

TRAFFIC[®]

TENDER DOCUMENT

Terms of Reference for the Design and Implementation of a TWIX App

Tender Reference Number: XXX_2023_X

TRAFFIC INTERNATIONAL

INTRODUCTORY NOTES

OVERVIEW

TRAFFIC

TRAFFIC is the leading non-governmental organization working globally on trade in wild animals and plants in the context of both biodiversity conservation and sustainable development.

TRAFFIC International is a charity and limited company registered in the UK. TRAFFIC's head office, based in Cambridge UK, provides worldwide leadership, coordination, cross-regional and corporate functions. TRAFFIC's local engagement is managed through programme offices operating under the auspices of the UK charity, with staff based in a hub office and at other strategic locations where necessary. Programme offices operate within a geographic area of responsibility focused on one or multiple countries where TRAFFIC aims to help deliver priority programme outcomes. TRAFFIC works in strategic alliance with IUCN and WWF on wildlife trade issues.

TWIX

The Trade in Wildlife Information eXchange (TWIX) platforms are developed and managed by TRAFFIC on behalf national governments of a specific region. There are four TWIX platforms currently in operation, covering Europe (EU-TWIX), Central Africa (AFRICA-TWIX), East Africa (Eastern Africa-TWIX) and Southern Africa (SADC-TWIX). With funding from a global German funding initiative¹ and WWF France, TRAFFIC is supporting the implementation of the Southern African Development Community Trade in Wildlife Information eXchange (SADC-TWIX). The TWIXes are online tool developed to enhance international cooperation and information sharing between law enforcement and management authorities dealing with CITES issues in the region. It has two components: a mailing list that enables quick and efficient sharing of information between designated law enforcement officials and a website containing a database of seizures and various useful resources. [More information can be found here.](#)

BACKGROUND

Since the launch of the inaugural TWIX platform in the Europe, the tool has expanded in both its functionality and purpose, as well as in its regional application. The launch of TWIX platforms in Africa has revealed certain challenges in how new and existing users can fully benefit from the potential of the platform.

The combination of internet access and stability limitations, preferences for instant messaging platforms, and the prevalence of relying on mobile phones amongst law enforcement officials, means that an email-based, desktop browser-only platform which requires consistent internet access is not sufficient to satisfy the needs of the relevant stakeholders or target audience.

¹ Partnership against Poaching and Illegal Wildlife Trade (Ivory and Rhino-Horn) in Africa and Asia, implemented by GIZ on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ) and the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV)

This Tender Document has been created to provide an overview of the requirements, goals and standards that TRAFFIC has with regard to the design and implementation of a TWIX application to be piloted in Southern Africa (SADC-TWIX).

OBJECTIVES

Broadly speaking, the main two objectives of the app would be to:

- Increase the use of TWIX tools (mailing list and/or website) among registered users of each regional TWIX platform, but primarily those in Southern Africa during the pilot stage of roll-out
- Allow enforcement officers working in the field and/or without stable internet access to use certain features of the TWIX platform

Secondary priorities include:

- Re-purpose/transfer certain elements of the TWIX website for mobile accessibility
- Develop new tools to support enforcement in detecting/prosecuting illegal wildlife trade

TENDER SPECIFICATIONS

ASSUMPTIONS

The sections of this document that cover the design and implementation of the TWIX app should be seen as a guide. Flexibility is permitted to allow for different development processes. However, suppliers are encouraged to seek clarifications before proceeding based on an assumption. All assumptions made must be fully documented within the tender proposal.

SCOPE OF WORK

The purpose of this work is to develop a fully-functioning, restricted-access app to complement the existing TWIX platforms. This app will be piloted for the SADC-TWIX platform, but should allow for roll-out to other TWIX platforms in future.

A design brief (Annex I) has been previously conducted to identify which existing features/sections of the TWIX platforms could potentially be transferred or repurposed into a future app. Suppliers are encouraged to review this study to fully understand the current technical and functional scope of what is required, while understanding that these may be subject to change following future discussions.

DELIVERABLES

The final deliverable for this tender would be a restricted-access mobile app available for download on iOS and Android. The development process will be split across four proposed phases as detailed below. Integration of the features and functionality of this app with the existing TWIX website will need to be included in the final deliverable. All TWIX websites are

designed and maintained by an external IT consultant, who will work with the selected app developer to ensure integration of functionality and design.

TENDER TIMETABLE

Task	Description	Timeline
Tender Release	Tender made available online	6 February 2022
Submission of Tenders	Full responses must be received by close of business	17 February
Evaluation of Responses	TRAFFIC will evaluate supplier proposals and if necessary seek clarification from suppliers	20 February 2023
Supplier Confirmation	TRAFFIC will inform selected supplier that they have been successful	24 February 2023
Transition Period	The selected supplier will commence detailed planning of their solution prior to the contract commencement <i>First deliverable: Provisional output for app architecture and design</i>	24 February -1 March 2023
Contract Commencement	Full development will begin	1 March 2023
Deadline for Phase 1	Full app architecture map agreed. Design commences	30 April 2023
Deadline for Phase 2	Development and testing delivered	November 2023
Deadline for Phase 3	Final development following user testing and launch	April 2024

KEY ELEMENTS TO INCLUDE

- Company profile or CV including details of skills and expertise in relation to services required, including VAT registration number, if applicable
- Demonstration of an understanding of the services being requested and the resources you have available
- A detailed tender proposal including your proposed solutions to the services required
- Cost breakdown analysis split between the separate phases of development, and pieces of functionality
- Any assumptions made
- Customer references or reviews of your services
- Equality and Environmental Sustainability policies

CONDITIONS

Any company or individual responding to this tender request (hereinafter referred to as the Supplier) acknowledges that a response to this tender does not commit TRAFFIC to any course of action resulting from its receipt and that the following conditions are to be observed:

- TRAFFIC may, at its discretion, reject any tender and is not bound to give any reason for doing so.
- TRAFFIC may select a Supplier based upon its own unique set of criteria.
- TRAFFIC is not bound to disclose details of such criteria and may at any time alter the criteria to reflect the changing needs of the business.
- TRAFFIC may terminate the tender process at any time.
- TRAFFIC reserves the right to amend any part of this tender request if required.

Nothing contained in this tender request or any other communication made between TRAFFIC and the Supplier shall constitute an agreement, contract or representation between TRAFFIC and the Supplier or any other party. Receipt of this tender request by the Supplier does not imply the existence of a contract or commitment by or with TRAFFIC for any purpose and Suppliers must note that this tender request may not result in the award of any business. It does not purport to contain all of the information that a Supplier may require. While TRAFFIC has taken all reasonable steps to ensure that, as at the date of this document, the facts that are contained in this tender request are true and accurate in all material respects, TRAFFIC does not make any representation or warranty as to the accuracy or completeness or otherwise of this tender, or the reasonableness of any assumptions on which this document may be based.

