Bhuvan's HFA App

ISRO's Android-based Mobile App designed to geo-tag and monitor construction stage of house under Housing For All scheme in India

Ministry of Housing and Urban Poverty Alleviation
Government of India

National Remote Sensing Centre
Indian Space Research Organisation
Government of India

November, 2020

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1. Introduction

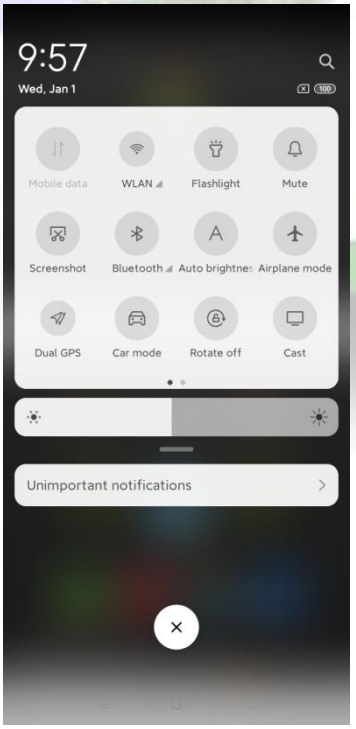
Bhuvan HFA App is a user-friendly mobile application which enables to collect and report geo-tagged information and monitor different stages of the houses construction for which are under “Housing For All scheme”. This mobile app will provide a platform to build spatial database on Bhuvan Geo-platform using controlled crowd sourcing method.

2. Data connectivity

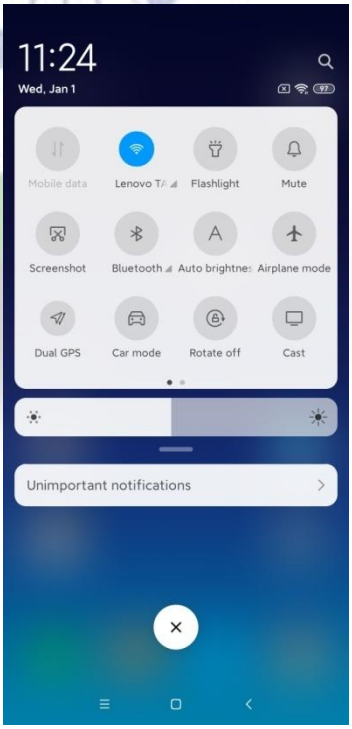
The mobile data connectivity is required to download the mobile application (Bhuvan HFA app), also essential to send collected data to Bhuvan HFA servers and download beneficiary data in the mobile device. The following are the step to enable mobile data.

Step-1: Tap the Home screen from top and swipe down. The user gets pop-down screen, which has provision to switch-on the mobile data connectivity.

Step-2: Tap on the Mobile Data button to switch-on.



Step 1



Step 2

Note: The Internet connectivity to the mobile also can be through Wi-Fi or Mobile data.

3. Download and Installation of Mobile app

There are very simple steps to download and install the Bhuvan HFA mobile app. The user can download the mobile app from Bhuvan Geo-platform using the web browser in mobile and key-in the URL as mentioned below and click on enter key. The installation requires allowing installation of apps from unknown sources and after installation, it can be disabled.

https://bhuvan-app3.nrsc.gov.in/mobile_app/bhuvan_mobile_app.php?proj_code=151

The BhuvanHFA_2dot1dot3.apk file starts download into download folder in the internal storage. On double click over the file (apk file), the app gets installed. The following are the steps to download and install the application.

Step-1: Open web browser in the mobile.

Step-2: Key-in the URL (given above)

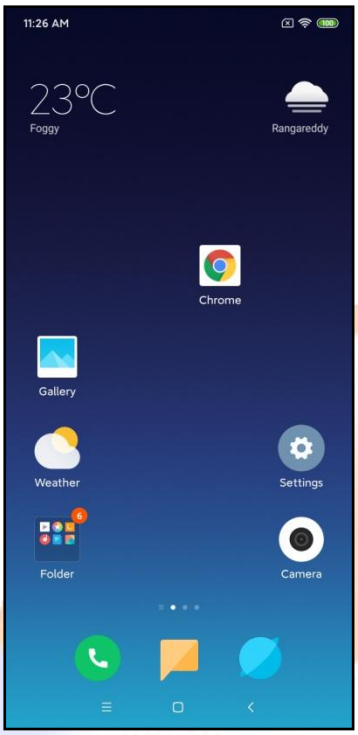
Step-3: Tap on the top of the screen and scroll down to get drop down screen and user can visualize download status.

Step-4: On completion of the download, user can tap on the download complete icon to initiate action for installation of the app.

A confirmation box appears to start the installation.

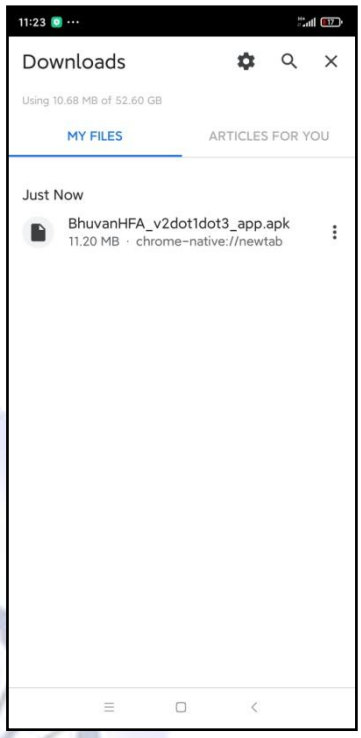
Step-5: Click on Install to start the installation

Step-6: Click on done to complete the installation process.

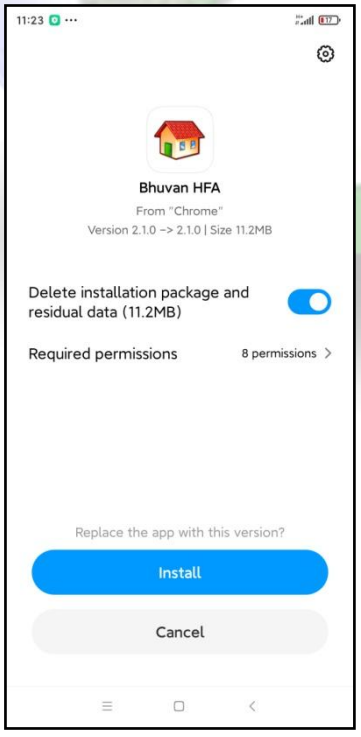


Step 1

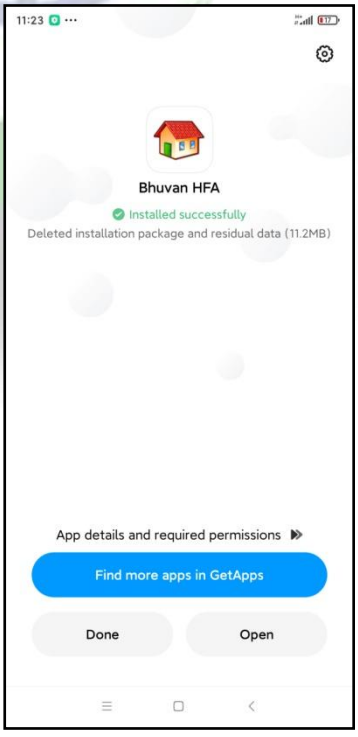
Step 2



Step 3



Step 4



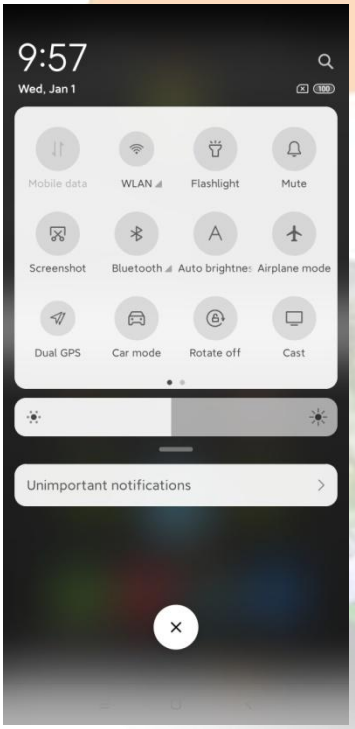
Step 5

4. Mobile GPS

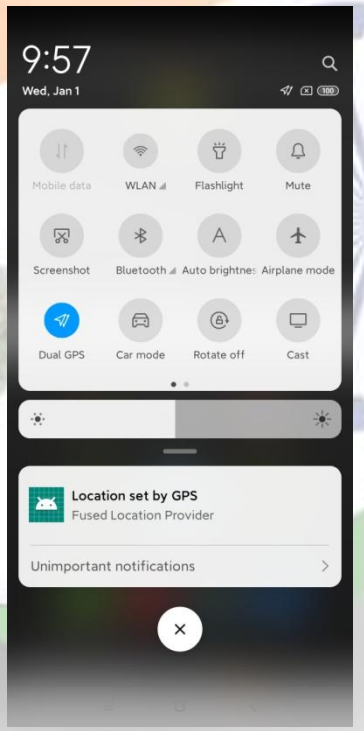
Mobile GPS is used to automatically acquire location information in the form of longitude and latitude, the GPS receiver in the mobile must be switched-on before opening the mobile app. The following are the options to enable GPS receiver.

Option-1: Tap the Home screen from top and swipe down. The user gets the pop-down screen, which has provision to switch-on the mobile GPS receiver. Tap on the GPS button to switch-on.

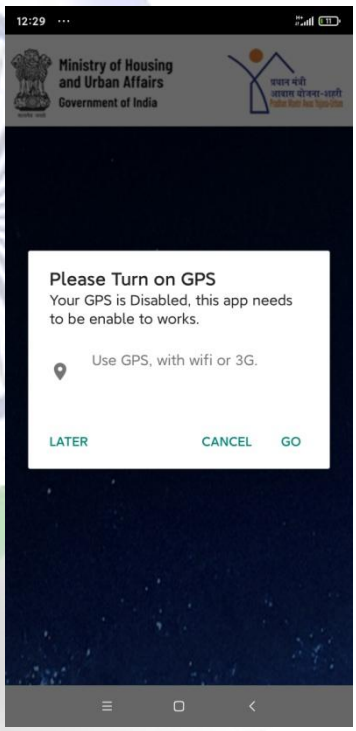
Option -2: Whenever user opens the app, before turn-on the GPS, user will get a dialog box to turn on GPS manually.



