2022-2023 Spring
CENG350 Term Project

Software Requirements Specification for afetbilgi.com

Hasan Ege Meyvecioğlu 2449783
Enes Şanlı 2375749

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1 Introduction

This document is the Software Specification Requirement (SRS) of the website **afetbilgi.com** created by METU students and graduates.

1.1 Purpose of the System

The objective of the afetbilgi.com is to confirm and spread information about the massive disaster, namely Kahramanmaras Earthquakes happened in the southeast part of the Turkey on February 6, 2023. While doing that, it aims to deliver the information in fast, accurate and simple ways.

1.2 Scope

Scope of the project can be listed as:

- Having a simple and well-organized interface to deliver safety-related knowledge.
- Providing accurate and up-to-date information about the Kahramanmaras Earthquakes of February 6, 2023.
- Being able to show every place that are somehow related to the disaster on the simple map view to ease reaching out for users.
- Demonstrating only the necessary information, by filtering based on location and related need.
- Providing a communication page for the people who wants to send up-to-date and verified information about earthquakes.
- Being accessible on multiple kind of electronic devices to ensure anyone can access as fast as possible.
- Having multiple language options, especially the languages that are spoken in the disaster area.

1.3 System Overview

1.3.1 System Perspective

afetbilgi.com is not part of a large system. However, it interacts with some other services such as **Google Maps** to retrieve any kind of location info, and **Amazon Web Services** to store its database. Data Collectors&Validators are simply the volunteers that shares confirmed information which are gathered from any kind of channel. All this information is presented by afetbilgi.com to users in a simple interface.

The context diagram is given in Figure 1.

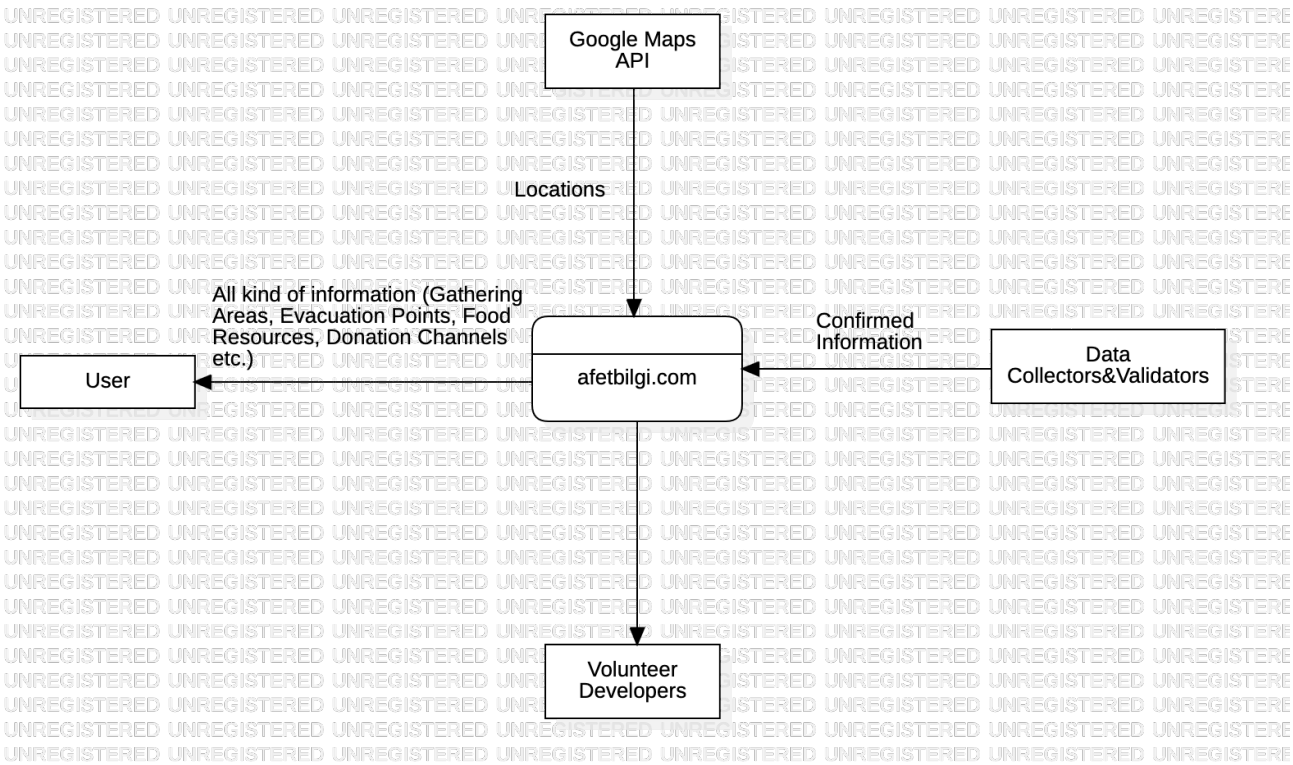

Figure 1: System Context Diagram

1.3.2 System Functions

- The system should show the user the locations of the general needs when requested.
- The system should display information about health services when the user requests it.
- The system should show the information of all resources and services to the user on the map it receives from the Google Maps API.
- The system should transfer the information on the afetbilgi.com site to a pdf file when requested.
- The system should display the information of all important resources to the user when requested.
- The system should display help options to the user when requested.
- The system should direct the developer to the discord server when a volunteer developer wants to help develop afetbilgi.com.
- If a user or developer wants to contact the founders of afetbilgi.com, the system should show them their contact information.
- The system should direct the user to these sites when a user wants to go to a site similar to afetbilgi.com or containing the information in it.

- The system should direct data collector&validators to communication paths when data collector&validators want to give information about the earthquake to the site and receive the information they provide.

1.3.3 Stakeholder Characteristics

- **Users Affected by The Earthquake:** People who are victims of earthquake or who are faced with earthquake. These stakeholders need earthquake information and guidance before, during and after the earthquake.
- **Users Not Affected by The Earthquake:** Users who want to add information to afetbilgi.com, who want to help the earthquake zone, who want to donate, but who are not in the earthquake zone
- **Users Who Are On The Search and Rescue Team:** These are the teams that respond quickly in case of earthquake and try to save the victims. These stakeholders need the information on the website to track the location, situation and needs of earthquake victims.
- **Related Institutions:** Institutions working on earthquake, such as public or private institutions such as municipalities, health institutions, public institutions. These stakeholders can prepare by using the information on the website before, during and after the disaster.
- **Volunteer Developers:** The people or team who manage the website create and update the site content and keep the website running smoothly. These stakeholders determine the requirements of the website and try to make the website user-friendly.
- **Media:** Media organizations that publish news about earthquake. These stakeholders can present accurate and reliable news by using the information on the website.

1.3.4 Limitations

- **Regulatory requirements and policies**: afetbilgi.com should be very careful about the correctness of the information it provides. Otherwise, it may break the Turkish Disinformation Law and may face serious consequences.
- **Hardware limitations**: A device that can connect to internet is enough.
- **Interfaces to other applications**: afetbilgi.com shall be compatible with the used web database, web browsers and operating systems for both mobile devices and computers.
- **Parallel operation**: The system shall respond to hundreds of users without crashing in parallel, at the same time.
- **Audit functions**: There is no limitation.
- **Control functions**: Volunteer Developers shall maintain the system by collecting feedback and updating information.

- **Higher-order language requirements**: System is developed using React framework and TypeScript language as they help make the system reliable, maintainable and cross-platform.
- **Signal handshake protocols**: afetbilgi.com uses HTTPS protocol for communication between the web server and the user's web browser. This protocol ensures a secure connection and prevents unauthorized access.
- **Quality requirements**: As long as the system is working, there is no other limitation.
- **Criticality of the application**: A broken system may prevent users reaching critical information. Therefore, any system failure shall be solved rapidly.
- **Safety and security considerations**: afetbilgi.com do not access any personal information or store private information. Therefore, there is no consideration about safety and security.
- **Physical/mental considerations**: Physically/mentally disabled people will not be able to use afetbilgi.com by their own as it does not provide any help for such users.
- **Limitations that are sourced from other systems**: There is no limitation.

