MAHENDRA INSTITUTE OF TECHNOLOGY
MALLASAMUDRAM

"CUSTOMER CARE REGISTRY"

NALAIYATHIRAN IBM PROJECT

TEAM ID:PNT2022TMID17282

SUBMITTED BY

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1.INTRODUCTION

1.1 PROJECT OVERVIEW

This Application has been developed to help the customer in processing their complaints. The customers can raise the ticket with a detailed description of the issue. An Agent will be assigned to the Customer to solve the problem. Whenever the agent is assigned to a customer they will be notified with an email alert. Customers can view the status of the ticket till the service is provided.

1.2 PURPOSE

Admin : The main role and responsibility of the admin are to take care of the whole process. Starting from Admin login followed by the agent creation and assigning the customer's complaints. Finally, He will be able to track the work assigned to the agent and a notification will be sent to the customer.

User: They can register for an account. After the login, they can create the complaint with a description of the problem they are facing. Each user will be assigned with an agent. They can view the status of their

complaint.

2.LITERATURE SURVEY

2.1 EXISTING PROBLEM

Information about the route,cancellation of tickets,departure time,arrival time,number of trains available and
other such information. Store and retrieve information about the various transactions related to Rail travel.

Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	Searching for tickets	Book bunch of tickets	Server issues are occuring	I can't able to book the tickets	Frustrated
PS-2	Searching for tickets	Book bunch of tickets on discount	There was issues in discount option	I can't able to redeem code	Disappointment

2.2   PROBLEM STATEMENT DEFINITION

A strong customer problem statement should provide a detailed description of your customer's current situation. Consider how they feel, the financial and emotional impact of their current situation, and any other important details about their thoughts or feelings.

Creating a customer problem statement is easy with Miro. Using our collaborative online whiteboard, you can create an online problem

statement that's easy to follow and shareable with your team. All you have to do is sign up for free, select this template, and follow your template.

3.IDEATION AND PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS

An empathy map is a simple, easy-to-gigest visual that captures Knowledge about a user's behaviour and attitudes.

It is a useful tool to helps teams better understand their users. Creating an effective solution requires understanding the true problem and the person who is experiencing it. The execise of creating the map helps participants consider thingd from the user's perspective along with his or her goals and challenges.

EXAMPLE :
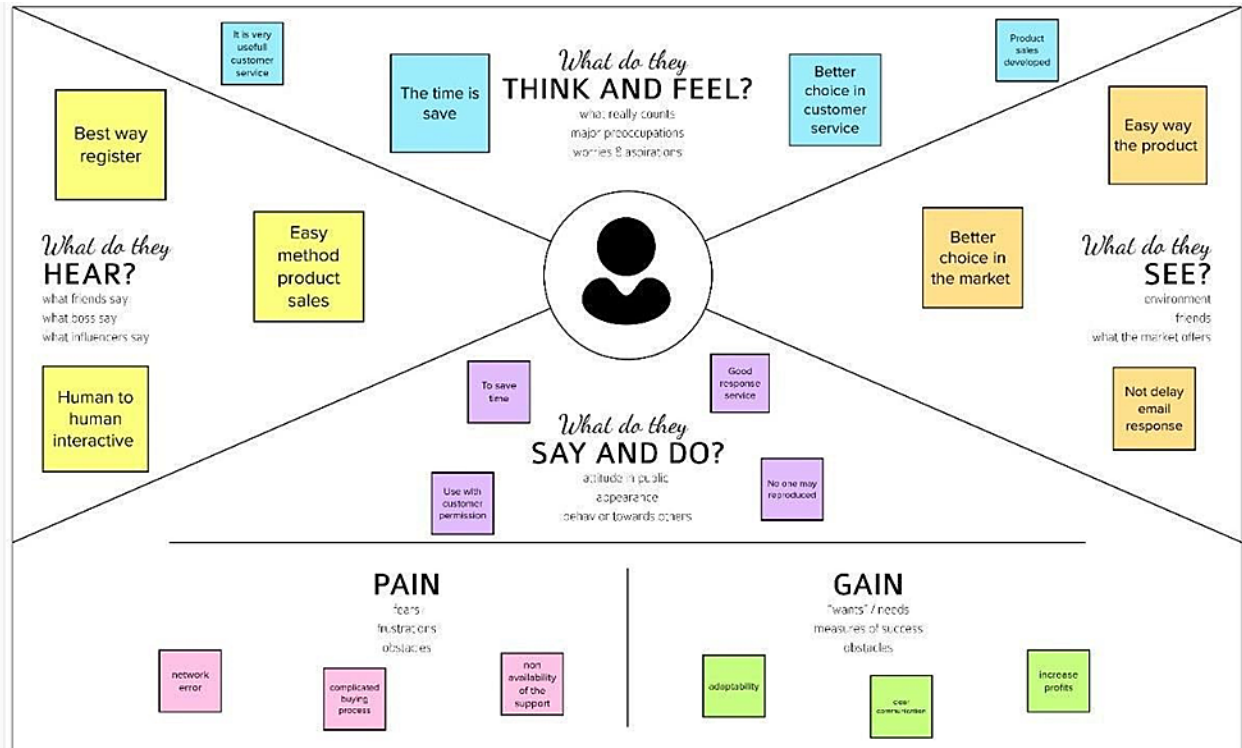
3.2 IDEATION AND BRAINSTORMING

   Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.
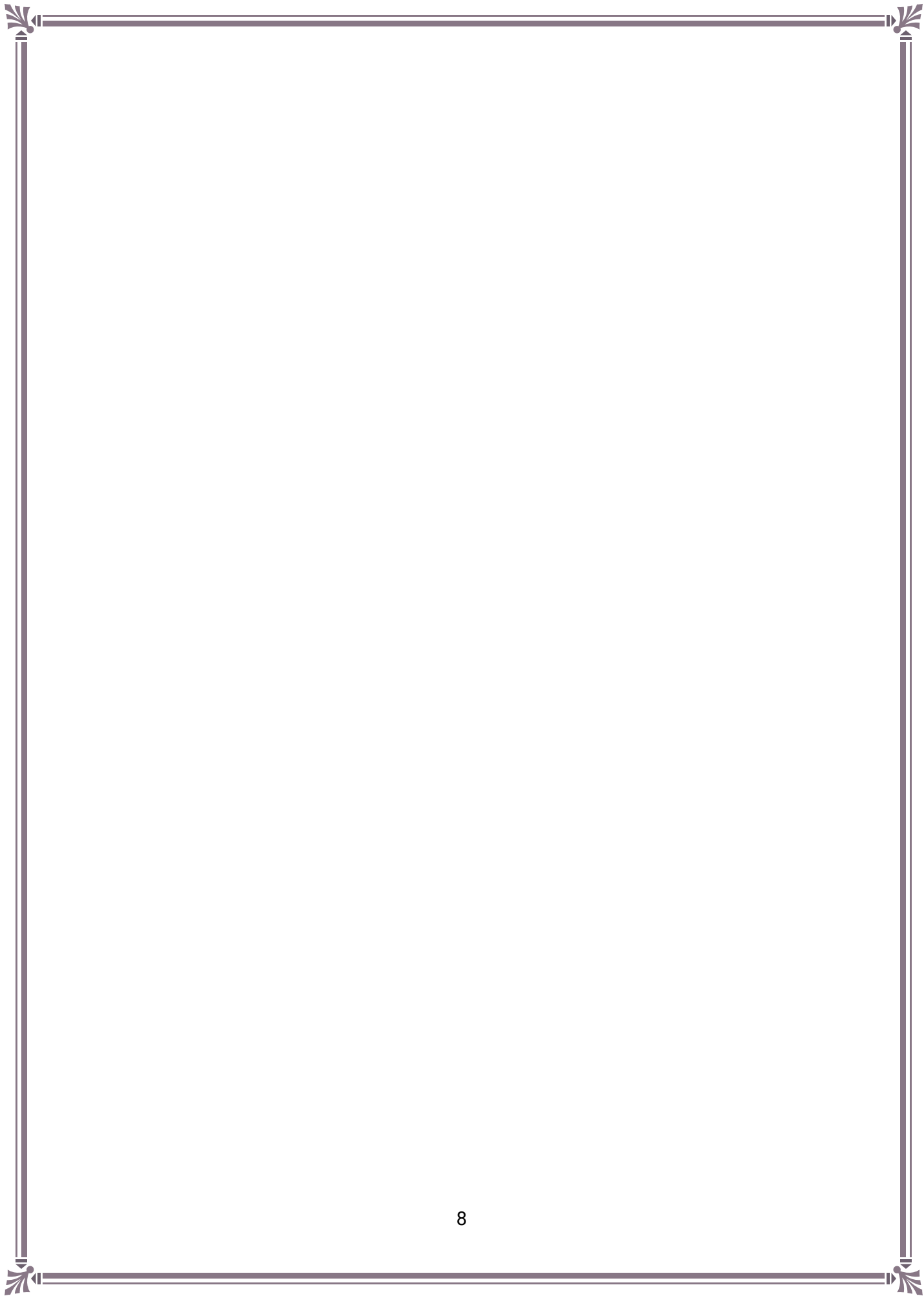
1

Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

⏱ **5 minutes**

PROBLEM

How might we help people send and received tickets-free using the app?

Key rules of brainstorming

To run an smooth and productive session

😊 Stay in topic.   💡 Encourage wild ideas.

😕 Defer judgment.   👂 Listen to others.

📑 Go for volume.   👁 If possible, be visual.

ht

Brainstorm

Write down any ideas that come to mind that address your problem statement.

⏱ 10 minutes

Monisha S

Aesthetic UI Design

Storing personal details like address in a secure manner

Email notification functionality

Dynamic database updation

Simple and direct buttons and instructions

Collaborating with government

Awareness page inside the app

Advertise and market the app

Incentives to the tickets

Deepika V

User Friendly

Responsive UI

Collaboration with corporation

Average cost in tickets

Message and E mail notification of sender and receiver

User Security

Easy of access of tickets

Keep track of users

Fast availability of tickets

Monisha S

Keeping facilities among users

Using 2FA in app

Collaboration with Google Calendar

Rewards for tickets

Ticket camps in Rural Areas

Quality foods

Neat compartment are available

Customer details safe and secure

Separate pagefor senderand Receiver

Nathiya P

Make the app reach rural places

Posters and social media marketing

Clear instructions

Provide tickets all over the world

Coupon codes and Goodies to customers

User Feedback

Arrange anytime tickets facilities

Dark mode and light mode UI
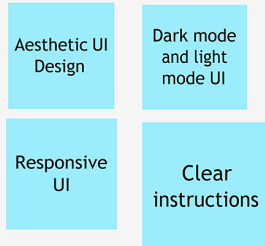
Fast fixing of bugs
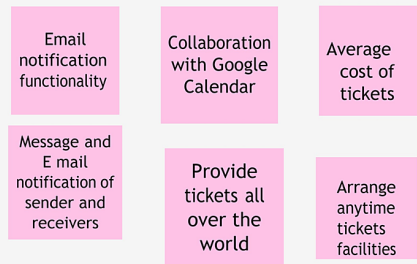
10

3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go.
In the last 10 minutes, give each cluster a sentence-like label. If a cluster is bigger
than six sticky notes, try and see if you and break it up into smaller sub-groups.

