

About the REDCap Mobile App

REDCap software provides its online users with the ability to create and manage surveys and databases quickly and securely to facilitate data collection. The REDCap Mobile App adds a new dimension to the software's versatility by providing users with a tool for offline data collection, particularly in environments with poor internet connectivity. With REDCap and the REDCap Mobile App, users have new options for electronic data capture for studies that under previous circumstances would have dictated pen and paper.

Visit www.projectredcap.org for more information on REDCap and on joining the REDCap Consortium.

App Concept

- 1 **Create** and design project on your REDCap installation. Grant Mobile App Rights and get token.
 - 2 **Set Up** project. While online, set up the project on the app using a code provided in REDCap.
 - 3 **Collect** data from participants. This can be done online or offline.
Send affected data to the REDCap server securely. New records are sent as a package; modified records have their values adjudicated against existing server values. The app user will then be given a chance to refresh the project. This step must be done online.
 - 4
 - 5 **View and Analyze** data. Once the data is uploaded to REDCap, it is a living part of the project.
-

Admin Interface

With the specially-created password, the admin user can log in. This will result in accessing a special interface that enables the admin to do just about everything in the app but collect data. This allows projects the ability to separate data collection from app administration through user rights management. Or if full access is desired for users, then full rights can be given, and the admin interface need not be used - which is the default.

An admin can add users and customize user rights. User passwords can be reset here. When a user is created, full rights are automatically given. The admin (and only the admin) can revoke rights. If all rights are revoked, the user can only collect data for new records. This allows a sort of user management for projects depending on the trust and the ability of the data collector.

Projects can be managed by the admin interface for each user. One can set up a mobile app project. One can also send any data for a project. Data can be dumped to the Mobile App File Repository on REDCap, logs can be sent, and projects can be refreshed. Everything but data collection is possible through this interface.

Downloading a project

New project creation is not possible in the REDCap Mobile App itself. The app's purpose is to collect data offline that will later be added to an existing project in the web based REDCap application. In order to do so, a copy of the project's data collection instruments must be reconfigured in the REDCap Mobile App.

Getting started

- 1 **Log into** your REDCap installation and select the correlating project.
Grant Mobile Apps Rights. Locate the Applications features on the left sidebar. Choose the User Rights

2 application and add REDCap Mobile App rights for yourself or another appropriate user. By rule, you will now be able to download the full data set and request an API token regardless of previous permissions levels.

3 **Request** Token and Get App Access Code. Click the REDCap Mobile App link on the sidebar and request an API token. Once the token is created, return to that page (or refresh the page). A QR code is now available under the Initialize Project in Mobile App tab. If you have trouble with the QR code, click the “Can’t get the QR code to work?” link to access a 10-character access code that can be entered manually.

4 **Open** the app on your device.

5 **Set Up** Project. Click the Set Up Project button.

6 **Provide** Code. Click the Scan QR Code and Initialize button. Scan the QR code that you see displayed or enter the 10-character access code here. If correct, either will grant you access to the project which has now been replicated on your device for offline data collection.

Optionally downloading data

In addition to the data collection instruments, you can choose whether you want to download data from the project or not. This process happens while online immediately after adding or resynchronizing the mobile project. When resynchronizing a mobile project on the REDCap Mobile App, all existing data for that project on the app will be deleted. (This will not affect any other projects that you have added in the app.)

Data collection

With the project in place, you can begin data collection for both new and existing records.

- Tap the Collect Data button and choose an instrument and a record. (This selection order is slightly different for classical projects, one-armed longitudinal projects, and multi-armed longitudinal projects.) If this is a new record, you must choose the first instrument. If this is a new record on a project without auto-numbering enabled, you will also have to choose a record name.
- Enter data and set the form status at the bottom as needed.
- Save your data in one of three ways:
 - Save Record (to save data entered and return to the records list)
 - Save and Continue (to save data entered and remain on the same screen)
 - Save and go to Next Instrument (to save data entered and move on to the next instrument in sequence)

Data collection features:

- Besides free text and structured data entry, pictures, videos, and audio can be uploaded into designated file fields. Signatures can be captured as well.
 - Records can be renamed on the first form. Note that renamed records will appear as new records when uploaded to the main database, so you will need to delete the original record there to complete the replacement process.
 - Instruments can be secured so that participants/users will only have the option of entering data (and not traversing the rest of the app, which can jeopardize confidentiality). They can be unlocked via the primary user's pin.
 - The amount of data collection is only restricted by what your device's hard drive will allow.
 - All data collection can be offline – without Internet access.
-

Sending Data

When back online, you can send data to the project's REDCap server. This will coordinate the mobile device's data with the main REDCap project. If record names or data values conflict, you will be given the opportunity to make adjustments before completing the upload. If the instruments themselves have been modified significantly in the main REDCap project since REDCap Mobile App project setup, you will not be able to complete the upload.

