

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

Date	18 NOVEMBER 2022
Team ID	PNT2022TMID07317
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	Real time bin monitoring	<ul style="list-style-type: none">▪ The proposed system constructed to the top of the bins to detect bin level status and alert the admin through a cloud service-based application▪ The application provides a monitoring platform for the waste management institution to handle the alert records by creating orders for the garbage collectors/drivers which can be accessed via a mobile application system
FR-2	Eliminate inefficient picks	Get rid of the collection of half-empty trash cans. Picks are recognized by sensors. We can demonstrate to you how full the bins you collect are using real-time data on fill-levels and pick recognition
FR-3	Plan waste collection routes	Route planning for rubbish pickup is semi-automated using the tool. You are prepared to act and arrange for garbage collection based on the levels of bin fill that are now present and forecasts of approaching capacity. To find any discrepancies, compare the planned and actual paths
FR-4	Detailed bin inventory	On the map, you can see every monitored bin and stand, and you can use Google Street View at any time to visit them. On the map, bins or stands appear as green, orange, or red circles. The Dashboard displays information about each bin, including its capacity, trash kind, most recent measurement, GPS position, and pick-up schedule

Non-functional Requirements:

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

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	Usability is a unique and significant perspective to examine user needs, which may further enhance the design quality, according to IOT devices. Analysing how well people interact with a product may help designers better understand customers' prospective demands for waste management, behaviour, and experience in the design process when user experience is at the Centre.
NFR-2	Security	Utilize recyclable bottles. Utilize reusable shopping bags. Spend responsibly and recycle Eat and drink in limited-use containers
NFR-3	Reliability	Creating improved working conditions for garbage collectors and drivers is another aspect of smart waste management. Waste collectors will use their time more effectively by attending to bins that require service rather than travelling the same collection routes and servicing empty bins.
NFR-4	Performance	The Smart Sensors assess the fill levels in bins (along with other data) numerous times each day using ultrasonic technology. The sensors feed data to Smart Waste Management Software System, a robust cloud-based platform with data-driven daily operations and a waste management app, using a variety of IOT networks. As a consequence, customers receive data-driven decision-making services, and garbage collection routes, frequency, and truck loads are optimized, resulting in at least a 30% decrease in route length
NFR-5	Availability	By creating and implementing robust hardware and gorgeous software, we enable cities, companies, and nations to manage garbage more intelligently.
NFR-6	Scalability	Using smart trash bins allows us to scale up and monitor the rubbish more efficiently while also reducing the number of bins needed in towns and cities