It is the responsibility of the Supplier to obtain for itself at its own expense all additional information necessary for the preparation of its response to this tender. Suppliers are responsible for all costs, liabilities and expenses that may be incurred in the preparation of its response to this tender and TRAFFIC will not be held liable for any costs incurred by the Supplier regardless of the outcome or whether a contract is awarded.

BUDGET AND CONTACT

The budget for this tender is **GBP 35,000 – 45,000**, to include all development and design costs, hosting agreements, and additional customer support covering a minimum of one calendar year following launch.

Please send your proposal to the below contacts by Monday 20 February 2023 at 17h00 SAST (GMT +2:00):

Storme Viljoen, SADC-TWIX Project Manager storme.viljoen@traffic.org

Marcus Cornthwaite, Communications Support Manager, marcus.cornthwaite@traffic.org

Antony Bagott, Database Manager, antony.bagott@traffic.org

January 2023

TWIX APP

FEASIBILITY STUDY AND ARCHITECTURE



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1. INTRODUCTION

This suggested solution architecture document will map the business needs to the suggested solution requirements. Although the document will contain some technical detail, it is designed to be read by stakeholders, users and technical staff. For more information on the Trade in Wildlife Information eXchange (TWIX) platforms, please visit <https://www.traffic.org/what-we-do/projects-and-approaches/supporting-law-enforcement/twix/>

i. BACKGROUND

Since the launch of the inaugural TWIX platform in the EU, the tool has expanded in both its functionality and purpose, as well as in its regional application. The launch of TWIX platforms in Central, Southern and Eastern Africa has revealed certain challenges in how new and existing users can fully benefit from the potential of the platform.

The combination of internet access and stability limitations, alongside the prevalence of relying on mobile phones amongst law enforcement officials, means that a desktop browser-only platform which requires constant internet access is simply not sufficient to satisfy the needs of our stakeholders or target audience.

The development of a TWIX app was initially proposed by WWF France, who subsequently funded the undertaking of a feasibility study by TRAFFIC, the mandated managers of all TWIX platforms globally. In order to understand its purpose, features, promotional strategy, user needs, and target audience, this study was done in September 2019 to help the development

of a targeted brief and architecture map. The initial feasibility study was run by Marcus Cornthwaite (Communications Support Manager), Antony Bagott (Database Manager), and Magdalena Norwicz (Programme Support Officer), with additional consultation with Tudor Ciobanu (Web Developer for current TWIX platforms).

In 2022, funding for the development of a TWIX app, to be piloted for the SADC-TWIX platform, was secured from the UK Foreign Commonwealth Development Office (FCDO). This activity is being led by Storme Viljoen (SADC-TWIX Project Manager) with support from TRAFFIC staff listed above.

ii. PURPOSE

The purpose of this document is two-fold, and as such is split into two main areas:

- A presentation of the results of the introductory Feasibility Study. This area is not a proposal or recommendation regarding the nature of the app itself, rather an outline for the next steps needed to guide the technical specifications we would look to pursue.
- An outline of the business requirements and suggested solutions for a TWIX app (hereafter the “App”), which will increase use of the TWIX tools and allow enforcement officers without stable internet access or who work on mobile to access features of the TWIX platform.

It should be noted that the business requirements in this document are taken from, and therefore subject to the limitations of, the Feasibility Study (section 2). Although progress has been made in terms of mapping the potential scope of the future App, there is scope for further discussion based on developer recommendations and input from our user focus groups. In particular, the relationship of the app with the existing website and mailing list, and new features which might prove useful needs to be considered. „

Further user research is also essential if we are to ensure the App meets the requirements of existing users and is attractive to those who are currently not engaging with the platform.

2. FEASIBILITY STUDY

i. OBJECTIVES OF THE APP

Broadly speaking, the main two objectives of the App would be to:

- Increase the use of TWIX tools (mailing list and/or website) among registered users, across all regions in general but primarily those in Africa
- Allow enforcement officers working in the field and/or without stable internet access to use certain features of the TWIX platform

Secondary priorities identified during the feasibility study include:

- Re-purpose/transfer certain elements of the TWIX website for mobile accessibility
- Develop new tools to support enforcement in detecting/prosecuting IWT

It should be noted that these objectives are largely based on personal communications, experience, and TRAFFIC’s expectations of what enforcement agencies require. It is obviously

essential that we additionally conduct varied and detailed consultation with user groups to identify what users expect and how they experience the app at key stages of the development process .

3. BUSINESS REQUIREMENTS & SOLUTION OBJECTIVES

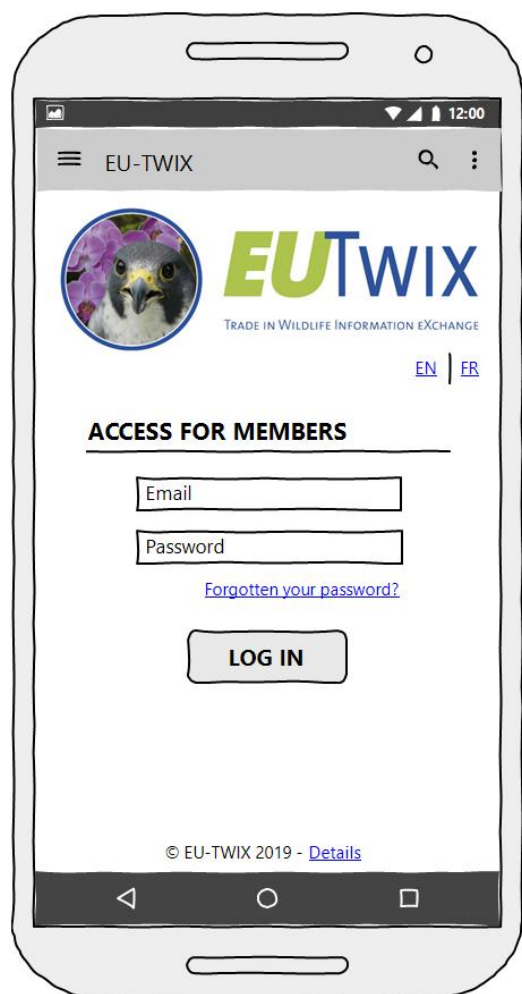
This section will state the business requirements and the solution objectives, as well as any assumptions made or any decisions to be made based on the proposed architecture.

Please note that the presented solutions are merely suggestions. Visual representations are provided as a rough overview of possible design structures and they are subject to change, do not display the full range of visuals available (colours/icons/images/etc.), do not reflect the final intended design of the App, and only constitute a portion of the final required components of the App.

i. MAIN PAGES

Business Requirements

The App requires pages to be built for access and top-level navigational purposes. This includes both a login page and a main menu. These should be user-friendly and unambiguous. In order to avoid confusion and to retain brand consistency, they should (to an extent) match the basic functionality of the website.



