



THE
S S O +
EXPERIENCE

SINGLE SIGN-ON⁺

A unified identity system taken to the next level

Complexity made simple

Built with the customer experience in mind



SSO+

PRODUCT INTRO

“Simple can be harder than complex”. Steve Jobs

A behind the scenes look into SSO+'s complex logic and functions to achieve a simply beautiful customer experience.

The Backstory

Inception

Customer, Customer, Customer.

We realized that in order to understand our customers better, we need to get an overall idea of their behavior throughout our platforms. In order to gather this data, the first step is to be able to identify them across our different applications.

This is when the inception of unified identity through single-sign-on began....

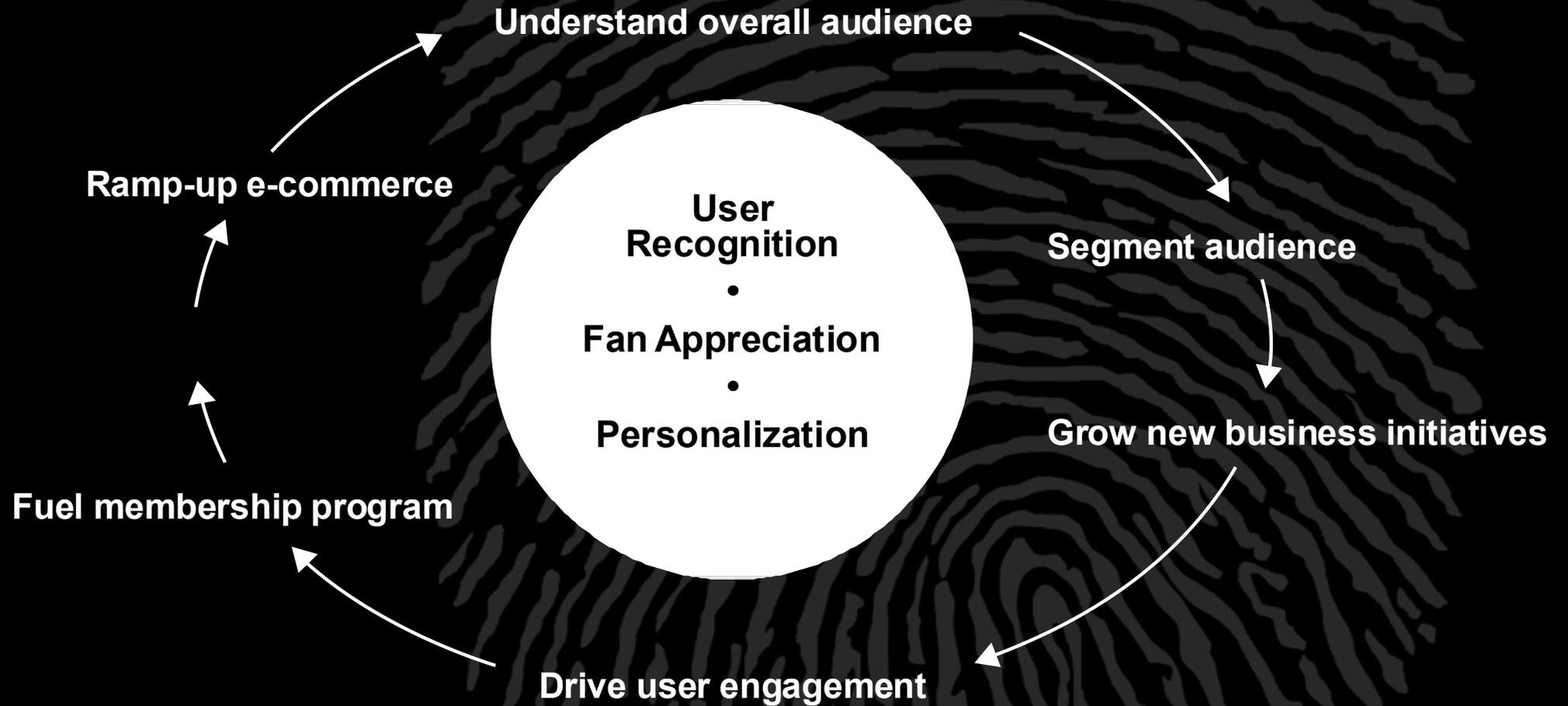


IMRAN SAADI

DIRECTOR

**BACKSTORY & THE
PLAN**

WHY DO WE CARE ABOUT DATA?



THE PLAN

➤ Phase 1: Consolidate data

ellentube
Accounts

ellentube
Newsletter

ellentube
Giveaways

Ellen Shop

**BE
KIND.**
by ellen
**Subscription
Box**

ellen
the ellen degeneres show
Tickets

**Pluggers/
Write to
the Show**

ellentube
VIP



THE PLAN

- Phase 1: Consolidate data
- **Phase 2: Unify Identity across core products and operationalize implementation**
- Phase 3: Include additional ellen partnerships & properties

ellentube
REWARDS

Mobile App
& Games



Open Source vs. Buy vs. Build

Open-Source



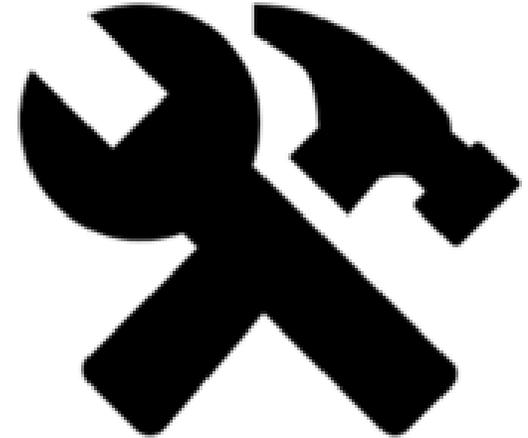
- Open-Source limitations
- Available solutions (Ory, Keycloak) too new with a lot of unknowns

Buy



- Past experiences with 3rd party solutions (Okta, Auth0)
- Cost

Build



- Cognito already powers our ellentube accounts
- 10+ million accounts to unify across ellentube & shops
- Flexibility

EUNICE QUEZON

PRODUCT MANAGER



**PRODUCT
FEATURES**



SSO+

PRODUCT FEATURES

An overview of the product's core elements and key features to set the stage for a more in depth look at how it was built



The **CORE ELEMENTS** that make SSO+ useful

Standardized & Reusable



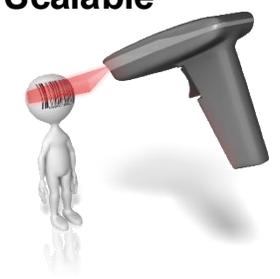
Secure



Customizable



Scalable



The KEY FEATURES

that make SSO+ a unique package



Integrated dynamic sign up/sign in experience

Designed with the user in mind, the dynamic design detects if the user exists and will display a sign up or sign in flow for a frictionless UX and reduced registration drop off.



Email verification send options

Allows for a frictionless checkout experience by providing an optional setting to validate/activate accounts after payment instead of the validate-first-then-pay default.



