

# Welcome to the fastest Element.

Element X has launched!



Amandine Le Pape



Amsha Kalra



Ștefan Ceriu



September 2023

# Element X Project

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STATUS: **IGNITION**

September 2024



# Element X Project

STATUS: TAKE OFF!!





**Element X is now the app that  
all Element users should use.**

Whether they're new or  
already have an account.

# You can now run it as a standalone app.

- Ignition required having classic Element alongside it: not anymore!
- You can create an account and use any baseline feature.

**In the past, Element users  
faced some challenges**

**Today,  
we have fixed it!**



So, here it is...



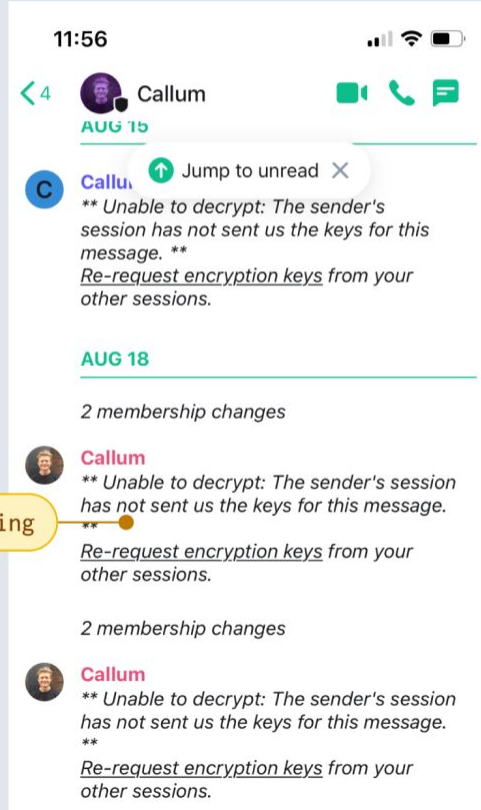
# Element X: Design Language

Amsha Kalra, Head of Design, Element

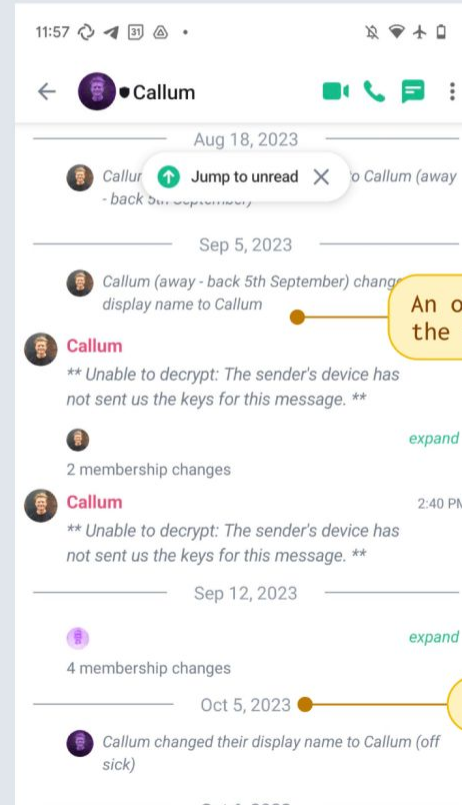
@amshakalra:matrix.org

2020

# High cognitive load



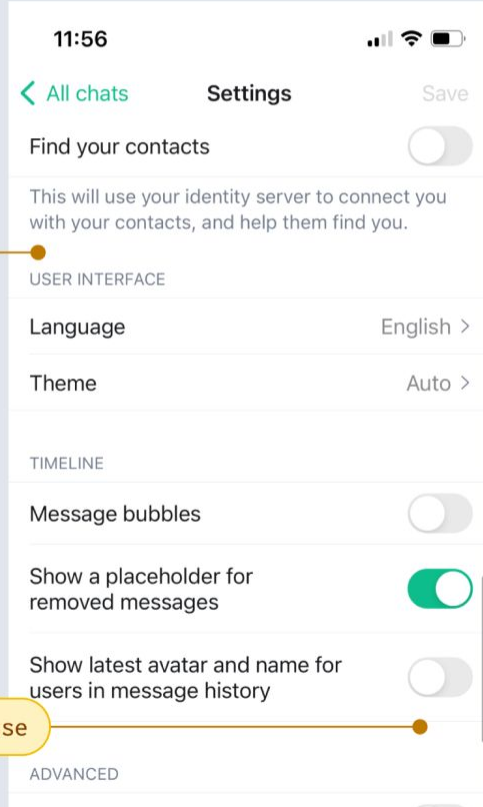
Complicated technical wording



An overwhelming interface taking the focus away from messages

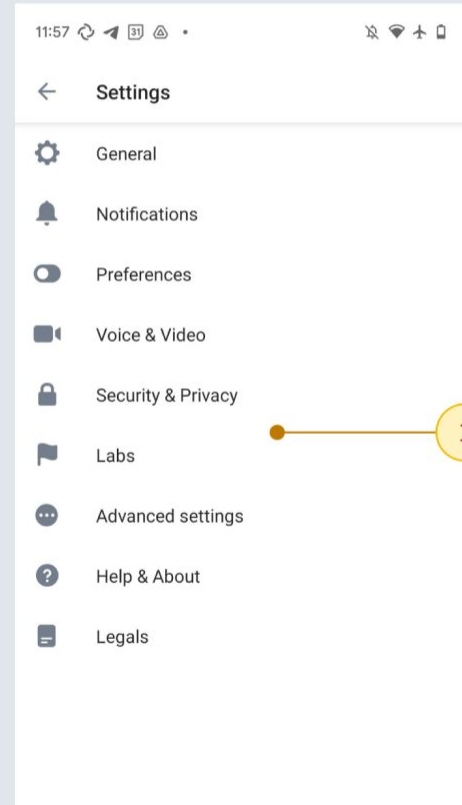
Low contrast text

# Platform inconsistencies



Different menu options

Inconsistent component use

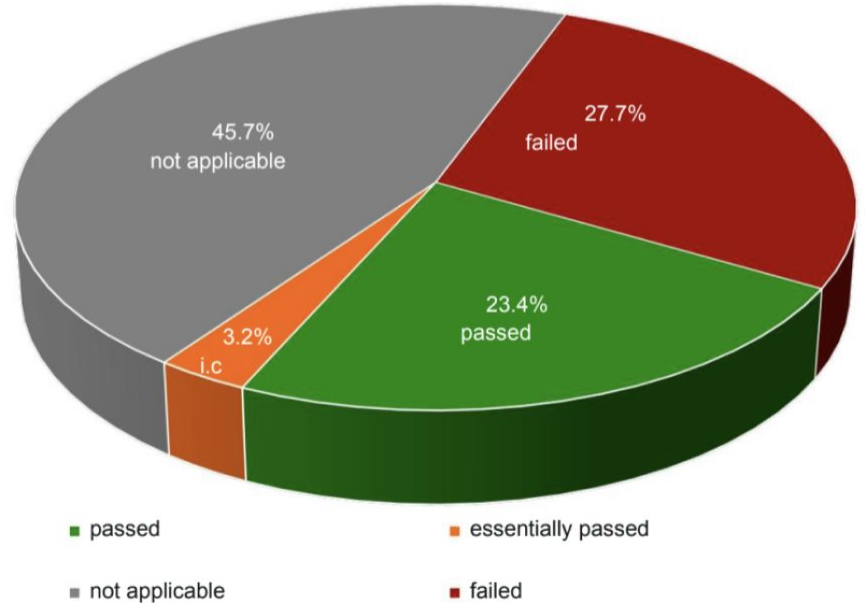


Icon use on one platform

# Low accessibility

→ Generally passed on screen reader, keyboard navigation

→ Failed on everything else visual: Text contrast, button contrast etc



# Design Language 2.0

Holistic vision for combining best practises, desirability & craft

## Intuitive

Building on known  
design standards

## Clear

Easy to use and  
understand

## Polished

Looks and feels good  
and spark joy

## Differentiator

Design as a competitive  
advantage

## Scalable

Adaptable and  
expandable

## Efficient

Work smarter,  
not harder

# Design Language 2.0

Revisiting various design aspects, all while working efficiently

**Typography**

**Colour**

**Iconography**

**Component  
libraries**

