

Selecting an IoT Infrastructure

Project	Greene Organix Greenhouses
Objectives	Provide precise control of the greenhouse environment. The IoT system will collect data, analyze that data, and control the greenhouse environment as necessary to ensure that all plants are subjected to optimal growing conditions.
Goals	Identify the basic IoT infrastructure you will need to include in your IoT solution for: <ul style="list-style-type: none">• Data Collection and Control• Local Connectivity• Remote Connectivity• Remote Data Ingestion, Analytics, and Backend Applications• Operational Constraints
A) IoT Infrastructure <i>What would be a typical IoT infrastructure setup for our greenhouses?</i>	<ul style="list-style-type: none">• Sensors: These are devices that measure various parameters such as temperature, humidity, soil moisture, light intensity, and so on.• Networking devices: These devices are used to connect the sensors to the internet. Options include WiFi routers, cellular modems, and LoRaWAN gateways.• Cloud platform: This is a server-based platform that stores and processes the data collected by the sensors. It can also host applications that allow you to visualize and analyze the data, as well as control the greenhouse environment.• Control system: This is the system that receives commands from the cloud platform and sends them to the greenhouse equipment, such as ventilation fans, irrigation pumps, and lighting systems.• User interface: This is the interface that you use to access the cloud platform and control the greenhouse. It could be a web-based dashboard, a mobile app, or a combination of both.

<p>B) Constraints</p> <p><i>What are some constraints we may be dealing with within our greenhouse operation?</i></p>	<ul style="list-style-type: none"> • Limited space: Greenhouses are typically much smaller than outdoor fields, which can make it difficult to grow large quantities of crops. • Environmental conditions: Greenhouses are designed to control the environment, but they are still subject to external factors such as temperature fluctuations, wind, and pests. • Water and nutrients: Proper watering and nutrient management is critical for plant growth in a greenhouse, but over-watering or using too much fertilizer can lead to problems. • Pest control: Pests such as insects and diseases can be difficult to control in a greenhouse, as the enclosed environment can create favorable conditions for their proliferation. • Energy efficiency: Heating and lighting a greenhouse can be energy-intensive, so finding ways to reduce energy consumption can be important for reducing costs. • Labor: Greenhouse operations often require a significant amount of labor, including tasks such as planting, watering, pruning, and harvesting.