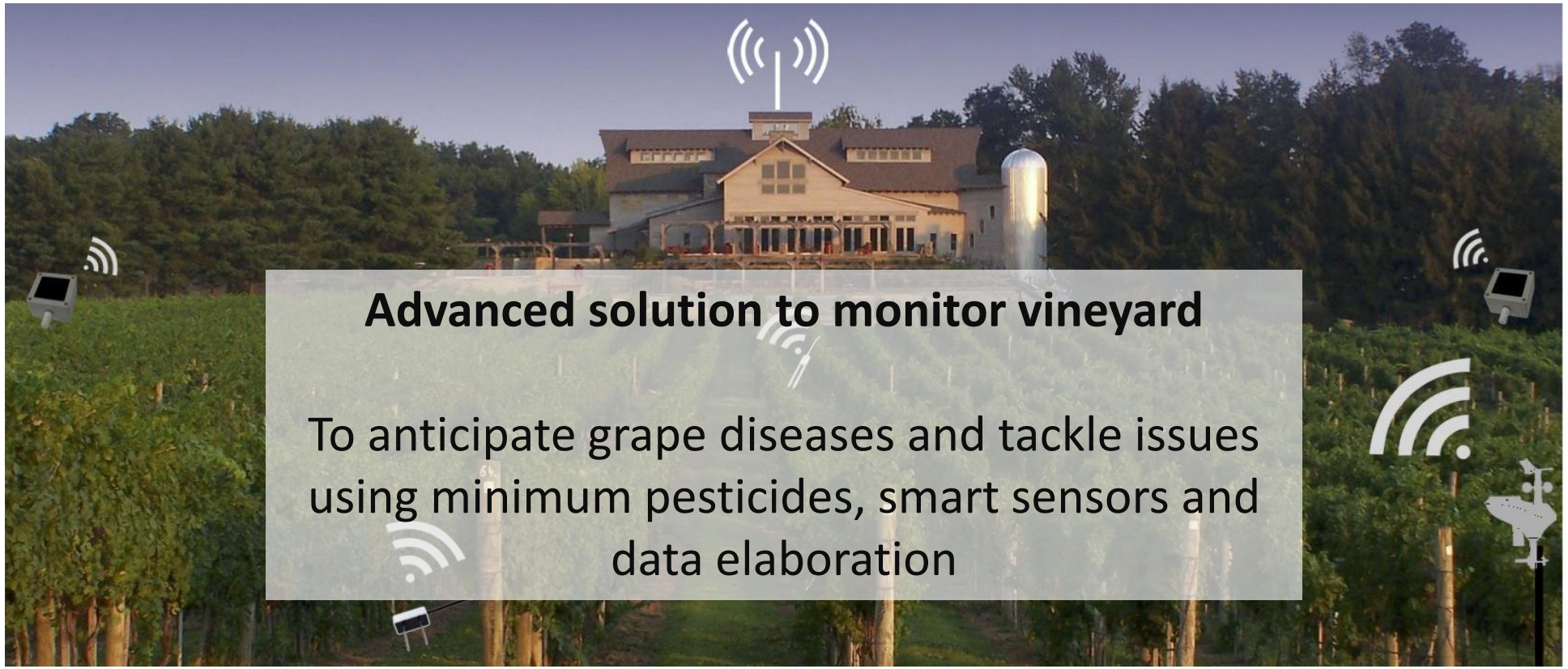
Production
12,88 t/ha

+20%

Variable Rate Application

Production
15,40 t/ha

TENUTA SANTA SCOLASTICA

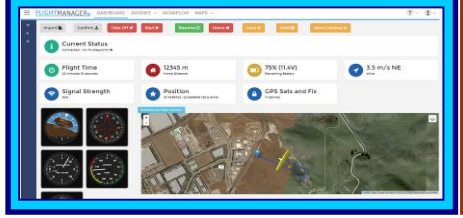


Connected Vineyard
a *SDF's project*

System to automate, integrate and easy the wine-growing supply chain

CONNECTED VINEYARD

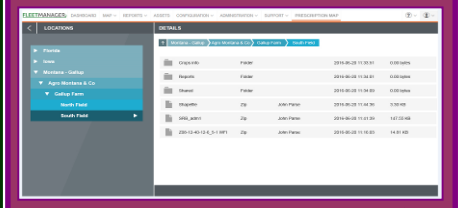
Flight Manager
- Flight plan
- Image acquisition
- Image elaboration



Map Manager
- Crop conditions
- Prescription maps

Fleet Manager
- Fleet management
- Vehicles allocation

Archive
- Operation data
- Historical data
- statistics report



Workflow integration

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Challenges – next steps

DIGITIZE companies

Fill the gap between supply and demand

Data management:

Valorisation and ownership

Thank you!

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@AgriFools **@Osserv_Digital** **@RiseLabUNIBS**

Save the date!
SMART AGRIFOOD FINAL WORKSHOP
23rd Jan 2018

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