



How Trust Registries Prevent Fraud, Scams, and Abuse

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northernblock.ca

ICANN79 - Digital Trust Panel, March 6, 2024



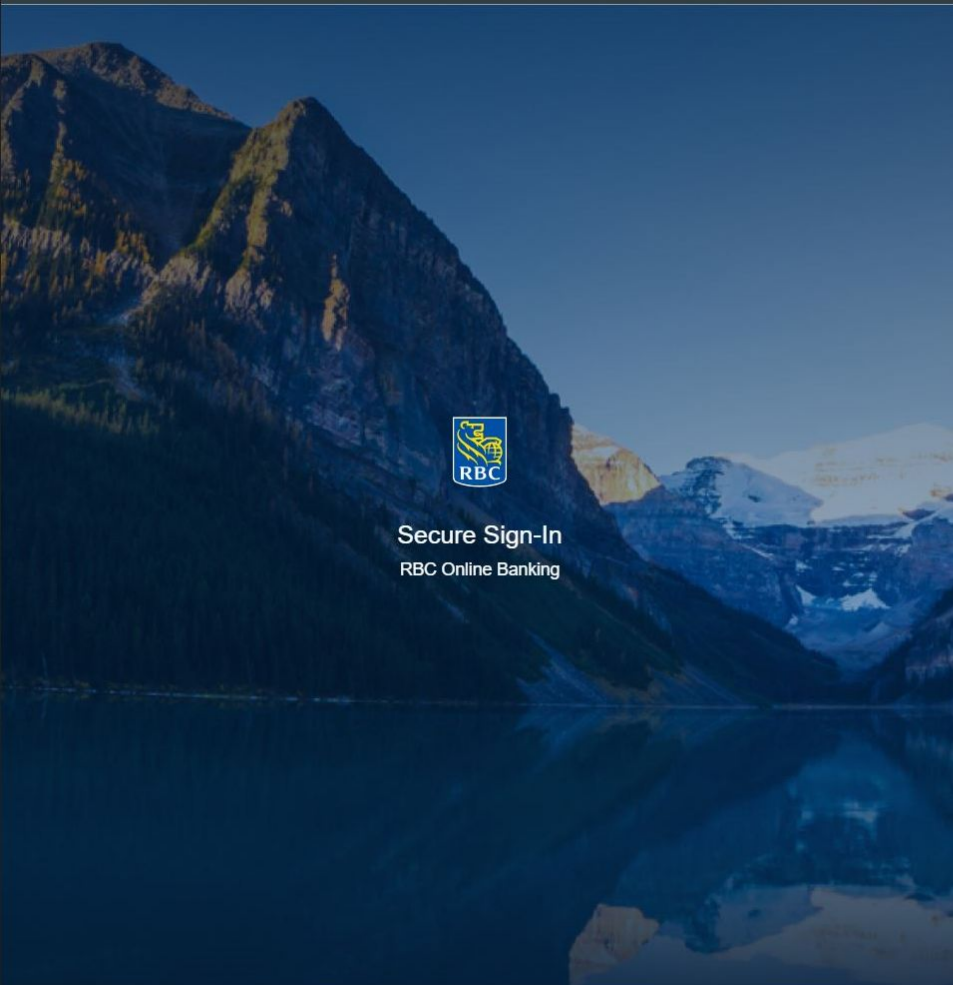
“Help ensure a
stable, secure, and
unified global
Internet”



“Build a trusted
internet for
Canadians”



“Enable trusted
digital interactions”