Option 1



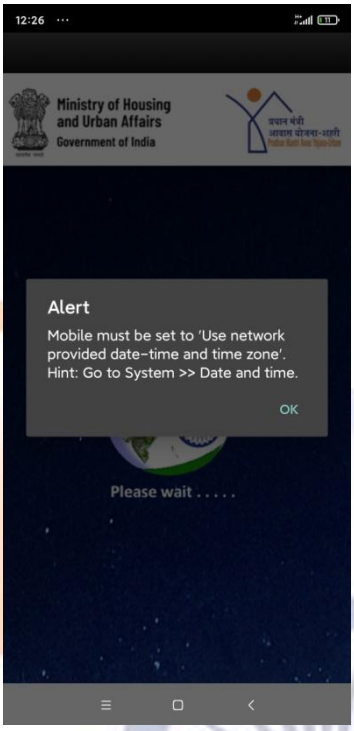
Option 1



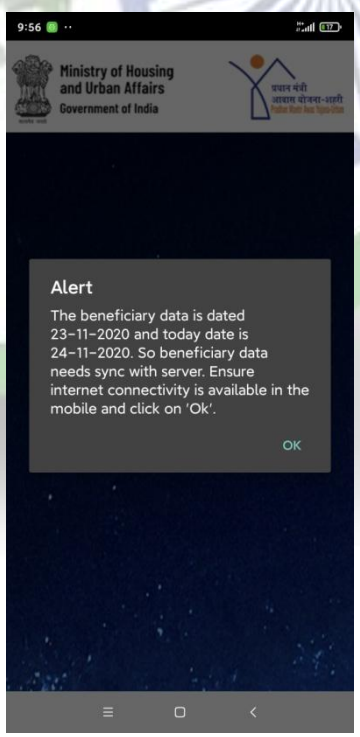
Option 2

5. System time and date

Mobile System time and date is used to automatically sync the Beneficiary data with the server. If the system time and data will be in disabled mode, whenever app opens user will get an alert as “mobile must be set to ‘Use network provider date-time and time zone’.

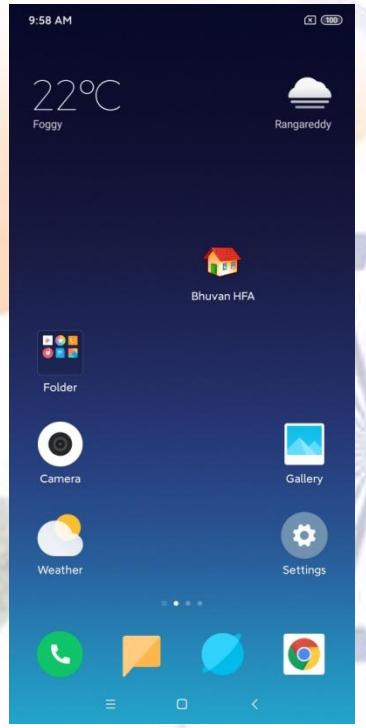


Mobile System time and date used to sync the beneficiary data on daily basis if the internet connectivity is available.



6. Open Bhuvan HFA mobile app

The Bhuvan HFA mobile application can be seen in the list of apps and can be brought to home screen by tap on the icon for few seconds. The user needs to tap on the icon to open the app in the mobile device.



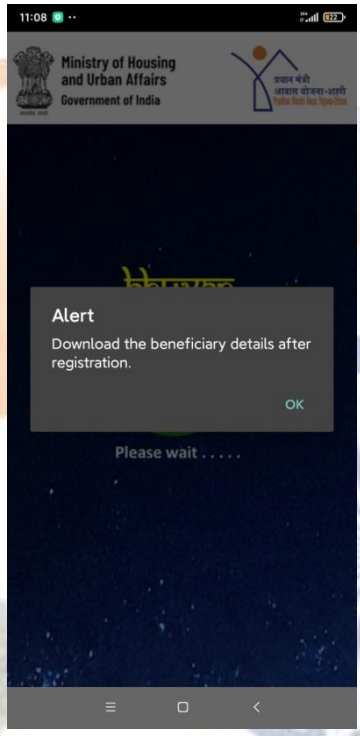
7. User Profile / Registration

The profile page consists of basic observer's parameter details such as User selfie, User ID, First Name, Last Name, Designation, Mobile Number and Organisation. The profile filling is One Time Activity by the observer.

- These parameters are tagged with each observation. The User selfie is an image of the field visitor. User ID is nothing but bhuvan User ID. If user not a bhuvan user, user must register with bhuvan by clicking https:/bhuvan.nrsc.gov.in. The User ID can be individual identification ID among a team. The ID can be used to query / search the geospatial database for individual points.
- This can be used to monitor the day-to-day activities of an observer on Bhuvan geo-platform. Along with above said parameters, the user will be

selecting the State, District and Town along with Approval project for the already registered user to download beneficiary data of the town to be used for geotagging.

- Before opening the registration page user will get below alert.



- After entering into Registration page, based on the user's status, two ways of login facilities have been provided, one for new user and another for the registered approved user.

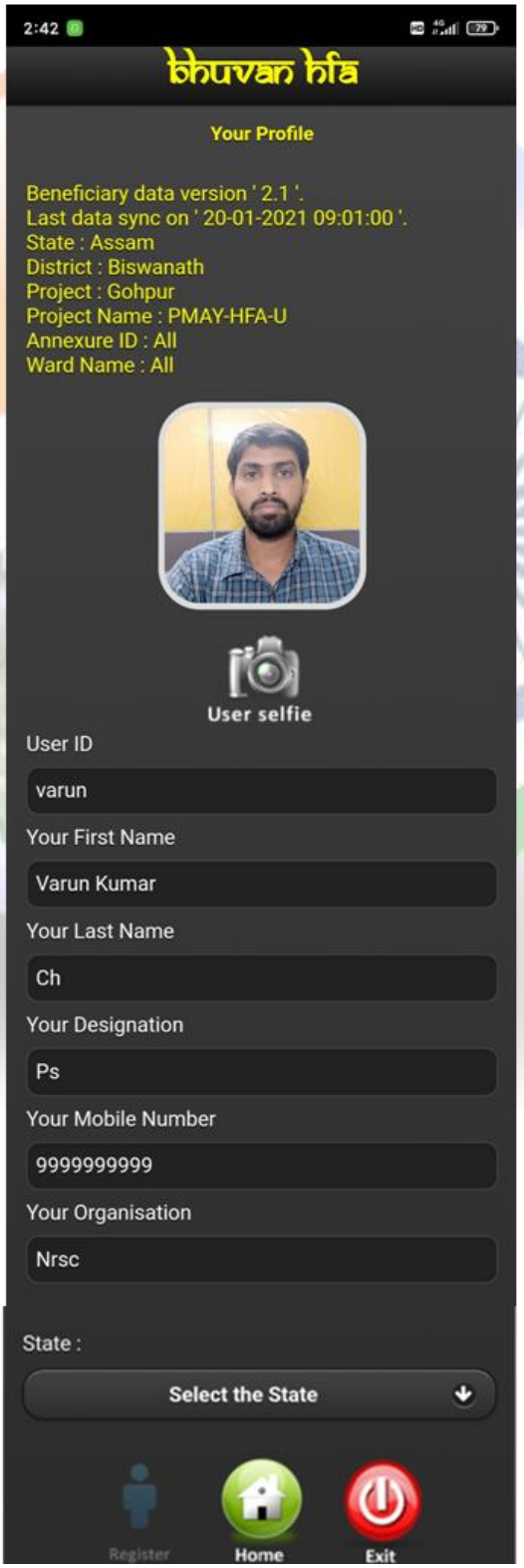
7.1 Registered as new User:

Step-1: Key-in basic observer profile details and select "State", "District" and "Town" from the dropdown.

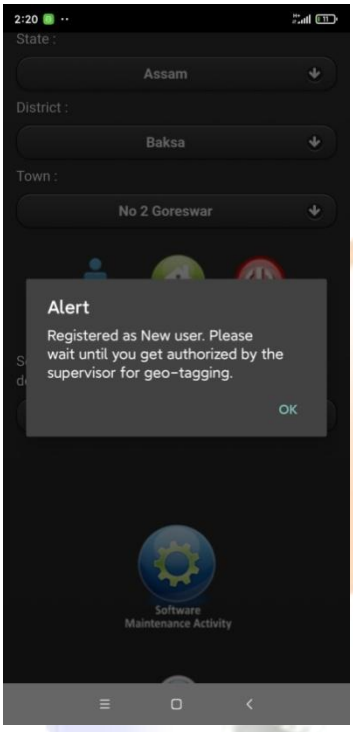
Step-2: On clicking the "Register" icon user will get an alert as "Registered as New User. Please wait until the registration gets approved by the supervisor for geo-tagging".

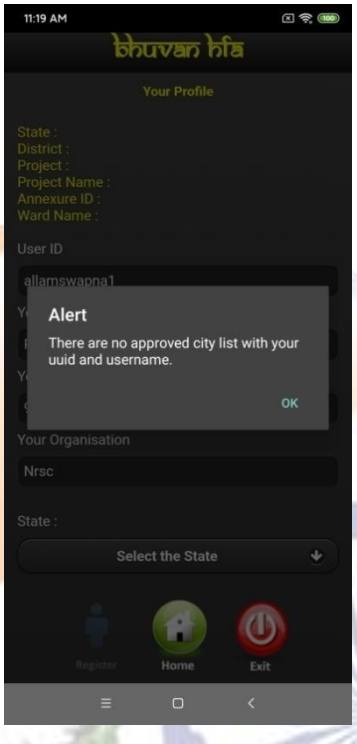
Step-3: After click on "OK", User will get an alert as "There are no approved city list with your uuid and username."

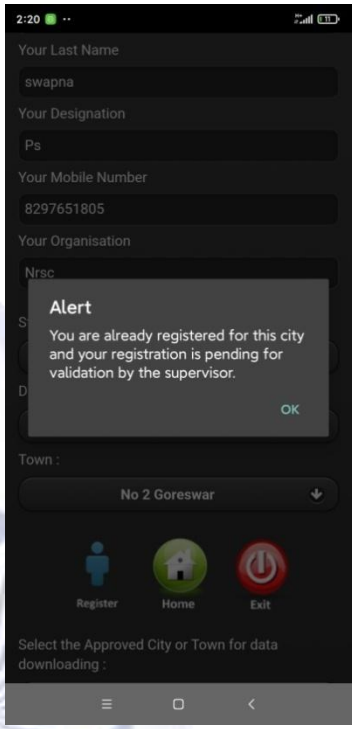
Step-4: If the user already registered with same User ID along with same "State", "District" and "Town", then user will get alert as “You are already registered for this city and your Registration is pending for validation by the supervisor."



