FABI Mobile User Manual

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Contents

1 General Information

The purpose of this document is to serve as an in-depth explanation and analysis of the system. The primary functionality and functions provided by the FABI Mobile software system are explained and outlined in an easy-to-understand and comprehensible manner.

1.1 Organization of this Manual

This user manual consist of five sections: General Information, System Summary, Getting Started, Using the System, and Troubleshooting.

The **General Information** section explains in general terms the system and the purpose for which it is intended. The Points of Contact are also provided in this section.

The **System Summary** section provides a general overview of the system. The summary outlines the use of the system's hardware and software requirements, the system's configuration, as well as the user access levels.

The **Getting Started** section explains how to get both the web and mobile applications, as well as how to use them based on the user levels.

Using the System provides a detailed description of all the system's functions.

The **Troubleshooting** sections describes all the recovery and error correction procedures. including error conditions that may generated and corrective actions that may need to be taken.

1.2 System Overview

FABI Mobile is the primary product. It encapsulates a web and mobile application intended to drastically modernize FABI's existing system as well as to compliment the roll-out of their Diagnostic Clinic to the forestry and agriculture sector. Another aspect of this software solution is to provide a central means for allowing internal staff within FABI to manage and maintain their databases, staff, and associated organizations. An external management system has been put in place for industry organizations to manage the guests that are associated to them and can in turn make use of the Diagnostic Clinic facilities.

The functionality of FABI Mobile lies within two main areas. The first main area is the web application. The intention of the web application is to provide a centralized and automated means for which organizations and users within those organizations can submit forms to the Diagnostic Clinic as well as track the progress of the samples that they submit. The web application also provides the ability for internal FABI staff to submit request and deposit forms for certain cultures as well submit samples to the Diagnostic Clinic. The mobile application will provide the exact same information with the exception that FABI administrators will not use the mobile application, as the mobile application is only intended for organizations, their members, and the FABI internal staff.

1.3 Points of Contact

FABI Contact Details:

Telephone: +27 (12) 420-3937 or 3938
FAX: +27 (12) 420-3960
Email: madelein.vanheerden@fabi.up.ac.za

Postal Address:
Forestry and Agricultural Biotechnology Institute (FABI)
University of Pretoria
Private bag X20
Hatfield
0028
South Africa

Physical address (also for courier deliveries pickups):
Forestry and Agricultural Biotechnology Institute (FABI)
University of Pretoria
Lunnon Street Entrance
Hatfield
0083
Pretoria
South Africa

1.4 Acronyms and Abbreviations

API: Application Programming Interface.
FABI: Forestry and Agricultural Biotechnology Institute.
HTTP: HyperText Transfer Protocol.
JSON: JavaScript Object Notation.
PDF: Portable Document Format.

2 System Summary

This section provides a general overview of the system. The summary outlines the use of the system's hardware and software requirements, the system's configuration, as well as the user access levels.

2.1 System Configuration

The web application will be run in a web browser and therefore any device may access the web application. There is no real constraints on these devices except that an Internet connection will be required to access the web application. The mobile application has been designed to run on both Android and IOS platforms. Again, these mobile devices will required and internet connection to use the mobile application. Offline local storage is provided by the mobile application. Once connected to the Internet, the mobile device will sync its local storage with the online databases. The Internal GPS system of the mobile devices will be used to capture the users GPS coordinates. These coordinates will also be extracted from the meta data of the images sent via the mobile application. Once download, the mobile application will need no other configuration.

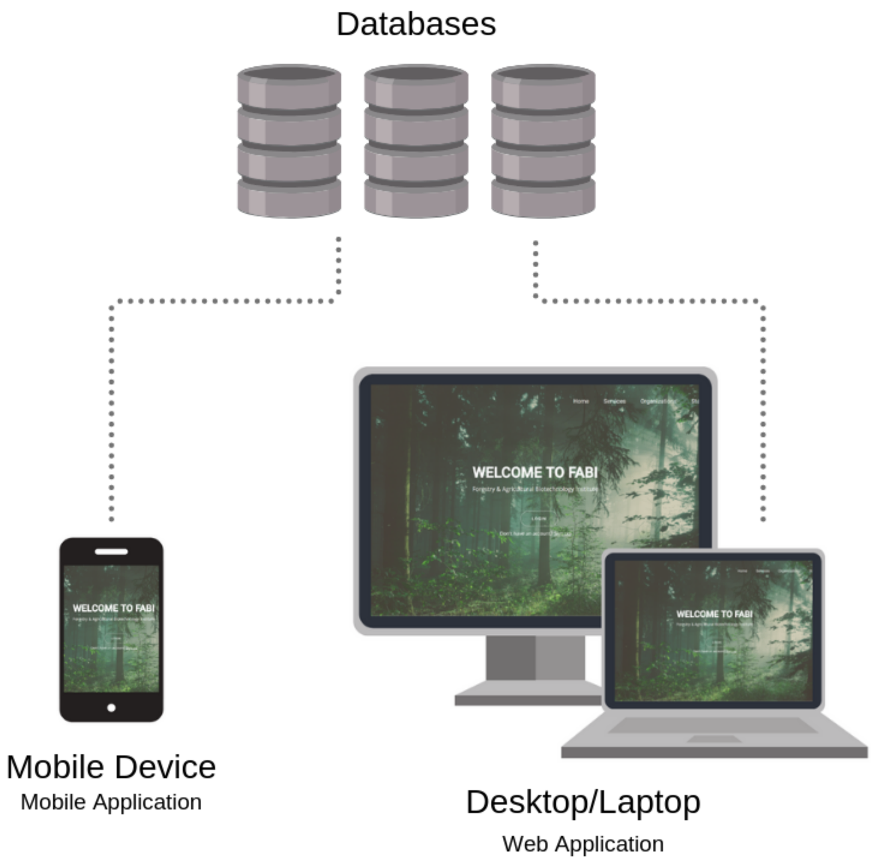


Figure 1: System Configuration

The above image graphically depicts how the system is configured. Both the web application and mobile application reply on the the databases and cloud storage systems to retrieve and store information.

2.2 System Installation

The web application will not require any installation because it can be accessed via any web browser. The mobile application will need to be downloaded from either the Android app store or the IOS app store depending on the mobile device being used. No other installations will be required for the use of this software system.

2.3 User Access Levels

With regards to the web application, all possible users will be given access, which requires them to login with their login credentials, however, their login credentials and user type will determine what they will be able to access within the web application. The same access procedure applies to the mobile application. Only registered administrators and FABI super users will be given access to the databases. As long as an organization has a registered account with FABI, the organization administrator will have access to both the mobile and web applications. Only registered members within the organization will be given access to the mobile and web applications. This system is not open to members of the general pubic outside of FABI or an organization.

FABI super users: they have access to all aspects of the system. This includes Staff Management, Organization Management, and Database Management. The super user as all access rights and privileges with regards to the system.

FABI administrators: they have rights to Staff Management as well as Database Management. An administrator can be assigned to a database to oversee its management.

FABI Staff: depending on their access levels and privileges, a staff member should be able to submit samples, process samples, submit other request/deposit forms, as well as view databases and possibly update the database(s).

3 Getting Started

3.1 Web and Mobile Application

Note: All images and descriptions below are based on the web application interface, however, all the same functionality will be provided by the mobile application. The mobile application also has the same interfaces and designs as the web application, but catered for a smaller screen size.

Home Page

You will be presented with the main page of the application. A navigation menu is provided at the top of the page with the following options:

1. **Home:** Navigates to the main home page.
2. **Services:** Navigates to a section providing information about the services offered.
3. **Organizations:** Navigates to a section providing the user with an option to send a request for their organization to be registered.
4. **Staff:**
5. **Contact:** Navigates to a section providing contact details and the ability to send a message to FABI.

To login, click the 'Login' button provided. This will redirect you to the login page whereby you can enter your login credentials.

