

Build CyberTracker Apps for Complex Data

In this 12-page tutorial, we will look at:

- Plan your CyberTracker App
- Screen Templates
- Screen Flow
- Simple Linear Sequence with Icons
- Linear Sequence with Main Screen as a second Save Target
- Linear Sequence with three Save Target Screens
- Branch Out into Different Screens
- Add Screens to Branches
- App Settings
- Publish your App
- Deploy your app to mobile phones
- Update App
- Set up Observation Filters
- View and filter data
- Export Data as a CSV file

Plan your CyberTracker App on Paper Spreadsheets

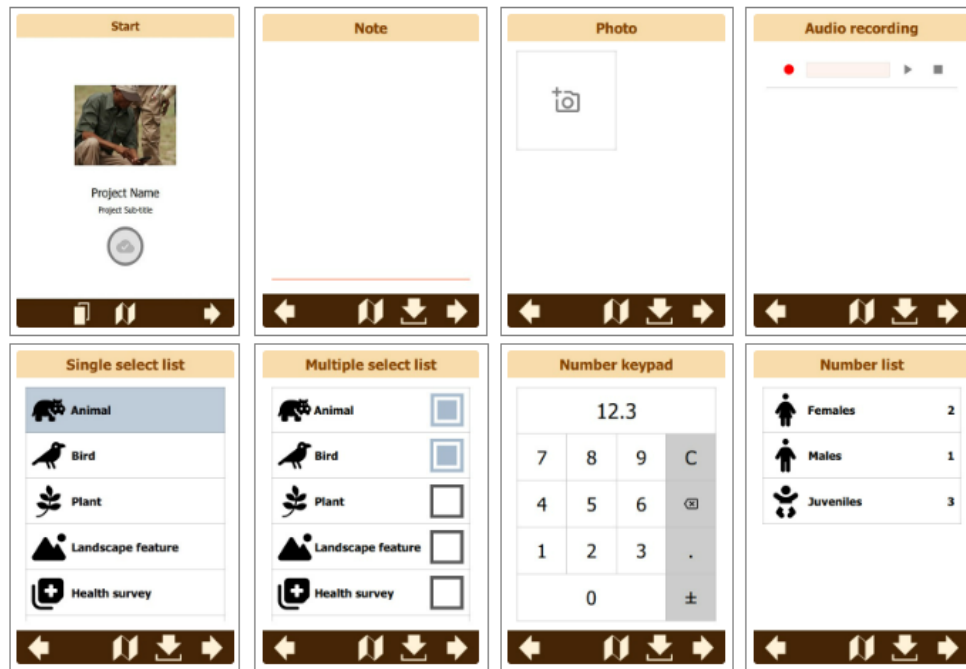
Before we had computers, we did numerical analysis on large sheets of paper – called “spreadsheets”.

Read this tutorial so that you understand the basic components of a CyberTracker App and then plan your app on a large sheet of paper. While it may be easy to build a simple app without planning, CyberTracker allows you to create apps that can capture very complex data.

For complex data, it is easier to first plan your app on paper. Draw the Screen Flow and the List Items for each screen. Sometimes paper “spreadsheets” are still the best UX option!

Screen Templates

The basic components of a CyberTracker app are the **Screen Templates**. You select a Screen Template and fill in the List Items where appropriate.

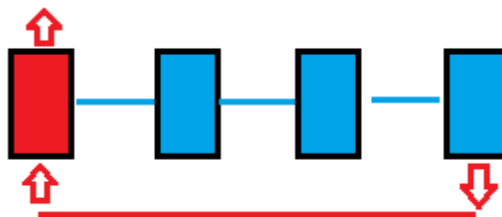


- The first screen of every app must be a **Start Screen**. The Start Screen initiates the **Timer Track GPS points** when you start recording observations. The Start Screen also enables you to **submit your data** to the CyberTracker Online server. You can also **select another Project** from the Start Screen.
- The **Note Screen** allows you to write a text field note.
- The **Photo Screen** allows you to select how many photos can be taken.
- The **Audio Recording Screen** allows you to record a voice note or a sound.
- The **Single Select List Screen** allows you to choose one List Item.
- The **Multiple Select List Screen** allows you to select more than one List Item.
- The **Number Keypad** allows you to enter a single number.
- The **Number List Screen** allows you to enter a number for each of the List Items.