1.4 Definitions (including acronyms and abbreviations)

Term	Definition
API	Application Programming Interface
PDF	Portable Document Format
AI	Artifical Intelligence
ChatGPT	A large language model designed to chat with humans

Table 1: Definitions

2 References

This document is written with respect to IEEE 29148-2011 standard:

IEEE. (2011, December 1). 29148-2011 - ISO/IEC/IEEE International Standard - Systems and software engineering – Life cycle processes –Requirements engineering. Retrieved from http://ieeexplore.ieee.org/d
on March 12, 2018. doi: 10.1109/IEEESTD.2011.6146379

3 Specific Requirements

3.1 External Interfaces

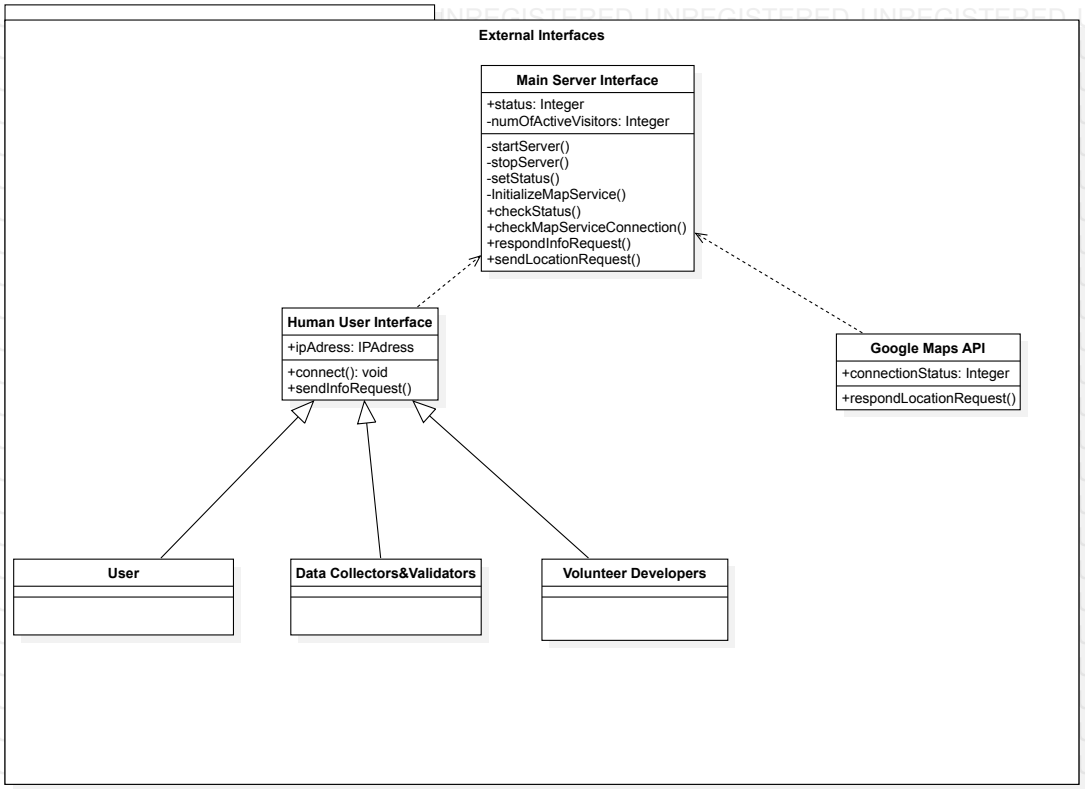

Figure 2: External Interfaces Class Diagram

3.2 Functions

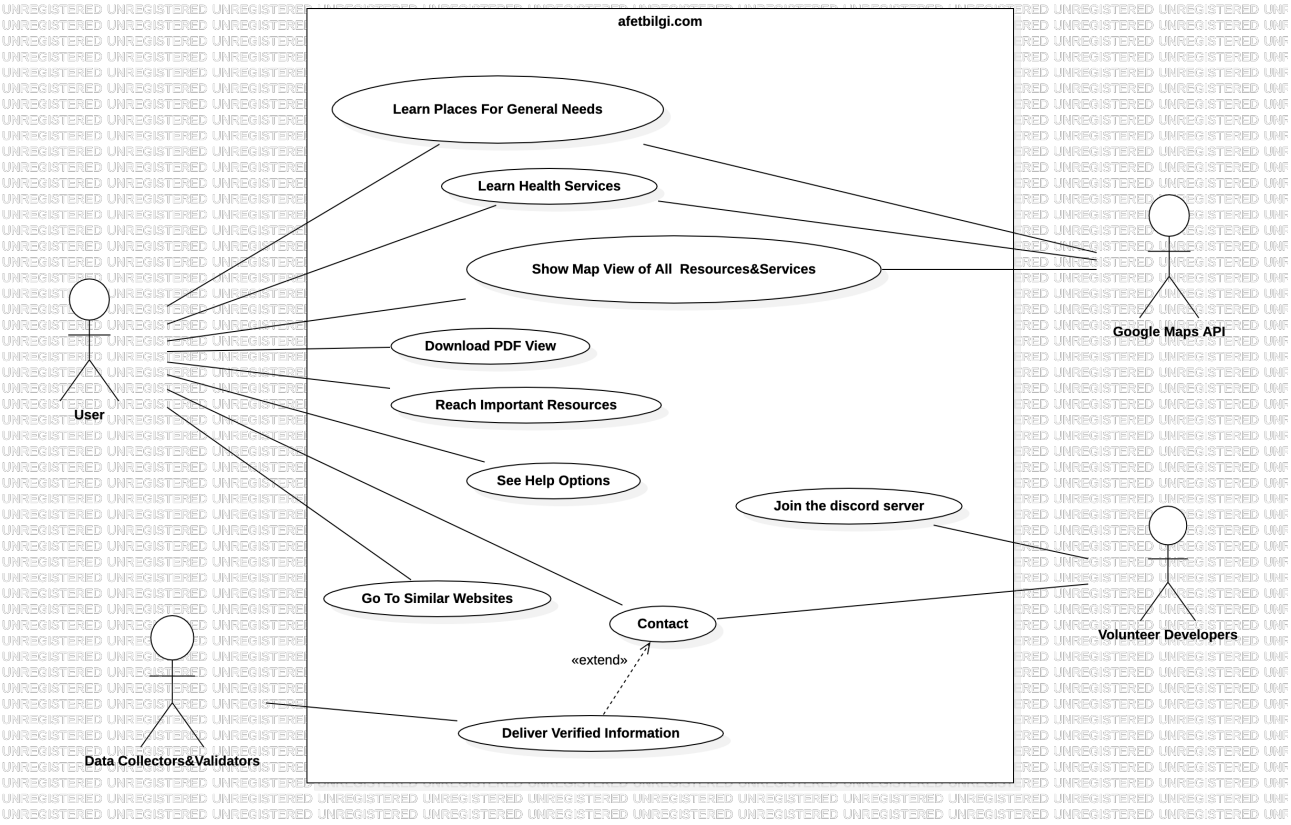

Figure 3: Use Case Diagram

Use Case	**Description**
Use Case Name	Learn Places For General Needs
Actor	User, Google Maps API
Description	When the user wants to get information about the places for general needs, system provides this according to the selected city and the type of need.
Data	Location of the place and the source of information.
Preconditions	Google Maps API is succesfully connected and working.
Postconditions	-
Normal Flow	1. User clicks to the type of need he/she needs. 2. afetbilgi.com asks for the city and county. 3. afetbilgi.com lists the available places for this need with the locations of them taken from Google Maps.
Exceptions	-

Table 2: Use Case 1: Learn Places For General Needs

Use Case	**Description**
Use Case Name	Learn Health Services
Actor	User, Google Maps API
Description	When the user wants to get information about the places for health services, such as hospitals, pharmacies, system provides this according to the selected city and the type of which services.
Data	Location of the place and the source of information or URL to lists containing place information.
Preconditions	Google Maps API is succesfully connected and working.
Postconditions	-
Normal Flow	1. User clicks to the type of need he/she needs. 2. afetbilgi.com asks for the city. 3. afetbilgi.com lists the available places for this need with the locations of them taken from Google Maps.
Exceptions	-