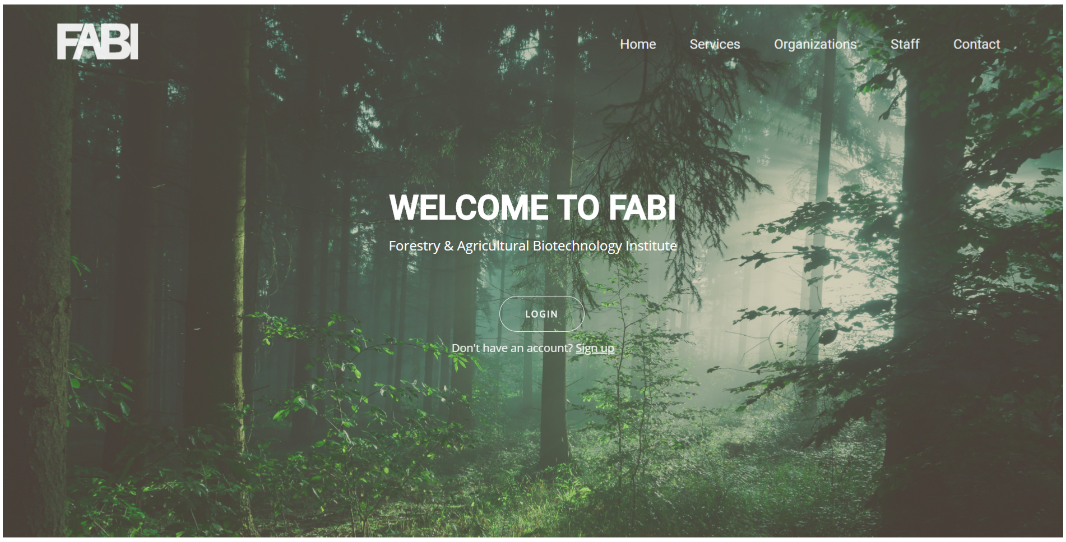


Figure 2: Web Application Main Page

Logging In

You will be presented with the main page of the application. Click the 'login' button to move to the login page. Enter your login credentials .ie. your email and password in the fields provided and select your organization as well as your user type, then click the 'login' button.

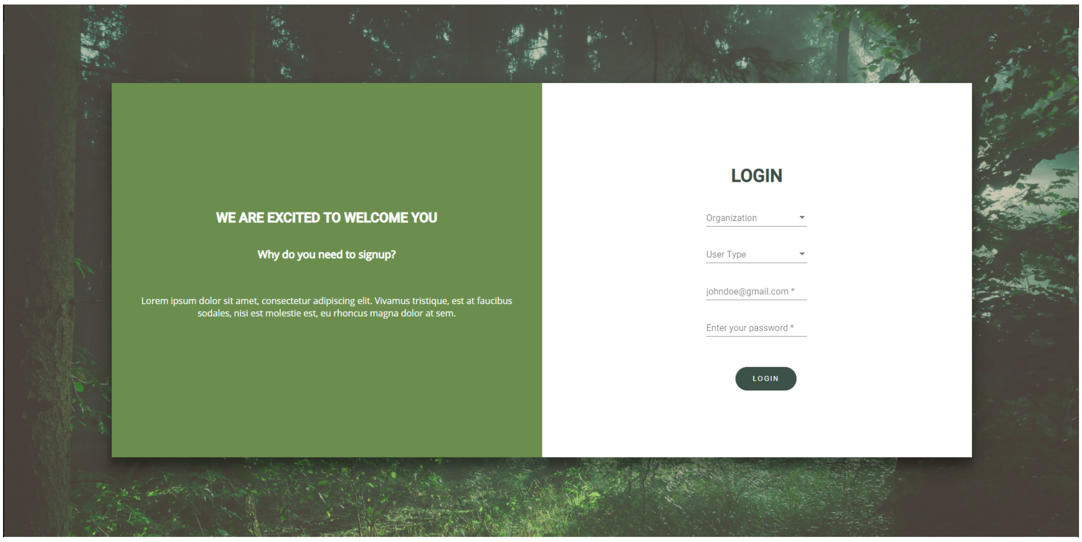


Figure 3: Web Application Login Page

Selecting the wrong user type or organization when logging in will prevent you from gaining access to the main page. This is due to user types being assigned when your profile is created. These cannot be altered by you unless a FABI administrator allows your user type to be altered and then they will make the necessary changes.

3.1.1 FABI Administrators

Understanding the Dashboard

The below image depicts what the dashboard (the main page once logged in) looks like. The menu is provided on the left-hand side of the page and provides the following options:

1. **Home:** Navigates to the main home page (ie. the dashboard).
2. **Staff:** Navigates to a page whereby the FABI staff can be managed (ie. added, updated, and removed).
3. **Organizations:** Navigates to a page whereby the organizations can be managed (ie. added, updated, removed).
4. **Diagnostic Clinic:** Navigates to a page whereby the functionality and attributes of the Diagnostic Clinic can be managed.
5. **Databases:** Navigates to a page whereby the databases can be managed (ie. added, updated, and removed). The porting functionality can also be found here.
6. **Profile:** Navigates to your profile as the administrator. Here, you will be able to manage and update your personal information.
7. **Settings:** Navigates to a page that provides you with the ability to change settings for the web application.
8. **Logout:** This will log you out of the web application once selected. You will be returned to the main page of the FABI web application.

Three statistics are provided in the middle of the page towards the top. The first being the total number of samples currently being processed, the second being the percentage of samples that have been completely processed and returned to the clients, and the last being the total number of FABI staff members.

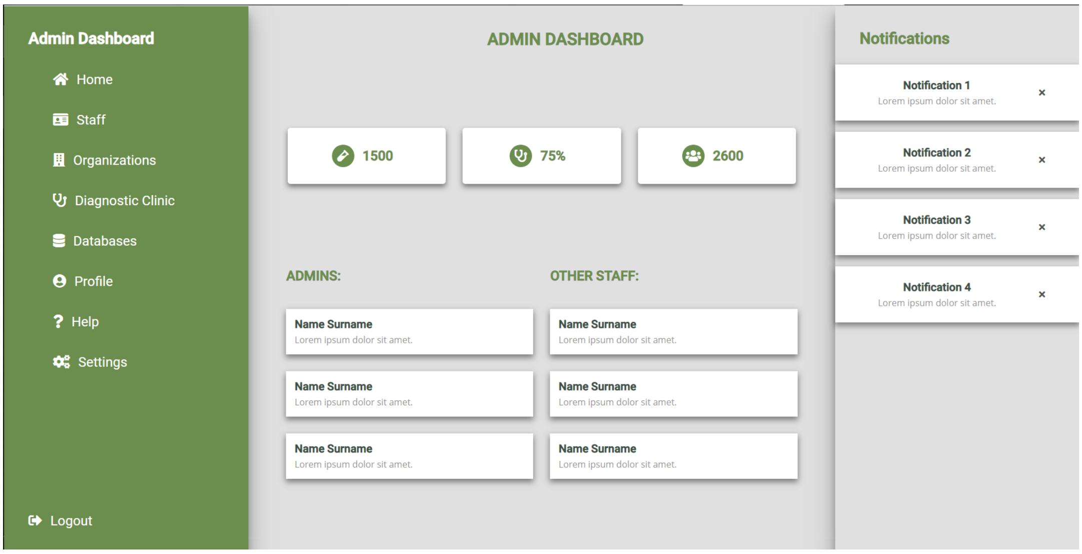


Figure 4: Web Application Dashboard

Towards the bottom of the page, two separate lists are provided: one for all the administrators involved in FABI and the second being for all the other staff members. These lists will provide you with information about the staff members of FABI.

On the right-hand side of the page is a notification section. All of your notifications will be here. This includes notifications about recently added organizations, new staff members, removed organizations, etc.

Exiting the System

To exit the application, select to 'logout' via the menu provided. Once selected, you will then be logged out of the application. The web application can then be closed by closing the browser tab.

