

**TRUST**  
Over **IP**

# **5th Anniversary Symposium**

19-20 November 2025

# 10-year TOIP Perspective

## ORIGINS

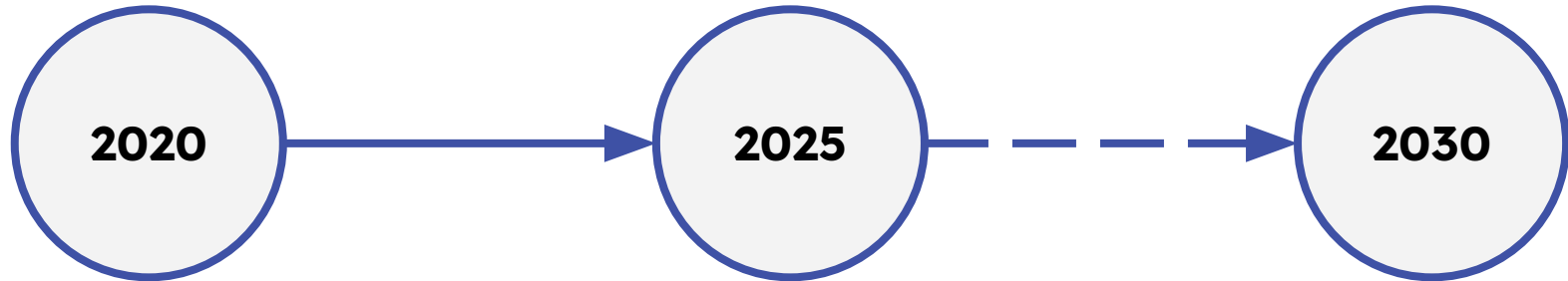
Where were we  
5 years ago?

## NOW

Where are we  
today?

## BEYOND

Where will we go  
in the next 5  
years?



# TOIP Origins

Where were we 5 years ago?



**2020**

# ToIP Origin Story

The Trust over IP idea began germinating in 2019 with Aries concept RFC 0289: The Trust Over IP Stack.

 <https://github.com/decentralized-identity/aries-rfcs/blob/main/concepts/0289-toip-stack/README.md>

**The Aries Concept RFC intended to define a standard information network architecture that developers could implement to establish trusted relationships over digital communications networks.**

- Introduced a complete architecture for Internet-scale digital trust that integrates cryptographic trust at the machine layer with human trust at the business, legal, and social layers
- Addressed a significant and widely-recognized gap: a means for any peer to establish trust over these digital connections
- Linux Foundation paper called **The ToIP Stack** published in August 2019
- December 2019 article in a special edition of IEEE Communications Standards Magazine on decentralized digital identity





# The Covid Effect...

Trust over IP was formally founded in 2020 - The Year of Covid.

**Covid had a profound and lasting impact on TRUST - and forced a hard reset in almost every aspect of life:** government, health, education, trade, travel, finance, science...



**... TRUST on centre stage.**

# Covid's (long lasting) Effect on TRUST

*Eroded, Polarized, Declined, Fragmented, Strained, Transformed*

The COVID-19 pandemic had a **profound and lasting impact on trust** - reshaped how societies function, polarize, and seek information.

Area	Lasting Effects on Trust
Government	Deep erosion, especially in polarized democracies. Perceived incompetence, politicization of health measures, long-term skepticism of authority
Science & Public Health	Politicized trust, divided by ideology
Media	Rise of alternative platforms and sources, accusations of bias/censorship, echo chambers, fragmentation, social media influencers,
Institutions (General)	Conditional trust based on shared values, not institutional legacy, values-driven allegiance
Personal Relationships	Social tension, divides over beliefs, health behavior, and risk tolerance damaged trust in friends/family
Finance	Distrust in central banks and Wall Street; rise of crypto, fintech, and peer-led finance
Technology & Platforms	Big Tech gained trust for services but lost some over content control and surveillance concerns, rise in systems designed to be trustless