⏱ **20 minutes**

User Interface

Aesthetic UI Design	Dark mode and light mode UI
Responsive UI	Clear instructions

Core Functionalities

Email notification functionality	Collaboration with Google Calendar	Average cost of tickets
Message and E mail notification of sender and receivers	Provide tickets all over the world	Arrange anytime tickets facilities

Marketing

Collaborating with government	Advertise and market the app
Collaboration with corporation	Posters and social media marketing
Make the app reach rural places	Easy to access the tickets

Reward System

Incentives to the person	Coupon codes and Goodies to customers
Rewards for customers	Quality foods available

Security

Storing personal details like address in a secure manner	Keeping security among users
User Security	Using 2FA in app

Miscellaneous

Fast fixing of bugs	Awareness page inside the app	User Feedback
Keep track of users	Comfort to travel	

(4)

Prioritize

Your team should all be on the same page about what's important moving
forward. Place your ideas on this grid to determine which ideas are important and
which are feasible.

⏱ **20 minutes**

Importance

If each of these
tasks could get
done without any
difficulty or cost,
which would have
the most positive
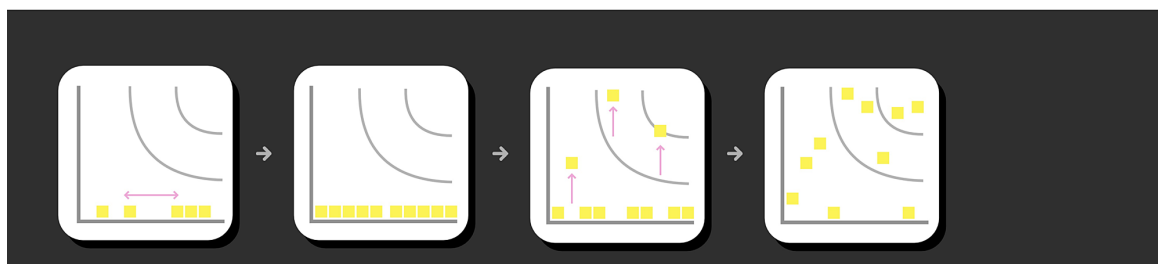impact?

Responsive UI

Fast fixing of bugs

Comfort to travel

Clear instructions

Using 2FA in app

Storing personal details like address in a secure manner

Keeping Anonymity among users

User Feedback

Easy to book the tickets

Advertise and market the app

Email notification functionality

Average cost of tickets

Rewards For person

Arrange anytime tickets facilities

User Feedback

Awareness page inside the app

Collaborating with government

Aesthetic UI Design

Incentives to the customers

Collaboration with corporation

Dark mode and light mode UI

Collaboration with Google Calendar

Feasibility

Regardless of their importance, which tasks are more
feasible than others? (Cost, time, effort, complexity, etc.)

3.3 PROPOSED SOLUTION

SI.NO.	Parameter	Description
1.	Problem Statement (Problem to be solved)	To solve customer issues using Cloud Application Development
2.	Idea / Solution description	Assigned Agent routing can be solved by directly routing to the specific agent about the issue using the specific Email. Automated Ticket closure by using daily sync of the daily database.
3.	Novelty / Uniqueness	Assigned Agent Routing, Automated Ticket Closure, Status Shown to the Customer, and Backup data in case of failures
4.	Social Impact / Customer Satisfaction	Customer Satisfaction, Customer can track their status and Easy agent communication
5.	Business Model (Revenue Model)	1. Key Partners are Third-party applications, agents, and customers. 2. Activities held as Customer Service, System Maintenance. 3. Key Resources support Engineers, Multichannel.
6.	Scalability of the Solution	The real goal of scaling customer service is providing an environment that will allow your customer service specialists to be as efficient as possible. An environment where they will be able to spend less time on grunt work and

