

Identity Wallets and the Web

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W3C 대한민국 회원사 워크숍 | 2023. 12. 08

A container of digital assets and credentials

Wallet

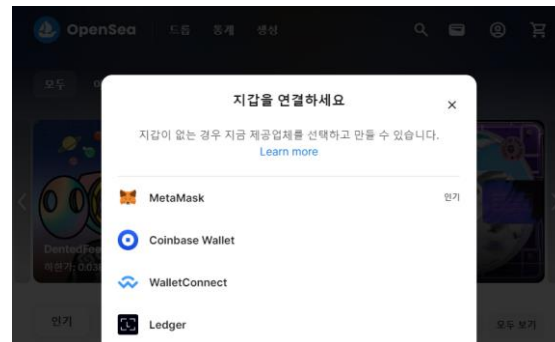
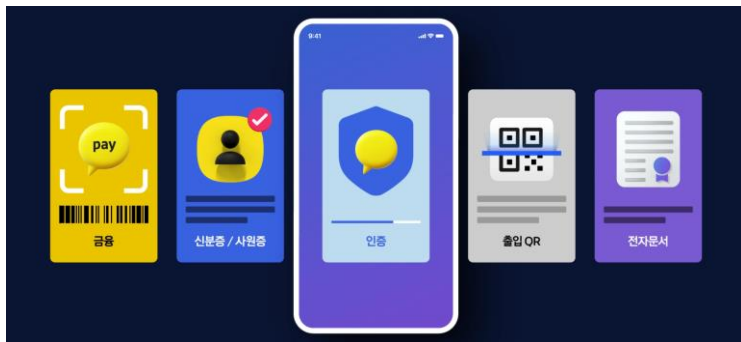
To be interoperable over the world

What is the Digital Wallet here?

Physical wallet (ID card, Credit card, Cash) ^{W3C DID/VC} ^{CBDC} ❌

Electronic wallet (Naver, Kakao) ❌

Crypto wallet (MetaMask, Coinbase) ❌



Definition of the Digital Wallet

Open Wallet Foundation (OWF)

<https://openwallet.foundation/>

Digital wallets store **digital assets, credentials, and useful items, such as tickets and keys.**

THE DIFFERENCE: OWF

OWF wallets will be **portable, highly secure, privacy-preserving, standards-based, interoperable, and multi-functional.**



DIGITAL WALLET ACCESS

Nearly all digital wallets are restricted **by vendor lock-in** from the banks, merchants, companies, or nations that issue them.