**Voice and tone**

**Branding**

# Colour guidelines to be accessible

## WCAG A

Baseline for standard vision.  
3:1 for content.

## WCAG AA

Moderate low vision.  
4.5:1 for text content.

## WCAG AAA

Low vision.  
7:1 for text content.

3:1 · Standard vision

Get Started

2.42:1 · Fail A

4.5:1 · Moderate low vision

Get Started

4.66:1 · Pass AA

Get Started

6.84:1 · Pass AA

7:1 · Low vision

Get Started

8.47:1 · Pass AAA



# Starting with monochrome

## Primary



**Base** (content, icons, CTAs, interactive elements)



**No accent**

## Secondary



**Graytones** (UI elements)



**Success or error** (text, icons, form fields)

## Argument

- With a **fully black-and-white interface**
- The content people are sharing that matters most.
- Everything else should get out of the way, or else clearly inform the user what's going on if they need to take action or be aware of something important.
- **Other than the logo, never use colour anywhere by default**
- **Colour used ONLY for special states** (confirmation/success, problem/error, etc.)
- **Pros:** It's clear, trustworthy, and simple (if we do it right)
- **Cons:** It could be super boring, utilitarian, and confusing (if we do it wrong)

# Add a pop of branding



Aa

Dynamic  
Type



VoiceOver



Display customization



Compound

Design system



Semantic  
properties



Accessible  
Tap Targets

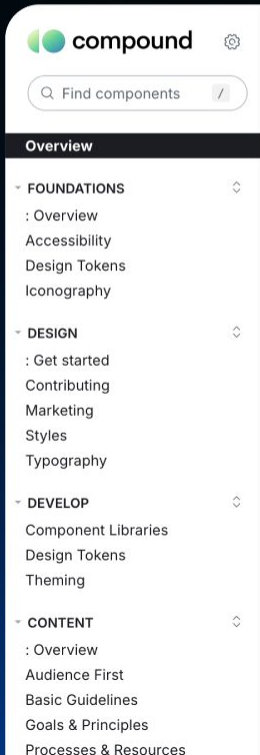


Keyboard support



Guided  
Access

# compound.element.io



Compound is the design system for Element. It's a shared language and set of UI component implementations for the web, iOS & Android. Compound is broken down into the following primitives:

- Foundations: Guiding principles which inform the basis of any implementation.
- Styles: Systems for applying colour, type, spacing, sizing and materials.
- Components: Defined components used to build end user experiences.