Screen Flow Diagrams

In the **Quick Start** guide we built a CyberTracker Photo Notes app that consists of a simple linear sequence of three screens. To build an app to collect more complex data we can visualise the **Screen Flow diagrams** using colours to represent different functions.

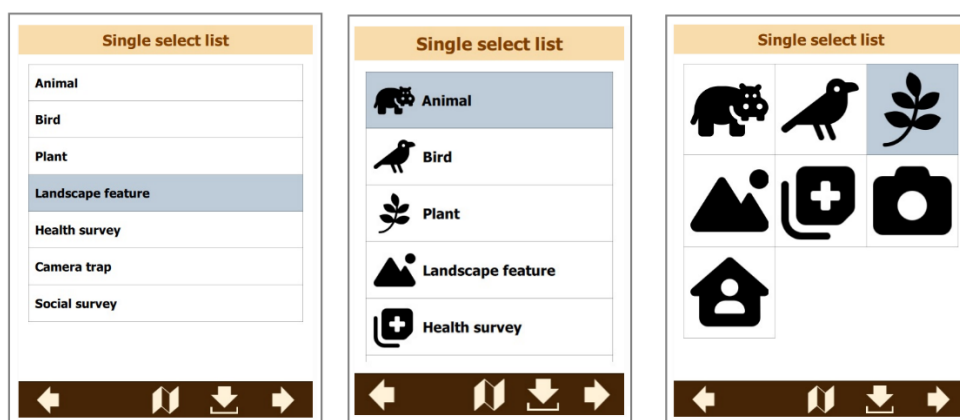
Simple Linear Sequence with Icons



- In **Edit Application, Screens** the first screen must be a **Start Screen (Red)**.

Text or Icons

- A Single-select List Screen can either **display Text, Icons, or both**.
- If you would like to **add Icons**, then:
- Download the **Kalahari Demo Icons** for this tutorial (on the website page where you found this tutorial).
- You can also **create your own icons**, search for **icons online**, or use **thumbnail photos** as icons.
- **Icon and image file types** include JPG, PNG, GIF, BMP, and SVG files.



Add a Single-select List Screen

- Click on **Add Screen**.
- Under **Label** enter a name for your screen: This could be the type of observation or the category of a list of observations.
- Select **Single select list** from the Template dropdown.
- Click **Save**.
- You are now on the **Edit Screen** page for your single select list screen.

Add a few List Items:

- Click on the **Add List Item** button.
- Under **Label** enter a **name for your List Item**.
- To **add an Icon**, click **Browse** and **select an Icon** that you downloaded and saved on your desktop computer.
- Click **Save**. You will be returned to the **Edit Screen page** for your list screen.

Add a couple more list items. You can drag and drop the list items in their list **to change the order** and use the pencil and bin icons to **edit or delete list items** if necessary.

- Under **Screen Settings**, in the **Appearance** dropdown, choose **Text Only, Text beside icon, or Icon Only** (if you added Icons).
- Click **Save** to save your changes and get back to the Screen list.

Add a Number Keypad Screen

- Click on **Add Screen**.
- Under **Label** enter the type of observation for which you need to record a number.
- Select **Number keypad** from the **Template** dropdown.
- Click **Save**.
- You are now on the **Edit Screen** page for your **Number keypad** screen.
- Use the **Back to Screens** button to get back to the Screens list.

Add a Note Screen

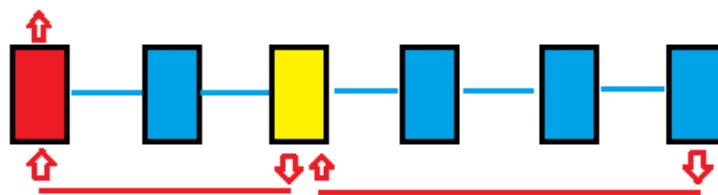
- Click on **Add Screen**.
- Under **Label** enter the type of Note, for example "Field Notes".
- Select **Note** from the **Template** dropdown.
- Click **Save**.
- You are now on the **Edit Screen** page for your **Note screen**.

- Under the **Navigation Buttons** section, check the checkbox for **Save button**.
- Click **Save** to save your changes and return to the Screen list.

