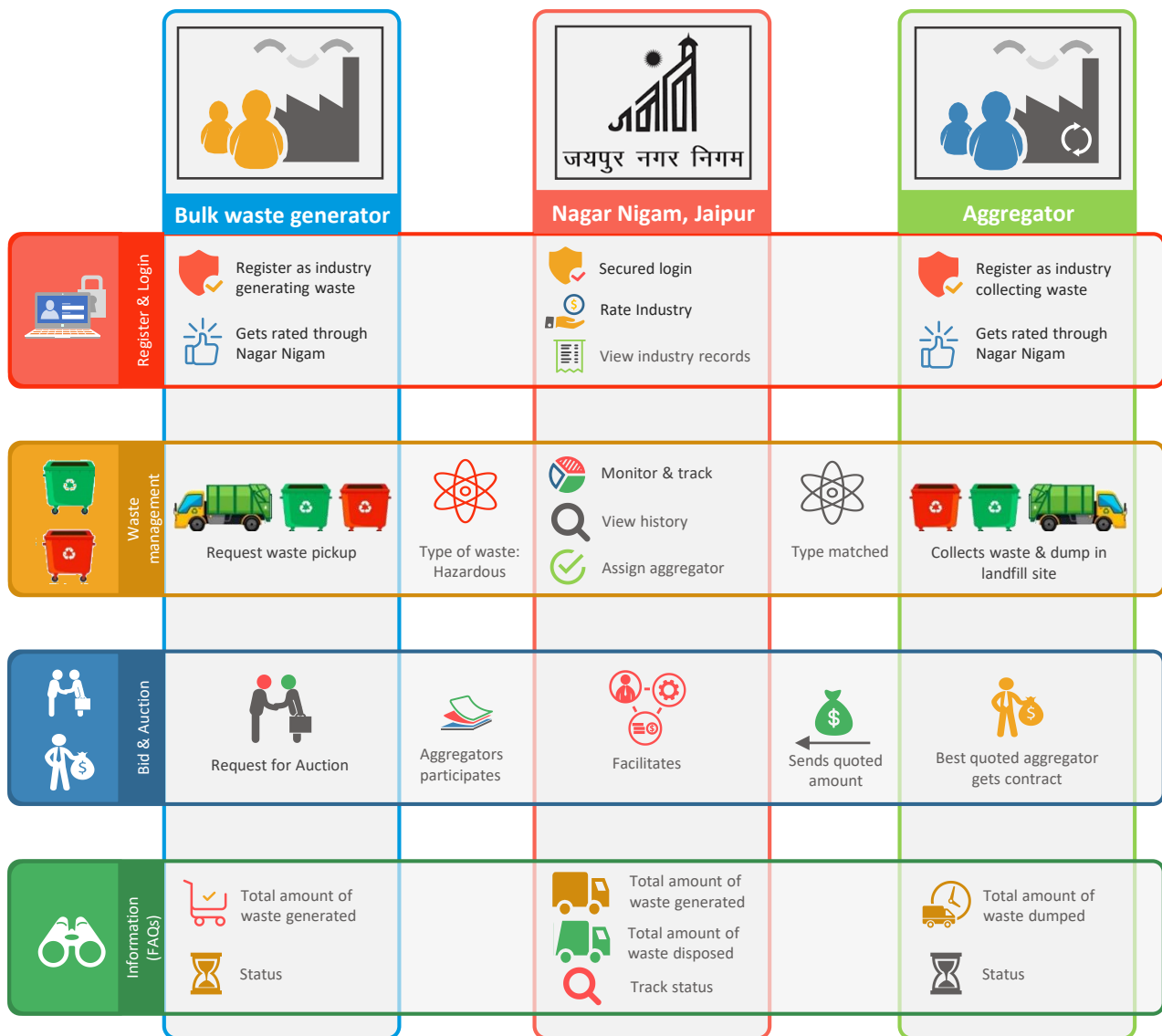| Organization Name	: **Nagar Nigam, Jaipur , Govt. of Rajasthan**
Problem Statement	: Development of Website/App for collection, transportation, disposal and segregation of waste products
Team Name	: Braniacs_3.4
Team Leader Name	: Shivam