## Platforms

The first target platforms for Compound are:

- ElementX, iOS & Android
- Element Web
- Element Call
- Element Admin
- Authentication screens when authenticating using OIDC

Find the latest status on [the roadmap and board](#) (will be publicly accessible when the design system matures further).

## Using Compound

While we're in early design & development, Compound is primarily built for and consumed by the Element core team. As Compound matures, we plan to open access to as much of Compound as possible.

In the meanwhile, if you're on the core team, start using Compound to:

- Design: Set up Figma with shared libraries and plugins. Start designing using styles and components.
- Develop: Familiarise yourself with packages and workflows.

# compound.element.io

The image shows a screenshot of the compound.design website. The left sidebar contains a navigation menu with categories: Overview, FOUNDATIONS, DESIGN, DEVELOP, and CONTENT. The 'Typography' section is highlighted in the sidebar. The main content area is titled 'Typography' and features a dropdown menu set to 'Typography'. Below this, there are two columns of text. The first column lists various font styles such as 'Body XS Regular', 'Body XS Medium', 'Body XS Semibold', 'Body SM Regular', 'Body SM Medium', 'Body SM Semibold', 'Body MD Regular', 'Body MD Medium', and 'Body MD Semibold'. The second column lists the corresponding Android font paths, such as 'Android/font/body/xs/regular', 'Android/font/body/xs/medium', 'Android/font/body/sm/regular', 'Android/font/body/sm/medium', 'Android/font/body/md/regular', 'Android/font/body/md/medium', and 'Android/font/heading/sm/regular'. A search bar at the top left of the main content area contains the text 'Find components'. A plus sign icon is visible in the bottom right corner of the main content area.

compound

Find components

Overview

FOUNDATIONS

Overview

Accessibility

Design Tokens

Iconography

DESIGN

Get started

Contributing

Marketing

Styles

**Typography**

DEVELOP

Component Libraries

Design Tokens

Theming

CONTENT

Overview

Audience First

Basic Guidelines

Goals & Principles

Processes & Resources

## Typography

Typography

Body XS Regular

Web/font/body/xs/regular

Body XS Medium

Web/font/body/xs/medium

Body XS Semibold

Web/font/body/xs/semibold

Body SM Regular

Web/font/body/sm/regular

Body SM Medium

Web/font/body/sm/medium

Body SM Semibold

Web/font/body/sm/semibold

Body MD Regular

Web/font/body/md/regular

Body MD Medium

Web/font/body/md/medium

Body MD Semibold

Web/font/body/md/semibold

Body XS Regular

Android/font/body/xs/regular

Body XS Medium

Android/font/body/xs/medium

Body SM Regular

Android/font/body/sm/regular

Body SM Medium

Android/font/body/sm/medium

Body MD Regular

Android/font/body/md/regular

Body MD Medium

Android/font/body/md/medium

Body LG Regular

Android/font/body/lg/regular

Body LG Medium

Android/font/body/lg/medium

Heading SM Regular

Android/font/heading/sm/regular

# compound.element.io

## DESIGN

Get started  
Contributing  
Marketing  
Styles  
Typography

## DEVELOP

Component Libraries  
Design Tokens  
Theming

## CONTENT

Overview  
Audience First  
Basic Guidelines  
Goals & Principles  
Processes & Resources  
Translations  
Vocabulary & Iconography  
Voice & Tone

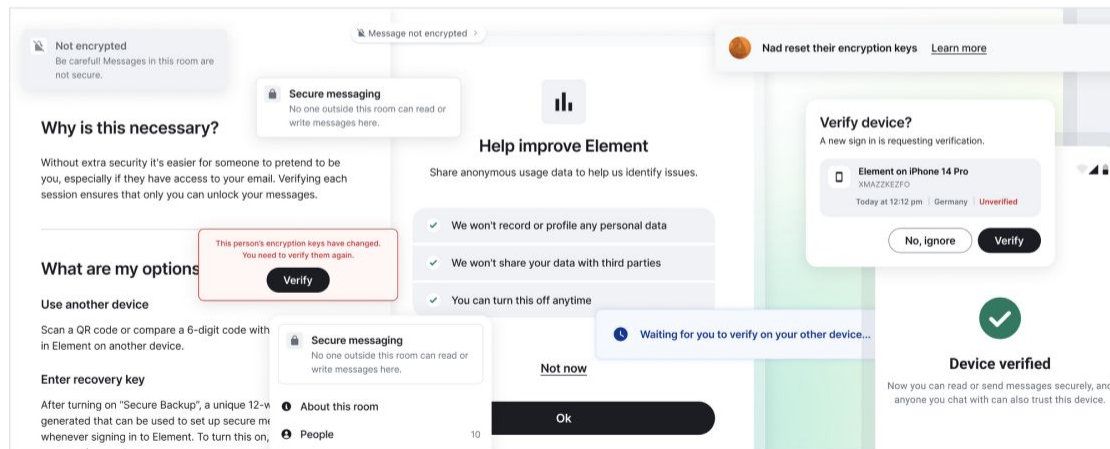
## Writing for Apps

Writing for Email  
Writing for Web & Marketing

## TOKENS

Color Palettes  
Icons  
Semantic Colors  
Spacing  
Typography

## Writing for Apps



## The interface should...

- **Get out of the way whenever possible.** Let the user focus on the content, not the interface.
- **Use colour sparingly, but consistently**

