Impacts of the digital economy on the food chain and the CAP

Study outcomes

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Structure of the Presentation

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2. **Benefits and challenges**
3. **Stakeholder views**
4. **Disruptive technologies**
5. **Case studies**
6. **Vertical integration**
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1.Digital economy – main trends

- Demand for technology in agriculture is rising and can assist farmers in dealing with current and future challenges: growing population, growing purchase power, growing consumption, and more challenging environmental conditions for production
- Consumer awareness and demand for organic products are increasing
- Food trends are adapting to consumer and societal changes
- Digitalisation can increase integration across agri-food value chains
- New technologies bring changes in farming practices
- Biotechnology will shape the future of agriculture

2.Benefits and challenges

CHALLENGES RELATED TO DISRUPTIVE TECHNOLOGY IN THE ⬛ SECTOR

Small and medium size farmers still lack knowledge, skills and investment capabilities

Primary requirements to enable most of new technologies, broadband coverage and good internet connection are not evenly distributed within Europe

Proper governance for 'fair' distribution of information is one of the key challenges for digitizing food-chains.

POTENTIAL NEGATIVE IMPACTS:

- Job losses
- Monopolisation

POTENTIAL POSITIVE IMPACTS:

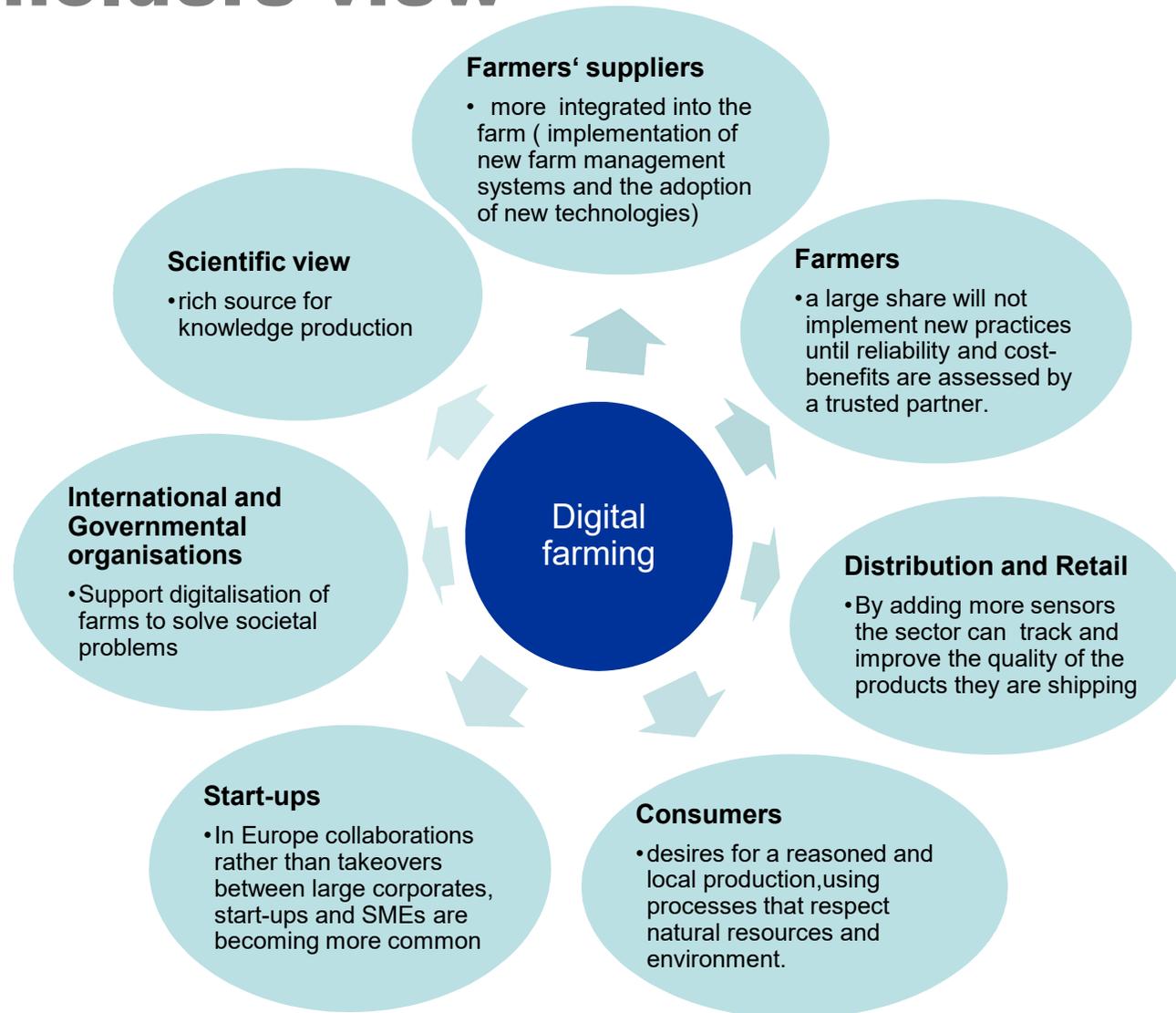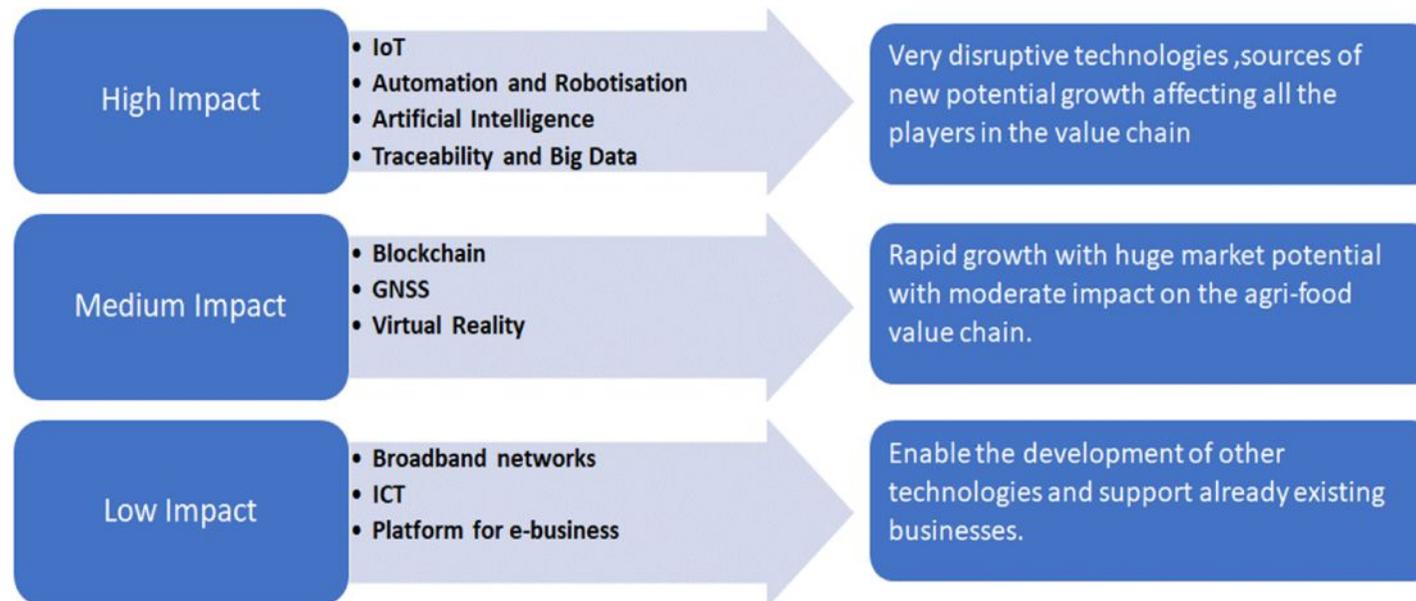|	
Farmers	-Increased production -Reduced production cost -Supported decision-making -Improved livestock health
Consumers	-Real time data and production information -Better quality of products
Public authorities	-Accurate farm and field evaluation -Efficient CAP
Environment	- Reduced water consumption due to soil moisture sensors -Better environmental, energy and climate care
New players	-New business opportunities for SMEs -New technology players in the Agri-food value chain -Start-ups development