Order of Screens

- For a **Simple Linear Sequence**, you create a sequence of screens which **follow each other in the order that you created them in the Main Flow (Blue)** of screens. On your mobile device the screens in your app will be displayed **in the order in which they are displayed** in this list.
- In **Edit Application, Screens** you can **change the order** of the screens by simply moving them up or down in the list of **Screens**.
- By default, the **Save button** will take you back to the **Start Screen**.
- You should now see four screens listed in your **Screens list**. You can **hover over the various icons** in the screen list to get a tooltip with **extra information** about the screen.

Linear Sequence with Main Screen as a Save Target

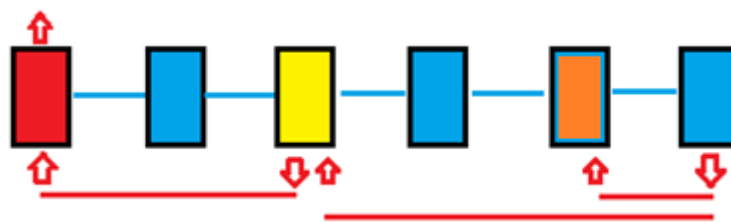


- The **Main Screen (Yellow)** is a **Single Select List screen** which, for example, provides a **menu of species** for which you need to collect data.
- In **Edit Application, Save Targets tab**, you can select more than one Save Target screen.
- When you **save** an observation, you select the Main Screen as the **Save Target** to loop back to the Main Screen.
- The screens that come **before** the Main Screen may contain **Meta Data** that needs to be attached to every observation you make. This may include the names of the

observers, the type of survey, survey details, etc. By looping back to the Main screen when you save an observation, you do not need to enter the Meta Data again for every observation you make.

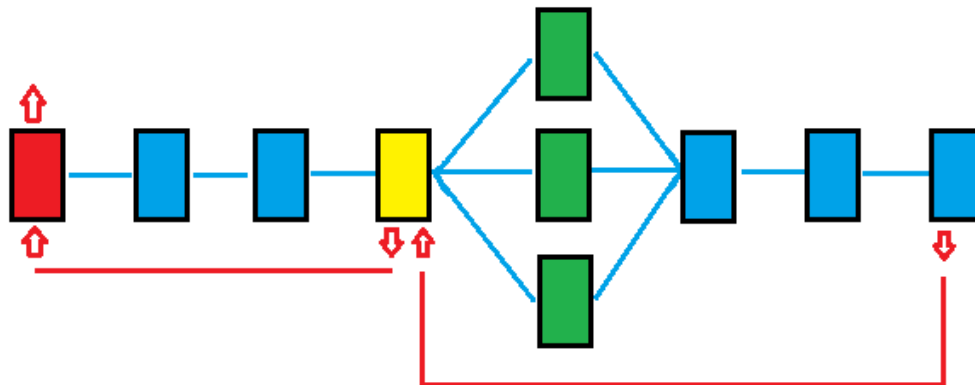
- When you create **more than one Save Target**, you need to: **(1)** Create a Save Target for the **Start Screen (Red)**; **(2)** Add an **“End Survey” List Item** on the **Main Screen** and **(3)** Check the **Save Button check box** to go back to the Start Screen.
- **On the mobile device**, for the Save button that goes back to the Start Screen, you need to **hold down** your finger to save – it has a **delay to prevent accidentally going back to the Start Screen** when you need to go back to the Main screen.