# Trust Tech to the Rescue?

## Verifiable Credentials

### Verifiable Credentials Data Model 1.0

Expressing verifiable information on the Web

W3C Recommendation 19 November 2019



## Decentralized Identifiers

### Decentralized Identifiers (DIDs) v1.0

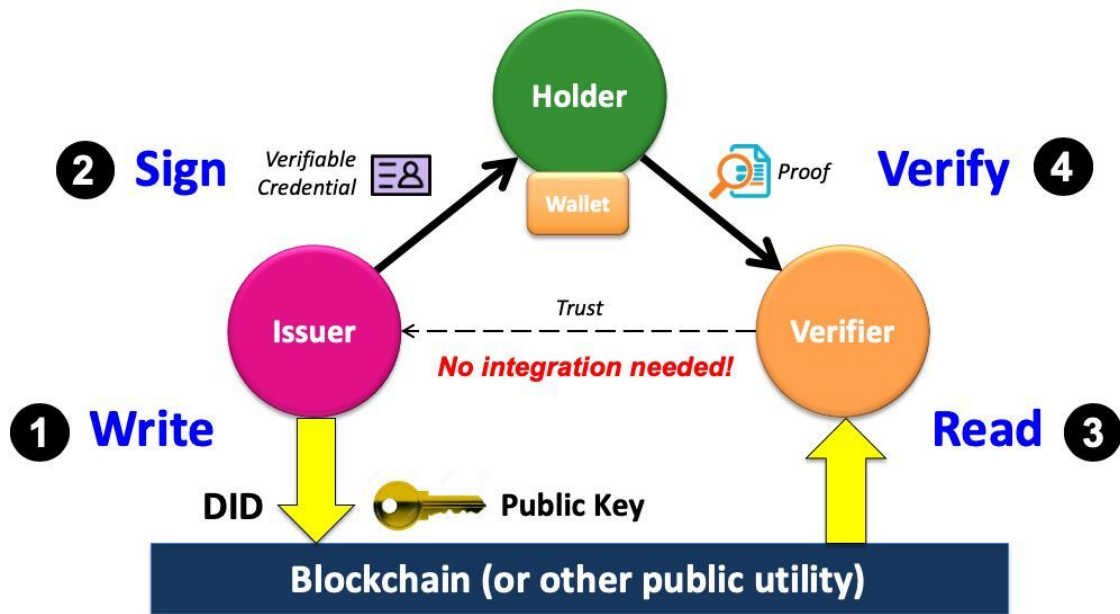
Core Data Model and Syntaxes

W3C Working Draft 09 December 2019





# Early Trust Triangle



# Not so fast ...

The specs, standards and concepts to meet the digital trust demand in 2020 were still *emerging tech*.

- **Verifiable Credentials** had only recently been recognised as a W3C Recommendation
- **DID** Core 1.0 was a W3C Working Draft
- **Blockchain, DLTs and Cryptocurrencies** were maturing but not widely adopted (and not widely trusted...)

# Hype Cycle for Emerging Technologies, 2020



## Less than 2 years

- Health passport

## 2-5 years away

- Bring your own identity

## 5-10 years away

- Authenticated provenance
- Digital twin of the person

[gartner.com/SmarterWithGartner](https://gartner.com/SmarterWithGartner)