3.1.2 Internal FABI Users

Understanding the Dashboard

The below image depicts what the dashboard (the main page once logged in) looks like. The menu is provided on the left-hand side of the page and provides the following options:

1. **Home:** Navigates to the main home page (ie. the dashboard).
2. **CMW Request Form:** Navigates to a page that provides you with the ability to fill out a CMW Request Form and submit it.
3. **CMW Deposit Form:** Navigates to a page that provides you with the ability to fill out a CMW Deposit Form and submit it.
4. **CMW Revitalization Form:** Navigates to a page that provides you with the ability to fill out a CMW Revitalization Form and submit it.
5. **CBS Request Form:** Navigates to a page that provides you with the ability to fill out a CBS Request Form and submit it.
6. **CBS Deposit Form:** Navigates to a page that provides you with the ability to fill out a CBS Deposit Form and submit it.
7. **Submit Sample:** Navigates to a page that provides you with the ability to fill out a Sample Form and submit it.
8. **Profile:** Navigates to your profile as the administrator. Here, you will be able to manage and update your personal information.
9. **Settings:** Navigates to a page that provides you with the ability to change settings for the web application.
10. **Logout:** This will log you out of the web application once selected. You will be returned to the main page of the FABI web application.

Two statistics are provided in the middle of the page towards the top. The first being the total number of CBS Request Forms currently being processed, and the second being the number of CMW Request Forms currently being processed.

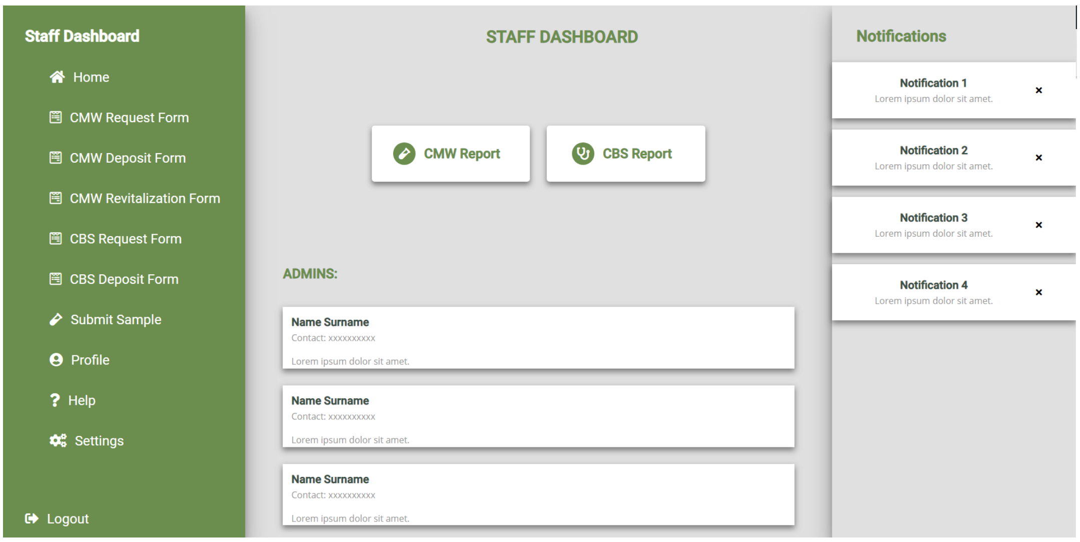


Figure 5: Web Application Dashboard

Towards the bottom of the page is a list containing the individual information for each FABI administrator.

On the right-hand side of the page is a notification section. All of your notifications will be here. This includes any updates about the processing of your submitted forms.

Exiting the System

To exit the application, select to 'logout' via the menu provided. Once selected, you will then be logged out of the application. The web application can then be closed by closing the browser tab.

4 Using the System

4.1 Handling Staff

4.1.1 Adding a staff member

This functionality is reserved for FABI super users and administrators, and can be performed on both the web and mobile applications. To add a new staff member, you (as either a FABI super user or an administrator) will navigate to the 'Staff Management' option provided by the side navigational menu on the dashboard (home page). You will be provided with a multitude of options relating to staff management. Selecting the 'Add Staff Member' option will display a form by which a new staff member may be added. All the relevant new user information will need to be provided, and you will need to select the user type for the new user (this will indicate what rights they will have within the system). Clicking on the 'Add Staff Member' button will send a request to the system to add the new staff member. If the user does exist within the system, they will not be added to the system but rather a message will be displayed on the screen indicating that the user already exists in the system. If the user was not found (ie. they do not exists in the system) the system will begin the processing of adding the new user. Once the processing of this request is complete, a message will be displayed on the screen indicating that the new staff member was successfully added. In addition to this, an email will be sent to the new user with a temporary login password. This password can be changed by the user via the 'profile' page when they log into either the mobile application or the web application.

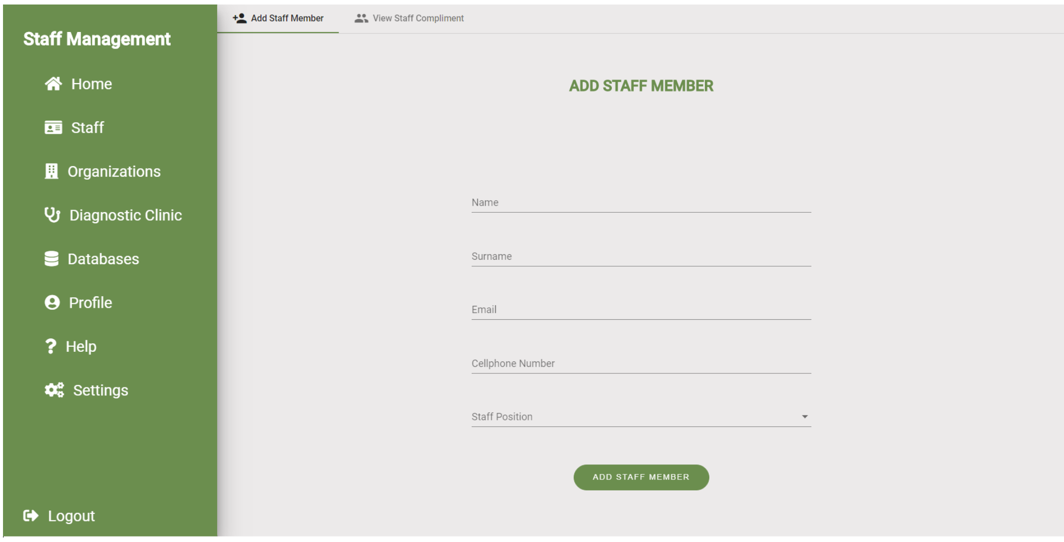


Figure 6: Staff Management: Adding a new staff member

4.1.2 Viewing the staff compliment

This functionality is provided by both the mobile and web applications. You (as either a FABI super user or an administrator) will navigate to the 'Staff Management' option provided by the side navigational menu on the dashboard (home page). Then, navigate to the 'View Staff Compliment' tab provided at the top of the page. This will display a table containing all the staff members belonging to FABI and that exist within the system.

