

17 February 2016 – 39<sup>th</sup> International Fair of Agricultural Machinery FIMA, Zaragoza, Spain

## **Challenges and Opportunities in the Digitization of European Agriculture**

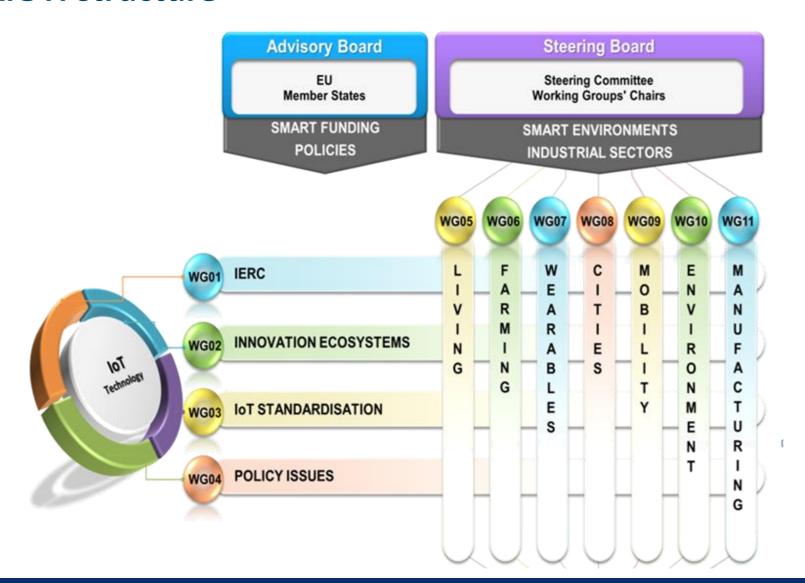
Luis Pérez-Freire - GRADIANT

### **AIOTI – Alliance for Internet of Things Innovation**

- AIOTI (<a href="http://aioti.eu/">http://aioti.eu/</a>)
   initiated by the EC and the
   IERC in 2014
- Officially launched by the EU Commissioner for Digital Economy & Society, Günther Oettinger (Brussels, March 2015)
- AIOTI main goals:
  - Dynamic European IoT Ecosystem
  - Facilitate deployment and adoption of IoT technologies in Europe



### **AIOTI structure**



### **AIOTI WG06 "Smart farming and food security"**

AIOTI WG06 vision: to become the key meeting point of EU-based stakeholders interested in developing and exploiting the benefits of the IoT (technologies, ecosystem and infrastructure) in the domains of farming for food production.

#### Chaired by **GRADIANT**

Co-chaired by **Orange** 

#### > **200** members

- Universities
- Research institutes
- ICT companies
- Agri-food sector companies



#### **Key concepts:**

Smart/precision farming – Food security -- Food safety -- "from farm to fork"

Smart Farming and Food Safety Internet of Things Applications – Challenges for Large Scale Implementations

> Publicly released on 26 Oct. 2015, available online <a href="here">here</a>

### **AIOTI WG06: areas of work**



### Digital farming is here



### **Digital farming: opportunities**

#### **Data-centric food chain**

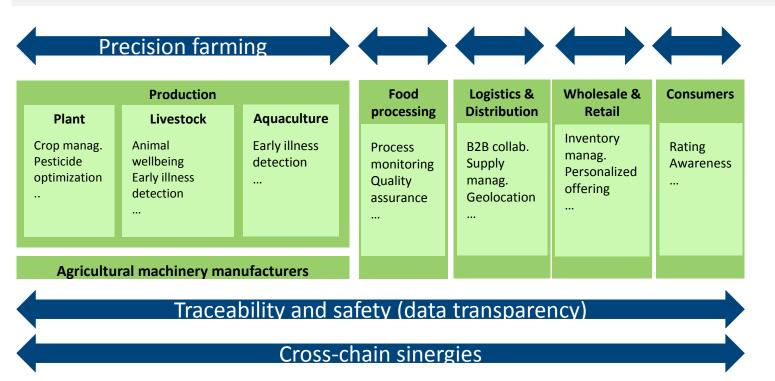
Fine-grained measurement, analysis, prediction, decision-making, actuation