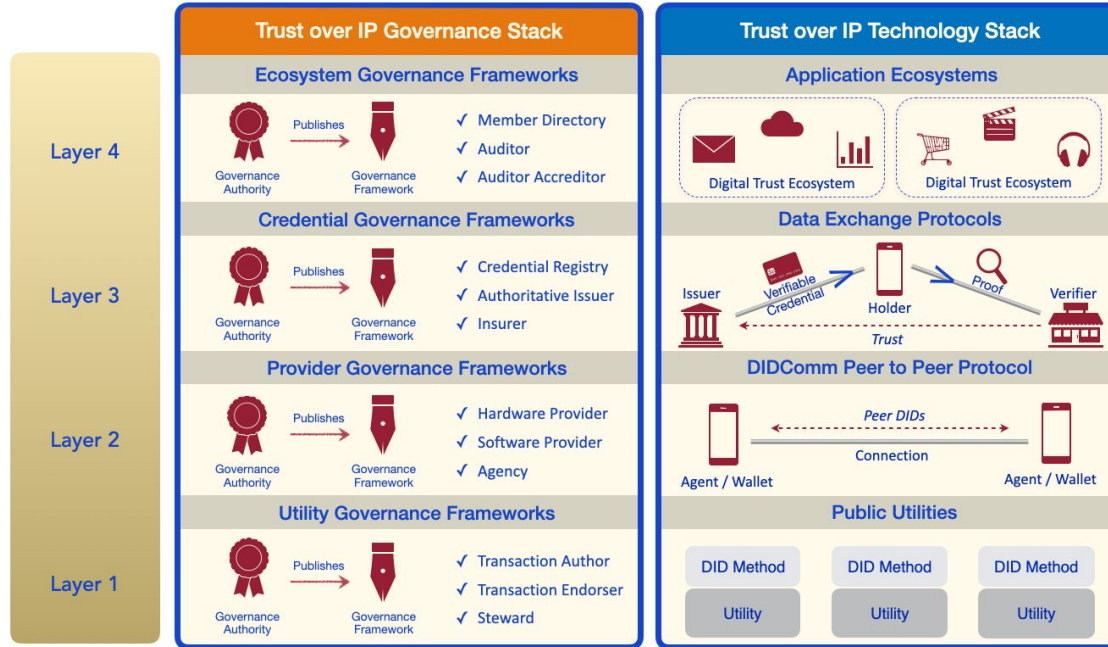
# **TOIP Official Launch in May 2020**

Officially launched May 2020 with *27 founding member organisations*

## **7 Working Groups**

- Governance Stack
- Technology Stack
- Ecosystem Foundry
- Utility Foundry Working Group
- Inputs and Semantics Working Group
- Concepts and Terminology Working Group
- Interoperability Working Group for Good Health Pass (IWG-GHP)

# TOIP Introduces the Governance Stack



# TOIP Early Impact



## TolP Foundation Hosts the Interoperability Working Group for Good Health Pass

**2021: Good Health Pass Collaborative** brought together more than 125 global companies and organizations from across the health, travel, and technology sectors to define principles and standards for digital health passes aimed at restoring international travel and restarting the global economy.

Good Health Pass Collaborative Releases Draft Blueprint for Digital Health Passes in Advance of G7 Summit.



# TOIP Early Impact

TOIP releases a host of **Digital Governance Resources**, and makes a strong claim to be THE GO-TO SOURCE for digital trust governance frameworks.

- **Governance MetaModel+**
- The [ToIP Governance Framework Matrix](#) and [Companion Guide](#).
- The [ToIP Trust Assurance and Certification Template](#) and [Companion Guide](#).
- The [ToIP Trust Criteria Matrix Template](#) and [Companion Guide](#).
- The [ToIP Governance Architecture Specification V1.0 \(PDF\)](#).
- The [ToIP Governance Metamodel Specification V1.0 \(PDF\)](#).



## ToIP Governance Metamodel Specification

Version 1.0

21 December 2021

This publicly available specification was approved by the ToIP Foundation Steering Committee on 21 December 2021.

The mission of the [Trust over IP \(ToIP\) Foundation](#) is to define a complete architecture for Internet-scale digital trust that combines cryptographic assurance at the machine layer with human accountability at the business, legal, and social layers. Founded in May 2020 as a non-profit hosted by the Linux Foundation, the ToIP Foundation has over 300 organizational and 100 individual members from around the world.

Please see the end page for licensing information and how to get involved with the Trust Over IP Foundation.

# TOIP Early Impact



Enabling global identity  
Protecting digital trust

GLEIF has been one of the earliest contributing members of TOIP and a Steering Committee member since 2024, providing valuable insight and real-world testing ground for TOIP technologies, governance, and principles.