		more time on actually resolving critical customer issues

3.4 PROBLEM SOLUTION FIT

Define CS, fit into CL	**1. CUSTOMER SEGMENT(S)** CS *Who is your customer?* Customer who are not able to solve them own complaints of what they are facing	**6. CUSTOMER LIMITATIONS** EG. BUDGET, DEVICES CL *What limits your customers to act when problem occurs? Spending power, budget, no cash in the pocket? Network connectivity? Availability of devices* These applications will be supported by almost all the devices. This solution also provides insights in a graphical way	**5. AVAILABLE SOLUTIONS** PLUSES & MINUSES AS *Which solutions are available to the customer when he/she is facing the problem? What are the pluses & minuses?* By reading the guidelines properly Offer a solution and give whenever possible By communicating properly	Explore AS, differentiate
Focus on PR, tap into BE, understand RC	**2. PROBLEMS / PAINS** + ITS FREQUENCY PR *Which problems do you solve for your customer? There could be more than one; explore different sides. eg. existing solar solutions for private houses are not considered a good investment* ☐ The applications allow the customers to find the solution for their queries ☐ they will able to categorize their expenses ☐ they also get the free solution where we provide our agents	**9. PROBLEM ROOT / CAUSE** RC *What is the root of every problem from the list? How often does the problem expensive (1.1), and possible changes to the law might influence the return of investment* Lot of customers don't know the guidelines for the problems Some customers have of lack of knowledge Not knowing the answer to a question not reading the guidelines properly	**7. BEHAVIOR** + ITS INTENSITY BE *What does your customer do to address the problem and get the job done directly or indirectly related to the problem?* Make sure he/she reads the guidelines properly tries different "green energy" calculators in search for the best deal (1.1), usually chooses for 100% green provider (1.2). Installs solar panels on the roof (frequency pt) Make sure they find a proper solution for the queries	Focus on PR, tap into BE, understand RC
Identify strong TR & EM	**3. TRIGGERS TO ACT** TR *What triggers customer to act? Innovative, more beautiful and efficient solution (1.2)* Customer can know to solve their solutions	**10. YOUR SOLUTION** SL *If you are working on existing business - write down existing solution first, fill in the canvas and check how much does it fill in. 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, solving a problem & doing the job* To design a personal help desk using flask To provide insights on their queries in Graphical way	**8. CHANNELS of BEHAVIOR** CH ONLINE *Extract channels from Behavior block and use for customer development* All their data are secured and being updated to cloud storage	Extract online & offline CH of BE
	4. EMOTIONS BEFORE / AFTER EM *Which emotions do people feel before/after this problem is solved? eg. frustration, blocking (can't afford it) > boost, feeling smart, be an example for others (made a smart purchase)* Customer can get the from the help desk		OFFLINE *Extract channels from Behavior block and use for customer development* Make sure defined the best solution of the complains	

4. REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENT

Following are the functional requirements of Proposed Solution

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through Google
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	User Login	Login via Google Login with Email id and Password
FR-4	Admin Login	Login via Google Login with Email id and Password
FR-5	Query Form	Description of the issues Contact information

FR-6	Feedback	Customer feedback

4.2 NON-FUNCTIONAL REQUIREMENT

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

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	To provide the solution to the problem
NFR-2	Security	Track of login authentication
NFR-3	Reliability	Tracking of decade status through email
NFR-4	Performance	Effective development of web application
NFR-5	Availability	24/7 service

