**Project Design Phase-II**

**Solution Requirements (Functional & Non-functional)**

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| Date | 18 NOVEMBER 2022 |
| Team ID | PNT2022TMID15172 |
| Project Name | SMART WASTE MANAGEMENT SYSTEM |
| Maximum Marks | 4 Marks |

**Functional Requirements:**

Following are the functional requirements of the proposed solution.

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| **FR No.** | **Functional Requirement (Epic)** | **Sub Requirement (Story / Sub-Task)** |
| FR-1 | Detailed bin inventory. | . All monitored bins and stands can be seen on the map, and you can visit them at any time via the street view feature from Google.  . Bins or stands are visible on the map as green, orange or red circles.  . You can see bin details in the Dashboard – capacity, waste type, last measurement, GPS location and collection schedule or pick recognition. |
| FR-2 | Real time bin monitoring. | Waste which are filled in bins are monitored by sensors. Based on the previous data, the tool predicts when will the bin fill. Smart sensor recognize each and every action takesplace. Hence it will check the last collected data. With the real time data & predictions, we can eliminate the overflowing of bins. |
| FR-3 | Expensive 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.  . The tool considers the average distance depo-bin- discharge in the area. The tool assigns bin a rating  (1-10) and calculates distance from depo-bin discharge. |
| FR-4 | Adjust bin distribution. | . Ensure the most optimal distribution of bins. Identify areas with either dense or sparse bin distribution.  . Make sure all trash types are represented within a stand.  . Based on the historical data, you can adjust bin capacity or location where necessary. |
| FR-5 | Eliminate un-efficient picks. | The sensor recognize picks. By the data filled on the bin, pick recognition, we can show how full the bins you collect are. Eliminates the collection of empty bins. |
|  |  | . The report shows how full the bin was when picked. You immediately see any inefficient picks below 80% full. |
| FR-6 | Plan waste collection routes. | Based on current bin fill-levels and predictions of reaching full capacity, we have ready to respond and schedule. We have to compare planned and executed routes to identify any inconsistencies |

**Non-functional Requirements:**

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

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| **FR No.** | **Non-Functional Requirement** | **Description** |
| NFR-1 | **Usability** | IoT device verifies that usability is a special and important perspective to analyze user requirements, which can further improve the design quality. In the design process with user experience as the core, the analysis of users’ product usability can indeed help designers better understand users’ potential needs in waste management, behavior and experience. |
| NFR-2 | **Security** | Use a reusable bottles  Use reusable grocery bags  Purchase wisely and recycle |
| NFR-3 | **Reliability** | This project (Smart waste management system) is all about creating better work experience for waste collectors and drivers. Waste collector will spend their time more efficiently instead of driving the same collection routes and servicing empty bins. |
| NFR-4 | **Performance** | By using the various IoT networks, the sensors send the data to smart waste management software system, a cloud platform, for data-driven daily operations, and available waste. User are provided with data-driven decision making, and optimization of waste collection route reduction by at least 35% |
| NFR-5 | **Availability** | By developing & deploying resilient hardware and beautiful software we empower cities, businesses, and countries to manage waste smarter. |
| NFR-6 | **Scalability** | Using smart waste bins reduce the number of bins inside town , cities coz we able to monitor the garbage 24/7 more cost efficient and scalability when we move to smarter. |