#### Precision farming **Production Logistics &** Wholesale & Food **Consumers** Distribution processing Retail Aquaculture **Plant** Livestock Inventory Crop manag. Animal Early illness B2B collab. Rating **Process** manag. wellbeing detection Pesticide Supply monitoring Awareness Personalized Early illness optimization Quality manag. offering detection Geolocation assurance **Agricultural machinery manufacturers**

### Digital farming: opportunities

#### **Data-centric food chain**

Fine-grained measurement, analysis, prediction, decision-making, actuation



### **Digital farming: opportunities**

#### **Data-centric food chain**

Fine-grained measurement, analysis, prediction, decision-making, actuation

### Precision farming

Production

Plant
Crop manag.
Pesticide
optimization
...
Animal
wellbeing
Early illness
detection
...

Agricultural machinery manufacturers

Process monitoring Quality assurance ...

Food

B2B collab.
Supply
manag.
Geolocation

Inventory manag. Personalized offering ...

Wholesale &

Retail

Rating Awareness ...

**Consumers** 

Crosssector sinergies Smart environment Waste manag. Water manag.

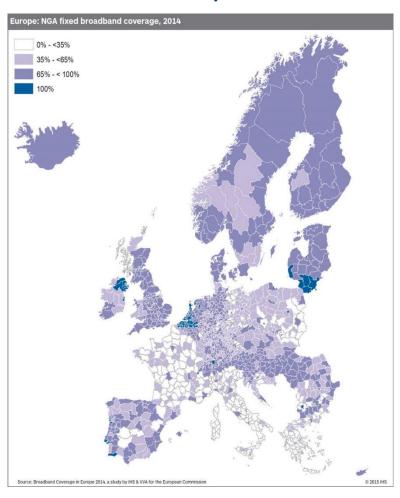
Smart manufacturing

Traceability and safety (data transparency)

Cross-chain sinergies

### Challenges: 1) technology level

### Connectivity



### Interoperability and standards

Service layer

Data layer

Communications layer

**HW** layer

### Challenges: 2) user level

- **Perceived value and user acceptability**: no more technology *per se*, data must be "beneficial to and useable for farmers" and all the stakeholders across the value chain

#### **Heterogeneity** of the value chain:

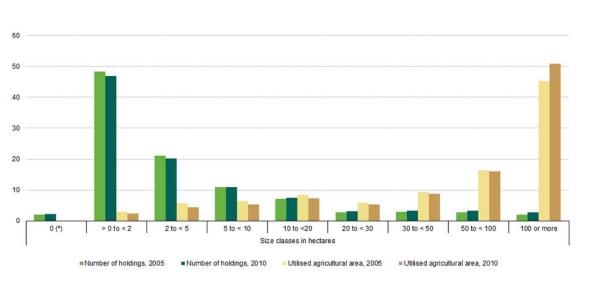
- Large, conventional farming exploitations vs. small/family exploitations
- Variety of holdings

mixed nonclassified crops/ livestock field cropping mixed livestock mixed cropping horticulture granivores permanent crops grazing livestock

Source: Eurostat

## Training, dissemination and awareness – avoid digital divide

47% of EU population is not properly digitally skilled, yet in the near future, 90% of jobs will require some level of digital skills (source: Digital Agenda for Europe)



### **Challenges: 3) business level**

- Ensure **business sustainability** (supply and demand sides)
- **Cost** of solutions vs. **profitability**

