

IoT in Agriculture and Manufacturing



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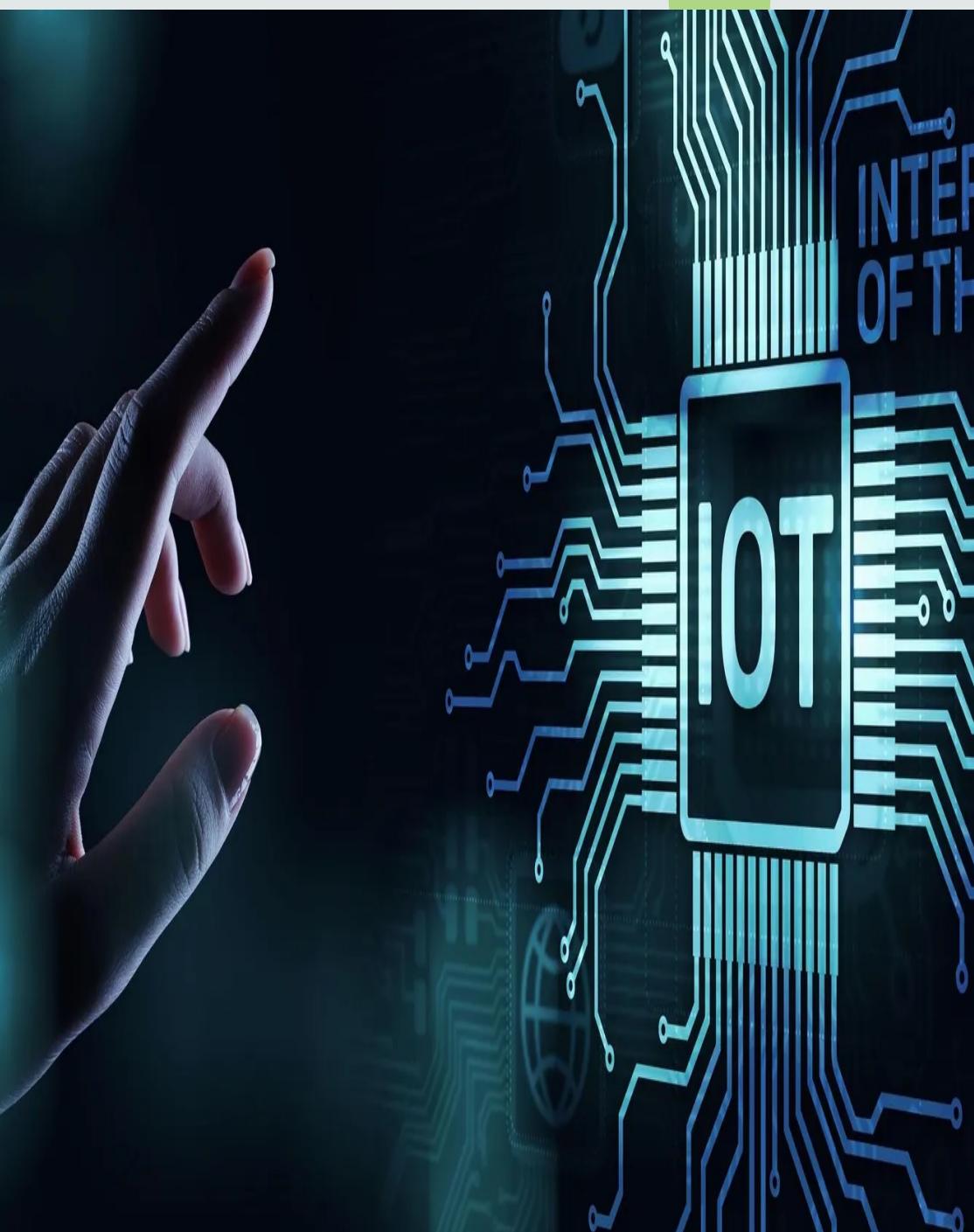
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Introduction

What is IoT ?

- The term “[Internet of Things](#)” or IoT was first introduced by Kevin Ashton in 1999.
- IoT refers to the billions of physical objects or “things” embedded with various sensors , all collecting and exchanging data with other devices and systems over the internet.