18:05:57 (UTC)
Sat, Feb 24, 2024

Client Card or Username

--

7

Save client card or username

Next

Recover Your Username

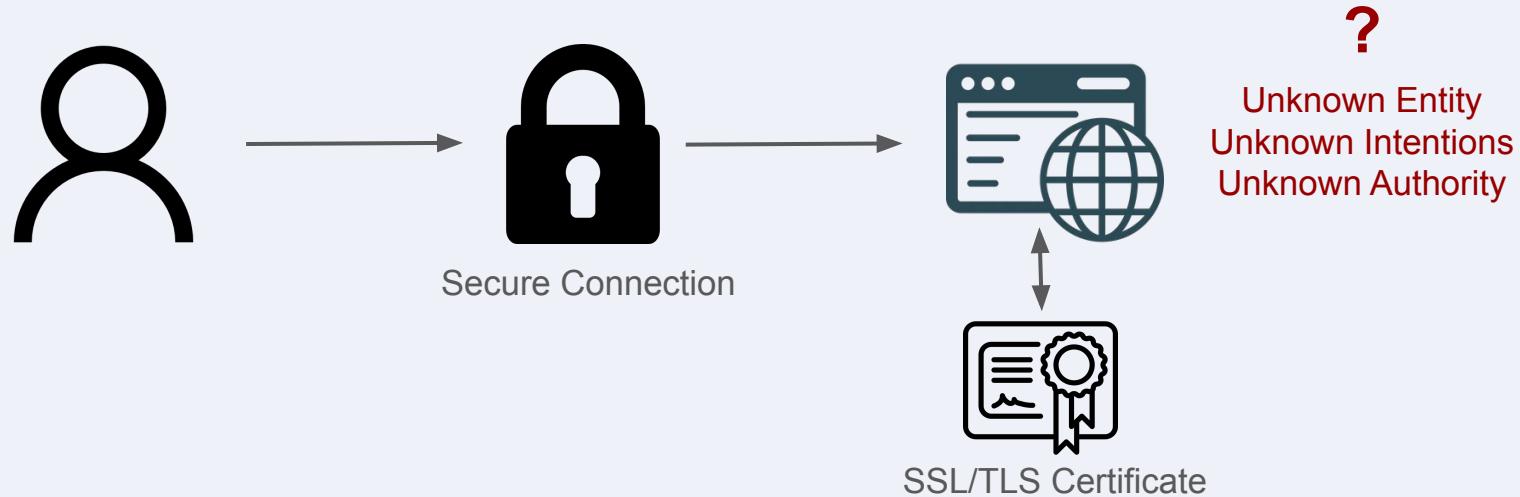
Enrol in Online Banking

Important Notices

As of June 2022, RBC Online Banking will no longer

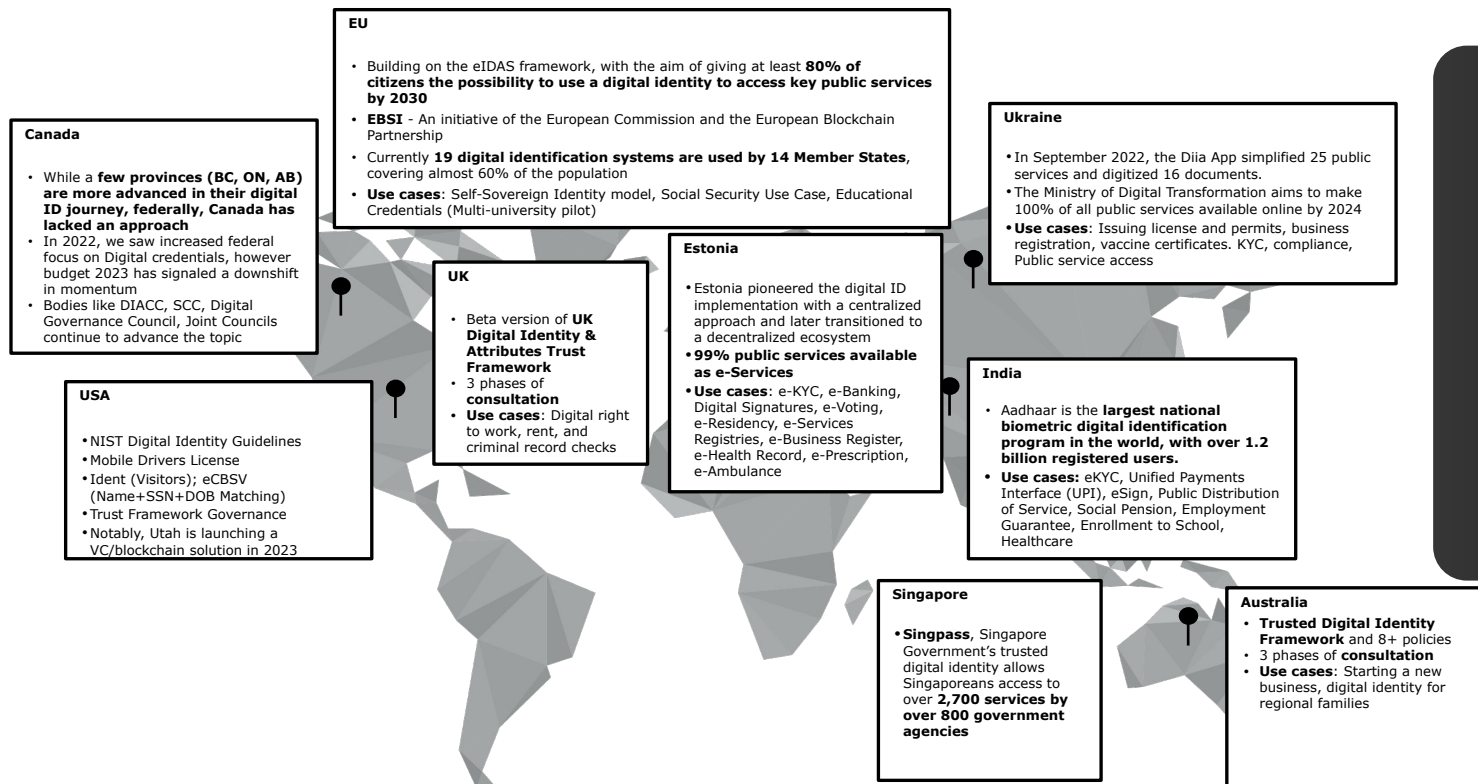


There is a **missing trust layer** on the internet



SSL/TLS certificates ensure encryption but do not verify the entity's **integrity** or **intentions**.

In an effort to help enable 'Digital Trust', global governments are investing in Digital Credential programs

