Citizen AI- Intelligent Citizen Engagement Platform

1.Introduction

In an era where technology is rapidly reshaping governance and public service delivery, **CitizenAI – Intelligent Citizen Engagement Platform** emerges as a smart solution aimed at bridging the communication gap between citizens and government authorities. This project leverages **Generative AI** and **Natural Language Processing (NLP)** to empower everyday citizens to report civic issues, seek information about government services, and receive AI-generated responses—all in real time.

Built using **Google Colab** and **Gradio**, CitizenAI offers an accessible, interactive, and user-friendly interface that enables users to engage with government systems effortlessly. Whether it is lodging complaints about streetlights, water supply, road maintenance, or accessing details about welfare schemes, the platform ensures that citizens are heard and served efficiently.

The primary goal of this platform is to **increase transparency**, **enhance citizen participation**, and **reduce bureaucratic delays** by providing a smart, AI-driven assistant that interacts in natural language and offers context-aware support tailored to local governance needs.

1.1 Project Overview

CitizenAI – Intelligent Citizen Engagement Platform is an AI-powered application designed to streamline communication between citizens and local government bodies. Built using **Google Colab** and **Gradio**, the platform enables users to interact with a smart assistant that responds to queries about public services and facilitates the reporting of civic issues such as potholes, malfunctioning streetlights, water shortages, and more.

The solution leverages **Natural Language Processing (NLP)** to understand user queries in plain language and deliver relevant, real-time responses. The main aim is to enhance civic engagement by reducing bureaucracy, promoting transparency, and creating an intelligent feedback loop between the public and administrators.

1.2 Purpose

The primary purpose of this project is to:

- **Empower citizens** by giving them a simple and intelligent tool to access government services and register complaints.
- **Promote digital governance** by integrating AI in civic communication systems.
- **Enhance user experience** by replacing complex forms and delayed responses with a conversational interface.
- **Bridge the communication gap** between citizens and government departments through instant, AI-driven interaction.

2.Ideation Phase

Define the Problem Statements

Date	21 June 2025
Team ID	LTVIP2025TMID32100
Project Name	Citizen AI
Maximum Marks	2 Marks

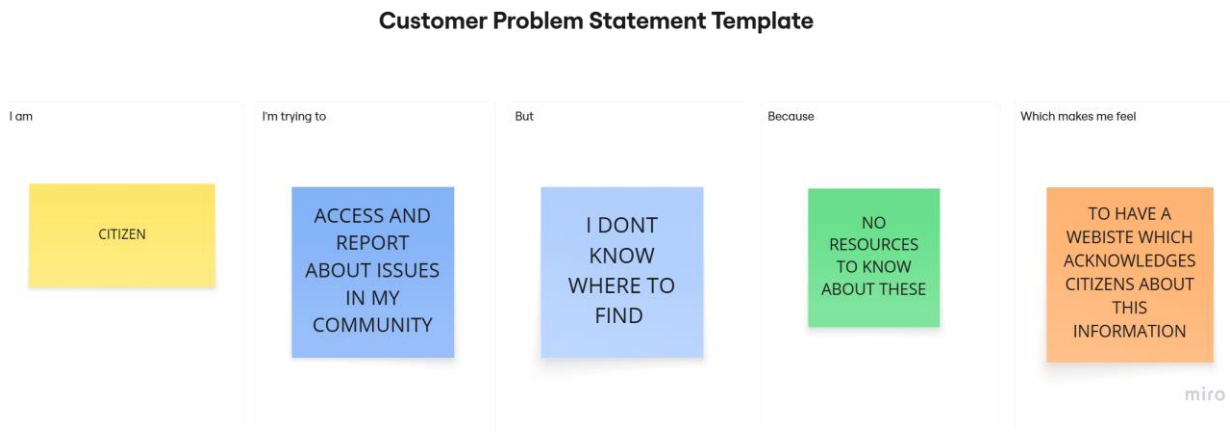
Customer Problem Statement Template:

Create a problem statement to understand your customer's point of view. The Customer Problem Statement template helps you focus on what matters to create experiences people will love.

A well-articulated customer problem statement allows you and your team to find the ideal solution for the challenges your customers face. Throughout the process, you'll also be able to empathize with your customers, which helps you better understand how they perceive your product or service.

I am	Describe customer with 3-4 key characteristics - *who are they?*	Describe the customer and their attributes here
I'm trying to	*List their outcome or "job" the care about - what are they trying to achieve?*	List the thing they are trying to achieve here
but	Describe what problems or barriers stand in the way – *what bothers them most?*	Describe the problems or barriers that get in the way here
because	Enter the "root cause" of why the problem or barrier exists – *what needs to be solved?*	Describe the reason the problems or barriers exist
which makes me feel	Describe the emotions from the customer's point of view – *how does it impact them emotionally?*	Describe the emotions the result from experiencing the problems or barriers

Example:



Problem Statement (PS)	**I am (Customer)**	**I'm trying to**	**But**	**Because**	**Which makes me feel**
PS-1	A working professional	Report a path hole in my way	I don't know where to report	Government sites are confusing and slow	Frustrated and ignored

PS-2	A student	Get information about available scholarships	The process is too complicated online	Information is spread across websites	Confused and discouraged
PS-3	A retired senior citizen	Learn about pension schemes	I struggle to use mobile apps or websites	They are not user-friendly for elders	Disconnected and anxious

Ideation Phase

Empathize & Discover

Date	21 June 2025
Team ID	LTVIP2025TMID32100
Project Name	Citizen AI
Maximum Marks	4 Marks

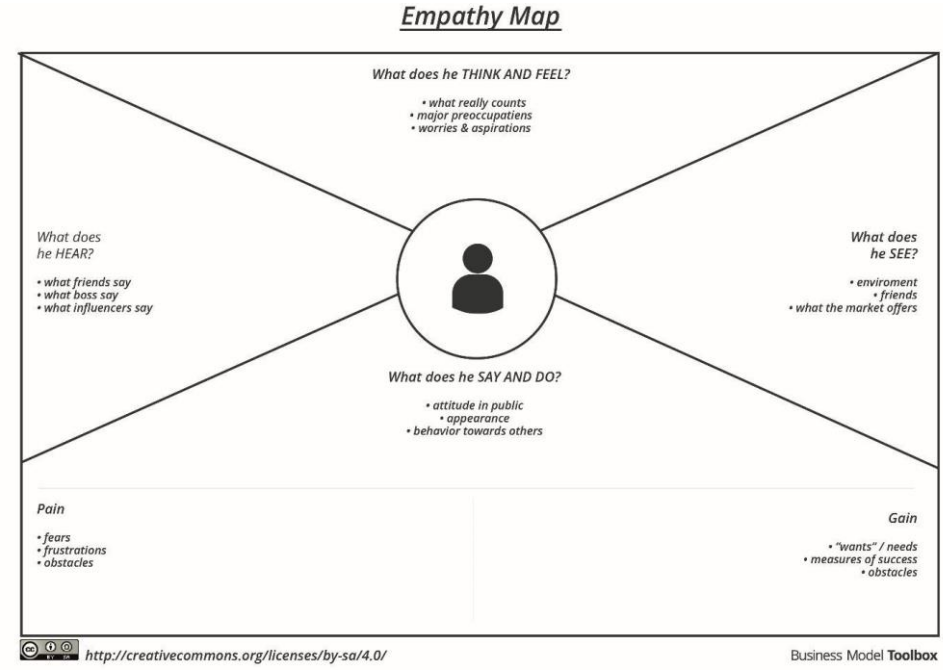
Empathy Map Canvas:

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviours and attitudes.

