# xxRFP-2022-015

xxForum: Anonymous Forum Software

This xx foundation request for proposals will fund the creation of xxForum, an open-source tool that allows the creation of anonymous, authenticated message boards. This tool is intended to replicate the basic functionalities of public forums such as reddit and 4chan, such as creating topics, making replies, and, optionally, user identity/account.

The xx foundation is offering a competitive bidding process to complete this work, with independently compensated phases. The selection process will analyze each phase individually according to the response contents, the proposed compensation, and the proposed final deliverable dates and contents. Proposers are expected to propose for all phases.

## Requirements

xxForum consists of a client-side app that facilitates sending data over cMix to the server-side software that receives, handles, and stores this information appropriately.

Users should, at minimum, be able to create, browse, and respond to topics/threads. Initially, simple text formatting only is sufficient. The proposal should outline additional formatting options such as rich text and image file submission. Users should be able to post anonymously or alternatively provide a public username.

Users viewing the forum need not maintain total anonymity, however the identity of any poster to the server will remain anonymous by utilizing cMix. The server should be able to respond to the user with any errors that occur.

Proposals must discuss mechanisms by which repeated spam postings can be prevented and associated security implications. Furthermore, scalability and consistency are two important factors of any medium to large scale message board and thus there should be a plan outlined for supporting larger numbers of users.

Include designs for a UI for browsing multiple topics, viewing individual topics, and creating new topics.

## Architecture

There are two suggested design paradigms for this project, although each will result in different final products.

For the first, a cMix client can be set up to act as a server. The forum itself can be served from a

web server of any kind and is fed data from this server and an associated database. This can be accomplished with an HTTP API exercised by the mobile app or by a full website implementation that requires mobile layout support for the app.

A user of the app can then browse the forum on the public internet. When the user wants to make a post or a reply, the app can use the [REST-like](#) package to securely write data to the server over cMix. The restlike package can be backed by [authenticated connections](#) in order to authenticate users. In summary, the forum is publicly readable but anonymously writable. Since forum data will all be stored server-side externally to cMix, this design provides the most flexibility and similarity to modern forums.

Alternatively, there is a more complex solution with better privacy guarantees. A cMix client should be set up to act as a server. Users of the app may send a request to create a new thread by using the restlike package to communicate this intent, along with other metadata like title or category, to this server. When a request is received, the server will create a new symmetric channel, store its cryptographic information and metadata, and return it to the requestor. In order to browse these threads, the app can make requests to the server for thread metadata. When the user wants to view a thread, the server will return the channel's cryptographic information so the app can begin listening and replying to the symmetric channel. Without gateway extension, replies to threads will only persist for up to three weeks under this design.

# Phases

You may propose your own phases, but the following phases are desired:

**Phase 1: Proof of Concept**—Implement the basic version of your proposed design and submit a final design for the client-side and server-side functionalities. This should include final versions of any cryptographic primitives and fully explained versions of all data structures and sub-protocols, as well as discussions on storing and serving forum data.

**Phase 2: Command-Line Tools**—Build a server client that can receive anonymous messages and serve content received over cMix to a user interface as a forum. Additionally, include a fully functional client-side command-line tool which exercises your proposed system without a user interface. The client-side command-line tool will be the final library used by the Android and iOS apps and have test coverage of at least 85% of the codebase. There should be an accompanying continuous integration/continuous deployment (CI/CD) styled testing script.

**Phase 3: Web Server**—Only if your architectural design choice requires a website. This should be able to read data output by the Phase 2 software and serve threads and replies on the web. If using a full website rather than an API, mobile layout support

is required and should be heavily considered as it will be the primary mechanism for browsing the forum.

**Phase 4: iOS & Android App**—App with the final user interface design using the library from Phase 3 and exercises the complete functionalities.

# Submission Instructions

Proposers should submit their proposals, in English, to the following website:

- [https://xxfoundation.org/archive/xx-foundation-announces-the-xx-dapps-grant-program](https://xxfoundation.org/archive/xx-foundation-announces-the-xx-dapps-grant-program)

Note that proposals are divided into two parts: An anonymized technical proposal and a staffing proposal. The technical proposal will be posted online and should not contain any identifying information about your organization or staff. The staffing proposal will contain resumes and additional evidence for why you and your team are qualified to do the work you propose.