

# The digital revolution in agriculture: why we talk about a new paradigm

Area 1 – SPA Overview  
Lesson 1 – Introduction to SPA  
Sequence ID – 3

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**DAGRI**  
DIPARTIMENTO DI SCIENZE  
E TECNOLOGIE AGRARIE,  
ALIMENTARI, AMBIENTALI E FORESTALI

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## DISCLAIMER

### A1.L1.T3 The digital revolution in agriculture: why we talk about a new paradigm:

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Marco Vieri, Daniele Sarri, Stefania Lombardo, Marco Rimediotti, Riccardo Lisci, Valentina De Pascale, Eleonora Salvini, Carolina Perna, Andrea Pagliai, *The digital revolution in agriculture: why we talk about a new paradigm*, © 2020 Author(s), [CC BY-SA 4.0 International](https://creativecommons.org/licenses/by-sa/4.0/), [DOI 10.36253/978-88-5518-044-3.03](https://doi.org/10.36253/978-88-5518-044-3.03), in Marco Vieri (edited by), *SPARKLE - SPARKLE - Entrepreneurship for Sustainable Precision Agriculture*, © 2020 Author(s), [content CC BY-SA 4.0 International](https://creativecommons.org/licenses/by-sa/4.0/), [metadata CCO 1.0 Universal](https://creativecommons.org/licenses/by-sa/4.0/), published by [Firenze University Press](https://www.firenzeuniversitypress.it/), ISSN 2704-6095 (online), eISBN 978-88-5518-042-9, [DOI 10.36253/978-88-5518-044-3](https://doi.org/10.36253/978-88-5518-044-3)

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# Overview



The new paradigm of digitalization and high technologies is considered fundamental in the next CAP\*, that aims to:

- 🌸 increase competitiveness;
- 🌸 assure food safety and quality;
- 🌸 maintain a fair standard of living for agricultural communities;
- 🌸 stabilise farm incomes;
- 🌸 better integrate environmental goals;
- 🌸 develop alternative job and income opportunities for farmers and their families.

Climate change makes it essential for farmers to implement an approach to Sustainable Precision farming and the further development of innovative technologies, which must be adapted specifically to the business model pursued by an agripreneur. Digitalization, connectivity, and high technology are tools for the new main revolution: agriculture 4.0, an agricultural mind-set evolution.

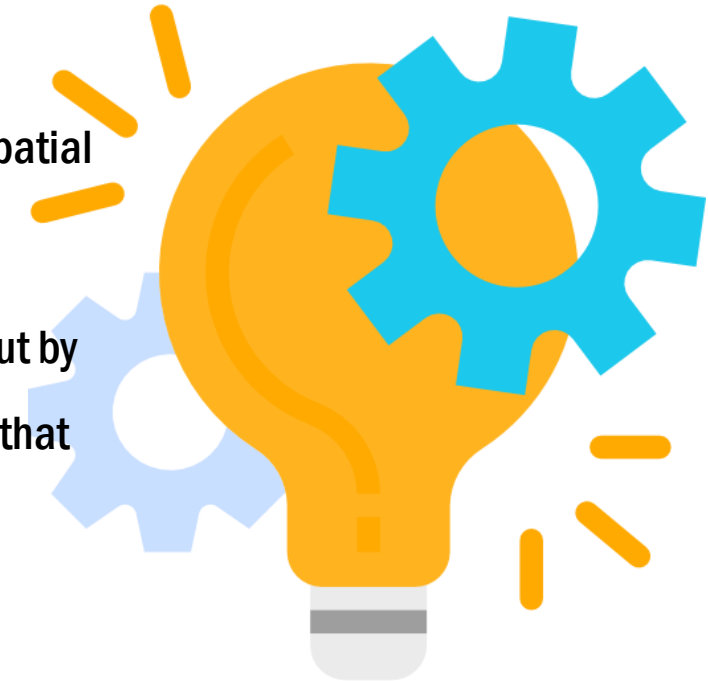
\* Common Agricultural Policy [https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy\\_en](https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy_en)

# 1. Digitalization, connectivity and SPA mind-set

Precision agriculture is a new paradigm for the timely management of agricultural practices. It is made possible on a large scale by new emerging technologies for measurement, evaluation and management of each element. It is a systematic approach, a new way of operating.