Solution Objectives

LOGIN PAGE

The design of the Login Page is subject to the decision to create standalone Apps for each region or a centralised version from which users can access one or multiple TWIXs. The outcome of this decision will affect whether there is an initial 'TWIX region chooser' page or whether the App opens directly into the Login Page.

On a basic level, the Login Page can borrow its overall structure from the TWIX website's login page, i.e.

- A banner showing the regional TWIX logo
- Language options
- Heading
- Email and password fields
- 'Forgotten password' link
- 'Log in' button
- Any other general information

Further information, sponsors, Terms of Reference, privacy notices, and contact details could potentially also be accessed here via a 'Read More' / 'More Details' (or similar) button. A decision regarding logout after a period inactivity could also affect whether the website's text on

this topic is displayed here.

MAIN MENU

The design and contents of the Main Menu are subject to decisions on which features or pieces of functionality will be made available in the App. The outcome of these decisions will affect how many App area options appear on this page.

The contents of the Main Menu will also affect the contents of the Navigation Drawer (see Section 3. ii.)

The visual representation on the right displays some of the main features that were identified as feasible and/or essential during the Feasibility Study. The areas are:

- **Mailing List**
 - Access to sending/receiving TWIX messages.
 - Access to a recent portion of the email archive OR access to the entire email archive
 - Optionally, a notification icon showing the number of new/unread messages.
- **Seizures**
 - The seizures database itself, in simple format OR full format (dependent on feasibility).
 - Charts/maps based on seizure data (these can be listed in a separate area if desired).
- **ID Tools**
 - A photo ID repository and ability to request IDs.
 - Downloadable ID tools (pdf files)
- **Templates**
 - Access to template messages for alerts.
 - This area could also be listed under the 'Mailing List' area if desired.



Decision Overview

- One TWIX App (with initial 'region chooser' page) or multiple regional Apps. Current recommendation is to have one application with the choice of TWIX by region
- Inclusion of a 'Read More' / 'More Details' / 'Report Problems' etc. button for further information on Login Page
- Inclusion of a message on Login Page regarding period of inactivity (*reliant on decisions made in Section 4. iii. of this document*)
- Number of areas displayed on main menu (*reliant on decisions made in various other sections of this document*)
- Inclusion of a notification icon on main menu showing new/unread TWIX messages

- Charts stored within 'Seizures' area or in a standalone 'Charts' area
- Alert templates stored within 'Mailing List' area or in a standalone 'Alert Templates' area
- Alternative to main menu: the App could open directly into one area (e.g. Mailing List). The user would instead use the Navigation Drawer to navigate (see *Section 3. ii.*)

ii. NAVIGATION

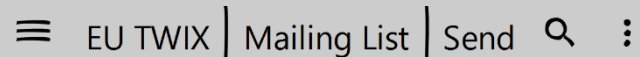
Business Requirements

The EU-TWIX user survey determined that 73% of users favoured 'Simplicity of navigation' as one of their top priorities for the App. The App therefore needs straightforward navigational functionality to allow users to move to any area quickly and easily, even when outside of the main menu. Users should also be able to quickly determine where they currently are in the App.

Solution Objectives

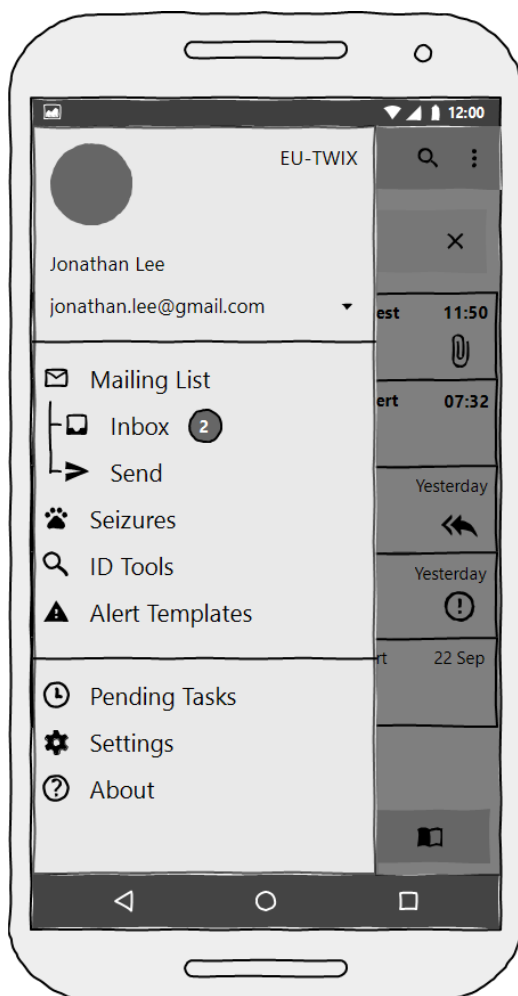
APP BAR

The App Bar, located at the top of the screen, can be used to show the user where they currently are in the App.



It can also be used to navigate back to another part of the App by tapping on a previous area.

Other functionality, like a Navigation Drawer (see below) and search icon, can be accessed here. Whether we require other items in an overflow menu (vertical ellipsis icon) remains to be seen.



NAVIGATION DRAWER

The Navigation Drawer is a simple and regularly-used app tool, usually accessed by tapping the 'hamburger' icon in the top-left of the screen (in the App Bar), as shown below:



Upon tapping the hamburger icon, the Navigation Drawer will slide in from the left-hand side of the screen, covering most of the display. At this point, the background display will darken. To exit the Navigation Drawer, the user can simply tap on the area they wish to navigate to, or tap on the background display to go back.

The Navigation Drawer will display the same contents as (or alternatively, will replace) the Main Menu. When the user is in a certain area of the App, opening the Navigation Drawer will automatically show any 'sub-areas' that exist in the current area. The visual representation on the left shows this scenario with the user in the 'Mailing List' area.

As with the Main Menu, the contents of the Navigation Drawer are subject to decisions surrounding which features or pieces of functionality will be made available in the App.