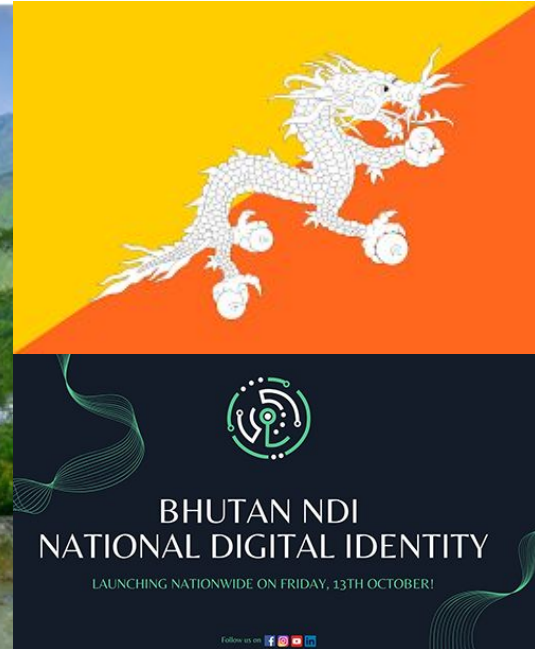
## Press Release 07 February 2022

GLEIF and Trust Over IP Foundation Publish Ecosystem Governance Framework for Digitally Verifiable LEI New, standardized, and decentralized ecosystem based on Trust Over IP Governance Metamodel supports digital identity for all legal entities globally.

The Framework has been created in full accordance with standards and recommendations of the Trust Over IP Foundation (ToIP), hosted by the Linux Foundation. It is the most comprehensive framework ever developed based on the ToIP Governance Metamodel.

# TOIP Early Impact

TOIP members and Governance Models contributed to Bhutan's National Digital Identity Governance Framework.



# TOIP Early Impact

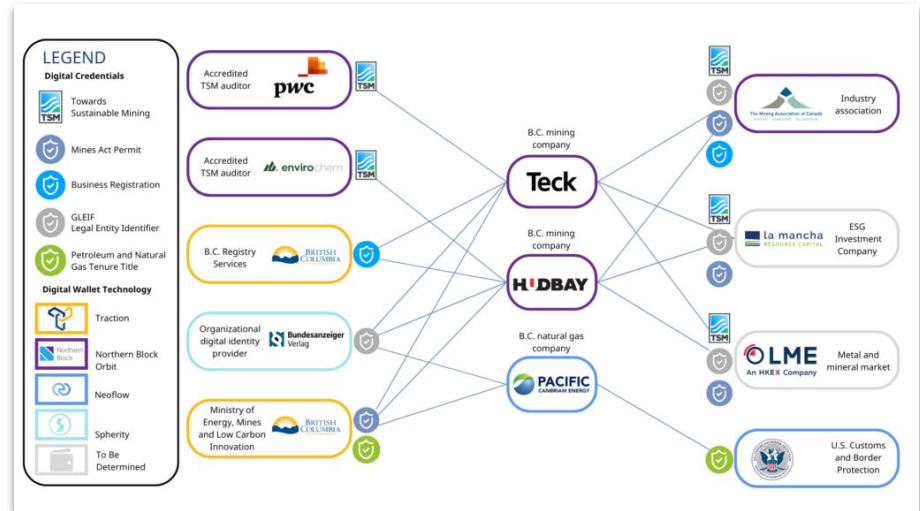
## Digital Credentials : Transforming Mining with Open-Source Innovation

The Energy & Mines Digital Trust, in partnership with British Columbia's Ministry of Energy, Mines and Low Carbon Innovation, empowers natural resource operators with digital tools that support B.C.'s sustainable economic development while maintaining high levels of environmental protection.

*Improving trust, accuracy, and efficiency when sharing sustainability data.*



Ministry of  
Energy, Mines and  
Low Carbon Innovation

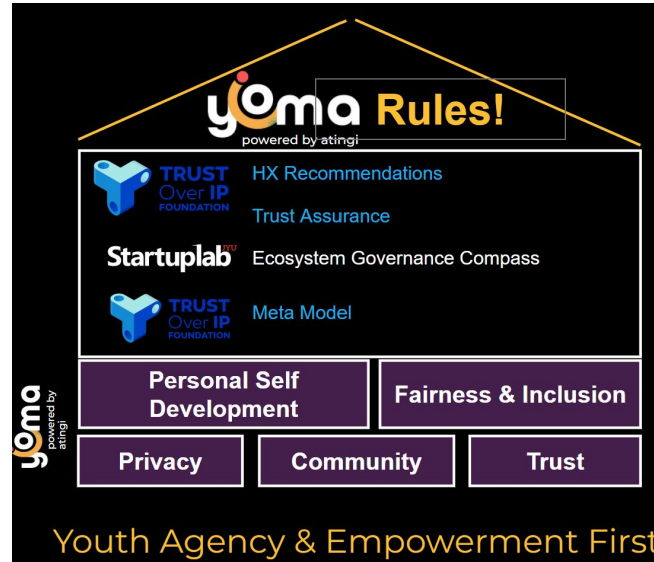


# TOIP Early Impact

**Yoma Rules!** A governance framework for the Youth Agency Marketplace  
(2021-2)



Youth-led  
participatory design



Operationalising ToIP Governance Architecture.  
CCA 4.0 License for others to use



