MIDDLE EAST TECHNICAL UNIVERSITY
DEPARTMENT OF COMPUTER ENGINEERING

SOFTWARE REQUIREMENTS SPECIFICATION

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afetbilgi.com

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1 Introduction

This document is the Software Specification Requirement (SRS) of a website designed to help earthquake victims to acquire the necessary information and give volunteers a chance to donate to help earthquake victims. The website is called afetbilgi.com, developed by Middle East Technical University (METU) students and graduates.

1.1 Purpose of the System

afetbilgi.com, direct translation to English is 'disaster documentation', is an open-source efforted project led by students from METU in Ankara, Turkiye. It aims to provide a clean, verified, and correctly classified information interface for earthquake victims and helpers alike in the aftermath of the tragic earthquake on February 6th, 2023, in Pazarcik, Turkiye. It also offers quick information using confirmed website links, maps, and address tables, along with the relevant contact details of organizations and helpers involved.

1.2 Scope

afetbilgi.com was established to offer as much information as needed by users in three main categories:

- People who are affected by the earthquake (the victims).
- Individuals/Organisations who want to help and participate in other governmen-t/private efforted procedures in the affected areas.
- People from METU who verify and checked any presented links on the websites.

The website is primarily responsible for providing tables and datasheets with website links to third-party organizations/contacts details of web places/physical locations which offer/collect help. As indicated here, these links are external and lead out to other websites(outside from afetbilgi.com) whose efforts are verified by human resolves (METU students/helpers/site administrators) on the surface-level user experience.

Given how the world is connected with the internet and phones/televised communication, the project developers aim to create a website using these advantageous characteristics via a simple interface in multiple available languages to create fast and easy use of information with no additional and unnecessary obstacles. In areas lacking internet infrastructure that might have been disturbed by the earthquake activities, the website can be distributed via printed-out PDFs, which are shareable via ordinary computers and mobiles, and hand-forwarded physical versions in the forms of leaflets and so on.

Lastly, afetbilgi.com includes a map functionality if the victim/helper has an internet connection. Any user can locate helper geolocations via terrain/road routes while also being able to quickly view extra details such as written addresses, contact phone details, and previous reviews.

1.3 System Overview

This document section will provide detailed information about the system, including all components.

1.3.1 System Perspective

afetbilgi.com[1] is not part of a more extensive system. It is a standalone and open-source efforted website to verify critical information in the fight against the 6 February 2023 Pazarcik Earthquake and deliver it to disaster victims and those who want to help in an understandable, concise manner in multiple languages.

This information is presented in either the form of legible tables with third-party governmental and private links or an interactable method via a map view interface. If deemed necessary, admin and maintainers can make changes to display newly created or edited data and upload it to the system upon any complaints or suggestions they may get on their contact details.