UI/UX Customization

Understanding business needs are distinct, the flexible UI design can be tailored by brand and theme, including adjusting elements to fit customer behavior.



Federated Log In

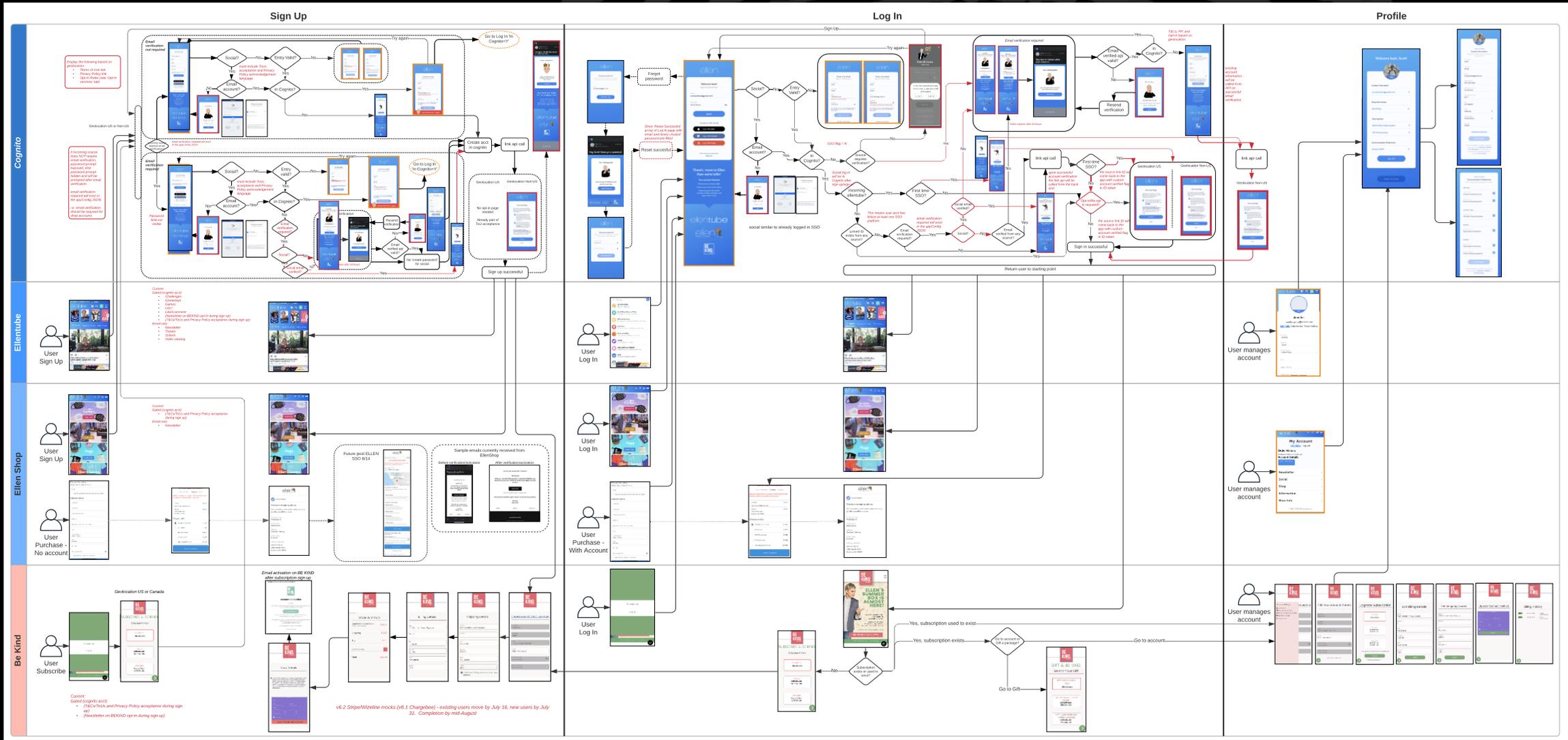
Integrated with Apple, Facebook and Google sign in, it not only reduces security risk but also provides a seamless user log in experience.



Shop and Subscription

It supports integration with both shop and subscription commerce models, leveraging a backend linking API and Shopify's Multipass authentication.