On a basic level, the Navigation Drawer could include:

- Access to user profile via a 'Profile' section at the top
- Access to contents of the App
- Access to other administrative areas such as 'Settings'

Decision Overview

- Any additional functionality required in the App Bar overflow menu
- Number of areas displayed in the Navigation Drawer (*reliant on decisions made in various other sections of this document*)
- Number (and content of) sub-areas under each area in the Navigation Drawer
- Navigation Drawer used as an addition to, or replacement of, the Main Menu

iii. MAILING LIST

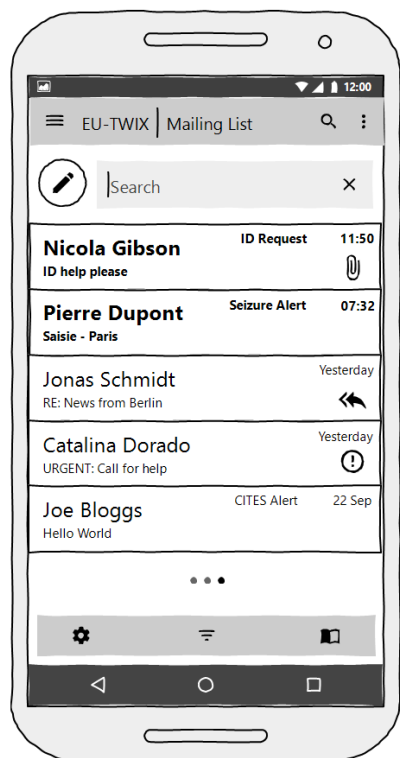
Business Requirements

The Feasibility Study identified that ‘access to sending/receiving TWIX emails’ was both desired by survey respondents and feasible in the context of an app. Emails sent via the App must also be received/stored via the current methods, i.e. in various user inboxes in whichever email client they use, and in the TWIX website mailing list archive. Messages exchanged in the App should directly mirror TWIX emails received via the various email clients. It is suggested that the App email functionality could be a ‘TWIX-filtered’ version of a standard email client, a forum-style messaging board or an instant messenger with distinct chats/conversations (e.g. WhatsApp style).

A submission form could be used to ensure that messages sent via the App are standardised. This should include the automated creation of an email signature to avoid situations where users are unclear on the agency/position/country of those who send emails without a signature.

The App messaging functionality will not replace the current methods used to send or receive emails – users should still be able to send and receive emails via their email accounts, and will still be able to access the email archive via the website.

A key requirement of the mailing list, or message exchange function, is that users have access to an integrated translation function. The SADC-TWIX platform is available in English, French and Portuguese, and it has been noted that the option to send and receive message in ones preferred language is strongly preferred by users.



enhance searching ([see Outlook functionality](#)).

Solution Objectives

INBOX

The contents of the Inbox are subject to a decision on whether we will be storing all TWIX emails here (i.e. mirroring the email archive), storing a recent ‘snapshot’ of TWIX emails (e.g. the last 30 days), or allowing users to select which messages they would like to archive.

On a basic level, the Inbox should mirror the functionality of most major email clients (Outlook, Gmail, etc.) to avoid confusion when using the App. This includes:

- ‘New email’ button, shown here in the top-left but also commonly seen as a ‘floating’ button in the bottom-right.
- Unread emails clearly defined – shown here with writing in bold.
- Search bar to find emails by sender, subject, body, etc. can include ‘search operator’ functionality to

- Inbox contents displayed with sender name and email subject line – sortable and filterable by date, sender, category, etc. (Defaults to sort by date).
- Email icons to show attachments, flagged emails, and so on, shown here below the date/time but also commonly seen to the left of the date/time.
- Other icons with various functionality, shown here in a bottom panel. Specific functionality could include settings, filters, contacts, and so on.
- When at the top of the list, users can sync to the most up-to-date inbox by dragging down.

The Inbox could also show the category of each mail item where known (see the 'Send' section below).

A decision should also be made as to whether the Mailing List opens directly into the Inbox, or whether the user accesses an initial 'Mailing Box navigation menu' beforehand. To allow for more simple and efficient navigation, it is suggested that the Inbox opens directly.

However, if further features are to be stored within the 'Mailing List' area rather than in standalone areas (e.g. Templates, ID Tools, etc.), a navigation menu may prove useful. Alternatively, these features could be stored in the overflow menu at the top-right, or in the icon panel at the bottom.

SEND FUNCTIONALITY

The Send functionality (alternatively: 'Compose', 'Write') will use a submission form to standardise emails sent via the App.

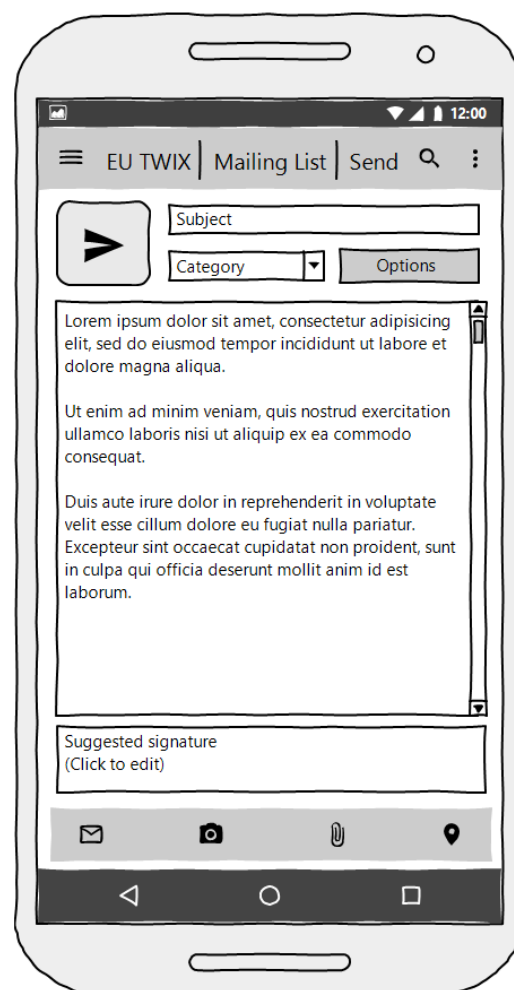
Like other mainstream email clients, the 'send' button will be placed at the top – it is shown here at the top-left.

Unlike other mainstream email clients, the TWIX Send functionality will not require recipient fields (To/Cc/Bcc) as the recipients of the email are predefined in the Mailing List.

The Send functionality could allow for an optional/compulsory category to be chosen. This can include 'ID Request', 'Seizure Alert', etc. as needed. The user will be asked if they wish to go to the relevant section of the App to complete this (see *Sections 3. v. and vi. of this document*).

An Options button could hold a number of features, including fonts, formatting, spell check, and so on.

The majority of the screen real estate will be taken up by the email's main body of text. A scroll bar is shown here, but this would only appear when the space on the display is exceeded.

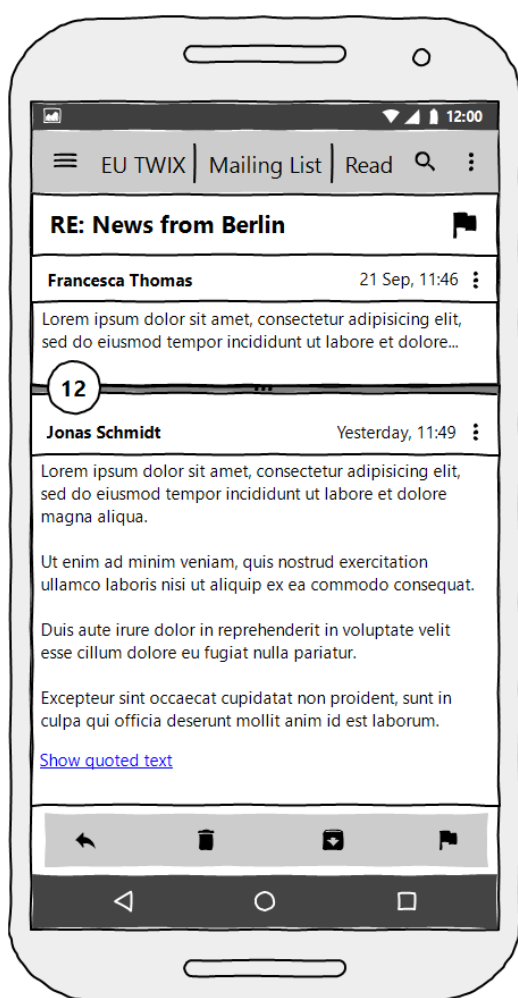


A Suggested Signature box will pull information gathered from the Profile Page on the user account (see Section 3. vii. of this document). This suggested signature can be modified by the user – any modifications will be stored in the memory for use in future emails.