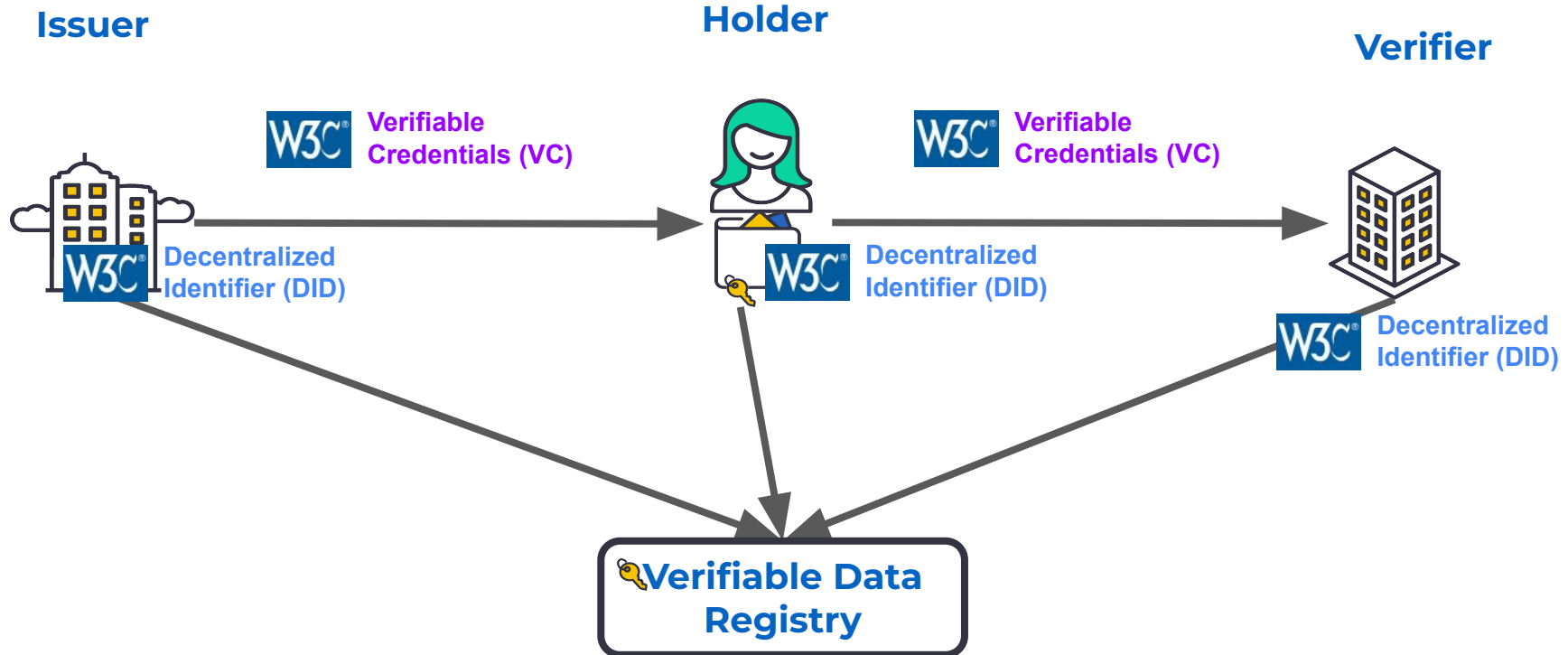


Digital Identity Ecosystems

Gartner predicts over a third of national governments will offer citizens mobile-based identity wallets by 2024. Governments are facing new responsibilities in emerging digital identity ecosystems, with expectations to ensure trust, innovation and adoption across sectors and borders. To achieve this, governments must make high-assurance digital identity easy to obtain and relevant for diverse target groups of end users and service providers.

Digital Credentials as a Tool for Digital Trust

(Based on Open Standards and Open Source Code)



PKI, schemas, metadata, revocation registries

When any entity is presented with a **claim**, there are three things they want to ensure:

