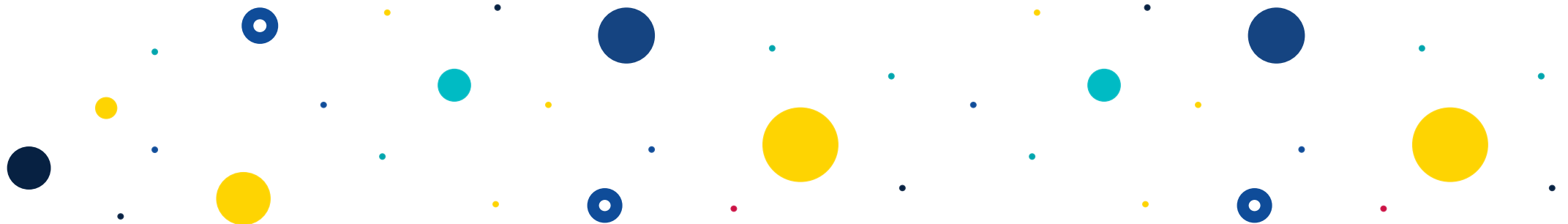


# IoT in agriculture: How to improve efficiency in agricultural production with IoT technology

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# Introduction

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The **IoT (Internet of Things)** has revolutionized our interaction with the world, **connecting devices in various areas of our lives and allowing us to control them remotely**. This technology is constantly growing, as evidenced by data from the most recent ONTSI report, which reveals that a significant **percentage of companies have implemented IoT devices in their operations**.

In the **agricultural sector**, IoT technology is being used to **address challenges** such as **water scarcity, climate variability** and the **demand for healthy food**, improving **efficiency, reducing costs** and **ensuring food quality**.



# Description of IoT technology

IoT is applied in sectors such as **industry, transportation and energy to monitor machinery, optimize routes and manage energy consumption efficiently.**

IoT communication **connects devices to collect and process data in real time**, enabling crop monitoring and smart irrigation management.

**SAP** is one of the **world's leading producers of business process management software** and defines **in simple terms the four phases of IoT operation**



# Benefits of IoT technology in agriculture

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> For an SME or freelancer to choose the best option in the market, it is **essential** to follow these **steps** and **consider the needs of the business and the target customer**:

**1.** Real-time monitoring

**2.** Optimization of the use of resources

**3.** Improved product quality

**4.** Increased productivity

**5.** Cost reduction

**6.** Increased security for farmers

**7.** Improving sustainability

# IoT use cases in agriculture

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## Monitoring of climate and soil conditions

Allows farmers to collect data on weather and soil conditions more accurately and in real time



## Soil moisture and air quality and air quality

Farmers can set specific moisture thresholds and program automated irrigation systems



## Crop health monitoring

Helps farmers monitor the health of their crops and detect problems such as pests and diseases



## Automation of agricultural tasks

It can help farmers improve productivity and make their processes more efficient



## Resource optimization

Can help farmers optimize the use of resources, such as water and fertilizers



## Supply chain tracking

It allows farmers to trace the origin of food and ensure food safety

# Tools

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> **Tools and applications** available on the market that can **help the farmer to monitor and manage his crops** are presented



Agroptima

**Agricultural management tool**

cropx

**Precision farming solution**



libelium

**Tool** that offers a wide variety of **sensors and IoT devices**

pycno

**Platform** that provides real-time information

# Conclusions

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- **IoT technology** in agriculture **improves efficiency, profitability** and **sustainability** by optimizing resource use and **increasing crop quality**. However, technology requirements, such as internet connectivity and data security, must be considered to ensure proper use of these tools and protect sensitive business information.
- IoT technology **improves agricultural efficiency**, making decisions based on real-time data, and **overcoming challenges** with **education, training and security**.





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