# Element X



# Design Principles

Ensure high  
quality 100

Make every  
feature count 🥰

Embrace our  
super powers 🦹

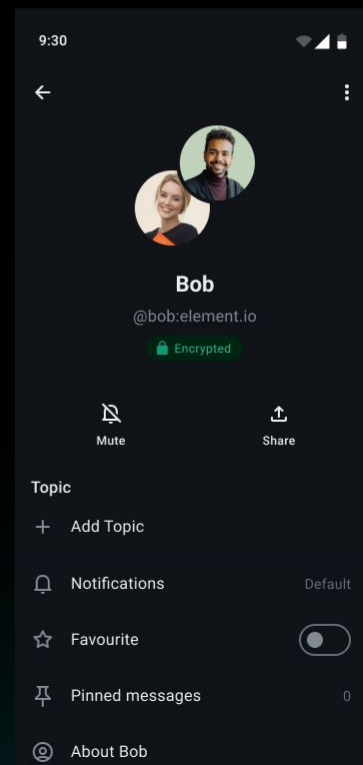
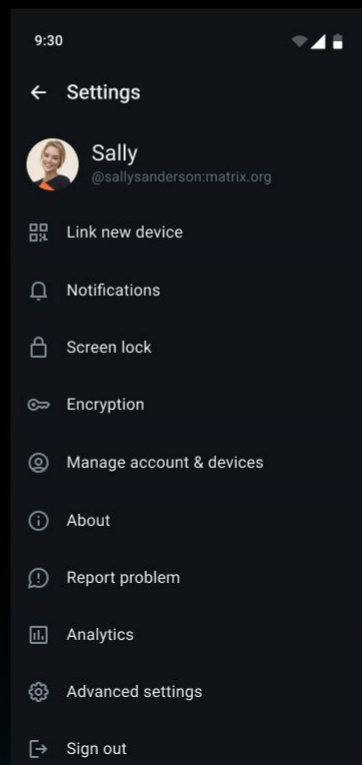
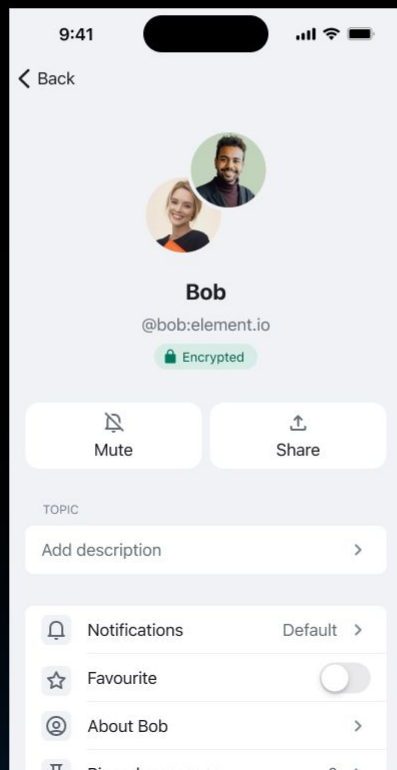
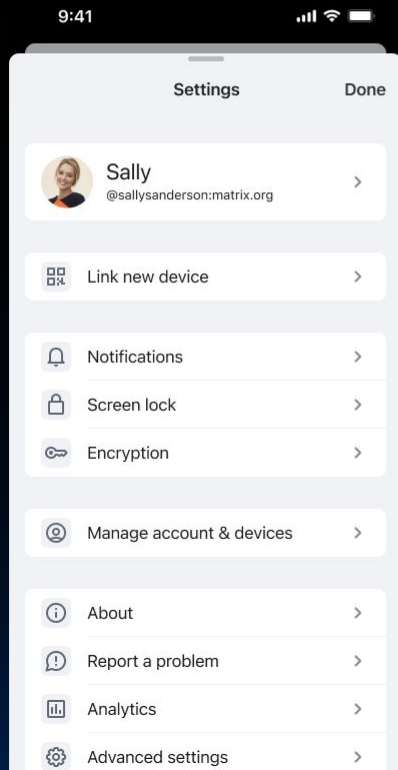
Using element is  
effortless 🙌