Linear Sequence with three Save Target Screens



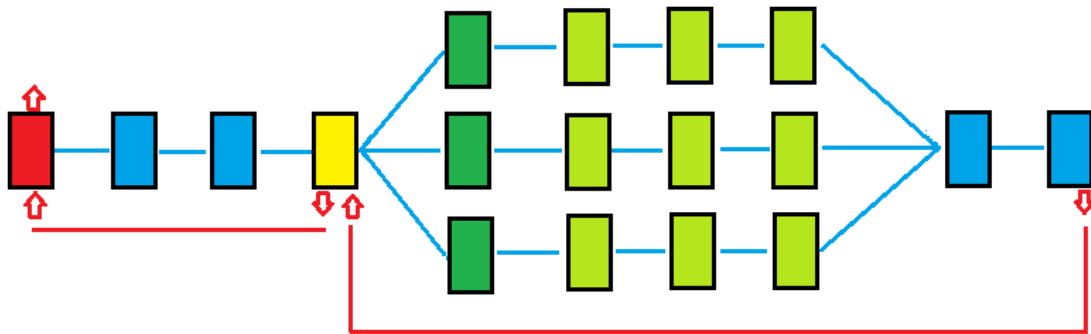
- You can create a **third Save Target screen** that allows you to loop back to a screen (Orange) that comes **after** the Main Screen (Yellow).
- For example, the Main Screen may contain a list of hoofed species. You may be tracking one species to study its feeding behaviour. While it is feeding, going from one plant to the next, you need to record the plants it is feeding on, but you do not want to go back to the Main Screen for each plant recorded. By selecting the screen with the list of plant species as a Save Target screen, you can Save a plant it is feeding on and loop back to the Plant list screen.
- You can have **several Save Target screens** in a linear sequence of screens.
- You can **add an Icon** to the Save Target screen.
- You can **change the order** in which the Save Targets appear in the **Save pop-up menu** on the mobile device by moving them up or down in the list of Save Targets.

Branch Out into Different Screens



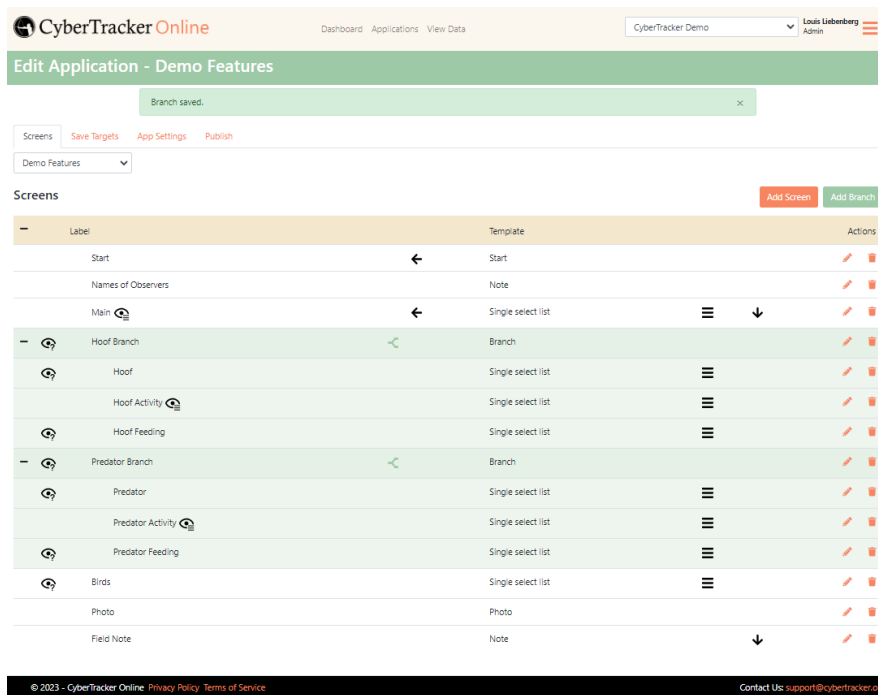
- From the **Main Screen (Yellow)** you can **branch out to different screens (Green)**.
- For example, in the Main Screen you may create List Items for **different categories** such as Hoof (for hoofed species), Predators and Birds, each branching out to a different screen.
- To branch out into different screens, **first create the screens to which you need to go to (Green)**, for example, create a screen for Hoof, another screen for Predators, and another screen for Birds, each with a list of species.
- After creating a screen for each of the categories in the Main Screen, in the **Edit Application, Screens tab**, select the **Edit button** (the Pencil icon) for the **Main Screen**.
- In **Edit Screen**, under **List Items**, select the **Edit button** (the Pencil icon) for the **Hoof List Item**.
- Select the **Makes Visible** drop-down menu and **select the screen to make visible** (i.e. the **next screen** when you select the Hoof List Item on the Main Screen), in this case the Hoof screen (Green).
- Repeat for the other categories in the Main Screen, so that **each List Item** on the Main Screen (Yellow) will **branch out to a different screen (Green)**.
- After branching out to one of these screens, you will go on to the **next screen in the Main Flow (Blue)** of the sequence of screens.