Step 1





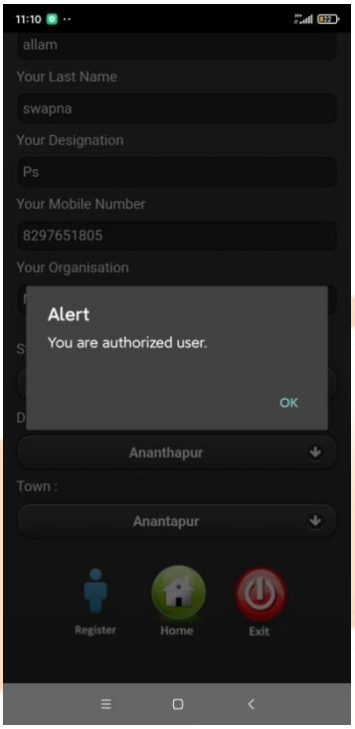


Step 2 Step 3 Step 4

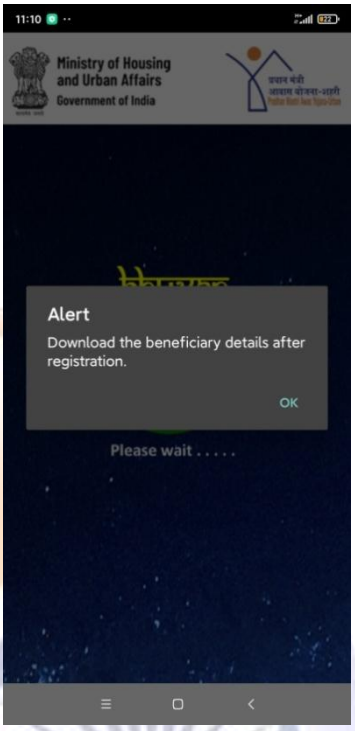
7.2 Registered and approved user:

Step-1: If user already have been approved for the Town, then user will get an alert as "You are Authorized user."

Step-2: After click on “OK”, user will get another alert which states that "Download the beneficiary details after registration."



Step 1



Step 2

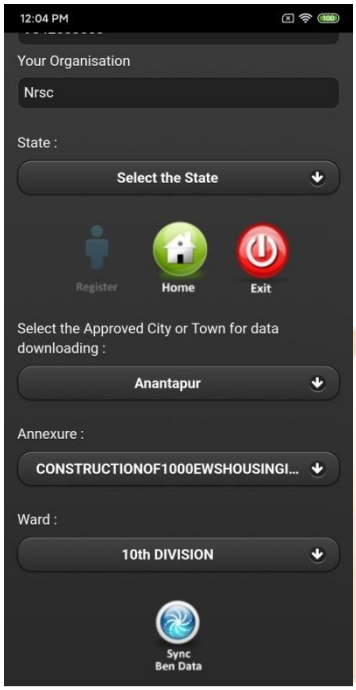
8. Beneficiary data to download:

Once the device get registered and approved to HFA app on Bhuvan Geo-platform, the user can download the beneficiary data based on selecting the "Approved City or Town for data downloading, Annexure and ward". The following are the steps for downloading the beneficiary data.

Step-1: After selecting a town, annexure, and ward then click on "Sync Ben Data" icon.

Step-2: Dynamic loader loading for "Downloading the Beneficiary Data....."

Step-3: One more dynamic loader after loading the data "Beneficiary Data loading....."



Step 1

Step 2

Step 3

9. Data collection overview points

The Internet connectivity is not required during data collection process. The internet connection or Wi-Fi with internet is necessary only to upload the data from mobile to the Bhuvan HFA server and filling user profile. In case of unavailability of internet in field, the collected information can be saved in the mobile and it can be uploaded to Bhuvan HFA server using send later option.

For operational convenience the users can collect data, save and view for any correction in attributes using Send Later of Manage option. The uploaded data will be systematically stored in the Bhuvan HFA server of NRSC.

The user is advised to ensure GPS/Location is switched-on with high accuracy before opening the app.

10. Data collection and Upload

Followings are the main tasks which are aids in the field data collation and upload in the HFA app. The step by step procedure for using the app is given below. There are seven main tasks in this app are 1) Select the Activity, 2) Select Financial Year, 3) Select the appropriate beneficiary, 4) GPS capture, 5) Taking photograph of the building (two

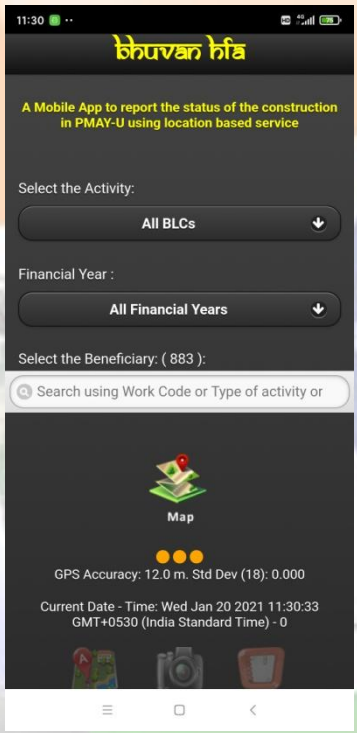
photographs of the House), 6) Adding information of the house construction and 7) Sending the collected information to Bhuvan HFA server, either immediately or later.

10.1 Selection of Activity

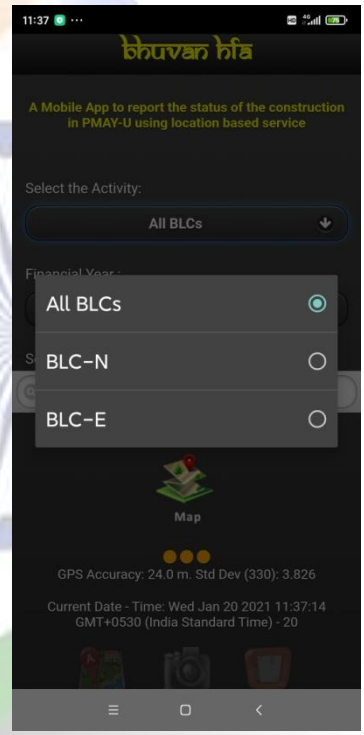
The following are the steps for the selection of Activity details by the user.

Step-1: In HFA home page user has to "select the Activity".

Step-2: For the type of beneficiary to be collected, the user must "select the Activity, like “All BLCs”, “BLC-N” and “BLC-E”.



Step 1



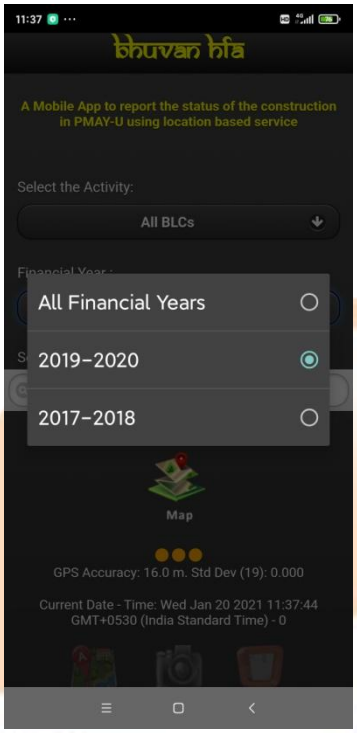
Step 2

10.2 Selection of Financial Year

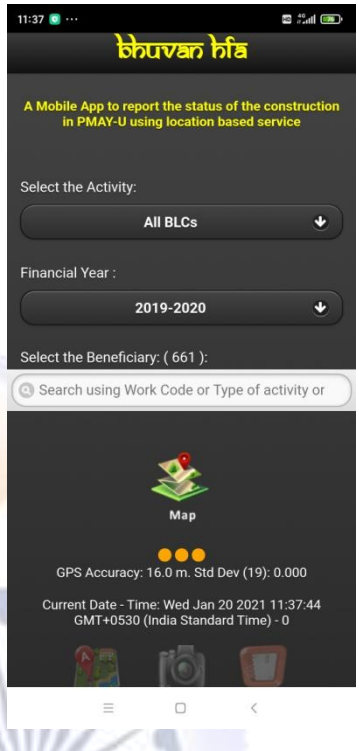
The following are the steps for the selection of Financial Year by the user.

Step-1: In HFA home page user has to select "Financial Year" for the kind of observation needs to be collected. An observation type consists of which is “All Financial Year”, “2019-20” and “2017-18”

Step-2: The user has to select any one of the "Financial Year" from the dropdown.



Step 1



Step 2

10.3 Selection of Beneficiary details

The following are the steps the selection of beneficiary details by the user.

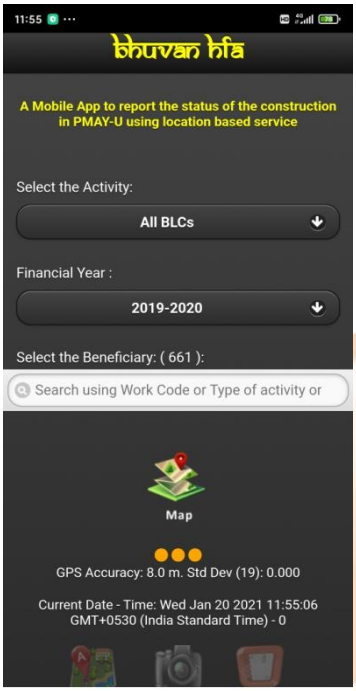
Step-1: In HFA home page user has to "Select the Beneficiary".

Step 2: The user has to tap on “select the beneficiary” for which the observation needs to be collected. The Beneficiary Name, Beneficiary Code, Annexure No, Fathers Name, Ward Name, Address, App Version and Project Name can key-in to fetch list of word that match from the beneficiary database. Key-in the any one of above mentioned parameters in list view box.

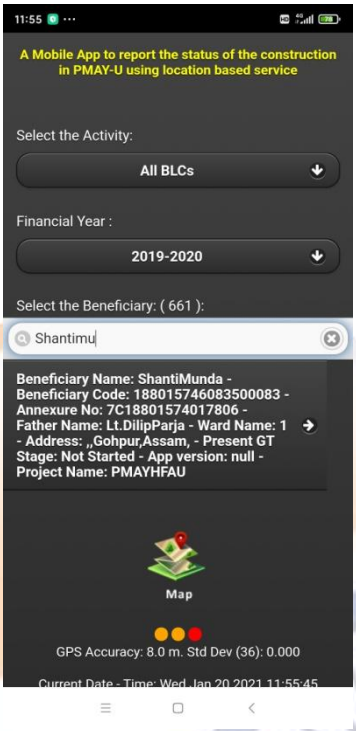
Step-3: A list of beneficiaries appears which matches with key-word and select the appropriate beneficiary.

Step-4: All the parameters of the selected beneficiary are displayed in the confirmation box. Click on "OK" to confirm the selected beneficiary details match with house parameters. Click on "Cancel" to re-select appropriate beneficiary detail.

