

## The Digitisation of the European Agricultural Sector

The digital transformation of agriculture will facilitate cooperation across the value chain, support farmers, and offer opportunities for innovative SMEs.



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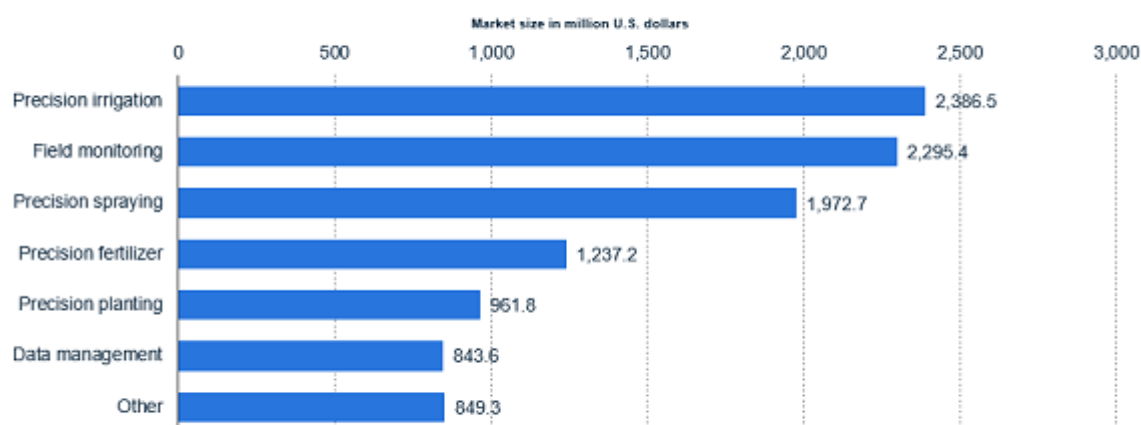
An example of a Digital Twin used to assess livestock.

Technologies, such as artificial intelligence (AI), robotics, the Internet of Things (IoT), Edge Computing, 5G, blockchain and supercomputing, all have the potential to make agriculture more efficient, sustainable, and competitive.

Nevertheless, as in other sectors and society as a whole, the digital transformation of agriculture poses the risk of a digital divide. For example, between connected and disconnected farms and economically small and large farms.

## Estimated addressable market for precision farming worldwide by 2025, by application (in million U.S. dollars)\*

Precision farming - estimated global market size by segment 2025



Note(s): Worldwide; as of 2018  
Further information regarding this statistic can be found on [page 35](#).  
Source(s): BIS Research; [ID 793448](#)

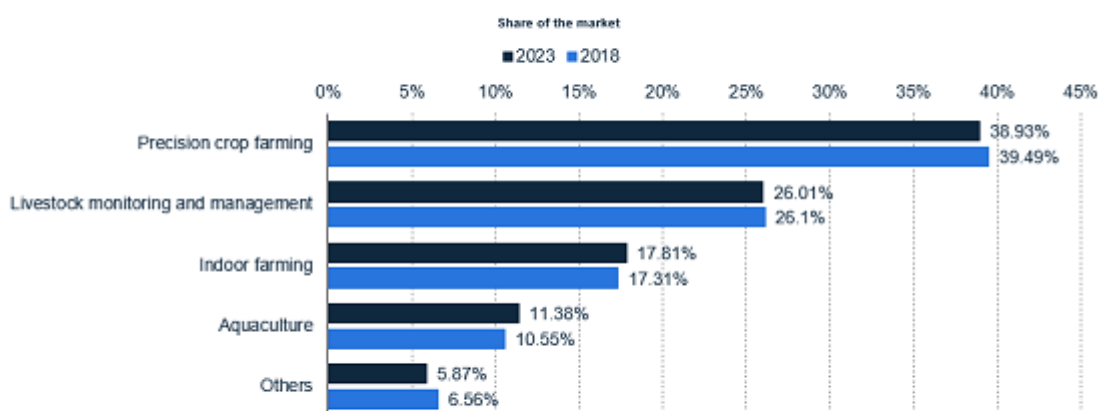
Market overview **statista**

## Which applications is IoT used in?

IoT sensors collect environmental and machine data, which can be exploited by farmers to make better decisions, as well as help them to improve every aspect of their work, such as crop farming and livestock monitoring. When combining IoT real-time data with accurate geo-spatial data, then one can speak of truly enabling precision farming.