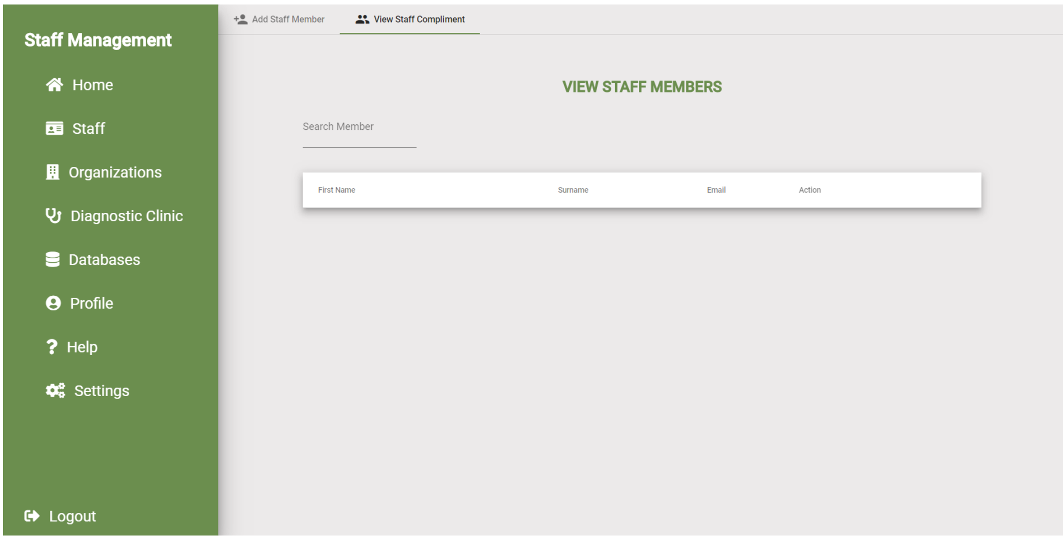


Figure 7: Staff Management: Viewing the staff compliment

4.1.3 Searching for a staff member

This functionality is provided by both the mobile and web applications. You (as either a FABI super user or an administrator) will navigate to the 'Staff Management' option provided by the side navigational menu on the dashboard (home page). Then, navigate to the 'View Staff Compliment' tab provided at the top of the page. You can then either view the staff member by looking through the table of all the staff members provided, or by specifically searching for the staff member by using the search option provided. Entering any information relevant to the staff member such as their name, surname, email address ,etc. will allow the system to find and display the user if they exist in the system.

4.1.4 Updating a staff member's details

This functionality is provided by both the mobile and web applications. You (as a FABI super user or an administrator) will either select to update the staff member's information by searching for the staff member and then selecting the necessary options to edit their information, or by selecting to view all the staff members provided by the 'View Staff Complement' tab in the 'Staff Management' page provided by the side navigation menu on the dashboard (home page). The necessary staff member information can be edited and then saved to the system by clicking the 'Save' button. If the necessary changes could not be made, an appropriate message will be displayed on the screen indicating what the problem is and how it could possibly be resolved.

4.1.5 Deactivating a staff member

This functionality is provided by both the mobile and web applications. You (as a FABI super user or an administrator) will either select to deactivate the staff member's account by searching for the staff member and then selecting the necessary options to edit their information, or by selecting to view all the staff members provided by the 'View Staff Complement' tab in the 'Staff Management' page provided by the side navigation menu on the dashboard (home page). Once the 'Deactivate' button is selected, the system will 'remove' the selected staff member from the system. If the staff member's account could not be deactivated for some reason, an appropriate message will be displayed on the screen indicating what the problem is and how it could possibly be resolved.

4.2 Authentication

4.2.1 Authenticating a FABI administrator

When a FABI administrator (and/or a FABI super user) logs into either the web application or the mobile application (by clicking the 'login' button provided on the 'Login' interface) using their login credentials (ie. the email address and password), these details will be authenticated against the details in the associated user database. This process will involve sending the FABI administrator's details to the 'User Management' API via a request. This request will contain the user's details. Once the API has received the request, it will extract the login details using an internal function. The API will then compare these details to details within the user database. If the credentials are correct, a success message will be sent back to the web applications, otherwise an unsuccessful message will be sent. If the credentials are correct, the API will also generate a session id for this user, as well as send through the user's user type in the form of a hashed sequence (this will allow the web application and/or mobile application to respond dynamically based on the user's user type). If the activity receives a success response, the user's dashboard will then be loaded. If an unsuccessful message is received, the error sent through with the unsuccessful response will be displayed for the user. The user will then have to try login again.

4.2.2 Authenticating a FABI staff member

When a FABI staff member logs into either the web application or the mobile application (by clicking the 'login' button provided on the 'Login' interface) using their login credentials (ie. the email address and password), these details will be authenticated against the details in the associated user database. This process will involve sending the FABI staff member's details to the 'User Management' API via a request. This request will contain the user's details. Once the API has received the request, it will extract the login details using an internal function. The API will then compare these details to details within the user database. If the credentials are correct, a success message will be sent back to the web application, otherwise an unsuccessful message will be sent. If the credentials are correct, the API will also generate a session id for this user, as well as send through the user's user type in the form of a hashed sequence (this will allow the web application and/or mobile application to respond dynamically based on the user's user type). If the activity receives a success response, the user's dashboard will then be loaded. If an unsuccessful message is received, the error sent through with the unsuccessful response will be displayed for the user. The user will then have to try login again.

4.2.3 Logging out as a FABI administrator

To log out of the mobile application and/or web application, the FABI administrator will need to navigate to the menu and select to 'logout'. This will send a request to the 'User Management' API. This will enable the API to destroy the user's session. Once the session has been destroyed, the API will send a response to the web or mobile application indicating so. The mobile application or web application will then revert back to the main page and the user will the be required to log in again in order to gain access.

4.2.4 Logging out as a FABI staff member

To log out of the mobile application and/or web application, the FABI staff memeber will need to navigate to the menu and select to 'logout'. This will send a request to the 'User Management' API. This will enable the API to destroy the user's session. Once the session has been destroyed, the API will send a response to the web or mobile application indicating so. The mobile application or web application will then revert back to the main page and the user will the be required to log in again in order to gain access.

4.2.5 Terminating a user's session

This is an internal use case that will be employed when the user either logs out of the web or mobile application or they have been inactive within the mobile application or web application for too long. In the former case, when a user requests to log out of the application a request will be sent to either the 'User Management' API or the 'Organization Management' API (depending on the type of user) indicating so. The API will then destroy the session and send a response message back. In the latter case, both the mobile and web applications have an internal specified timeout period that has been programmatically set. When this timeout period is reached, the application will itself send a request to either the 'User Management' API or the 'Organization Management' API (depending on the type of user) to log the user out. The session assigned to that user will be destroyed and the API will send a response message indicating so. The user will then be logged out of the application.

4.2.6 Verifying a user's session

This is an internal function called when a user is authenticated (ie. they log into either the web application or the mobile application), the 'User Management' API or the 'Organization Management' API (depending on the type of user) will generate a session id that will be associated with that user until they log out of the application or their session is destroyed due to timeout constraints. Whenever the user makes changes to either their profile, or information in a database, their session id will also be sent in the request. The appropriate API will authenticate the session id before performing any other actions. If the session id is valid (ie. it exists and that it is associated with a user who has the rights to perform the specific action), the API will continue to process the action performs. If the session id is not valid, the API will send a response message back to the activity indicating that either the session id does not exists, or that it is associated with a user who does not have the rights to perform the kind of action that they are trying to perform.

(This functionality is still to be implemented and therefore has not been completed in this user manual)

4.3 Handling the Diagnostic Clinic

4.3.1 Adding a processing stage

4.3.2 Updating a processing stage

4.3.3 Removing a processing stage

4.3.4 Viewing current samples

4.3.5 Searching through samples

4.4 Central Data Access Point

4.4.1 Adding a database

This functionality has only been allocated to a FABI super user, and can be performed on both the web and mobile applications. There are two methods via which a database may be created: manually or by using the porting system. In the case of the former approach, you (as the FABI super user) will navigate to the 'Database Management' option provided by the side navigational menu on the dashboard (home page). Selecting to 'Add a new database' will then provide the you with the necessary interface in order to create a new database. You will be required to fill in all the necessary information and then select 'Add new database'. To add a database via the porting system, navigate to ***Submit a CSV file***

4.4.2 Viewing databases

This functionality depends on the user and what 'kind' of viewing is to be provided, and can be performed on both the web and mobile applications. FABI super users and general administrators will be able to search for a database and then it will be displayed. To view a database, the user will navigate to the 'Database Management' option provided by their dashboard (home page). FABI super users will be shown a dashboard that contains all the relevant databases. To view one of these database, the user will 'click' on the displayed name of the database. This will send an HTTP POST request to the 'Database Management' API. This request will contain the user's session id so that the API can validate the request action. If the session id is valid, the API will send a response message containing the chosen database's information. Otherwise, an appropriate response will be sent indicating that the session id is not valid. The web application will then display the information returned in a logical and understandable manner. With regards to a general FABI administrator, they will only be allowed to view the database(s) that they are the administrators of. Again, to view one of these database, the user will 'click' on the displayed name of the database. This will send an HTTP POST request to the 'Database Management' API. This request will contain the user's session id so that the API can validate the request action. If the session id is valid, the API will send a response message containing the chosen database's information. Otherwise, an appropriate response will be sent indicating that the session id is not valid. The web application will then display the information returned in a logical and understandable manner.