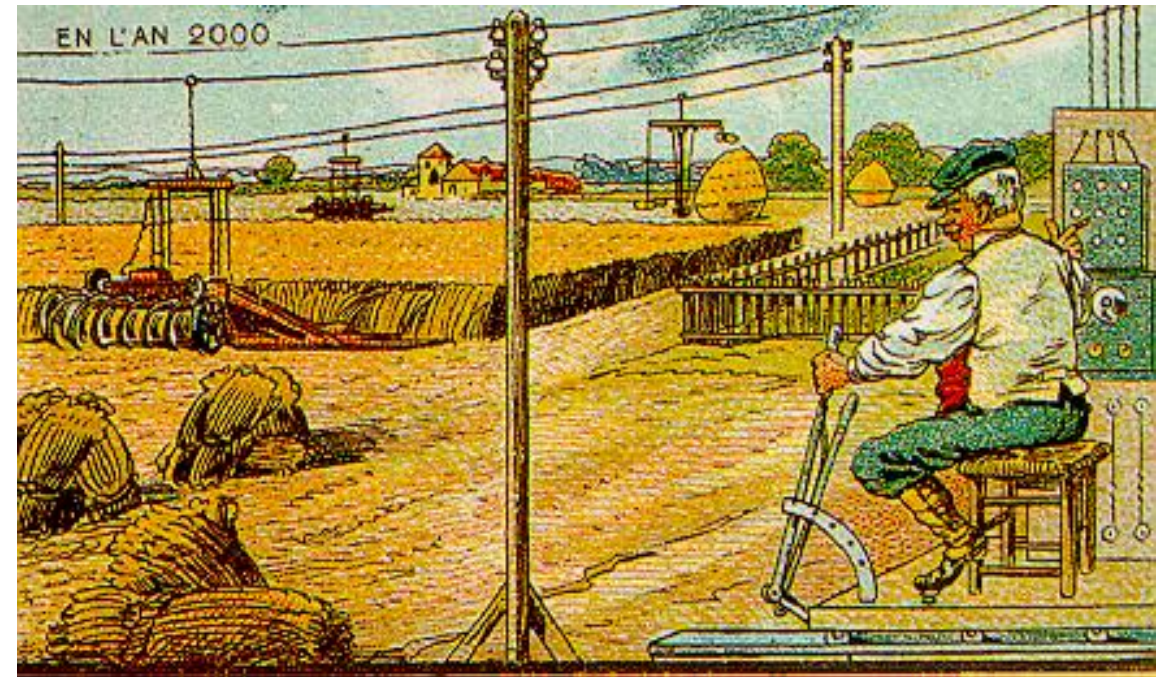
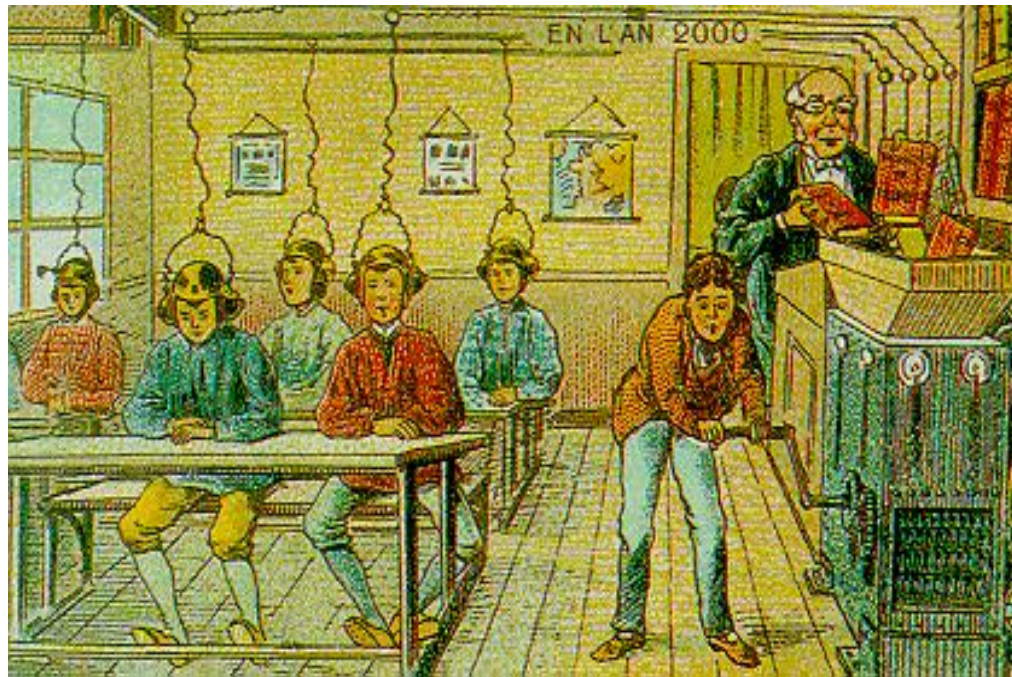
Digitalization, sensor development, and high technologies make it possible to manage the spatial variability, the single factors and subjects, both continuously and in a wide range.