Table 3: Use Case 2: Learn Health Services

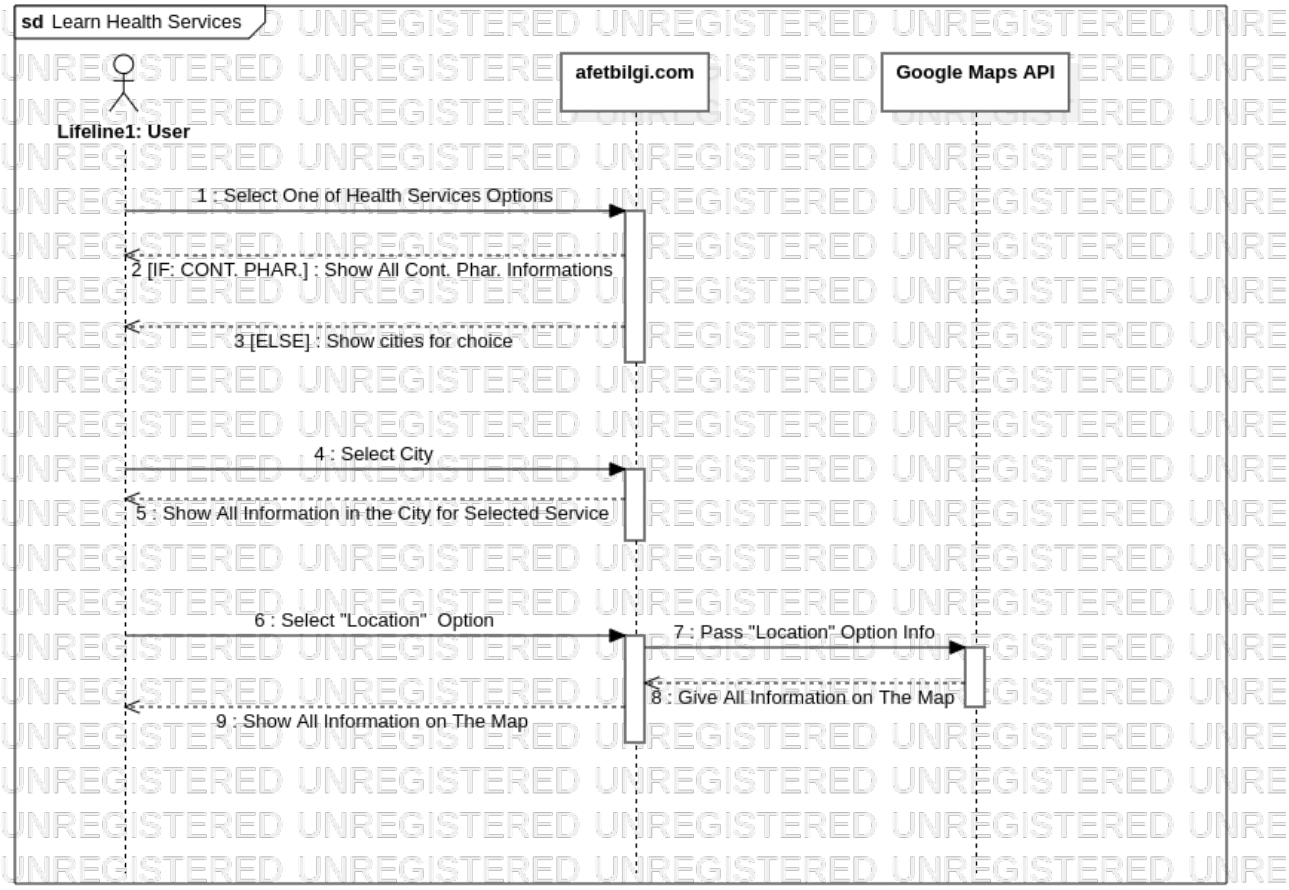

Figure 4: Sequence Diagram for Learn Health Services

Use Case	**Description**
Use Case Name	Show Map View of All Resources&Services
Actor	User, Google Maps API
Description	When the user wants to get information about the locations of all resources and services as a map view, the system provides this by retrieving location data from Google Maps API and .
Data	Earthquake zone map and location of all services and resources.
Preconditions	Google Maps API is succesfully connected and working
Postconditions	-
Normal Flow	1. User clicks to the "MAP". 2. afetbilgi.com shows the location of all services and resources on the map.
Exceptions	-

Table 4: Use Case 3: Show Map View of All Resources&Services

Use Case	**Description**
Use Case Name	Download PDF View
Actor	User
Description	When the user want to access the information on afetbilgi.com via pdf instead of the web, the system transfers all the information on afetbilgi.com to pdf.
Data	Location and phone number of general need, service and resource places, and the source of information.
Preconditions	-
Postconditions	-
Normal Flow	1. User clicks to the "PDF". 2. afetbilgi.com asks for the city. 3. afetbilgi.com create a pdf showing the location and information of all general needs, services and resources.
Exceptions	-

