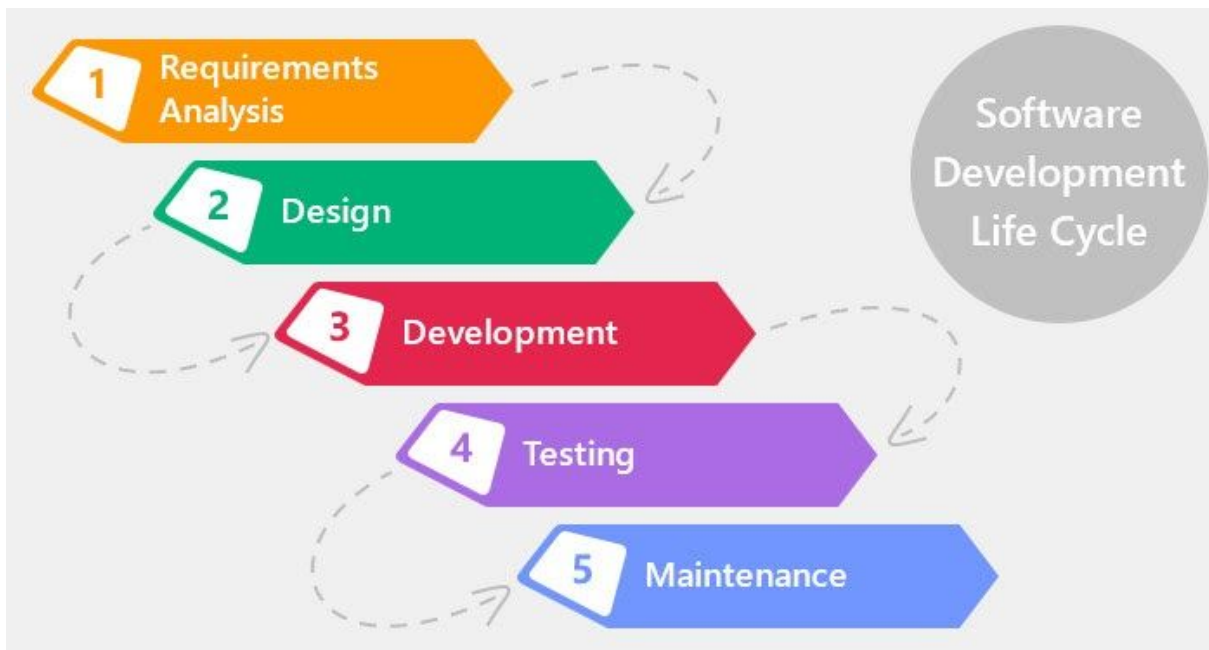




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Requirements Analysis and Specifications Document

Version No.3.0

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1. OVERVIEW

HATUA is a Swahili word for action. HATUA is an initiative which seeks to address the global antibacterial resistance (ABR) crisis through local action, mapping the burden and drivers of disease to translate global strategy into local solutions. The HATUA team, from Kenya, Uganda, Tanzania, USA and the UK has a broad range of expertise, a proven track record in ABR research and is well-placed to address the question of the drivers of ABR in the East African Communities (EAC).

HATUA will conduct a program of research in 3 countries:

- Kenya.
- Uganda.
- Tanzania.

This research is focused on four key elements of the ABR problem:

- the pathogen.
- the patient.
- the community with the disease.
- The therapy landscape.

2. PROJECT GOALS AND SCOPE

2.1 GOALS:

The project aims to design a web-application that allows users to visualize information about the dataset, which is the result of a survey conducted by the HATUA team and it includes:

- Patients' location.
- Gender.
- Marital status.
- Level of education.
- Religion.

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- Stigmas regarding diseases.
- Time from the first manifestation of symptoms.
- First doctor Visit.

2.2 SCOPE:

The web application will offer maps of the dataset with the ability to extract custom views of the data, manipulate the data display methods (pie charts/bars) and contribute to the data by adding information or even comments.