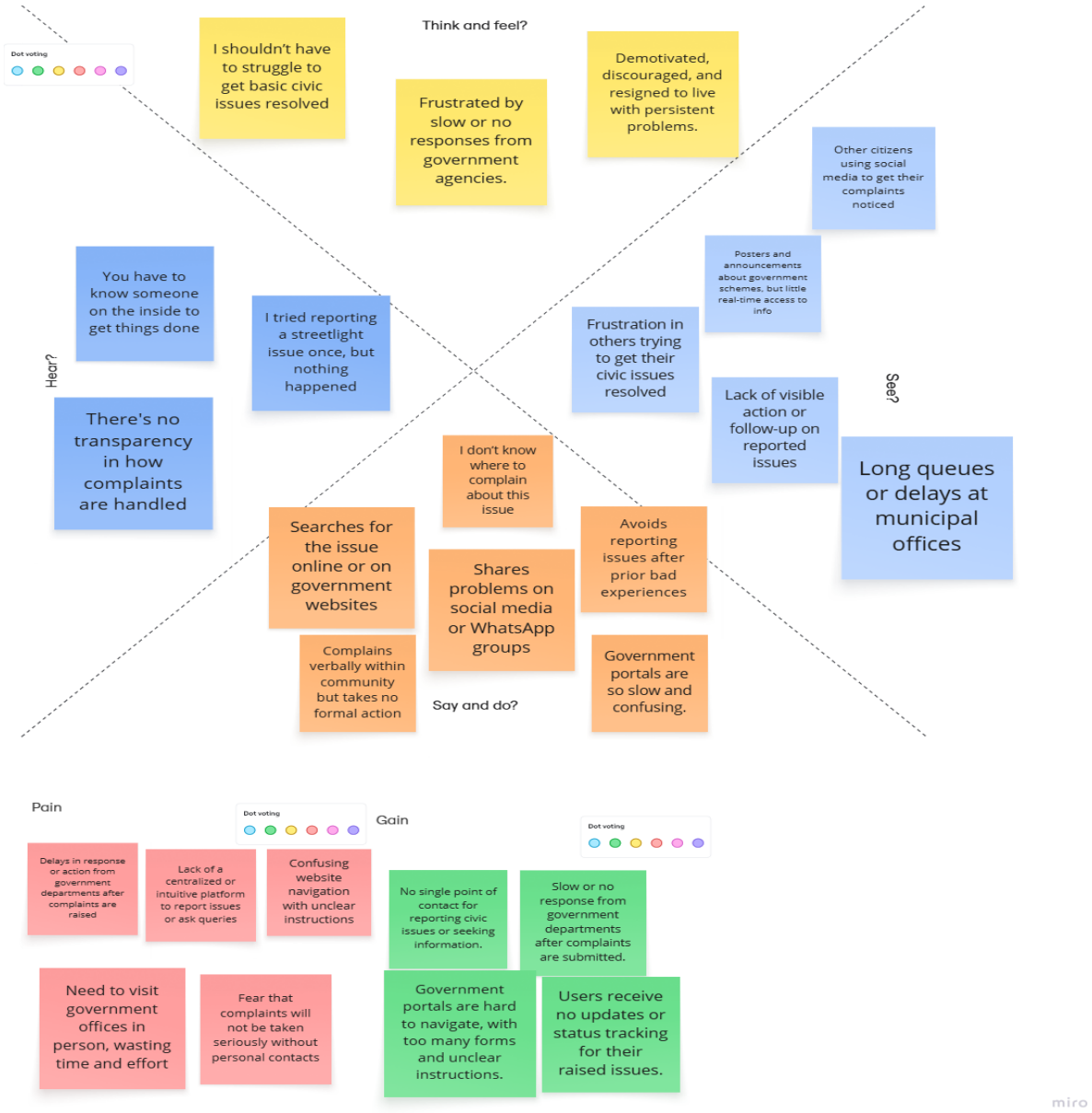
It is a useful tool to helps teams better understand their users.

Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges.

Example:



Example: Citizen AI



Ideation Phase

Brainstorm & Idea Prioritization Template

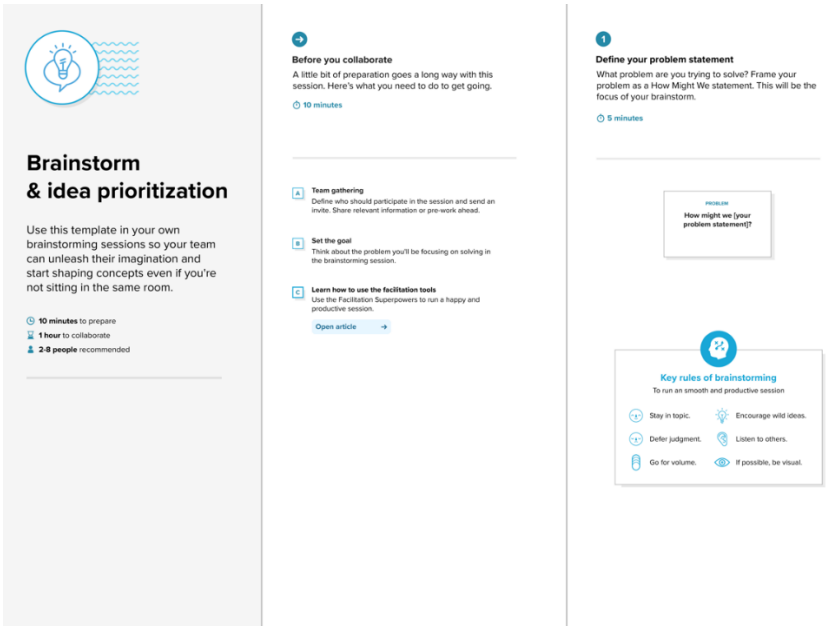
Date	22 June 2025
Team ID	LTVIP2025TMID32100
Project Name	Citizen AI
Maximum Marks	4 Marks

Brainstorm & Idea Prioritization Template:

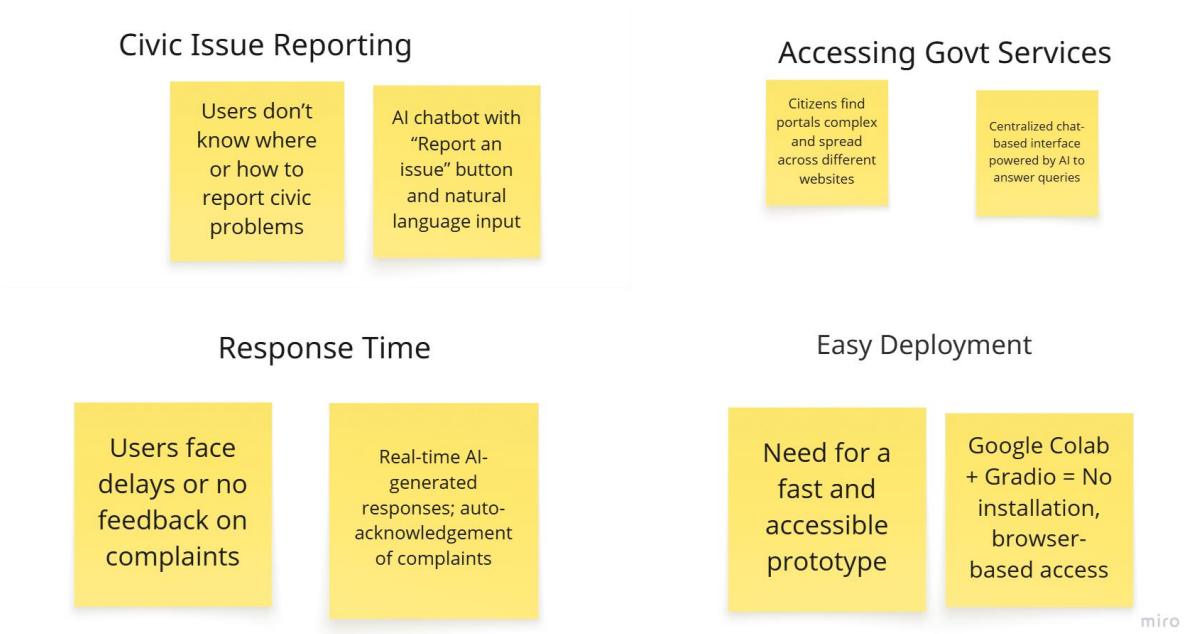
Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate,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