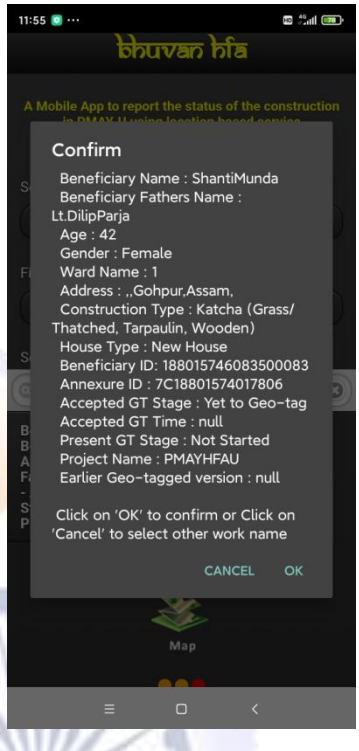
Step-5: The selected beneficiary details appear above map icon.



Step 1



Step 2 & 3



Step 4

Step 5

10.4 Location data capture

The app has provision to capture the location information in the form of longitude, latitude, altitude that should be indicating with “red”, “orange”, “green” colours in small circle shape and user must ensure GPS accuracy is below “20 meters” and Std Dev is above “0” and below “0.5”.

Step-1: The following are the colour indicators to display colours according to the GPS values (Longitude, Latitude, and Altitude):

1.1 Red colour: This indicates no value or any one value not coming from GPS.

1.2 Orange colour: This indicates values are coming from GPS.

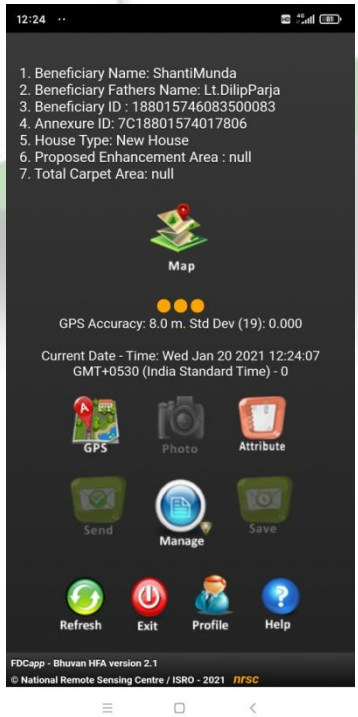
1.3 Green colour: This indicates values are coming from GPS and also ensure that GPS accuracy is below “20 meters” and Std Dev is above “0” and below “0.5”.

Step-2: Stand on the observation site, ensure GPS accuracy is below 20m and Std Dev is less than 0.5 and Click on "GPS" icon.

Step-3: A confirmation box appears for accepting with respect to GPS accuracy.

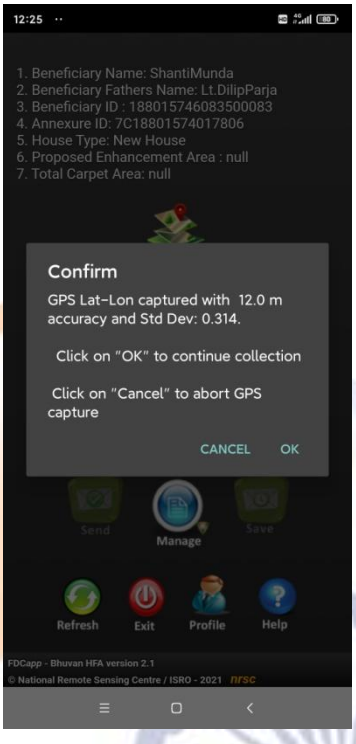
Step-4: A label appears with captured accuracy in meters over the GPS icon.

Step 1.1



Step 1.2

Step 1.3



Step 2 Step 3 Step 4

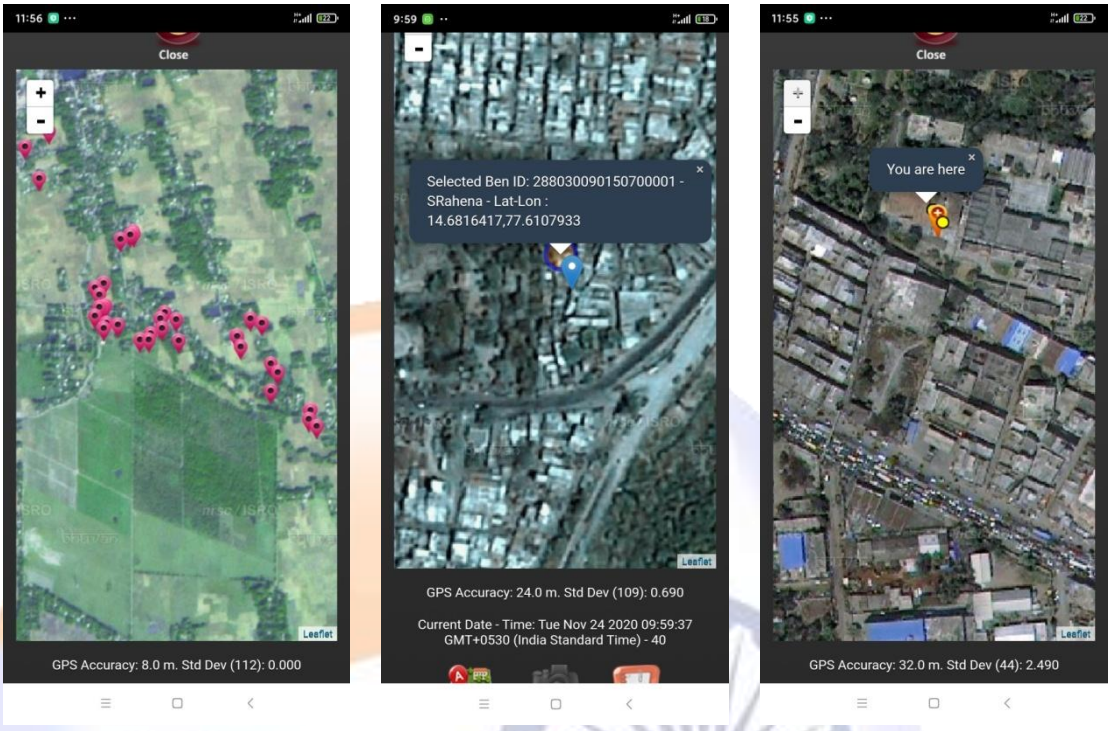
10.5 Visualization of House on Map

User can visualize the beneficiary by clicking on map icon.

Step-1: By clicking the map icon, it will give satellite image tiles, Point info. Also all beneficiary details which are already geo-tagged once will be displayed in pink color icon.

Step-2: The selected beneficiary will be displayed in blue color icon with beneficiary ID.

Step-3: The current location will be displayed in the orange color icon.



Step 1 Step 2 Step 3

10.6 Photograph capture and preview

The following are the steps to capture and preview the photographs after taking the GPS accuracy. The user can capture and upload two photographs of the house.

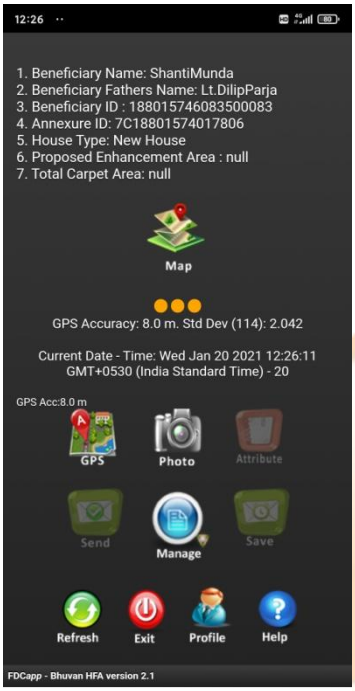
Step-1: Click on the "Photo" icon to activate your mobile camera for taking photographs.

Step-2: Click on the "Camera" icon to capture the focus on the type of land mark and click on the "Save" icon to save the captured photograph. While capturing the photographs, the longitude and latitude is captured with the direction in which the camera is held.

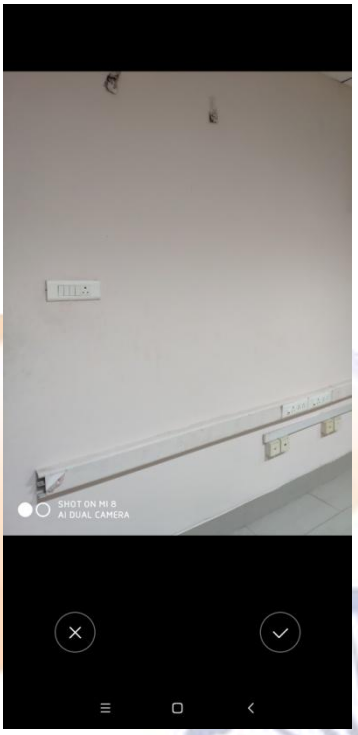
Step-3: Click on the blue icon to visualize captured photograph and Key-in the text about the captured photograph.

Step-4: Click on the same blue icon to close the preview.

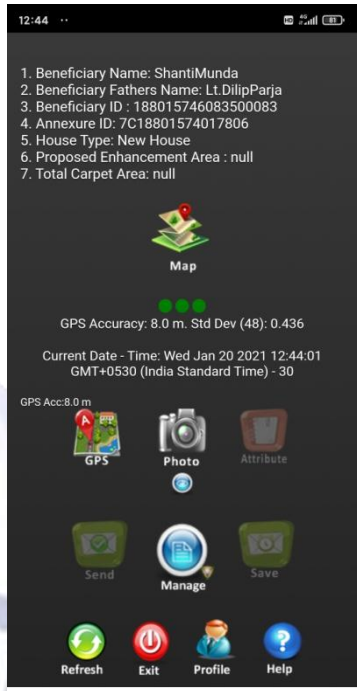
Note: Repeat the steps 1 to 4 to capture the second photograph.



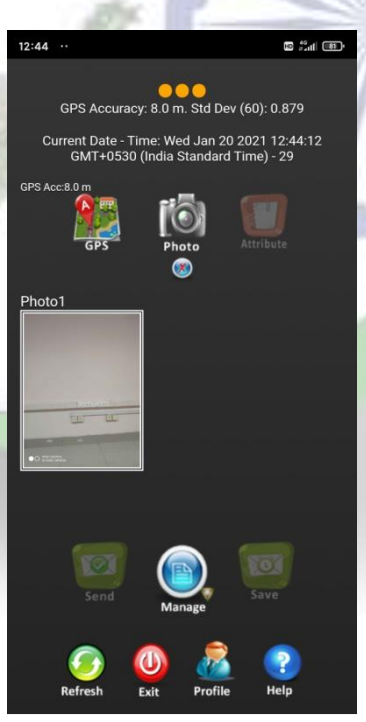
Step 1



Step 2



Step 3



Step 5

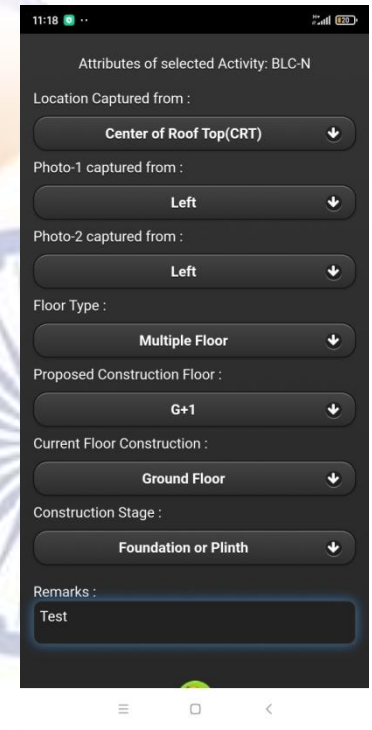
10.7 Adding information of the house construction

After taking the two photographs, user has to click on “Attribute” icon in the home page. The following are the steps for filling the attribute data.