3. DOMAIN ANALYSIS

3.1 Domain entities:

- User.
- UG HATUA PHASE 2 ADULT OUTPATIENTS Dataset.

3.2 Domain analysis :

Phenomena	Location	Controlled by:
The data of the project is collected	Shared	The world
The user opens the browser.	The world	The world
The user opens the link of the system in the browser.	shared	The world

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User registration	Shared	The world
User credentials are stored in the Database.	The machine	The machine
User signing in	Shared	The world
User creates custom views (circles/line/bar graph)	Shared	The world
The user adds a comment	Shared	The world
The user's comment is added to the database	The machine	The machine
The system retrieves the comment and username from the database and shows them in the comments section.	Shared	The machine
The user searches for data	Shared	The world
The system asks the users for their usernames and passwords	Shared	Machine

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The system shows an error message when the user enters wrong details.	Shared	Machine
The system shows a hello message followed by the user's username	Shared	Machine
The system renders the main webpage including the default map and default visualization aspects	Shared	Machine

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4. RELEVANT PHENOMENA

4.1 WORLD PHENOMENA

1. The user opens the Internet browser.

4.2 MACHINE PHENOMENA

1. User credentials are stored in the database.
2. User's comment is added to the database.

4.3 SHARED PHENOMENA

- Phenomena controlled by the world and observed by the machine:
 1. The user opens the link of the system in the browser.
 2. The data of the project is collected.
 3. The user registers into the system by clicking the "Register" button in the system webpage.
 4. The user enters his/ her username and password and signs in by clicking the login button.
 5. The user changes the visualization way in a customized one by pressing the desired visualization option button (circle, bar or line).
 6. The user inserts a comment in the comment tab and presses the "Add Comment" button.
 7. The user searches for data by entering his inquiry in the search tab.
- Phenomena controlled by the machine and observed by the world:
 1. The system asks the user for their username and password.
 2. The system shows an error message when the user enters wrong details.

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3. The system shows a hello message to the user followed by the user's username.
4. The system renders the main webpages including the default view of the map and other default visualization aspects.
5. The system retrieves the comment, username from the database and shows them in the comments section.
6. The system displays the user's comment alongside his username.

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5. USE CASES

5.1 ACTORS:

Members: users that have access to the database and can view, search and add some information in the web page, as well as leave comments and interact with each via a built-in message board.

Users: users that can view and search information from the database in read-only.

5.2 USE CASES CONCERNING USERS/MEMBERS:

Member registration:

- ❖ Use case name: RegisterMember
- ❖ Actors: Members.
- ❖ Entry Condition: Member opens the web page.
- ❖ Flow:
 - The Member selects the “register” option.
 - A window pops-up asking the member to fill a registration form, which includes username, email address, user’s age.
 - The Member fills the form and confirms the process.
 - The username of the member is stored in the software’s database.
 - The member’s password is encrypted before being stored in the software’s database.
- ❖ Exit Condition: The software stores the input information in the database.

Member login:

- ❖ Use case name: LoginMember
- ❖ Actors: Members.
- ❖ Entry Condition: Member opens the web page.
- ❖ Flow:
 - The Member selects the “login” option.

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- The software opens a window asking the Member for username and password.
- The Member submits his/her username and password
- The software checks if the member's credentials are stored in the database.
- The software grants the Member access to the full properties of the web page if his credentials match the ones in the database.
- The software returns an error message if the user provides wrong credentials.
- ❖ Exit Condition: The member is successfully logged in.