Finally, other functionality can be included in a bottom bar. This can include attachments, camera access, geotagging, and more. Alternatively, these can be included under the Options button or elsewhere to allow for more screen real estate for the main body of text.

The creation of an instant messaging interface would have similar requirements/suggestions, however, the message threads would appear as 'chats'. Message threads would need to have predefined subject suggestions to facilitate easy searching. Each message would should indicate the sender's name and agency (e.g. Name, Agency, Country code – 'Joe Bloggs, Customs ZA').

READ FUNCTIONALITY



The Read functionality will allow the user to choose whether each email is displayed separately, or whether emails that are part of the same 'thread' (i.e. replies to another email) are listed in a 'conversation view'. The latter is shown in the visualisation on the left.

'Conversation view' will group related emails:

- As shown on the left, the first email will show a brief preview and previously-read emails are hidden.
- The number of hidden emails will be displayed on a circular button – the user can tap this button to reveal previews of the previously-read emails. The user can then tap these emails to view them in full.
- The earliest unread email (or the final email in the thread) will be shown in full at the bottom.
- All emails, whether in single or conversation view, will feature the following:
 - The subject line at the top of the screen. Relevant icons (flags, etc.) will also appear here.
 - The name of the sender at the top of each email. A user can tap the name to show more information about the sender.
 - The send date/time at the top of each email. Dates displays as 'Yesterday'/'Today' where appropriate.
 - An overflow menu (vertical ellipsis) at the top of each email. This can contain options such as 'Reply', 'Flag', 'Mark unread' and so on.
- The main body of the email. The user should be able to set the zoom level to increase/decrease font size to their liking (perhaps through pinch zoom).

- A 'Show quoted text' link to allow the user to display any quoted text (i.e. text automatically copied from previously replied-to emails). This will change to 'Hide quoted text' upon use.
- A bottom bar for other functionality. This can include a general 'Reply' button, a 'Delete' button, an 'Archive' button, a 'Flag' button, and so on. Note that 'Delete' and 'Archive' should only delete/archive for the user themselves, not for other users.
- Optionally, WhatsApp-style functionality could be emulated by providing a message box at the bottom of the screen, allowing users to quickly type a reply to the thread or the email.

Decisions -Overview

- Access to the entire email archive or just a recent snapshot (e.g. 30 days)
- Quick-access 'WhatsApp-style' message box at the bottom of emails/threads
- Do not automatically include geotagging on seizure photos and ID requests

iv. SEIZURES DATABASE

Business Requirements

The Feasibility Study identified that access to the seizures database and the charts visualising seizure data was deemed a priority by *some* survey respondents, and that it is *potentially* feasible in the context of an App.

If the seizures database is to be included in the App, the database contents should be formatted to allow readability and ease of use on a small mobile screen. This could mean reducing the number of fields available or displaying a summarised version of the database figures.

Users should be able to query the database and the charts. Whether the level of querying ability matches that of the website or whether it takes on a more simplified/abridged form is something that needs to be determined.

Solution Objectives

DATABASE

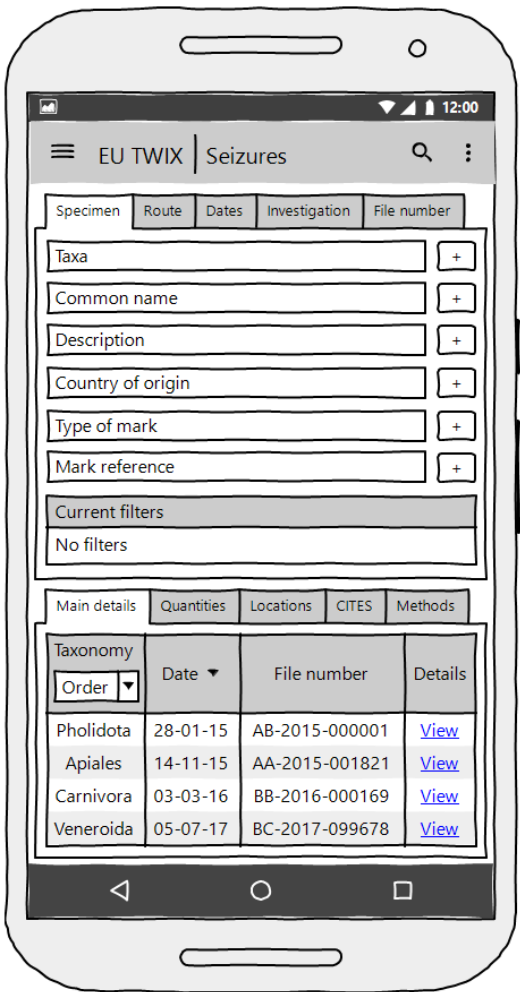
If desired, the website's querying/filtering functionality can be included in the App in its full form. Tabs used on the website can be replicated in the App. They are shown on the right with their full headings ('Specimen', 'Route', etc.), but if space requirements are an issue, they can be simplified into icons:



The website's 'Add filter' button will also become a simple '+' button on the App to minimise the use of horizontal space.

The filter fields themselves and the 'Current filters' table can mirror the website to retain brand consistency. If vertical space becomes an issue, the filter fields and the 'Current filters' table can be minimised by default (showing instead a summarised count of active filters), then actively maximised when required.

For the database table itself, multiple columns can be included with the use of tabs. The number and content of these tabs will need to be determined: if desired, some columns can be omitted to allow space for 'high-priority' columns. The tabs could use simple icons instead of headings to minimise the use of horizontal space.



Other features include:

- Another space-saving feature: related columns can be grouped and include a dropdown – e.g. a 'Taxonomy' column with a dropdown allowing a user to display different taxonomic ranks.
- A default number of rows: e.g. 20, configurable to 50 / 100 / All rows, as on the website.
- The option to view the full details of a single record (a pop-up window is suggested)
- Automatic and manual data syncing, and a 'Last updated' date/time in the overflow menu.