**Demand Side** 

Plant

farming

Arable crops

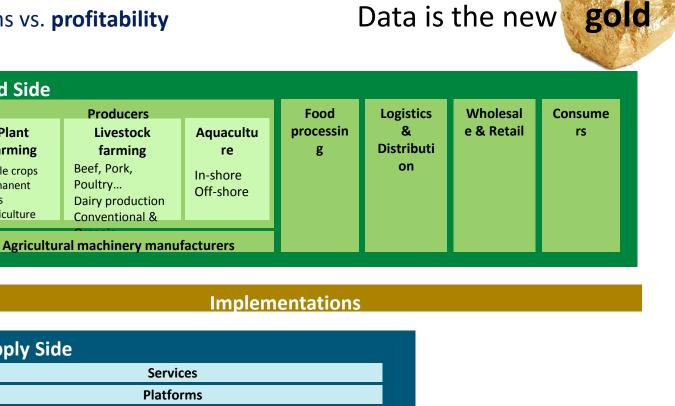
Permanent

**IoT Supply Side** 

crops Horticulture

**Disruptive models**: from selling products to selling data services

Data is the new



**Enabling Communication Technologies Enabling Software Enabling Hardware** 

### Challenges: 4) data management level

### Data protection and ownership

- Who owns the data?
- Who determines how it is used and shared?
- Security and privacy
  - Data in the cloud?
  - Trade secrets at risk?
  - Private vs. open data?
  - Trusted data?
  - Need for policies but also technological solutions

### Data aggregation and sharing



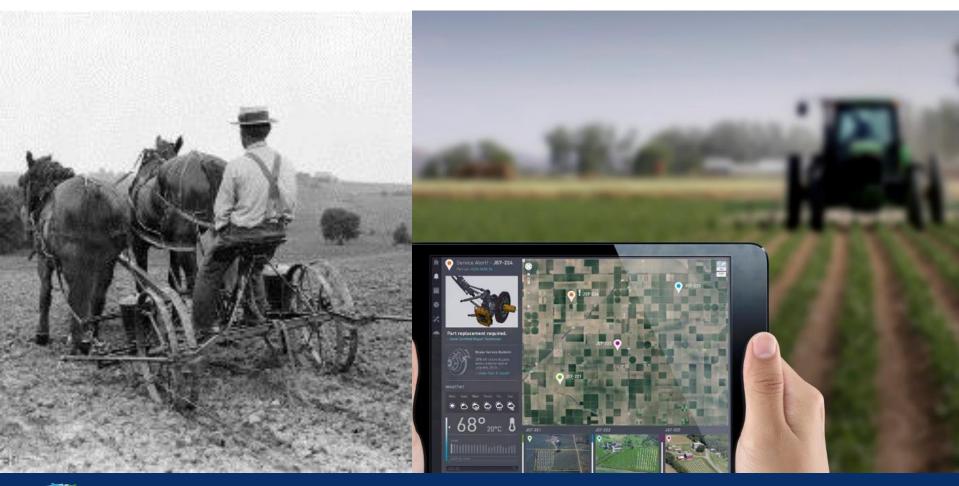
Example: NYC subway plague map by

Weill Cornell Medical Collegue

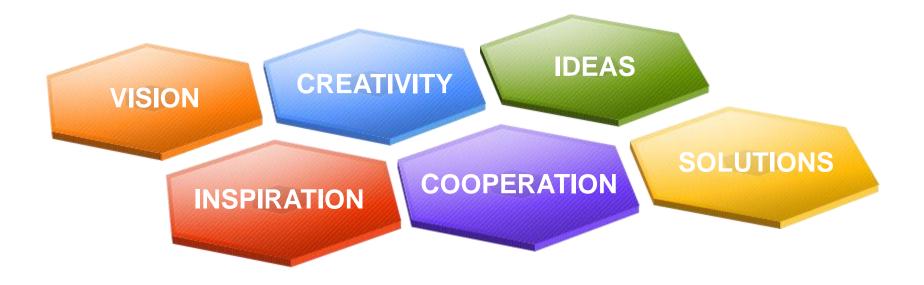
Source: <a href="http://www.dailymail.co.uk/">http://www.dailymail.co.uk/</a>

### **IoT for Farming 4.0**

- Sustainable farming. Higher productivity, lower footprint
- Boost rural areas and economy



# Thank you!



www.aioti.eu

**#AIOTI** 

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