NFR-6	Scalability	Agents scalability as per the number of customers

5.PROJECT DESIGN

5.1 DATA FLOW DIAGRAM

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.
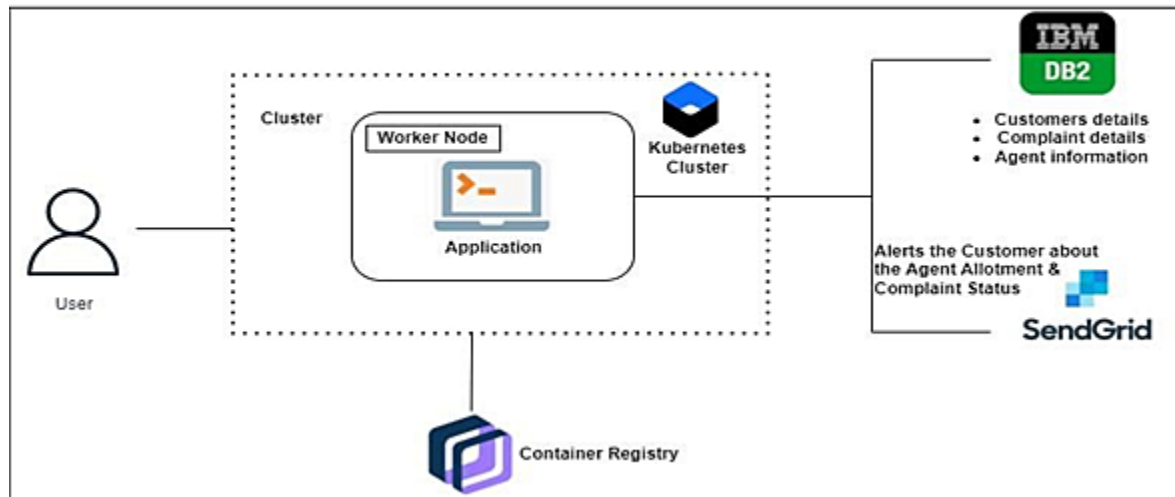
Example: (Simplified)
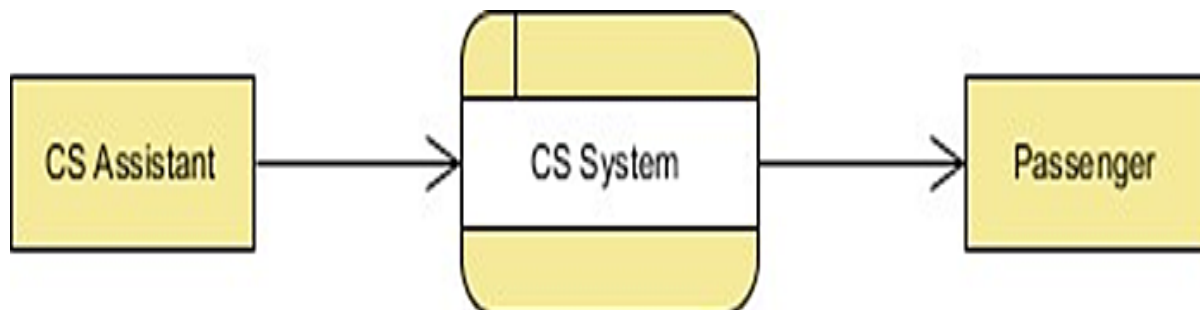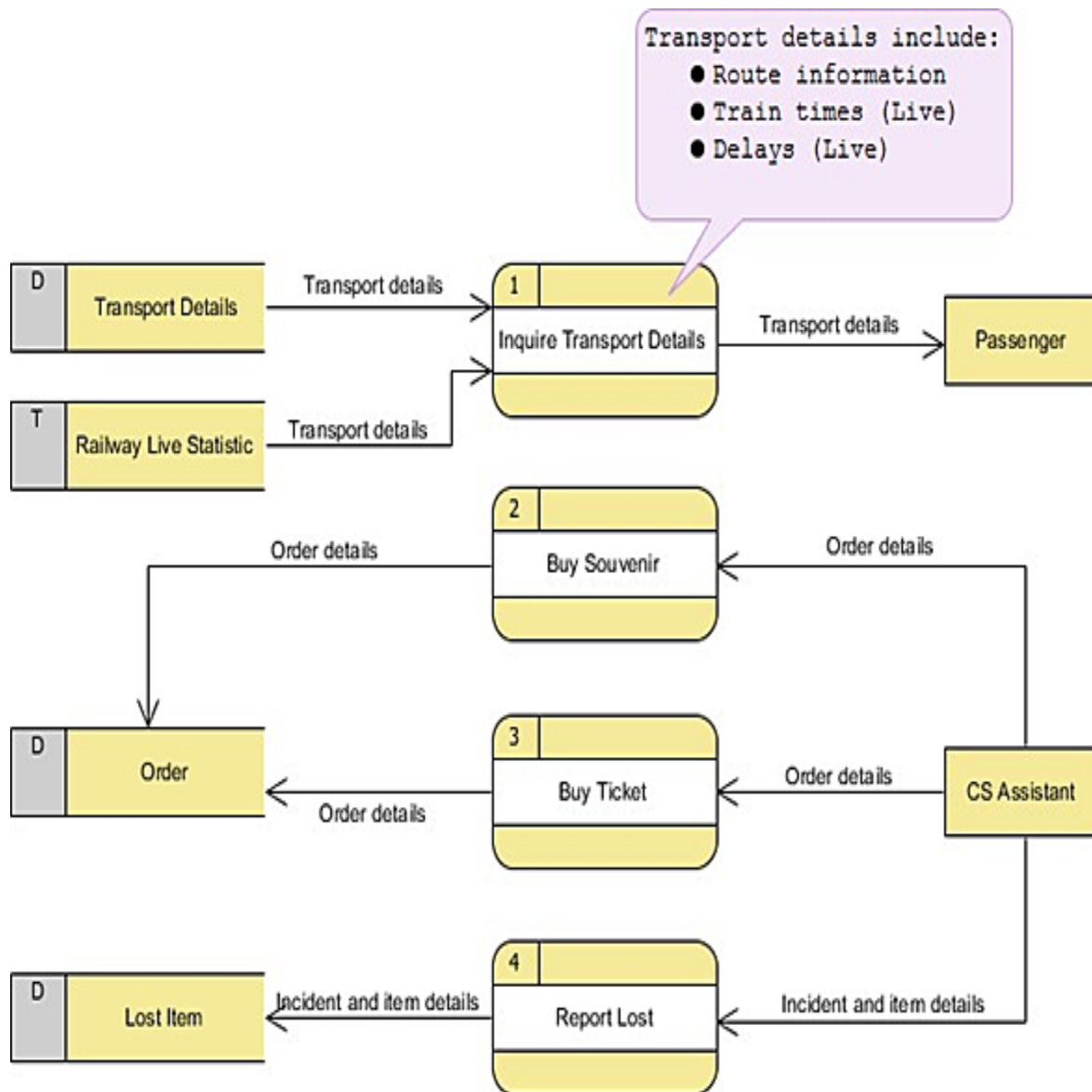
5.2 SOLUTION AND TECHNICAL ARCHITECTURE

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Guidelines:

- Include all the processes (As an application logic / Technology Block)
- Provide infrastructural demarcation (Local / Cloud)
- Indicate external interfaces (third party API's etc.)
- Indicate Data Storage components / services
- Indicate interface to machine learning models (if applicable)

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript / Angular Js / React Js etc.

2.	Application Logic-1	Logic for a process in the application	Java / Python
3.	Application Logic-2	Logic for a process in the application	IBM Watson STT service
4.	Application Logic-3	Logic for a process in the application	IBM Watson Assistant
5.	Database	Data Type, Configurations etc.	MySQL, NoSQL, etc.
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	Purpose of External API used in the application	IBM Weather API, etc.
9.	External API-2	Purpose of External API used in the application	Aadhar API, etc.
10.	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	Local, Cloud Foundry, Kubernetes, etc.

S. No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Technology of Opensource framework

2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.