Bring joy to our  
users 🥳

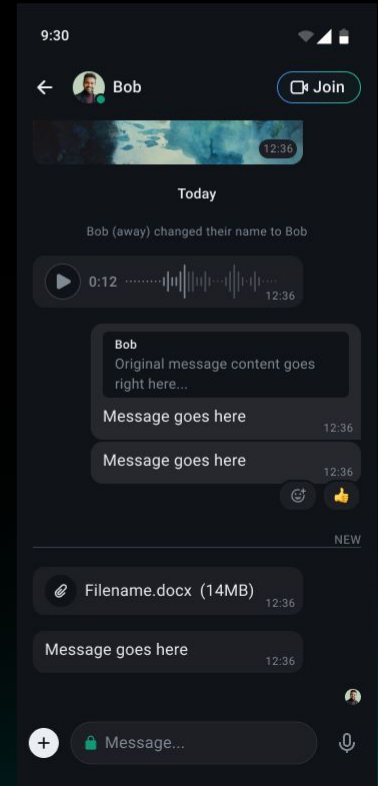
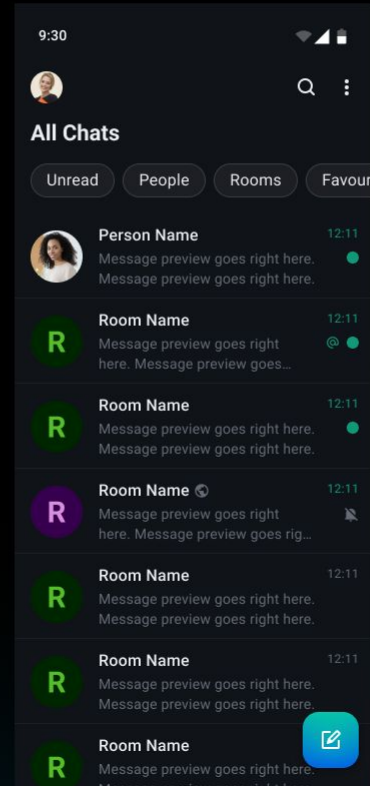
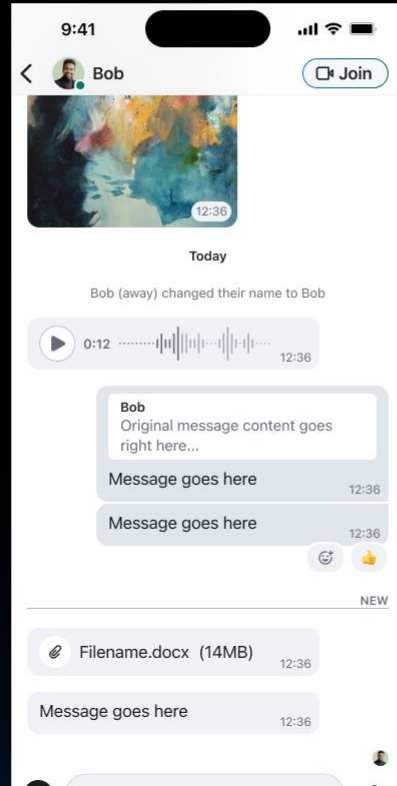
Don't reinvent the  
wheel 🎡



# Using familiar native patterns



# While keeping high uniformity



# What's next?

Feature parity 

Illustrations 

Improve  
Accessibility 

Motion 

Sound 

Delight 

**Design is always a work in  
progress.**

**Thank you for all your  
feedback and support  
over the years.**

# Element X and Apple Platforms.



Ștefan Ceriu  
Apple Platforms Tech Lead

# Element X +

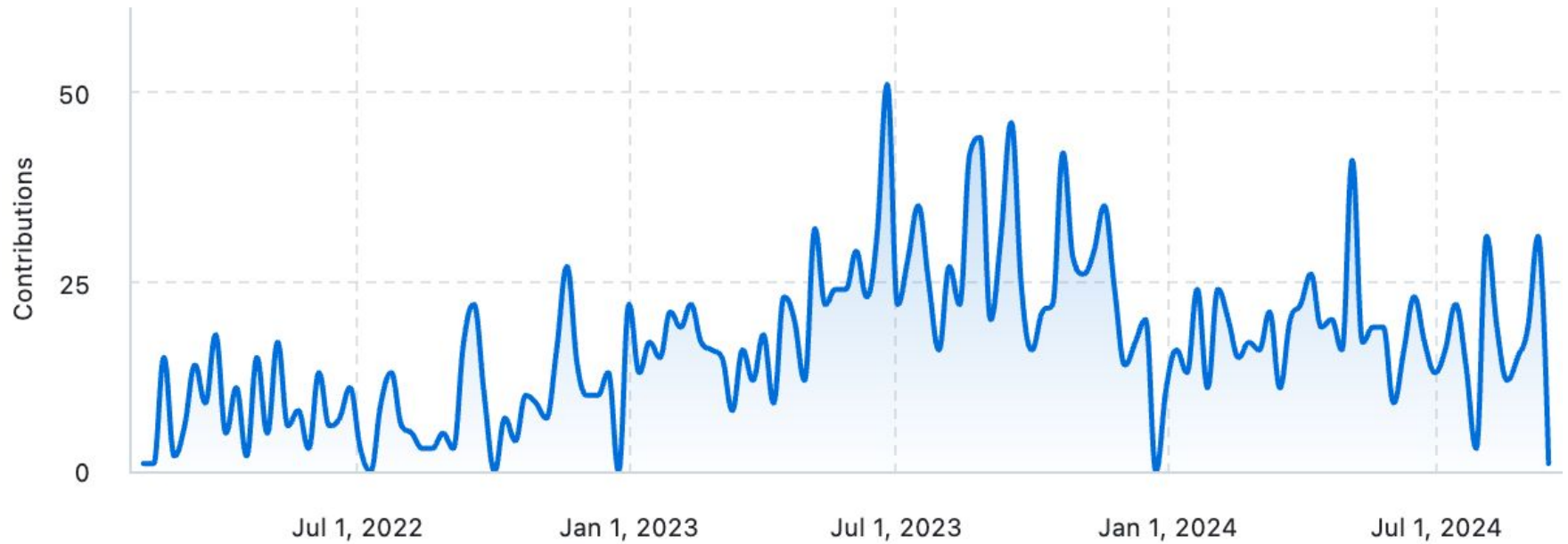
```
git log --reverse
commit a499570f39206d0322b804950b4ca734e5f0f904
Author: Stefan Ceriu <stefan.ceriu@gmail.com>
Date:   Fri Feb 11 14:06:26 2022 +0200

Initial commit
```