Table 5: Use Case 4: Download PDF View

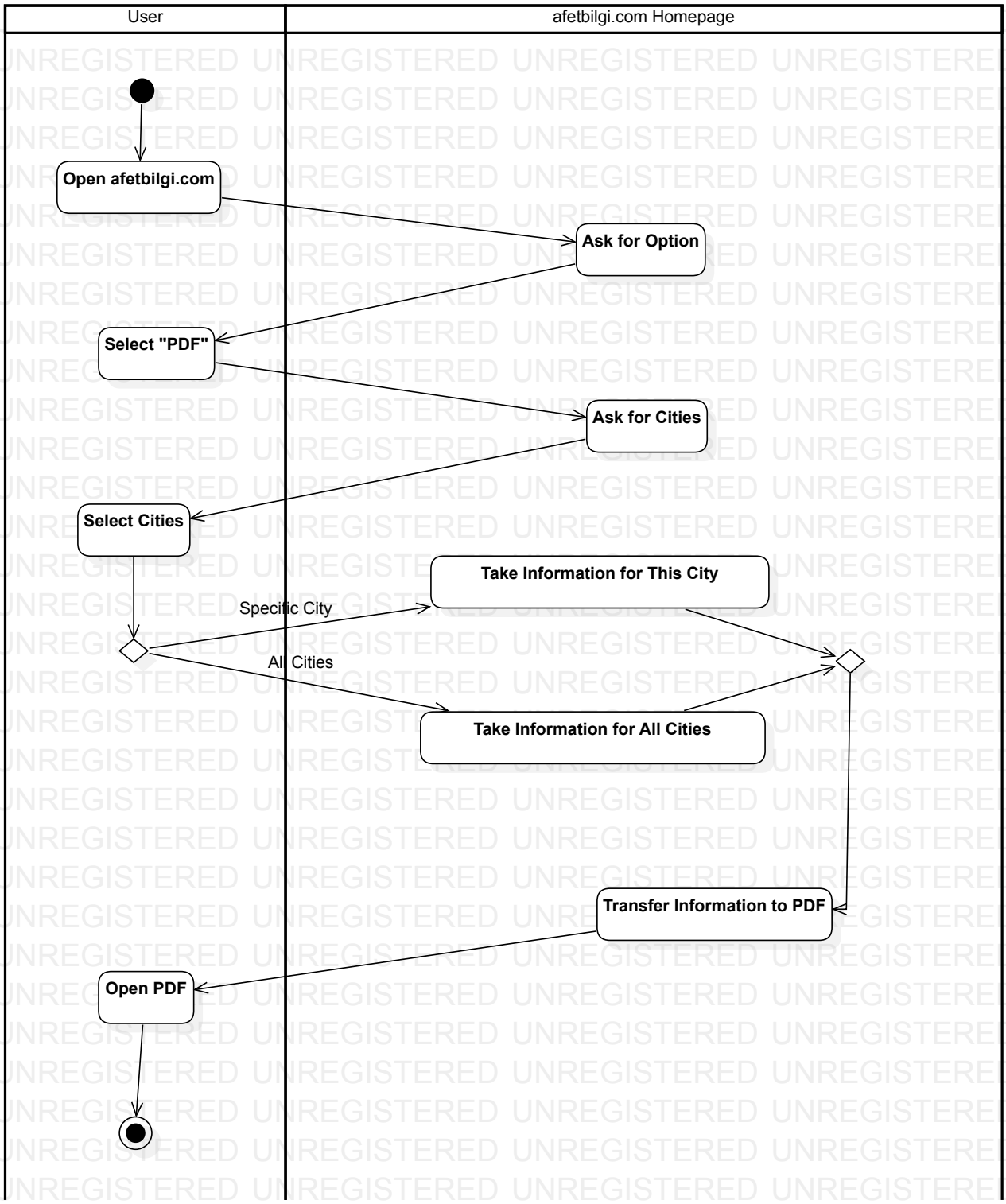

Figure 5: Activity Diagram for Download PDF View

Use Case	**Description**
Use Case Name	Reach Important Resources
Actor	User
Description	When the user wants to access the information of important resources such as, important web-sites, important phone numbers and useful articles, system provide this.
Data	URL of important places, phone numbers of important places to be reached, and important articles about earthquakes.
Preconditions	-
Postconditions	-
Normal Flow	1. User clicks to one of the important resource types such as "CRUCIAL PHONE NUMBER", "USEFUL LINKS", "USEFUL ARTICLES" . 2. afetbilgi.com shows this information according to the selected important resource type.
Exceptions	-

Table 6: Use Case 5: Reach Important Resources

Use Case	**Description**
Use Case Name	Deliver Verified Information
Actor	Data Collectors&Validators
Description	When data collectors and validators want to spread verified information about any kind of earthquake related topic, system outputs communication channels for them.
Data	Location and phone number of general need, service and resource places, and the source of information
Preconditions	Data collectors&validators should have clicked the contact options.
Postconditions	-
Normal Flow	1. User clicks to "ABOUT US/CONTACT" in the website. 2. afetbilgi.com warns and strongly asks actors to deliver verified information 3. afetbilgi.com outputs communication channels
Exceptions	-

Table 7: Use Case 6: Deliver Verified Information

Use Case	**Description**
Use Case Name	See Help Options
Actor	User
Description	When the user wants to help the earthquake victim area or earthquake victims, the system offers different types of assistance to the user
Data	The locations of some donation addresses, the URLs of places related to money donation and other donation.
Preconditions	-
Postconditions	-
Normal Flow	1. User clicks to the type of help options such as "MONETARY DONATION LINKS", "KIZILAY BLOOD DONATION PLACES". 2. If "OTHER DONATION" is selected, afetbilgi.com asks the user for the city, otherwise it does not ask anything. 3. afetbilgi.com shows information according to the selected help option.
Exceptions	-

Table 8: Use Case 7: See Help Options

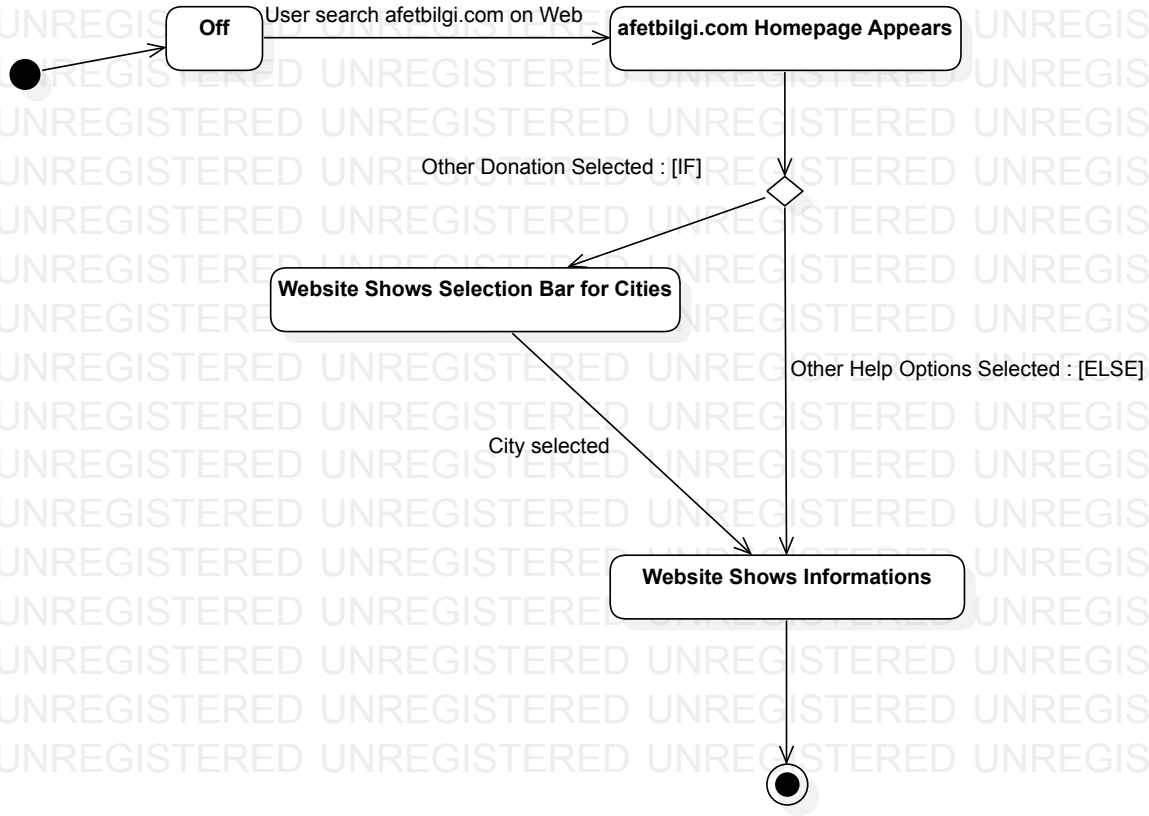

Figure 6: State Diagram for See Help Options

Use Case	**Description**
Use Case Name	Contact
Actor	User, Volunteer Developers, Data Colectors&Validators
Description	When the actor wants to contact the founders of afetbilgi.com, the system gives the user different communication ways and a brief information about the afetbilgi.com.
Data	The brief information of afetbilgi.com and and the URLs of social media accounts such as Instagram and Twitter, and the e-mail address for communication.
Preconditions	-
Postconditions	-
Normal Flow	1. Actor clicks to the "ABOUT US/ CONTACT". 2. afetbilgi.com shows social media adresses, e-mail and brief information about afetbilgi.com
Exceptions	-

Table 9: Use Case 8: Contact

Use Case	**Description**
Use Case Name	Join The Discord Server
Actor	Volunteer Developers
Description	When the volunteer developer wants to join the developer team of the afetbilgi.com site, the system redirects it to discord server where all volunteer developers communicate.
Data	The URL of the Discord server
Preconditions	-
Postconditions	-
Normal Flow	1. User clicks to the "DISCORD" icon from the upper left corner 2. afetbilgi.com directs the volunteer developer to join the discord server.
Exceptions	-

Table 10: Use Case 9: Join The Discord Server

Use Case	**Description**
Use Case Name	Go To Similar Websites
Actor	Users
Description	"The system redirects the user to other websites that offer assistance and information on various aspects related to earthquakes."
Data	The URLs of the websites
Preconditions	-
Postconditions	-
Normal Flow	1. User clicks to one of the icons from the upper left corner that he/she wants to go. 2. afetbilgi.com redirects the user to that website.
Exceptions	-

Table 11: Use Case 10: Go To Similar Websites

3.3 Usability Requirements

- Users shall be able to use system easily with smart phones and computers.
- Users shall be able to reach the relevant information very fast, with a few clicks/taps.
- Users shall be able to use the system in the language they want.
- Users shall be able to easily navigate between different sections of the system.

3.4 Performance Requirements

- System shall have as low lag as possible.
- System shall be available for hundreds, thousands for people and maintain its speed.
- System shall consume very low battery since an earthquake victim may try to use it.
- System shall have a fast response time for all user requests.
- System shall use minimal data for users with limited internet access.