THE BUSINESS LOGIC





ANSHUL KUMAR

SENIOR BACKEND ENGINEER

**ARCHITECTURE &
SECURITY**

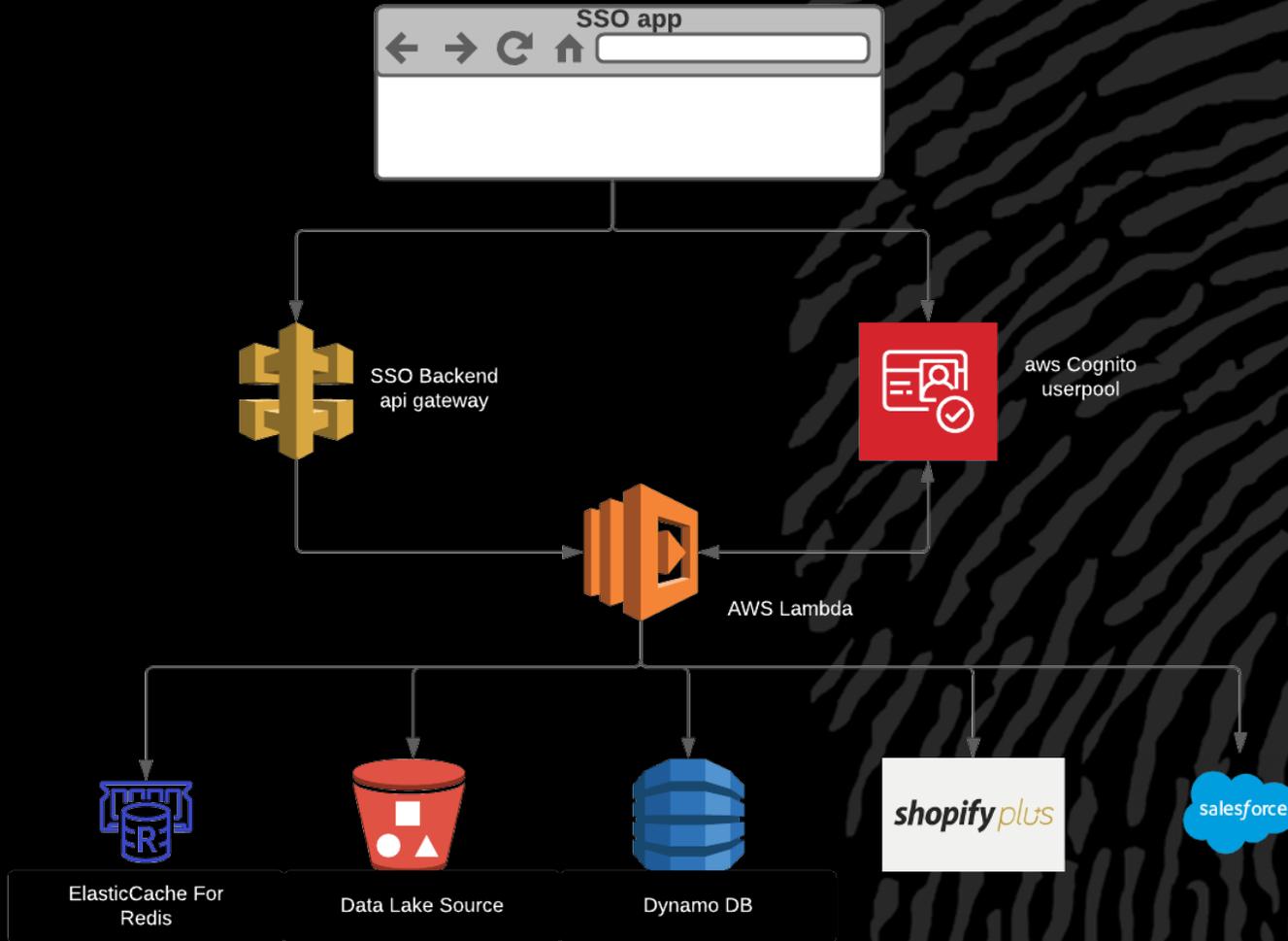
TOPICS

Architecture & Implementation

- Complexity captured
- How we built it
 - Architecture
 - Spec
- How we kept it secure
- How we are preparing it for marketing growth

THE ARCHITECTURE

Ellen SSO App Architecture

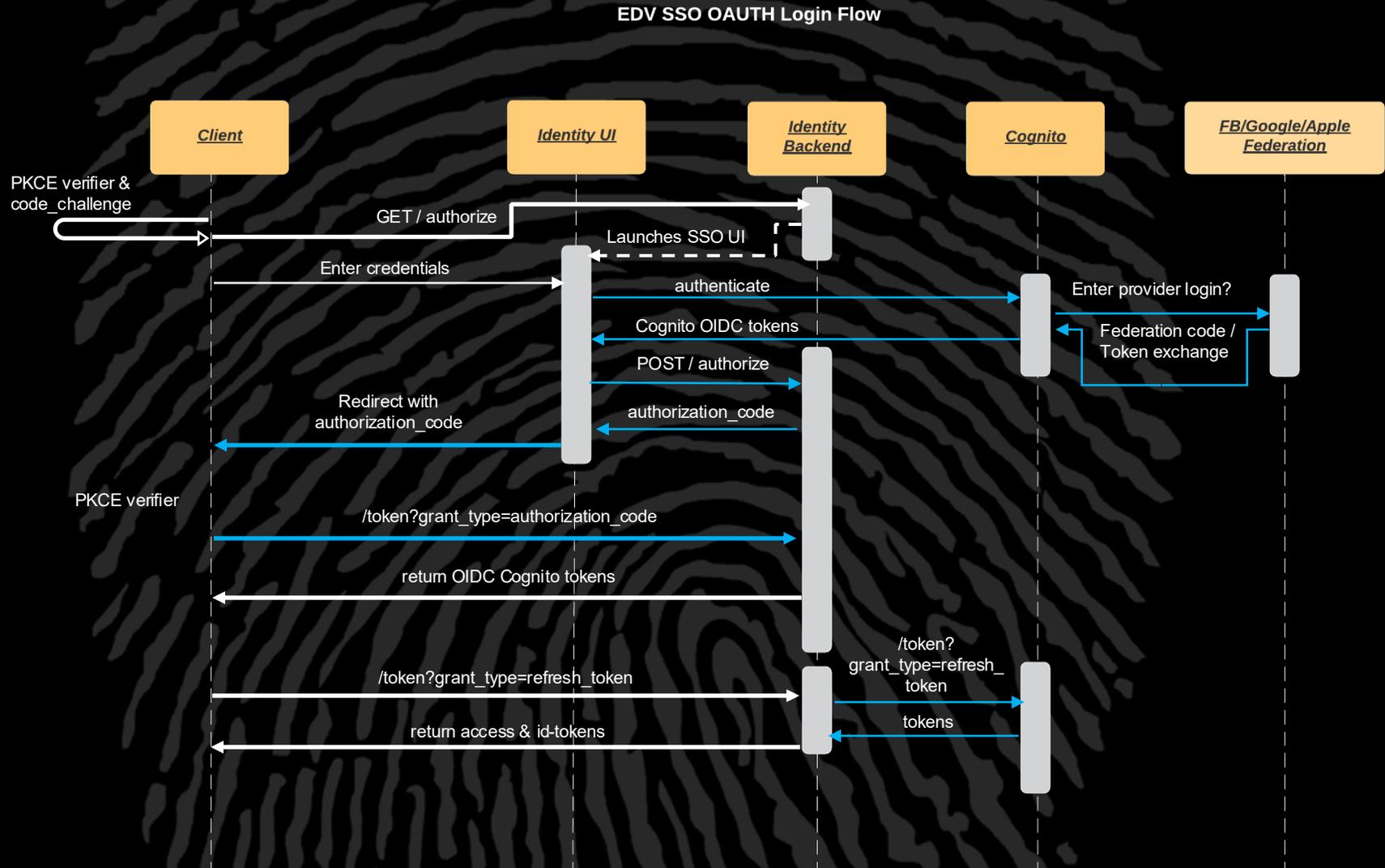


SAM template based serverless application

- Infrastructure creation
 - Redis ElasticCache client
 - AWS Lambda,
 - API gateway,
 - AWS DynamoDB
- IAM roles for resource access permissions to code in lambda functions