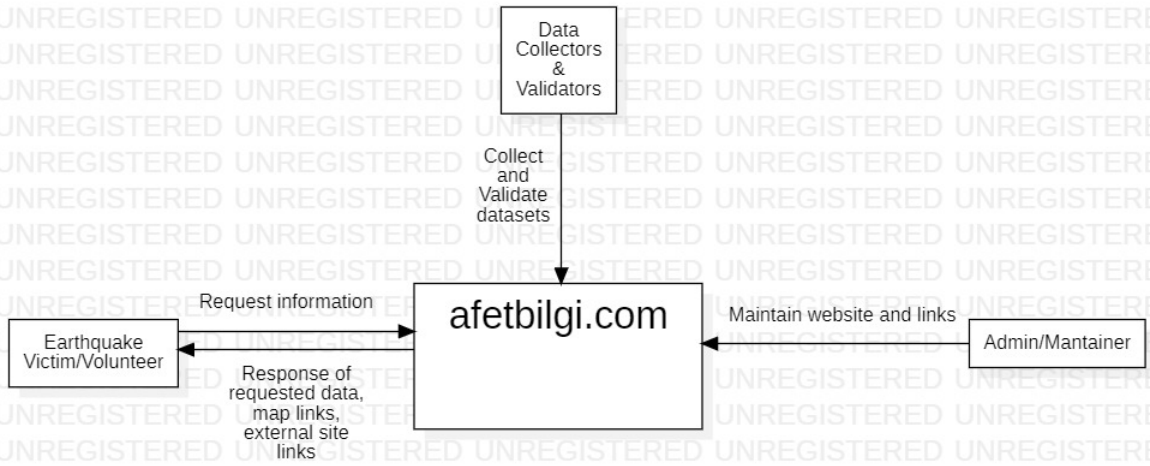

Figure 1: Context Diagram for afetbilgi.com

1.3.2 System Functions

Function	Summary
PDF creation	Users generate PDF versions of the entire website or internal further classified pages per their needs.
Connect via socials	Victims and helpers can connect with the site administrators and contributors to inform/change anything on the website by clicking on the relevant social app on the main page (discord, etc.). An about section can also be used to contact site administration via formal email methods.
Search for mobility needs	Lets users click in the relevant section in general needs and bring up information on transportation and evacuation sites.
Search for necessities	Site user click in the relevant section in general needs and bring up locations as per cities on restaurants, food kitchens, and gas stations.
Search for housing	Users can click in the relevant section in general needs and bring up dormitories, tenting segmented areas providing shelter.
Inquire about miscellanous information	In important resources, the website provides a list of resources such as useful articles on efforts and organization contact details.
Donate and help	People wishing to help the victims are given verified directories of blood banks, charitable private/government organizations for monetary funds, and ongoing digital campaigns to show trends involving support.
Track hospitals and vets	In the healthcare services section, users can track hospitals, whether for medical supplies, surgical/medicinal help, or even to donate and help in nursing facilities.
Locate pharmacies	Users can find a directory of pharmacies in the healthcare services if in need of medicinal supplies.
Language translation	Multiple versions in different languages are provided at the click of a button on any website page.
Map generation and use	Users can open categorized and labeled locations on interactive maps whether to ask/send help in the affected areas while noting the terrains and routes involved in such areas. The map displays calamity-stricken areas and other areas from other cities taking help as well.

Table 1: System Functions

1.3.3 Stakeholder Characteristics

There are three main categories of people related to afetbilgi.com:

1. **Earthquake victims/ affectees:** These individuals whom the earthquake has directly impacted seek help, support, and information to recover from the disaster. They may be looking for information on how to find shelter, food, medical assistance, and other resources that can help them get back on their feet. The website may provide them with a platform to connect with relief organizations and volunteers and access information on navigating the recovery process.

2. **Volunteers:** These individuals want to offer their time, skills, and resources to support the relief and recovery efforts. They may include local volunteers, international volunteers, and disaster response teams. The website may attract volunteers by providing information on how to get involved, where to go, and what support is needed. Their primary use of the website could be to scout places to help from outside the main areas, such as centers transporting essential needs to stricken areas like farther cities such as Ankara and Istanbul. This is the target sector for the Donate or Help category, such as via blood donation, monetary donation, physical volunteer help, etc. Other entities such as relief organizations, government agencies, more prominent sponsors, and potential media outlets can exist within this category.

3. **Web developers, Data Collectors, and Site administrators:** These are the website creators responsible for developing, designing, and maintaining the platform. They may include web developers, designers, and other professionals involved in creating and managing the website. These stakeholders may be vested in ensuring the website is accessible, user-friendly, effective, and, most importantly, providing simple, verified information to facilitate relief and recovery efforts without any hurdles.

1.3.4 Limitations

- **Regulatory policies:** Users can access the website without authentication or obstacles. The links themselves to the third party are verified by actual personnel in the site maintainers' team and can be reported by users via given socials and contact us details.

- Hardware limitations: Any device such as phones/computers connected to internet infrastructure can access it. In the case of earthquake-stricken infrastructure, PDFs can be generated for website distribution via physical or other electronic means of conveyance.

- **Interface to other applications:** There is no interface to other applications in the in-use build version of the website being serviced to users via the internet, but in the development version(later published after workflow checks), the website is served in the backend with backups of data.

- **Parallel operation:** No parallel operations are involved in this web application, which instead involves different individual directories/maps listing answers to a user's need of information as per his/her selected category/city and language.

- **Audit functions:** There are regularly run Github CI/CD-based workflows that back up site data to the backend cloud at AWS while checking newly added pages/entries for syntax/storage/unreachable DNS link errors.

- **Control functions:** There is no primary control function, but website maintainers / registered contributors are the ones that get to decide what new entries are to be entered/working of existing pages along with viewing reviews or complaints about the website sent to them. The site maintainers also decided on the UI/UX frontend that users interact with in the released website versions and the backend, where the website is hosted/backed up regularly.

- **Higher-order language requirements:** Any user who wishes to contribute to the site maintainers should know TypeScript and the React Web framework to work on JSON objects in this static website. Python knowledge assimilates scripts for adding new pages/classes of help/data to the development/published website version.

- **Signal handshake protocols:** For such a static website, it is hosted on the backend and accessed using an IP address (translated from DNS aliases/names categories under afetbilgi.com created by site maintainers) over HTTPS protocol whenever the site domain is typed and entered in any internet browser of choice by the user.

- **Quality requirements:** There is no such limitation in this open-sourced effort that aims to provide fast, reliable information to urgently needed victims and helpers. Hence, the website was published as fast as possible in its initial condition without quality checks during the early earthquake occurrence days, which was also when the website was most used. The only quality procedure involved is a basic shared understanding of the quality of 3rd-party links/external information that the site contributors manually check to get an idea of the reliability of new data before adding it to the site to be accessible by the common public.

- **Criticality of the application:** This website was meant for emergency use and was essential to victims and helpers alike. Hence, it needed at least a basic level of authentication/verification of the links provided, which site contributors did to the best of their abilities, given the minimal time and resources they could receive.

- **Safety and security considerations:** There is no such consideration apart from the fact that site contributors manually check new directories/data to avoid false information, non-renowned/non-existing organizations, fake/fabulous-natured based monetary websites for donations, and so on.