CHARTS

If desired, the website's chart functionality can be included in the App in its full form. Features from on the website can be replicated in the App. These include:

- Geographical data visualisation (trade routes from A to B to C)
- Chart heading
- Filter fields
- 'Generate Chart' button
- The chart / map and chart key
- Options to save the chart as PNG
- It is suggested that the App will not include:
 - Options to save the data as CSV
 - The full table of results

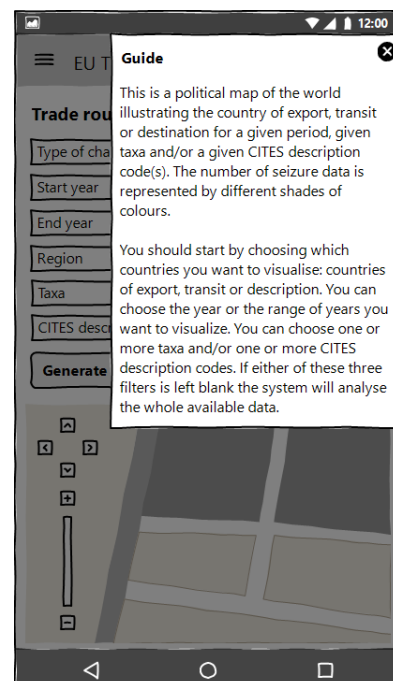
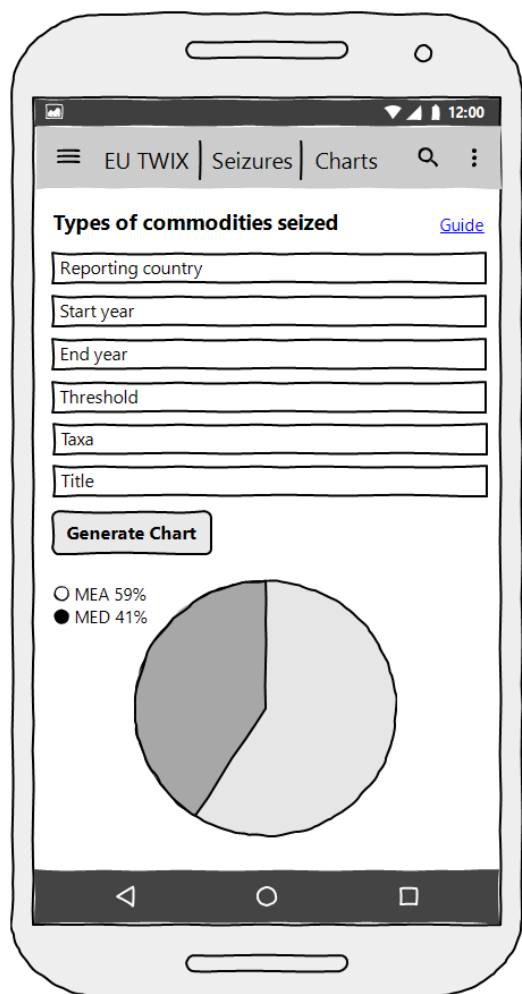
Users will be able to tap specific segments/bars/countries on the chart, granting access to a pop-up showing more contextual information.

Rather than including a 'Zoom to continent' field, maps should be zoomable via pinch-zoom.

The visual representation on the left shows just one

example of a chart. An initial 'chart menu' will also be implemented to allow users to choose the chart they wish to use, as on the website.

Any guidance text can be included in a hyperlinked 'Guide' to minimise the use of vertical space. The guide will simply 'pop up' and the background display will darken. The guide can then be closed with a top-right 'x' button or by tapping on the background display (see visual representation to the right).



Decision Overview

- Full or simplified querying functionality
- Full or simplified seizures database
- Number of fields in seizures database (if seizures database is simplified).
- Number and content of tabs in seizures database
- Use of icons or full headings in tables
- Level of space-saving features required (grouped columns with dropdowns, minimised filter tables, etc.)
- Default number of rows in database table

V. ID TOOLS

Business Requirements

The Feasibility Study identified that an overwhelming majority of respondents would like ID tools available on the App and that these tools would be feasible on the App through number of possible solutions.

Despite the very positive survey response to the inclusion of ID Tools on the App, the fact that 'Downloadable resources' were not identified as a priority by EU-TWIX respondents could suggest that they would like a different ID solution to the current downloadable PDF guides on the website. However, AFRICA-TWIX users indicated a preference for pdf guides.

Therefore, in addition to making the PDF guides available, the App could incorporate another ID tool – this could be through using existing wildlife identification software, through a bespoke system, or a combination of the two. Suggested options include using [open-source code from iNaturalist](#), and setting up a forum-based system where photos are uploaded to a repository and then manually identified by TWIX users. However, it's recommended that despite a possible opportunity for the creation of a new ID resource tool, the current scope of creating a TWIX app would not cover this solution, and that existing PDF guides would need to suffice as a potential solution.

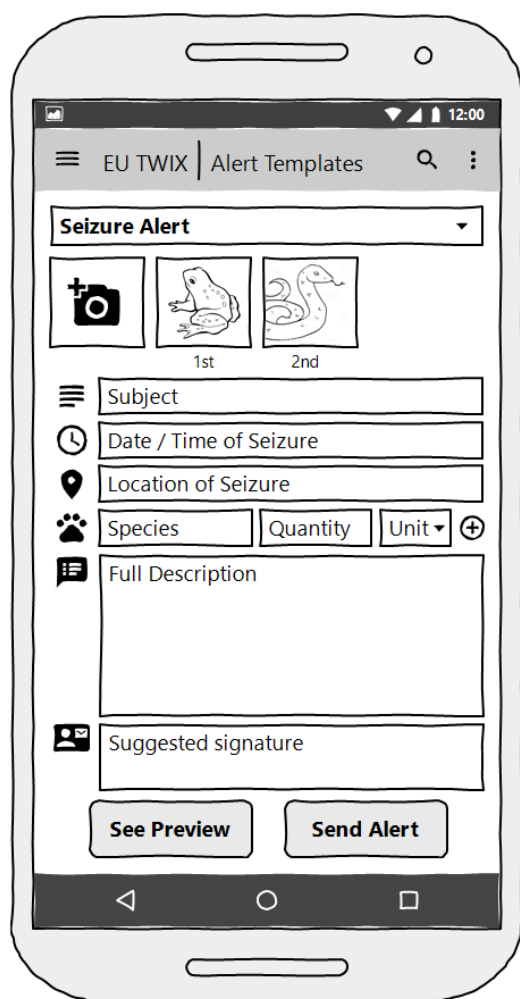
vi. TEMPLATES

Business Requirements

The Feasibility Study identified that template messages, such as seizure alert templates or standardised email submission forms, were both desired by survey respondents and feasible in the context of an app.

The templates should help to standardise alerts, ensuring that they are immediately recognisable. The template message should either be sent as a PDF attachment or as the body of the email, or both.

