WHAT IS THE IMPACT OF DIGITALISATION ON FARMING PRACTICES AND STRUCTURES AS WELL AS NEW DEPENDENCIES?
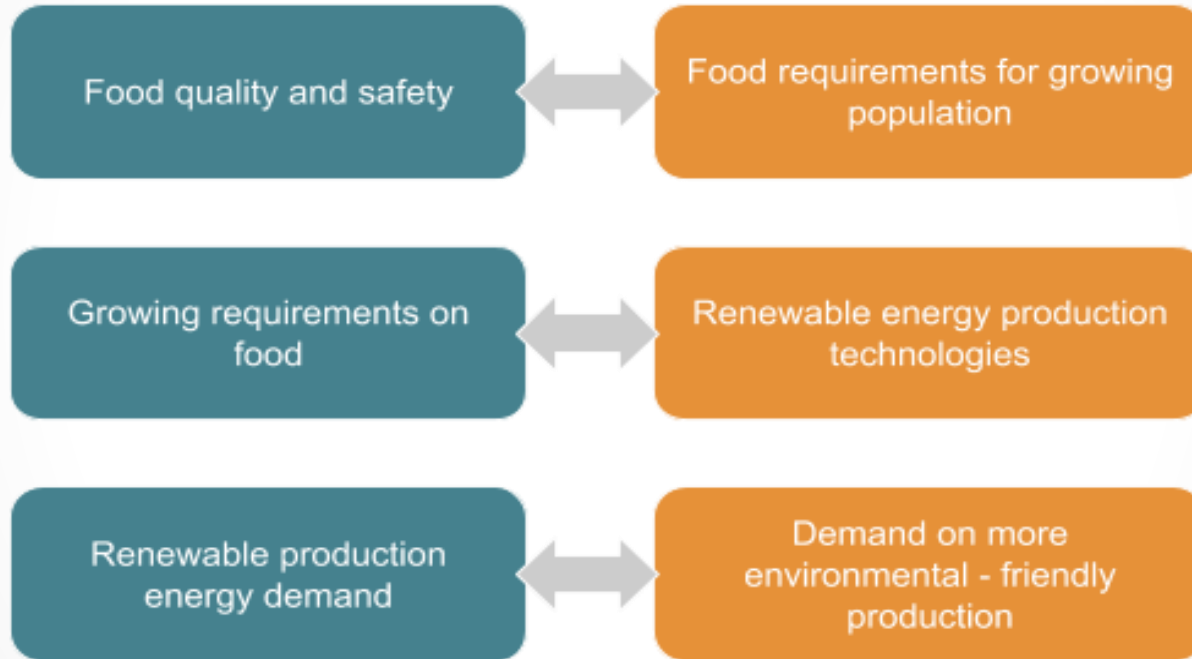
WIRELESSINFO
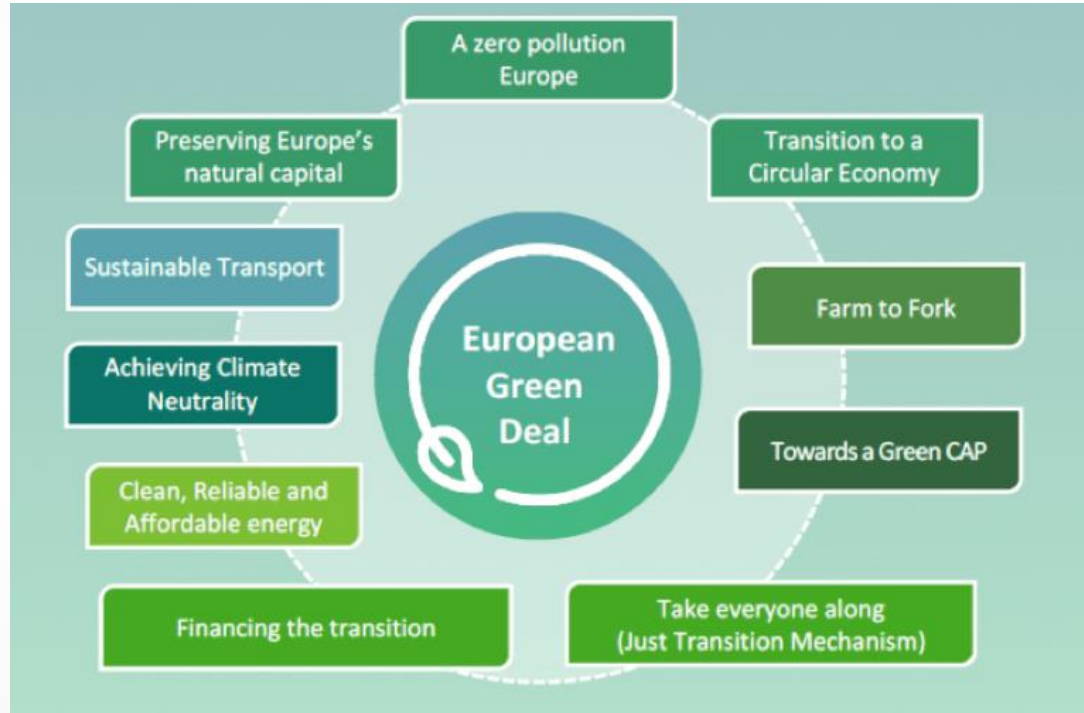
Karel Charvat