- In the app, click on Send Data to Server.
- Click the Begin Send button.
- New records will be added to the main REDCap project immediately if no conflicts exist or if conflicts exist but are automatically resolved by the app.
 - If there are no duplicate record names/numbers, records will upload with the names/numbers assigned at the app.
 - If auto-numbering is enabled and there is a record name conflict, REDCap will automatically update the record numbers to the next numerical series of numbers before uploading and provide details on the app page.
 - If auto-numbering is not enabled, a new ID number is suggested but can be modified unless its name conflicts with a new record on the server.
- Existing records that have been modified on the app will have modifications detailed on the app page.
 - An option to send the data to the server for each modified record appears, as well as the opportunity to view details of the differences between server data and app data for that record. Individual field values can be selected from the details (i.e., server vs. mobile device).
 - Each record that has been modified is usually auto-filled with a “Yes” response to the “Send data to the server?” question. If after reviewing the scheduled changes for that record, you decide not to make the update, change the response to “No” to remove it from the upload queue.
 - To choose field-level changes, click on the cells that have the information you want to enter for the record. You can choose from either the app side or the server side of the table.
 - Special scenarios to note:
 - If a record is deleted from the main project after it has been replicated in the app and a change was not made to the app record, the record will not upload from the app to the project as a replacement. You will not receive a notification from the app or server that the original record has been deleted.
 - If a record is deleted from the main project after it has been replicated in the app and a change was made to the app record, you will receive a notification and option to change the ID number and upload as a new record, or not to upload the record at all.
 - If a record is deleted from the app, it will not be deleted from the server after data syncing. You may only delete records from the main project on the server.
 - For cases where auto-numbering is disabled, if a new record was entered on the server with the same ID as a new record entered on the app, you are given the options to merge the data, to upload the app data with a new ID, or not to upload the data.
 - Click Send Records with Changes to complete data upload when ready.
 - Click Refresh Setup & Data (recommended) to remove old mobile data and replace with the most current project information from the main REDCap project, or choose Back to Project to continue working with the same data. If you choose Back to Project, uploaded data will no longer be marked as new or modified; that is, it will no longer be queued for upload.

User Responsibilities

REDCap Project Creator:

- 1
 - Create and design the REDCap project.
 - Grant mobile rights access to the appropriate REDCap users.

REDCap User:

- 2
 - Create a token for the project so that it can be distributed to the App User.
 - Coordinate data reception from the app(s). No action is usually required other than monitoring the project.

App (Device) User:

- 3
 - Download the project onto the app.
 - Collect data on the app.
 - Send data from the app to the server at an appropriate time.
 - Keep the project up-to-date by reinitializing the project after data is sent.
-

User Management

You can add multiple users to the device in the Add & Manage Users section. Each user will have a unique PIN that you assign to provide access. Each app user, however, maintains unique project copies on the device and cannot share the same REDCap Mobile App projects. An app user downloads the main project from a REDCap user on the server with the opportunity to download all data that has been entered or uploaded. This app user collects data separately from anyone else (i.e., the data is siloed to each app user and then again, to each REDCap Mobile App project). When the app user sends data to the server, the process handles duplicate record ID's and conflicting data, and conflicts are presented to the app user. (This is described in the Sending Data section.) After the data is sent, the REDCap user can view the data.

Security Features

- **Transmission:** Data is transmitted securely to and from the REDCap server via SSL (https) if it is set up on the server. If SSL is not set up on the server, the REDCap Mobile App will alert the user when the project is downloaded.
- **Device's Hard Drive:** The database is encrypted on the mobile device's hard drive using SQLCipher (public key/private key encryption). This prevents someone from breaking into the file in the event of a stolen device.
- **Application:** A login with a 6-digit pin is required to access the application. Five login attempts are allowed before lockout, and a 15-minute lockout period is initiated. When the application is sent to the background or is cloaked with a screen saver, the pin is required again to access the application if a user is logged on. Similar log in attempt rules and lockout rules apply when the user reenters the application.
- **Instrument:** The Secure the Instrument feature restricts access by a participant to a single form. Enabling this feature allows you to hand over the device to a participant to enter information directly, but locks the participant out of the rest of the application as well as other forms. REDCap Mobile App user's 6-digit pin is required to unlock the form. Similarly, the 6-digit pin is required to reenter the form if the participant minimizes the application or if a screen saver interrupts form entry.
- **Logs:** Project logs for activity on the REDCap Mobile App are stored in the database's Mobile App File Archive. These can be transmitted to the server (for one given project) via the Send Project Logs button on the Project menu. These logs record data creation, modifications, and uploads; renaming, deletion, and viewing of records; and downloads of project instruments and records.