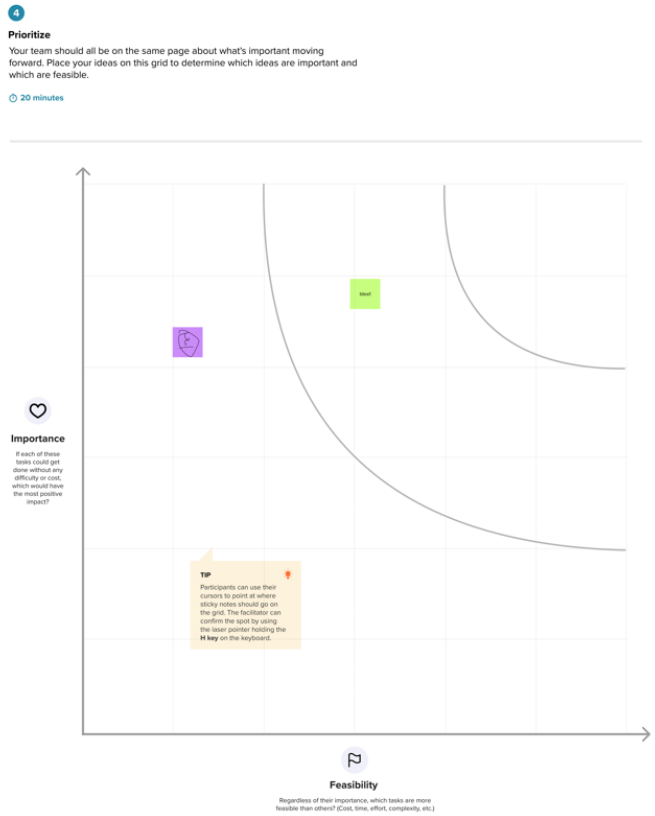
Step-1: Team Gathering ,Collaboration and Select the Problem Statement



Step-2: Brainstorm, Idea Listing and Grouping



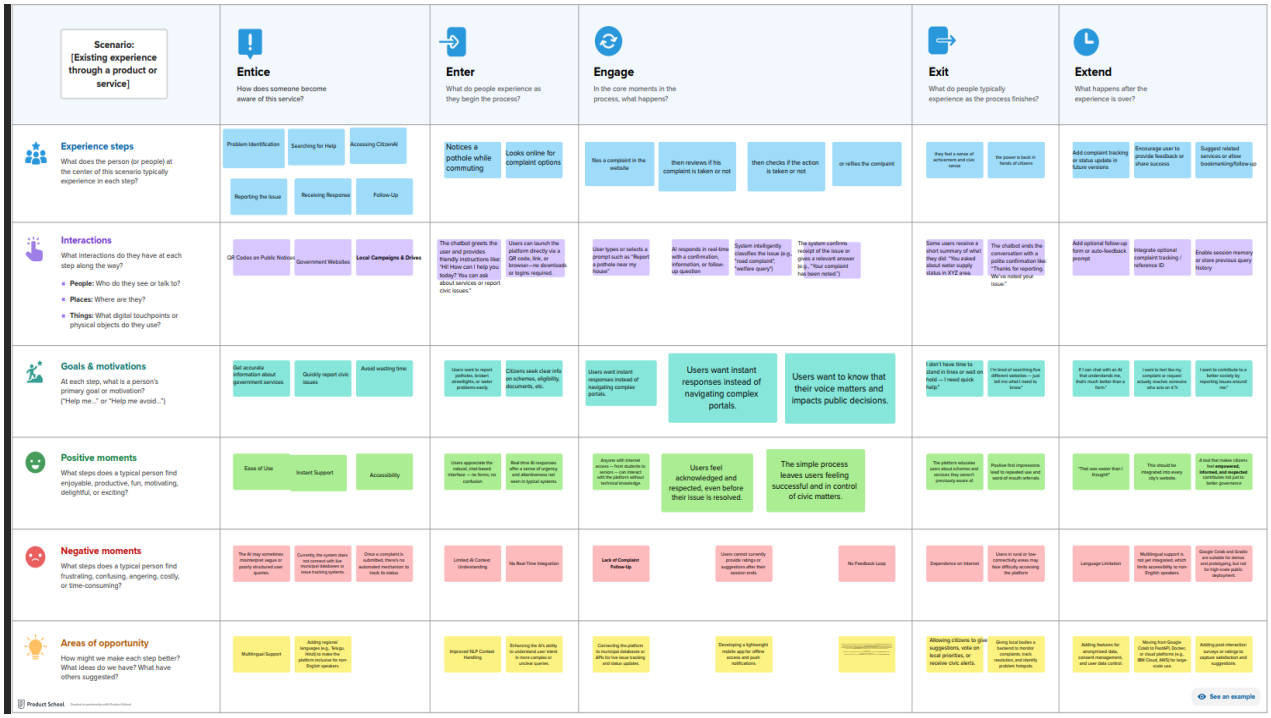
Step-3: Idea Prioritization



Date	23 June 2025
Team ID	LTVIP2025TMID32100
Project Name	Citizen AI
Maximum Marks	4 Marks

3.REQUIREMENT ANALYSIS

3.1 CUSTOMER JOURNEY MAP



3.2 SOLUTION REQUIREMENTS

Project Design Phase-II

Solution Requirements (Functional & Non-functional)

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Chat-based Citizen Interaction Interface	- Develop a Gradio interface to handle user input and output in chat format - Support free-text natural language queries - Display welcome message, prompts, and fallback responses
FR-2	Issue Reporting & Categorization	- Enable reporting of civic issues like potholes, water problems, streetlight - Automatically categorize the type of complaint using NLP
FR-3	Information Delivery About Government Services	- Allow users to ask questions about schemes, eligibility, and required documents - Provide AI-generated responses based on trained or integrated datasets
FR-4	Response Generation & Confirmation	- Display instant, AI-generated responses in a human-like tone

Non-functional Requirements:

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

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	The platform must have a simple and intuitive user interface (Gradio), ensuring ease of use for all age groups including non-tech-savvy users.
NFR-2	**Security**	User data (queries, reports) must be handled with privacy and care. Any future storage of data must comply with data protection standards.
NFR-3	**Reliability**	The system should consistently provide correct, AI-generated responses and not crash during user interaction.
NFR-4	**Performance**	The chatbot should respond to queries within 2–3 seconds to maintain a smooth conversational experience.
NFR-5	**Availability**	The system should be accessible 24/7 via the hosted Gradio interface (as long as the backend is active).
NFR-6	**Scalability**	The platform should support transition from prototype (Gradio on Colab) to production (FastAPI, cloud deployment) with higher user load.

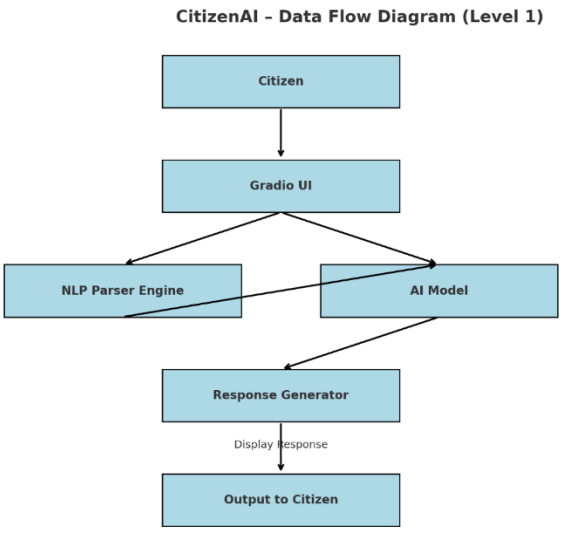
Project Design Phase-II

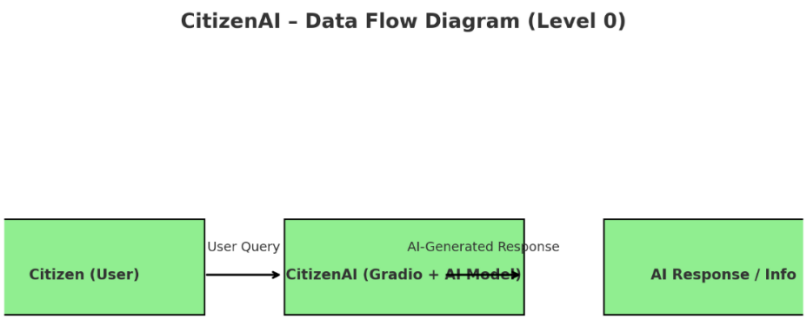
3.3Data Flow Diagram & User Stories

Date	24 June 2025
Team ID	LTVIP2025TMID32100
Project Name	Citizen AI
Maximum Marks	4 Marks

Data Flow Diagrams:

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.