December 03 2020

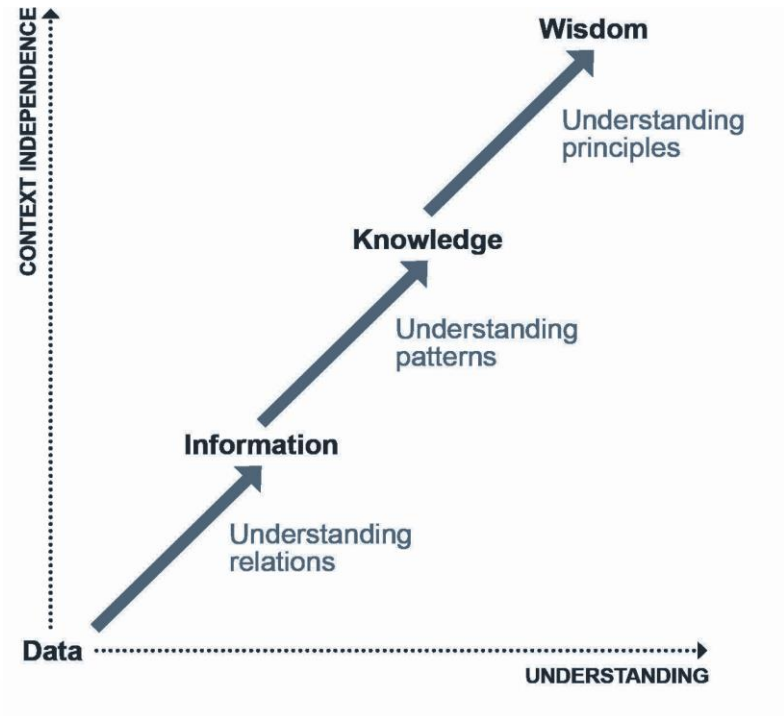# EXTERNAL DRIVERS FOR AGRICULTURE AND FOOD SECURITY