3.5 Logical Database Requirements

- System shall store the topics and the information in them.
- Topics must be in General Needs, Important Resources, Health Services, and To Help

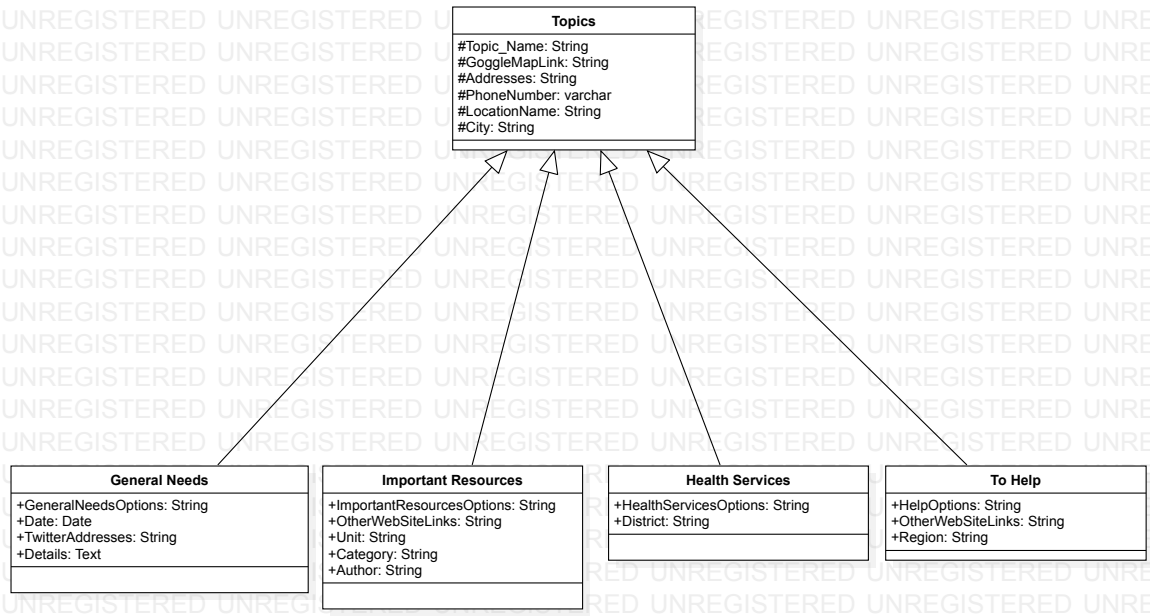

Figure 7: Class Diagram for Logical Database

3.6 Design Constraints

- Users in earthquake-affected areas may have limited bandwidth, so the system should be designed to minimize data usage.
- System shall not include any item that is device/platform specific.
- System shall ensure it obeys legal constraints.
- System shall be designed so that it can be easily used by the people who are not good at understanding technology.

3.7 System Attributes

Reliability, Availability, Security, and others as applicable.

a. **Reliability**:

- The system shall handle a large number of requests without crashing or producing errors.
- The system shall recover from failures quickly.
- The system shall be tested regularly to ensure its reliability.

b. **Availability**:

- The system shall be available at any time, 24/7.
- The system shall serve even when there is an unexpected failure.In other words, it shall have backup plan.

c. **Security**:

- The system shall comply with applicable laws and regulations regarding data privacy and security.
- The system shall use secure connection protocols (such as HTTPS).

3.8 Supporting Information

The afetbilgi.com system is designed to provide crucial information to earthquake victims and other users who want to help the earthquake zone. Its requirements prioritize easy access to relevant information and multilingual support for usability. Design constraints, such as regulatory requirements and hardware limitations, are taken into account to ensure the system operates within legal borders.

4 Suggestions to improve the existing system

4.1 System Perspective

The suggested context diagram is below. In this system, there is a new external entity, ChatGPT API. This entity will be integrated so that afetbilgi.com will provide the benefits of AI. Users will be able to have conversation with a virtual assistant.