Step-1: After capturing the two photographs, click on “Attribute” icon.

Step-2: After clicking the “Attribute” icon user can fill the attribute details.

Step 1



Step 2

10.8 Sending the collected observation

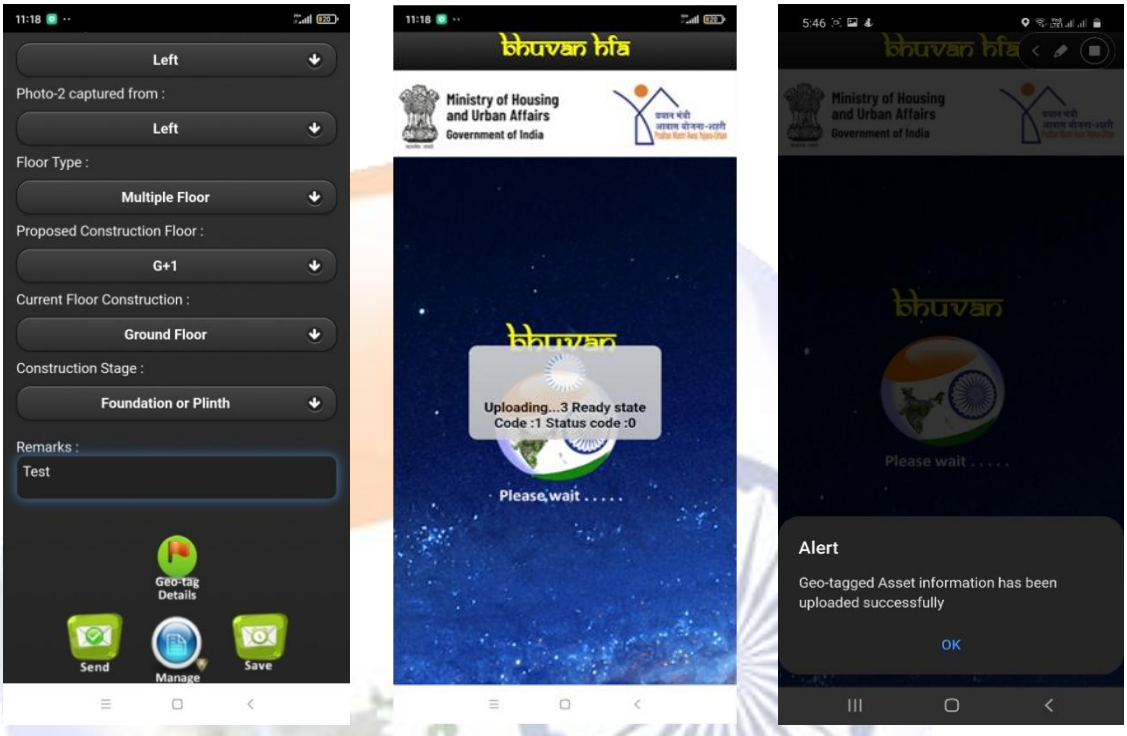
Once the user is satisfied with the collected data, the following are the steps to upload the data to Bhuvan HFA server.

Step-1: After filling all the fields in the Attribute section related to the activity of a beneficiary then user may tap the "Send" icon.

Step-2: A dynamic loader loading for "Data uploading....."This will upload all the information collected. User is advised to ensure that mobile data is switched-on before tapping the "Send" icon.

Step-3: The User has to wait for confirmation message "Geo-tagged Asset information has been uploaded successfully" on successful upload. For

any communication failure, a failure message appears and automatically the data is organised in Send Failed option.



Step 1 Step 2 Step 3

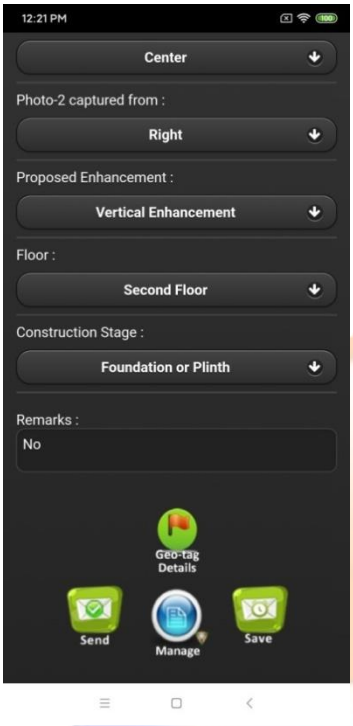
11. Save data for Sending Later

In case of unavailability of Internet connectivity in the collection site, the user is advised to tap "Save" icon. This will store the collected data in the mobile. Once the Internet connectivity is available, the user may follow the steps to upload the data to Bhuvan HFA server using Send Later option. The Wi-Fi facility of Internet modem (like broadband at home or office) can also be used to connect for internet facility in the mobile and upload the data. The following steps to store data in send later.

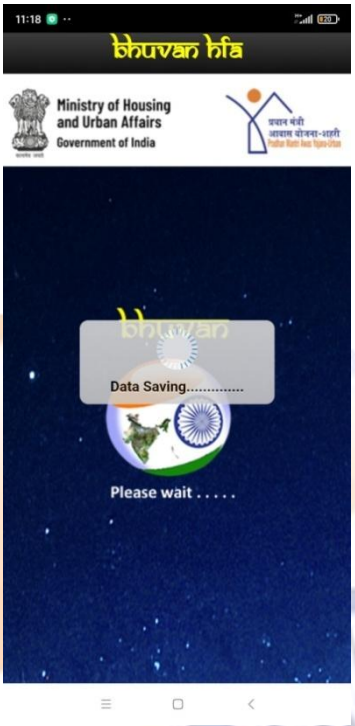
Step-1: The user has to fill all the fields in the Attribute section, and then click on "Save" icon.

Step-2: A dynamic loader loading for "Data storing for sending later....."This will save all the information collected.

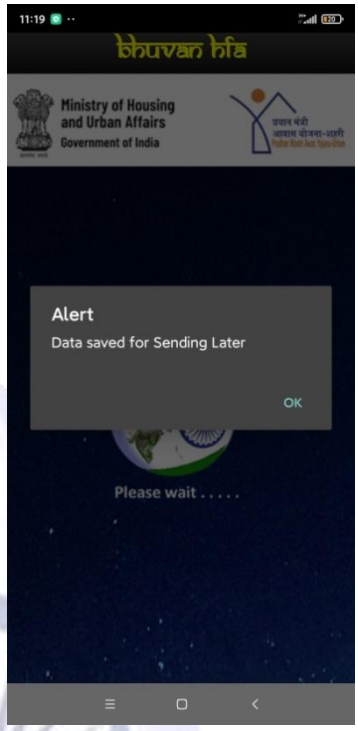
Step-3: After loading is completed, user will get an alert as "Data saved for sending later".



Step 1



Step 2



Step 3

12. Managing your data

The user has provision to edit the saved data, upload the saved data to Bhuvan HFA server, view the completed houses data, delete the data and visualize the sent observations.

12.1 Send Data from Send later

The app provides facility for the user to send the data in Send Later option. This will list all the data collected and stored in the mobile. The following steps to sending data in Send Later option.

Step-1: User has to tap on "Send Later" icon in "Manage" option.

Step-2: User has to select the observation data from the list of observations, which needs to be uploaded and then tap "Send" icon to upload the data to Bhuvan HFA server.

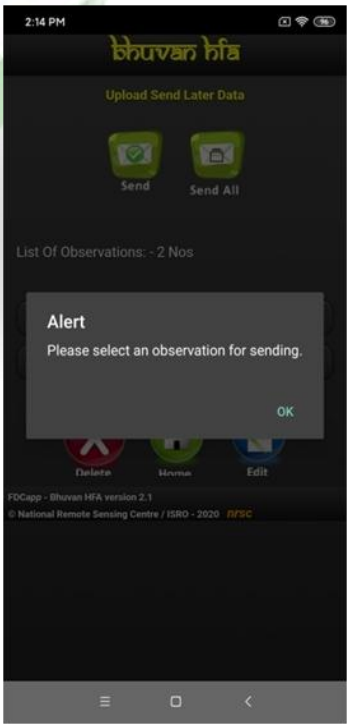
Step-3: If user clicks on send icon without selecting any observation before sending, it will show an alert as “Please select an observation for sending.”

Step-4: After selecting the observation click on “Send” icon to send the observation to Bhuvan HFA server and a dynamic loader loading for "Data sending...Wait for alert....”

Step 5: The User has to wait for the confirmation message "Geo-tagged Asset information has been uploaded successfully" on successful upload.

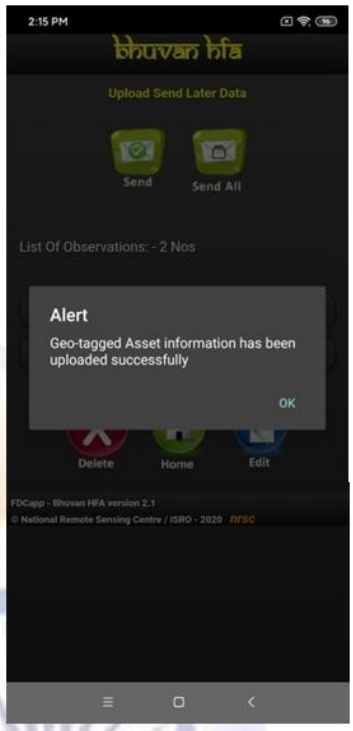
Step 1

Step 2



Step 3

Step 4



Step 5

12.2 Send All Data from Send later

The app provides facility for the user to upload the bulk data to bhuvan server. The following are steps to upload the bulk data in Send Later option.

Step-1: Tap "Send Later" icon. This will list all the data collected and stored in the mobile.

Step-2: Click on “Send All” icon to upload the bulk data to bhuvan server.

Step 1

Step 2

12.3 Editing of Attributes in Send later option

The app provides facility for the user to edit the data in Send Later option. Editing is possible only for attribute values. The user cannot edit GPS values, photographs and the timestamp of the captured observation. The following are the steps for editing the data saved in send later.