- **Physical/Mental considerations:** Multiple languages are provided to be read by any of the widely varying victims/helped involved, along with maps to provide visual prowess in investigating physical routes/terrain/closeness of the locations involved. Pdfs can be generated and shared via physical or electronic means, too, if needed, of the website and its' directories of information listings.

- **Limitations that are sourced from other systems:** There is no such limitation, but Cloudflare is used to provide secure proxy DNS procedures in addition to the website being backed up by a secure AWS bucket instance while employing Vercel in hosting as well. These services are renowned worldwide; hence, given the minimal time of deployment and deliverance, they are the best possible choices for publishing a website.

1.4 Definitions

Term	**Definition**
Python	Computer Programming language to create applications, features, etc.
React	A JavaScript framework widely used to create websites
JavaScript	Scripting programming language used to create applets for the internet
CI/CD	Continuous Integration/Continuous Development
HTTPS	An internet protocol known as Hyper Text Transfer Protocol Secured
AWS	Amazon Web Services the provide web hosting servicing
CloudFlare	A secure DNS hosting service
Vercel	A web hosting service
UI/UX	User Interface/User Experience, meant to refer to the frontend part of a web app that the target audience of the website interact with
PDF	Known as Portable Document Format for easy sharing
IP	Internet Protocol
DNS	Domain Name Server

Table 2: Definitions

2 References

This document is prepared with respect to IEEE 29148-2011 [2] standard.

References

[1] A. B. İşlem Merkezi, *Afetbilgi — afetler hakkında doğru ve güncel bilgiler*, `http://www.afetbilgi.com/`, February, 2023.

[2] IEEE, "29148-2011 - iso/iec/ieee international standard – systems and software engineering – life cycle processes – requirements engineering," IEEE Standards Association, Standard, 2011. DOI: `10.1109/IEEESTD.2011.6146379`. [Online]. Available: `http://ieeexplore.ieee.org/document/6146379/` (visited on 04/12/2023).

