The need for a higher integration of precision farming technologies

Digital farming

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ECS 2019
About Gradiant Research and Technology Organization (RTO) in Galicia, Spain, created in 2008

Industry-oriented R&D

- +170 customers
- +250 Projects developed with companies
- +100 Licensing agreements

Connectivity
- Communication systems and internet of things for data transmission

Intelligence
- Infrastructure and algorithms for extracting value from data, converting them into useful and actionable information

Security
- Protection of data and information systems, and protection of privacy
**About AIOTI**

AIOTI is the multi-stakeholder platform for stimulating IoT Innovation in Europe, bringing together small and large companies, start-ups and scale-ups, academia, policy makers and end-users and representatives of society in an end-to-end approach.

More than 150 members

More than 500 individuals
About WG06 `Smart farming & food security`

**Mission:** to become the key meeting point of EU-based stakeholders interested in the benefits of the IoT (tech, ecosystem, infrastructure) in the domains of farming for **food production and food safety, from farm to fork**, addressing the sectorial challenges

**Scope:**
- Farming domains: agriculture, livestock, aquaculture
- Technologies
- Farming & food ecosystems
- Policies
- Projects and pilots

**Facts:**
- 68 member entities, 103 delegates (as of today)
- Monthly conf. calls for progress update - **join us!**

**Diversity of members:** ICT companies (large and small) consultancy services, research centers, and relevant members from demand side:
- Representatives of farmers and cooperatives, representatives of agriculture machinery, ...
- 2 of the largest ag-machine manufacturers (which are AIOTI founding members)
- ...

**Examples of activities**
- Position and recommendations on digital innovation hubs for agriculture
- 5G use cases in smart farming
- R&I priorities for Horizon Europe
- Collaboration with Brazil IoT Chamber
- Recommendations for monitoring of the new CAP through ICT technologies
- **On-going:** IoT data marketplaces in smart farming and agri-food

**Chair:**
**Co-chair:**

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**ECS 2019**
Where innovators meet & shape our digital future
INTRODUCTION
The global context of digital farming

- 9000 million inhabitants in 2050
- +70% food
- Rural depopulation
- Reduction of farm land
- Increasing economic pressure
- Climate change
- Difficult sustainability
- Reduction of farm land + pressure on farming activity
The global context of digital farming
CHALLENGE
Digital Farming: filling in the gaps

- Autonomous tractor
- Smart sensors & actuators
- Weather station
- Earth observation satellite
- Decision making
- Soil/crop sensor
- Autonomous harvester
- Sensorized silos
- Sensorized animals
- Earth observation UAV
Landscape of activities in Europe

- Major publicly-funded EU projects
- Smart specialisation strategies in EU regions
- Farming and agrifood in the digital agendas of MS
- Digital Innovation Hubs – specialization in agrifood/farming
### Where are we going?

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<thead>
<tr>
<th>Trend/need</th>
<th>Future use case scenario</th>
<th>Progress needed</th>
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| Progressive automation of farm labour | UC#1: Cooperative autonomous agriculture robots | • Autonomous decisions  
• AI at the edge |
| Next-gen precision farming: finer monitoring and granularity | UC#2: Massive and individual monitoring of individual plants and animals | • Ultra-low power IoT  
• Massive M2M  
• Low cost/device |
| Data-centric management & virtualization of food chain | UC#3: Digital “twin farm” | • Same as UC#2  
• Interoperability |
| Reduction of footprint in environment and climate | UC#4: Data-driven climate agriculture | • Agronomic models integrated with IoT  
• Major think shift |
| Simplification and modernization of CAP | UC#5: Automated CAP management through ICT tools | • Integration remote sensing–ground data  
• Data certification & reliability |

- Smart Networks and IoT. Common topics for research and innovation in Horizon Europe  
- IoT and digital technologies for monitoring of the new CAP  
Progressive integration of technologies and services

- Device / Edge / Cloud
  - Sensing
  - Connectivity
  - Intelligence / decision making
  - Actuation
    - Agronomic knowledge

Data Management and Security

- More integrated platforms
- More interoperability
- More data-centric

Data lake / data marketplace
Thanks

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