# Element X +

## Commits over time

From 6 Feb 2022 to 15 Sept 2024





# What can go wrong?

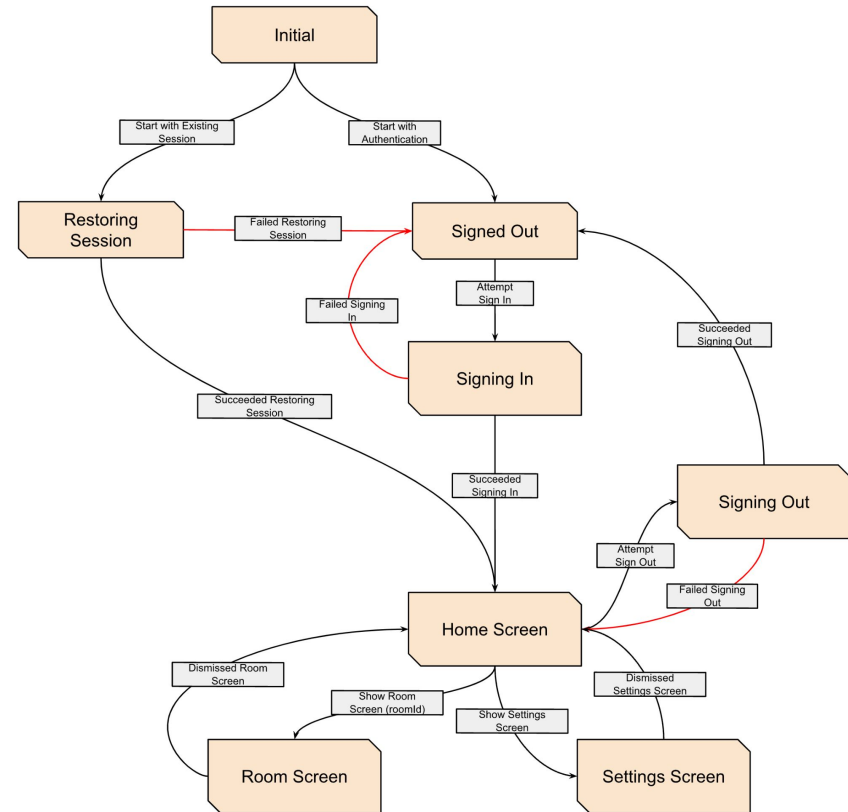
We wanted to:

- Build on top of the Rust SDK
- Rewrite everything in Swift
- Rethink the UX to be more friendly and approachable
- Using SwiftUI and Element specific design system
- While replacing the sync engine

(on Android replace SwiftUI with Jetpack Compose)

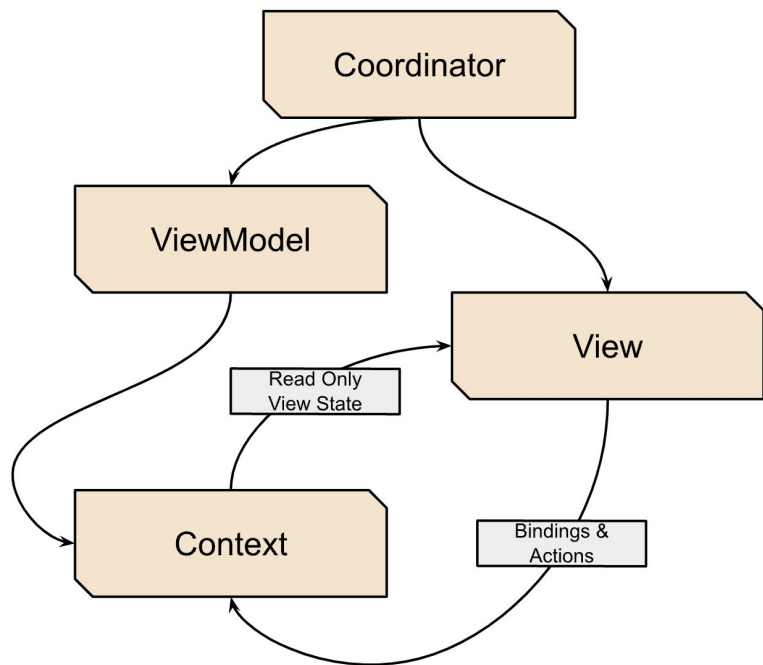
# Architecture

- The tried and tested MVVM-C
- Overseen by Flow Coordinators with built in state machines that enforce valid navigation paths
- Asserting in production
- The app will always be in an expected and correct state



# SwiftUI

- A version of the system we used in the legacy app
- Decoupling the ViewState and only providing a read only version to the view
- Powered by a custom UI navigation stack



# Testing

More is more so:

- Plain unit tests
- Snapshot unit tests on top of SwiftUI previews
- Plain UI Automation Tests + Snapshots

... all with automatically generated mocks for both local and SDK services.