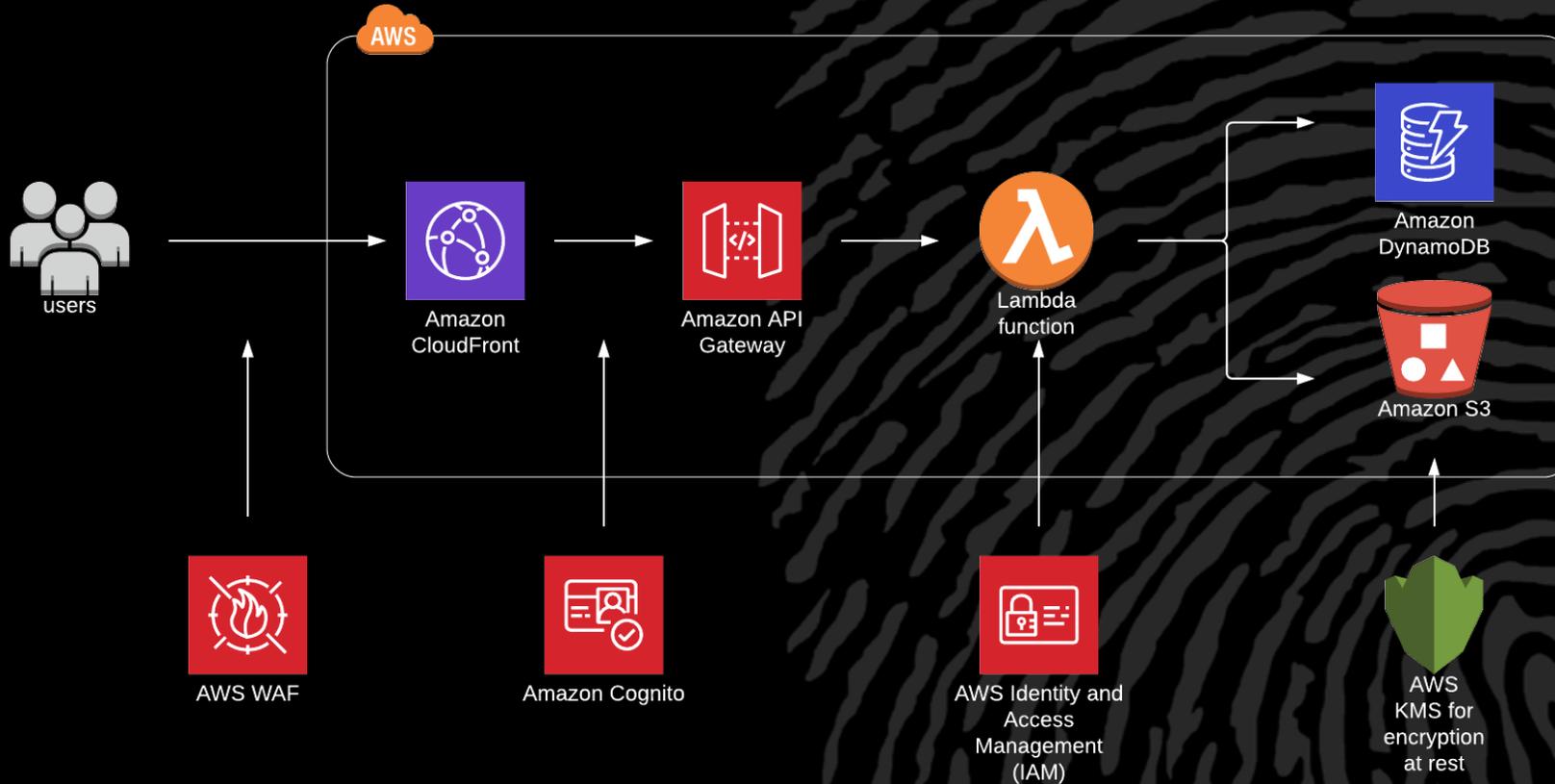
THE SPEC

- Following standard oauth2 and OpenID connect standards
- PKCE extension
- Federated logins
 - Apple
 - Facebook
 - Google
- Protected API by Cognito tokens
- Compatible with standard OAuth libraries like AppAuth, etc.
- Further study –
 - [OAuth2 spec](#)
 - [OpenID Connect](#)
 - [PKCE](#)



THE SECURITY

EDV SSO Layers Security implementation

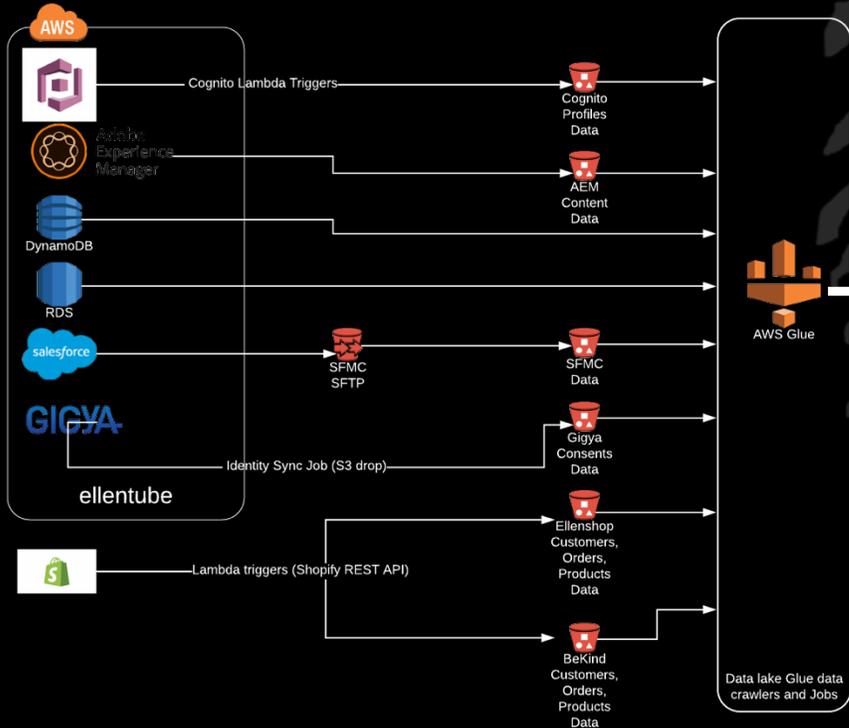


- Followed standard practices recommended for securing serverless apps
- No app secrets in the code, all secrets go to AWS secret managers
- CORS and other security headers (HTTP Strict Transport Security, X-XSS-Protection, etc.) for the API responses
- OWASP ZAP tool to scan and identify possible security issues and fixes
- AWS WAF for gateway level extra security