College Code : 1-3517520220

Idea of Approach

	Bulk waste generator		Nagar Nigam, Jaipur		Aggregator
Register & Login	Register as industry generating waste Gets rated through Nagar Nigam		Secured login Rate Industry View industry records		Register as industry collecting waste Gets rated through Nagar Nigam
Waste management	Request waste pickup	Type of waste: Hazardous	Monitor & track View history Assign aggregator	Type matched	Collects waste & dump in landfill site
Bid & Auction	Request for Auction	Aggregators participates	Facilitates	Sends quoted amount	Best quoted aggregator gets contract
Information (FAQs)	Total amount of waste generated Status		Total amount of waste generated Total amount of waste disposed Track status		Total amount of waste dumped Status

Note

For the sake of simple representation, Industries has been divided into two types:

Bulk Waste Generator	Aggregator
Industries who are generating solid waste and does not have waste treatment and disposal capabilities in house	Industries who collects the waste from the site and disposes it to the land fills after treating the waste appropriately

Nagar Nigam, Jaipur

Nagar Nigam, Jaipur — Suresh Nawal

Dashboard
Edit Profile
View Records
Track status
Ratings
Aggregator Assignment
FAQs

120089	18950	400	380
Total waste generated	Total waste collected	Waste Generating industries	Waste collectors
Yesterday : 02:30PM	5th Jan, 19 : 02:30PM	25th Nov, 18 : 03:00 PM	Today : 12:00PM

Waste Generation/ Disposal per month
(Jan, Feb, Mar, April, May)
— Waste Generated — Waste Disposed

Type of waste
- E - waste
- Chemical
- Hazardous
- Mixed

42%, 13%, 17%, 29%

Top 5 waste generating industries
Ambuja Cement, Tata Steel, AAMRITA TEXTILE INDUSTRIES, Grace Food Processing, Reliance Chemicals

Type of waste, Disposal/ Collection
Tons in 100
E - waste, Chemical, Hazardious, Mixed, Inert
Type
■ Disposal ■ Collection

Voice

Nagar Nigam, Jaipur

Nagar Nigam, Jaipur — Suresh Nawal

Dashboard
Edit Profile
View Records
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Ratings
Aggregator Assignment
FAQs

Aggregator Assignment

Search waste generating Industry — Enter Industry Name — Search

Industry ID	Name	Type	Quantity (TON)	Assign Aggregator	Action
IND038	Bilra Cement	Chemical	78	Grave Processing	✓ ✗
IND043	Tata Cement	Hazardous	197	Reliance Treatment	✓ ✗
IND038	Bilra Cement	Chemical	78	Grave Processing	✓ ✗
IND043	Tata Cement	Hazardous	197	Reliance Treatment	✓ ✗

Assigned Aggregator

Industry ID	Name	Type	Quantity (TON)	Assign Aggregator
IND038	Ambuja	Hazardous	38	Grave Processing
IND043	Tata Cement	Hazardous	197	Reliance Treatment
IND038	Ambuja	Hazardous	38	Grave Processing
IND043	Tata Cement	Hazardous	197	Reliance Treatment
IND038	Ambuja	Hazardous	38	Grave Processing
IND043	Tata Cement	Hazardous	197	Reliance Treatment
IND038	Ambuja	Hazardous	38	Grave Processing
IND043	Tata Cement	Hazardous	197	Reliance Treatment

Voice

- Application will bring all the stakeholders involved in the process of waste management on a single platform so as to make the process of disposing waste seamless for industries and to help Nagar Nigam to keep the landfills free of harmful wastes.
- Application will allow Bulk waste generators to raise a request for the collection and disposal of waste.
- Nagar Nigam can now facilitate and monitor the process of waste disposal at every stage – collection, segregation, disposal etc. with the help of the proposed system

- The system will enable Nagar Nigam to connect Aggregator with the suitable Bulk waste generator.
- Nagar Nigam can closely watch the request raised, served and not served for waste disposal with the help of info-graphics represented on dashboard
- Industries can auction the waste available and also place a bid on the actionable waste with the help of the proposed system
- The system will allow Industries to collaborate and support each other by knowledge transfer or by defining process of waste management for them

Bilra Cement — Bulk Waste Generator

Suresh Nawal

- Dashboard
- Edit Profile
- Bid for waste
- Auction
- Track status
- Ratings
- FAQs

Bid for Waste

Apply for Collection

Type ID	Date of Collection	Type	Quantity (TON)	Location	Apply
Enter ID	Select	Select	78	Select	✔ ✖