Yoma Rules! Principal Document  
*The Interim Governance Framework for the Yoma  
Community*

Version 1.0  
19 December 2021

This publicly available (guide, template, spreadsheet, etc.) was approved by the ToIP Foundation Steering Committee on [date of approval (dd month yyyy)].

The mission of the [Trust Over IP Foundation](#) is to define a complete architecture for internet-scale digital trust that combines cryptographic assurance at the machine layer with human accountability at the business, legal, and social layers. Founded in May 2020 as a non-profit hosted by the Linux Foundation, the ToIP Foundation has over 300 organizational and 100 individual members from around the world.



# TOIP Early Impact



## Content Provenance and Authenticity

- **The Coalition for Content Provenance and Authenticity (C2PA)**  
*Content Credentials* Specification - a growing standard that helps attach a digital “nutrition label” to content; showing when it was made, how it was edited, and by what capture devices or software.
- **CAWG (Creator Assertion Working Group)**  
*A joint ToIP/DIF WG presently housed at DIF:* focuses on making sure that individual and organizational content creators can identify themselves with their content and provide additional information for their audience to understand their content.
- **TOIP’s TSP (Trust Spanning Protocol)**  
provides a strong foundation for *online trust* between people, platforms, and tools - making sure that when something claims to come from someone, it actually does.



# Truly Meeting the Trust Demand?

While hopes were high for quick adoption of emerging trust technologies, the reality was that we were still in early days.

- Mainly proofs of concept, exploratory use cases ...
- General value propositions were vague ...
- Little understanding of commercial models ...
- UI / UX clunky...
- Governance was still often an afterthought ...
- Very little tooling / librairies / SDKs available ...
- Difficulty finding right product-market fit ...

**Digital Trust as a business / social concept is largely unknown, still bundled with cybersecurity.**

# TOIP Pushes On...

- **November 2022:** First public review draft of the [ToIP Technology Architecture Specification V1.0](#).
- **February 2023:** ToIP Joins the Open Wallet Foundation as an Associate Member
- **2023** [did:webs Method Specification](#)
- **April 2024:** First Implementers Draft of the [Trust Spanning Protocol Specification](#)
- **April 2024:** [Trust Registry Query Protocol Specification](#) Implementers Draft
- **Sept 2024:** KERI Suite WG formed (public review drafts published)

# TOIP Now

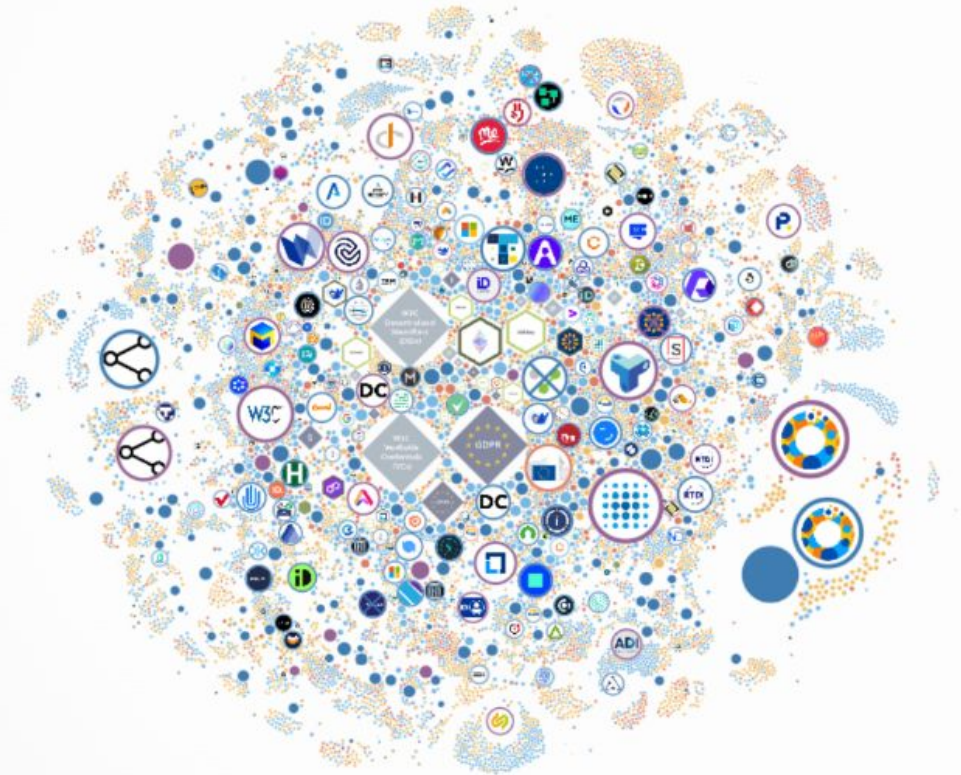
Where are we today?