Add Screens to Branches



- When you have branched out from the Main Screen, you can **add screens to each branch (Lime green)**.
- For example, the Hoof screens (for hoofed species) may go along a **separate Branch of screens** for Activities that are different from Predators.
- The **Hoof Branch** may consist of screens for Hoof Activities and Feeding that includes a list of plant species.
- The **Predator Branch** may consist of screens for Predator Activities, such as Hunting and Prey Species that it may feed on.
- **To create a Branch**, In **Edit Application, Screens**, select the **Add Branch** button.
- Under **Label**, enter, for example, “Hoof Branch” and in the **drop-down menu** select “Main flow”. This will create a **Branch Header** highlighted in green in the list of screens to indicate where the screens that belong to the branch start.
- **Move the Branch Header** up the list of screens so that it is **above** the Hoof screen (Dark green) that branches off from the Main Screen (Yellow).
- Create the **screens that will be in the Hoof Branch (Lime green)**, for example, a screen for “Hoof Activity” and a screen for “Hoof Feeding”.
- For each of the Hoof screens, select the **Edit button** (the Pencil icon), and in the **“Belongs to main flow or branch?” drop-down menu**, select “Hoof Branch”.
- **Move all the Hoof screens (Green)** so that they **follow the Branch Header** in the correct order.
- Repeat for **Predator Branch** screens.
- The **Hoof Branch** screens and the **Predator Branch** screens will follow separate paths. After completing their separate paths, the sequence of screens will rejoin the **Main flow (Blue)** of screens.

- You can also create **Branches within Branches**
- Remember to **check that the order of the screens is correct.**



App Settings

- Under App Settings you can **switch off the GPS** if you are collecting data indoors and do not need GPS locations for your survey.
- The **Save Timer Tracks for session** allows you to **track the path followed** while collecting data. This is essential to calculate the **Survey Effort** and **Index of Abundance** of animal populations. For accuracy, Timer track point interval of 10 seconds is recommended, or for high accuracy 1 second intervals.
- The **Timer Tracks set at 10 second intervals** also have the **advantage** that the **GPS acquisition when saving an observation is virtually immediate**. Without the Timer Tracks, the GPS may lose track of the satellites and then cause a delay when saving an observation when it needs to re-acquire the satellites.

Publish your App

- Go to the **Publish tab**, and click the **Publish button**.
- A message will **confirm** when your app has been published.

- A **CyberTracker Mobile App Link** and a **CyberTracker Mobile App QR Code** image will appear.
- The **App Link** is used to **install** your app onto mobile phones using email or WhatsApp. Use the **Copy to clipboard** link to copy the app link to your clipboard.
- Or you can scan the **Mobile App QR Code** to **install** your app onto mobile phones.

Deploy your app to mobile phones

To deploy app to mobile phones you can **send the Mobile App Link to the phones**, or you can use the **QR Scanner** in **CyberTracker Mobile** to scan the Mobile App QR Code.

Mobile App QR Code:

- **Download CyberTracker Mobile** from the Apple **App Store** onto your iPhone or from **Google Play** onto your Android phone.
- Use the **QR Scanner** in **CyberTracker Mobile** to scan the Mobile App QR Code.
- You can scan the Mobile App QR Code **on your desktop computer** where you published your app.
- You can **email the Mobile App QR Code** or send it via **WhatsApp** and receivers can then scan the QR Code (if it is received on a phone, it must be scanned from another phone).
- You can post the Mobile App QR Code on your **project Facebook page** or your **project website** if you want members of the public to scan and use your app to collect **community science** data.
- You can **print out the Mobile App QR Code** and distribute **pamphlets** to people who want to use your app for **community science** projects.

Mobile App Link:

- **Download CyberTracker Mobile** from the Apple **App Store** onto your iPhone or from **Google Play** onto your Android phone.
- **Paste the app link** from your clipboard **into an email** and email it to the mobile device. Or paste it into a **WhatsApp Group** message. The link should be very long. The copy to clipboard function will copy the full link for you.
- Then **on your phone**, open your email or WhatsApp message and **tap on the app link**. You will need to have an internet connection on your phone when you do this.