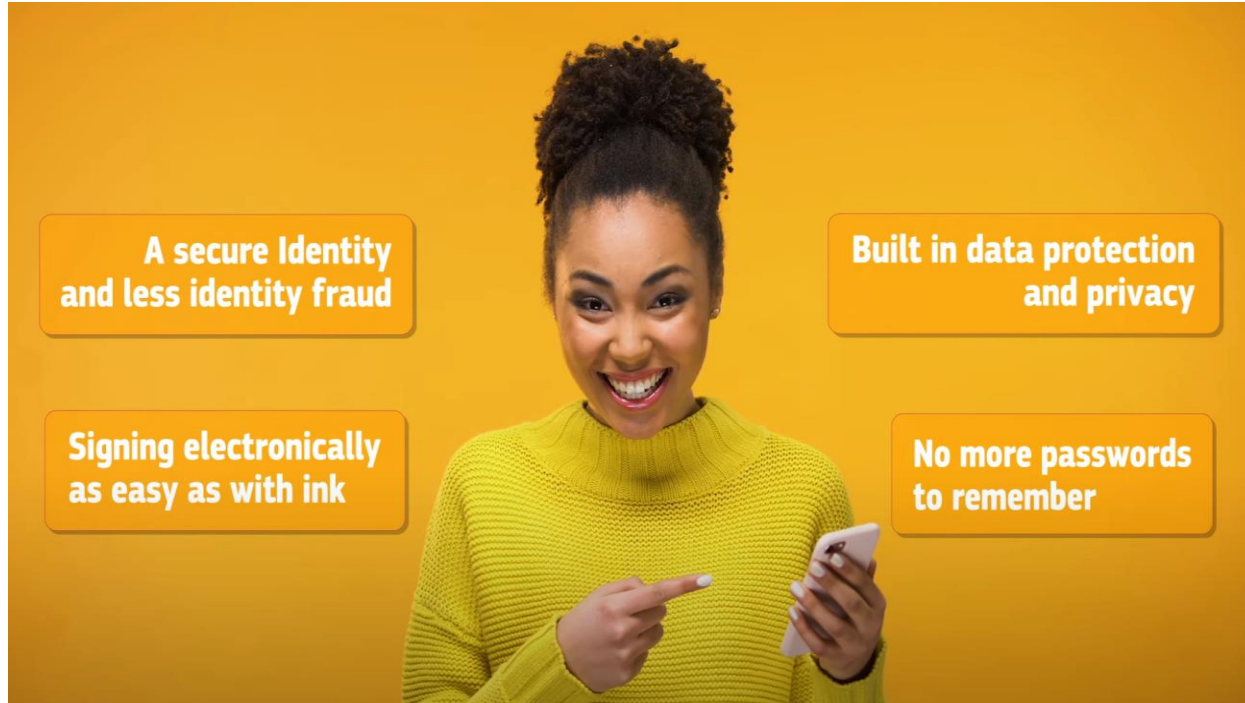


* Why the World Needs an Open Source Digital Wallet Right Now

<https://www.linuxfoundation.org/research/open-wallet-foundation>



European Digital Identity Wallet is Coming!



(1:30)

**EDIW wallet
can be used for:**

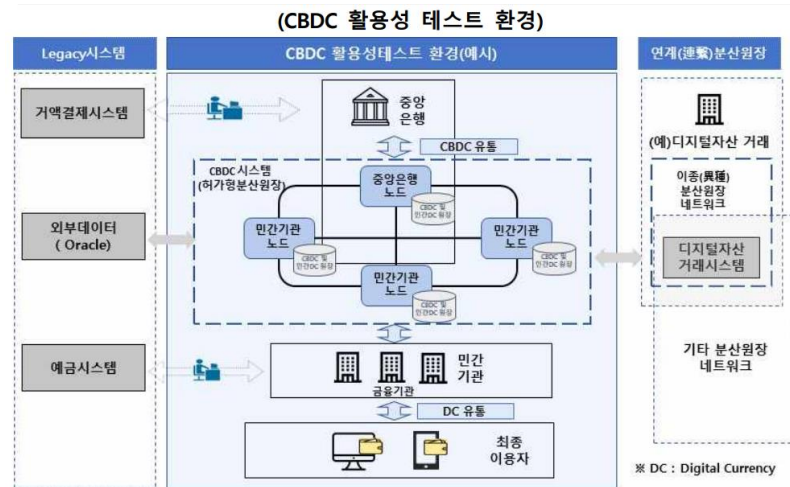
- Proving your age
- Medical certificates
- Opening a bank account
- Filing tax returns
- Applying for a university
- Renting a car
- Checking into a hotel

Digital Wallet in the CBDC

CBDC 활용성 테스트 요구사항 (2024.01 ~ 2025.03, 116억 규모)

- 신규 상세 아키텍처 설계
- 분산원장 네트워크 구성
- 거래 기밀성 지원 기능 탐색
- 이종 분산원장 연계 기능
- 민간 디지털통화 발행/환수/조회/이체/기록관리
- 전자지갑 발급/폐기/관리

내 모바일에는 몇 개의 전자지갑이 필요할까?



There is one interoperable world wide web

W3C

Leading the Web to its full potential
by developing protocols and guidelines
that ensure the long-term growth of the Web

Ian Hickson's Story (W3C and Google at the early stage)



Flutter

Co-founder, technical lead

2015-present

I co-founded the Flutter project, now the most widely used multiplatform UI framework, leading the project through the initial launch of Flutter 1.0 on Android and iOS in 2018 and continuing to today with support for macOS, Windows, Linux, the web, and Fuchsia. In my role as tech lead I fostered an active open source developer community while maintaining the highest standards of quality for our code and documentation.

WHATWG, HTML5

Co-founder, lead editor

2003-2015

I co-founded and then led the WHATWG standards organization, taking on the lead role as HTML specification editor. In this role I was responsible for the standardization of numerous now widely-deployed web technologies such as the <video> element, Web Sockets, Web Storage, and Web Workers. I also effected a significant cultural change in the web standards sphere, moving efforts into a radically more open environment and raising the quality expectations of web standards.