User Stories

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

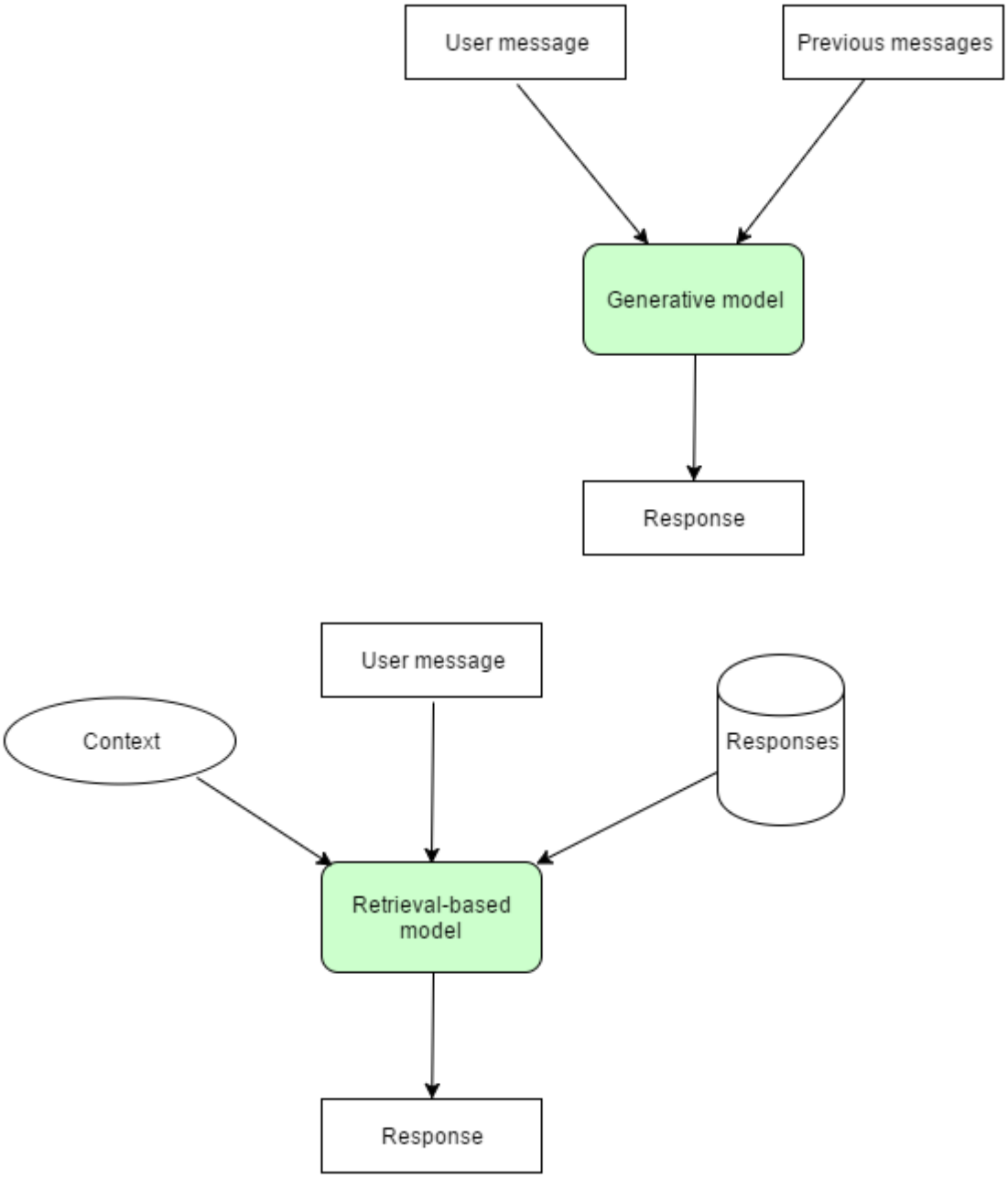
User Type	Functional Requirement (Epic)	USN	User Story / Task	Acceptance criteria	P
Citizen (Web/Mobile)	Report Civic Issue	USN-1	As a citizen, I can report a civic issue by typing in my complaint in natural language.	I can submit an issue and receive a confirmation instantly	H
Citizen (Web/Mobile)	Ask Govt. Service Info	USN-2	As a citizen, I can ask questions about schemes or services.	I get accurate AI-generated answers for my query.	H
Citizen (Web/Mobile)	Follow-up Questions	USN-3	As a citizen, I can ask follow-up queries in .	I can continue the conversation without restarting it.	M
Citizen (Web/Mobile)	Language Support (Future)	USN-4	As a citizen, I want to interact in my local language.	I can use Telugu/Hindi for questions and receive responses.	L
Citizen (Web/Mobile)	Feedback Submission	USN-5	As a user, I want to leave a rating or comment after using the platform.	I see a short feedback prompt at the end of my session.	M

User Type	Functional Requirement (Epic)	USN	User Story / Task	Acceptance criteria	P
Admin	View Complaint Analytics	USN-6	As an admin, I want to view total complaints by category and area.	I see a dashboard showing visual stats by issue type/location.	H
Admin	Export User Queries	USN-7	As an admin, I want to export all queries	As an admin, I want to export all queries submitted by users.	M
Support Executive	Respond to Escalated Issues	USN-8	As a customer care executive, I want to view and respond to escalated complaints.	I can access issue details and add comments or mark them resolved.	H
Support Executive	View Chat History	USN-9	As a support user, I want to view past user-chat history for context.	I can view previous chats linked to a user or issue.	M

Project Design Phase-II

3.4Technology Stack (Architecture & Stack)

Date	25 June 2025
Team ID	LTVIP2025TMID32100
Project Name	Citizen AI
Maximum Marks	4 Marks



Technical Architecture:

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

S.No	Component	Description	Technology

1.	User Interface	Chatbot interface for user interaction (issue reporting, Q&A).	**Gradio**, HTML, CSS.
2.	Application Logic-1	Handles routing, query preprocessing, response formatting	**Python**, FastAPI
3.	Application Logic-2	AI model interaction and natural language understanding	**IBM Granite 3.3**, Hugging Face Transformers
4.	Application Logic-3	Query classification and response generation logic	Python-based logic & custom intents
5.	Database	Optional storage for FAQs, schemes, issue categories	JSON files / SQLite (optional)
6.	Cloud Database	For storing user queries, feedback, issue logs (future scope)	IBM Cloudant, Firebase (optional)
7.	File Storage	Storing logs, screenshots (if uploaded), or static JSON files	Local Filesystem / IBM Object Storage (future)
8.	External API-1	To fetch area-specific government service information (future)	e-Seva / RTI APIs (future integration)
9.	External API-2	(Optional) To verify user or connect to citizen services	Aadhar API, etc.
10.	Machine Learning Model	Understand and respond to user queries in natural language	IBM Granite Model / Fine-tuned Transformers
11.	Infrastructure (Server / Cloud)	Deployed via Google Colab; can migrate to IBM Cloud or local host	**Google Colab**, IBM Cloud, Local/VM, Docker

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Frameworks and tools used to build the platform	Gradio (Python), FastAPI, Hugging Face Transformers
2.	Security Implementations	Application-level security (basic for now, expandable)	Token-based access, HTTPS (when deployed), basic auth Future: OAuth2, IAM, OWASP practices
3.	Scalable Architecture	Modular backend, pluggable AI, potential for microservices and API gateways	Microservices-friendly: FastAPI + AI Models separated
4.	Availability	Can be deployed to cloud, supports scaling through containerization and serverless platforms	IBM Cloud, Docker, Cloud Foundry (optional)
5.	Performance	Optimized for fast inference using lightweight models, Gradio sessions cached	GPU-enabled Colab, Caching in FastAPI (future), Preloaded responses

4.Project Design Phase

Project Design Phase

Project Design Phase Problem – Solution Fit Template

Date	25 June 2025
Team ID	LTVIP2025TMID32100
Project Name	citizen ai – intelligent citizen engagement platform
Maximum Marks	2 Marks

Problem – Solution Fit Template:

