EBSI Explained: Verifiable Credentials

An introduction

January 2023

Web 3.0 is said to have the potential to democratise the Web

What about Web3?

Platform centric services

Decentralised services

Web 1.0

Websites & directories with basic service offerings

Web 2.0

Web dominated by few large platforms that often provide services in exchange for personal data.

Web 3.0

Fair, privacy-preserving & decentralised web of services

Source: (Roukny, 2022) **Decentralized Finance: information frictions and public policies - Approaching the regulation and supervision of decentralized finance – DG FISMA**

Evolution of the Web Trust Model

Information is siloed, information is trusted because of the source, information is easily verifiable

The Web 3.0 trust model eliminates (or at least minimizes) the middleman role of the platform by leveraging verifiable information (stored on distributed ledgers). In Web3 the information can be trusted because it is verifiable by everyone.

Web 1.0

Sign in X

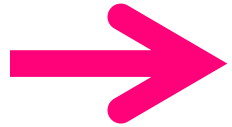
Sign in Y

Sign in Z

Trust Model relying on "trusted" third parties

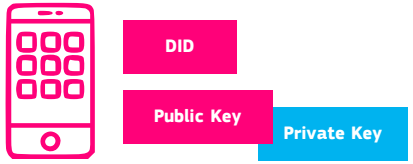
Web 2.0

Sign in with Google



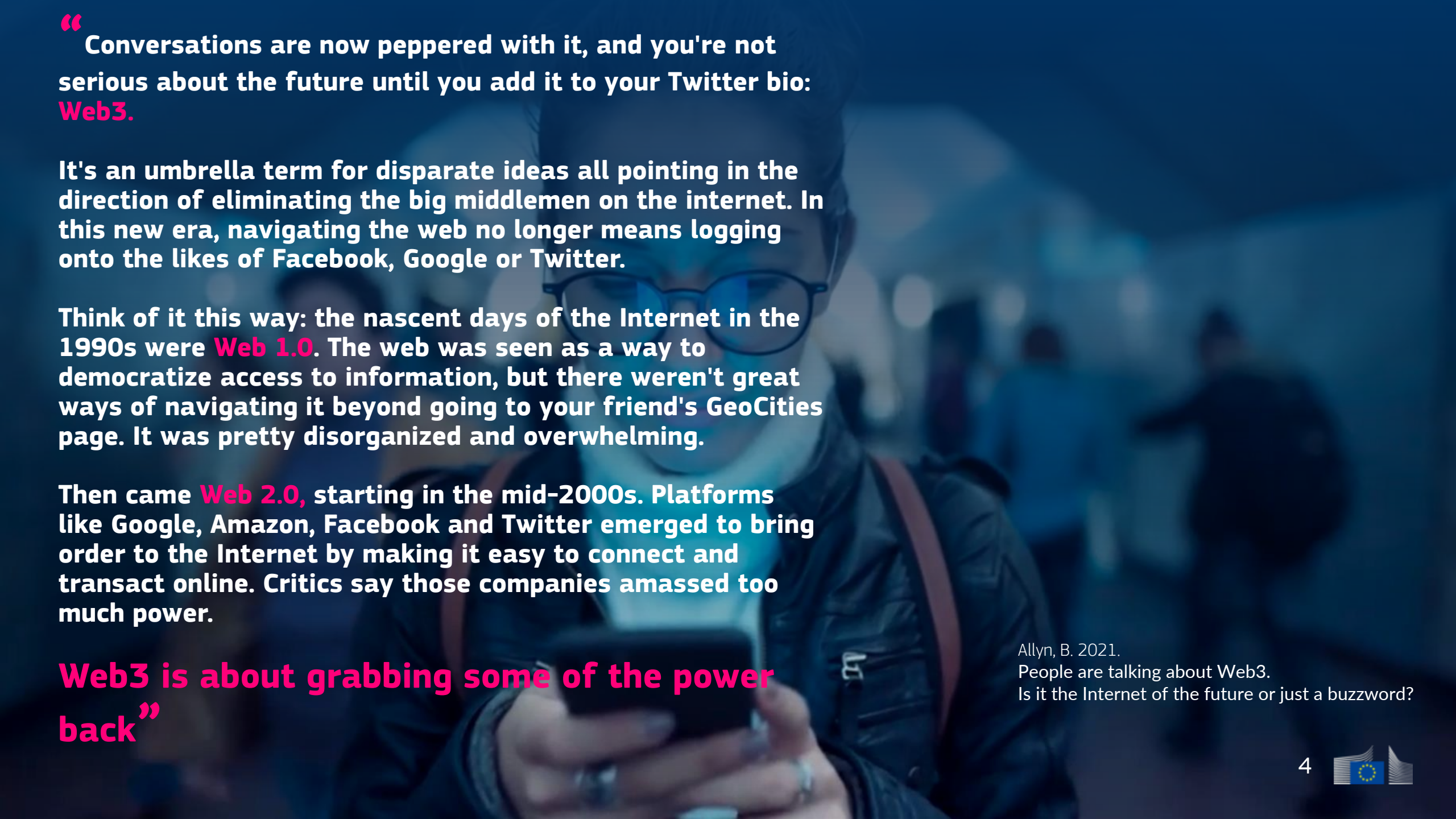
Trust Model relying on Verifiable Information