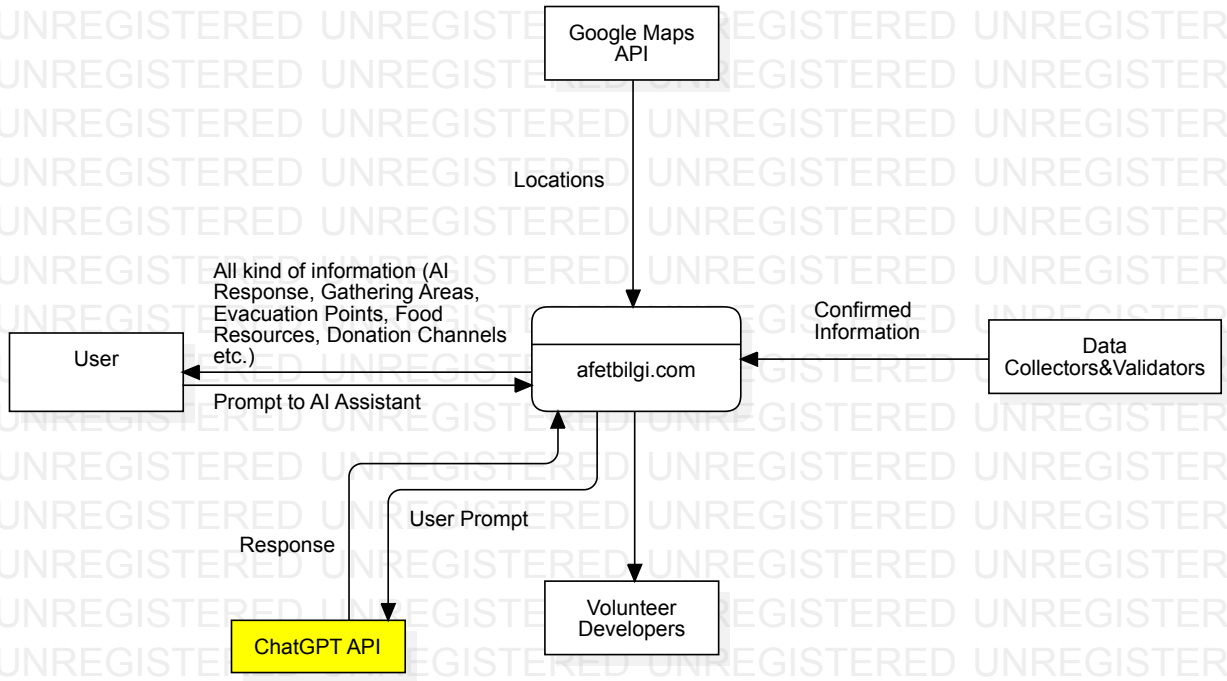

Figure 8: Suggested System Context Diagram

4.2 External Interfaces

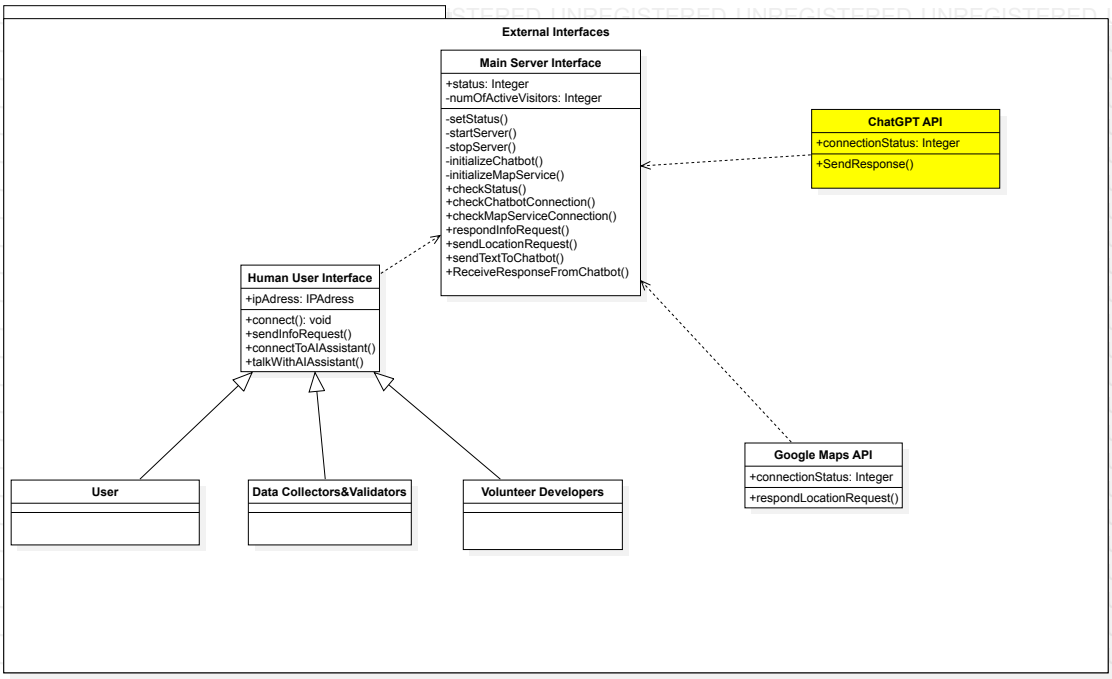

Figure 9: External Interfaces Class Diagram

4.3 Functions

afetbilgi.com can be improved by new use cases. Updated use-case diagram and the description tables for new use-cases are under this section.

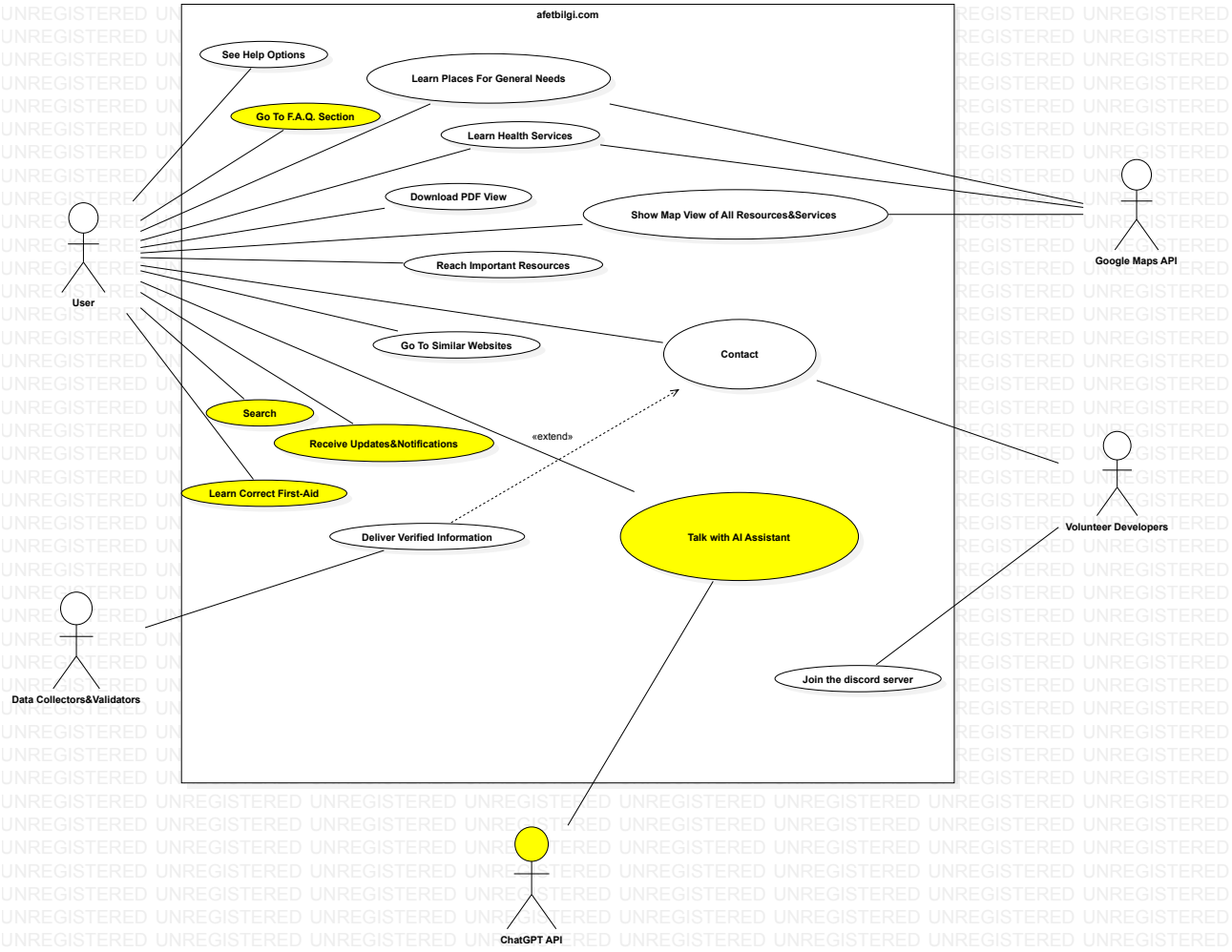

Figure 10: Suggested Use Case Diagram

Use Case	**Description**
Use Case Name	Talk with AI Assistant
Actors	User, Volunteer Developers, Data Collectors&Validators, ChatGPT API
Description	When a person wants to ask or learn about something that he/she couldn't find information on the page, he/she interacts with an AI assistant powered by the GPT-3 model that is connected to the system with ChatGPT API.
Data	Prompt&Response Texts
Preconditions	The ChatGPT API is successfully connected to the system.
Postconditions	-
Basic Flow	1. Person clicks the relevant icon 2. System displays a chat page. 3. Person asks a question or makes a request. 3. System sends the person's message to the ChatGPT API endpoint. 4. ChatGPT API sends a response back to the system. 6. System displays the response to the user. 7. Flow starts again until person wants to end the conversation.
Exceptional Flows	If the ChatGPT API is offline or there is an error and connection fails, the system displays an error message.