1 That the claim **hasn't been falsified** at any point in time (cryptographic verifiability) = **technical trust**

2 That the claim has **accurate representation** (authentication) = **human trust**

3 That the claim has **authority** (authorization) = **human trust**

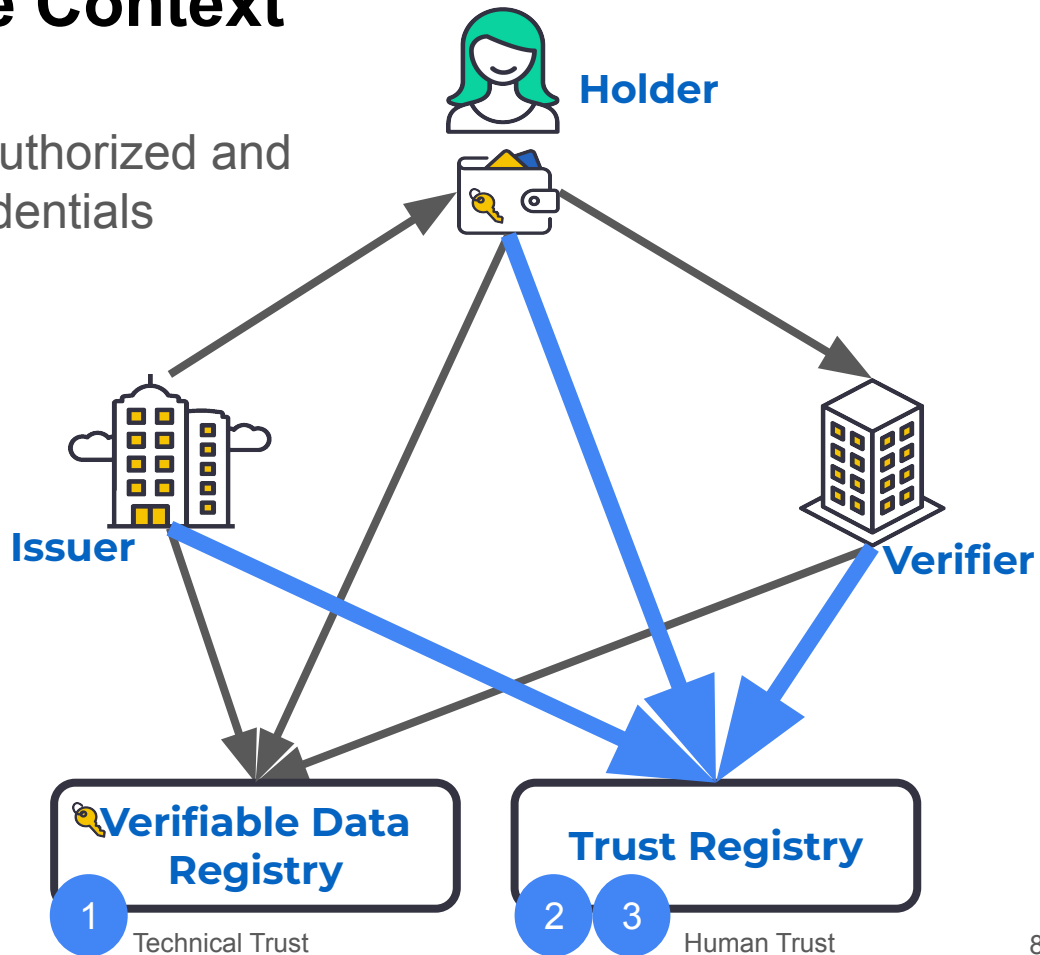
Requires domain-specific governance

Trust Registries - In The Context of Digital Credentials

Contain information about who is authorized and trusted to issue or verify digital credentials

- Enable entities to seek authoritative information as inputs for making trust decisions.
- Trust registries are governed by domain-specific authorities

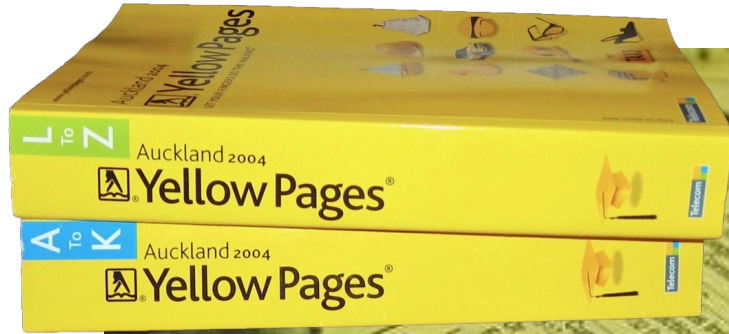
Trust registries provide valuable digital trust inputs independently of digital credential ecosystems



The internet's missing trust layer stems from a **lack of authoritative attribution**, which Trust Registries aim to address.

Entity → Identifier(s) → Claim(s)

Example 1 *Trust Registry*



Attribution:

Entity → Identifier(s) → Claim(s)

Company → Phone Number → Nature of Business

Plumbing Services Inc. → (123) 123-1234 → Plumbing Services

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The ICAO Master List and ICAO Health Master List

This page provides the possibility to download the ICAO Master List (CSCA public key certificates for the authentication of Electronic Machine Readable Travel Documents) and the ICAO Health Master List (public key certificates for the authentication of Electronic Health Proofs - certificates of vaccination, testing and/or recovery from COVID-19).