3.Stakeholders view

Farmers' suppliers

• more integrated into the farm (implementation of new farm management systems and the adoption of new technologies)

Scientific view

• rich source for knowledge production

Farmers

• a large share will not implement new practices until reliability and cost-benefits are assessed by a trusted partner.

Digital farming

International and Governmental organisations

• Support digitalisation of farms to solve societal problems

Distribution and Retail

• By adding more sensors the sector can track and improve the quality of the products they are shipping

Start-ups

• In Europe collaborations rather than takeovers between large corporates, start-ups and SMEs are becoming more common

Consumers

• desires for a reasoned and local production,using processes that respect natural resources and environment.

4. Disruptive technologies

- Based on desk research, multi-criteria analysis and internal expertise of the consortium, the following categorisation is based on the impact of disruptive technology on food-value chain sector was made

High Impact	• IoT • Automation and Robotisation • Artificial Intelligence • Traceability and Big Data	→	Very disruptive technologies ,sources of new potential growth affecting all the players in the value chain
Medium Impact	• Blockchain • GNSS • Virtual Reality	→	Rapid growth with huge market potential with moderate impact on the agri-food value chain.
Low Impact	• Broadband networks • ICT • Platform for e-business	→	Enable the development of other technologies and support already existing businesses.

5. Case studies

Use of Blockchain for traceability of goods and animals

Use of virtual reality to educate customers

Use of drone-based soil moisture maps, and GNSS

Use of Bioresources supply chain optimiser, as e-business

Combination of technologies (IoT, Big Data) in leafy vegetable production

Combination of technologies (IoT, Big Data, AI) sensors detecting pig health and use of antibiotics

Use of AI and robotisation in hydroponic crops

Combination of technologies (IoT, AI, robotisation, drones, satellite) detecting diseases, pests and viruses on olives, vineyards and cork trees