Types of IoT

- Consumer IoT - Eg: home appliances, voice assistance, and light fixtures.
- Commercial IoT - Used in the healthcare and transport industries. Eg: smart pacemakers and monitoring systems.
- Military Things (IoMT) - Used in the military field. Eg: surveillance robots and human-wearable biometrics for combat.
- Industrial Internet of Things (IIoT) - Used in manufacturing and energy sectors. Eg: Digital control systems, smart agriculture and industrial big data.
- Infrastructure IoT - Used for connectivity in smart cities. Eg: infrastructure sensors and management systems.



Features of IoT

Sensing

Heterogeneity

Connectivity

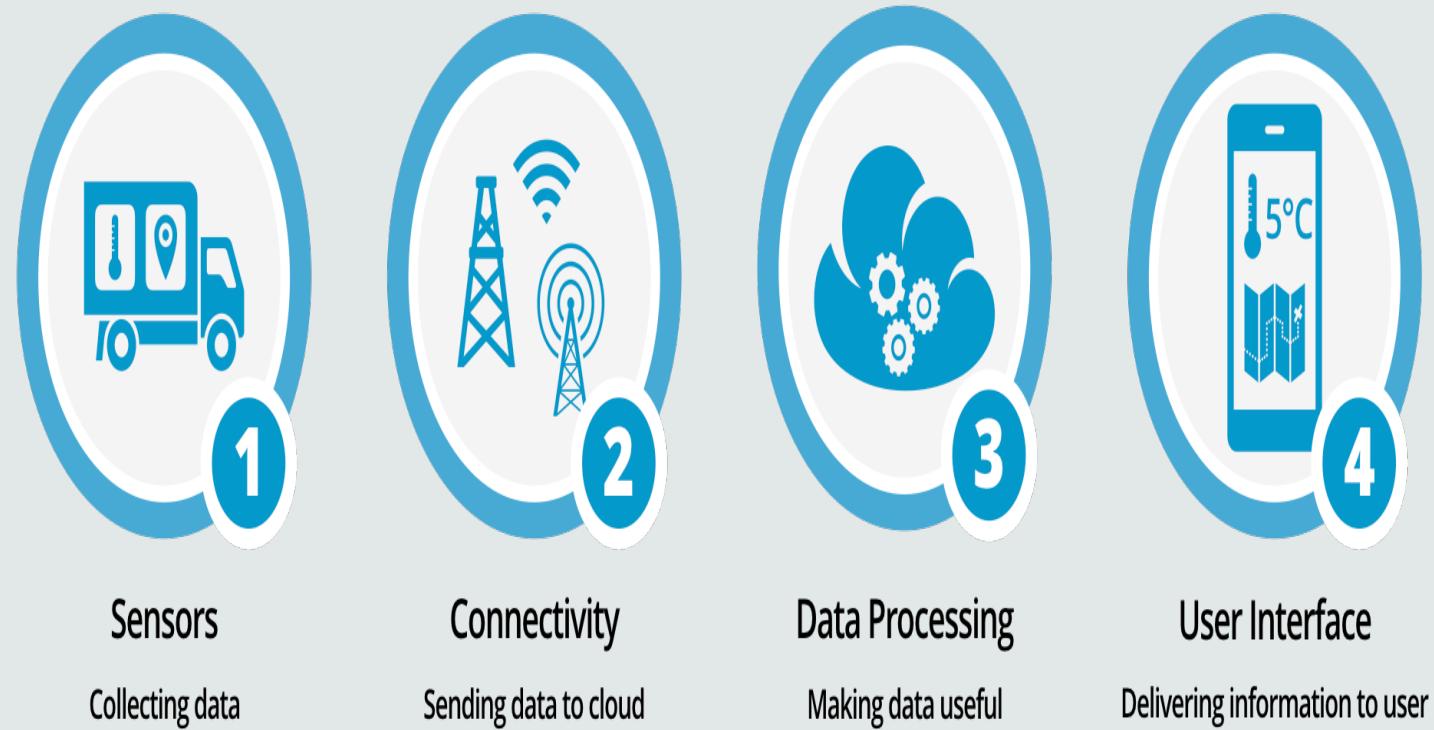
Intelligence

Enormous Scale

Dynamic Nature

• IoT Architecture

- IoT Sensors
- Connectivity/Network
- Cloud
- Hyper Decision Framework
- User Interface



Agriculture and Manufacturing

- An essential sector needed for survival of the human community.
- First occupation of man
- Foundation of all other industries

AGRICULTURE & MANUFACTURING



Why IoT in Agriculture ?