Member logout:

- ❖ Use case name: LogoutMember
- ❖ Actors: Members.
- ❖ Entry Condition: Member is logged in.
- ❖ Flow:
 - The Member selects the "logout" option.
 - The software requires the member to confirm the operation.
 - The Member confirms the operation.
 - The software closes the Member's session.
- ❖ Exit Condition: The member is successfully logged out

Search:

- ❖ Use case name: Search
- ❖ Actors: Members.
- ❖ Entry Condition: Members search for inquiry.
- ❖ Flow:
 - The Member enters inquiry.
 - The software searches the database for relevant information as the user enters.
 - The software retrieves the relevant inquiry from the database.
 - The software redirects the Member to the visualization page.
- ❖ Exit Condition: The Member is redirected to the Search page with the

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data_table contents on the page.

Visualization:

- ❖ Use case name: VisualizeData
- ❖ Actors: Members.
- ❖ Entry Condition: Members search for inquiry.
- ❖ Flow:
 - The Member is redirected from the search page.
 - The Member asked to choose a visualization method (circle,line graph, bar chart).
 - The software displays information according to the User/Member's selection.
- ❖ Exit Condition: The software returns the desired data.

View Map:

- ❖ Use case name: ViewMap
- ❖ Actors: Members.
- ❖ Entry condition: Members open the web page.
- ❖ Flow:
 - TheMember selects the “View Map” option.
 - The software redirects the Member to OpenStreetMap rendered Map in View Map page.
- ❖ Exit Condition: The software opens OpenStreetMap in View Map page.

Comment:

- ❖ Use case name: AddComment.
- ❖ Actors: Members.
- ❖ Entry Condition: Member is logged in.
- ❖ Flow:
 - The Member selects the “add comment” option.
 - The software opens a field for Member input.

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- The Member types in a comment.
 - The software saves the comment to the database.
 - The software displays the comment on the web page's message board.
- ❖ Exit Condition: The user's comment is successfully added

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5.3 EXCEPTIONS:

The software returns “login error” when a member inputs login information incompatible with information stored in the web page database.

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6. REQUIREMENTS AND DOMAIN ASSUMPTIONS

6.1 REQUIREMENTS:

- I. The system shall be created using UG HATUA PHASE 2 ADULT OUTPATIENTS Epicollect5 dataset.
- II. The system should be implemented in Python.
- III. The system should be displayed on the web.
- IV. The system should return feedback about data applications within 5 seconds.
- V. The system should be available for 24/7.
- VI. The system should allow users to register using a username, a password, Email address and age that will be used as user credentials for signing in
- VII. The system shall allow users to extract custom views of the data.
 - The system will use OpenStreetMap as a default base-map.
 - The geographic data will appear as a on the top of the basemap where the data point location appears in a specific style.
 - The system shall allow the user to change the data style through tabs in the system's webpage.
 - The system shall allow users to customize the attributes of points to sketch them in(circles, lines and bars) charts for selected attributes (the entities).
- VIII. The system will offer a specified section of comments with a button for entering a comment to show.
 - The system will display the user's username on the screen with the user's comment.
- VIII. The system will offer a specified section of search with a button for entering a desired search to show.
 - The system will retrieve data from the data_table and present them based on the user's search.

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Keys:

- **Functional requirements.**
- **Non-functional requirements (suggested).**
- **Technical requirements.**

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6.2 DOMAIN ASSUMPTIONS:

1. The coordinates provided by UG HATUA DATASET correspond to real places on the map.
2. The patients that contributed to the UG HATUA DATASET provided real information.

7. REFERENCES

UT HATUA PHASE 2 ADULT OUTPATIENTS Database:

<https://five.epicollect.net/project/ug-hatua-phase-2-adult-outpatients>

8. EFFORT

1. MohamedElmustafa Omer: Requirements, Domain analysis and Relevant Phenomena + Use Cases. 25%
2. Wafi Eldoud: Goals, Overview, Scope, Use-cases, Domain assumptions. 25%
3. Abubakr Albashir: Requirements, Scope, Domain analysis and Relevant Phenomena, Goals. 25%
4. Faris Elsmani: Goals, Scope, Overview, Domain assumptions. 25%

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