Solution Objectives



TEMPLATE CREATOR

The Template Creator allows users to enter information, such as seizure alerts, into predefined fields and create a standardised PDF/email.

Features will include:

- Adjustable alert category (e.g. 'Seizure Alert', 'identification request') – changing the category will also contextually change the underlying fields. The category will copy into the email subject line upon sending.
- Photo upload (via camera or device storage) – see Section 4. ii. for details on image conversion and compression
- Subject line (will copy across into the email subject line after the category name)
- Date / Time field (defaults to current date and time)
- Location field if agreed (defaults to current location)
- Other contextual fields such as Species, Quantity, Unit, etc. with optional features such as dropdowns, 'new line' buttons, etc.
- Full Description field for main body of text
- Suggested signature based on Profile (as for emails sent from the App)

- 'See Preview' button to view completed template

Decision Overview

- Replication of Alert Templates on website
- Number and content of alert categories
- Number and content of other contextual fields
- Alert as a PDF attachment or the body of the email, or both

vii. PROFILE PAGE

Business Requirements

The App will require a Profile Page to allow users to view and update their contact details. Users on the website will not be required to fill out their profile – however, any information they enter on their App profile could be copied across to the website if desired.

The contents of a user's profile will make up their suggested signature, which will be used in emails and alert templates.

Solution Objectives

PROFILE

The Profile Page will be accessible via the Navigation Drawer (by clicking on the user's name or email address at the top of the Drawer).

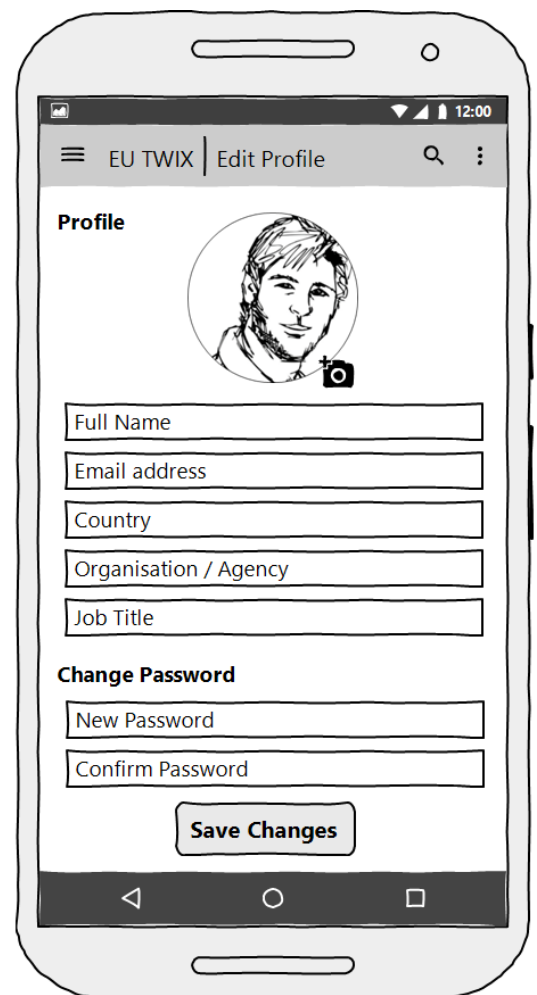
The user will be able to view their details, and then tap on an 'Edit Profile' button to make changes (shown on the right).

The full contents of the Profile Page will need to be decided upon, but suggestions include:

- A photo (optional) via camera or device storage – see Section 4. ii. for image conversion/compression
- Contact details such as Full Name and Email Address
- Location details such as Country (or Address)
- Employment details such as Organisation and Job Title
- Password update options

Decision Overview

- Replication of Profile Page on website, even if just as an optional feature
- Contents of user profile (e.g. number and content of fields; inclusion of photo)
- Contents of suggested signature (Full Name, Country, Organisation, Job Title, etc.)
- Whether completing some or all profile fields are mandatory



viii. OFFLINE USE

Business Requirements

The Feasibility Study identified that many users, particularly in Africa and when out in the field, do not have regular and easy access to the internet. The App, as a mobile tool, should therefore allow for a certain amount of offline functionality.

Contents of the Mailing List's inbox, the Seizures Database and the photo repository of the ID Tools should be available offline. User should also be able to compose emails, templates, comments and requests without internet access.

A decision will need to be made to determine how much of the App's online functionality is downloadable for offline use, and whether these downloads take place automatically or only upon user request.

Solution Objectives

MAILING LIST – INBOX

Emails can be stored offline but will impact on storage space on the user device. Users should be given the option to download emails for offline capability, or to only have online access. A decision will need to be made as to whether the App gives access to all emails or just a recent portion.

It is suggested that users have access to all emails when online, but only a portion when offline. The size of the 'portion' of emails should be determined by the user – this should be based on a time period ranging from 'One day' through 'Three days', 'One week', 'Two weeks', 'One month' to 'All' (This matches Android email sync options). Emails will automatically be deleted from the device after they have passed the sync period.

Users should also be given the option to automatically download attachments, although it is suggested that this is turned off by default. Users should be able to select whether downloads take place whenever connected to the internet, or on Wi-Fi only.

On a global level, average email size is roughly 75KB per email, or 3MB with images. However, research into current TWIX average email size and email frequency should be undertaken for each TWIX Mailing List to inform final decisions.

SEIZURES DATABASE

In order to have a functional database available offline, the entire database will need to be downloaded onto the user device. Based on an estimate using imitation TWIX data, 100,000 seizure records in CSV format have a file size of about 35MB. A MySQL database will likely have a larger file size due to indexing, tabling, etc. However, even with a size increase of a factor of two (a highly pessimistic estimate), this would mean that 100,000 records would fit into a file size of 70MB – still a very 'downloadable' amount.

Further decreases to file size could be gained from intelligent mapping of data fields – for example, a single species linked to multiple seizures should only reference *one* species record rather than being repeated for each seizure to which it is linked.

A decision needs to be made as to whether the Seizures Database is downloaded by default upon installation of the App (thereby increasing the default size of the App but ensuring that all users have access to the database without internet connection) or whether it is 'actively' downloaded by users.

In either case, downloaded/offline versions of the database should give options for both automatic and manual synchronisation with the online version. Users should be able to select whether synchronisation takes place whenever connected to the internet, or on Wi-Fi only.

ID TOOLS – PHOTO REPOSITORY AND PDF GUIDES

To ensure users have offline access to the photo repository and PDF guides of the ID Tools, users should be given the option to download the repository and PDFs to their device. It is suggested that conversion to JPEG and medium image compression is used to decrease image file size but maintain a level of quality that allows for accurate identification – see Section 4. ii. for more details about image conversion and compression.

Based on an estimated compressed image size of 150KB, a repository of 1,000 images would use 150MB of device storage space. Users should be able to select whether image downloads take place whenever connected to the internet, or on Wi-Fi only. It is suggested that users can choose to download the PDF guides they require, rather than downloading all of them.