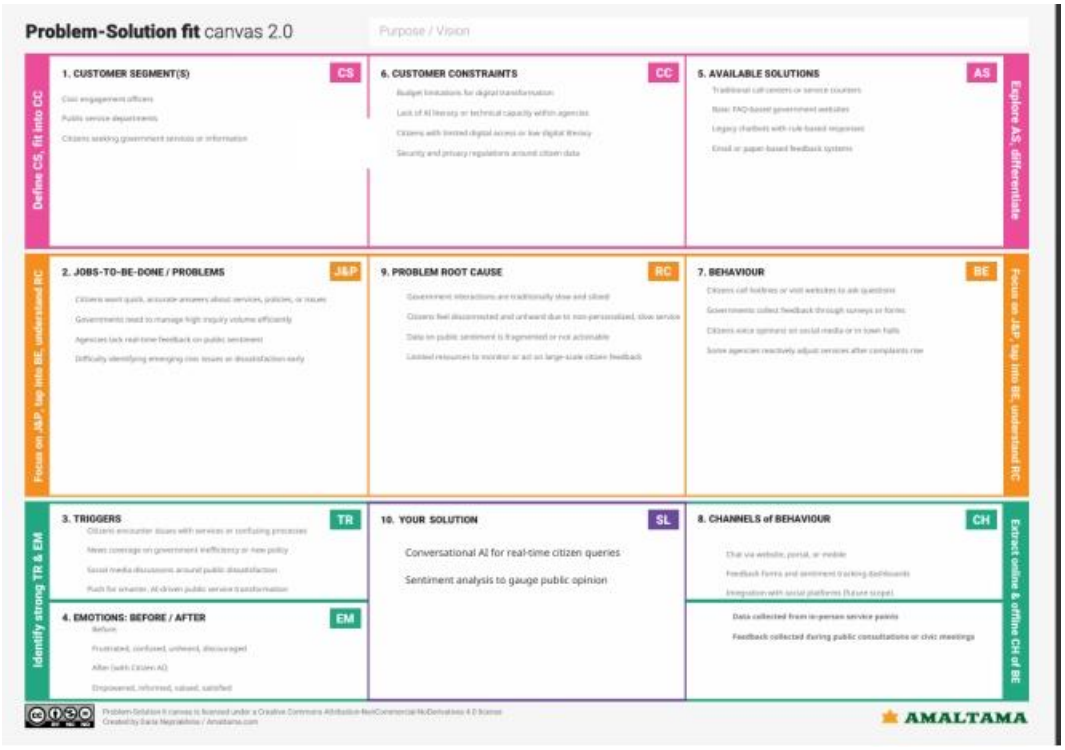
The Problem-Solution Fit simply means that you have found a problem with your customer and that the solution you have realized for it actually solves the customer's problem. It helps entrepreneurs, marketers and corporate innovators identify behavioral patterns and recognize what would work and why

Purpose:

- Solve complex problems in a way that fits the state of your customers.
- Succeed faster and increase your solution adoption by tapping into existing mediums and channels of behavior.
- Sharpen your communication and marketing strategy with the right triggers and messaging.
- Increase touch-points with your company by finding the right problem-behavior fit and building trust by solving frequent annoyances, or urgent or costly problems.
- **Understand the existing situation in order to improve it for your target group.**

Template:

References:



Project Design Phase Proposed Solution Template

Date	25 June 2025
Team ID	LTVIP2025TMID32100
Project Name	citizen ai – intelligent citizen engagement platform
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in the proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Inefficient citizen en
2.	Idea / Solution description	

		AI-based chat, senti dashboard.
3.	Novelty / Uniqueness	Real-time, contextua
4.	Social Impact / Customer Satisfaction	Faster responses, hig
5.	Business Model (Revenue Model)	SaaS for governmen
6.	Scalability of the Solution	Cloud-ready, multi-p

Project Design Phase

Project Design Phase Solution Architecture

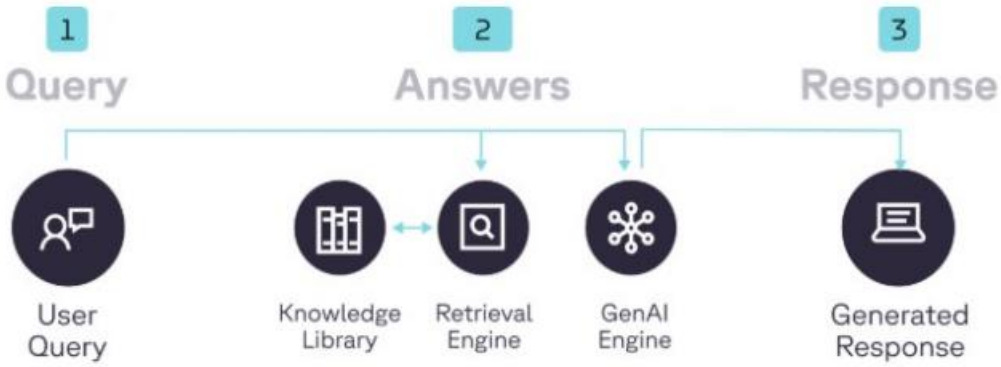
Date	25 June 2025
Team ID	LTVIP2025TMID32100
Project Name	citizen ai – intelligent citizen engagement platform
Maximum Marks	4 Marks

Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

- Find the best tech solution to solve existing business problems.
- Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders.
- Define features, development phases, and solution requirements.
- Provide specifications according to which the solution is defined, managed, and delivered.

Example - Solution Architecture Diagram:



5.Project Planning & Scheduling

Citizen AI – Agile Project Breakdown

Agile Concepts Applied

- Sprint: A fixed period (5 days) during which the team works to complete specific tasks.
- Epic: A large, overarching project feature that is too big to complete in one sprint. It is broken down into smaller, manageable tasks (Stories).
- Story: A single task or unit of work that contributes to an Epic. Can be completed within a sprint.
- Story Point: A numeric value (often in Fibonacci sequence) used to estimate the effort and complexity of a Story.

Sprint 1: (5 Days)

Epic: Data Preparation & Preprocessing for Citizen AI

Task	Story	Story Points
Collection of Government Datasets	✔	2
Loading Data into Flask App	✔	1
Handling Missing Values	✔	3
Handling Categorical Variables	✔	2

Total Story Points in Sprint 1: 8

Sprint 2: (5 Days)

Epic: Model Integration and Deployment

Task	Story	Story Points
Building Sentiment Analysis Model (analyse_sentiment)	✔	5

Testing Model Functionality	✔	3
Creating Working HTML Pages (UI)	✔	3
Flask Deployment with IBM Watson/Granite Integration	✔	5

Total Story Points in Sprint 2: 16

Summary:

Metric Value

Citizen AI – Agile Project Planning Document

Date: 15 February 2025

Team ID: LTVIP2025TMID32100

Project Name: Citizen AI – Intelligent Citizen Engagement Platform

Maximum Marks: 5 Marks

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members	Status
Sprint-1	Data Collection & Preprocessing	USN-1	As a developer, I can collect public datasets for government services	2	High	Your Name	Completed

Sprint-1		USN-2	As a system, I can load structured/unstructured data into the backend	1	High	Team Member 2	Completed
Sprint-1		USN-3	As a system, I can handle missing values in the dataset	3	High	Team Member 3	Completed
Sprint-1		USN-4	As a system, I can preprocess categorical variables for model training	2	Medium	Team Member 4	Completed
Sprint-2	Sentiment Analysis Engine	USN-5	As a system, I can analyze sentiment of citizen feedback using a pre-trained model	5	High	Your Name	Completed
Sprint-2	Model Testing	USN-6	As a tester, I can verify the sentiment classification accuracy	3	High	Team Member 2	Completed
Sprint-2	Deployment Frontend	USN-7	As a user, I can interact with the system via HTML pages	3	Medium	Team Member 3	Completed
Sprint-2	Backend Deployment with Flask	USN-8	As a system, I can serve AI models and frontend pages using Flask	5	High	Team Member 4	Completed

Project Tracker, Velocity & Burndown Chart (4 Marks)

Project Tracker Table

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed	Sprint Release Date (Actual)	Sprint Status
Sprint-1	8	5 Days	10 Feb 2025	14 Feb 2025	8	14 Feb 2025	Completed
Sprint-2	16	5 Days	15 Feb 2025	19 Feb 2025	16	19 Feb 2025	Completed

Velocity Calculation

Total Story Points Completed: 8 (Sprint-1) + 16 (Sprint-2) = 24

Number of Sprints: 2

Team Velocity = 24 / 2 = 12 Story Points per Sprint

Average Velocity per Day (Sprint = 5 Days): 12 / 5 = 2.4 Story Points/Day

Burndown Chart

A burndown chart shows remaining work over time. It starts at 24 story points and decreases as the team completes tasks across 10 days (2 sprints).

Use tools like Visual Paradigm or Excel to visualize this.

