Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	14 October 2022
Team ID	PNT2022TMID02664
Project Name	Smart Waste Management System For Metropolitan Cities
Maximum Marks	4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Employee ID
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Design smart bins	Equip bins with sensors to sense bin weight, garbage level and location data. Data sent to cloud.
FR-4	Cloud computing	Pull data from sensors. Serve as storage unit. Perform computation to detect when bin level and weight crosses threshold.
FR-5	Dashboard view	Showcase bin details in the Dashboard using visually appealing UI. Give appropriate pop- up alerts to indicate when bins are full. Real time bin monitoring.
FR-6	Alert system	Provide notifications to web application user. Intimate location of bins to truck drivers to collect waste through GSM module.

Non-functional Requirements:

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

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Simple and easy-to-use user interface. Use of single-page application to limit page load interruptions and provide a better experience.
NFR-2	**Security**	Make use of two-factor authentication in the form of password and OTP for authorized user access, and captcha inclusion for added security.
NFR-3	**Reliability**	The system makes use of sensors to detect the level of garbage in bins thereby making it free from human intervention and provides accurate reporting.

NFR-4	**Performance**	The web application load time should be fairly fast and since the sensor data is collected and computed remotely in cloud, it ensures good performance.
NFR-5	**Availability**	This smart waste management system monitors smart bins all time around the clock. The web application's any future new module deployment can also take place without any hitch in the working of other pages. If system isn't available during new module deployment it will display a timer to indicate when the system is going to be up again.
NFR-6	**Scalability**	If the municipality decides to increase the number of trash cans in any area the system can easily incorporate the new trash cans and also the sensor system in smart bins can be updated for more accuracy ensuring vertical and horizontal scalability.