Notable achievements:

- [Acid2](#) and [Acid3](#) tests
- [HTML5](#)
- [WebSocket](#)

본문은 요즘 IT와 번역가 Chase가 함께, “히시(Hixie)”로 알려진 이안 히슨(Ian Hickson)이 2023년 11월 구글을 떠나며 개인 블로그에 쓴 <Reflecting on 18 years at Google>을 번역한 글입니다. 필자인 이안 히슨은 F1utter의 공동 창립자이자 리더이며, Acid2와 Acid3테스트, WHATWG, HTML 5 스펙, Pingback 스펙의 관리자이고, 웹 애플리케이션 1.0의 초안을 작성했습니다. 웹 표준의 지지자로 알려진 그는 CSS 등의 스펙 작성에서 중요한 역할을 담당했으며, CSS 2.1 스펙의 공동 편집자(co-editor)이기도 했습니다. 넷스케이프, 오페라 소프트웨어에서 근무하다가 2005년 구글로 자리를 옮겼습니다.

구글에서 처음 9년 동안 저는 [HTML과 관련 표준](#)을 연구했습니다. 웹에 좋은 것이 구글에도 좋은 것이기 때문에 웹을 위해 최선을 다하는 것이 제 임무였습니다(구글의 이해관계는 무시하라고 직접적으로 주문 받았을 정도입니다). 이는 오페라에서 근무할 때의 일과 비슷했습니다. 구글은 훌륭하게 저를 지원해줬습니다. 제 팀은 명목상으로는 ‘구글 오픈소스’ 팀이었지만, 전적으로 자율적으로 일했습니다(관련해서는 크리스 디보나(Chris DiBona)에게 고마움을 표합니다). 대부분의 업무는 노트북 하나만 들고 구글 캠퍼스의 아무 건물에 서서 했고, 제게 배정된 책상은 사용해본 적이 없을 정도입니다.

저희는 처음부터 근본적인 개방을 추구했기 때문에 건강한 오픈 소스 프로젝트를 쉽게 구축할 수 있었습니다. 또한 필터가 기술 책임자인 아담 바스(Adam Barth), PM인 팀 스니스(Tim Sneath), 엔지니어링 매니저인 토드 볼커트(Todd Volkert)와 같은 훌륭한 리더십을 수년 동안 유지할 수 있었던 것도 큰 행운이었습니다.

<https://news.hada.io/topic?id=11982>
<https://yozm.wishket.com/magazine/detail/2354/>
<https://ln.hixie.ch/?start=1700627373>
<https://software.hixie.ch/utilities/js/live-dom-viewer/>

