# Project Design Phase-II

**Solution Requirements (Functional & Non-functional)**

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| Date | 15 October 2022 |
| Team ID | PNT2022TMID02471 |
| Project Name | IOT Based Smart Crop Protection |
| Maximum Marks | 4 Marks |

**Functional Requirements:**

Following are the functional requirements of the proposed solution.

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| **FR No.** | **Functional Requirement (Epic)** | **Sub Requirement (Story / Sub-Task)** |
| FR-1 | User Registration | Registration through Form  Registration through Gmail |
| FR-2 | User Confirmation | Confirmation via Email Confirmation via OTP |
| FR-3 | User Support | Support through Chat  Support through Google form |
| FR-4 | Monitoring Weather Condition | Analyzing through Temperature Sensor  Analyzing through Humidity Sensor |
| FR-5 | Tracking Moisture in Soil | Analyzing via Soil moisture Sensor |
| FR-6 | Proper Crop Irrigation | Accomplished via Weather Analysis  Accomplished via Remotely Controlled Water Pump Accomplished via Soil Moisture Sensor |
| FR-7 | Detection of Animal intrusion | Accomplished via PIR Motion Sensor  Accomplished via Distance Sensor Accomplished via Camera |
| FR-8 | Classifying the animals  causing threat | Achieved via Image Processing Python Package  OpenCV |
| FR-9 | Sending alert notification | Send through mobile application Send through email  Alerting the forest officers through call |
| FR-10 | Communication Gateway | By implementing Wifi Module |
| FR-11 | Connecting devices and app | Achieved via Watson IOT platform |
| FR-12 | Creating Application | Accomplished through Node-Red |
| FR-13 | Cloud Storage | Integrating to IBM Cloud Platform |
| FR-14 | Drive away animals | Through speakers in specific location By flashing LED at night time |
| FR-15 | Power supply | Accomplished with the help of solar panel |

# Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

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| **FR No.** | **Non-Functional Requirement** | **Description** |
| NFR-1 | **Usability** | Easy to access |
| NFR-2 | **Security** | It is secure as the communication is via API |
| NFR-3 | **Reliability** | It can withstand extreme environmental conditions |
| NFR-4 | **Performance** | Faster response time, throughput and  accuracy and workload is reduced |
| NFR-5 | **Availability** | Services are available 24/7 on an interactive  chat platform. |
| NFR-6 | **Scalability** | It is affordable and can be easily repaired/ replaced. |