1. The ICAO Master List

The ICAO Master List contains the Country Signing Certificate Authority (CSCA) public key certificates of ICAO PKD members that have been passed to ICAO through diplomatic channels and are therefore trusted by ICAO.

Attribution:

Entity → Identifier(s) → Claim(s)

Country → CSCA Public Key Certificate → Authority to Issue Travel Documents

Country of Examplestan → CSCA Public Key Certificate XYZ123 → Authorized to Issue Passports and Other Travel Documents for Examplestan

Availability

The ICAO Master List is available for download at the bottom of this page, subject to the terms and conditions outlined herein. It is also part of the ICAO PKD, available for download by ICAO PKD participants. The contents of the PKD can also be downloaded, subject to terms and conditions, [here](#).



<https://trustregistry.nborbit.ca/>

This Beta version,

- Enables anyone to **create any new trust registry** through a web interface
- Enables every trust registry to possess a **Decentralized Identifier (DID)** that is anchored in DNS records signed with DNSSEC
- Allows the administrator to **manage registrant entries** and update registrant entry states in an append-only manner
- Enables the trust registry to be published onto a public website for **discovery** purposes
- Enables the trust registry to be **queried** from third-party applications

Example 3

Trust Registry



Decentralized
Identifier (DID)



Global ccTLD Authority Registry (G-CAR)

Authoritative Credential Issuers

The Global ccTLD Authority Registry (G-CAR) serves as a trust registry of verified authorities responsible for managing country code Top-Level Domains (ccTLDs) worldwide.

All 4 Current 3 Terminated 1 Expired 0 Revoked 0

NAME	PUBLIC IDENTIFIERS	CREDENTIAL NAME	STATUS	STATUS SINCE
CIRA-DEMO	- did:sov:2amTTg45vZKGRQ8SqaWNjx - https://www.cira.ca/ 1 (877) 860-1411 - NA			
Canadian Internet Registration Authority (CIRA)	- did:sov:QFzF1qBqzmG - https://cira.ca/			
CZ NIC	- NA - https://www.nic.cz/ - NA - NA			
Canadian Internet Registration Authority (CIRA)	- did:sov:QFzF1qBqzmG - https://cira.ca/ 1 (877) 860-1411 - NA			

Attribution:

Entity → Identifier(s) → Claim(s)

ccTLDs → DID(s), Website, Emails → Authorized TLD Issuers

CIRA → did:sov:2amTTg45vZKGRQ8SqaWNjx & cira.ca →
Authorized to issue verified .CA digital credentials

Demo Example Trust Registry: <https://g-car.trustregistry.nborbit.ca/>

Example 4

Trust Registry

Verified C2PA Organizations

[Membership List](#)

Decentralized
Identifier (DID)



Coalition for
Content Provenance
and Authenticity

This is a list of all the Coalition for Content Provenance and Authenticity (C2PA) verified media publishing companies.

[All 2](#)[Current 2](#)[Terminated 0](#)[Expired 0](#)[Revoked 0](#)

NAME	PUBLIC IDENTIFIERS	BUSINESS ADDRESS	STATUS	STATUS SINCE
Thomson Reuters	- did:web:reuters.com - https://www.reuters.com/	19 Duncan Street, Toronto, Ontario, Canada	Current	Feb 28, 2024, 6:36 AM
Registration Number: 386348649 Country: Canada Primary Contact: Steve Hasker Associated Press - did:web:apnews.com - https://apnews.com/				

Showing 1 to 2 of 2 results

Attribution:

Entity → Identifier(s) → Claim(s)

Media Outlet → DID & Website → Verified Content Creation

Thomson Reuters → did:web:reuters.com &
https://www.reuters.com/ → Authorized to Publish News Articles
under the Thomson Reuters Brand