W3C 이해하기

History

Since 1994

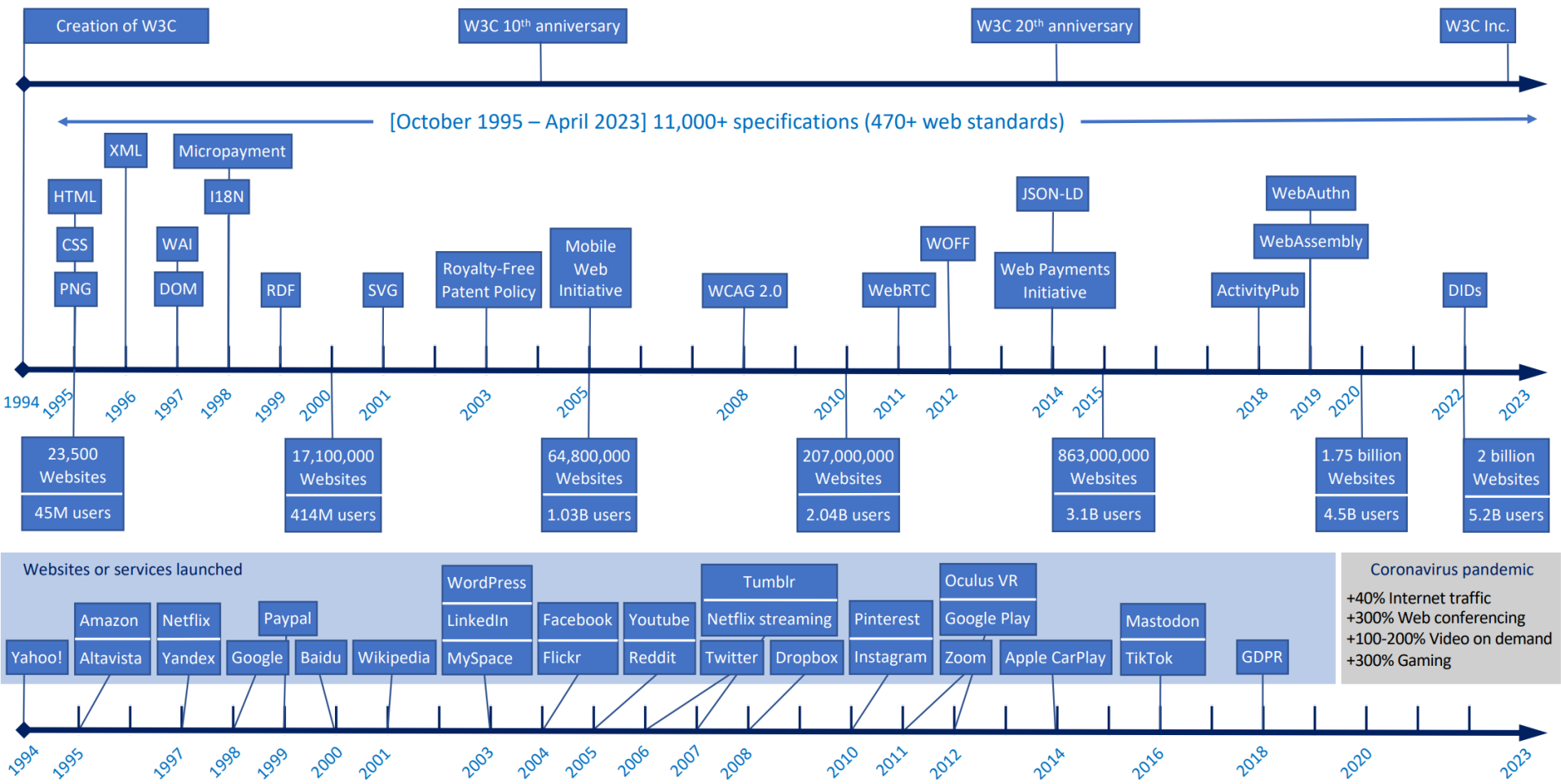
- Google, Mozilla, Apple, MS
• 브라우저 회사 중심의 'One Web'을 위한 표준화 기구로 시작
- Web 2.0 시대를 위한 기술 기반 제공 (Google, Mozilla, Apple, MS)
- Netflix 등 주요 빅테크 업체들은 모두 'One Web' 수혜자 ([lan's story](#))

Now

Year 2023

- NTT, VW, Alibaba, Consensys, Meta, Disney
• 45개국 393개 회사* 참여, 35명의 full time staff
- 23년 1월, Legal entity 출범 (W3C Inc.) => Governance 체계 변화!
- 브라우저를 넘어 다양한 산업 표준에 관여해 오고 있음
(Automotive, IoT, Metaverse, AI, Epub, Entertainment)
- TPAC 2023 참석 규모 (Sep 2023): 476명 (in-person), 315명 (remote)