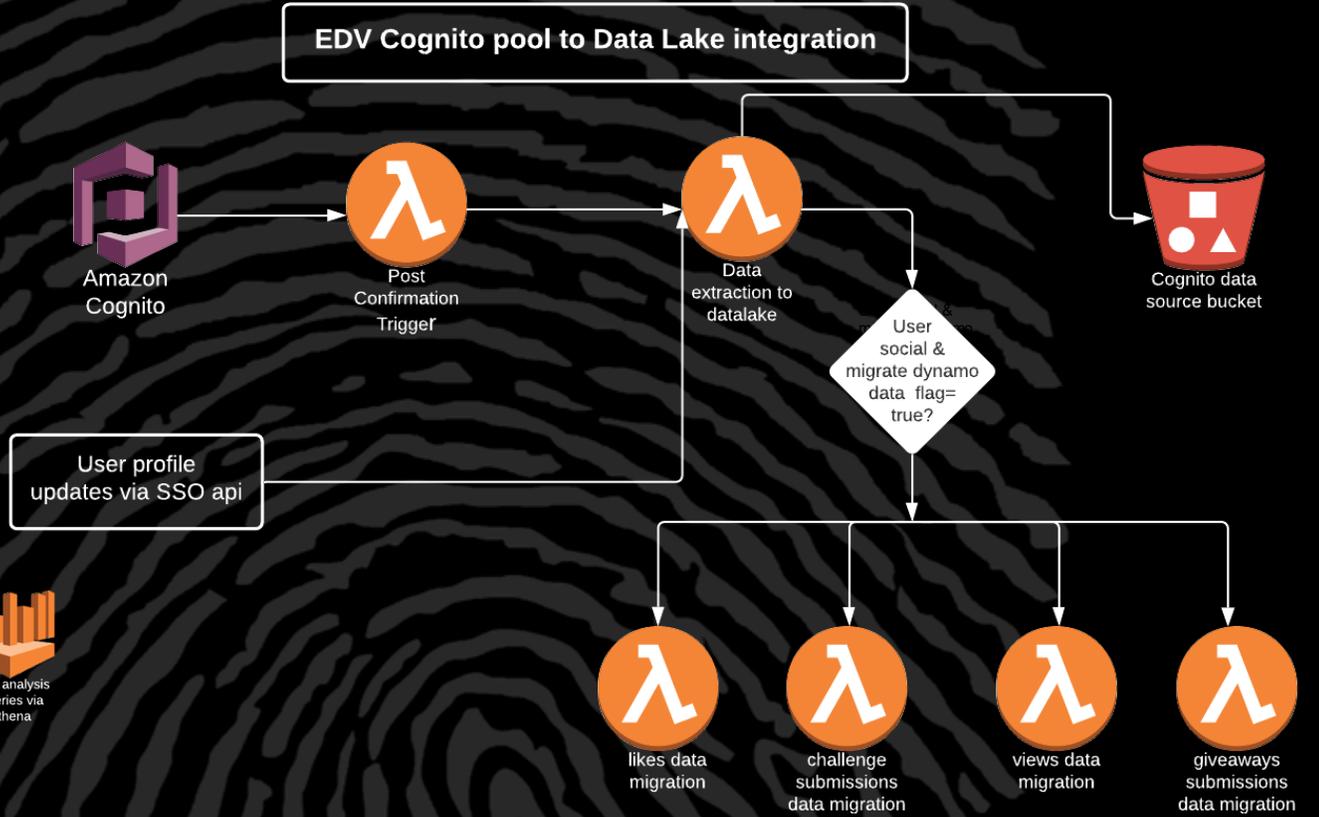
THE DATA

- Integration with data lake
- Cognito trigger utilization for new accounts
- Custom API flow for profile updates flow

Ellen Digital Data Lake



EDV Cognito pool to Data Lake integration



MICHAEL POURSHALIMI

FRONTEND ENGINEER



**SECURITY,
MULTIPASS & DEMO**

TOPICS

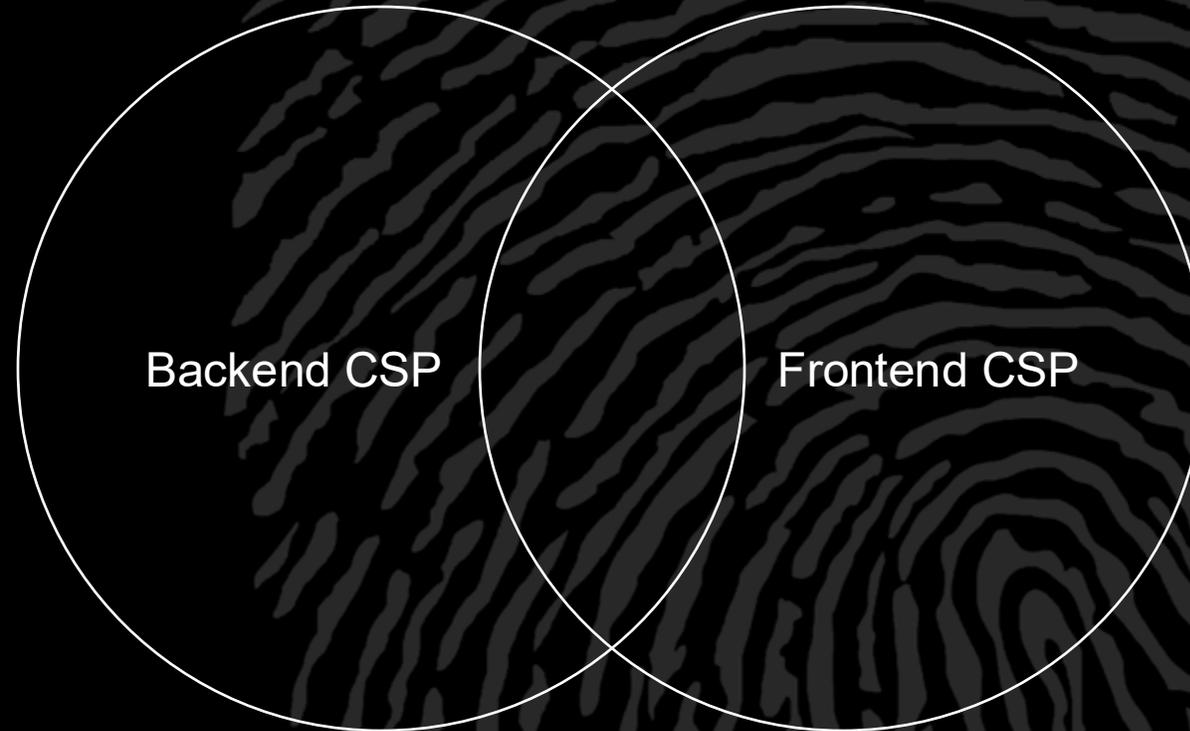
Security, Multipass, Demo and more

- Frontend Security
- Multipass
- Federated Identities
- Flows
 - Consents
 - Account Migration
- Demo

SECURITY

Content Security Policy (CSP)

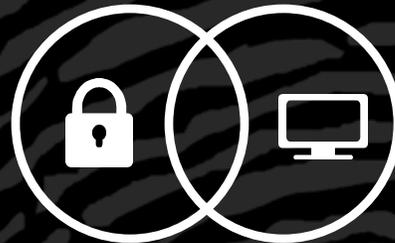
A computer security standard introduced to prevent cross-site scripting (XSS), clickjacking and other code injection attacks



CSP SPECS

Backend TECH:

- Lambda@Edge



Frontend TECH:

- CspHtmlWebpackPlugin

PARAMS:

default-src:

base-uri:

script-src:

style-src:

manifest-src:

font-src:

img-src:

connect-src:

SPECS:

- 'none'

- 'self'

- <analytics> <cognito> *.ellentube.com 'self'

- * 'unsafe-inline'

- 'self'

- <google fonts> 'self'

- img-src 'self' *.ellentube.com data:

- <APIs> *.ellentube.com <analytics>
<cognito> 'self' <s3 photo bucket>

SPECS:

- 'self'

- * 'self' <nonce values>

- 'self' 'unsafe-inline' <google>

SCENARIOS



MULTIPASS

Shopify Plus Authentication Solution

TECH:

- Amplify
- Backend Lambda API
- Multipassify

FEATURES:

- Logs users in to Shopify via a primary identifier (email)
- Logged in users preserve their order history and account details
- Unifies identity by passing in profile information from SSO to the Shopify user
- Supports new users logging in via Multipass
- Allows for setting of flags such as “VIP user” where logic can be implemented to give discounts and perks
- Secured by user's IP address