Applied History

Type ID	Date of Collection	Type	Quantity (TON)	Location
IB89	10-Jan-2019	Chemical	188	Guwahati
IB89	10-Jan-2019	Chemical	188	Guwahati
IB89	10-Jan-2019	Chemical	188	Guwahati
IB89	10-Jan-2019	Chemical	188	Guwahati
IB89	10-Jan-2019	Chemical	188	Guwahati
IB89	10-Jan-2019	Chemical	188	Guwahati

Voice

Grave Processing — Aggregator

Suresh Nawal

- Dashboard
- Edit Profile
- Dump Requests
- Apply for Auction
- Track status
- Ratings
- FAQs

Dump Request

Approve for collection

Type ID	Date of Collection	Type	Quantity (TON)	Details	Location	Action
IB97097	15-Jan-2019	Chemical	Enter	📄	Jaipur	✔

Approved Collections

Type ID	Date of Collection	Type	Quantity (TON)	Details	Location
IB89	10-Jan-2019	Chemical	188	📄	Guwahati
IB89	10-Jan-2019	Chemical	188	📄	Guwahati
IB89	10-Jan-2019	Chemical	188	📄	Guwahati
IB89	10-Jan-2019	Chemical	188	📄	Guwahati
IB89	10-Jan-2019	Chemical	188	📄	Guwahati
IB89	10-Jan-2019	Chemical	188	📄	Guwahati

Voice

Technology Stack

Frontend

HTML5, JavaScript, CSS3, Bootstrap, jQuery, ANGULARJS by Google

Backend

Java 8, Maven, spring boot, HIBERNATE

Database, hosting, domain

MySQL, Firebase, amazon web services, GoDaddy

Data Analytics

tableau, KNIME Open for Innovation

Voice

Jovo, Dialogflow, Google Assistant

Project Management

TortoiseSVN, GitHub, Jira

3

Use Cases

BULK GARBAGE GENERATOR

Pick my waste

Submit application for waste collection

Handover waste to aggregator

Track the status of waste till arrival at Segregation Unit

Search Open requests

View history

Place a bid

View auction request of other industries

Place their bid

View status of auction

Buy my waste

Submit application for available waste for auction

Set start date and end date for auction

View details of Industries who have placed bid

Accept a bid

Suggest me a plan

Submit request for waste inspection

View responses against request

Accept/ reject a suggestion based on number of likes by other industries on a suggestion

AGGREGATOR

Dispose Waste

Accept the assignment for waste collection by Admin

Collect waste from site

Transport waste to Segregation Unit

Treat Waste

Dispose on Land fills

Collaborate

View open requests for waste inspection

Suggest a response to open request – share knowledge

Accept the request for Inspection

Find an Inspector for waste

Send inspector to site

Treat waste

Receive waste at Segregation Unit

Find type of waste received at segregation unit

Treat the waste based on the category

Collect the Reusable parts generated after the treatment

Collect the waste to be disposed

Auction Waste

Submit Details of recyclable waste collected after treatment

Set start and end date for auction

View the bids placed by industries

Accept one bid out of many placed by industries

NAGAR NIGAM

Monitor and Facilitate

Track the requests raised for waste collection and disposal

Suggest waste management plans to the industries asking for inspection of waste

Connect Bulk waste generator with aggregator

Reward Industries disposing wastes properly

Approve Profiles

View submitted applications to be a part of system as an aggregator Industries

Approve/Reject applications of aggregator

Assign Aggregator

View the request received for waste collections

Select the aggregator from the list of aggregator suggested by the system through an algorithm

Specify reason in comments for the selection of particular aggregator

Assign the Aggregator

Insights from Data

Plot graph for waste generated against waste disposed

Waste generated monthly per year

Plot graph of Industries who disposed maximum number of waste appropriately against generated by them.

On-boarding Stakeholders on application
- Profiles for the user of Jaipur Nagar Nigam will be created beforehand for the proper functioning of system.
- Profile of Aggregator type Industries has to be approved by Nagar Nigam (Admin) after they register in order for the aggregator to be able to use system.

Information
- Information regarding type of waste, available quantity of waste and date of waste generation will be provided by Bulk Garbage generator Industry appropriately.
- Information regarding amount of waste disposed, waste recycled will be provided appropriately by the Aggregator

Infrastructure
- All the stakeholders involved have basic IT infrastructure to run the web application