Demo Example Trust Registry: <https://c2pa-companies.trustregistry.nborbit.ca/>

Summary: How **Trust Registries** Prevent Fraud, Scams, and Abuse

- 1 By providing a comprehensive framework for digital signatures, enhancing the verification of trust online with necessary context.
- 2 By ensuring that digital signatures accurately represent endpoints, bridging the gap in context and authenticity in existing systems.
- 3 By offering a broader solution to internet trust issues beyond digital credentials.
- 4 Content authenticity and the broader trust problem on the internet could drive quicker adoption of trust registries.
- 5 Can be deployed independently by a single entity without full ecosystem support.
- 6 The decentralized internet requires a trust layer that maintains its ethos.
- 7 Necessitates multiple centralized governing authorities for high-integrity, verifiable information.

Example 5

Trust Registry



Decentralized
Identifier (DID)

did:web:canada-ror.trustregistry.nborbit.ca

Recognized Canadian Trust Registries

Registry of Registries

This trust registry manages a list of recognized Canadian trust registries. To be used for discovery purposes.

All 4 Current 4 Terminated 0 Expired 0 Revoked 0



NAME	PUBLIC IDENTIFIERS	CREDENTIAL NAME	STATUS	ST
Office of the Superintendent of Financial Institutions (OSFI)	- did:web:ofsi-bsif.trustregistry.nborbit.ca - https://ofsi-bsif.trustregistry.nborbit.ca - NA - NA	Office of the Superintendent of Financial Institutions (OSFI)	1 Current	Ma
Content Provenance and Authenticity (C2PA)	- did:web:c2pa-companies.trustregistry.nborbit.ca - https://c2pa-companies.trustregistry.nborbit.ca - NA - NA	Verified C2PA Organizations	1 Current	Ma
Description:		This is a list of all the Coalition for Content Provenance and Authenticity (C2PA) verified media publishing companies.		
Mining Association of Canada	- did:web:mac-members.trustregistry.nborbit.ca - https://mac-members.trustregistry.nborbit.ca - NA - NA	Mining Association of Canada (MAC) Mining Members	1 Current	Ma
Global ccTLD Authority Registry (G-CAR)	- did:web:g-car.trustregistry.nborbit.ca - https://g-car.trustregistry.nborbit.ca - NA - NA	Global ccTLD Authority Registry (G-CAR)	1 Current	Mar 3, 2024, 5:43 PM

did:web:canada-ror.trustregistry.nborbit.ca

Resolve Clear

Copy link to result Check Compliance

RESULT DID DOCUMENT RESOLUTION METADATA DOCUMENT METADATA

```
{
  "@context": [
    "https://www.w3.org/ns/did/v1",
    "https://w3id.org/security/suites/jws-2020/v1",
    "https://w3id.org/security/suites/ed25519-2020/v1"
  ],
  "id": "did:web:canada-ror.trustregistry.nborbit.ca",
  "authentication": [],
  "service": [],
  "verificationMethod": [
    {
      "id": "did:web:canada-ror.trustregistry.nborbit.ca#key-1",
      "type": "Ed25519VerificationKey2018",
      "controller": "did:web:canada-ror.trustregistry.nborbit.ca",
      "publicKeyBase58": "B6AJ9gr2maU2CmsW3qTVYXQvDd8dkMsVkJzXGys8VMJ"
    }
  ],
  "alsoKnownAs": [],
  "assertionMethod": [],
  "dnsRecord": {
    "dns": "canada-ror.trustregistry.nborbit.ca",
    "tlsa": [
      {
        "usage": 3,
        "selector": 1,
        "match": 0,
        "key": "042095e748b28aa8d3a42ce386d3d77240f05e82ddf2b90102f758c38ad266e244dd",
        "keyBase58": "6013eacd20bfcf24bb824ae7512e6d84964af53c13ea4aa3ce6773985a1fbb"
      }
    ]
  }
}
```

Demo Example Trust Registry: <https://canada-ror.trustregistry.nborbit.ca/>



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Northern
Block

Join us in our mission
to establish more trust
on the internet.



<https://trustregistry.nborbit.ca/>