Step-1: Tap "Send Later" icon. This will list all the data collected and stored in the mobile.

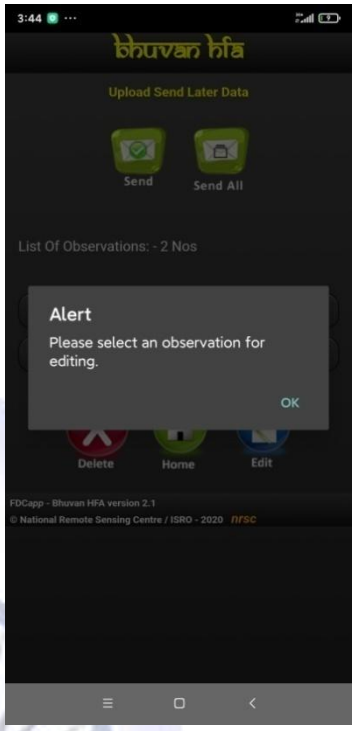
Step-2: Select the observation data that needs to be edited and then tap on "Edit" icon.

Step-3: If the user clicks on the “Edit” icon without selecting any observation before editing it will show an alert as “Please select an observation for editing.”

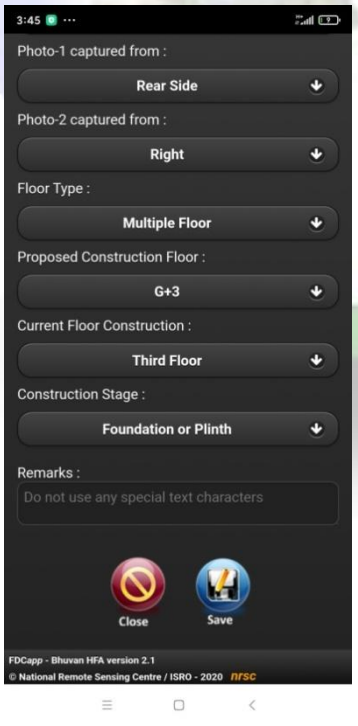
Step-4: After modifying the data in the attribute section, Click on “Save” icon to save the observation details in the local storage. After clicking on “Save” icon it will show an alert as “Data updated successfully.....”

Step 1

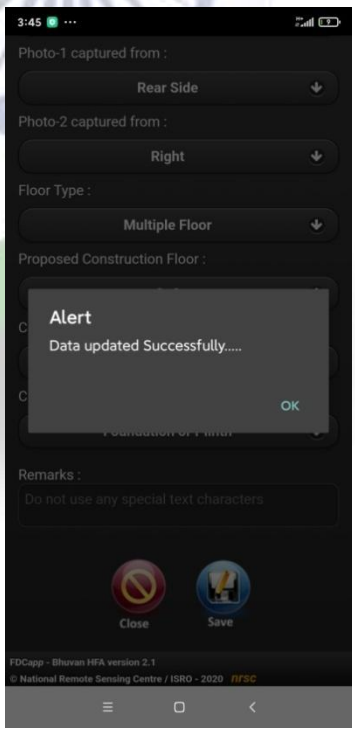
Step 2



Step 3



Step 4



Step 4

12.4 Deletion of observation in Send later option

The app provides facility for the user to delete the data in Send Later option. The data once removed, cannot be retrieved back. The following are the steps to deletion of observation.

Step-1: Click on the “Send Later” icon.

Step-2: The list of observations will be displayed in the “Upload send later Data”.

Step-3: Without selecting any observation from the list if user clicks on Delete icon then user will get an alert as “Please select an observation for deleting.”

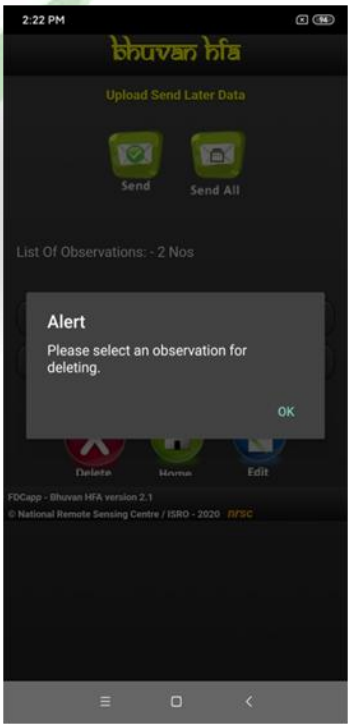
Step-4: After selection of an observation, clicks on “Delete” icon and user will get a confirmation dialog for the observation deletion is permanently not.

Step-5: After clicking on the “OK” button. User will get another alert as “Details of the observation has been removed”.

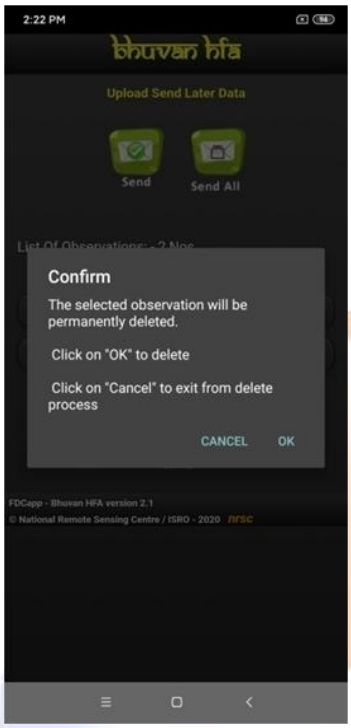
Step-6: If the list of observation is empty in the “Send Later” it will show a label as “No data records found.”

Step 1

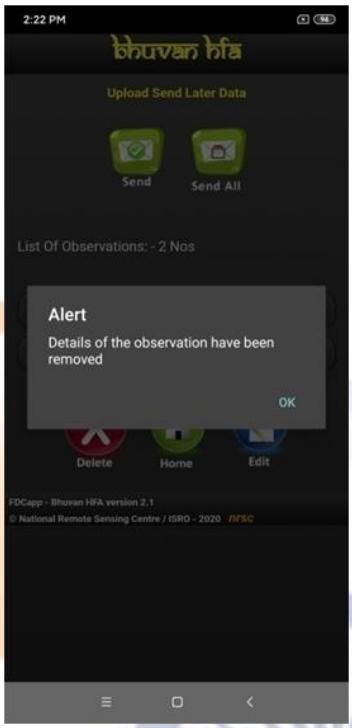
Step 2



Step 3



Step 4



Step 5

Step 6

12.5 View Sent observation

The user can visualize the observation which is sent to Bhuvan HFA server. The following are the steps to view the sent data.

Step-1: Click on “View Sent” icon.

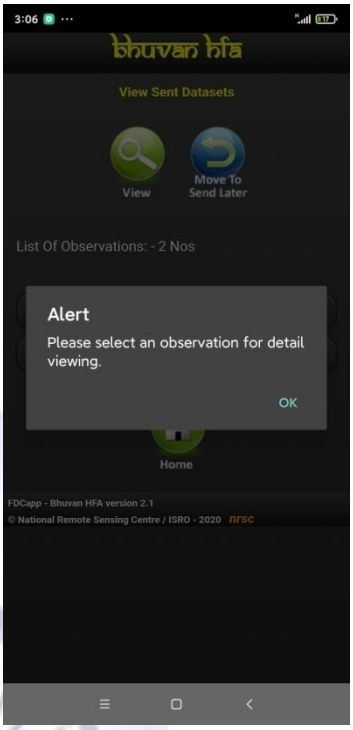
Step-2: The list of observations will be displayed in the “View sent Datasets”.

Step-3: If user clicks on View icon without selecting any observation from the list, user will get an alert “Please select an observation for viewing.”

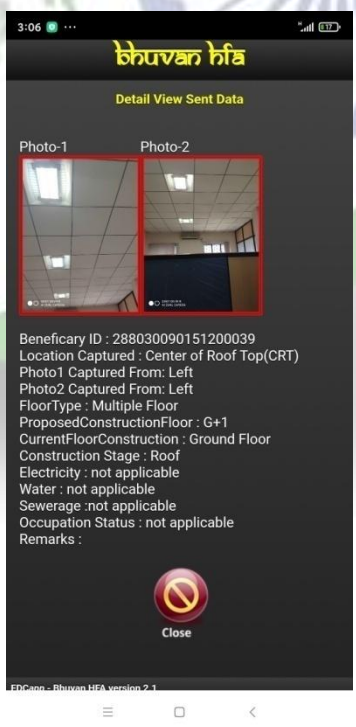
Step-4: After selecting an observation clicks on “View” icon, the user will see all the details about the sent beneficiary.

Step 1

Step 2



Step 3



Step 4

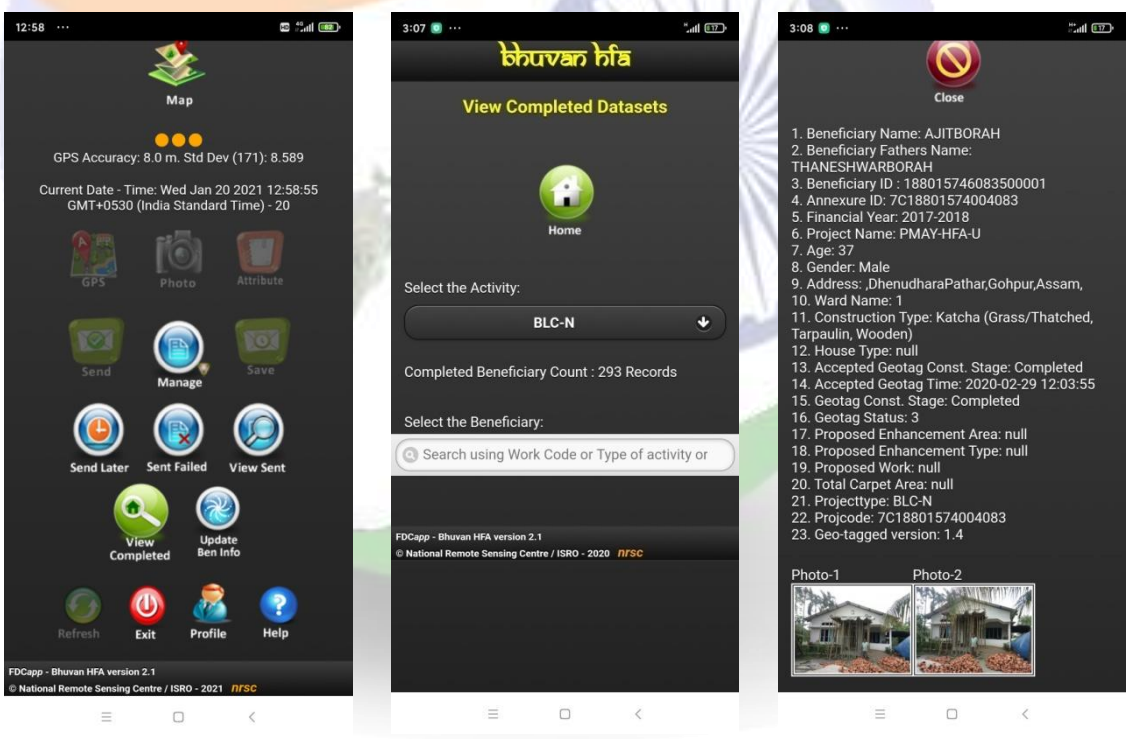
12.6 View Completed observation

The user can see the completed Houses information in view completed. The following are the steps to view the completed Houses data.