Table 12: Use Case 11: Talk with AI Assistant

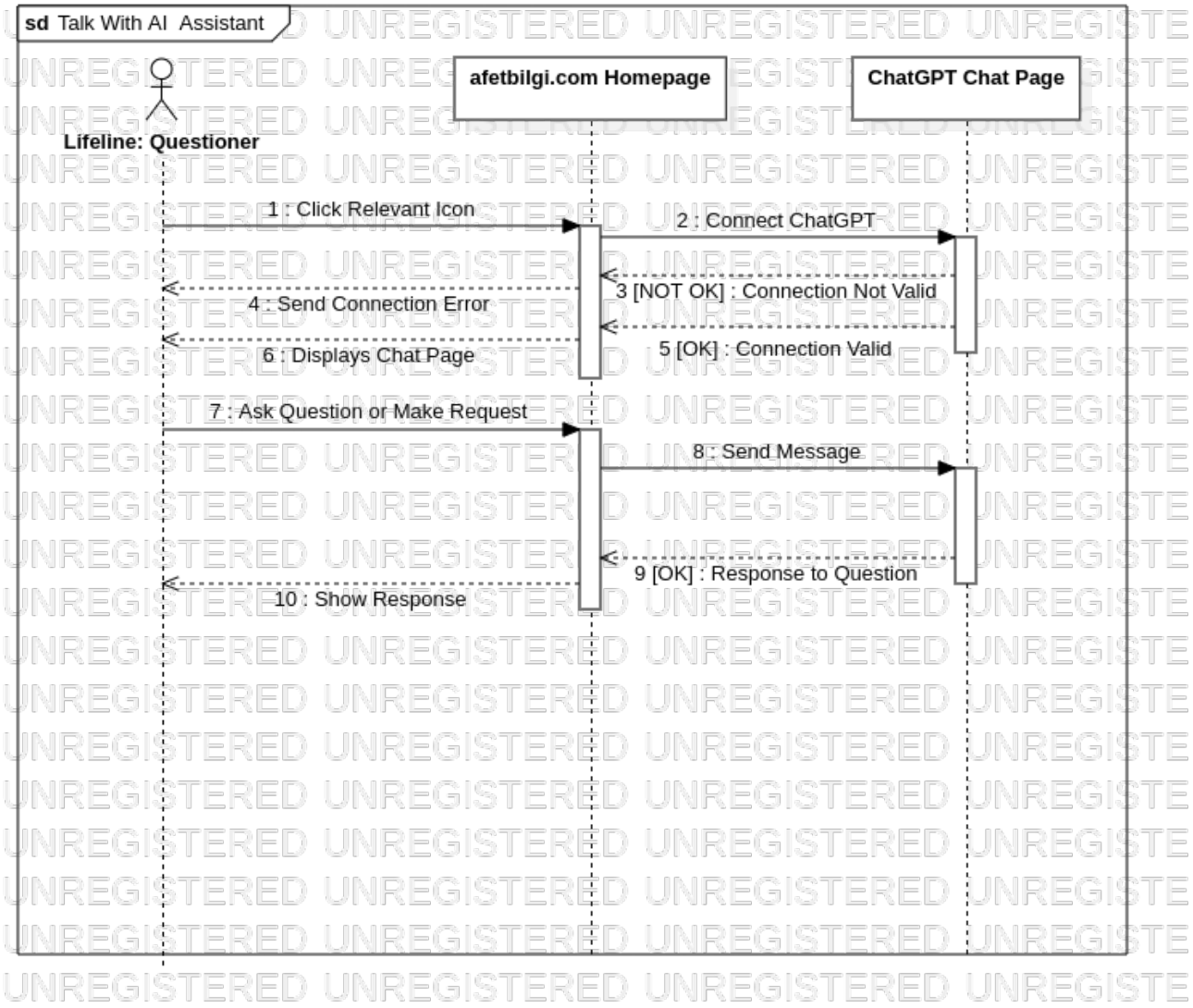

Figure 11: Sequence Diagram for Talk with AI Assistant

Use Case	**Description**
Use Case Name	Search
Actor	User
Description	When the user wants to search about a specific information directly, it will use the search bar.
Data	-
Preconditions	-
Postconditions	-
Normal Flow	1. User clicks to search bar. 2. User types keywords for the search. 3. afetbilgi.com lists the relevant results.
Exceptions	If there is no relevant result, afetbilgi.com displays an error message.

Table 13: Use Case 12: Search

Use Case	**Description**
Use Case Name	Learn Correct First-Aid
Actor	User
Description	When the user wants to learn about first-aid, system helps him/her.
Data	First-Aid Teaching Materials
Preconditions	-
Postconditions	-
Normal Flow	1. User clicks to "First-Aid Tutorial". 2. afetbilgi.com displays a documentation and/or video about how to give first-aid properly.
Exceptions	-

Table 14: Use Case 13: Learn Correct First-Aid

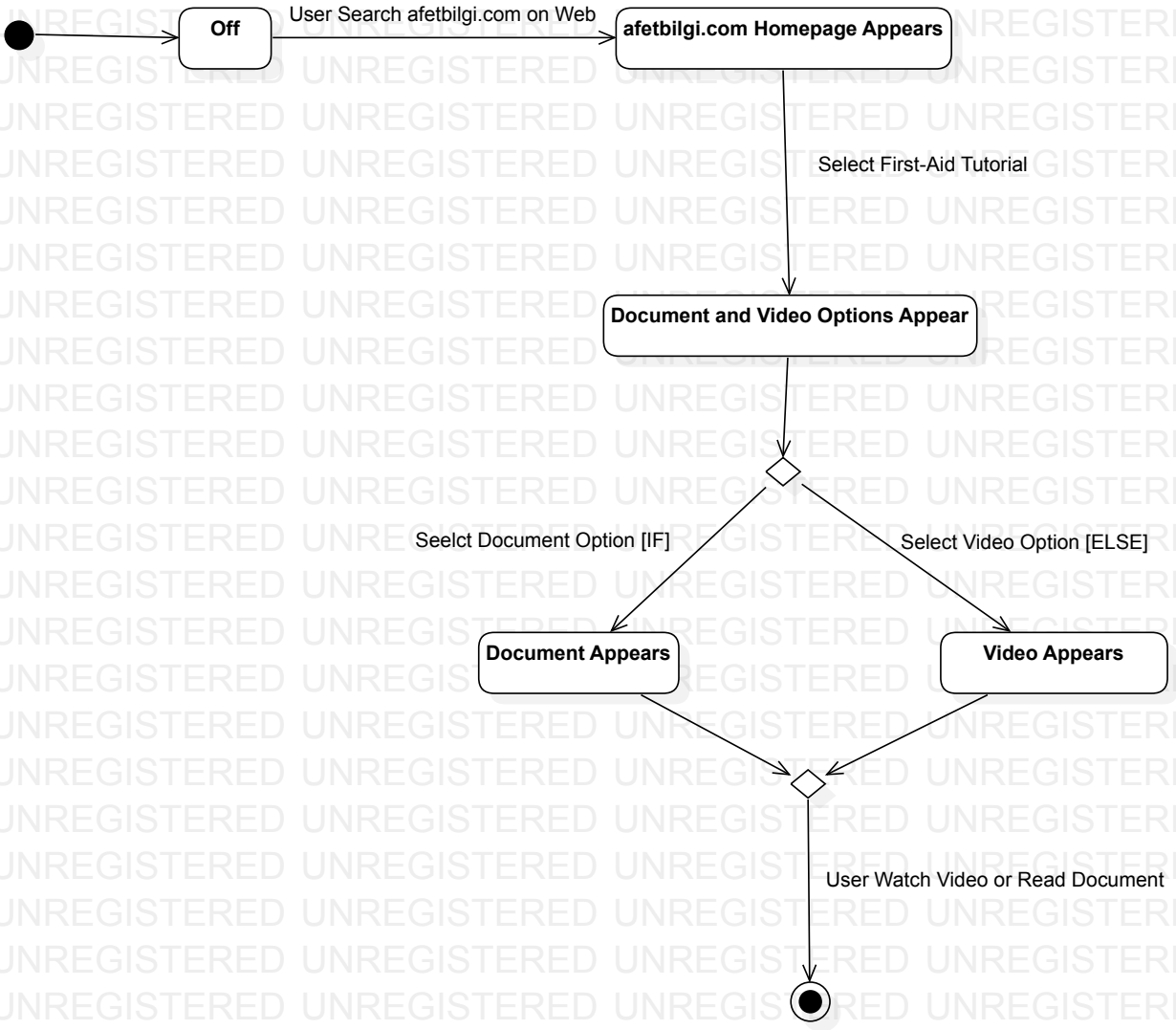

Figure 12: State Diagram for Learn Correct First-Aid

Use Case	**Description**
Use Case Name	Go To F.A.Q. Section
Actor	User
Description	System directs the user to the frequently asked questions' section.
Data	-
Preconditions	-
Postconditions	-
Normal Flow	1. User clicks to "F.A.Q." icon . 2. afetbilgi.com redirects the user to the "Frequently Asked Questions" page.
Exceptions	-

Table 15: Use Case 14: Go To F.A.Q. Section

Use Case	**Description**
Use Case Name	Receive Updates&Notifications
Actor	User
Description	If there is any change or update in a section, afetbilgi.com notify. For instance, if a user couldn't find any food place nearby him/her but wants to check regularly, from that moment on he/she will be informed when there is a new food option.
Data	Relevant Information
Preconditions	User gives consent to share his/her phone number, mail address etc.
Postconditions	-
Normal Flow	1. User clicks to "bell" icon under a section. 2. afetbilgi.com request a communication channel from user. 3. When there is an update, afetbilgi.com notify the user.
Exceptions	-