- Precision farming



- Livestock monitoring



- Greenhouse automation



- Irrigation Monitoring



- Supply chain Management



UAV Farming



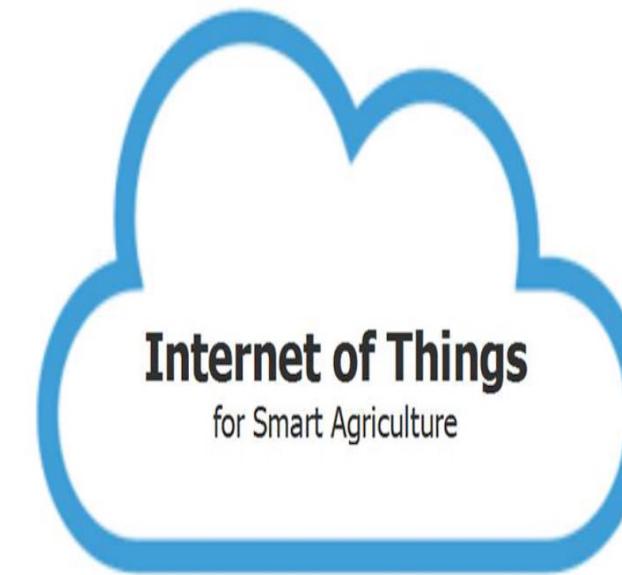
Monitoring Farm



Precision Farming



Tracking & Tracing



Monitoring Forestry



Aquaponics Farms



Analytic Data & Prediction



Supply Chains Management

IoT Devices Used in Agriculture

- Drones and AI
- Intelligent Water and Fertilizer Integrated Machine
- Intelligent Insecticidal Lamp
- Soil Moisture Monitoring system
- Cowlar
- Computer Imaging