3 Specific Requirements

3.1 External Interfaces

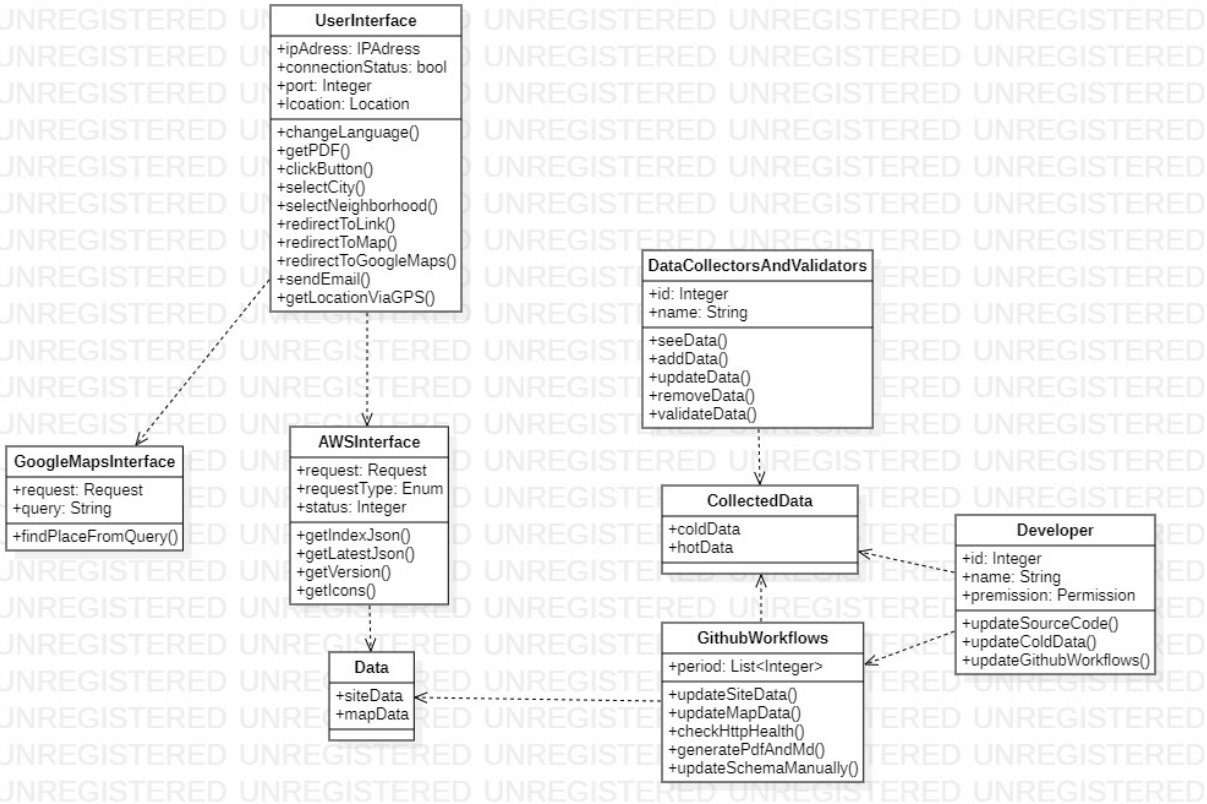

Figure 2: External Interfaces

3.2 Functions

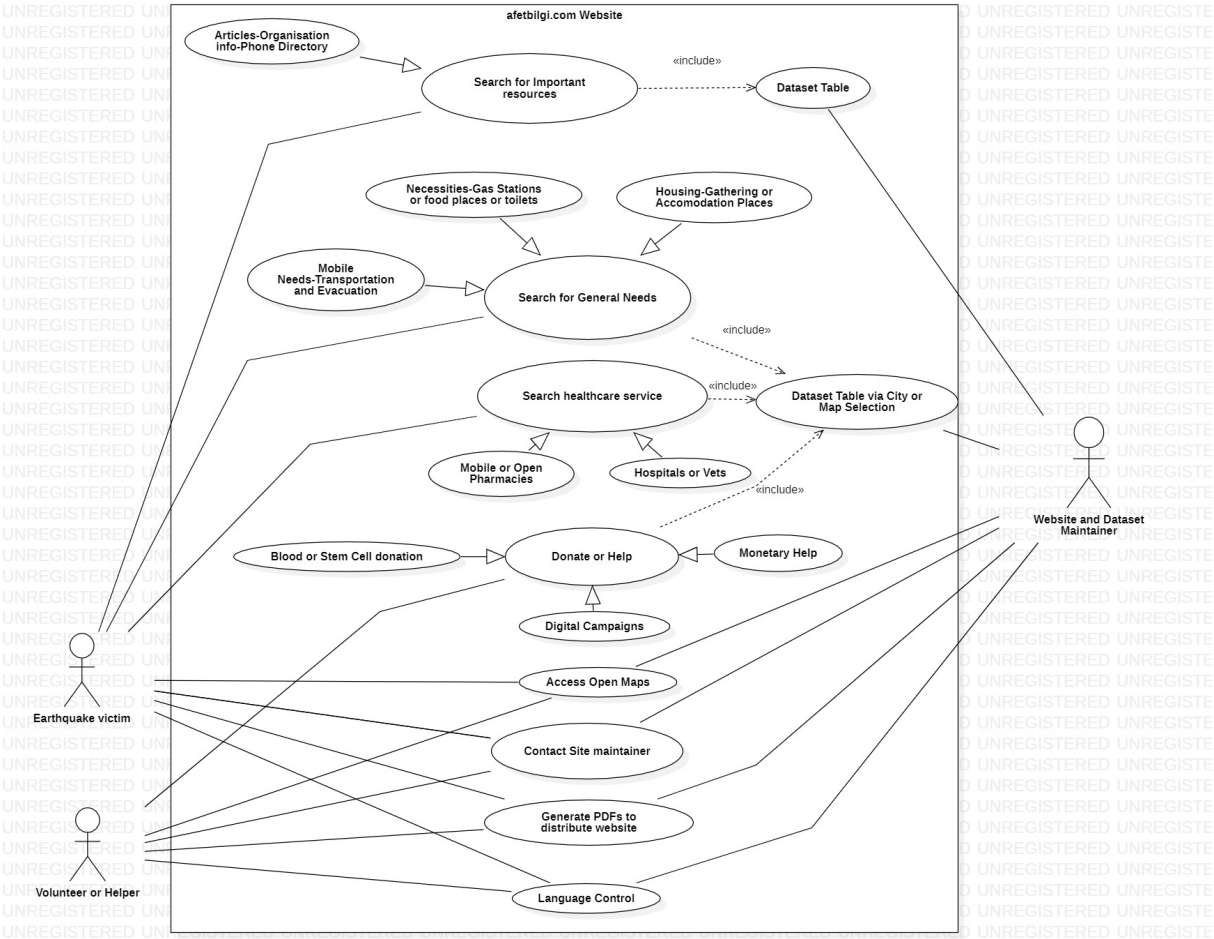

Figure 3: Use Case Diagram for afetbilgi.com

Use Case ID	1
Use-Case Name	Donate or Help
Actors	Volunteer or Helper and Website maintainers
Description	Whenever a site user wants to donate or help earthquake victims, he or she can view verified and updated institutions and organisations, which he or she can donate to, on the website to donate to
Data	Verified and updated directory of external 3rd party links of welfare and governmental organisations
Preconditions	The directory must be updated and verified regularly given the potential monetary usage of the links in the future by the users
Stimulus	User clicks on the relevant donation/help methods listed as bold text buttons in the "`To Help`" category on the website
Basic Flow	**Step 1:** User clicks on "`Digital solidarity campaigns`" **Step 2:** User selects any of the presented external-3rd party links(presented in a directory) **Step 3:** User redirected to verified 3rd party website
Alternative Flow #1	**Step 1:** User clicks on "`Other donation`" **Step 2:** User selects relevant city **Step 3:** User selects verified helper links of individuals/smaller organisations along with their contact details **Step 4:** User clicks on any link and escorted out to a 3rd party site
Alternative Flow #2	**Step 1:** User clicks on "`Kizilay Blood Donation Places`" **Step 2:** User automatically redirected to primary verified 3rd party site of governmental organisation accepting blood donations
Exception Flow	-
Post Conditions	User is redirected to a verified external website out of the afet-bilgi.com domain

