ProjectDesignPhase-II

SolutionRequirements(Functional&Nonfunctional)

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| Date | 20October2022 |
| TeamID | PNT2022TMID20132 |
| ProjectName | SmartWasteManagementSystemFor MetropolitanCities |
| MaximumMarks | 4Marks |

FunctionalRequirements:

Followingarethefunctionalrequirementsoftheproposedsolution.

| FRNo. | FunctionalRequirement (Epic) | SubRequirement(Story/Sub-Task) |
|---|---|---|
| FR-1 | UserRegistration | RegistrationthroughForm<br>RegistrationthroughGmail<br>RegistrationthroughLinkedIN |
| FR-2 | UserConfirmation | ConfirmationviaEmail ConfirmationviaOTP |
| FR-3 | Detailedbininventory | Allmonitoredbinsandstandscanbeseenonthe map,andyoucanvisitthematanytimeviathe StreetViewfeaturefromGoogle.Binsorstandsare visibleonthemapasgreen,orangeorredcircles. YoucanseebindetailsintheDashboard–capacity wastetype,lastmeasurement,GPSlocationand collectionscheduleor pickrecognition |
| FR-4 | Realtimebinmonitoring | TheDashboarddisplaysreal-timedataonfill-levels ofbinsmonitoredbysmartsensors.Inadditionto the%offill-level,basedonthehistoricaldata,the toolpredictswhenthebinwillbecomefull,oneof thefunctionalitiesthatarenotincludedeveninthe bestwastemanagementsoftware..Sensors recognizepicksaswell;soyoucancheckwhenthe binwaslastcollected.Withreal-timedataand predictions,youcaneliminatethe overflowingbinsandstopcollectinghalf-empty ones |
| FR-5 | Eliminateinefficientpicks | Eliminatethecollectionofhalf-emptybins.The sensorsrecognizepicks.Byusingreal-timedataon fill-levelsandpickrecognition,wecanshowyou howfullthebinsyoucollectare.Thereportshows howfullthebinwaswhenpicked.Youimmediately seeanyinefficientpicksbelow 80%full. |
| FR-6 | Planwastecollectionroutes | Thetoolsemi-automateswastecollectionroute planning.Basedoncurrentbinfill-levelsand predictionsofreachingfullcapacity,youareready torespondandschedulewastecollection.Youcan compareplannedvs. executedroutestoidentifyanyinconsistencies. |

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Non-functionalRequirements:

Followingarethenon-functionalrequirementsoftheproposedsolution.

| FRNo. | Non-FunctionalRequirement | Description |
|---|---|---|
| NFR-1 | Usability | IoTdeviceverifiesthatusabilityisaspecialand importantperspectivetoanalyzeuser requirements,whichcanfurtherimprovethe designquality.Inthedesignprocesswithuser experienceasthecore,theanalysisofusers' productusabilitycanindeedhelpdesigners betterunderstandusers'potentialneeds inwastemanagement,behaviourandexperienc |
| NFR-2 | Security | UseareusablebottlesUsereusablegrocery bagsPurchasewiselyandrecycleAvoidsingle usefood anddrinkcontainers |
| NFR-3 | Reliability | Smartwastemanagementisalsoaboutcreating betterworkingconditionsforwastecollectors anddrivers.Insteadofdrivingthesame collectionroutesandservicingemptybins,wast collectorswillspendtheirtimemoreefficiently, takingcareofbinsthat needservicing. |
| NFR-4 | Performance | TheSmartSensorsuseultrasoundtechnology tomeasurethefilllevels(alongwithother data)inbinsseveraltimesaday.Usinga varietyofIoTnetworks((NB-IoT,GPRS),the sensorssendthedatatoSmartWaste ManagementSoftwareSystem,apowerful cloud-basedplatform,fordatadrivendaily operations,availablealsoasawaste managementapp. Customersarehenceprovideddata-driven decisionmaking,andoptimizationofwaste collectionroutes,frequencies,andvehicleloads resultinginroutereductionbyatleast30%. |
| NFR-5 | Availability | Bydeveloping&deployingresilienthardware andbeautifulsoftwareweempowercities, businesses, andcountriestomanagewastesmarter. |
| NFR-6 | Scalability | Usingsmartwastebinsreducethenumberof binsinsidetown,citiescozweableto monitorthegarbage24/7morecosteffect andscalabilitywhen wemovestosmarter. |

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