3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Technology used
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Technology used

5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Technology used

5.3 USER STORIES

Use the below template to list all the user stories for the product

User Type	Functional (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer	User Registration	USN-1	As a user, I can register for the application by my password.	I can access my account / dashboard	High	Sprint-1
Customer	User Confirmation	USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
Customer	User Login	USN-3	As a user, I can log into the application by entering email & password	I can login and access my account	High	Sprint-1
Administrator	Admin Login	USN-4	As an admin, I can log into the application by entering email & password	I can login and access my the customers and agents	High	Sprint-1
Customer	Query Form	USN-5	As a user, I can raise tickets through the form	I can raise tickets	High	Sprint-1

Agent	E-mail Alert	USN-6	As a user, I can view the status of tickets for the application	I can see the tickets status	High	Sprint-1
Customer	Feedback	USN-7	As a user, I can give the customer feedback for the agent who communicated	I can give positive and negative feedback	Medium	Sprint-1

6.PROJECT PLANNING AND DESIGNING

6.1 SPRINT PLANNING AND ESTIMATION

SPRINT	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	User Panel	USN-1	The user will login into the website and go through the services available on the web page	20	High	MONISHA.S NITHYA.M S.MONISHA

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2.	Admin Panel	USN-2	The role of the admin is to check out the database about the availability and have a track of all the things	20	High	NITHYA . M S.MONISHA
Sprint-3	Chat Bots	USN-3	The user can directly talk to Chat bot regarding the services. Get the recommendat ions	20	High	NATHIYA.P DEEPIKA.V
Sprint-4	final delivery	USN-4	Container of applications using ducker kubernetes and deployment the application .Create the documentation and final submit the application	20	High	DEEPIKA.V MONISHA.S NATHIYA.P

6.2 SPRINT DELIVERY SCHEDULE

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date(Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022		29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022		05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022		12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022		19 Nov 2022

7.CODING AND SOLUTIONING

7.1 FEATURE 1

https://github.com/IBM-EPBL/IBM-Project-29691-1660128515/tree/main/Project%20Development%20Phase/Sprint%204/cutomer%20care%20registry/Registry/Templates

7.2 DATABASE SCHEMA

import ibm_db

conn = ibm_db.connect("DATABASE=bludb;HOSTNAME=2d46b6b4-cbf6-40eb-bbce-6251e6ba0300.bs2io90l08kqb1od8lcg.databases.appdomain.cloud;PORT=32328;SECURITY=SSL;SSLServerCertificate=DigiCertGlobalRootCA.crt;UID=tcz92999;PWD=4Etp8VM63VGm1Zyr","","")

sql = "SELECT * FROM COURSE" stmt = ibm_db.exec_immediate(conn,sql) dictionary = ibm_db.fetch_assoc(stmt) print(dictionary)