## Global agricultural IoT market size in 2018 and 2023, by application

IoT in agriculture market segmentation by application globally 2018/23



Note(s): Worldwide  
Further information regarding this statistic can be found on [page 49](#).  
Source(s): BIS Research; [ID 765721](#)

Agriculture IoT **statista**

# Benefits and challenges ahead

## What are the benefits?

The digital transformation of agriculture will enable:

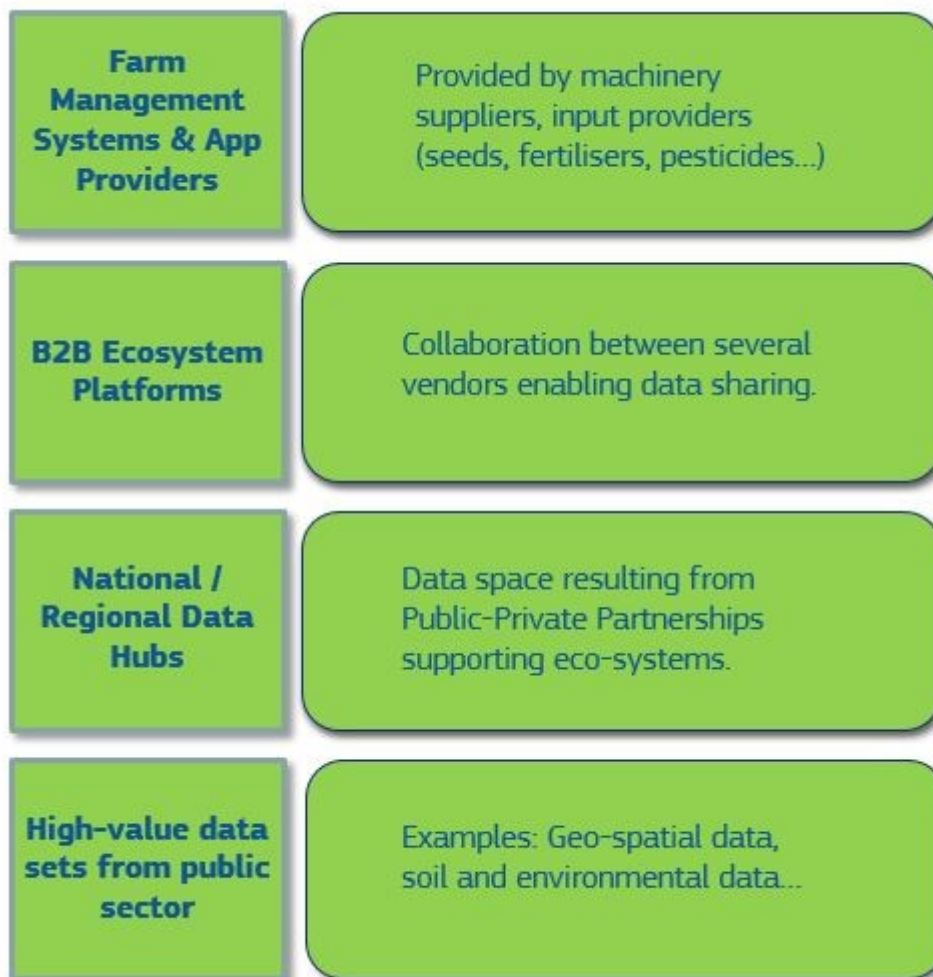
- Increased economic and environmental performance, allowing farmers to thrive.
- Environmental sustainability, helping agriculture to become greener.
- Competitiveness of the EU digital supply industry.
- Improved working conditions of the farmers.
- An increase in transparency along the supply chain.

## Challenges

Farmers can face various uncertainties linked to weather, price and income volatility. Many agricultural workers only work part-time or are self-employed, and the ecosystem relies on temporary contracts for seasonal workers. The industry faces challenges linked to an ageing workforce and attracting staff with high-level skills. **This is where the use of digital technologies can help.**

But there are limiting factors:

- Connectivity issues
- Benefits awareness
- System interoperability
- Farmers' skills
- Benefit-cost ratio
- Reluctance to share data



#### Interoperability between

**existing digital platforms** is another essential aspect addressed by large-scale pilots, because there are too many platforms supporting different ecosystems, as illustrated in the landscape of data sharing platforms.

It should be noted that numerous, farming-related, digital applications already exist, but are not delivered in a bundled form. As such, there is **no data flow between these applications**. Moreover, at present, there is a limited availability of cost-benefit analysis on the use of digital applications in farming in general. This is exactly why **European large-scale pilots** were introduced, in order to demonstrate the benefits of IoT in real-life scenarios.

## Looking ahead: demonstrating the benefits of digital twins on farms

Can digital twins be used to enable an interoperable green transformation in farming? Using digital twins on farms means creating virtual representations of physical assets – fields, animals or machinery – that can be enhanced by exploiting data from sensors and cameras on the land, using **Cloud, Edge, AI and IoT** for optimised water usage, properly spreading seeds and fertilisers, or reducing the use of pesticides.

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**Source URL:** <https://digital-strategy.ec.europa.eu/policies/digitisation-agriculture>