MULTIPASS

Example JSON

```
{
  email: "bob@shopify.com",
  created_at: "2013-04-11T15:16:23-04:00",
  first_name: "Bob",
  last_name: "Bobsen",
  tag_string: "vip-subscriber",
  identifier: "bob123",
  remote_ip: "107.20.160.121",
  return_to: <state uri or shop address>,
  addresses: [<...address info>]
}
```

SCENARIOS



FEDERATED IDENTITY

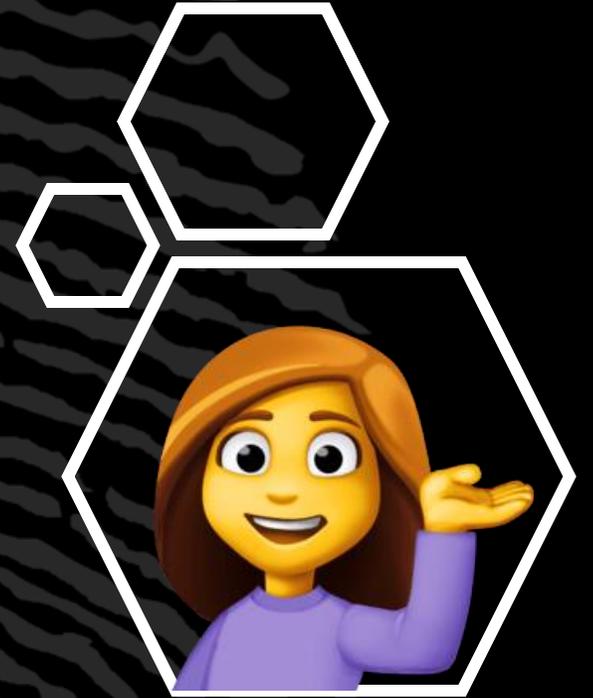
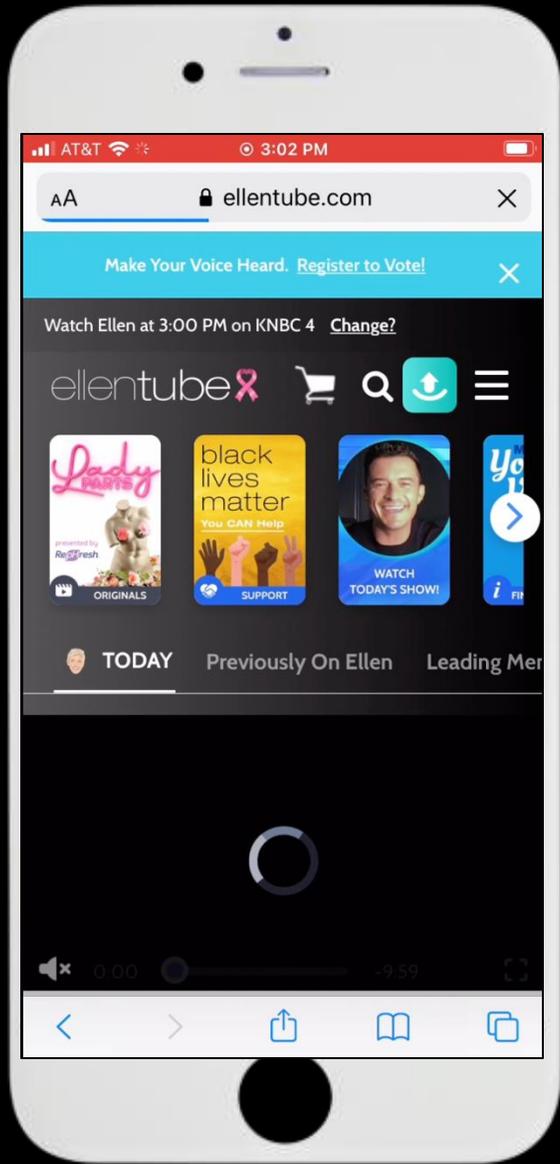
OpenID Connect on top of OAuth 2.0

TECH:

- Amplify
- Linking Lambda API

FEATURES:

- Authenticates users via Federated Identity
 - Facebook
 - Google
 - Apple
- Links Federated Identities with common primary identifiers
- Links Federated Identities with native accounts with common primary identifiers



SCENARIOS

CONSENTS FLOW

GDPR / CCPA Compliant Consents

TECH:

- Consent API
- Amplify

FEATURES:

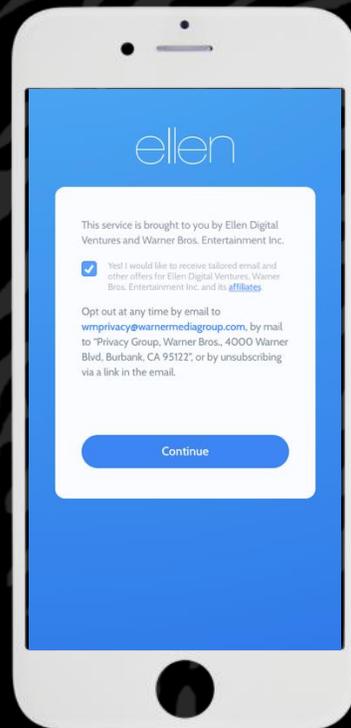
- Users based in the US implicitly consent to Marketing from Warner Bros and their affiliated partners (combined) upon signing up. They can checkout their privacy settings from their global SSO profile to change their preferences.
- Users based in the US with an existing ellentube account signing in to SSO for the first time will be prompted for Marketing consents with a default “checked” value
- Users not based in the US are prompted to agree to Marketing and Affiliated Partner Marketing with a default “unchecked” value for each.

SCENARIOS

US

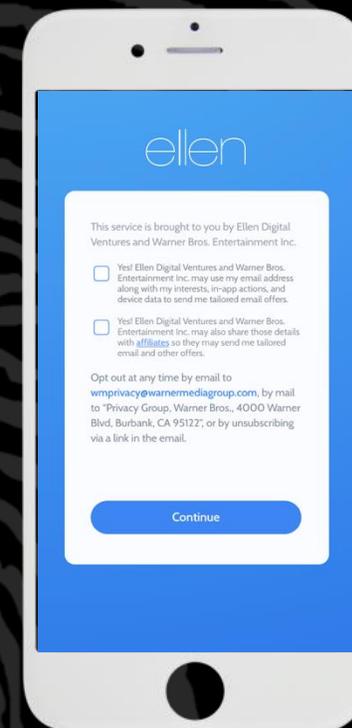
Sign up

Sign in (first time)



Outside US

Sign up & Sign in (first time)



MIGRATE FLOW

External Client Account Migration

TECH:

- SSO API
- External Client API
- Multipass
- Amplify

FEATURES:

- Existing account information from client source pulled in for ergonomic SSO client onboarding
- Secure Client API access
 - Email Verification code
 - Secured S3 with API Secret