8.TESTING
8.1 TEST CASES
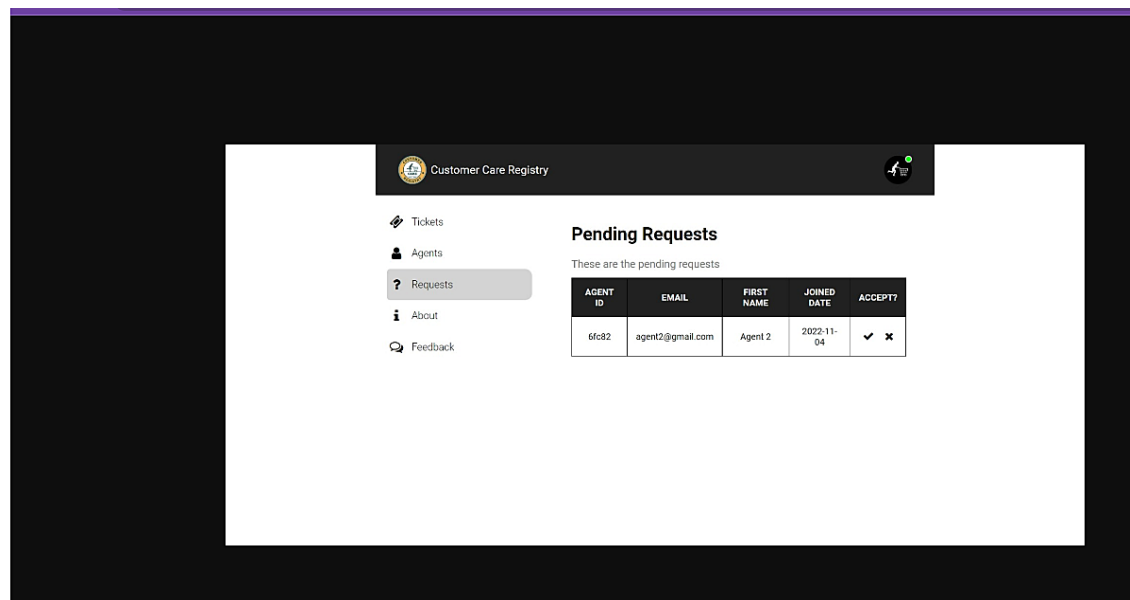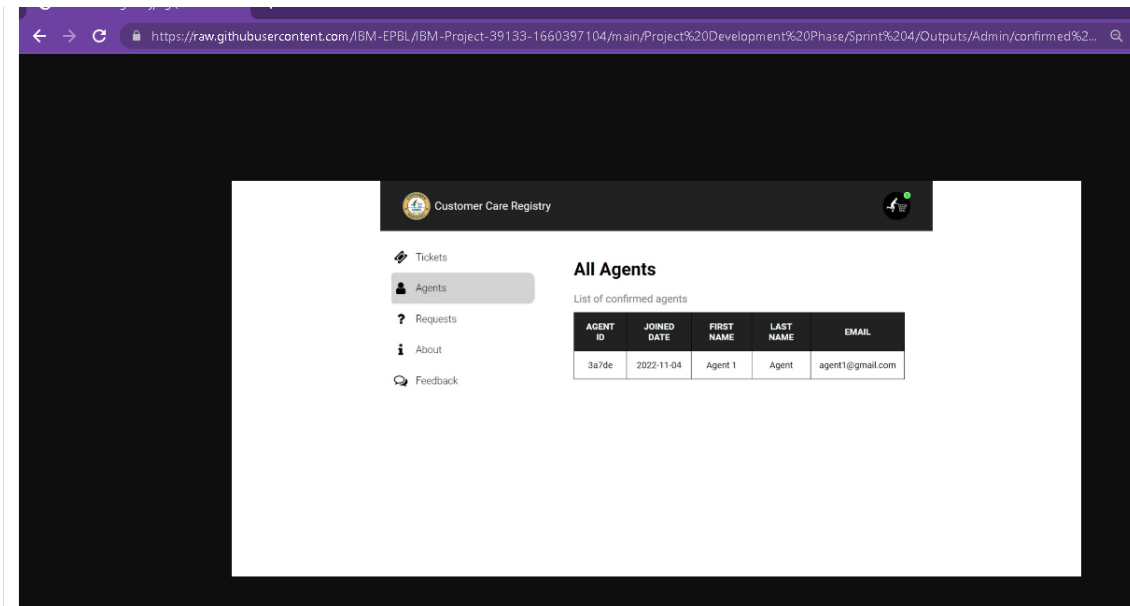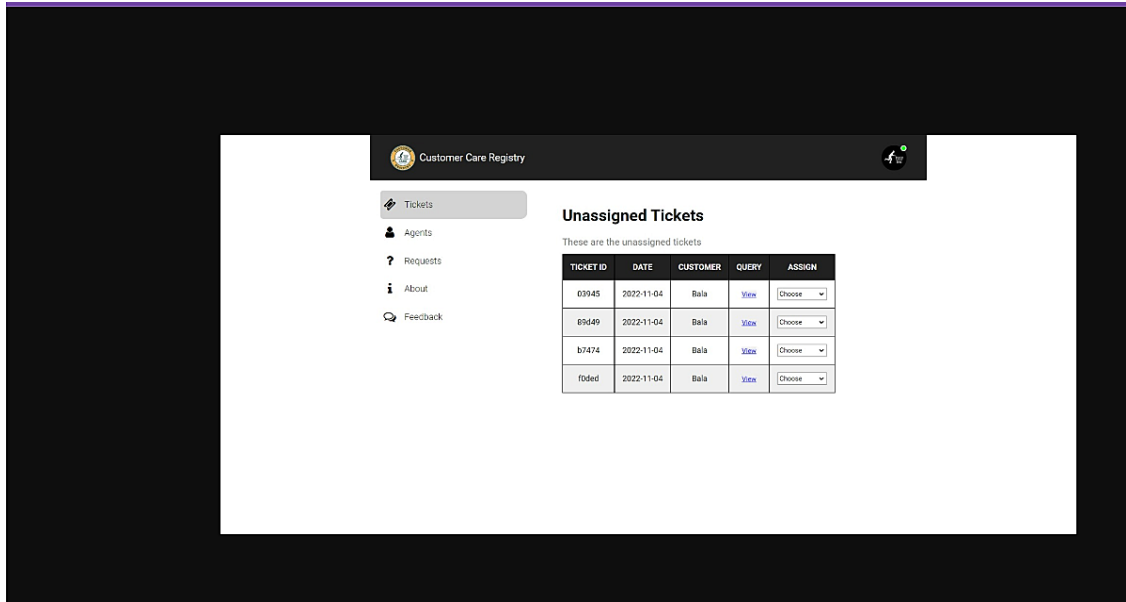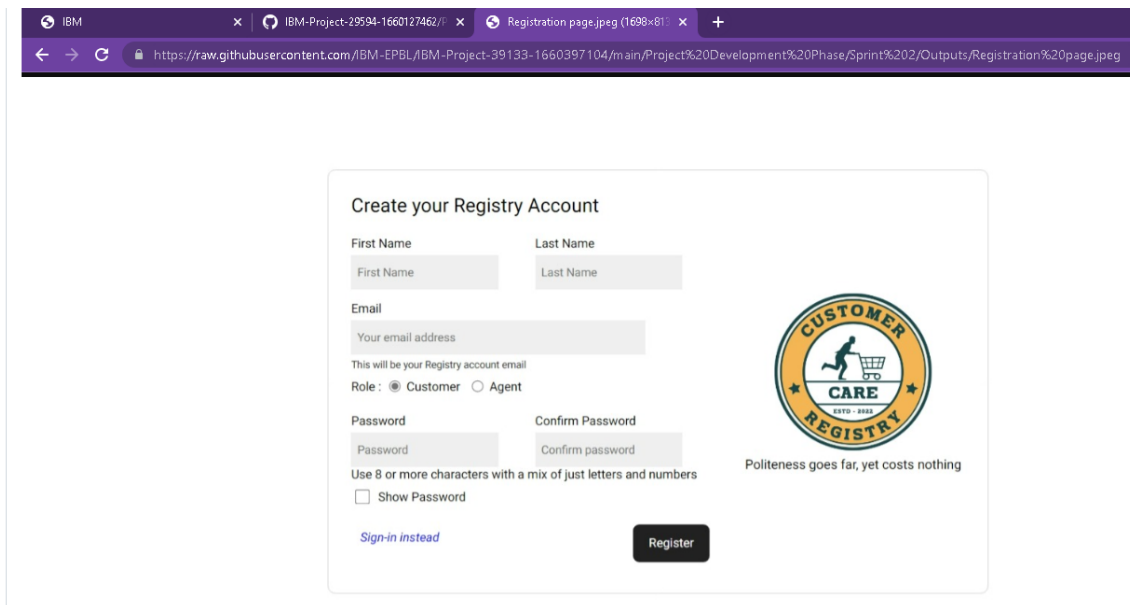
8.2 USER ACCEPTENCE TESTING