4.4.3 Searching databases

This functionality is provided by both the mobile and web applications. The searching functionality is provided by either navigating to the 'Database Management' option on the dashboard (home page) and filling in the search criteria in the field provided, or the user can navigate to the menu and fill in the search bar. A 'smart' searching algorithm has been implemented to search through all databases based on the input in the search field. An HTTP POST request will be sent to the 'Database Management' API containing the searching criteria provided by the user, as well as the user's session id. The API will validate the user's session id. If the search criteria if found in a database that the user does not have authorization to access or view, the API will send a response message indicating so. Otherwise, the API will return the required information to the web application. In terms of searching, users, samples, diagnostic clinic, culture clinic, and other information may be searched for.

4.4.4 Maintaining a database

This functionality has only been allocated to a FABI super user and general administrators that have been assigned to a database, and and can be performed on both the web and mobile applications. Maintaining a database includes inserting new records (information/data), updating records, and deleting records within the database. FABI super users have the rights to maintain all databases, and general administrators have the rights to only maintain the database(s) that they have been assigned the administrators of. The user will navigate to the 'Database Management' option provided by their dashboard (home page) and select the database that they would like to maintain. This will invoke the 'View Database' use case. Once the database has been displayed for the user, they will be able to edit records and make any necessary changes. Certain records that may not be altered (due to internal configuration requirements or for other reasons) will be 'greyed' out and uneditable (ie. the user will not be able to 'click' on that entry nor request to edit that entry) to indicate to the user that they may not edit those entries. The necessary options have been provided for the user to make the alterations that they wish to. When a user is finished with the database, they will click the 'save' button. This will send an HTTP POST request to the 'Database Management' API containing all the changes that were made. The API will then go through the necessary processing in order to save those changes. If the API finds errors, that could have arisen by leaving out an entry .etc., an appropriate message will be sent to the web application indicating so. In this case, the alterations will not be processed and the database will remain in the state that it was before the alterations. If the changes were successfully processed and applied, the API will send a response to the web application indicating so. The updated database will then be displayed for the user.

4.4.5 Assigning an administrator to a database

This functionality has only been allocated to a FABI super user, and can be performed on both the web and mobile applications. Preconditions to this function include the database existing within the system as well as the user to be allocated as the administrator to exist in the system. To allocate an administrator, the super user will navigate to the 'Database Management' option provided on their dashboard (home page). Selecting the 'Add database administrator' option will open a form via which an administrator can be assigned to a database. The super user will select the database and input the user's email. Clicking the 'Assign administrator' button will send an HTTP POST request to the 'Database Management' API containing the selected database and the selected administrator's email address. The API will search for the user's email in the user database. If the user does not have 'administrator' status they will then be given administrator rights. The API will then assign the selected user to be the administrator of the chosen database. The API will then send a response message to the web application indicating that the assignment was successful. In addition to this response message, an email will be sent to the new database administrator informing them of the administrator assignment.

4.5 Handling the Culture Collection

4.5.1 Submitting a CMW request form

This functionality is provided by both the mobile and web applications. You (as the user) will navigate to the 'Submit CMW Request Form' option provided by the side navigational menu on the dashboard (home page). Selecting to submit a CMW request form will present the you with the CMW request form to fill out. Filling in the necessary information and selecting to 'submit' the form, will result in the web or mobile application checking that all the necessary information has been provided before submitting the form. If the form is not valid, an appropriate message will be displayed for the user indicating so. Otherwise, a request will be sent to the system containing all the form information. The system will then being with the processing of the form submission. Once the form has been processed and the information has been inserted into the relevant database, a response message will be sent back to the web or mobile application indicating that the form has been successfully submitted.

4.5.2 Submitting a CMW deposit form

This functionality is provided by both the mobile and web applications. You (as the user) will navigate to the 'Submit CMW Deposit Form' option provided by the side navigational menu on the dashboard (home page). Selecting to submit a CMW deposit form will present the you with the CMW deposit form to fill out. Filling in the necessary information and selecting to 'submit' the form, will result in the web or mobile application checking that all the necessary information has been provided before submitting the form. If the form is not valid, an appropriate message will be displayed for the user indicating so. Otherwise, a request will be sent to the system containing all the form information. The system will then being with the processing of the form submission. Once the form has been processed and the information has been inserted into the relevant database, a response message will be sent back to the web or mobile application indicating that the form has been successfully submitted.

4.5.3 Submitting a CMW revitalization form

This functionality is provided by both the mobile and web applications. You (as the user) will navigate to the 'Submit CMW Revitalization Form' option provided by the side navigational menu on the dashboard (home page). Selecting to submit a CMW revitalization form will present the you with the CMW revitalization form to fill out. Filling in the necessary information and selecting to 'submit' the form, will result in the web or mobile application checking that all the necessary information has been provided before submitting the form. If the form is not valid, an appropriate message will be displayed for the user indicating so. Otherwise, a request will be sent to the system containing all the form information. The system will then being with the processing of the form submission. Once the form has been processed and the information has been inserted into the relevant database, a response message will be sent back to the web or mobile application indicating that the form has been successfully submitted.

4.5.4 Submitting a CBS request form

This functionality is provided by both the mobile and web applications. You (as the user) will navigate to the 'Submit CBS Request Form' option provided by the side navigational menu on the dashboard (home page). Selecting to submit a CBS request form will present the you with the CBS request form to fill out. Filling in the necessary information and selecting to 'submit' the form, will result in the web or mobile application checking that all the necessary information has been provided before submitting the form. If the form is not valid, an appropriate message will be displayed for the user indicating so. Otherwise, a request will be sent to the system containing all the form information. The system will then being with the processing of the form submission. Once the form has been processed and the information has been inserted into the relevant database, a response message will be sent back to the web or mobile application indicating that the form has been successfully submitted.

4.5.5 Submitting a CBS deposit form

This functionality is provided by both the mobile and web applications. You (as the user) will navigate to the 'Submit CBS Deposit Form' option provided by the side navigational menu on the dashboard (home page). Selecting to submit a CBS deposit form will present the you with the CBS deposit form to fill out. Filling in the necessary information and selecting to 'submit' the form, will result in the web or mobile application checking that all the necessary information has been provided before submitting the form. If the form is not valid, an appropriate message will be displayed for the user indicating so. Otherwise, a request will be sent to the system containing all the form information. The system will then being with the processing of the form submission. Once the form has been processed and the information has been inserted into the relevant database, a response message will be sent back to the web or mobile application indicating that the form has been successfully submitted.

4.5.6 Generating a CMW request list

This functionality is provided by both the mobile and web applications, but is reserved for FABI super users and administrators. You (as either a FABI super user or administrator) will navigate to the 'Reporting' option provided by the side navigational menu on the dashboard (home page) and will select to 'Generate a CMW request list'. This will send a request to the system to retrieve all the CMW request forms that have been submitted for the week, and/or the forms that have not been processed. The system will fetch the necessary information from the relevant database and send a response message to the mobile or web application containing this information. The mobile or web application will then generate and display the CMW request form list based on the information returned form the system. You will also be provided with the option to download this generated list as a PDF.