In the past knowledge was transmitted verbally or through writing, nowadays this is carried out by digital language and tools. Digitalization and connectivity become the enabling instruments that allow you to manage a complex system in the Sustainable Precision Agriculture aim.



## 2. Human and Machinery speak digital

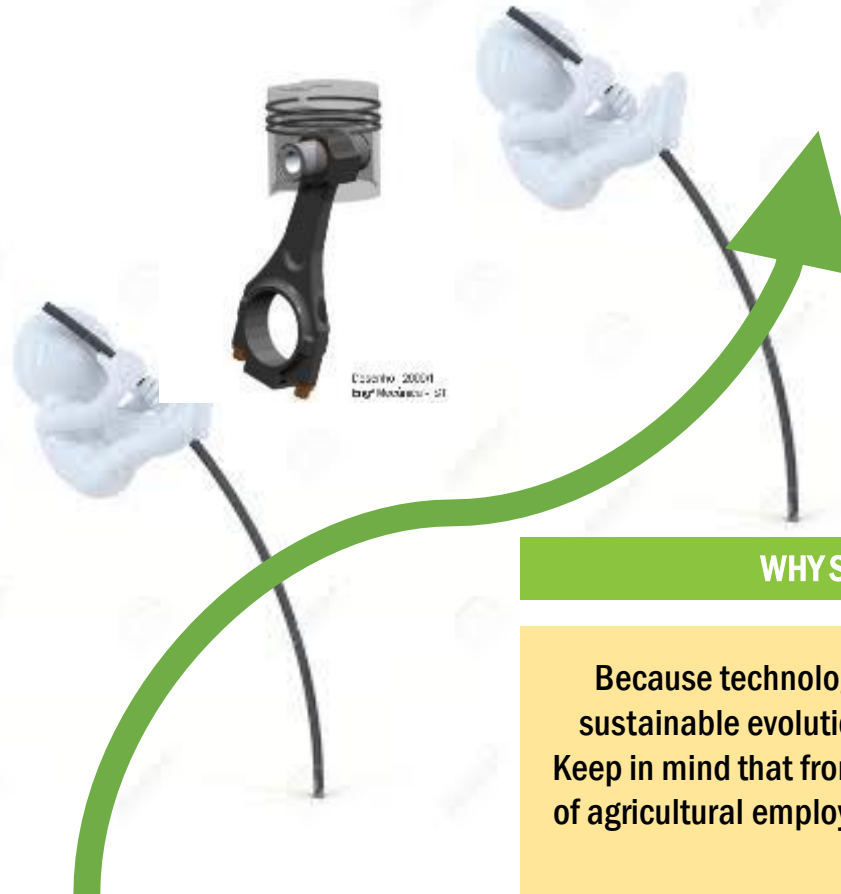
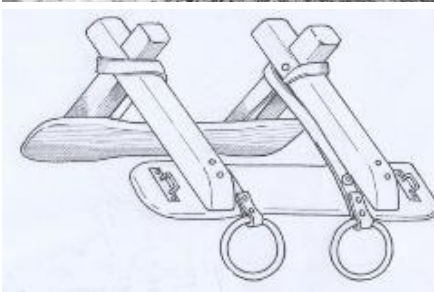
Digitalization and connectivity make a dialogue between computers, sensors, equipment, and machinery possible with human supervision and control.



