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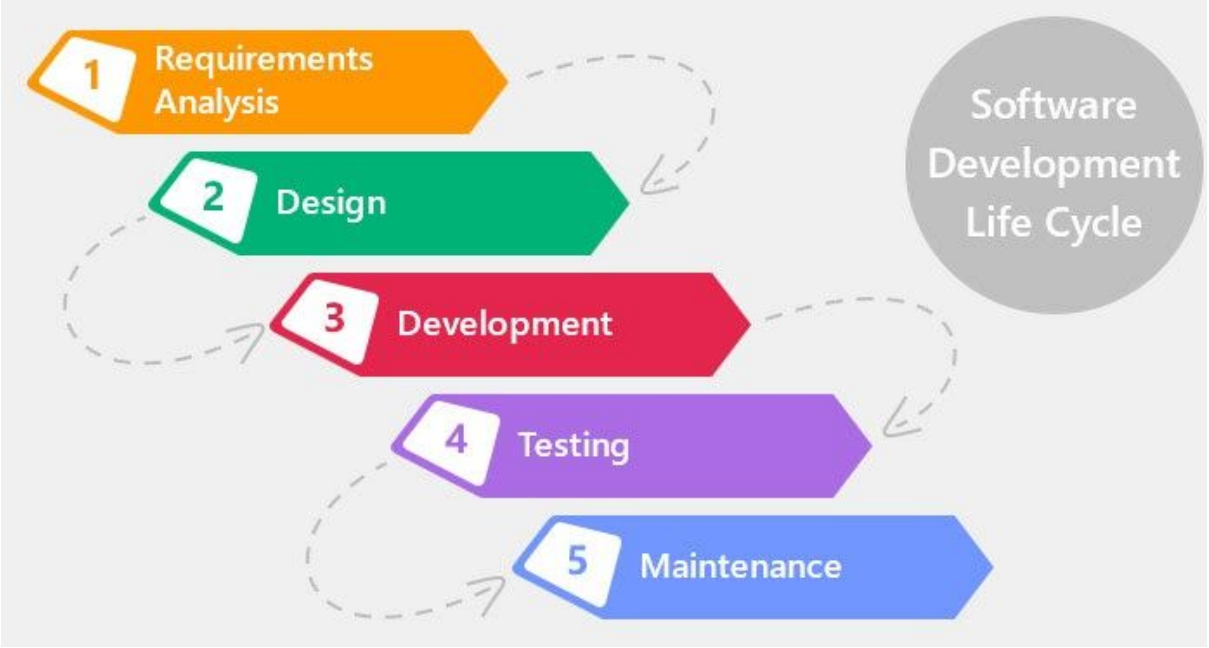


# Requirements Analysis and Specifications Document

*Version No.3.0*

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Group 5 Document.

Abubakr Albashir, Faris Elsmani, Mohamedelmustafa Eid, Wafi Eldoud.

Politecnico di Milano - 2020.

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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 conducts 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 (pie/bar charts) | 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 displays the user's comment alongside his username. | Shared | 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 | Shared | Machine |

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| | | |
|---|---|---|
| usernames and passwords | | |
| 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 |

## 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.
3. The user's comment is modified in the database.
4. The user's comment is deleted from 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 "change plot" button.
  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.

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2. The system shows an error message when the user enters wrong details.
3. The system shows a hello message to the user followed by the user's username.
4. The system renders the main webpage 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.

## 5. USE CASES

### 5.1 ACTORS:

*Members*: users that have access to the database and can view, search, add, remove and modify 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 name, surname, email address, birth date, etc.
  - The Member fills the form and confirms the process.
  - The software displays a confirmation message.
  - The credentials of the member are 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.
  - 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: Users/Members.
❖ Entry Condition: Users/Members searches for inquiry.
❖ Flow:
- The User/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 User/Member to the visualization page.

❖ Exit Condition: The User/Member is redirected to visualization page.

**Visualization**:

- Use case name: VisualizeData
- Actors: Users/Members.
- Entry Condition: Users/Members searches for inquiry.
- Flow:
  - The Users/Member is redirected from the search page.
  - The User/Member asked to choose a visualization method (line graph, pie chart, 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: Users/Members.
- Entry condition: Users/Members open the web page.
- Flow:
  - The User/Member selects the "View Map" option.
  - The software redirects the User/Member to Open Street Map in View Map page.
- Exit Condition: The software opens Open Street Map 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

### 5.3 EXCEPTIONS:

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

## 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 and a password 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 Open Street Map as a default base-map.
- The geographic data will appear as a default map where the data point location appears in a specific style in an overlay layer.
- The system shall allow the user to change the data style (color and size) as well as the basemap into other basemaps through tabs in the system's webpage.
- The system shall allow users to customize the attributes of points to sketch them in bars, or in pie charts by selecting the attribute (the entity) and the graph type from a list of options.

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.
- The system will allow the user to edit and delete his comment.

**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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