**2025**

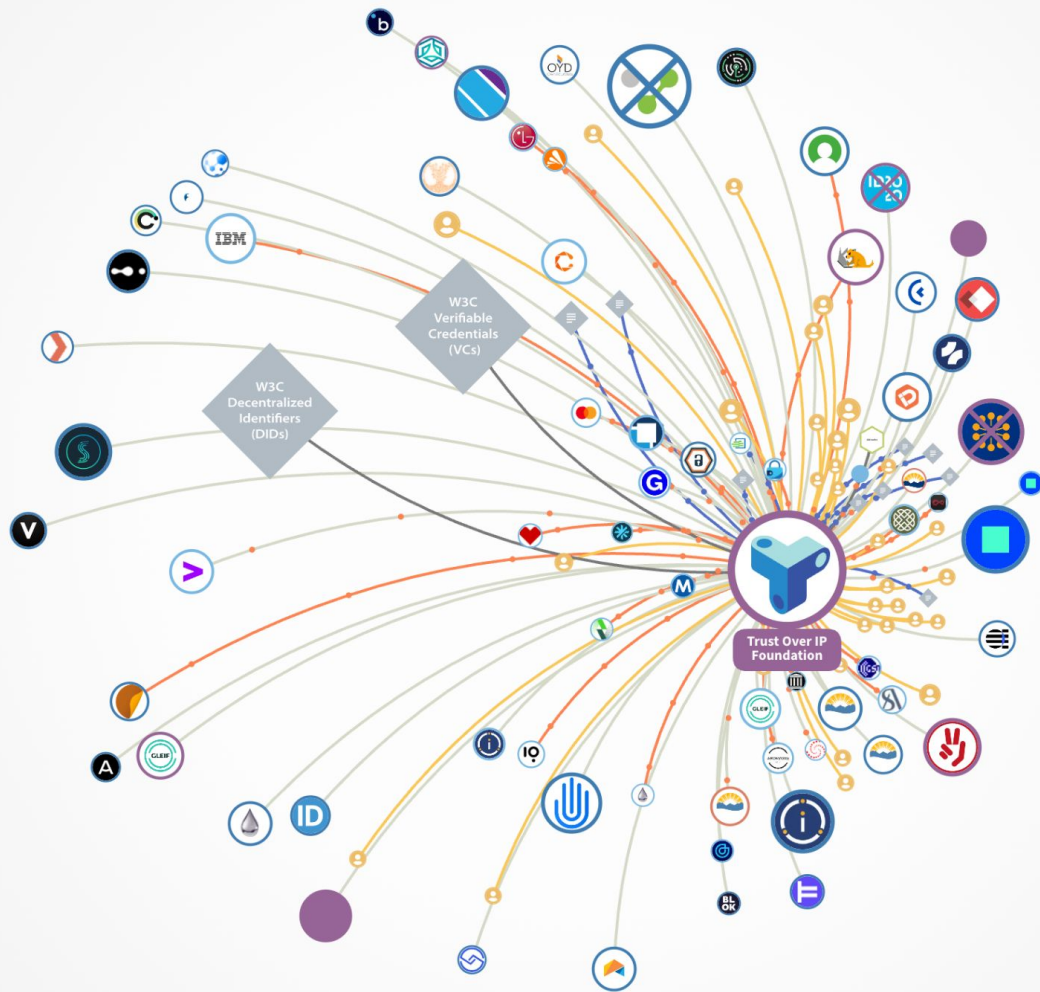
# Web of Trust

[www.weboftrust.org/](http://www.weboftrust.org/)