Table 3: Use Case - Donate or Help

Use Case ID	2
Use-Case Name	Access open maps
Actors	Volunteers or Victims, Website maintainers
Description	Users can view current location with respect to places in need of help and use interactive map view to track down relevant places offering help (verified by site maintainers) via GPS location
Data	Interactive Map View with relevant place descriptions to navigate on
Preconditions	Places ought to be verified, properly categorised and color coded for easy understanding by site user
Stimulus	User drags mouse around on map view involving GPS after clicking on the map button anywhere on screen or calling `maps.afetbilgi.com` directly in the browser
Basic Flow	**Step 1:** User is shown his current location with respect to to rest of Turkey **Step 2:** Users can zoom in or out of Turkey's map and track themselves to needy areas as per color codes and categorisation **Step 3:** User can click on a tracked down helping house, restaurant, etc. and be greeted by a pop up box with description and relevant links to third party sites or Google Maps routes **Step 4:** User can click on the links and escorted out to 3rd party websites or Google Maps website
Alternative Flow #1	**Step 1:** User can select zoom in or out along with clicking on the camera icon **Step 2:** User can save map screenshot for later use or distribution
Alternative Flow #2	-
Exception Flow	-
Post Conditions	User ends up on verified external website outside of afetbilgi.com domain

Table 4: Use Case - Access open maps

Use Case ID	3
Use-Case Name	Generate PDFs to distribute website
Actors	Volunteers or victims
Description	Users can save filtered out website directories for later use given possible lack of electrical or network necessities in these earthquake stricken areas
Data	Separate downloadable PDF documents after selecting relevant cities
Preconditions	User is able to select entire cities with verified directory links and contact information
Stimulus	User clicks on PDF icon button anywhere on the website
Basic Flow	**Step 1:** User clicks on PDF icon anywhere on website **Step 2:** User selects city **Step 3:** Document is loaded and enabled for download by the user with the relevant city and categories highlighted on it
Alternative Flow #1	-
Alternative Flow #2	-
Exception Flow	-
Post Conditions	Site user has received well formatted and legible generated PDF document with relevant hyperlinks and contact details of verified directories

Table 5: Use Case - Generate PDFs to distribute website

3.3 Usability Requirements

- Being a website, users shall be able to easily navigate fast to sections concerning their relevant interest via clearly labeled explicitly placed buttons on the page.
- Users shall be able to understand the hierarchical/efficiently categorized portions of this website in the form of help categories and city selection.
- The website has been made easy to follow in multiple languages and has a simple plain design with center-placed buttons and efficient answering tables of information.
- Site maintainers have made the contents of this website accessible to the public, governmental organizations, media outlets, and sponsors/volunteers alike, in addition to its target of earthquake victims.
- The website has been optimized to work correctly on mobile devices and ensure access from anywhere.
- The website has contact details and socials of its managing community's details for fast feedback regarding complaints, and reviews from its users.
- Users must be able to gain fast access to pdf generation for distribution given stressful, emergency conditions in earthquake-stricken areas.
- Site maintainers must have verified as much information on details as possible for users to access while safeguarding their monetary and physical interests.
- Users shall be able to access the website at all times for secure third-party links. Hence the site maintainer's agenda is to host on widely-acclaimed services like Cloudflare.
- Maps should be able to serve not just geo-locations but also internal details, such as contact details involving physical addresses and phone numbers on description boxes for easy accessibility by victims and helper volunteers alike.

3.4 Performance Requirements

- **High Availability:** To guarantee that it is always accessible, particularly in times of emergency when people require information and support, the afetbilgi.comwebsite should have high availability.

- **Fast Loading:** The website must load rapidly for users to access the required data immediately, especially in locations with sluggish internet connectivity. The site's various DNS(s)' health is regularly checked with CI/CD workflows.

- **Backup site data:** Via the backend of the GitHub workflow, the website is backed up and updated every 30 minutes with the latest version visible on any viewed webpage(from the site's hierarchy).

- **Adaptability:** The website has an adaptable design with straightforward, strategically positioned buttons suitable for desktops, laptops, tablets, and mobile devices.

- **Scalability:** The backend of the Cloudflare website should be able to handle high traffic, especially in times of emergency when it may increase dramatically.User-Friendly Interface: The website should have a simple, user-friendly interface that makes it simple for visitors to access available resources and obtain the information they need.

- **Multilingual Support:** To allow users who do not speak their native language to access the website's resources and information, the site maintainers have built it such that the website should support multiple languages.

- **Social media integration:** To encourage communication and information sharing among the impacted communities and other stakeholders, the website has been integrated with social media platforms like Discord and Twitter.