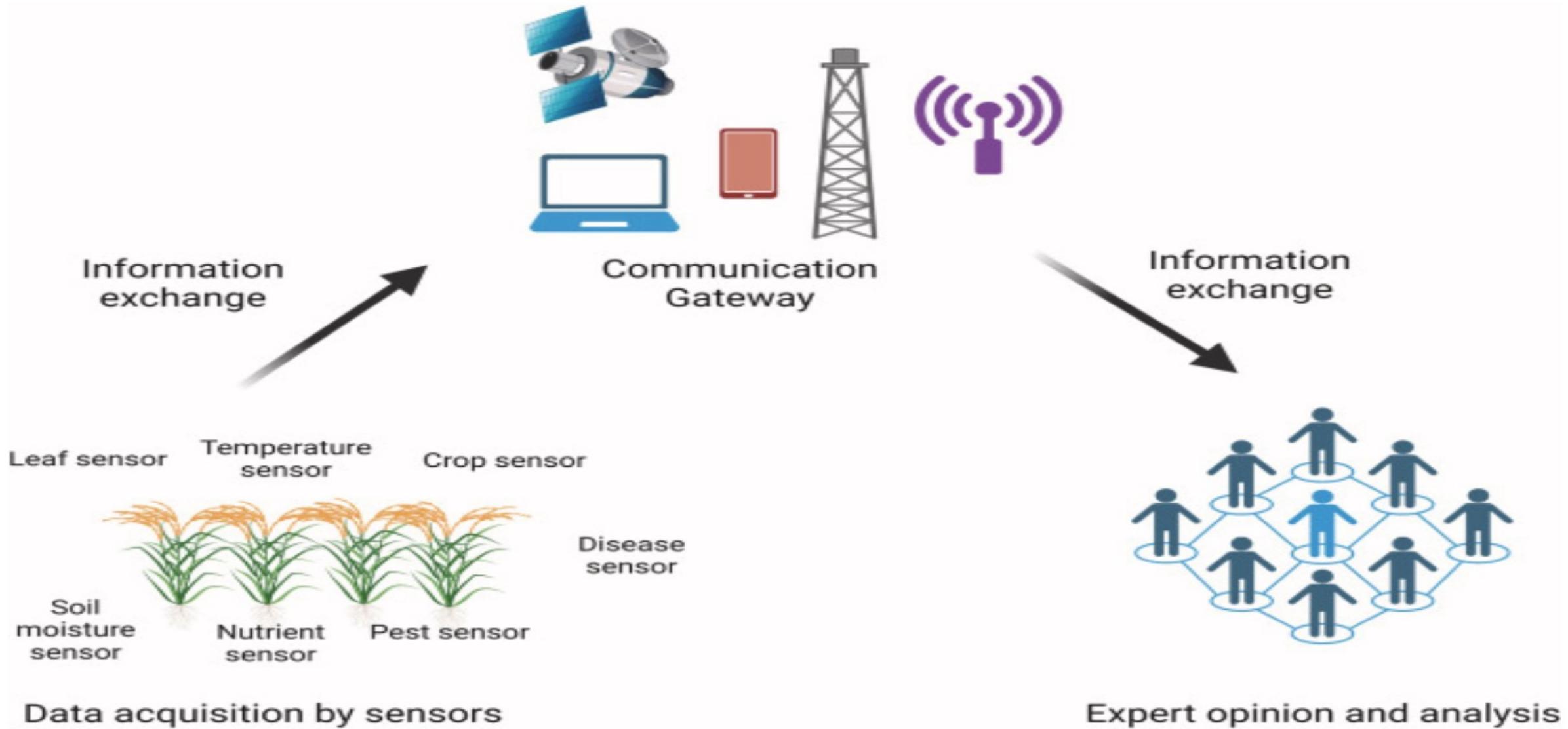


Sensors used in Agriculture and Manufacture

- Electromagnetic sensors :
- Light detection and ranging (LIDAR)
- Optical sensors
- Mechanical sensors
- Mass flow sensors
- FPGA (Field programmable gate array)
- Electrochemical sensors
- Airflow Sensors
- Temperature and Humidity sensor



Data Acquisition by different sensors



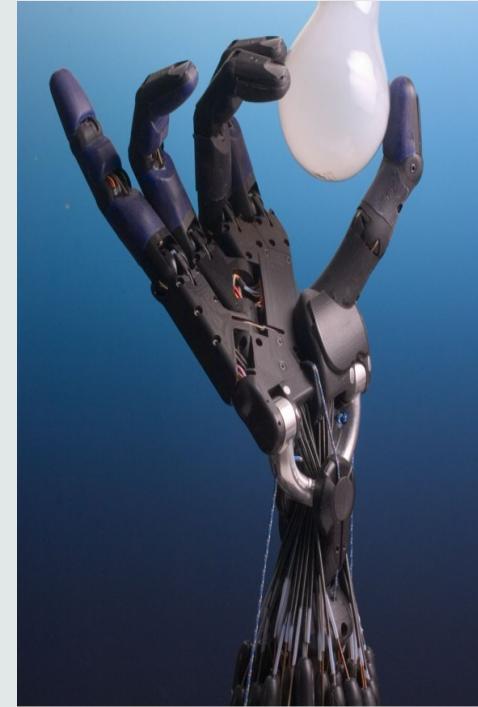
How IoT is Transforming Agriculture

- Robotics
- Automated Crop Harvesting
- On-Field Navigation
- Auto spreading
- Crop yield analysis
- Smart data



IoT Device in Manufacturing

- Autonomous Robotics
- GPS Trackers
- RFID Tags
- Barcode Scanners
- Programmable Logic Controllers (PLCs)
- Automated Guided Vehicles (AGVs)
- Video Surveillance Systems



Why IoT in Manufacturing?