“En l'an 2000 o Visions de l'an 2000”, Villemard, France 1899.

## 2. Human and Machinery speak digital

The new paradigm: from drawbar and manual labour, to digitalization & connectivity trough mechanical revolution.



AGRICULTURE 4.0



WHY SHOULD WE TALK ABOUT A SYSTEMATIC APPROACH?

Because technological evolution will only be profitable with an inclusive social and sustainable evolution and with giving the right importance to each actor in the chain, Keep in mind that from the start of the last century on one hand we went from 90% to 5% of agricultural employers (today). But mechanization in agriculture only became effective with the rise of services and infrastructures.

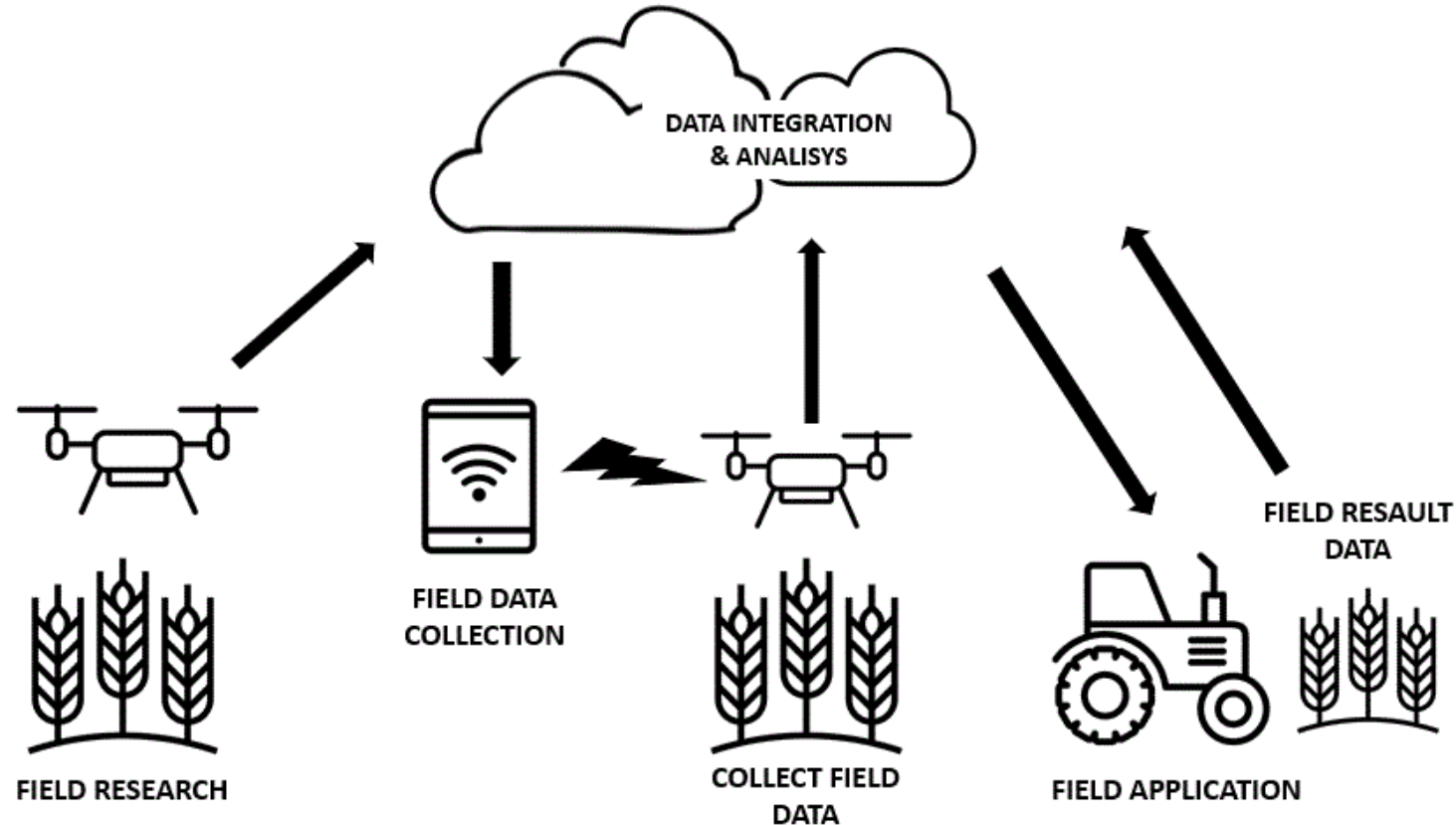
Technological jump, from manual labour to digitalization