SCENARIOS





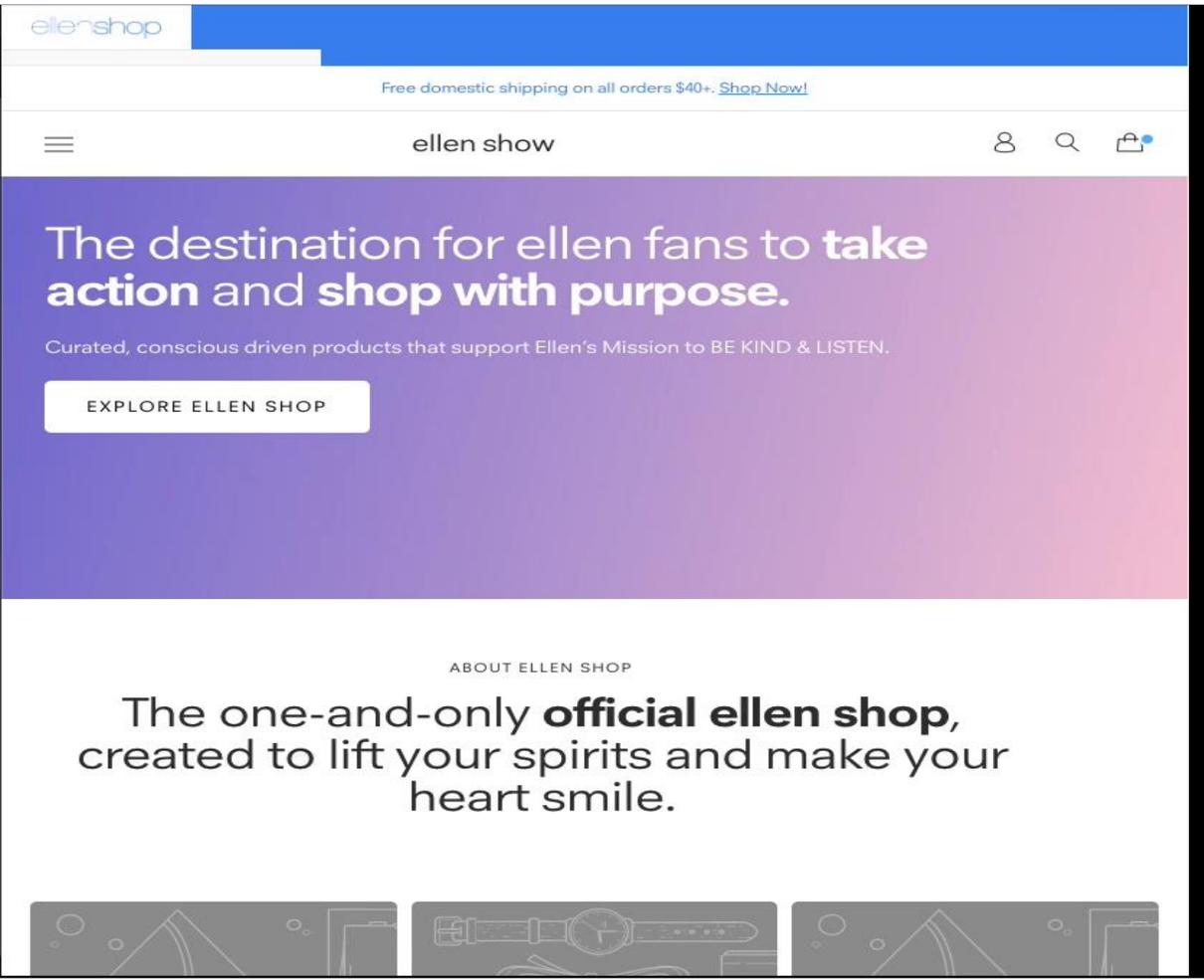
SSO+

THE DEMO

Demo of ellentube and ellen Shop

The screenshot shows the ellentube.com website interface. At the top, there is a navigation bar with the URL "ellentube.com" and a search bar. Below the navigation bar, there is a banner for "Make Your Voice Heard. Register to Vote!". The main content area features a grid of promotional cards for various shows and events, including "Lady Parts", "black lives matter", "Your Voice", "GAME GAMES", "Help Those Affected by COVID-19", "Shutterfly Moments", and "PUMPKIN CARVING". Below the grid, there is a "TODAY" section with a video player for "ellen" and a list of featured videos, including "Gloria Steinem and Meghan Markle Cold-Called Voters", "Ellen Meets Teen Who Builds Desks for Students in Need", and "Tom Hanks Makes an 'Appearance' on Tig Notaro's Skybox Show". At the bottom, there are more promotional cards for "Lady Parts", "black lives matter", and "GAME GAMES".

ellentube



ellen Shop



ENRIQUE FLORENDO

FRONTEND ENGINEER

REUSABILITY

TOPICS

Reusability, Admin Demo

- Reusability
- Admin Demo

ellen - my account

ux.do29iq3dyplvb.amplifyapp.com/admin?client_id=32vkpoc789queg5jrddck2k74s&redirect_uri=https://dev.ellentube.com&code_challenge=N9iqw00pcRuqVX_mqN67BmziaqhKt1LD4d7EC1im1Vw&code_challenge_meth...

Desktop Mobile

LOADING SCREEN

BRANDING

FONTS

BUTTONS

ALERTS

FIELDS

SOCIAL

SIGN IN/UP

MIGRATE

LEGAL

VERIFY

FOOTER

Save Fields Copy Fields

SAVED VERSIONS

Ellen 2020-10-06 22:34

Ellen 2020-10-06 22:43

Ellen 2020-10-06 22:49

Ellen 2020-10-06 22:59

Ellen 2020-10-06 23:01

Registration Password Migrate Confirm Loading Profile

ellen

You're in for a treat!

Enter your email to sign in or sign up.

Email

Continue

Continue with Apple

Continue with Facebook

Continue with Google

By clicking a 'Continue with' button above, I accept the [Terms of Use](#) and I acknowledge that I have read and understand the [Privacy Policy](#).

[Forget your password?](#)