Web 3.0



Digital Wallets & Verifiable Credentials

Distributed Ledger Technology & Smart Contracts



“Conversations are now peppered with it, and you're not serious about the future until you add it to your Twitter bio: Web3.

It's an umbrella term for disparate ideas all pointing in the direction of eliminating the big middlemen on the internet. In this new era, navigating the web no longer means logging onto the likes of Facebook, Google or Twitter.

Think of it this way: the nascent days of the Internet in the 1990s were Web 1.0. The web was seen as a way to democratize access to information, but there weren't great ways of navigating it beyond going to your friend's GeoCities page. It was pretty disorganized and overwhelming.

Then came Web 2.0, starting in the mid-2000s. Platforms like Google, Amazon, Facebook and Twitter emerged to bring order to the Internet by making it easy to connect and transact online. Critics say those companies amassed too much power.

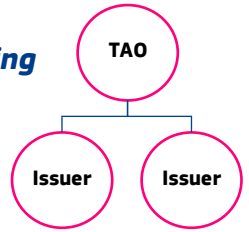
Web3 is about grabbing some of the power back”

Allyn, B. 2021.
People are talking about Web3.
Is it the Internet of the future or just a buzzword?

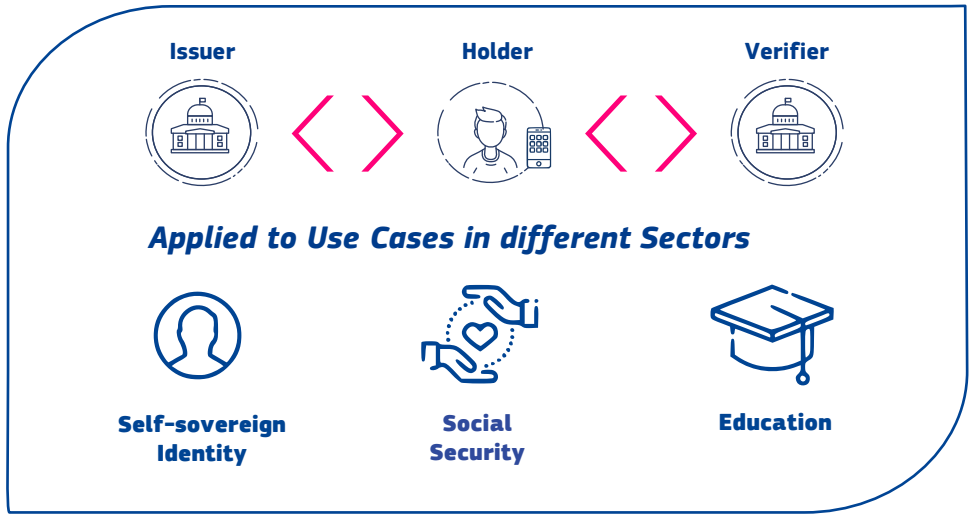
EBSI provides the elements of a Web 3.0 trust model

for sharing of **Verifiable Credentials** between Public Administrations, Citizens and Businesses

