

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

Date	03 October 2022
Team ID	PNT2022TMID37162
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 Monitoring	The dashboard at the admin end shows the level of the bin frequently and gives the bin which is about to be full at the top . With real-time data and predictions we can eliminate the risk of bin overflowing .
FR-2	Details of the bin	The complete details of the bin (i.e its location , its frequency of becoming full , percentage of the current bin etc) are displayed in it .
FR-3	Check bin level	The sensor placed in the bin checks the level of the bin frequently and updates it to the admin end and truck driver API .
FR-4	Complaint Notification	When a user gives a complaint via user application that wastes are being spread on roads it should directly be sent to the admin end and admin should assign nearest staff to take necessary action and clean them .
FR-5	Get Nearest bin location	Whenever a user uses the application to raise a complaint the application asks for the user location to track the bin location where the wastes are being spread on road .
FR-6	Nearest full bin at top	The application of truck driver is designed in a such a way that it shows the nearest full bin or the bin which is about to be full at the top .
FR-7	Full bin Alert	The truck driver application gives a notification when the bin is about to be full (For example a notification if it goes above 80% and another notification if it goes above 90% and frequently for every hour after 95%)

### Non-functional Requirements:

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

FR No.	Non-Functional Requirement	Description
NFR-1	<b>Usability</b>	The web application at the admin end and truck driver end requires a log in which is quite easy for them to use with no further requirements needed they can use the application easily . The application for customer complaint is some more easy as it needs only location permission for raising a complaint.
NFR-2	<b>Security</b>	As the data processed is all about wastes level and bin location there is no fear of attacks in this mechanism . Though there may be some attacks for user location the application will have all sorts of security to maintain it confidentially.
NFR-3	<b>Reliability</b>	As the sensors and other components used has a chances of failure or stopped due to external reasons they must checked frequently . If a bin does not update its level for more than a day it should be checked . Maintaining less than 250 bins for a area is quite easy but if its more than that necessary precautions should be taken and frequently checked .
NFR-4	<b>Performance</b>	It should return the bin level frequently as much as possible if there is a delay in finding the bin , the bin should be repaired and it should be emptied according to its pass history of being full .
NFR-5	<b>Availability</b>	The user application is available almost all time as only a few times its being used in a day or week. The truck driver application should have a stable network coverage to frequently check for the bin level. The admin end system should have a high speed connection to receive all data and process all complaints and bin data .
NFR-6	<b>Scalability</b>	If there is less than 200 or 250 in a particular area it is quite easy to maintain them . If it goes above it or the area is big then the performance of the system gets slightly affected by it .