* <https://www.w3.org/membership/list/>



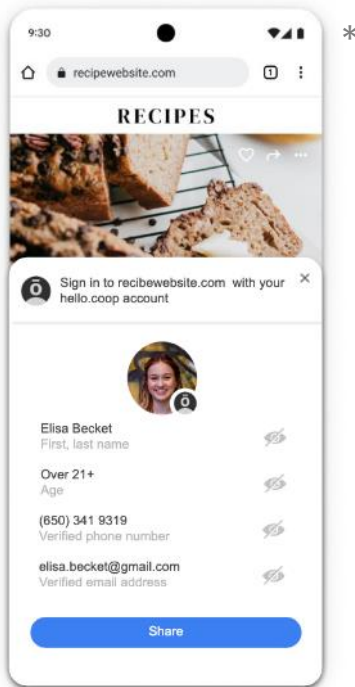
Identity Standards in W3C

W3C Federated Identity CG (FedID CG) https://www.w3.org/community/fed-id/	Participants: 240 Chairs belong to: https://enid.foundation/en/ (European netID) https://www.google.com/ (Google Chrome) https://www.microsoft.com/ (Microsoft/PassKey)
Web Identity Credential WG (Coming soon)	
W3C Decentralized Identity WG (DID WG) https://www.w3.org/2019/did-wg/	Participants: 126 (Organization: 60) Chairs belong to: https://entethalliance.org/ (Ethereum) https://www.midy.com/ (Avast, Gen)
W3C Verifiable Credentials WG (VC WG) https://www.w3.org/2017/vc/WG/	Participants: 116 (Organization: 54) Chairs belong to: https://www.microsoft.com/ (Microsoft/Platform) https://identity.foundation/ (DIF, USA)
W3C Web Authentication WG (WebAuth WG) https://www.w3.org/groups/wg/webauthn/	Participants: 104 (Organization: 35) Covers primitives APIs for accessing public key credentials
W3C Credential CG (CCG) https://www.w3.org/community/credentials/	Participants: 557 Supports industrial considerations (w/ OpenID, OpenWallet, IIW*)
W3C Privacy IG (PING) https://www.w3.org/Privacy/IG/	Participants: 131 Monitors privacy issues, Investigates new areas, and provides guidelines

* IIW: Internet Identity Workshop (<https://internetidentityworkshop.com/>)

a.k.a. WebID

FedCM (Federated Credential Management)



*

Federated Identity

Allows authorized users

to access multiple applications and domains

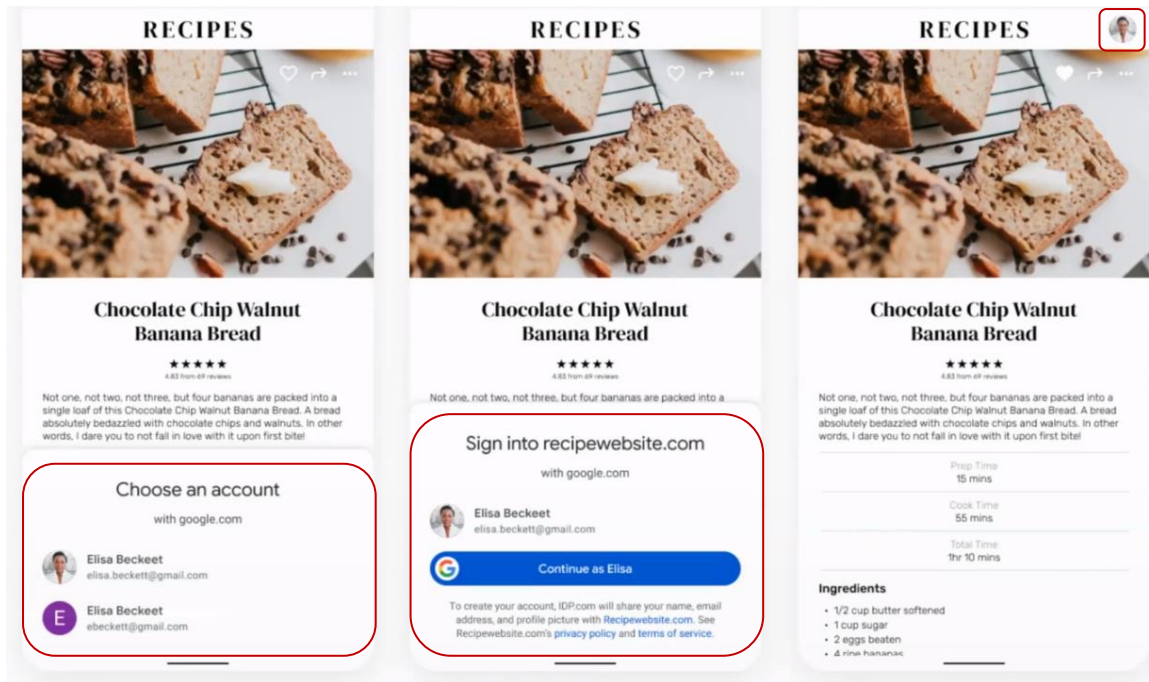
using a single set of credentials.

[Demo](#)

간편/소셜 로그인도 Federated Identity의 일종

* <https://github.com/w3ctag/design-reviews/issues/718>

FedCM (Federated Credential Management)



Entities on the login

1. User

=> Elisa Beckett

2. RP (Relying Party)

=> recipewebsite.com

3. IDP (IDentity Provider)

=> Google, Naver, ...

