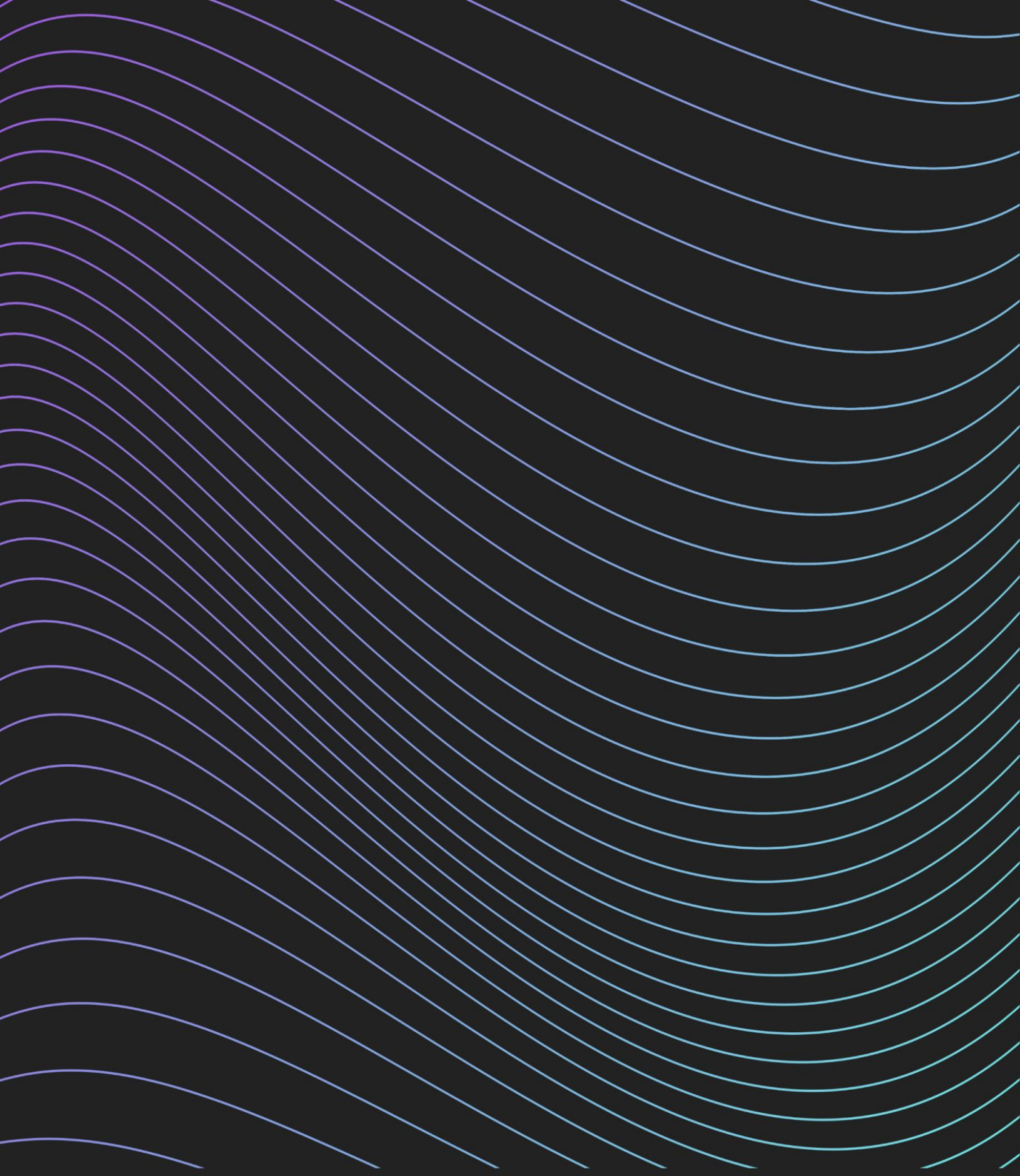

CROSSMARK

DARKPAPER

CROSSMARK

unleashing interactive money

DARKPAPER

2022

TABLE OF CONTENTS

ABSTRACT

The digital currency space has grown accustomed to interacting with decentralized webapps, commonly known as dapps, using browser extensions. The explosion of decentralized financial tools such as over collateralized loans, liquidity pools, and staking protocols has drawn due attention to the ability to easily interact with smart contracts. Every interaction with a smart contract requires a user interaction and this is most easily accomplished through a browser extension.