- **Accessibility:** afetbilgi.comwas created with accessibility in mind to make sure that persons with impairments can access the data and tools offered on the website, like different map views.

- **Information that is accurate and current:** afetbilgi.commakes every attempt to offer accurate and current information regarding the earthquake, its effects, and the ongoing relief efforts.

- **Security and privacy:** To safeguard user personal information and guarantee that their donations and contributions are secure and free from frauds or thefts, third-party, external links with security and privacy in mind are chosen on the afetbilgi.comwebsite.

3.5 Logical Database Requirements

afetbilgi.comdoes not currently have any relational database. To acquire the required data for both site and maps, it gets a JSON file from AWS and the code of website parses this JSON file according the path and the chosen option. For this purpose, it uses axios to send `GET` request to the `cdn.afetbilgi.com/latest.json`. This request returns the `latest.json` file, which includes all the data required in the website. Although it may have drawback such as long load time, it may have advantages such as not loading any data after initial load.

To parse and upload the JSON file into the AWS, Github Workflows are used. Github Workflows parse and upload the `latest.json` by using the data, which collectors and validators collect and validate, periodically.

The relations between objects in the JSON file is shown at Figure 4. The code use these relations to parse the JSON correctly and show the included information in the JSON. If the system is updated to a relational database, the database can use the relations at the Figure 4.

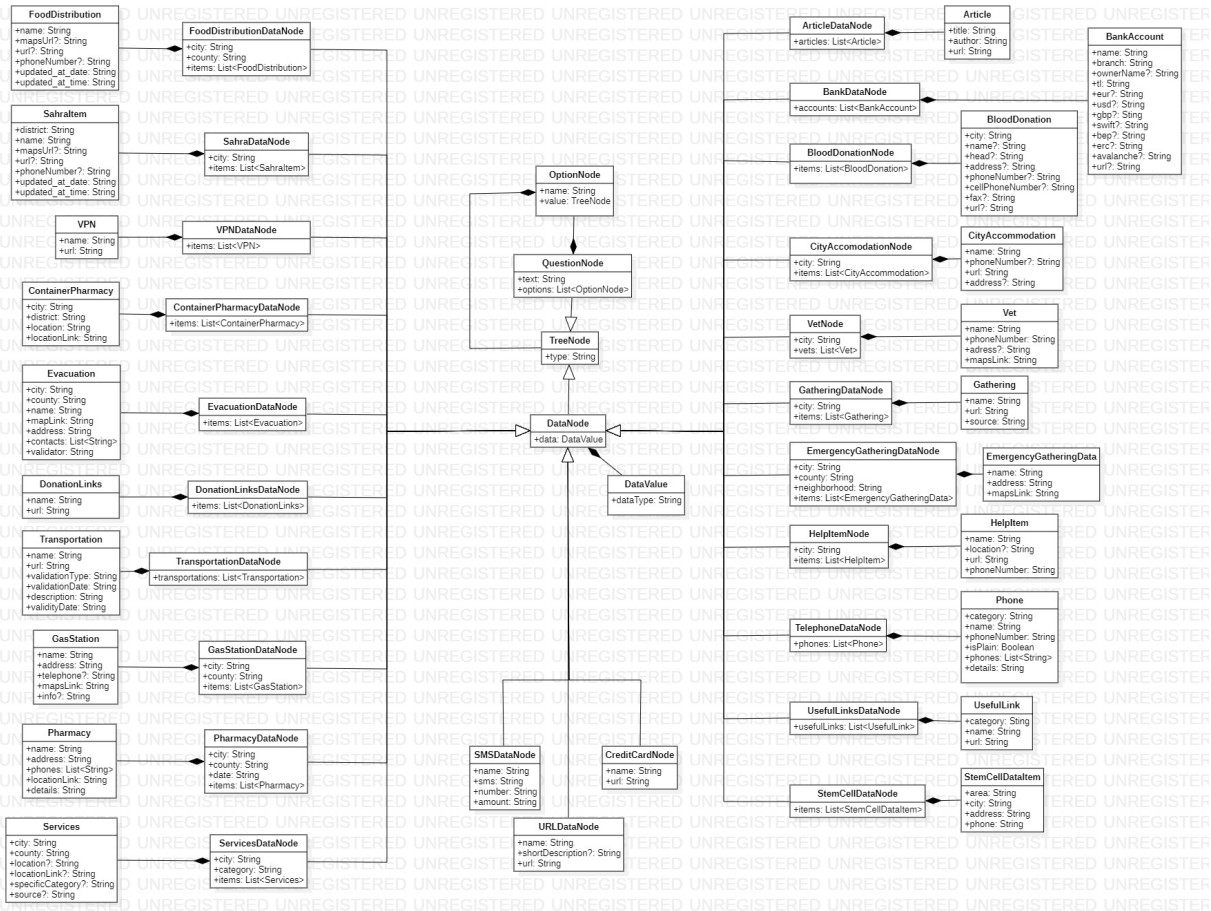

Figure 4: `latest.json` Object Structure

3.6 Design Constraints

The afetbilgi.comwebsite uses minimalistic design on its frontend site with central-placed, bold text clear buttons to allow users under potentially distressing conditions to scout and navigate through. Not only that, but due to a lack of proper open license given how the website was created for urgent use by students, the website still employs a proper backend system, at least, with Cloudflare to handle proxy DNS issues, GitHub CI/CD workflows to continuous update the website and check the various DNS(s) health, along with AWS to hold backup versions in cloud bucket instances too.