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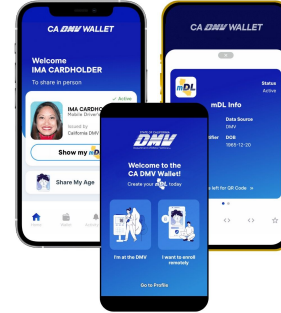
[www.weboftrust.org/](http://www.weboftrust.org/)



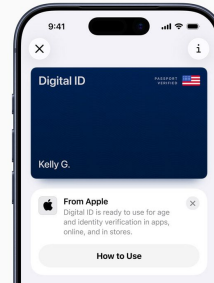
# Digital Trust Tech in Production - Today

Today - 2025 - Where are we?

- Maturing tech
- Stable standards
- Advanced tooling
- In production, expansion of use cases, specific value propositions
- Edge cases
- Focus on interoperability / cross-jurisdiction
- Exploring of commercial models
- Explosion of Government ID & mDLs
- Expansion of Verticals
  - Telco
  - Healthcare
  - Travel & Hospitality
  - ...



EU Digital Identity  
**Wallet**





# TOIP Maturing

Now with over 500 organizational and individual members

- Moved into the newly formed **Linux Foundation Decentralized Trust (LFDT)** umbrella, as the first Joint Development Foundation standards project to join LFDT.
- **Increasing Outputs** from WGs:
  - Trust Spanning Protocol, Trust Registry Query Protocol, MetaModel companion guides...
- **Evolution** of our organisation: bringing together the Governance WG & EFWG
- **Dedication of KERI Suite:** moved out of tech stack for more dedicated focus on specs and protocols

# TOIP Maturing

- The world is catching up, recognising the need for the work we've been doing the past 5 years ...
- **Governance** still in focus, i.e. C2PA Conformance Program uses the TOIP Governance Toolkit
  - Starting to see the fruits of all the labour: seeing Gov Frameworks being built based on our toolkits
  - Basic framework, principles remain unchanged

# Ecosystem & Governance Presenter Series



Almost 50 presentations from experts sharing experiences in working in and building digital trust ecosystems, products and services.



# the **First Person Project**



**Real people.  
Real trust.  
No intermediaries.**

A global infrastructure for social verification.

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**And a New Working  
Group**

Decentralized Trust Graph  
Working Group

# **Trust in AI**

## **Trust in Agentic AI**

### **Trust in AI Agents**

AI Working group: Humanity, TSP & MCP & A2A work together

# TOIP Beyond

Where will we go?



**2030**

# Peering into the Future...

- **First Person Project** - matures, as 'human-only' corners of the internet emerge
- **AI Agent Trust** - warp speed toward UX that
  - Mature Tech - fades into background, embedded in products and services
  - Digital Identity become mainstream
  - Verifiable credentials (of multiple flavours) are widely used - whether we see them or not
  - Standards widely adopted
  - Specialised tooling addressing edge cases ...
  - Interoperability, inclusion of agents and personhood ...
  - Settling of commercial models

**Digital Trust as a business / social concept becomes solidified**

# TOIP Contributors

TOIP contributors are all volunteers!

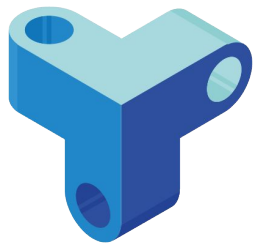
We are a welcoming community

Not just for tech-focus people - TOIP is accessible to all!

***Thanks*** to all who have supported the work of TOIP.

Please Join us and help move this important work forward, for a better, more secure, more trustworthy digital world.





**TRUST**  
Over **IP**

**Thank You!**