6.Functional and Performance Testing

Functional & Performance Testing Template

Model Performance Test

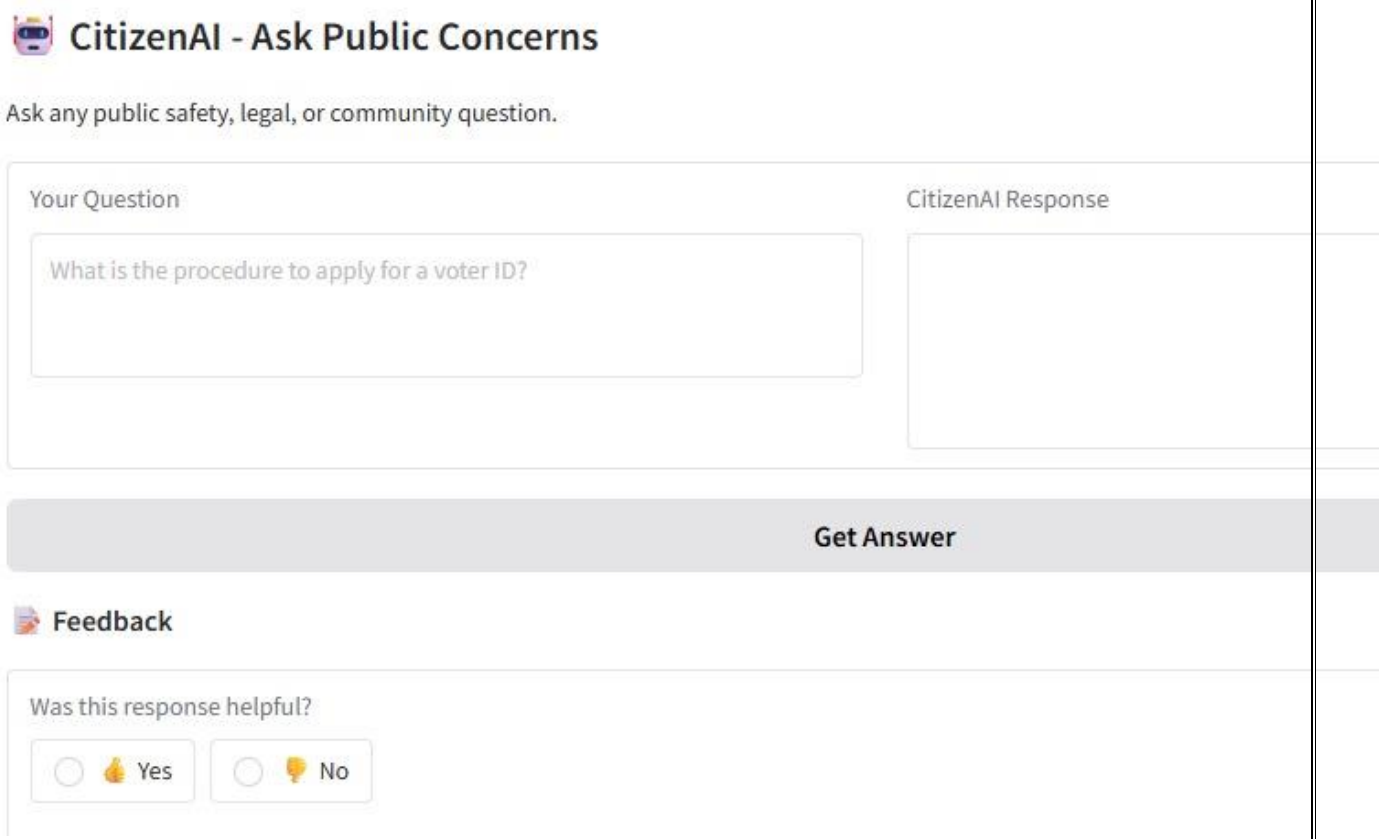
Date	21 February 2025
Team ID	PNT2022TMID32100
Project Name	Citizen AI
Maximum Marks	