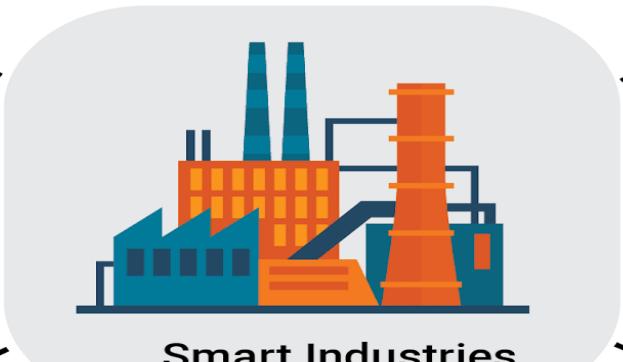
Predictive Analytics



Asset Management

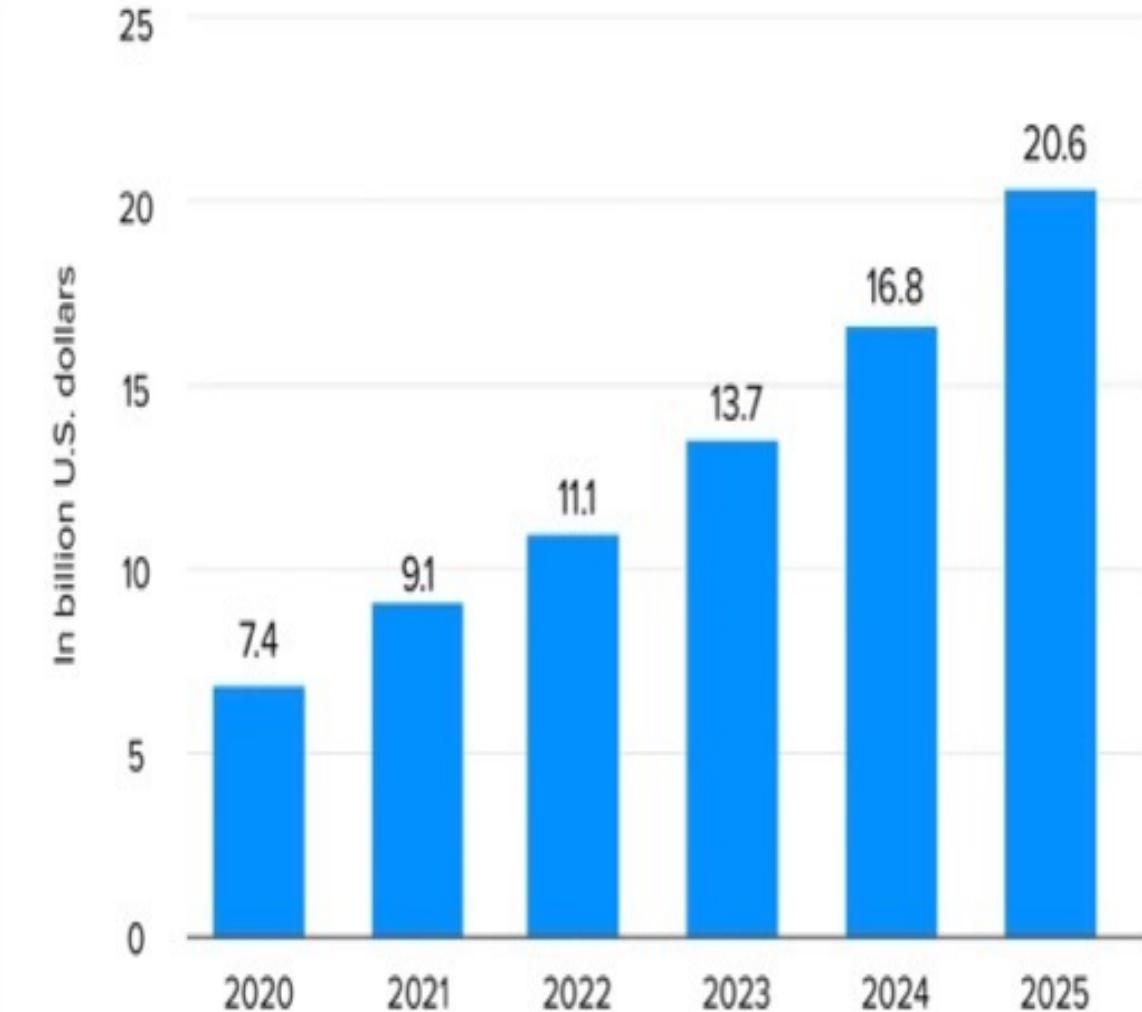
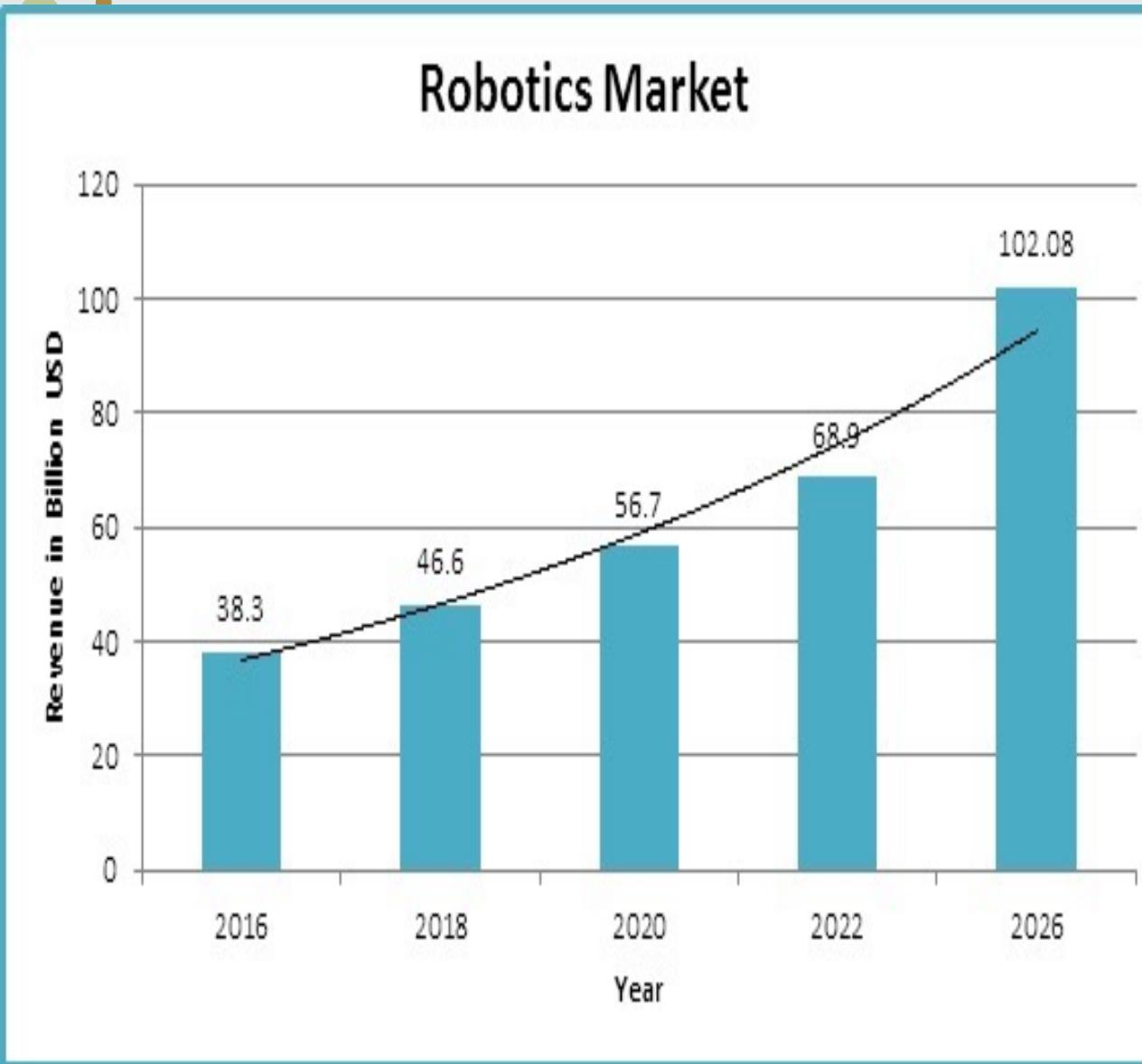