ellentube BE KIND. by ellen ellenshop

**GRANT CHENG
&
VARUN CHOPRA**

FULL STACK ENGINEERS



MOBILE APP

TOPICS

Sample App, iOS Demo

- Seamless integration (AppAuth Sample App)
- iOS Demo



APPAUTH LIBRARIES

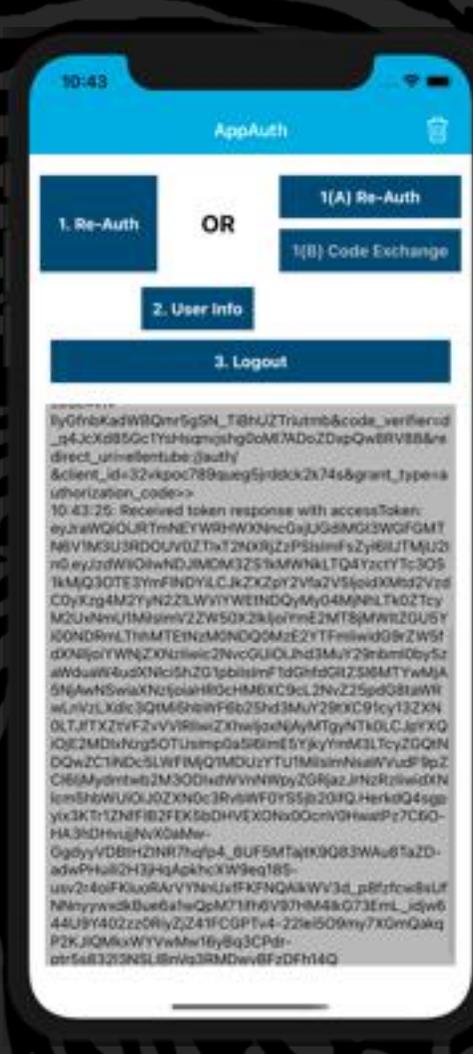
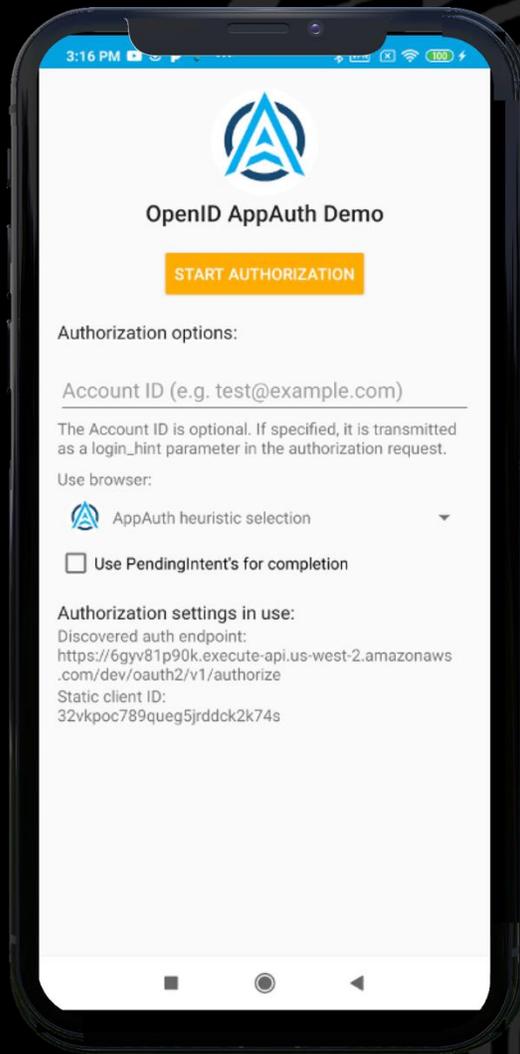
AppAuth-Android Demo App

AppAuth-iOS Demo App

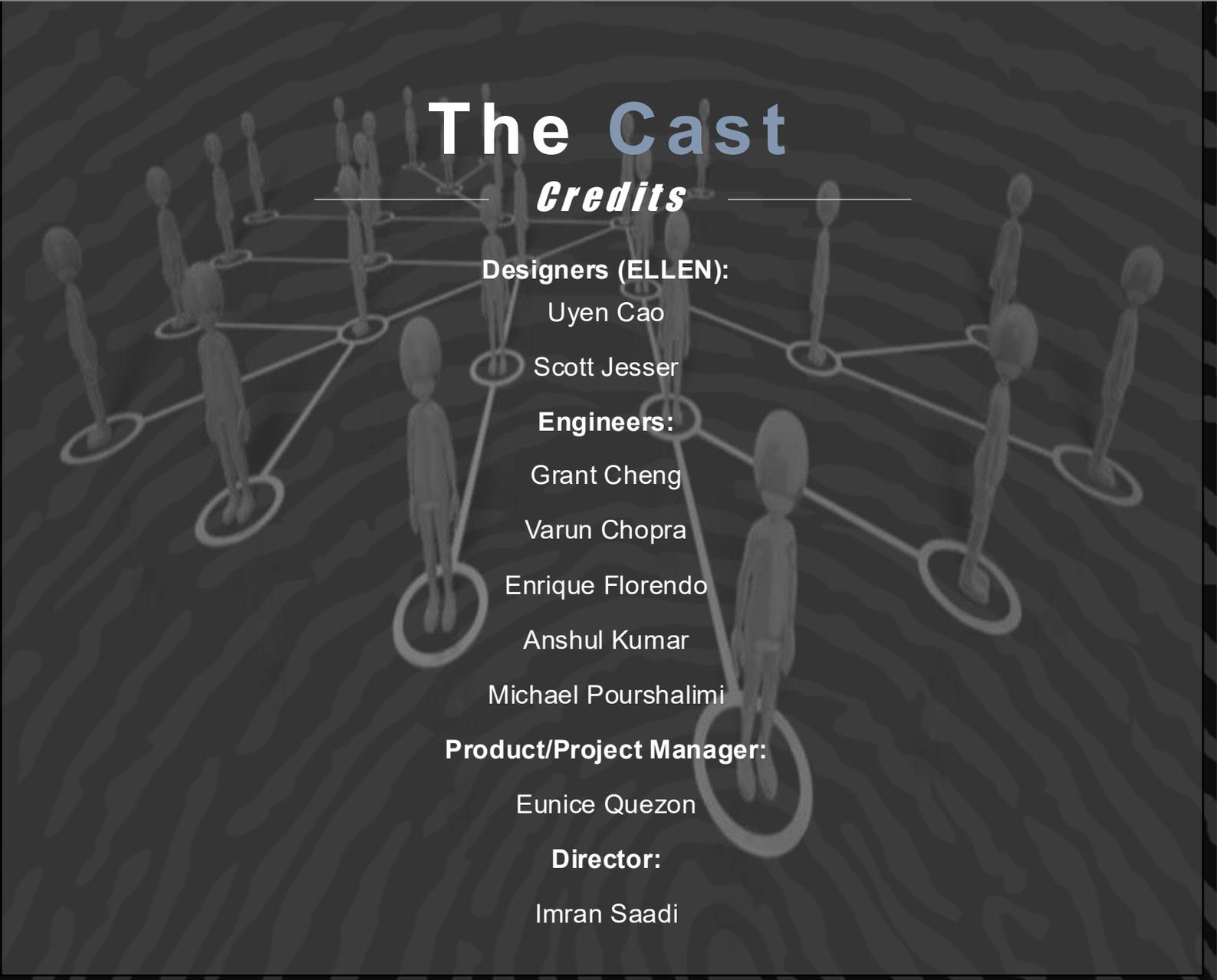
Our SSO backend is fully supported by all certified OAuth libraries.

The most common ones are AppAuth Libraries. We have setup demo apps for Android and iOS.

Note: demo apps are in our GitHub repo.



The Cast



Credits

Designers (ELLEN):

Uyen Cao

Scott Jesser

Engineers:

Grant Cheng

Varun Chopra

Enrique Florendo

Anshul Kumar

Michael Pourshalimi

Product/Project Manager:

Eunice Quezon

Director:

Imran Saadi



SSO+

THE END

Thanks for watching!