PENDING TASKS

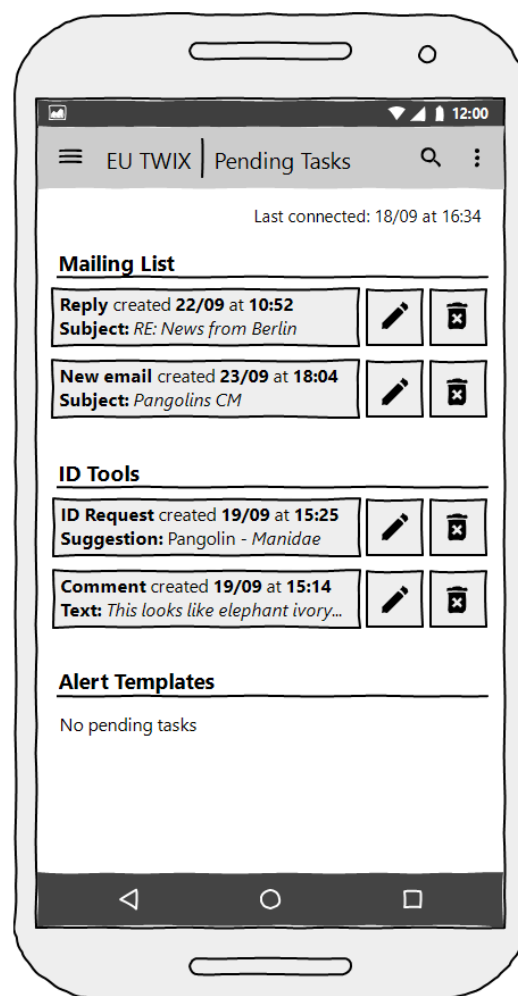
For outgoing tasks such as sent emails, templates, ID requests and ID responses, a Pending Tasks section will be created. This will essentially be a 'holding area' for any items that require an internet connection before sending.

Users will be able to compose the item in full and press 'Send'. If no internet connection is available, they will receive a pop-up message stating that the item will be held in the Pending Tasks section until connected.

Items in the Pending Tasks section can be viewed, edited and deleted as needed. Upon connection to the internet, the item will be sent automatically.

Decision Overview

- Synchronisation of entire mailbox, or recent portion of emails, or choice given to user.
- Offline seizures database downloaded by default with download of App, or only upon request.
- Automatic or manual downloads of items, or choice given to user, or dependent upon area of App.
- Wi-Fi-only downloads selected or unselected by




default, or dependent upon area of App.

4. ADDITIONAL NOTES

This section covers any additional notes relating to the design of the App and aims to clarify certain design choices made in Section 3.


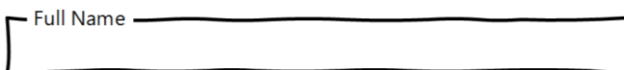
i. FORM FIELD DESIGN

For the purpose of simplicity, the form fields shown in visual representations throughout this document have followed the same format, i.e. a text box with 'placeholder text':



However, that this is not the only solution for form field design. In the above example, the placeholder text (in this case, 'Full Name') disappears upon typing in the box, thereby straining users' short-term memory and making fields more difficult to re-check once a form is complete.

A common solution to this problem is to move the placeholder text to the top-left of the field after the field is tapped by a user. Two potential outcomes to this are shown below, and interactive examples are available at <https://material.angular.io/components/form-field/overview>.



ii. IMAGE COMPRESSION

It is recommended that images uploaded to the App are compressed to reduce server load, minimise the use of server space and accommodate the slower internet connections of certain TWIX users. Compression should reduce file size without causing a significant negative effect on visible quality.

Recommendations include:

- Conversion to JPEG
- Image scaling (e.g. maximum 800-pixel width)
- Medium rate of lossy compression

Typically, this type of compression results in images of anywhere between 50KB to 300KB per photo (an 8 megapixel image of about 3MB can be reduced to around 70KB without much visible loss of quality).

A decision should be made as to whether the full, uncompressed versions of the images are stored in the server. If they are, users with an internet connection could potentially choose (on an ad hoc basis) to access the full-size version of the image when needed.

iii. SECURITY

A decision will need to be made as to whether the App logs a user out after a period of time. The downside of this is that it may discourage users from using the App. To alleviate this issue, an alternative to the standard login process would be to ask users, after their first login, to set up a 4-digit PIN that grants them access to the App from their device.

As parts of the App may be downloaded for offline use, this data (most importantly, the seizures database and contents of emails) must be encrypted to avoid unauthorised access or loss. Initial access to download the App can be hosted via private Android and iOS platforms and requests sent by invite.

If required, there are 'private channels' on Google Play and the Apple Store that can hide apps from the general public. This may incur a cost. It is therefore advised that the login page would be sufficient to stop any unauthorised access. To give a comparison: the website is currently available to the general public, but only authorised users can log in to see its contents – the same can be said of the App.

iv. USER ANALYTICS

In order to monitor usage of the App, we will require administrative functionality that measures user activity across different areas of the App. Specifically, the administrator should be able to monitor activity including, but not limited to:

- When a user has logged in
- Which areas of the App a user has accessed
- What information a user has sent/received
- Aggregated statistics for all user activity

v. OTHER APP AREAS

Settings

The Settings area should grant access to:

- Language settings (the user should be able to change the language of the App)
- Display/accessibility settings (dark mode, contrast, font size, etc.)
- Profile settings (also available elsewhere in the App)
- Email account settings (including options to link an email account to the App)
- Notification settings (frequency, sound, appearance, etc.)
- Auto-download/synchronisation settings

About

The About area should grant access to:

- General TWIX information (including sponsors and copyrights)
- Policies (Terms of Service, Data/Cookie Policy, Privacy Notice, etc.)
- 'Contact Us' options, perhaps including a specific area to report issues

5. CONCLUSIONS AND NEXT STEPS

The current TWIX platforms have proven themselves to be valuable and effective tools to support enforcement in the regions in which they have been launched. At the same time, there are opportunities for expansion and enhancement (both via an App and to the existing browser versions) that could contribute to increased uptake, increased investment, and increased impact for wildlife.

i. RESEARCH

Central to these expansions is the need for targeted and methodical user research to fully understand the requirements of different enforcement agencies in different countries. At key stages of development, it is recommended that user groups be approached for feedback.

A focus group in Southern Africa would be a potential avenue for gathering extensive data on the gaps/successes/future expectations of using a TWIX App, and could provide a more detailed insight into user preferences than the initial survey.

ii. APP DESIGN DECISIONS

Based on further research and discussion, the design decisions outlined in Sections 3 and 4 of this document should be finalised.

iii. SCALABILITY

With the increasing popularity of the TWIX concept, scalability of an App is key. This means whether we decide to create standalone Apps for each region, or a centralized version where users can access one, or multiple TWIXes.