Digitalizing trust using Trust Model of Issuers



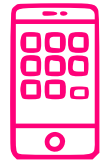
Exchanging information using Verifiable Credentials Framework



EBSI Verifiable Credentials Playbook

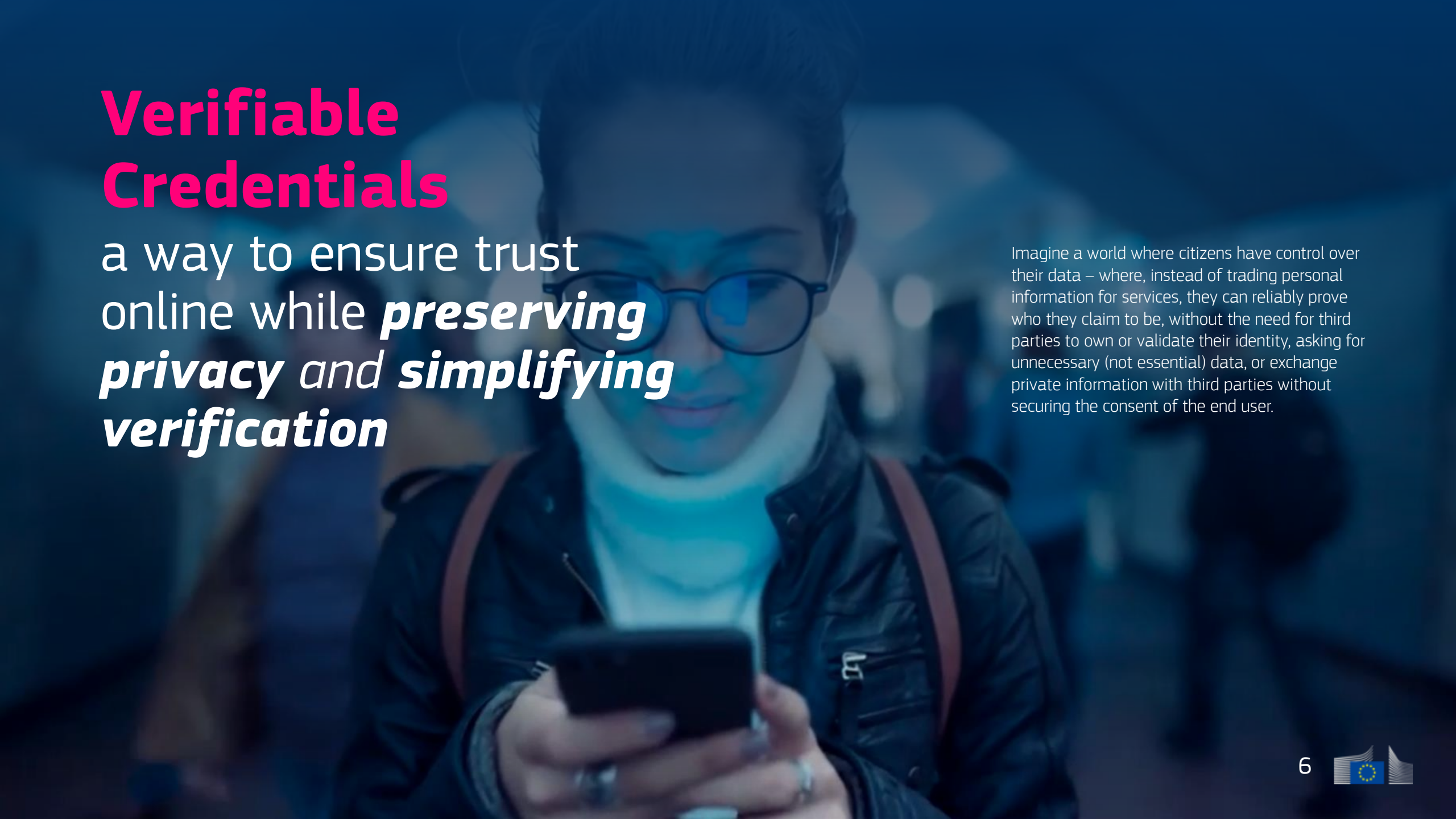
EBSI DID methods for Natural and Legal Persons

ebsi
European Blockchain



Achieving interoperability using Conformance Testing Service of Digital Wallets

Highly available and resilient source of information using permissioned Trust Registers deployed on EBSI's Blockchain supported by EBSI's Smart Contracts