GREEN DEAL

SUSTAINABLE DEVELOPMENT GOALS

OBJECTIVE

- Future agriculture production needs to be globally increased, with higher quality and using less land and fewer inputs at the same time.
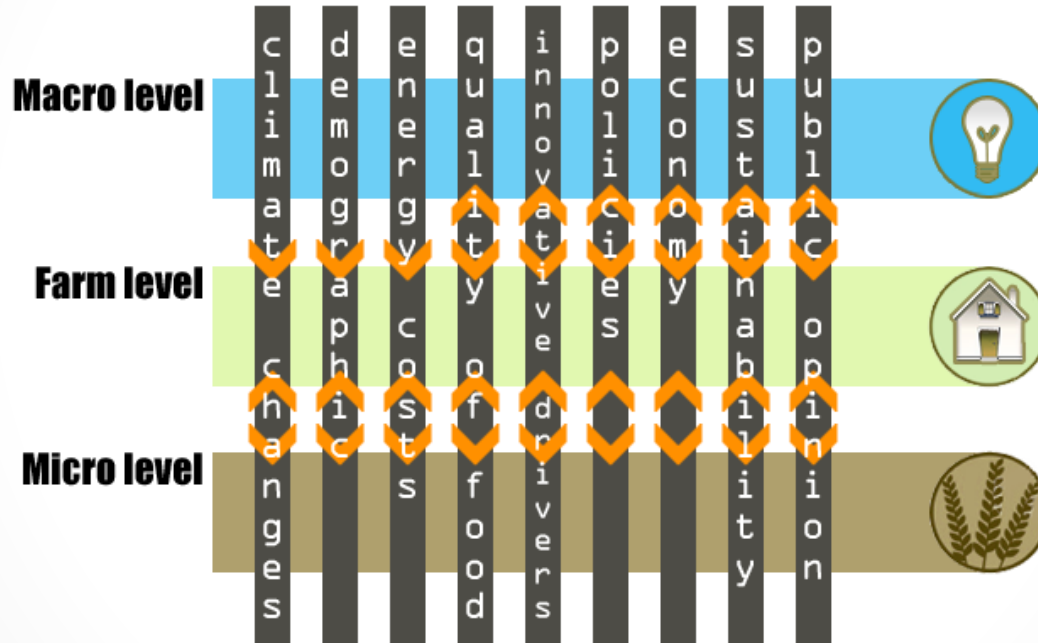
NEEDS FOR FUTURE KNOWLEDGE MANAGEMENT

KNOWLEDGE MANAGEMENT LEVELS

- **Macro level**, which includes management of external information, for example about market, subsidies system, weather prediction, global market and traceability systems, etc.)

- **Farm level,** which include for example economical systems, crop rotation, decision supporting system.

- **Field level** including site specific farming, collection of information about traceability and in the future also robotics.

EXTERNAL DRIVERS INFLUENCING FUTURE FARMING

Macro level

Farm level

Micro level

climate changes
demographic
energy costs
quality of food
innovative drivers
policies
economy
sustainability
public opinion