The XRP Ledger community has adopted a mobile-first approach by leveraging and using the XUMM wallet created by XRPL Labs. While XRPL Labs has been beyond supportive for the developer community, they have stated that they have no intention of creating a browser-first option. This has left a gaping hole in the ecosystem to this point, and CROSSMARK aims to be the first browser extension which is fully committed to the goal of bridging the divide between dapps and the XUMM mobile environment.

CROSSMARK will provide a rich, feature-full experience to developers and users within the XRP Ledger ecosystem. In addition to supporting XUMM wallet users, CROSSMARK will support opt-in server side backups, hot swapping between development networks / sidechains, and wallet generation with local storage keychain encryption. CROSSMARK will be the de-facto browser extension and will support the latest features and amendments of the XRP Ledger.

INTRODUCTION

Once upon a time, in a land far far away, there was one blockchain that ruled them all. That blockchain was called the XRP Ledger. However, despite its prowess and popularity, there was a fundamental component missing from its reign. Many were shocked, by the trials and tribulations, and some even lay in dismay by the ledgers' supremacy without this crucial piece of the puzzle.

Now comes the day where this reality is no more. CROSSMARK will provide the missing link in the chain, the missing piece of the puzzle, the missing stone in the cobble. CROSSMARK will be the first natively supported browser extension to meet mass market adoption and gain wide spread support amongst the community of developers and its users on the XRP Ledger.

THE PROBLEM

New projects building on the XRP Ledger are craving a browser-first wallet. As more developers and users move from the ethereum ecosystem, this demand will only increase. It is important to ask why and what are the current barriers fueling this demand. We will investigate a few of the drivers listed below:

- Lack of simple interactions
- Difficulty in developer tooling
- Familiarity
- Centralization of payloads

Lack of simple interactions

Certain webapps, or business models, need a wallet that enables simple and quick ways to sign transactions. Any undue friction, even if for security reasons, may destroy the business concept and/or prevent a fruitful user experience. In such situations, these application need a wallet that can open at the click of a button. This is especially the case where time is of the essence - think leveraged trading, or liquidity positions. Furthermore, if speed is the priority, a wallet that sits closest to the webapp (ie. a website in browser alongside a wallet in the browser) will have proximity advantages compared to its mobile counterparts.

Difficulty in developer tooling

Developers should be able to implement wallet interactions in an evening with a cup of coffee. If tooling is difficult or cumbersome, developers might decide to abandon the network and support a different wallet or a different blockchain. Absence of developers compounds; less network activity drives less value and remove incentive from new developers to build on the network.

Familiarity

A common thread discussed amongst users is their familiarity with browser extension wallets on different blockchains. When they move over to the XRP Ledger, there currently is no wallet option that mimics or provides a similar experience to the ecosystem that they have grown accustomed to.

Centralization of payloads

A lack of wallet options will inevitably lead to a centralization of payload construction. If everyone is using the same provider to interact with the ledger, that single provider has a lot of control over payloads, and how dapps build on the XRP Ledger. As time goes on, it becomes exponentially harder for competitors to gain adoption and compete in a captured market.

THE SOLUTION

As a solution to the barriers and issues forementioned, we are building a full featured-browser extension wallet with three main goals:

1. Provide an alternative to a mobile-first wallet to specifically serve webapps that are more suited for browser environments

2. Define and adopt a universal qr code structure for other wallets and builders for the XRP Ledger

3. Provide a wallet that supports custom networks, network specific features, and hot swapping between networks. Our browser wallet will be architected with future features in mind, such as AMM and sidechain proposals.

THE PURPOSE

This ***DARKPAPER*** is prepared as general information for developers, supporters, and enthusiasts.

The **ARCHITECTURE** and **MILESTONES** are presented in this paper.

ARCHITECTURE

The tip of the spear for the CROSSMARK browser extension wallet is the architecture of the platform. Unlike other solutions, CROSSMARK will have a two sided architecture, a front-end client and a back-end server, to serve a more robust feature set to our users.

Speaking with potential partners of the CROSSMARK platform has helped shaped the interaction between the two sides of the platform and to balance the overall functionality of the backend and frontend aspects. For instance, one the of common request has been to keep the platform as decentralized as possible. In order to achieve this, CROSSMARK has to be completely functional without a server. In other word, the platform should be able to startup and operate self-hosted, anywhere, free of censorship.

There are significant and potentially detrimental trade-offs to a platform that does not integrate with a backend server and database. A few features, such as user backups, multiple user accounts, cross device support, and wallet registries, are not possible in a completely decentralized environment. To give our users the best of both worlds, we have agreed upon a opt-in architecture, where users have the ability to choose to interact with the backend server and database, free of any additional costs.

