PROJECT DESIGN
PHASE II
FUNCTIONAL
REQUIREMENT

DATE	16-10-2022
TEAM ID	PNT2022TMID18911
PROJECT NAME	SMART FARMER-IOT
MAXIMUM MARKS	4 MARKS

Smart farming using IOT

"IoT device includes every object that can be controlled through the Internet. IoT devices have become commonplace in consumer markets with wearable IoWT (Internet of Wearable Things), such as smartwatches, and home management products, like Google home. It is estimated over 30 billion devices could be connected to the Internet of Things by 2020.

The applications of the Internet of Things in agriculture target conventional farming operations to meet the increasing demands and decrease production losses. IoT in agriculture uses robots, drones, remote sensors, and computer imaging combined with continuously progressing machine learning and analytical tools for monitoring crops, surveying, and mapping the fields, and providing data to farmers for rational farm management plans to save both time and money."

In IOT-based Smart farming system there are some requirements are needed. In that requirements,some of them mentioned below.

Smart farming refers to managing farms using modern Information and communication technologies to increase the quantity and quality of products while optimizing the human labor required.

Among the technologies available for present-day farmers are:

- **Sensors**: soil, water, light, humidity, temperature management
- **Software**:   specialized software solutions that target specific farm types or applications agnostic IoT platforms
- **Connectivity**: cellular, LoRa
- **Location**: GPS, Satellite
- **Robotics**: Autonomous tractors, processing facilities
- **Data analytics**: standalone analytics solutions, data pipelines for downstream

solutions.

APPLICATION OF SMART FARMING :

1) Precision Farming

Precision agriculture (PA) is **the science of improving crop yields and assisting management decisions using high technology sensor and analysis tools**. PA is a new concept adopted throughout the world to increase production, reduce labor time, and ensure the effective management of fertilizers and irrigation processes.

Precision agriculture is one of the most famous applications of IoT in the agricultural sector and numerous organizations are leveraging this technique around the world. CropMetrics is a precision agriculture organization focused on ultra-modern agronomic solutions while specializing in the management of precision irrigation.

2) Agricultural Drones:

Agriculture is one of the major verticals to incorporate both ground-based and aerial drones for crop health assessment, irrigation, crop monitoring, crop spraying, planting, soil and field analysis, and other spheres.

Since drones collect multi spectral, thermal, and visual imagery while flying, the data they gather provide farmers with insights into a whole array of metrics: plant health indices, plant counting and yield prediction, plant height measurement, canopy cover mapping, field water pond mapping, scouting reports, stockpile measuring, chlorophyll measurement, nitrogen content in wheat, drainage mapping, weed pressure mapping, and so on.

3)Livestock Monitoring :

Livestock management, also known as livestock monitoring or precision livestock farming, **uses IoT-enabled devices to track and monitor the health of livestock, most commonly cattle**.

Large farm owners can utilize wireless IoT applications to collect data regarding the location, well-being, and health of their cattle. This information helps them in identifying animals that are sick so they can be separated from the herd, thereby preventing the spread of disease. It also lowers labor costs as ranchers can locate their cattle with the help of IoT based sensors.

JMB North America is an organization that offers cow monitoring solutions to cattle producers. One of the solutions helps the cattle owners observe cows that are pregnant and about to give birth. From the heifer, a sensor powered by a battery is expelled when its water breaks. This sends information to the herd manager or the rancher. In the time that is spent with heifers that are giving birth, the sensor enables farmers to be more focused.