4.5.7 Generating a CBS request list

This functionality is provided by both the mobile and web applications, but is reserved for FABI super users and administrators. You (as either a FABI super user or administrator) will navigate to the 'Reporting' option provided by the side navigational menu on the dashboard (home page) and will select to 'Generate a CBS request list'. This will send a request to the system to retrieve all the CBS request forms that have been submitted for the week, and/or the forms that have not been processed. The system will fetch the necessary information from the relevant database and send a response message to the mobile or web application containing this information. The mobile or web application will then generate and display the CBS request form list based on the information returned form the system. You will also be provided with the option to download this generated list as a PDF.

4.6 Handling the Organization

4.6.1 Adding an organization

This functionality is reserved only for the FABI super users, and is provided by both the mobile and web applications. You (as the FABI super user) will navigate to the 'Organization Management' option provided by the side navigational menu on the dashboard (home page) and select the 'Add Organization' tab at the top of the page to add a new organization to the system. You will then be presented with a form by which you can add a new organization. All the required information will need to be provided and then you can select the 'Add New Organization' button. The web or mobile application will perform form validation before the form information is submitted for processing. If their is missing and/or incorrect information, you will be informed of this via a message displayed on the screen. If the form is valid, a request will be made to the system to add the new organization. A response message will then be sent back to the mobile or web application indicating weather the processing was successful or not. In addition to this, an email will be sent to the administrator assigned to oversee the organization's account, containing the organization's temporary login password. This password can be changed via the mobile or web application.

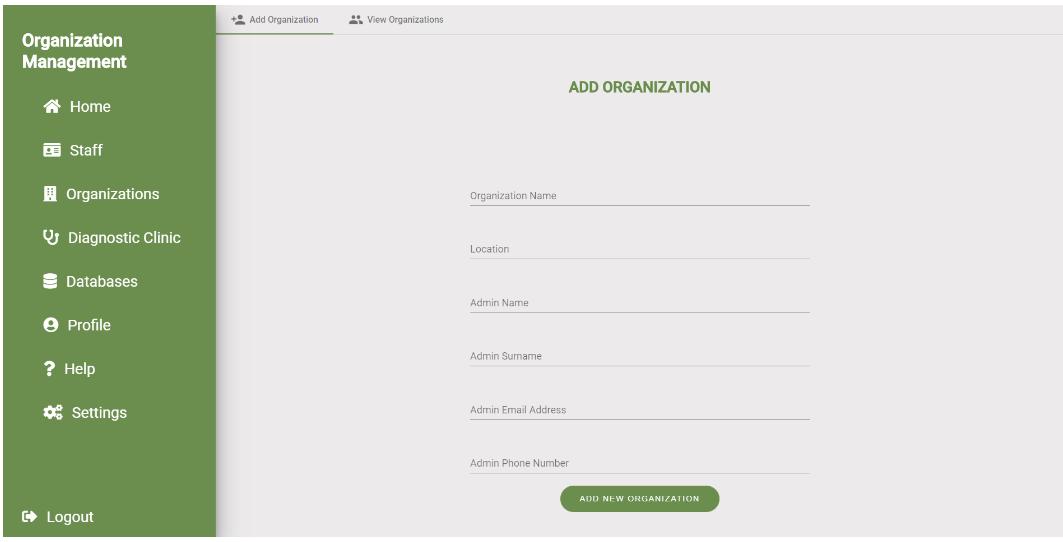


Figure 8: Organization Management: Adding a new organization

4.6.2 Viewing an organization

This functionality is reserved only for FABI super users, and is provided by both the mobile and web applications. You (as the FABI super user) will navigate to the 'Organization Management' option provided by the side navigational menu on the dashboard (home page) and select to either 'view' an organization by selecting the 'View Organization' tab provided at the top of the page, or by searching for the organization in the search field provided.

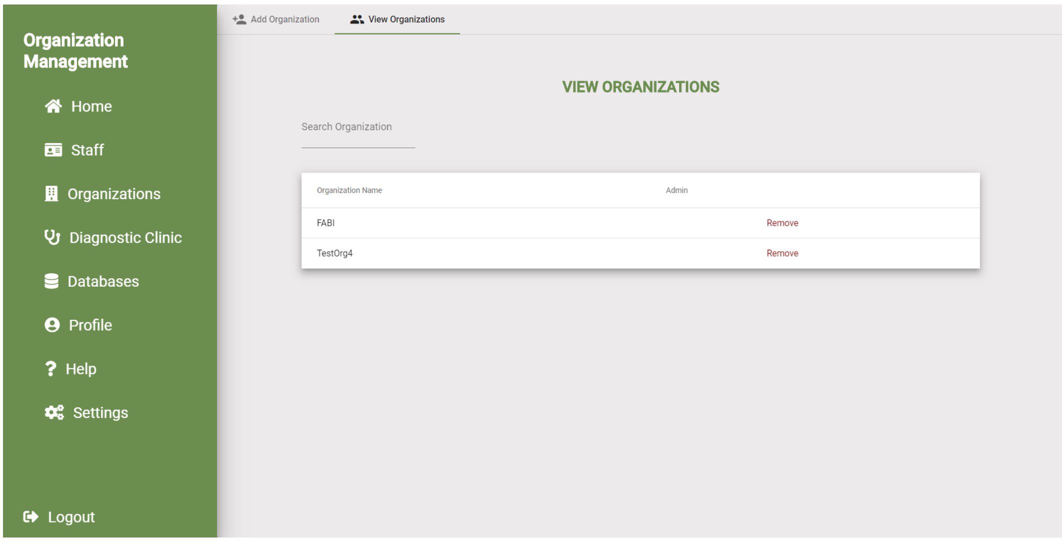


Figure 9: Staff Management: Viewing an organization

4.6.3 Searching for an organization

This functionality is provided by both the mobile and web applications. You (as either a FABI super user or an administrator or as any other user that will need to view an organization's details) will navigate to the 'Organization Management' option provided by the side navigational menu on the dashboard (home page). Then, navigate to the 'View Organization' tab provided at the top of the page. You can then either view the organization by looking through the table of all the organizations provided, or by specifically searching for the organization by using the search option provided. Entering any information relevant to the organization such as their name, location, email address ,etc. will allow the system to find and display the organization's information if they exist in the system.

4.6.4 Deactivating an organization's account

This functionality is reserved for FABI super users, and can be performed on both the web and mobile applications. You (as the FABI super user) can perform this action by either navigating to the 'Organization Management' option provided by the side navigational menu on the dashboard (home page) and selecting to 'remove' the organization, or by searching for the organization and selecting the appropriate option to remove the organization. The selection to remove an organization will result in a request being sent to the system. The system has been designed to never fully delete an organization from the system, but rather to deactivate their account. The relevant organization database will be searched through and if the organization is not found, a response message will be sent back to either the mobile or web application indicating so. If the organization is found, their account/profile within the database will be deactivated. A response will then be displayed on the screen indicating that the organization has been successfully 'removed' from the system.