## 2. Human and Machinery speak digital

Digitalization makes the dialogue between humans, machines and devices as sensors or actuators possible.

In the following image the cycle of Precision Agriculture is shown.



# 3. Agripreneurs in the future scenario of Digitalization, Connectivity, SPA and Climate Change



Agricultural Entrepreneurs or “Agripreneurs” can increase their level of control by implementing connected technologies through a complex Farm Management Integrated System, allowing them to apply SPA.

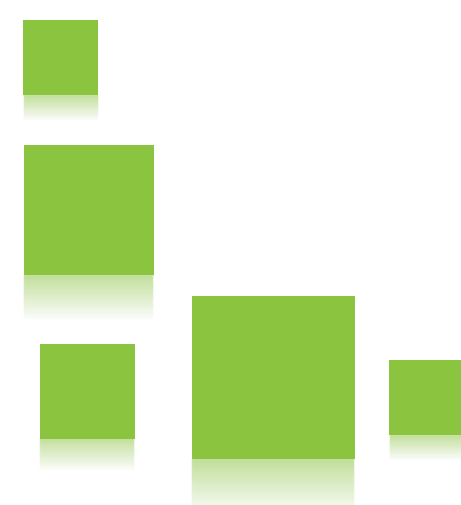
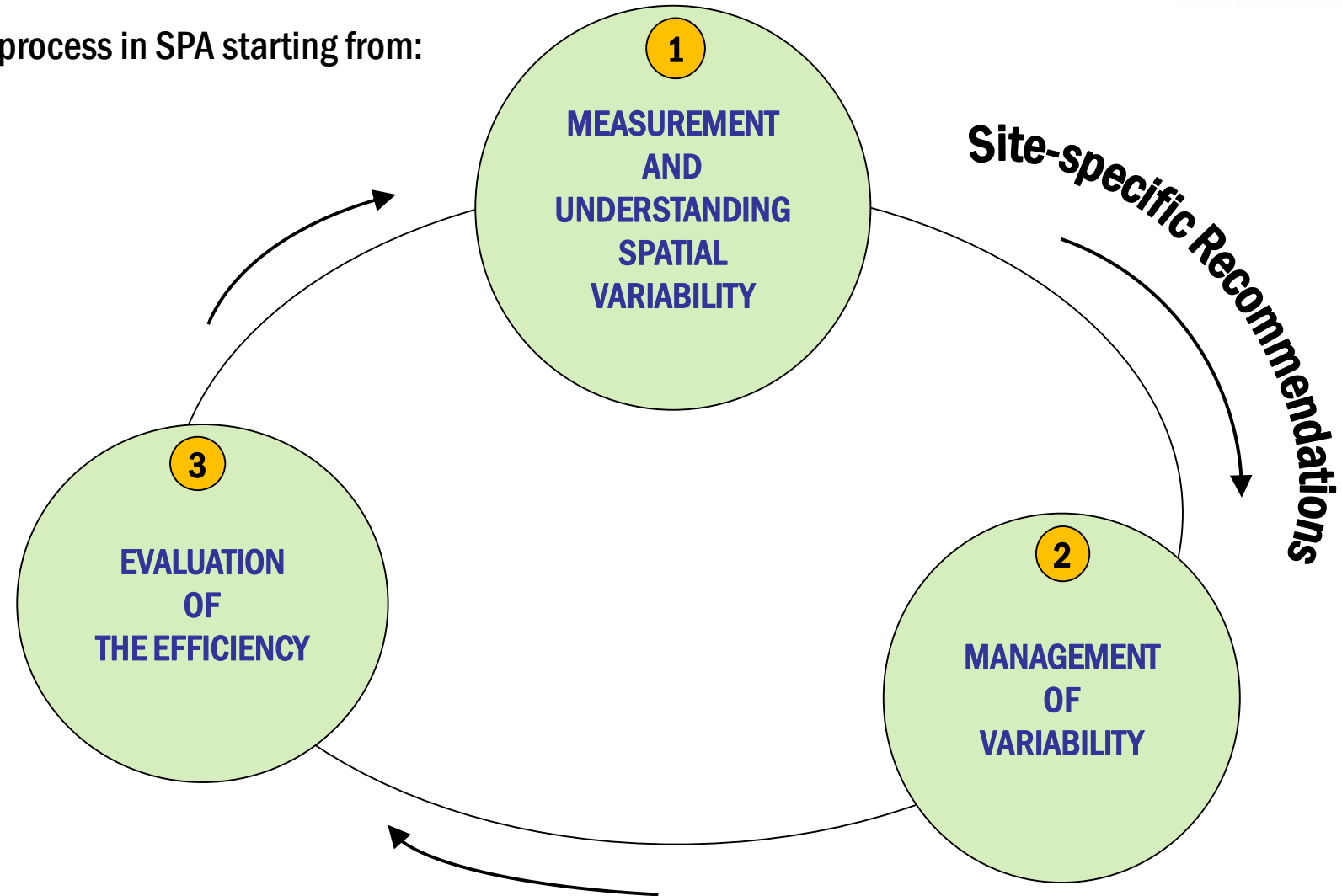
Technologies as the eyes, the arms, and the mind of the entrepreneur in managing operations.