Efficient and Productive Process



Safety Operations

Global market for agricultural and Manufacturing robot from 2020- 2025 (in billion U.S dollars)



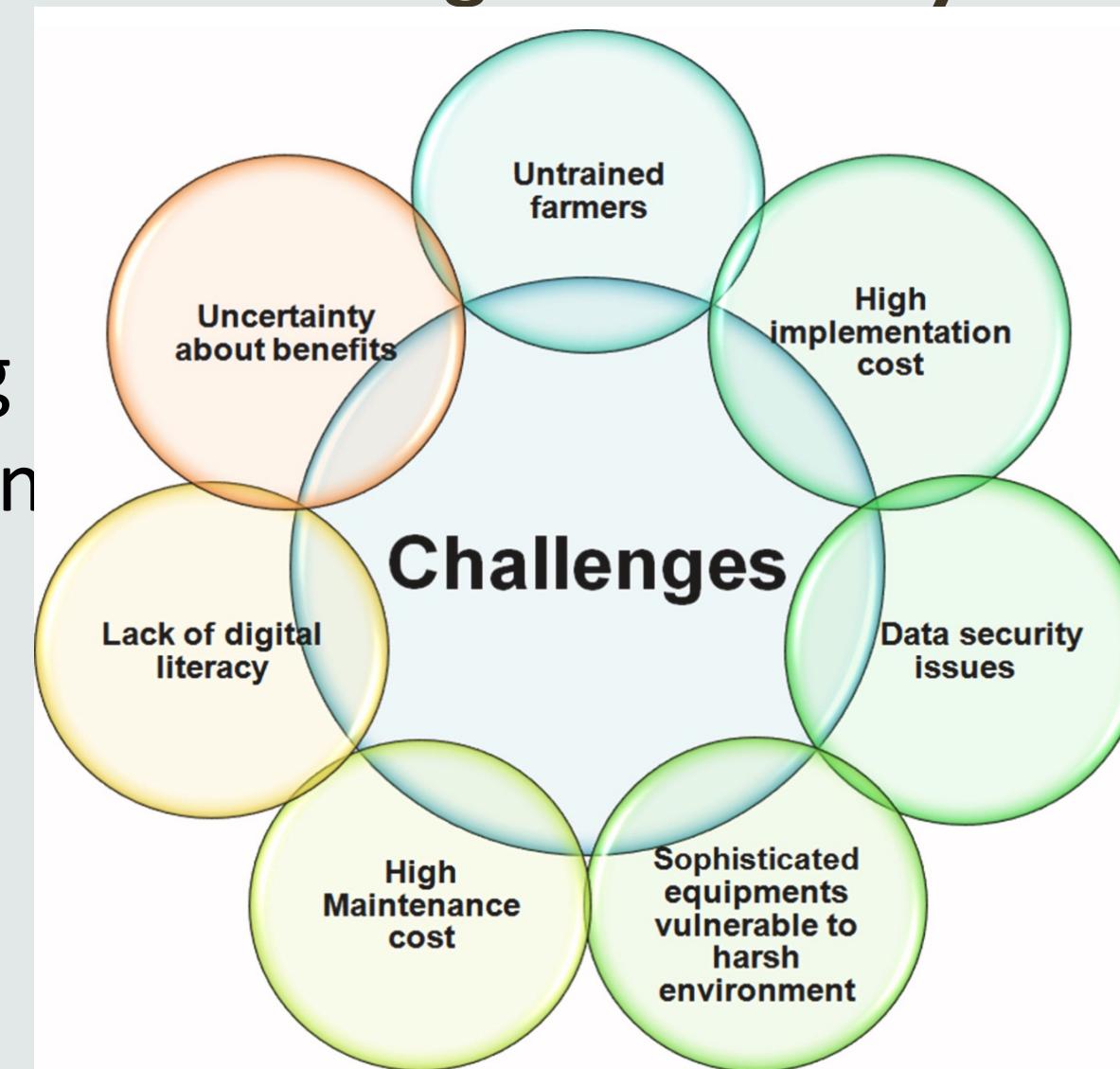
Future of IoT in agriculture and Manufacturing

- SMART FARMING TECHNOLOGIES CAN BRING
- COSTS REDUCTION
- BETTER DATA ANALYTICS
- AN INCREASE IN OVERALL OPERATIONAL EFFICIENCY
- THE RISE OF SMART AGRICULTURE SENSORS



Challenges of Agricultural and Manufacturing IoT security

- Untrained Farmer
- Insufficient testing and updating
- Data security and privacy concerns
- Lack of digital literacy



Conclusion

- Agriculture is a fundamental sector to meet global food demand.
- Crop yield is limited by harsh environmental conditions and pest attack.

- IoT-enabled smart sensors monitor crucial physical factors for manufacture company.
- Digital literacy, financial aid, & data security are essential for smart farming and Manufacturing

References

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End

Thank You !!!