This section will cover each aspect of the architecture - including key features and structure of the codebase.

CLIENT SIDE ARCHITECTURE & FEATURES

CLIENT SIDE ARCHITECTURE

- REACTJS FRAMEWORK
- TYPESCRIPT
- YARN PACKAGE MANAGER
- BROWSER + LOCAL STORAGE
- WEBPACK BUILDER
- CHROME / FIREFOX / OEPRA MANIFESTS

CLIENT SIDE FEATURES

- ENCRYPTION KEYCHAIN
- NEW XUMM OAUTH SUPPORT FOR DAPPS
- HOT SWAP XRPL NETWORKS
- CUSTOM XRPL NETWORK SUPPORT
- MULTIPLE WALLET SUPPORT
- WALLET PORTFOLIO MANAGMENT
- XRPL APP SUPPORT
- XRPL + CROSSMARK WINDOW OBJECT
- SELF-MANAGED DAPP FIREWALL
- ADD WALLET METHODS
  --> XUMM WALLET
  --> EXISTING WALLET W/ SECRET KEY,
  --> GENERATE NEW WALLET

CODEBASE

- APP
  - CONFIG
  - PUBLIC
    - manifest.json
    - index.html
    - main.html
    - options.html
    - popup.html
    - verify.html
  - SCRIPTS
  - TESTS
  - SRC
    - ASSETS
    - COMPONENTS
    - CONTAINERS
    - HOOKS
    - INTERFACE
    - LIB
    - SCREENS
    - SERVICES
    - STORE
      - auth.tsx
      - store.tsx
    - VIEWS
    - app.tsx
    - index.tsx

CODEBASE

- API
  - ASSETS
  - SRC
    - CONTROLLER
      - accounts.controller.ts
      - graphql.controller.ts
      - oracle.controller.ts
      - root.controller.ts
      - xapp.controller.ts
      - xumm.controller.ts
    - HELPERS
    - INTERFACE
    - MIDDLEWARE
    - MODELS
      - account.model.ts
      - refreshToken.model.ts
      - timeseries.model.ts
    - ROUTES
    - SCHEMA
    - SERVICES
      - account.service.ts
      - oracle.service.ts
    - constants.ts
    - index.ts
  - tsconfig.json
  - Dockerfile
  - config.json

SERVER SIDE ARCHITECTURE

- NODEJS FRAMEWORK
- TYPESCRIPT
- YARN PACKAGE MANAGER
- POSTGRES DATABASE
- PRISMA DB CLIENT
- REST API
- COOKIE JWT AUTH
- OPEN API + SWAGGER SUPPORT
- TRPC - TYPESAFE ROUTES

SERVER SIDE FEATURES

- EMAIL NOTIFICATIONS AND REMINDERS
- WALLET REGISTRY LOOKUP
- DIRECT CUSTOMER SUPPORT
- USER PROFILE AND WALLET BACKUPS
- WALLET LIST RESTORE
- CROSS BROWSER SUPPORT
- USER METRICS
- CROSS DEVICE SUPPORT

MILESTONES

ALPHA*v1 RELEASE

PRIVATE

Update codebase to support manifest version 3 and add openAPI documentation to readme

ALPHA*v2 RELEASE

PRIVATE

Separate codebase with opt-in server side functionality

BETA*v1 RELEASE

PARTNER

Setup full history nodes for queries and standard nodes for transactional processing. Closed Beta release specifically for DEFI Partners

BETA*v2 RELEASE

PARTNER

Setup full history nodes for queries and standard nodes for transactional processing. Closed Beta release specifically for DEFI Partners

BETA*v3 RELEASE

PARTNER

Stably Integration and Developer Dashboard

BETA*v4 RELEASE

PARTNER

Prepare a beta version for a test production release

PROD*v1 RELEASE

PUBLIC

Go through review process to get first public release on chrome store

CLOSING REMARKS

We are committed to bringing a full-featured browser extension wallet, CROSSMARK, to the XRPL community. With your consideration and support, our vision can become a reality - adding direct utility to the ecosystem and encouraging users and developers to support web-based payments and interactions on the XRP Ledger.

We will ***UNLEASH INTERACTIVE MONEY*** on the **XRP LEDGER**...

RESOURCES

- ➔ https://www.crossmark.io/
- ➔ https://twitter.com/crossmarkio
- ➔ https://github.com/crossmarkio
- ➔ https://www.linkedin.com/company/crossmarkio/