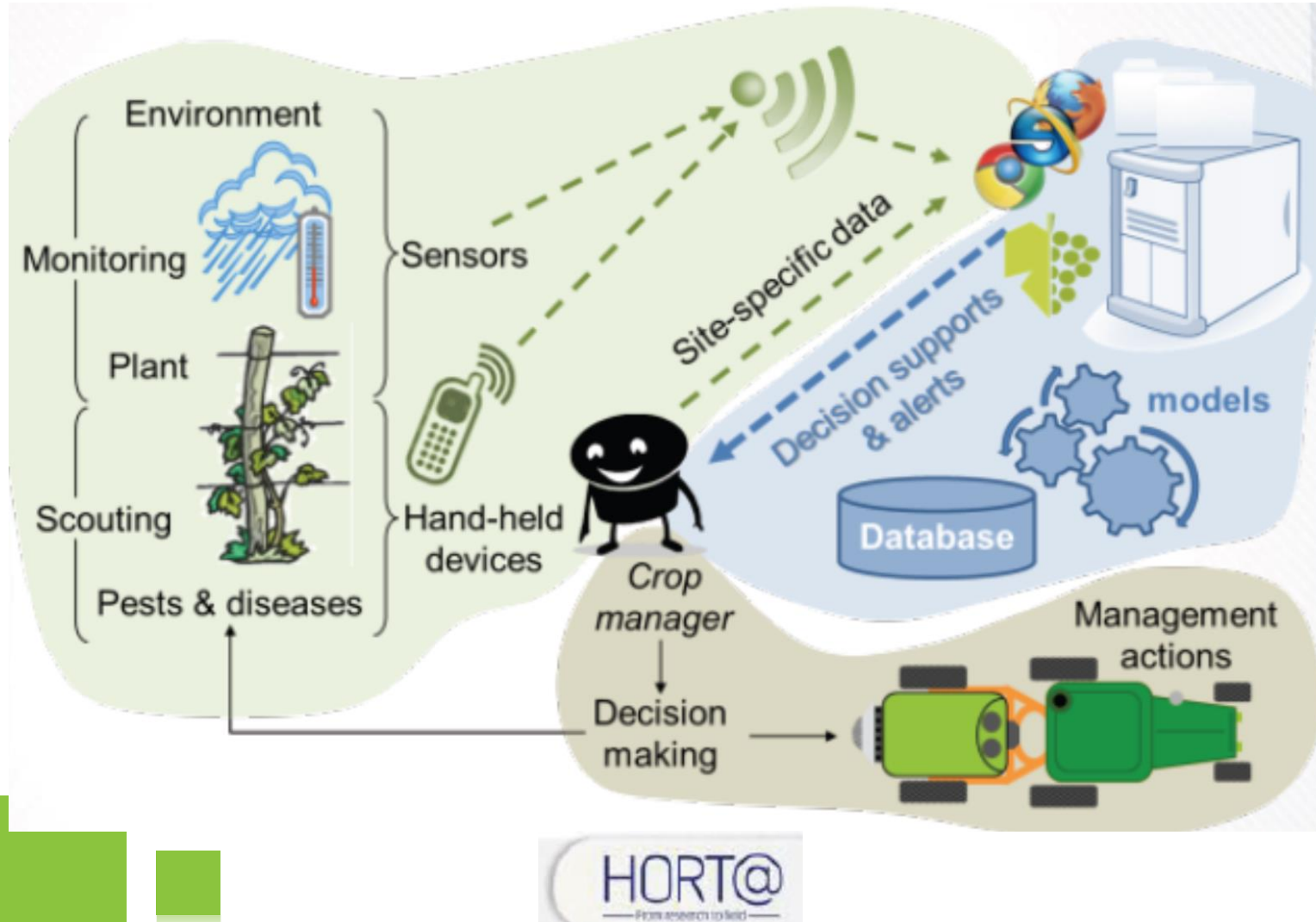
### 3. Agripreneurs in the future scenario of Digitalization, Connectivity, SPA and Climate Change



The importance of a reiterative process in SPA starting from:



### 3. Agripreneurs in the future scenario of Digitalization, Connectivity, SPA and Climate Change



Climate change imposes important choices for the timely management of crop protection.

There are many technological solutions to support decisions and optimize operations by reducing the number of treatments.

There are many companies or projects (as HORT@) that through the use of DSS (Decision Support System) can convert complex weather and crop phenomena into clear and specific operative choices in the field.

### 3. Agripreneurs in the future scenario of Digitalization, Connectivity, SPA and Climate Change



Climate change makes it extremely necessary to precisely monitor the crop, soil, and environment status that could mitigate such risks for the crops, especially in the critical periods. Fog and Cloud networks of meteorological stations are increasing all around, and are connected digitally with DSS and Risk Alert.

Climate change is the cause of particular and costly operations, such as emergency heating in the vineyard. Technologies are an indispensable tool for effectively intervening and checking the conditions on each specific site.



Facing extreme weather condition in vineyards



Weather station in the field



Example of real time connection

# References

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