- UI Automation Integration tests
  
- Element X iOS is sitting at a comfortable 82% overall coverage

# Unit tests

- We love them, everybody should
- We have around 800 of them
- They work great with the generated mocks

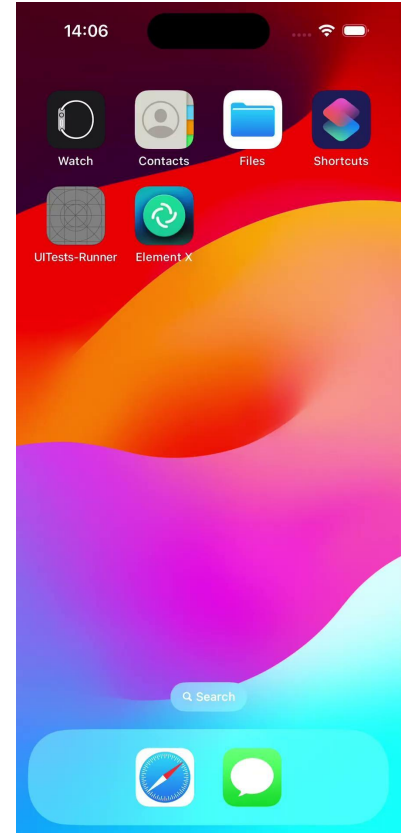
# Snapshot tests

- We use SwiftUI previews to build new screens
- But we also use them for snapshots tests
- On different devices and language configurations



# UI automation tests

- Test real UI with mocked services and data
- We can compose together multiple screens and user flows
- We also snapshots various steps within the tests



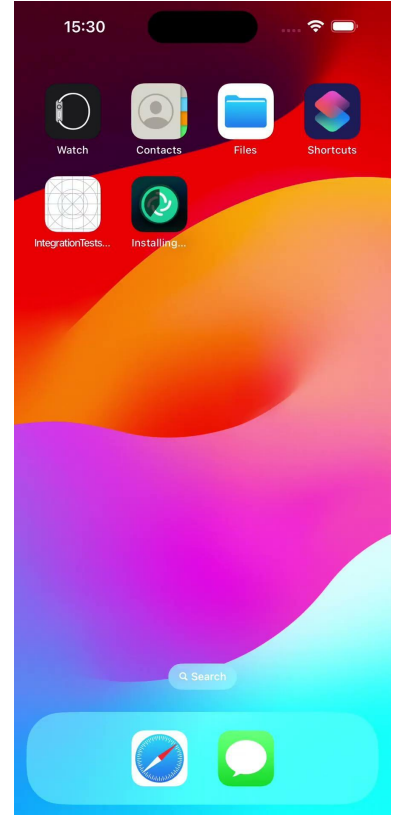
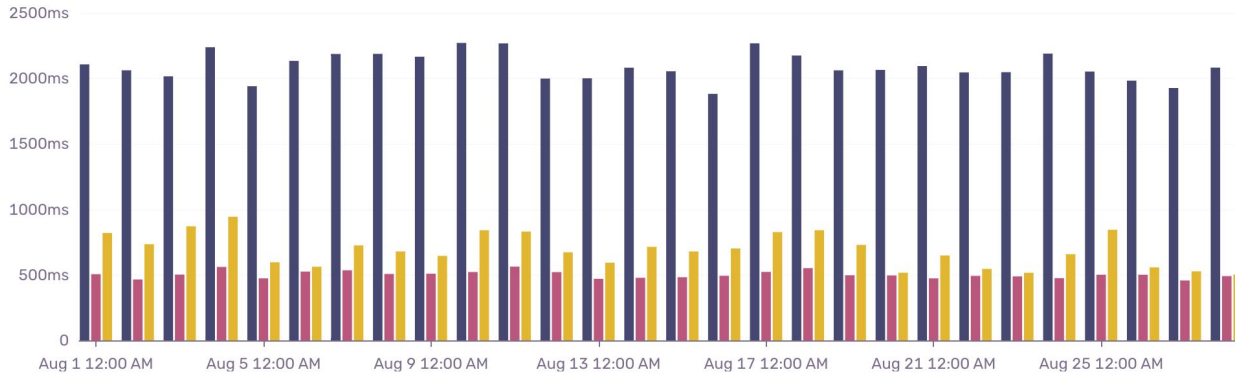
# Full integration tests

- We run UI automation tests with real users on real homeservers (matrix.org)
- We check the main app flows and that nothing breaks (on any layer)
- We gather and track performance stats

## Startup Performance

Timings for startup tasks

● Session restoration + first rooms : p75 (transaction.duration) ● Time to first rooms : p75 (transaction.duration) ● First sync time : p75 (transaction.duration)