POOR FARMER
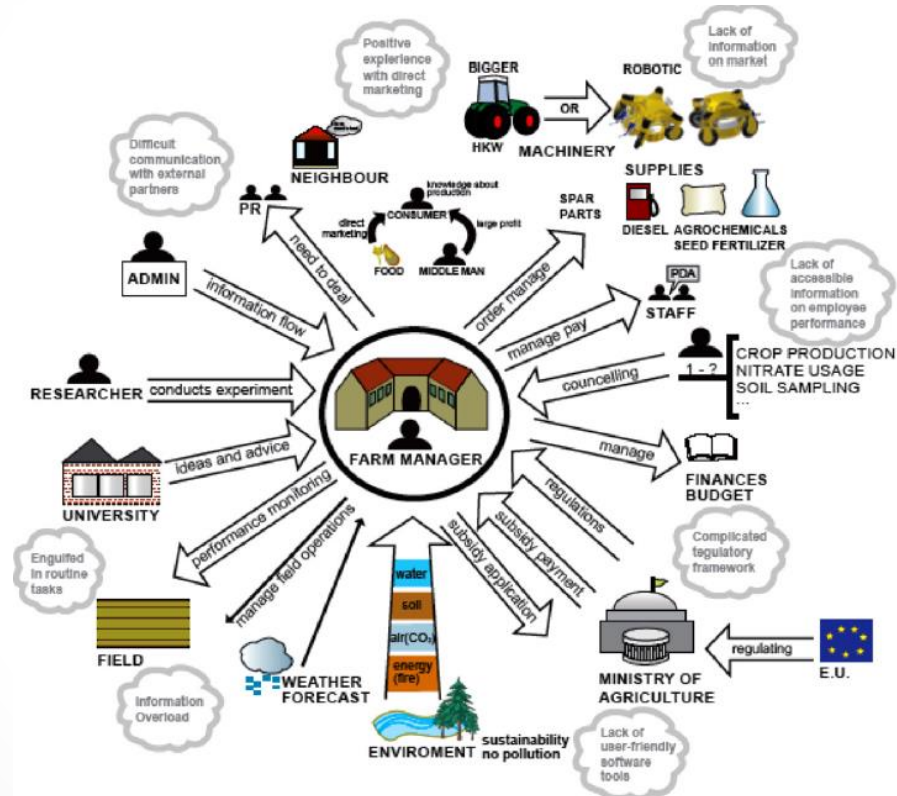
KNOWLEDGE BUILDING
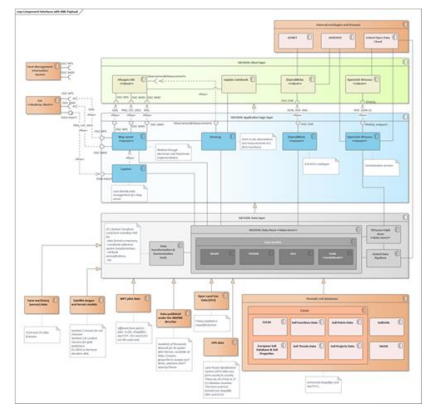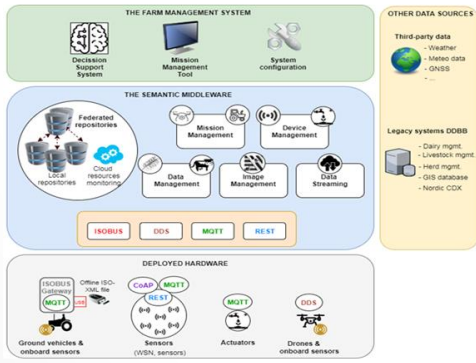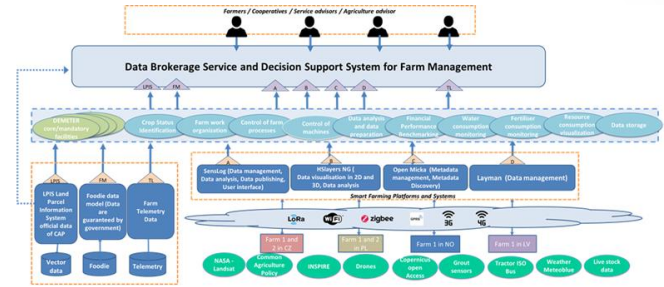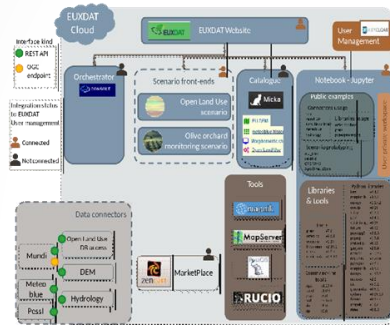
WHAT IS COMING NOW

We jump into period of

- Big Data

- Open Data

- Shared data

BIG DATA

Variety (managing integration of all the heterogeneous data from the past - using Linked (Open) Data and semantics/ontologies etc. - and data access, queries, reporting etc. for data preparation).

Descriptive analytics and classical query/reporting (performance data, transactional data, attitudinal data, descriptive data, behavioral data, location-related data, interactional data, from many different sources)

Velocity (managing real time/sensor data from the present - complex event processing, Apache Kafka/Storm etc.)

Monitoring and real-time analytics - pilot services (in need of Velocity processing - and handling of real-time data from the present) - trigging alarms, actuators etc.

Volume (mining all the data with respect to prediction and forecasting for the future - using various types of machine learning and inductive statistical methods).