4.7 Porting

4.7.1 Submitting a CVS file

This functionality is restricted to the web application alone. A FABI super user may use this to create a database by uploading a csv file. You will navigate to the 'Database Management' by selecting the 'Databases' option provided by the side navigation menu. You will then be navigated to the 'Database Management' page that looks like the image below:

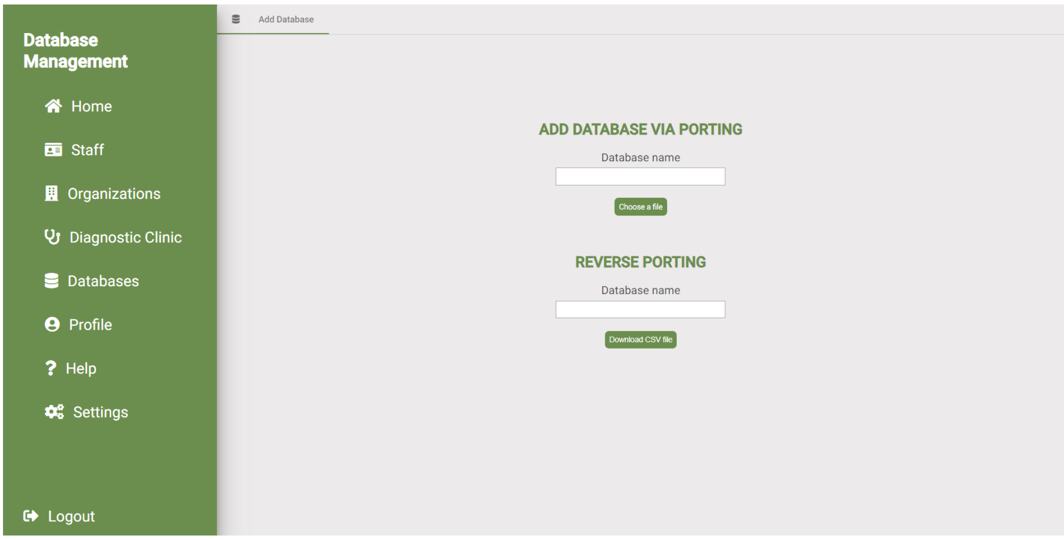


Figure 10: Web Application Database Management

Two options are provided: uploading a .csv file to create a database (**porting**), and the option to download a database (**reverse porting**).

To create a database, enter the new database name in the space provided. Selecting the 'Choose a file' option will allow you select a .csv file from your device. Once you have selected a file, a preview table will be display. This will allow you to see what the database will look like. You will then be provided with two options, selecting 'Yes' will result in the database being created because you deem the preview table to be correct, and selecting 'No' will provided you with the option to select the file again or to select another file.

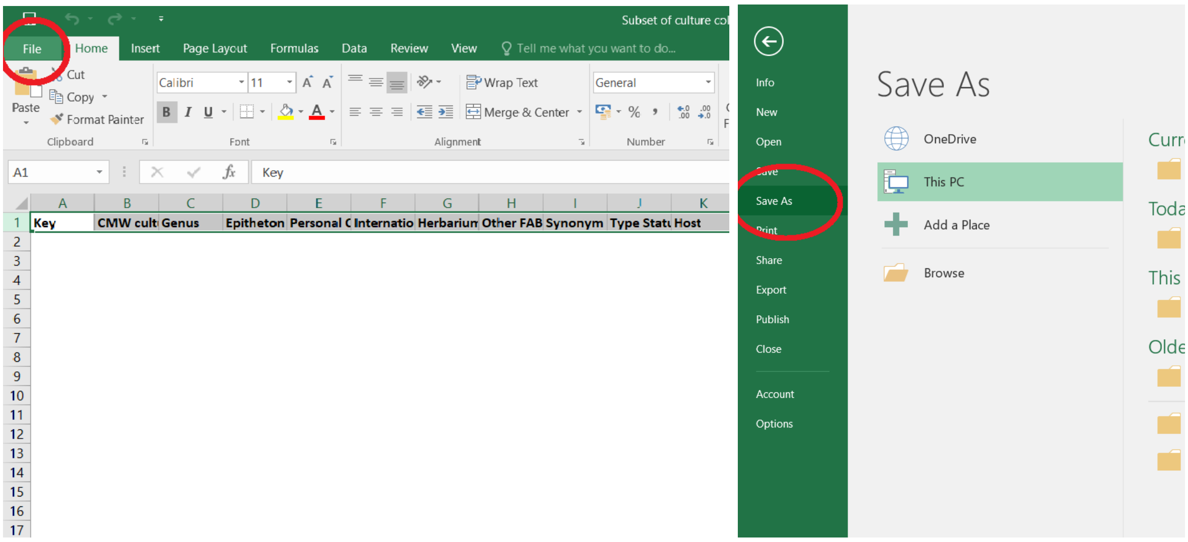
To download a database, enter the database's name in the space provided. Then, select the 'Download CSV file' to download the database as a .csv file. His download can be found within the 'Downloads' folder on your device.

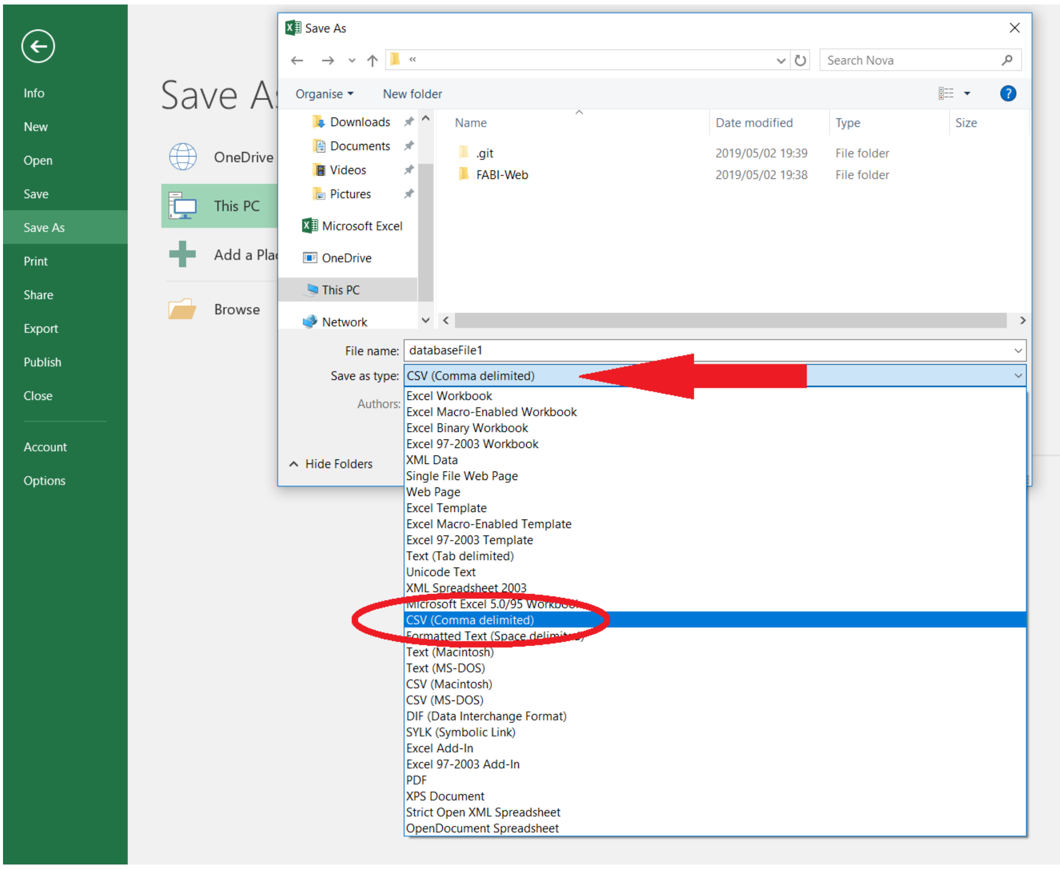
The web application will validate the csv file before the database can be created. If the file is not valid, you will be notified and required to either submit another file or resubmit the same file in the correct format. If the file is in a valid format, the database will be created and a message will be displayed on screen indicating so.

The processing of saving your Excel document as a csv file:

1. Select the 'File' option provided at the top of the page.
2. Select the 'Save As' option provided by the menu
3. Select the 'CSV' option

The below images depict this process:





4.7.2 Processing the submitted CVS file

This is internal functionality that is called upon when a .csv file is submitted and sent through to the 'Database Management' API via a HTTP POST request. The API will process this .csv file into a format that it can work with. This will be in the format of a JSON object. The necessary processing will be performed (ie. the new database will be created from the .csv file or the information from the .csv file will be added to an existing database). Once the processing has taken place, the appropriate response message will be sent back to the web application.