FedID CG Meeting in TPAC 2023

WG charter discussion

(Web Identity Credential WG, [charter draft](#))

Implementation status

(Chrome, Safari, Firefox, Brave)

Open issues discussion for FedCM

(e.g. Login Status API)

Joint meeting with Web Payments WG

- [Chrome Stable] Past – delta from last TPAC “where we are at”
 - The Baseline
 - Prerequisite: [IDP Login](#)
 - [Baseline](#)
 - [Context API](#)
 - [Login Hint API](#)
 - [Iframes API](#)
 - [Mediation \(Auto Reauthn\)](#)
 - [User Info API](#)
- [Chrome Canary] Under Active Development “what's our next step”
 - IdP Sign-in Status API
 - [IDP mark login](#) / [logout](#)
 - [Demo](#)
 - Under Origin Trial / [chrome://flags/#fedcm-idp-signin-status-api](#)
 - [Error Code API](#) ([chrome://flags/#fedcm-error](#))
 - [AccountAutoSelected Flag](#) ([chrome://flags/#fedcm-account-auto-selected-flag](#))
 - Hosted Domains API ([chrome://flags/#fedcm-hosted-domain](#))
 - [IDP Login](#) => “Nicolás sandbox”
 - [Demo](#)
 - Revocation API ([explainer only](#))
- Under Active Investigation “where we are going”
 - [AuthZ API](#) ([chrome://flags/#fedcm-authz](#))
 - [Wallet API](#) ([chrome://flags/web-identity-mdocs](#), Android only)
 - Public (longer) <https://www.youtube.com/watch?v=0FFOsisYtyQ>
- Desired but non-active Investigations
 - [Multi IdP API](#) ([chrome://flags/#fedcm-multi-idp](#))

W3C Verifiable Credentials

검증 가능한 크리덴셜 (자격증명: 운전면허증, 졸업증명서)

Verifiable Credentials (VCs)

Verifiable: Cryptographically secure, privacy respecting, and machine-verifiable

Credentials: Driver's license, Passport, Certificate of Graduation

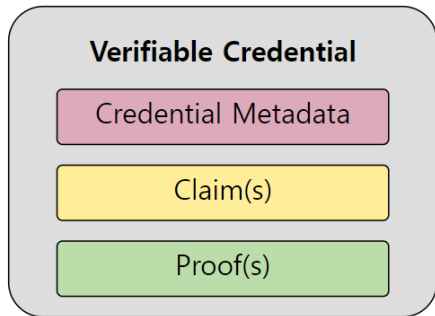


Figure 5 Basic components of a verifiable credential.

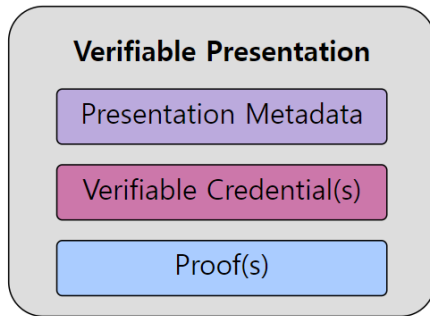


Figure 7 Basic components of a verifiable presentation.



Global interoperability

Sam Goto (<https://code.sgo.to/>)

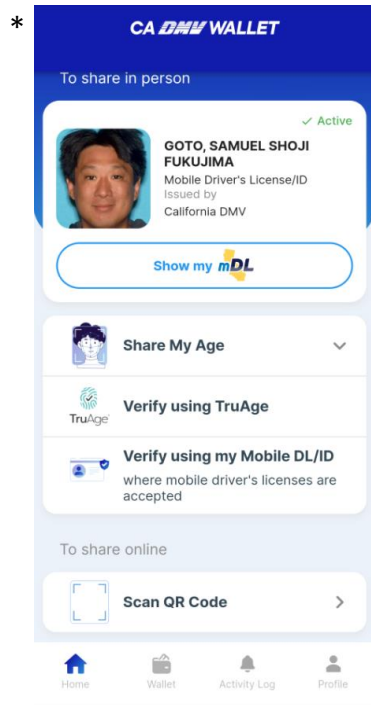
<https://chromium-review.googlesource.com/q/goto@chromium.org>

ISO/IEC 18013-5 defined mDL (driver's license)

<https://www.iso.org/standard/69084.html>

Parts of North America states have supported mDL now.

