








# Smart Waste Management System for Metropolitan Cities

## Customer Journey

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<div>SCENARIO</div> <div>Browsing, booking, attending, and rating a local city tour</div>	<div>Entrice</div> <div>How does someone initially become aware of this process?</div>	<div>Enter</div> <div>What do people experience as they begin the process?</div>	<div>Engage</div> <div>In the core moments in the process, what happens?</div>	<div>Exit</div> <div>What do people typically experience as the process finishes?</div>	<div>Extend</div> <div>What happens after the experience is over?</div>
<div>Steps</div> <div>What does the person (or group) typically experience?</div>	<div>collect garbage</div> <div>Smart City technology evolved together with the developments in wireless sensor networks (WSN) and the Internet of Things</div> <div>separate waste</div> <div>Smart cities essentially combine the use of ICT to provide services for better living conditions inside cities.</div> <div>alert message send to controlroom</div> <div>The current state of technology in the field of smart waste management involves the use of sensors that measure the fill level of the trash bin.</div> <div>view details on trashcan</div> <div>The solution presented in this article focuses on the mitigation of these disadvantages by the implementation of RFID based trash identification system and additional weight sensor for improved fill level estimation.</div>	<div>seperate collection and sorting</div> <div>Metropolitan City citizens People whose house near the trashcans.</div> <div>expanding the recycling industry</div> <div>Trashwan Drivers &amp; Workers The dustbins need to empty after it got filled. The overflowing needs to avoid.</div> <div>the circular economy based as a resource</div> <div>Monitoring the dumpsters and send the information about the garbage level to the authenticated person to empty the trashcans using arduino device.</div> <div>reliable collection and better landfill sites</div> <div>The sensors senses the amount of waste in trashcans and the device sends the notification to the head office, they will come and collect the wastages.</div>	<div>extensive uncontrolled dumping</div> <div>The citizens can send the message about the smart dumpsters if any damage on the IoT device occurred.</div> <div>prevention</div> <div>The current process of waste management starts with the waste being created by people in the cities and disposed in trash bins near its creation point.</div> <div>preparation of reuse</div> <div>The lack of resources and capacities and a low level of knowledge and education emerged in all case studies as major root causes for several drivers of disaster risk.</div> <div>recycling</div> <div>One is to think little of disasters and become defensesless. The other is to fear disasters excessively and to be confused.</div>	<div>fully digital and easy to access</div> <div>Awareness, education, preparedness, and prediction and warning systems can reduce the disruptive impacts of a natural disaster on communities.</div> <div>clean city and maintain itself</div> <div>The user can contact our team if they feel any hardness while using the app.</div> <div>suitable infrature and maintenance easily</div> <div>The device using here is help to update the content regularly and check the truthfulness.</div>	<div>they feel clean management system</div> <div>Some trash bins are overfilled while others are underfilled by the trash collection time</div> <div>clean india system</div> <div>The waste management services take care of a healthy environment allowing optimization of the utilities and prevent overloading the carrier for waste disposal.</div>
<div>Interactions</div> <div>What interactions do they have at each step along the way?</div> <div><div>■ People: Who do they see or talk to?</div><div>■ Places: Where are they?</div><div>■ Things: What digital touchpoints or physical objects would they use?</div></div>	<div>all human produce municipal solid waste</div> <div>garbagebin overflows monitoring by the ultrasonic sensor</div> <div>urbanwaste collection is expenditure on government budgets</div> <div>garbage produce in different area in a city vvarious widely</div>	<div>checking the status of sensor</div> <div>sensing the level of bins</div> <div>application to send feedback</div>	<div>website to monitor the trash can</div> <div>analyse status of dustbiin</div> <div>easily report the current status of garbage</div>	<div>internet is necessary to use the webapp</div> <div>the device may send wrong information</div> <div>feel easy to monitor the waste</div>	<div>it reduces the fuel cost for travelling</div> <div>sensor can be damaged when collecting garbage</div>
<div>Goals &amp; motivations</div> <div>At each step, what is a person's primary goal or motivation? ("Help me..." or "Help me avoid...")</div>	<div>clean india</div> <div>make waste free environment</div> <div>protection of public health</div> <div>encourage the recycling industries</div>	<div>development and improvement of clean technology</div> <div>reduce ,recycle,and to reuse</div> <div>encourage the adoption of sustainable production and consepction patterns</div>	<div>the environment to support the economic development and superior quality of life</div> <div>waste can be solid,liquid or gases</div> <div>each type has different methods of disposal</div>	<div>each type has different types of management</div> <div>industrial,biological waste or organic and biomedical waste</div> <div>its reduce the dangerous effect</div>	<div>a big part of waste management deals with municipal solid waste</div> <div>well maintained area</div>
<div>Positive moments</div> <div>What steps does a typical person find enjoyable, productive, fun, motivating, delightful, or exciting?</div>	<div>become a smart city</div> <div>enhance safety</div> <div>reduce man power</div>	<div>effective way to keep the clean city</div> <div>optimization of resources</div> <div>scarb metal reuse</div>	<div>quality control improvement and process monitoring</div> <div>exchange of waste</div> <div>shipping to the point of use</div>	<div>reduse harmful waste water</div> <div>zero waste</div> <div>reduce the use of packaging material</div>	<div>protect the environment</div> <div>increase the fertility of the soil</div>
<div>Negative moments</div> <div>What steps does a typical person find frustrating, confusing, angering, costly, or time-consuming?</div>	<div>jobless</div> <div>increasing cost of the dustbin</div> <div>difficult to maintain the dustbin</div>	<div>soil contamination</div> <div>water contamination</div> <div>air contamination</div>	<div>human damage</div> <div>harm towards animal and marine life</div> <div>extreme weather pased by climate change</div>	<div>loss of habitats</div> <div>incase of any short circuit</div> <div>sensor affect by water</div>	<div>incase of any malfunction</div> <div>some cloud warning issue</div>
<div>Areas of opportunity</div> <div>How might we make each step better? What ideas do we have? What have others suggested?</div>	<div>smart waste bins</div> <div>waste level sensor</div>	<div>AI recycling robots</div> <div>garbage truck weighing mechanism</div>	<div>pneumatic waste pipes</div> <div>solar powered trash compacters</div>	<div>E-waste kiosk</div> <div>recycling apps</div>	<div>waste management program</div> <div>sustainability development</div>