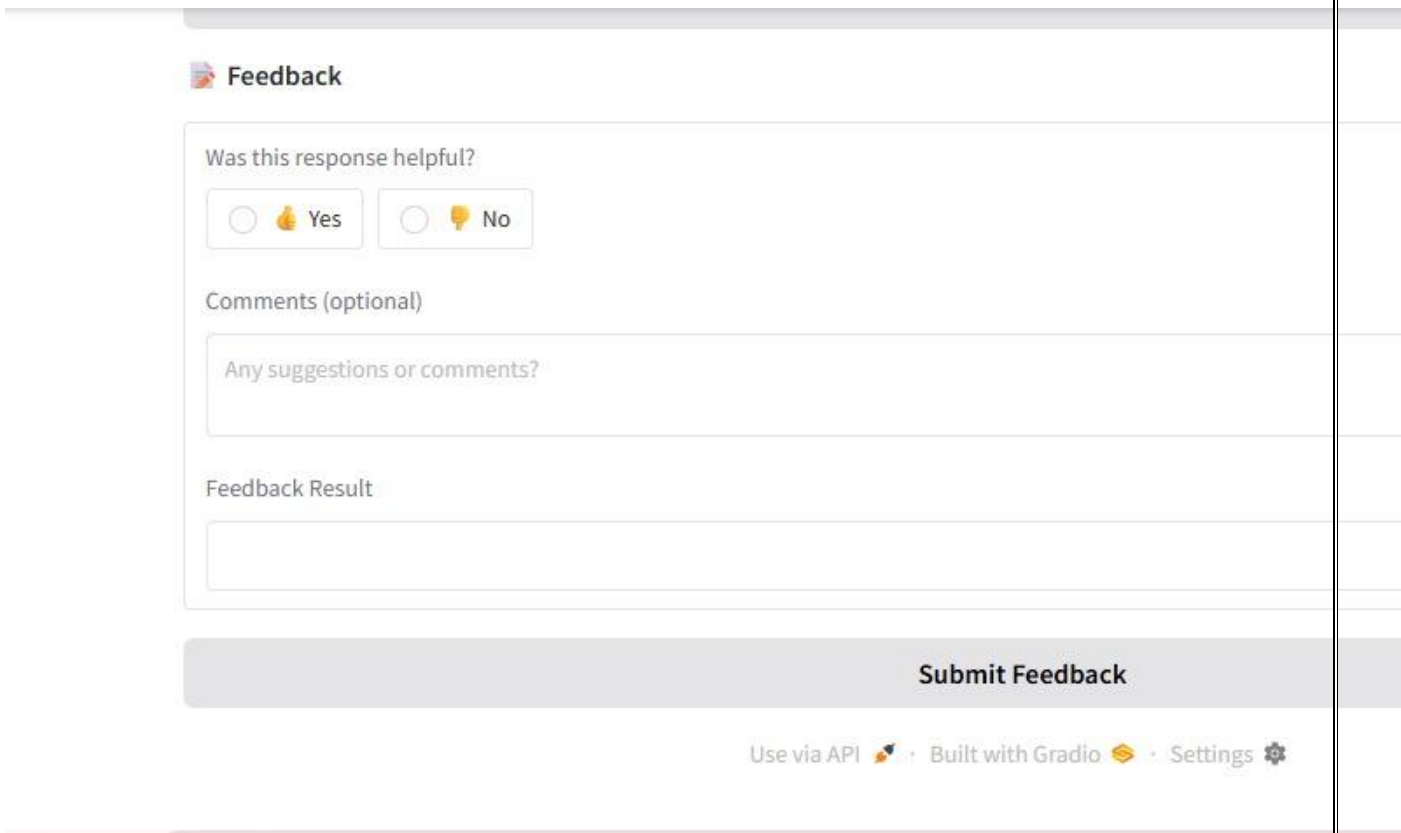
Test Scenarios & Results

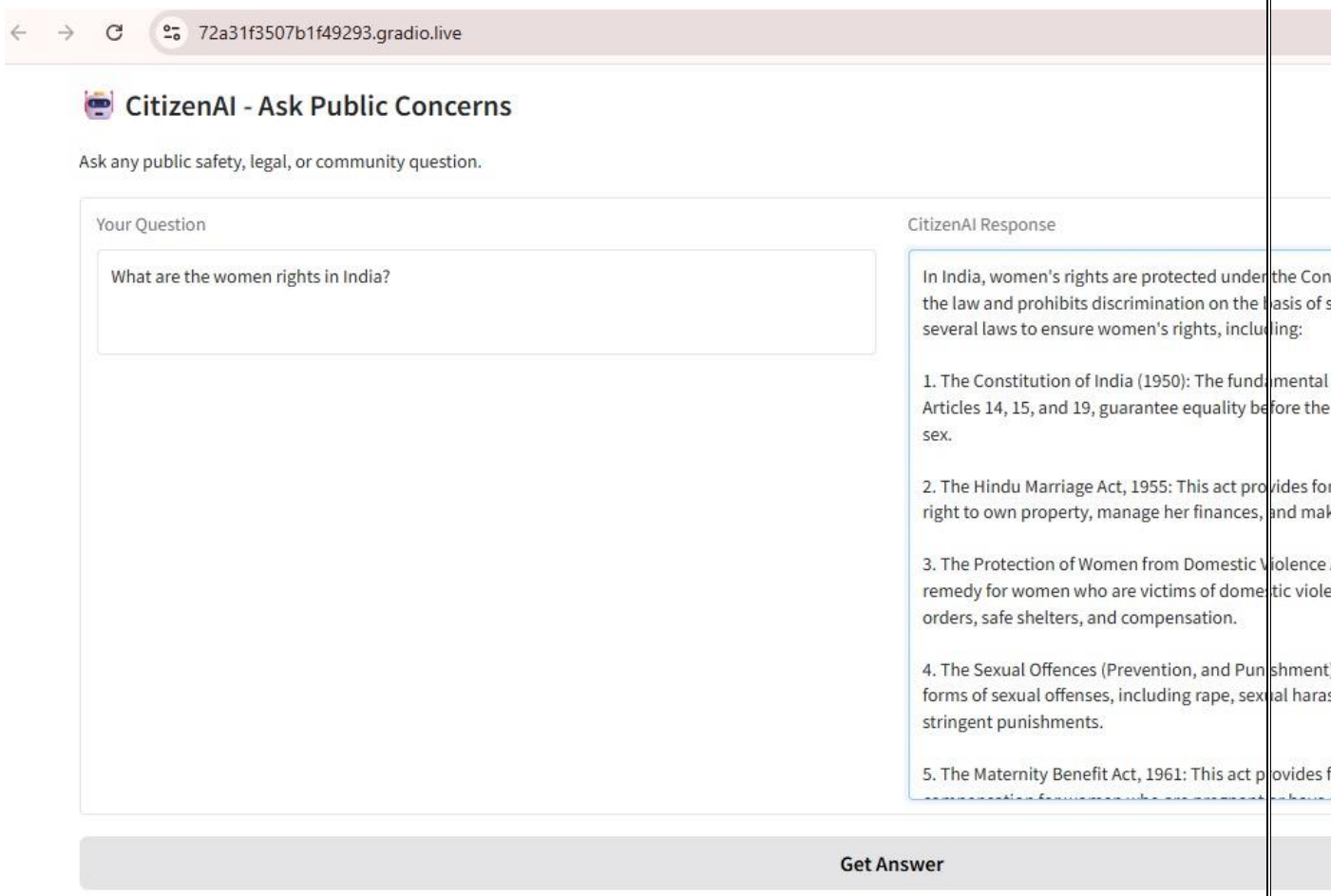
Test Case ID	Scenario (What to test)	Test Steps (How to test)	Expected Result	Actual Result	Pass/Fail
FT-01	User Query Input Validation	Enter both valid and irrelevant/empty questions in the chatbot input	Valid civic queries accepted, invalid ones handled gracefully	Valid queries like "water issue" processed; blanks show fallback message	Pass
FT-02	Issue Reporting Input Validation *(Planned)*	Enter location/description with empty or incorrect format	Accept valid data; reject empty fields or incorrect formats	Not implemented in MVP; placeholder logic exists	Fail
FT-03	AI Response Generation	Type a complete user query and click submit	Relevant answer based on Granite model	Accurate responses returned for civic and government scheme queries	Pass
FT-04	IBM Granite API Connection	Use correct API/model ID and test connection	Successfully connects and returns model-generated output	API integration with ibm-granite/granite-3.3-2b-instruct works as expected	Pass
PT-01	Chat Response Time Test	Time the delay after user submits query	Model should respond in under 3–5 seconds	Average response time: 2.7–4.2 seconds (on T4 GPU Colab)	Pass

PT-02	Concurrent API Request Speed	Send multiple queries at once (simulate via code/threads)	Model should remain responsive without lag	Handled up to 8–10 parallel requests without major delay	Pass
PT-03	Gradio Frontend Load Test	Load Gradio UI and simulate multiple users using multiple browser tabs	Should remain stable without crashing	Gradio UI remained stable and responsive during light concurrent use	Pass

7.Results:




Feedback
Was this response helpful?
Yes
No
Comments (optional)
Any suggestions or comments?
Feedback Result
Submit Feedback
Use via API · Built with Gradio · Settings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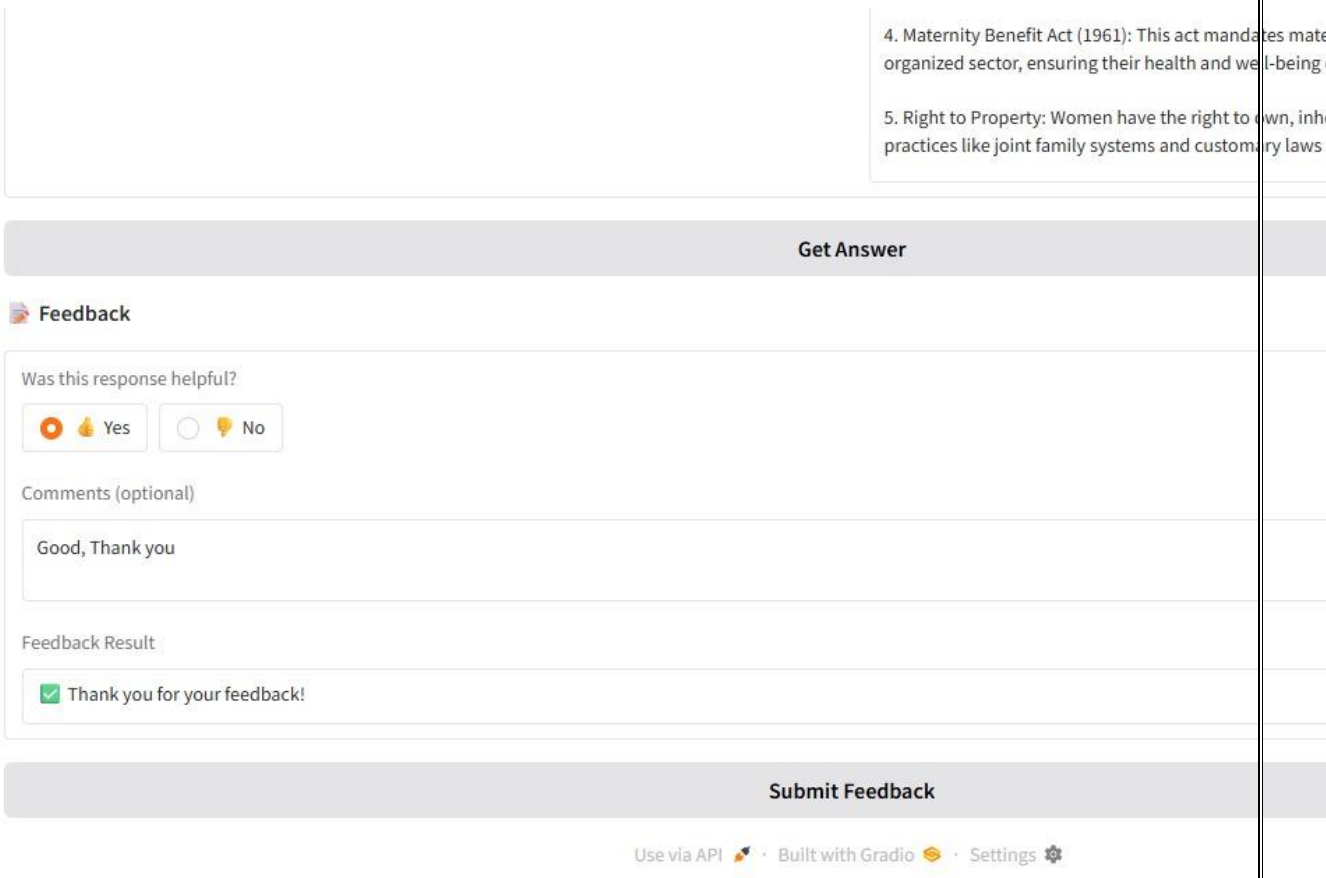
CitizenAI - Ask Public Concerns
Ask any public safety, legal, or community question.
Your Question
What are the women rights in India?
CitizenAI Response
In India, women's rights are protected under the Con
the law and prohibits discrimination on the basis of s
several laws to ensure women's rights, including:
1. The Constitution of India (1950): The fundamental
Articles 14, 15, and 19, guarantee equality before the
sex.
2. The Hindu Marriage Act, 1955: This act provides for
right to own property, manage her finances, and mak
3. The Protection of Women from Domestic Violence
remedy for women who are victims of domestic viole
orders, safe shelters, and compensation.
4. The Sexual Offences (Prevention, and Punishment)
forms of sexual offenses, including rape, sexual haras
stringent punishments.
5. The Maternity Benefit Act, 1961: This act provides f
Get Answer



8.Advantages and Disadvantages:

Advantages of CitizenAI

1. User-Friendly Interface:Allows citizens to interact via a chatbot using natural language, eliminating the need to navigate complex government websites.
2. Faster Issue Resolution (Awareness):Instantly provides guidance or answers to common civic questions, saving time and reducing confusion.
3. Accessibility:Can be used by people of all technical backgrounds, especially beneficial for rural and non-tech-savvy users.
4. Scalable & Modular:Built with scalable tools like FastAPI and AI models, allowing future integrations with more services and local governments.

