

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

Date	03 October 2022
Team ID	PNT2022TMID04740
Project Name	Project – Smart Waste Management System for Metropolitan Cities
Maximum Marks	4 Marks

**Functional Requirements:**

The functional requirements of the proposed solution are as follows.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Details of the Bin	The bin details are displayed in the Dashboard – capacity, waste type, last measurement, GPS location and collection schedule or pick recognition.
FR-2	Bin Monitoring	We can eliminate the risk of bin overflow and stop collecting half-empty bins by using real-time data and predictions.
FR-3	Cost of bins	It is beneficial to identify bins that increase your collection costs. In terms of collection costs, the tool assigns a rating to each bin.
FR-4	Adjusting level of Garbage	Ensure the best possible bin distribution. Determine whether the bin distribution is dense or clustered. Ensure that all types of trash are represented within a stand. You can adjust bin capacity or location as needed based on historical data.
FR-5	Eliminate insufficient garbage	Remove the collection of half-empty bins. Picks are recognised by the sensors. We can show you how full the bins you collect are by using real-time data on fill-levels and pick recognition. The report indicates how full the bin was when it was picked. Any picks that are less than 80% full are immediately visible.
FR-6	Planning for waste collection	The programme plans waste collecting routes semi-automatically. You are prepared to respond and plan waste collection based on current bin fill levels and projections of approaching full capacity. To find discrepancies, compare planned and accomplished routes.

### Non-functional Requirements:

The non-functional requirements of the proposed solution are as follows.

FR No.	Non-Functional Requirement	Description
NFR-1	<b>Usability</b>	This Smart Waste Management system enables bins to be evacuated before they become overloaded with garbage or recycling, along with before contamination becomes an issue.
NFR-2	<b>Security</b>	This method is robust to threats since the data processed is simply about trash amount and bin placement. Trash reduction technology advancements enable us to better monitor, avoid, and manage our waste.
NFR-3	<b>Reliability</b>	Smart Bins contribute to a cleaner, safer, and more hospitable environment, as well as increased operating efficiency while lowering management costs, resources, and road-side emissions.
NFR-4	<b>Performance</b>	Rather of travelling the same collection routes and servicing empty bins, trash collectors will use their time more efficiently servicing bins that require service.
NFR-5	<b>Availability</b>	When needed, the system should be accessible at all times. To receive all data and analyze all complaints and bin data, the admin entire network should have a quickest possible connection.
NFR-6	<b>Scalability</b>	Using smart bins helps reduce the number of bins within cities although we can monitor waste 24 hours a day, seven days a week.