xxRFP-2022-003

Scheduler: A Zero Knowledge Calendar

This xx foundation request for proposals will fund creation of Scheduler, an open source tool to schedule a meeting with another individual. This tool will be a more automated and private form of tools like whenisgood.net, allowing both users to submit dates and times they are available for a meeting without either party knowing the others' availability. If overlapping dates are provided by both parties, then a meeting may be scheduled. Otherwise, nothing more is relieved to anyone about either party's schedule. Scheduling agreement should be performed using zero knowledge proofs.

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

When a user installs the Scheduler app, it will ask the user for access to their xx messenger contacts, in order to send the scheduling invitations. These invitations will be sent over the xx network through the messenger using deep links. This should be integrated with the xx messenger, where the invitor may send a request directly to the invitee through the messenger. This way the user may directly invite their desired contacts through the messenger app in an integrated ecosystem with the xx messenger. The ability to send an invite through other applications are preferred but not required.

Proposals for different event frequency options (daily, weekly, etc) are strongly desired. The calendar should appear in a standardized format such as iCalendar. The ability for either party to request the event to be modified or removed from their calendar should be specified as part of the proposal. We will give significant weight to proposals with strong cryptographic protocols to ensure zero knowledge for either party. The ability to load from other calendar applications, particularly common calendars such as Google, Apple, etc are preferred features.

All proposals, in addition to a protocol design for Scheduler, must include a User Interface (UI) design. The UI should include mechanisms for inviting contacts to an event, providing the user's availability to the application. The invitee will receive this invitation and provide their availability to their application via the UI. The user may input availability manually if they desire. Another desired ability would be the importation of a user's calendar, as mentioned above. Once a date for an event has been agreed upon, the event should become visible on both party's calendars. The ability to press on this event for more information, and the ability to modify the event and attendees are preferred features for the UI.

The Scheduler app must never share the user’s availability with a third party. The inviter and the invitee will only know the availability of the other if availability overlaps and both parties accept the event. Server components (if any) must only be accessed through cMix on the xx network. Proposals should address how these properties are achieved (e.g., specific libraries, protocol sketch, etc) as well as provide a high-level description of the intended software architecture.

Phases

You may propose your own phases, but the following three 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 integration with a service.

Phase 2: **Command Line Tools**—Fully functional command line tools which fully exercise your proposed system without a user interface. This is the final library used by the Android and iOS apps, with test coverage of at least 85% of the code base and an accompanying continuous integration/continuous deployment (CI/CD) styled testing script.

Phase 3: **User Facing App** — Build applications the users will use. Each application will serve as an individual milestone:

- **a:** **Android App**—Android app with the final user interface design using the library from Phase 2.
- **b:** **iOS App** —iOS app with the final user interface design using the library from Phase 2.

Submission Instructions

Proposers should submit their proposals [CONTENT GUIDE LINKED HERE], in English, to the following website:

- FULL ADDRESS HERE

Note that proposals are divided into 2 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.