3.7 System Attributes

- **Reliability:**
  - All of the software involved in creating this website is open source to allow for inspection and improvement in future similar case scenarios.
  - The website's DNS must always be in public health, along with the most recent updated information from the backend.
  - GitHub CI/CD workflows must be regularly run to maintain website health with appropriate alerts in case of attacks/unusually high user traffic.
  - Newly added pages must be checked with workflows to correspond to established data node interface conventions.
- **Availability:**
  - Site data must be backed up regularly to AWS for retrieval and archiving of past data before any potential updates.
  - All of the sites involved DNS/domain names' health in being readily checked via HTTP request status with workflows to make sure they are active.
- **Security:**
  - Cloudflare is to be employed to safeguard against any potential high-traffic attacks.
  - External sites mentioned and third-party links shall be evaluated by human personnel in the form of site contributors. Their validities/authenticities are judged accordingly to be placed and referred to on the website.
- **Maintainability:**
  - The site is regularly updated every 30 minutes as per CI/CD workflows from the latest open-source code repository.

- **Portability:**
  - afetbilgi.comis made accessible with similar characteristics, such as having the same ease of use and clarity on mobile phones as on personal laptops/computers.
  - PDF generation should be provided if the website details must be physically distributed to people.

3.8 Supporting Information

It must be kept in mind that this website is an open-source efforted whose short-term immediate target period of use started just after the 6th of February and continues these days in the Spring of 2023 with proper maintenance.

However, in the long term, this website might eventually be dissolved when monetary support for its backend services, domain registration, and so on ceases.