Combination of technologies (Big Data, AI, IoT) in the diary sector

6. Vertical integration of the food-chain

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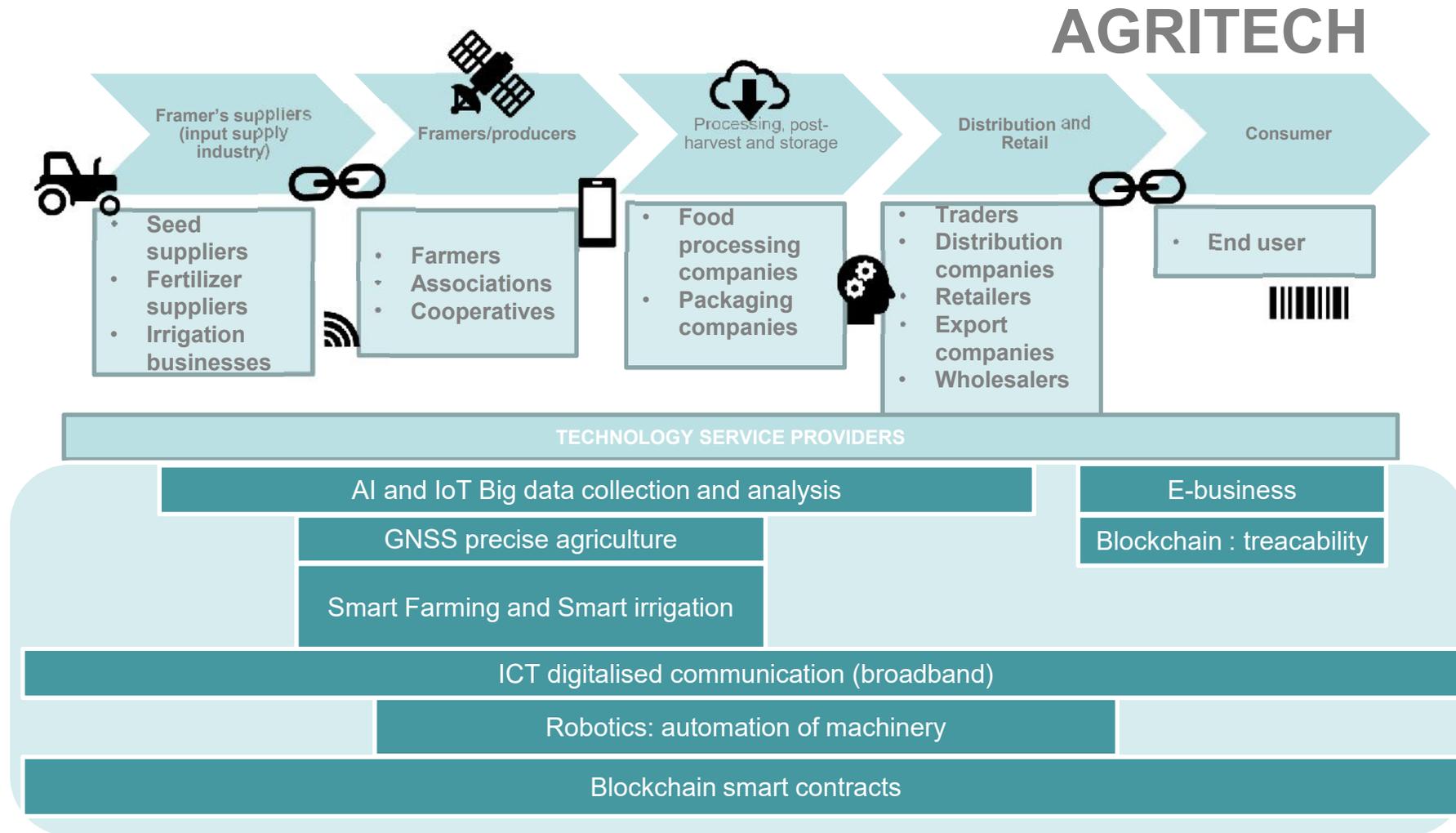
7. CAP impacts

Modernization of CAP via digital innovations can:
•Make governance more transparent, fairer and likely decrease disputes
•Improve administration, monitoring and overall operation of the CAP
•Have multiple benefits for farmers and Member States' administrations

For instance to:

Provide new ways of payments:

- with sound and transparent monitoring system built on reliable and robust environmental indicators.

- reducing, if not eliminating, sanctions, by enabling more advanced technologies to combine datasets and using innovative techniques to validated payments.

Provide new monitoring and control procedures:

- to shift from the traditional control of farmers' claims based on sampling, to a continuous and full monitoring that checks compliance to requirements that can be verified.

- improve monitoring by recent advancements in satellite Remote Sensing, and in the European Earth Observation program Copernicus.

Provide decision-making support tool to farmers (Farm Sustainability Tool):

- to assist farmers to adopt the new CAP decision-making tool to optimise their use of nutrients, and therefore their income, while protecting water quality and reducing greenhouse gas emissions.

8. Conclusions

Main disruptive drivers
- Changing environmental and climate conditions
- Uncertain future of demand due to urbanisation
- Growing population and societal changes
- Needs for optimising the production due to high cost

Main accelerators
- The consumers' changing preferences and their request for access to more information concerning food products
- The presence of well-developed infrastructure (broadband networks) and support by legislation that encourage use and uptake of new technologies
- Data availability and open access to information to facilitate the development of new products, services and business models across the entire value chain
- Enough investments in R&D to support technology advancements

Impact on the value chain
- Risks in agricultural production
- Risks associated with emission and climate change
- Efficiency gains in production and adaptation to changing market demands (e.g. more effective use of water and energy)
- Information about logistics throughout value-chains
- New possibilities for customers to get more insights into the qualities throughout production processes.

Thank you for your attention

Q&A session