

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

Date	08 October 2022
Team ID	PNT2022TMID07841
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	Bin inventory.	All monitored bins and stands can be seen on the map. You can see bin capacity, GPS location and collection schedule or pick recognition.
FR-2	Real time bin monitoring.	The level of bins are monitored by smart sensors. Sensors recognize picks as well; so you can check when the bin was last collected. With real-time data and predictions, you can eliminate the overflowing bins and stop collecting half-empty ones.
FR-3	Bins.	We help you identify bins that drive up your collection costs. The tool calculates a rating for each bin in terms of collection costs.
FR-4	Bin distribution.	Ensure the optimal distribution of bins. Identify areas with either dense or sparse bin distribution. Based on the historical data, you can adjust bin capacity or location if necessary.
FR-5	Eliminate inefficient picks.	Eliminate the collection of half-empty bins. By using real-time data on fill-levels and pick recognition, we can show you how full the bins you collect are.

### Non-functional Requirements:

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

FR No.	Non-Functional Requirement	Description
NFR-1	<b>Usability</b>	IoT device verifies that usability is a special and important perspective to analyze user requirements, which can further improve the design quality. The analysis of users product usability can help designers to understand users potential needs in waste management, behavior and experience.
NFR-2	<b>Security</b>	Use a reusable bottles and grocery bags. Avoid single use food and drink containers.
NFR-3	<b>Reliability</b>	Smart waste management is also about creating better working. Instead of driving the same collection routes and servicing empty bins, waste collectors will spend their time more efficiently, taking care of bins that need servicing.
NFR-4	<b>Performance</b>	The Smart Sensors use ultrasound technology to measure the fill levels in bins several times a day. Using a variety of IoT networks the sensors send the data .Customers are hence provided data-driven decision making, and optimization of waste collection routes, frequencies, and vehicle loads resulting in route reduction.
NFR-5	<b>Availability</b>	By developing & deploying the hardware and software we empower the country to manage waste smarter and easier.
NFR-6	<b>Scalability</b>	Using smart waste bins we can be able to monitor the garbage more cost effectively .