Verifiable Credentials

a way to ensure trust online while ***preserving privacy*** *and* ***simplifying verification***

Imagine a world where citizens have control over their data – where, instead of trading personal information for services, they can reliably prove who they claim to be, without the need for third parties to own or validate their identity, asking for unnecessary (not essential) data, or exchange private information with third parties without securing the consent of the end user.

What are the benefits
of information sharing based on Verifiable Credentials?

01.

Are you an **Issuer?**

Cross-border friendly format.

With our standardised Verifiable Credentials data model, information's format and structure is unified across borders and domains – making it less costly for an ecosystem to form.

Read more:

CHAPTER 1; VC Explained – How to structure VCs?

CHAPTER 2: VC in action – Where the VC model is relevant to apply?

02.

Are you a **Holder?**

Self-sovereignty, privacy & usability.

Holders of data are in control of what data they share, and when, with verifiers, thanks to their digital wallets. They can also prove that the information they share belongs to them.

Read more:

CHAPTER 6 : OIDC4VC - How do holders request issuance and present VCs?

CHAPTER 7 : Digital Wallets - How do holders store and use VCs?

CHAPTER 3: DID Methods - How do holders prove that VCs belong to them?

03.

Are you a **Verifier?**

Easier & faster verification.

The Verifiable Credentials model allows verifiers to trust the data without needing to trust the source of it and to easily identify holders.

Read more:

CHAPTER 5: Issuer's Trust Model – How to trust issuers of VCs?C

CHAPTER 4: Digital Identity - How to identify holders of VCs?

Verifiable Credentials can be used in almost all sectors!

Below is a non-exhaustive list of what VCs can do

Food / Beverage

I want to guarantee / verify the **origin / authenticity of a product (e.g. organic product)**

Business

I want to guarantee / verify **the origin of funding.**

Health

I want to guarantee / verify the origin / authenticity of **a health certificate.**

Administration

I want to guarantee / verify the origin / authenticity of a **birth certificate**.

Transport

I want to guarantee / verify the origin / authenticity of **the consignments transported**.

Audit

I want to guarantee / verify the origin of **publications / books of accounts**

Diploma

I want to guarantee / verify the origin **of diploma credentials**

Identity

I want to guarantee / verify the authenticity of **the identity of a person / legal entity**

Energy

I want to guarantee / verify my **energy consumption is green.**

Law

I want to guarantee / verify the origin / authenticity of **the apostille**

Based on Open Standards

EBSI builds on existing open standards and recommendations

W3C standards and recommendations

- Decentralized Identifiers v1
- Verifiable Credentials Data Model v1.1
- Presentation Exchange v2

OpenID Connect

- OpenID Connect SIOP v2
- OpenID Connect for Verifiable Presentations
- OpenID Connect for Verifiable Credentials Issuance

eIDAS

- JAdES
- eID authentication and identification

JWT RFC family

- IETF RFC 7515-7520

Interested? Download the explained series

Get started with our EBSI explained: Verifiable Credentials series

01.

Verifiable Credentials Explained

02.

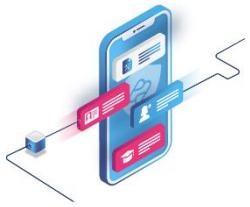
Verifiable Credentials in action

03.

Decentralised Identifiers (DID) Methods

04.

Digital Identity



05.

Issuers Trust Model

06.

Open ID Connect for Verifiable Credentials

07.

Digital Wallets

Click here for the full series