Step-1: Click on “View Completed” icon.

Step-2: Select the activity from the drop down. After selecting the activity a label will be displayed along with select the Beneficiary search bar. The label shows the count of completed beneficiary records. Select the beneficiary from search bar.

Step-3: After selecting the beneficiary a new page will open which contains all the details of completed houses along with two photographs.



Step 1 Step 2 Step 3

12.7 View Un Sent Data in Sent Failed option

The user can view the observation which is un sent to Bhuvan HFA server. The following are the steps to view the un sent data.

Step-1: Click on “Sent Failed” icon.

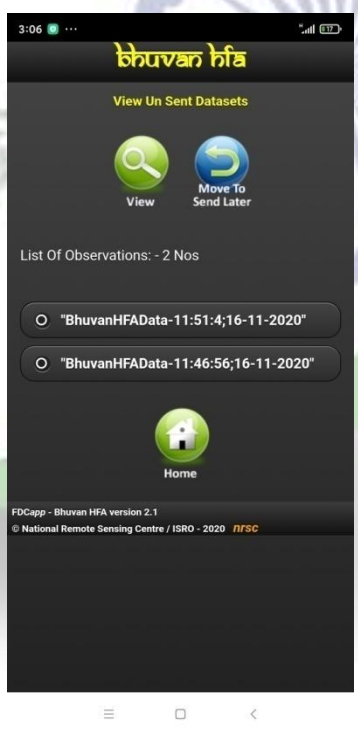
Step-2: The list of observations will be displayed in the “View Un Sent Datasets”.

Step-3: Without selecting any observation from the list, if user clicks on “View” icon, user will get an alert as “Please select an observation for detail viewing.”

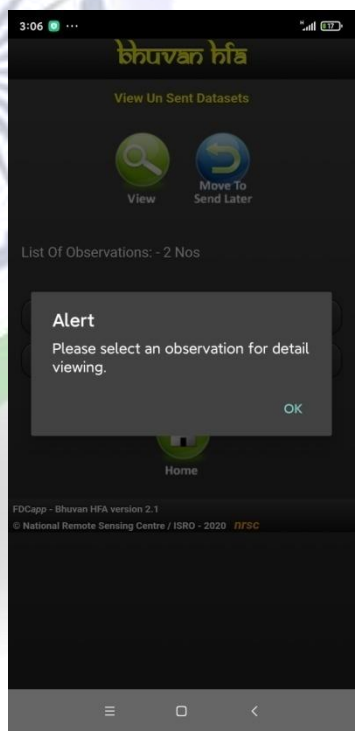
Step-4: After selecting the observation clicks on “view” icon, user can see the details of un sent data with photographs and the reason why the data is not sent to the Bhuvan server.

Step-5: After viewing the details, scroll down the form and click on “Close” icon.

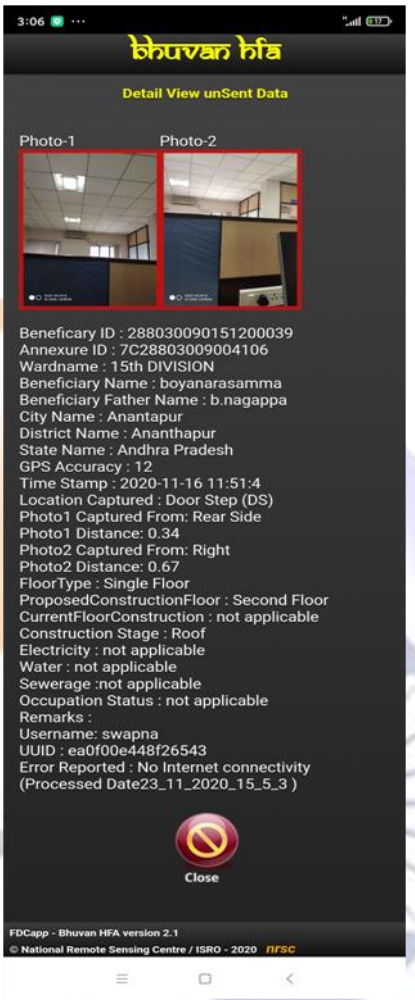
Step 1



Step 2



Step 3



Step 5

12.8 Move To Send Later in Sent Failed

The user has provision to re-send the failed data to server. For this the user need to move the observation from sent Failed to Send Later. The following are the steps to move the observation from sent Failed to Send Later.

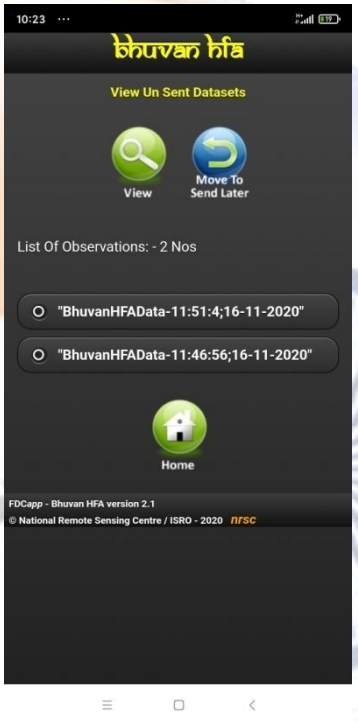
Step-1: Click on “Sent Failed” icon.

Step-2: The list of observations will be displayed in the “View Un Sent Datasets”.

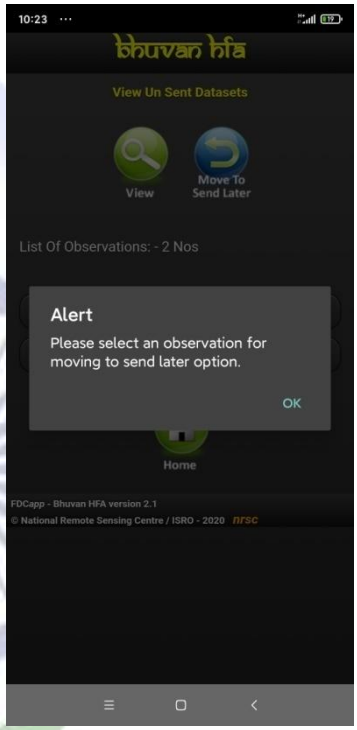
Step-3: If user clicks on Move To Send Later without selecting any observation from the list, user will get an alert as “Please select an observation for moving to send later option.”

Step-4: After selecting an observation, clicks on “Move To Send Later ” icon and user will get an alert as “The selected Dataset is moved to Send Later option.”

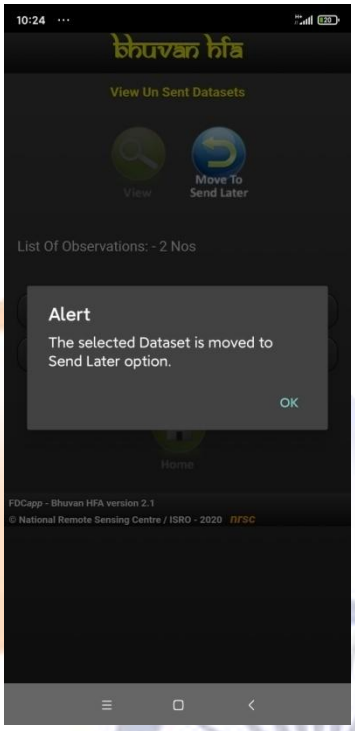
Step 1



Step 2



Step 3



Step 4

12.9 Move To Send Later in View Sent

The user has provision to re-send the sent data to server. For this the user need to move the observation from View Sent to Send Later. The following are the steps to move the observation from View Sent to Send Later.

Step-1: Click on "View Sent" icon.

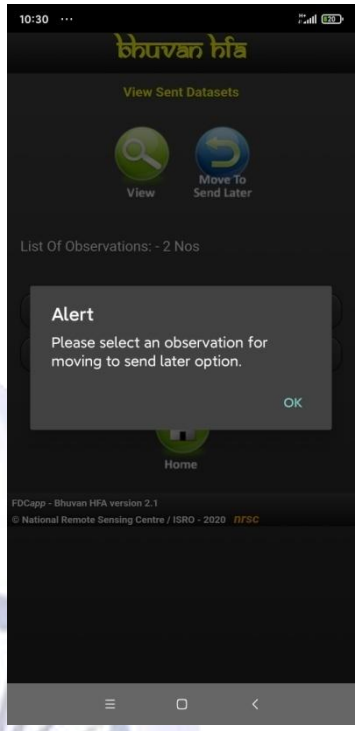
Step-2: The list of observations will be displayed in the "View Sent Datasets".

Step-3: If user clicks on Move To Send Later without selecting any observation from the list user will get an alert as "Please select an observation for moving to send later option."

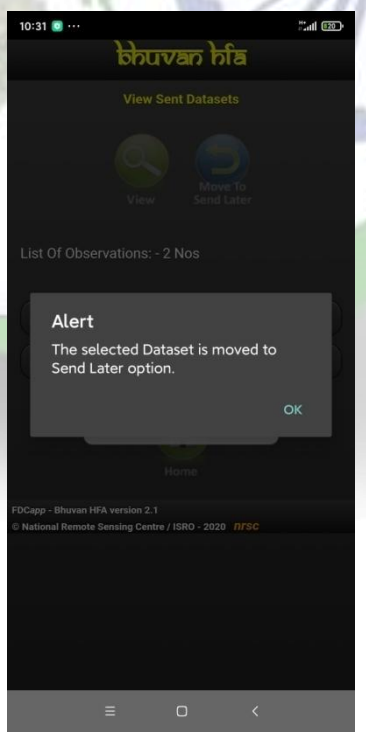
Step-4: After selecting the observation, clicks on "Move To Send Later" icon and user will get an alert as "The selected Dataset is moved to Send Later option."