Table 16: Use Case 15: Receive Updates&Notifications

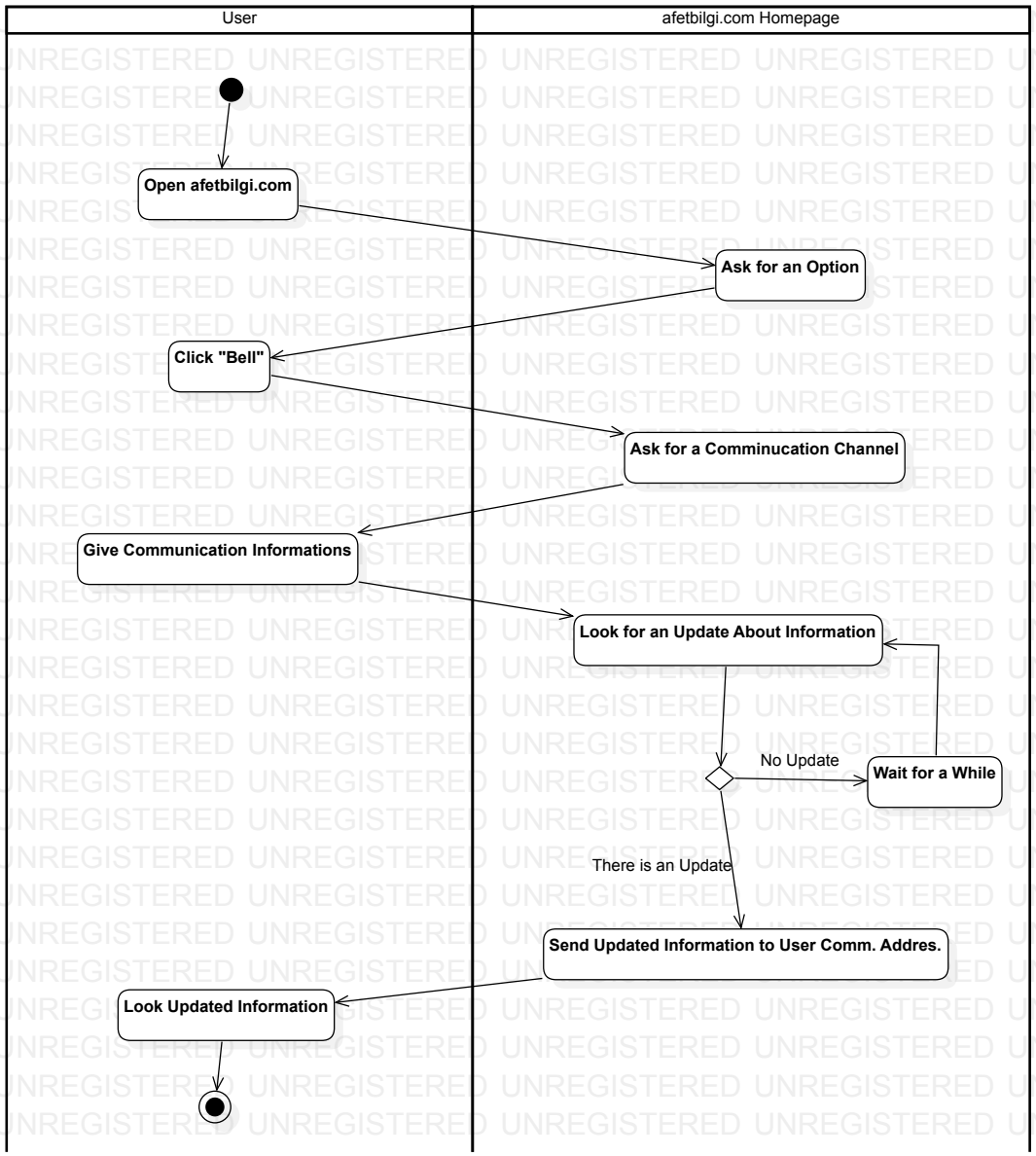

Figure 13: Activity Diagram for Receive Updates&Notifications

4.4 Usability Requirements

In addition to those in section 3.3, suggested system should also have the following usability requirements:

- Users shall allow notifications from afetbilgi.com to take notifications
- Users shall have a positive chatting experience with AI Assistant.
- Users shall directly search the need they want if they couldn't find.

4.5 Performance Requirements

In addition to those in section 3.4, suggested system should also have the following performance requirements:

- System shall respond search queries as fast as possible.
- System shall integrate smoothly with ChatGPT.
- System shall rearrange the resource usage to keep it low with new properties.

4.6 Logical Database Requirements

- System shall store the user's contact information and ChatGPT account information.
- The system should store the questions asked to ChatGPT and the answers given by ChatGPT.
- System should store first aid resources as a topic type.

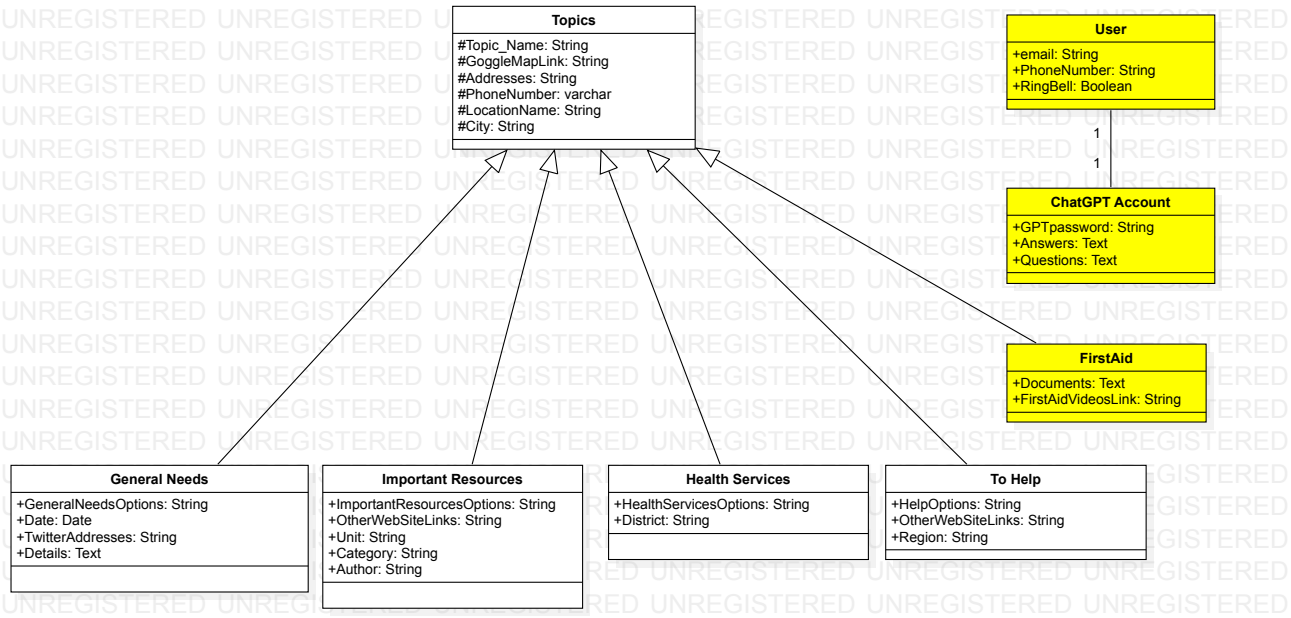

Figure 14: Class Diagram for Logical Database

4.7 Design Constraints

In addition to those in section 3.6, suggested system have the following design constraints:

- System shall still have a clean and simple interface after new properties added.
- System shall check that no sensitive information is shared with AI Assistant to ensure user privacy.
- System shall use reliable and time-efficient notification mechanisms.

4.8 System Attributes

In addition to those in section 3.7, suggested system have the following system attributes:

a. **Reliability**:

- Integration and unit tests for new components shall be conducted.

b. **Availability**:

- Newly integrated components shall not cause any shut down.

c. **Security**:

- AI Assistant shall be integrated by ensuring the data privacy and security.

4.9 Supporting Information

afetbilgi.com can be improved by adding new features that will enlarge its use and impact. An AI assistant will be really helpful for providing general information about disasters and how to act in case of an earthquake. For this purpose, the new trend, ChatGPT can be integrated easily. A search bar will be quite beneficial because there are many section and finding something can be hard. Since resources and news are keep changing constantly in earthquake area, a notification mechanism can be integrated to notify people if there is a change. Finally, "Frequently Asked Questions" and "Learn Correct First-Aid" sections can be added.