OPEN AND BIG DATA

Open and Big data are not holy grail, they are useful tool

RURAL COMMUNITIES

Farmers

Foresters

Fisheries

ICT companies

Researchers

Wood producers

Food producers

Citizens including young people

Advisors

Developers

Visitors, tourists

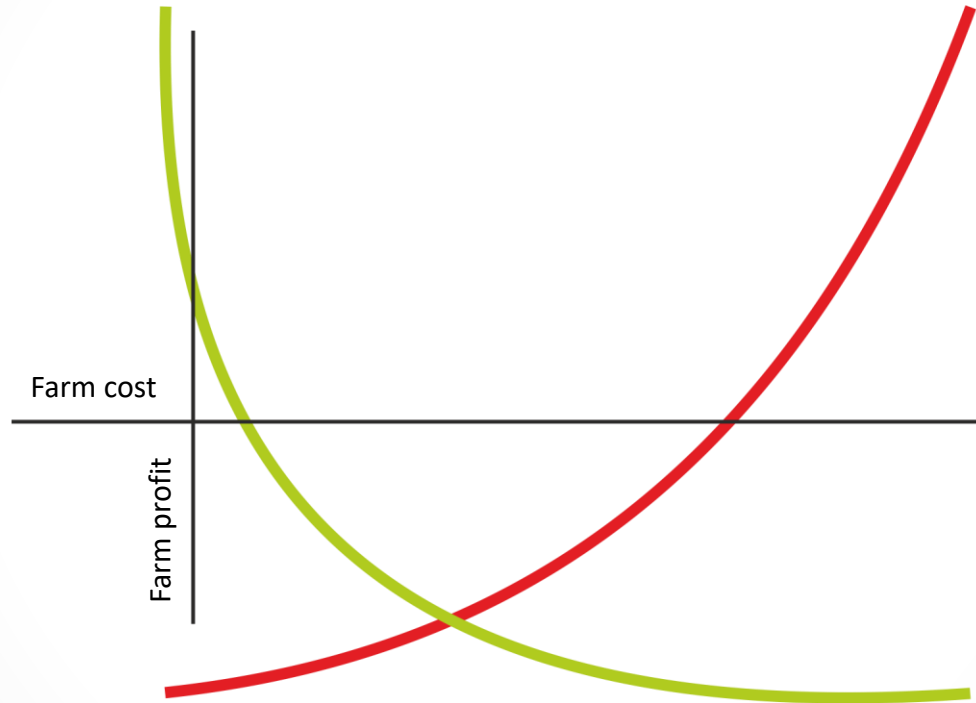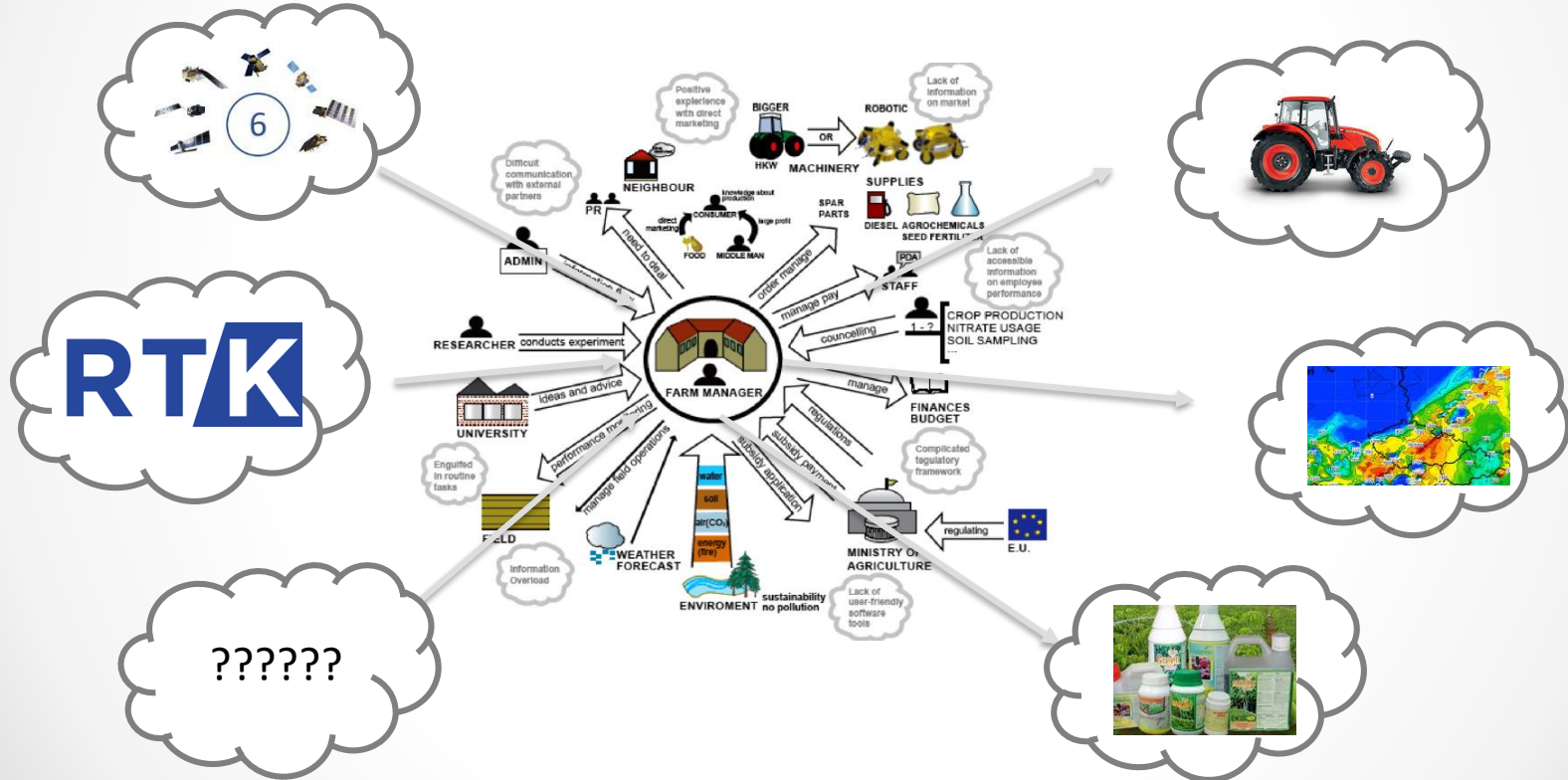Local Government