Step 1

Step 2



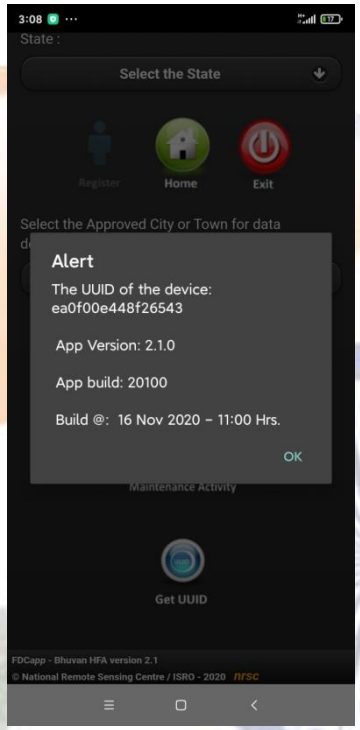
Step 3



Step 4

13. How to know your device UUID?

The details of how a UUID is generated are determined by the device manufacturer and are specific to the device's platform or model. It is a random 64-bit as a string and it is generated on the device's first boot.



14. Software maintenance activity

The software maintenance activity consists of a reset of configuration information and clear space.

14. 1 Clear Space

If user wants to clear disk storage space like removing all sent attribute data and removing backup data stored from the configuration settings can follow below steps.

Step-1: Click on the “Profile” icon in the home page.

Step-2: Click on the “Software Maintenance Activity” icon

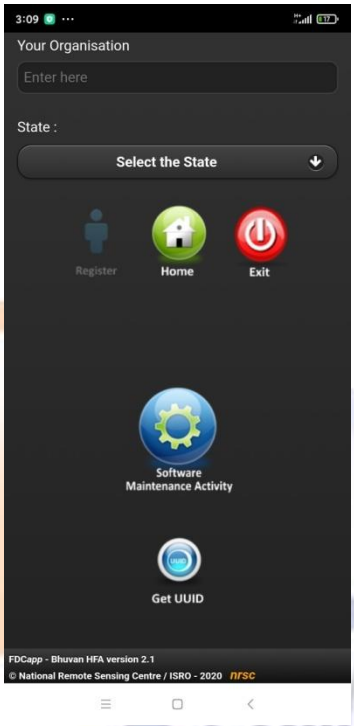
Step-3: Click on the “Clear Space” to generate disk space by removing sent data from mobile.

Step-4: A confirmation dialog is shown as a Caution like “You are removing all sent attribute data stored in app”, then click on “OK”.

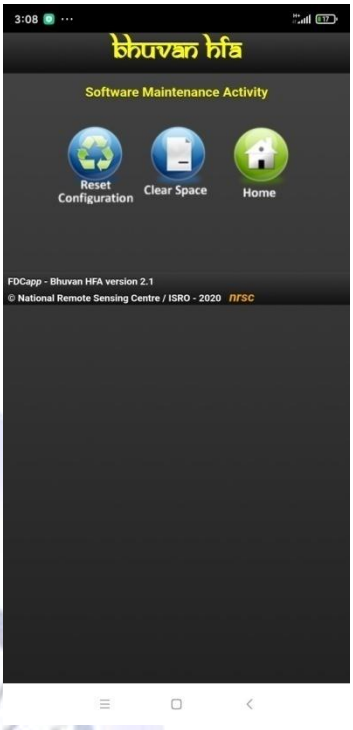
Step-5: After that another alert will be shown “The sent attribute data has been removed”.

Step-6: Click on "Ok" to reset the software database, provision to re-enter the user profile and download beneficiary data. The step closes the software and user has to open the app manually again. To re-enter the profile parameters follow steps of the earlier session.

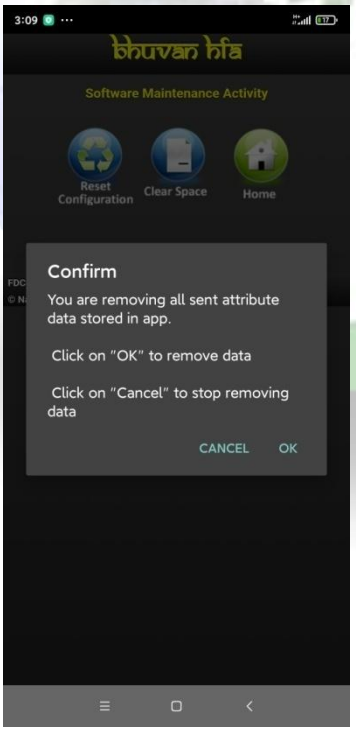
Step 1



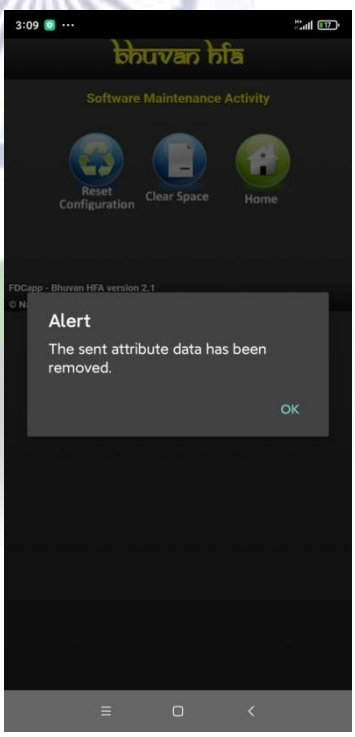
Step 2



Step 3



Step 4



Step 5

14.2 Reset the software configuration

In the software maintenance activity if the user wants to re-enter the profile details or resetting the configuration settings can follow the below steps.

Step-1: Click on Profile icon on the home page of the Bhuvan HFA app.

Step-2: Click on "Software Maintenance Activity" icon.

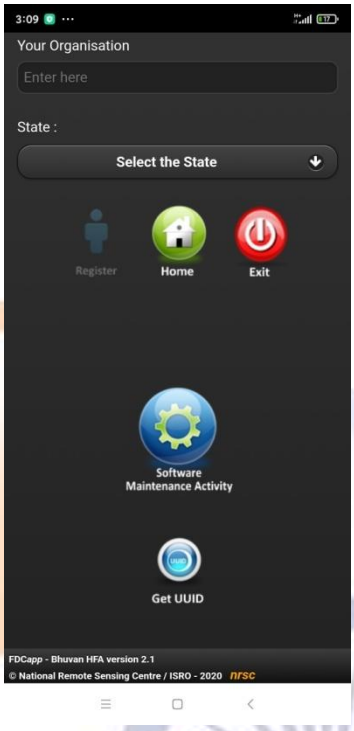
Step-3: Click on "Reset Configuration" icon.

Step-4: A confirmation dialog shown as a caution like “You are resetting the configuration settings. You have to re-enter your profile details.” Then click on “OK” to confirm , Click “Cancel to exit without any changes. If user clicks on “OK”.

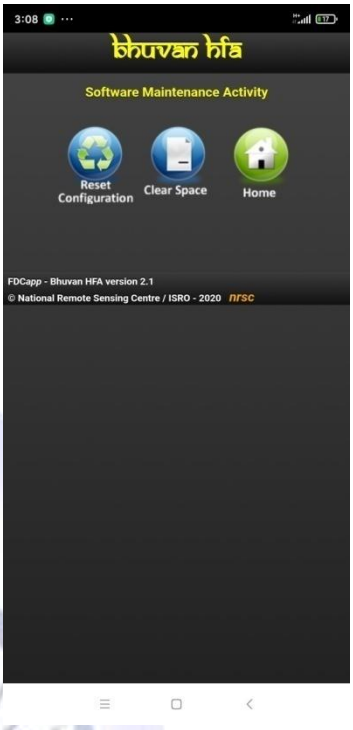
Step-5: After that another alert will be shown “The app configuration setting is reset, require a restart”.

Step-6: Click on "Ok" to reset the software database, provision to re-enter the user profile and download beneficiary data. The step closes the software, and the user has to open the app manually again. To re-enter the profile parameters follow steps of the earlier session.

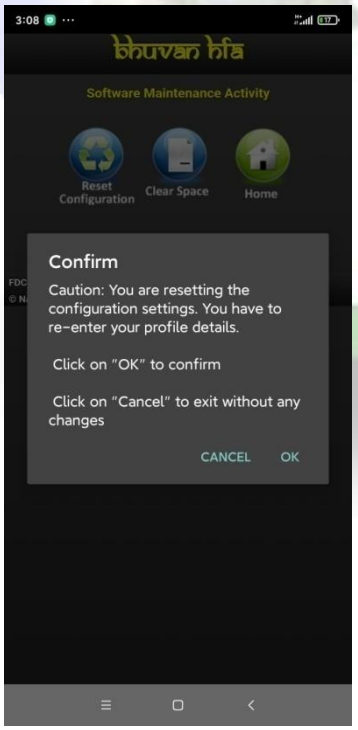
Step 1



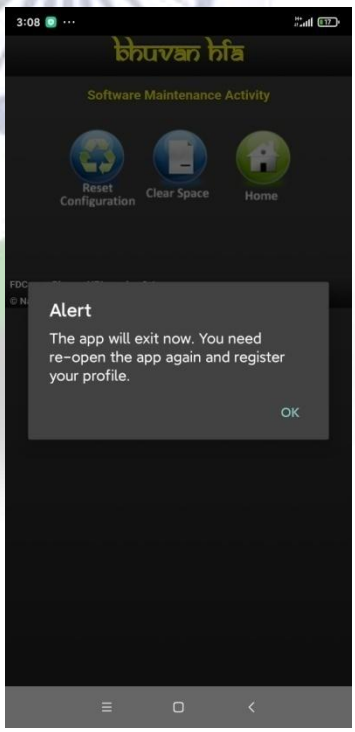
Step 2



Step 3



Step 4



Step 5

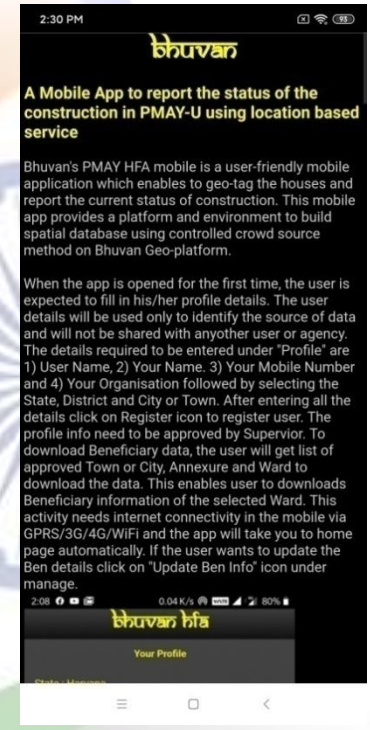
15. Help in the mobile

There is a help page in the mobile app which gives salient features and privacy policy of Bhuvan mobile app in the HFA app.

Step-1: Click on Help icon in the home page for salient features of the app.

Step-2: Here user can see the information regarding step by step procedure in HFA app and scroll down user can see the privacy policy of Bhuvan.

Step 1



Step 2

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