

Focus on J&P, tap into BE, understand RC

2. JOBS-TO-BE-DONE / PROBLEMS

J&P

Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.

Smart waste management focuses on solving the previously mentioned solid waste management problems using sensors, intelligent monitoring systems, and mobile applications. The first smart waste management solution to make the waste collection process more efficient is sensors. Sensors can measure the fill level of the containers and provide updated information at any time and notify waste management services to empty them when they are full or almost full.

9. PROBLEM ROOT CAUSE

RC

What is the real reason that this problem exists? What is the back story behind the need to do this job?  
i.e. customers have to do it because of the change in regulations.

Good waste management is essential to protect the environment. As the population grows, waste generation increases. And if it is not properly treated, it ends up in landfills and incinerators. This causes environmental problems that affect the soil, water and air.

7. BEHAVIOUR

BE

What does your customer do to address the problem and get the job done?  
  
i.e. directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace)

Smart waste strategies and solutions are the most direct way to address cities' pain points when it comes to smart waste management and are increasingly seen as a necessary step in the drive to build more efficient and sustainable cities. Smarter waste solutions are driven by technologies such as Internet of Things (IoT) sensors, cloud-based applications, radio frequency identification (RFID) as well as global positioning systems (GPS) and route and fleet optimization software.

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Define CS, fit into CC

1. CUSTOMER SEGMENT(S)

CS

Who is your customer?  
i.e. working parents of 0-5 y.o. kids

The global smart waste management market is expected to witness significant growth over the forecast period. Smart waste management is a collective term for the management of solid wastes from residential and commercial societies, streets, public places, hospitals, and other institutions. The advent of innovative devices such as RFID, disposable tags, containers, and vacuum cleaners with real-time measurement of wastes has developed a significant market for solid waste management.

6. CUSTOMER CONSTRAINTS

CC

What constraints prevent your customers from taking action or limit their choices of solutions? i.e. spending power, budget, no cash, network connection, available devices.

This system uses different sensors for monitoring the waste level . The Arduino controller used will access the sensor data. With the use of IoT, the collected data is analyzed and the waste level can be investigated by a stringent mechanism. The ultrasonic and LoRa sensors.

5. AVAILABLE SOLUTIONS

AS

Which solutions are available to the customers when they face the problem  
  
or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? i.e. pen and paper is an alternative to digital notetaking

To counter the global threat of solid waste, the world is in dire need of Smart Waste management techniques. Fundamentally, Smart waste management refers to the methods and system that incorporates technology, and smart solutions of IoT, to make waste collection easy, efficient, and eco-friendly. Seemingly, IoT solutions can help collect and track real-time data and optimize the waste collection process while still opening for better innovations in the future.

Explore AS, differentiate

## 3. TRIGGERS

TR

What triggers customers to act? i.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news.

We are building a IoT based Smart waste management using ESP8266 NodeMCU Module and LoRa Sensor.

## 4. EMOTIONS: BEFORE / AFTER

EM

How do customers feel when they face a problem or a job and afterwards?  
i.e. lost, insecure > confident, in control - use it in your communication strategy & design.

## BEFORE:

- Before implementing this IOT project people faced some difficulties to enjoy garbage free environment.
- They also face major problems in the development is cost efficiency.

## AFTER:

- By using this project cost of the project is minimized.
- Waste level is minimized.

## 10. YOUR SOLUTION

SL

If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality.  
If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.

The major process is collecting the waste and separating it. So we have to collect the waste properly and separate the waste based on their degradability, at the same time we have to try to degrade the degradable waste as possible. Bio waste and E waste should be separated and should be dumped properly.

## CHANNELS of BEHAVIOUR

CH

## ONLINE

What kind of actions do customers take online? Extract online channels from #7

## OFFLINE

What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.

## ONLINE:

1. Public may provide review and rating for the system.
2. The software used should be properly studied by everyone to operate it.

## OFFLINE:

1. Connectivity. This doesn't need too much further explanation.
2. Things. Anything that can be tagged or connected as such as it's designed to be connected.