4 Suggestions to Improve the Existing System

4.1 System Perspective

4.2 External Interfaces

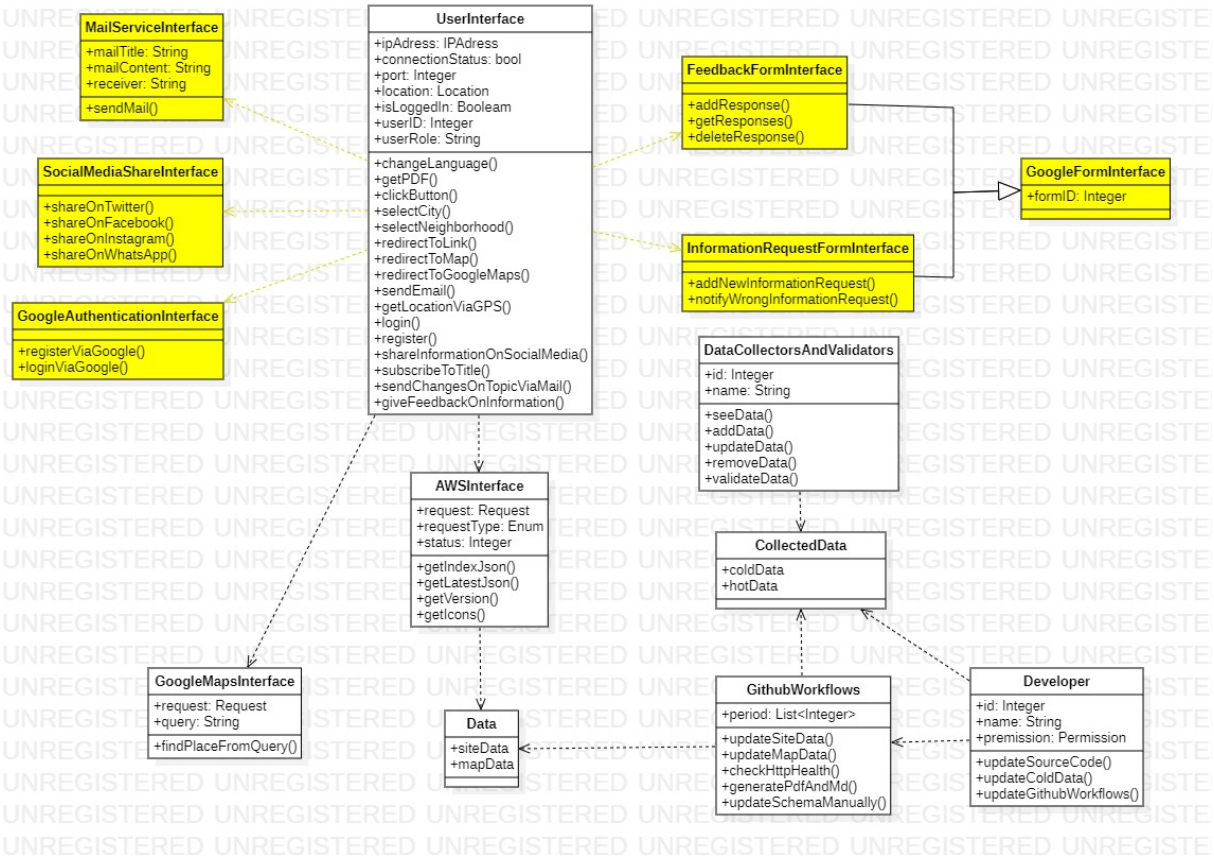

Figure 5: Suggested New External Interfaces

4.3 Functions

4.4 Usability Requirements

4.5 Performance Requirements

4.6 Logical Database Requirements

afetbilgi.comdoes currently have a relational database. To make minor difference in the source code, the object structure in the Section 3.5 is preserved. Additionally, users, roles and mail subscription data are added into database. `Users` relation provides information related to the login system. `Roles` relation provides information related to the registered role. `Mail Subscription` relation provides the information related to topics that users subcribed.

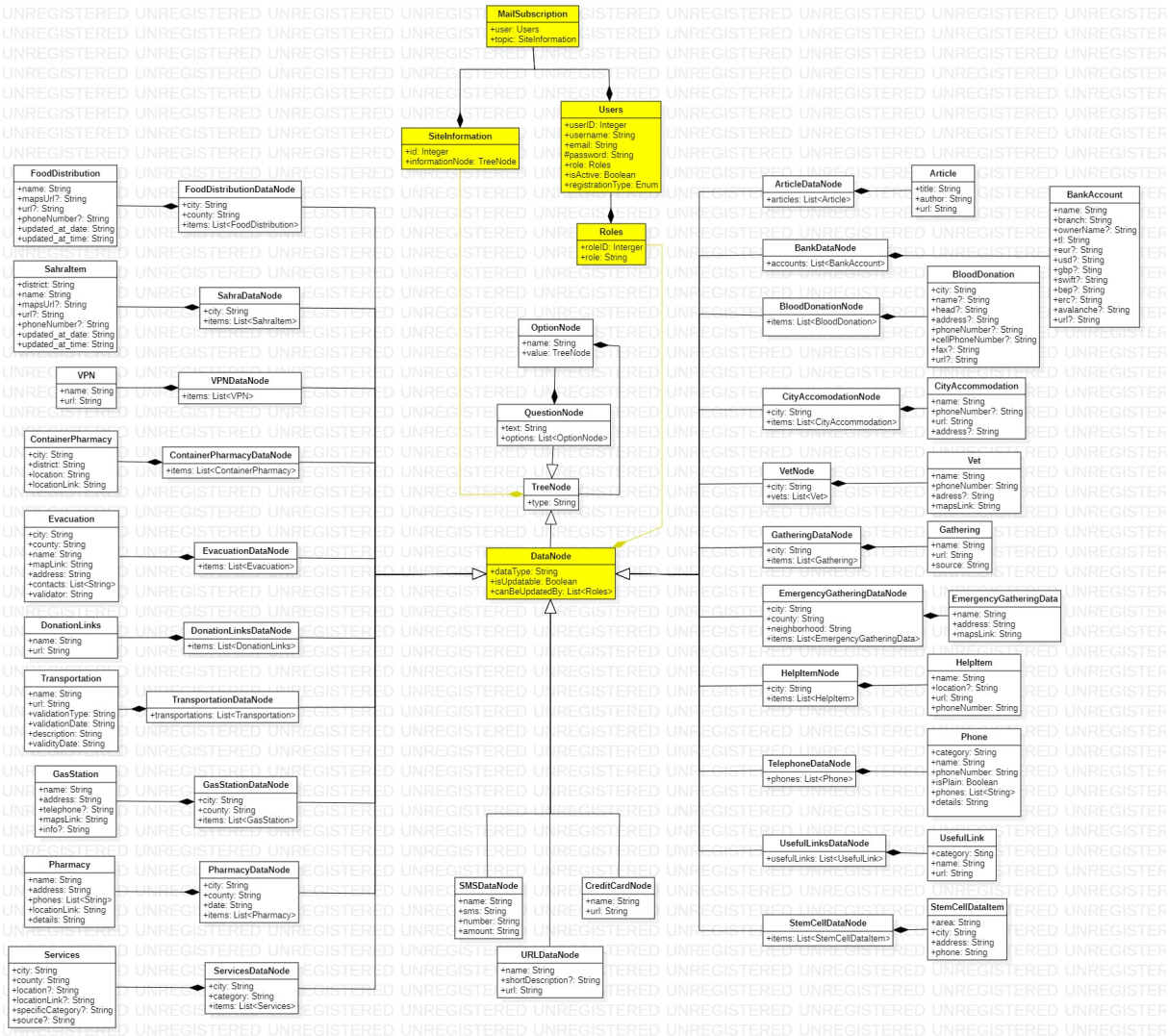

Figure 6: Suggested New Relational Database

4.7 Design Constraints

4.8 System Attributes

4.9 Supporting Information