- If you have used **WhatsApp**, be aware that WhatsApp on iPhone has a quirk where some of the links only look like a link for the first part. Make sure you tap on the main body, even if it doesn't look like a link.
- The **WhatsApp Group** option is the **best solution** if members of a community are widely dispersed, and individuals only have one smartphone (and therefore **do not have a second device** from which to scan a QR Code).

Enter Your Name in CyberTracker App on Mobile Device

- **On the mobile device, in CyberTracker App**, select the **Projects button** and then **Settings**. Enter **your name** under **Collect as**. Your name will be attached to every observation.

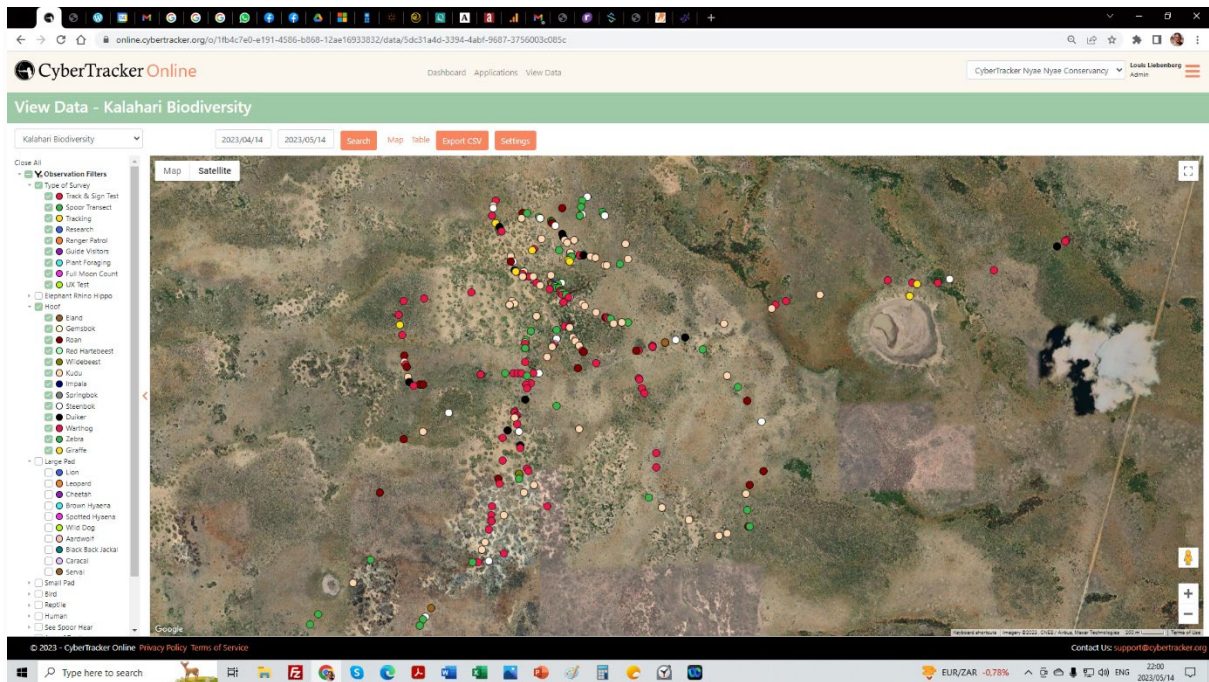
Update App

- You can **make changes** to your app, like adding more screens or more list items, or re-ordering items.
- **Re-publish** (select the Publish button again as in Step 5).
- There is **no need to resend the app link** to your mobile users. The mobile phone will detect that there is a new version available and show the **refresh icon** in the **Projects** list.
- **Touch the refresh icon to update** to the new version of the app.

Set up Observation Filters

Select any **Single Select List Screen** as an **Observation filter** by which you will later be able to filter your data in the **Map and Table views**.

- In Applications, Screens tab, in the **Screens** list, click the **pencil icon** next to a **Single Select List** screen to **Edit** it.
- Scroll down to the bottom of the Edit screen page, and under the **View Data Settings**, check the checkbox for **Observation filter**.
- Click **Save**.
- You will now be able **to filter your data** by the list items on this screen.



View and Filter data

- Go to **View Data** using the link in the header to see the **Map view**.
- You can filter your data using the **Observation Filters** on the left.
- You can also view your data in **Table view** by clicking the link.

Export Data

- You can **Export** data as a **CSV file**.
- We will be adding more export file formats.