Development agencies, etc

Analytics

Economist

FARMERS ROI

Farm cost

Farm profit

STILL A POORER FARMER

DREAM OF BIG BOYS

OR

With the new **Green Deal** Initiative and *new understanding of the Common Agriculture Policy* in the Frame of Green deal seems natural to think about building common solutions or **sharing data among all groups of stakeholders**.
There are two important aspects for this to find common trust for data sharing and also implementation **of *FAIR* Data *Principles* (Findable, Accessible, Interoperable, Re-usable**).
This could be supported by *a New European strategy for data*.
There is a need for discussion among the private and public sector about effective sharing of data and expenses.
Due fact, that some services will be in **public interest it seems to be natural that the public sector will cover part of expenses.**

There is on one side a **large number of overlapping needs** for analysis for different stakeholder groups.

On the other side there is a problem mainly in the farming sector that covers the **cost of Earth Observation services** and in this way **supports sustainable business for all players in the Earth Observation sector**.

Last important fact is that new understanding of **precision farming services can not only increase production, but produce products of higher quality, have less negative influences on the environment and also reduce different environmental risks**. It means, that in such case there could be interest of more stakeholders to improve Earth Observation services

EO4Agri recommendations

1. Organise regular workshops and conferences of all interested stakeholders. These workshops and conferences have to lead to an exchange of information and furthermore to an education of all stakeholders about new methods
2. Discuss this white paper with a large community and based on that define a new Strategic Research Agenda in the short time period.
3. Support cooperation of all players from the public and private sectors to fulfill the European Green Deal and SDG goals. It will also include the food industry, machinery, chemical industry, IT industry, financing organizations and will help to build a common environment.
4. Support the farming sector with open data, including Copernicus and other EO data. This will require additional investments.
5. Support new common research involving both EO and agriculture/agronomy experts to develop new methods that guarantee food security and agriculture sustainability.

EO4Agri Recommendations

6. Continue with the development of new technologies and EO methods to build future Digital Twins. On the other side, there exists a large potential of existing technologies recently developed, which potential is not fully exploited. It's necessary to prepare an overview of existing technologies and discussion among the teams on how to make solutions interoperable and how to reuse existing solutions.

7. Finance a large number of smaller independent projects for technical development. This can bring new ideas in the short term.

8. Support standardization efforts and use of existing standards. This needs to be done in cooperation with existing standardization bodies including OGC, ISO, and W3C.

9. Support large scale coordination actions, which will improve cooperation among different projects, initiatives, and standardization organizations.

10. There exist several technical problems, but the biggest one is at the level of legislation and financing. It will require a reform of the Common Agriculture Policy and also build effective strategies. This cannot be done only on a political level, but it will require communication of politicians with technical experts and researchers to define a successful strategy. For this purpose, it is necessary to establish a forum, where all these players will meet. A new strategy has to be prepared based on expert opinions and scientific results.

STAY-TUNED VIA

Thank you for your attention

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