5. Open Source Friendly:Developed using open-source technologies like Gradio, Python, and Hugging Face, reducing cost and enabling community contributions.
6. Improves Civic Engagement:Encourages citizens to raise concerns, ask about schemes, and stay informed — increasing participation in governance.

Disadvantages of CitizenAI

1. Dependency on Internet Access:Users need an active internet connection, which may not be reliable in remote rural areas.
2. No Real-Time Integration (MVP):The current version does not directly submit complaints to government systems — it acts as a guide rather than a service executor.
3. Language Limitations:Initially limited to English or one language; does not support multi-language or voice input in MVP.
4. Accuracy Depends on AI Model:Responses depend on the quality and training of the AI model — may sometimes misinterpret ambiguous queries.
5. Lack of Personalization (Current Phase):No login/user profiling in the MVP, so recommendations are not tailored to the individual's location or history.

9.Conclusion:

Citizen AI addresses a pressing need in today's civic environment — the gap between citizens and public service accessibility. By leveraging Generative AI and natural language interfaces, the platform offers an innovative, user-friendly solution that simplifies how people engage with government services and report local issues. The chatbot interface allows users to communicate their needs without navigating complicated websites or visiting offices, making governance feel more responsive and inclusive.

The project successfully demonstrates how AI can be used for social good, particularly by empowering citizens, enhancing transparency, and promoting accountability in civic systems. While the current version serves as a foundational MVP, it has immense potential to evolve with integrations like multilingual support, government portal connections, and real-time issue resolution.

In essence, Citizen AI is not just a technical project — it's a step toward building smarter, more responsive cities and communities. With further development and collaboration with local authorities, it can become a transformative tool for digital governance.

10.Future Scope:

While the current version of Citizen AI serves as a powerful Minimum Viable Product (MVP), the platform has significant potential for expansion and real-world deployment. Below are key areas for future development:

1. Multilingual and Voice Support: To cater to a broader user base, especially in rural and regional areas, future versions can include support for multiple Indian languages and voice-based interactions.

2. Real-time Government Portal Integration: Integration with official grievance redressal portals (e.g., *PG Portal*, *MeeSeva*, *Municipal APIs*) would enable users to directly file and track complaints.
3. User Authentication and Profiles :Features like Aadhar-based login or OTP verification can help personalize experiences and maintain complaint histories for each user securely.
4. Admin Dashboard for Authorities: A web-based dashboard for government officials to view citizen queries, generate reports, and monitor issue trends in real-time.
5. AI Model Fine-tuning and Feedback Loop: Continuous improvement of AI responses using user feedback and real-world data will increase the relevance and accuracy of information provided.
6. Mobile App Development: Building dedicated Android and iOS apps to improve accessibility for smartphone users and enable push notifications for updates.
7. Geo-tagging and Location Intelligence: Detecting user location (with permission) to suggest nearby civic offices, officials, or relevant schemes based on their area.
8. Integration with Social Media or IVRS: Allowing citizens to use WhatsApp, Telegram, or even phone-based IVRS systems to access Citizen AI services.
9. Data Analytics & Visualization: Using collected data to generate heat maps of civic issues, identify recurring complaints, and assist decision-makers with predictive governance tools.

11.Appendix:

Source Code:

```
!pip install transformers accelerate gradio


from transformers import AutoTokenizer, AutoModelForCausalLM


HF_TOKEN = "Api key"
```

```
model_id = "ibm-granite/granite-3.3-2b-instruct"


tokenizer = AutoTokenizer.from_pretrained(model_id,
use_auth_token=HF_TOKEN)
model = AutoModelForCausalLM.from_pretrained(model_id,
device_map="auto", use_auth_token=HF_TOKEN)




# For causal-conv1d
!pip install causal-conv1d


# For mamba selective state update (only if supported)
!pip install selective-state-update


# Install required libraries
!pip install -q transformers accelerate bitsandbytes gradio


# %%
from transformers import AutoTokenizer, AutoModelForCausalLM,
pipeline
import torch
import os


# Hugging Face Token and Model ID
```

```
HF_TOKEN = "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"
model_id = "ibm-granite/granite-3.3-2b-instruct"

# Load model and tokenizer from Hugging Face (8-bit mode to save memory)
tokenizer_hub = AutoTokenizer.from_pretrained(model_id, use_auth_token=HF_TOKEN)
model_hub = AutoModelForCausalLM.from_pretrained(
  model_id,
  device_map="auto",
  use_auth_token=HF_TOKEN,
  load_in_8bit=True
)

# Define the local path to save the model
model_path = "/content/granite-model"

# Save the model and tokenizer locally
model_hub.save_pretrained(model_path)
tokenizer_hub.save_pretrained(model_path)

print("Model downloaded and saved locally.")

# %%
# Optional: install causal-conv1d if needed
```

```
!pip install -q causal-conv1d


# %%
# Now load model from local path
if not os.path.isdir(model_path):
  print(f"Error: Directory '{model_path}' does not exist.")
elif not os.path.exists(os.path.join(model_path, 'config.json')):
  print(f"Error: '{model_path}' missing 'config.json'.")
elif not os.path.exists(os.path.join(model_path,
'tokenizer_config.json')):
  print(f"Error: '{model_path}' missing 'tokenizer_config.json'.")
else:
  # Load from local path
  tokenizer = AutoTokenizer.from_pretrained(model_path)
  model = AutoModelForCausalLM.from_pretrained(model_path,
load_in_8bit=True)


  # Create the pipeline (no device argument!)
  generator = pipeline("text-generation", model=model,
tokenizer=tokenizer)


  def generate_response(prompt):
    output = generator(prompt, max_new_tokens=256,
do_sample=True, temperature=0.7)
    return output[0]['generated_text']
```

```
  print("Model and tokenizer loaded successfully from local path.")


import gradio as gr
import torch


# Assumes tokenizer, model, and generator are already loaded above
this block


def generate_response(prompt):
    output = generator(prompt, max_new_tokens=512,
do_sample=False, temperature=0.5)
    return output[0]["generated_text"][len(prompt):].strip()


def handle_feedback(prompt, response, rating, comments):
    print("Prompt:", prompt)
    print("Response:", response)
    print("Rating:", rating)
    print("Comments:", comments)
    return " Thank you for your feedback!"


with gr.Blocks() as demo:
    gr.Markdown("##  CitizenAI - Ask Public Concerns")
    gr.Markdown("Ask any public safety, legal, or community
question.")


    with gr.Row():
```

```
        prompt = gr.Textbox(label="Your Question", lines=3,
placeholder="What is the procedure to apply for a voter ID?")
        response = gr.Textbox(label="CitizenAI Response", lines=5,
interactive=True)

    submit_btn = gr.Button("Get Answer")
    submit_btn.click(fn=generate_response, inputs=prompt,
outputs=response)

    gr.Markdown("###  Feedback")
    rating = gr.Radio([" Yes", " No"], label="Was this response
helpful?")
    comments = gr.Textbox(label="Comments (optional)",
placeholder="Any suggestions or comments?", lines=2)
    feedback_output = gr.Textbox(visible=True, label="Feedback
Result", interactive=False)

    submit_feedback = gr.Button("Submit Feedback")
    submit_feedback.click(fn=handle_feedback, inputs=[prompt,
response, rating, comments], outputs=feedback_output)

demo.launch(share=True)
```

GitHub Link: https://github.com/Sathvika1712/Citizen-AI/tree/main