It can be presented via Android/iOS wallets apps. (e.g. [DMV](#))



* Mobile wallet credentials on the web Overview and risks

<https://docs.google.com/presentation/d/1Z7bIMTME1tAQAdO-Wr42oVNN3CRibkIASjbJdB1jYOc/>

Identity Credential API (Web Wallets API)

Chrome & Android goals for Identity Credential API

Wallet discovery and invocation
(From mobile wallet apps to websites)

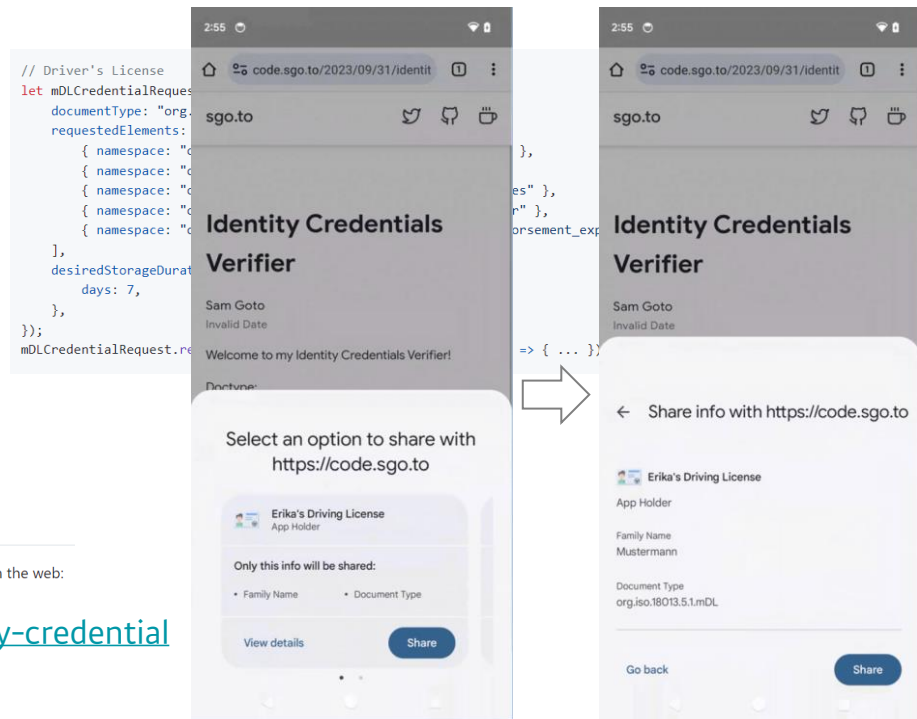
Seamlessly support multiple wallets

Proposals related to identity credentials

This repo is being used to work on, and hopefully converge, proposals related to identity credentials on the web:

- [Identity Credential](#)
- [Digital Credential](#)
- [navigator.identity.get\(\)](#)
- [Mobile Document Request API](#)

<https://github.com/WICG/identity-credential>



Identity Credential (Background and status for VCWG)

https://docs.google.com/presentation/d/1mz7AUjLc9y7zOU7CfLCsBSt3dGikN_x61tpoRaQCQko/

Meetings in W3C Credentials CG (W3C CCG)


다양한 산업/표준과의 연계 검토 및 새로운 표준 기술 발굴 역할

Meeting

W3C CCG - What's New in Mobile Driver License (mDL)?

Upcoming

Confirmed

 Log in to subscribe to this event

Date: 31 October 2023, 12:00–12:50 Eastern Daylight Time

Status: Confirmed

Repeats: weekly on Tuesday, starting from 2023-09-12, until 2026-06-30

Groups:  [Credentials Community Group](#) ( [View calendar](#))

Andrew Huges will provide the latest updates to ISO/IEC 18013-5 Mobile Driver License (mDL) standard.

Meeting

W3C CCG - OpenWallet Foundation Updates

Upcoming


Confirmed

 Log in to subscribe to this event

Date: 14 November 2023, 12:00–12:50 Eastern Standard Time

Status: Confirmed

Repeats: weekly on Tuesday, starting from 2023-09-12, until 2026-06-30

Groups:  [Credentials Community Group](#) ( [View calendar](#))

Daniel Goldscheider, Ry Jones, and Torsten Lodderstedt will provide the latest updates on the OpenWallet Foundation.

<https://www.w3.org/groups/cg/credentials/calendar/>

Wrap up

Identity wallets 기술 수요가 전세계적으로 크게 높아지고 있음 (Interoperability)

최근 브라우저 벤더에서도 Federated ID, Wallets API 등 표준에 큰 관심을 가짐

특정 주제는 국가 단위의 대응이 필요한 특징을 지님 (유럽, 중국, 일본 활동 참조)