# And then were the tools and DevX

- Xcode Cloud 📦 - for continuous delivery
- Github Actions - for everything else
- Danger - Check PRs adhere to rules
- Fastlane - to configure the various app flavours (PR, nightly, enterprise builds)
- Swiftlint and swiftformat - to .. well.. Lint and format
- Sonarcloud - to track down common bugs and code smells
- Codecov - for info on tests and coverage
- Localazy - to share translations
- Custom git hooks for checking formatting, git lfs, licenses etc.
- Custom swift scripts for setting up the project, releasing bindings, generating mocks and more
- Rust xtask based scripts for generating Swift bindings through Uniffi
- Shared project: RustSDK, Compound, AnalyticsEvents and the RichTextEditor

# Thank you!



# What's next?

# You can use it today!

- Just log in with your existing account
- Or use it to create an account on any server having Matrix Authentication Service (MAS) deployed
- Element Server Suite fully supports it of course!
- Matrix.org will only have MAS at the end of the year, but a registration helper allows you to go through legacy registration
- Or you can experiment with [beta.matrix.org](https://beta.matrix.org)

# What remains?

- Threads
- Spaces
- Continue improving UX (e.g. invisible crypto, media management...)
- Feature parity with EW (e.g. verifying users, tracking your own verified and unverified devices...)
- Proper UI for joining rooms (but Element X iOS has `/join`)!

# And beyond that?

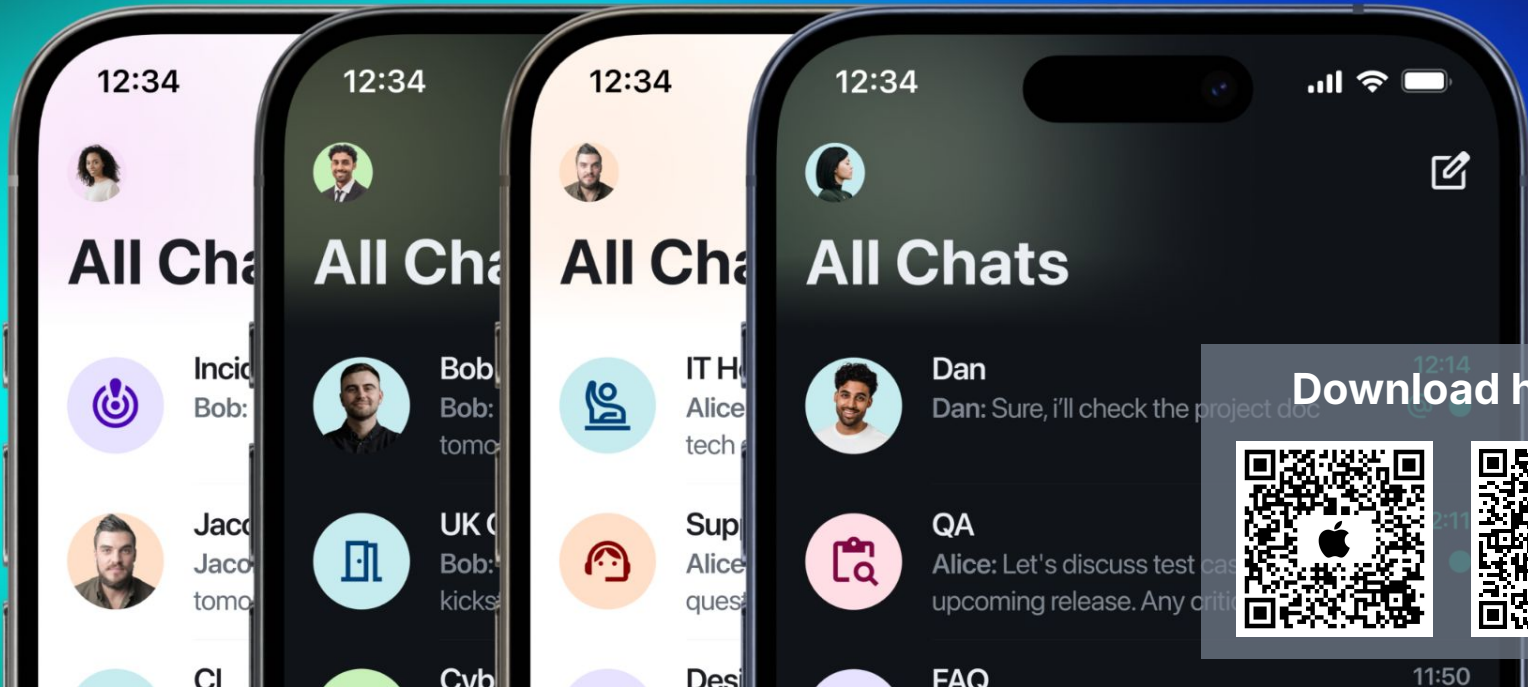
- Retiring the legacy apps once we have feature equivalence in Element X
- Element X Web
- Element Call feature parity with Jitsi, Zoom & friends
- Faster, Sexier Element Server Suite
- People and content search
- ...

# In the meantime...

**Go and tell the world!**  
**The new generation of Element**  
**is out and it rocks! 🤘**



# Element X.



Download here



11:50