4.8 Sample Processing

4.8.1 Submitting a sample

This functionality is provided by both the mobile and web application's and is not reserved fro any one type of user. Every user has access to the ability to submit a sample. Navigate to the 'Sample' page by using the menu provided by the side navigational menu on the dashboard (home page). Once at the 'Sample' page, the sample submission form will be provided. Fill in all the information required in the fields provided. When ready to submit the sample form, click the 'Submit' button and the form will be sent. You will then be issued with a reference number.

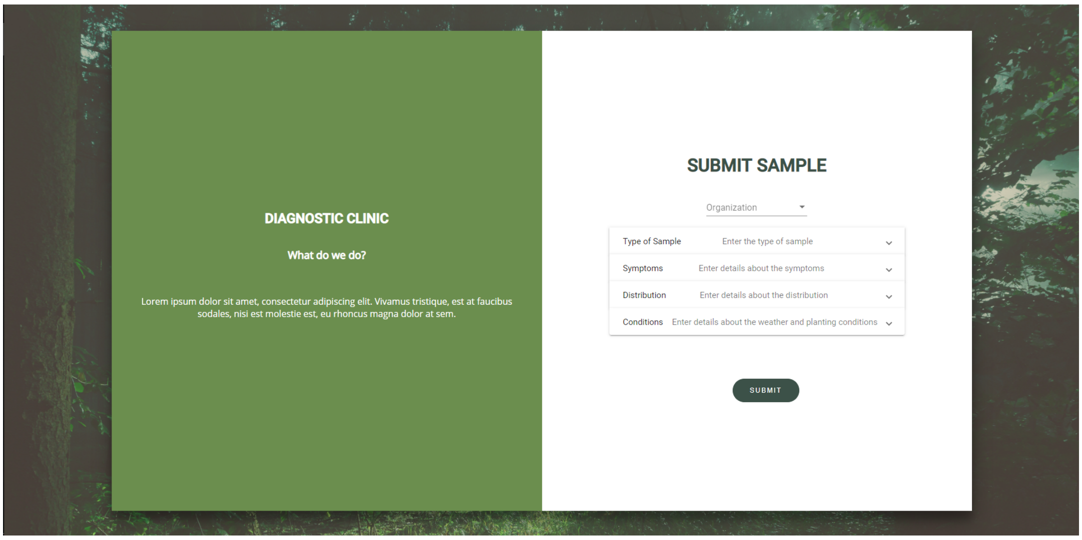


Figure 11: Web Application Sample Form

4.8.2 Canceling a sample's processing

4.8.3 Initiating a sample's processing

4.8.4 Confirming a samples allocation

4.8.5 Completing a process

4.8.6 Sending a diagnosis report

4.9 Notifications

4.9.1 Notifying an organization on their account creation

This is an internal function that is employed when a new organization is added to the system. An email will be sent to the organization with confirmation of their account creation, as well as a temporary login password that can be changed via the 'profile' page provided by both the mobile and web applications.

4.9.2 Notify an organization's on their account deactivation

This is an internal function that is employed when an organization's account is 'removed' from the system (ie. their account is deactivated). An email will be sent to the organization notifying them of their account deactivation.

4.9.3 Notifying FABI personnel

4.9.4 Sending a sample reference number

This is an internal function that is employed when a sample form submission is received by FABI. A reference number will generated and assigned to represent the sample. This reference number will be sent to both the Diagnostic Clinic Administrator, as well as to the organization member who submitted for sample form.

4.9.5 Notifying on sample received

This is an internal function that is employed when a sample submission form is received by FABI and/or the physical sample package has been received by FABI. An email will be sent to the respective organization member as indicated by the member's email that is sent through when the sample form is submitted. This notification (ie. email) will also contain the sample's reference number.

4.9.6 Sending a log report

4.9.7 Sending a CBS notification

4.10 Logging

All logging functionality is internal and certain logs will be displayed as notifications on the user dashboards when necessary. The logs will also be displayed in a form of a report with graphics such a charts for the FABI super users and certain administrators.

4.10.1 Logging authentication details

This is internal functionality that can only be triggered when a user is authenticated, either successfully or unsuccessfully. When users login, they will be authenticated. The system will log this process and whether it was successful or not.

4.10.2 Logging database changes

This is internal functionality that can only be triggered when changes have been made to a database. When users select to 'maintain' a database and either insert, update, or delete records, the system will log this process.

4.10.3 Logging system errors

This is internal functionality that can only be triggered when an error occurs within the system. When an error occurs within the system, the system will log this error and what could have possibly caused it.

4.10.4 Logging culture requests

This is internal functionality that can only be triggered when a culture request form is submitted. When users submit a culture request form, the system will log this process and whether it was successful or not.

4.10.5 Logging culture deposits

This is internal functionality that can only be triggered when a culture deposit form is submitted. When users submit a culture deposit form, the system will log this process and whether it was successful or not.

4.10.6 Logging sample submissions

This is internal functionality that can only be triggered when a sample form is submitted. When users submit a sample, the system will log this process and whether it was successful or not.

4.10.7 Sending log information

This functionality is triggered when a user selects to generate a report. The 'Reporting' system will request information from the logs regarding either authentication details, database changes, system errors, culture requests, culture deposits, or sample submissions. The information will be sent back to the 'Reporting' system in the form of an HTTP POST response.

4.11 Reporting

4.11.1 Generating a request report

This functionality is provided by both the mobile and web applications, and is restricted to FABI super users and administrators. You (as either the FABI super user or an administrator) will request to generate a request report by selecting the appropriate option on the side navigational menu provided. Once selected, a request will be sent to the system. The system will pull information from the stored logs about the culture requests submitted. If no recent requests have been located, the system will send a response to the web application indicating so. The system will construct a report from this information and send it in the response to the web application. The web application will display this report on the screen as well as provide the you with an option to download the report in the form of a PDF.

4.11.2 Generating a deposit report

This functionality is provided by both the mobile and web applications, and is restricted to FABI super users and administrators. You (as either the FABI super user or an administrator) will request to generate a deposit report by selecting the appropriate option on the side navigational menu provided. Once selected, a request will be sent to the system. The system will pull information from the stored logs about the culture deposits submitted. If no recent deposits have been located, the system will send a response to the web application indicating so. The system will construct a report from this information and send it in the response to the web application. The web application will display this report on the screen as well as provide the you with an option to download the report in the form of a PDF.

4.11.3 Generating a sample submission report

This functionality is provided by both the mobile and web applications, and is restricted to FABI super users and administrators. You (as either the FABI super user or an administrator) will request to generate a sample submission report by selecting the appropriate option on the side navigational menu provided. Once selected, a request will be sent to the system. The system will pull information from the stored logs about the samples submitted. If no recent sample submissions have been located, the system will send a response to the web application indicating so. The system will construct a report from this information and send it in the response to the web application. The web application will display this report on the screen as well as provide the you with an option to download the report in the form of a PDF.

4.11.4 Generating an error report

This functionality is provided by both the mobile and web applications, and is restricted to FABI super users and administrators. You (as either the FABI super user or an administrator) will request to generate an error report by selecting the appropriate option on the side navigational menu provided. Once selected, a request will be sent to the system. The system will pull information from the stored logs about all recent errors. If no recent errors have been located, the system will send a response to the web application indicating so. The system will construct a report from this information and send it in the response to the web application. The web application will display this report on the screen as well as provide the you with an option to download the report in the form of a PDF.

5 Troubleshooting

All forms to be submitted have been designed to provide error checking on the input fields. If an input field has not been filled out, the system will detect this and inform you as the user. No form will be submitted unless all the required information has been provided.

In terms of any other errors that may occur, all errors are handled internally so that an appropriate message can be displayed on the screen indicating what the error/problem is and how it could possibly be resolved.

All errors can also be viewed in the log files if necessary.