9.PERFORMANCE TESTING

10.ADVANTAGES AND DISADVANTAGES

ADVANTAGE

1. Dependable:

　　The greatest advantage of the railway transport is that it is the most dependable mode of transport as it is the least affected by weather conditions such as rains, fog etc. compared to other modes of transport.

2. Better Organised:

　　The rail transport is better organised than any other form of transport. It has fixed routes and schedules. Its service is more certain, uniform and regular as compared to other modes of transport.

3. High Speed over Long Distances:

   Its speed over long distances is more than any other mode of transport, except airways. Thus, it is the best choice for long distance traffic.

4. Suitable for Bulky and Heavy Goods:

   Railway transport is economical, quicker and best suited for carrying heavy and bulky goods over long distances.

5. Cheaper Transport:

   It is a cheaper mode of transport as compared to other modes of transport. Most of the working expenses of railways are in the nature of fixed costs. Every increase in the railway traffic is followed by a decrease in the average cost. Rail transport is economical in the use of labour also as one driver and one guard are sufficient to carry much more load than the motor transport.

6. Safety:

   Railway is the safest form of transport. The chances of accidents and breakdowns of railways are minimum as compared to other modes of transport. Moreover, the traffic can be protected from the exposure to sun, rains, snow etc.

7. Larger Capacity:

   The carrying capacity of the railways is extremely large. Moreover, its capacity is elastic which can easily be increased by adding more wagons.

8. Public Welfare:

   It is the largest public undertaking in the country. Railways perform many public utility services. Their charges are based on 'charge what the traffic can bear' principle which helps the poor.

DISADVANTAGES

Although railway transport has many advantages, it suffers from certain serious limitations:

1. Huge Capital Outlay:

The railway requires is large investment of capital. The cost of construction, maintenance and overhead expenses are very high as compared to other modes of transport. Moreover, the investments are specific and immobile. In case the traffic is not sufficient, the investments may mean wastage of huge resources.

2. Lack of Flexibility:

Another disadvantage of railway transport is its inflexibility. Its routes and timings cannot be adjusted to individual requirements.

3. Lack of Door to Door Service:

Rail transport cannot provide door to door service as it is tied to a particular track. Intermediate loading or unloading involves greater cost, more wear and tear and wastage of time.
The time and cost of terminal operations are a great disadvantage of rail transport.

4. Monopoly:

As railways require huge capital outlay, they may give rise to monopolies and work against public interest at large. Even if controlled and managed by the government, lack of competition may breed inefficiency and high costs.

11.CONCLUSION

Customer service is reactive. Here, the focus is on helping customers solve problems or answer questions before purchase, either in a self-serve fashion or via the customer support team. If a company neglects customer care, it can negatively impact the customer service experience.

12.FUTURE SCOPE

- Confident, wide-spread awareness that retention is just as important as acquiring new customers (if not more.)

- The use of customer support as a training ground for product, sales and marketing professionals. At Help Scout, agents earn deep product and customer knowledge in support and then join other teams.

- Injection of sales trained support agents into the customer journey at Schuh. The results were outstanding.

- In-store salespeople using free time to answer support queries at Three. Their ThreeStore Now project boosts sales and improves customer experience.

- Use of support conversations to measure product and feature performance.

- Use of insight from support conversations for root cause analysis.

- Rapid adoption of closed-loop and proactive customer support to tackle customer churn.

Driving real growth through support (like in the above examples) is far from standard and far from optimised.

We opened with this statement: "businesses will consider customer service to be the most strategically useful business function". This is happening already and will only increase over the next 3-5 years.

13.APPENDIX

CODE

```
# using SendGrid's Python Library
# https://github.com/sendgrid/sendgrid-python
import os
from    sendgrid    import
SendGridAPIClient    from
sendgrid.helpers.mail  import
Mail

message = Mail(
    from_email='from_email@example.com',
    to_emails='to@example.com',
    subject='Sending with Twilio SendGrid is
    Fun',
    html_content='<strong>and easy to do anywhere,
even with Python</strong>') try:
sg = SendGridAPIClient(os.environ.get('SENDGRID_API_KEY'))
```

```
response = sg.send(message)

print(response.status_code)

print(response.body)

print(response.header)

except Exception e

print(e.message)
```

GITHUB LINK

https://github.com/IBM-EPBL/IBM-Project-29691-1660128515

DEMO VIDEO

https://drive.google.com/file/d/1q2voE_DaB0D_jwH_PHtz Ds6zyTHxHo0m/view?usp=sharing