ToIP Governance Architecture 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.

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Table of Contents

Document Information

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Revision History

Version	Date Approved	Revisions
1.0	21 December 2021	Initial Publication

Terms of Use

Terminology and Notation

All terms appearing in **bold** in this **specification** are listed in either the ToIP Core Glossary (based on the ToIP Core terms wiki) or the ToIP Governance Glossary (based on the GSWG terms wiki.) For more information see the Terms Wiki page of the Concepts and Terminology Working Group.

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in **RFC 2119**.

1. Purpose and Motivations

The purpose of this ToIP **specification** is to specify the standard **requirements** that apply to all ToIP-compatible **governance frameworks** (GFs) regardless of their layer in the ToIP stack. The technical counterpart to this **specification** is the ToIP Technology Architecture Specification.

The overall purpose of the **ToIP governance stack** is to enable users of the **ToIP technology stack** to make **trust decisions** (especially those requiring **transitive trust**) based on GFs that include both **human-auditable requirements** and **machine-testable requirements**. While GFs are expected to be specialized for all four layers of the **ToIP stack**, certain interoperability **requirements** apply to all ToIP-compliant GFs regardless of layer. The goal of this **specification** is to specify those interoperability requirements in one place.

2. ToIP Governance Metamodel Specification

The Trust Over IP Foundation has developed a single metamodel for GF documents called the **ToIP governance metamodel**. Because it brings together all **requirements** for the structure and content of ToIP-compliant GFs in one place, it is defined in a separate **specification**. All ToIP-compliant GFs MUST conform to the **requirements** of the ToIP Governance Metamodel Specification.

3. Identification Requirements

To support **transitive trust** across trust boundaries, ToIP-compliant GFs and their components and **authorities** need to be identified by persistent, verifiable globally unique identifiers.

1. The following MUST have **public DIDs** compliant with the ToIP Technology Architecture Specification:
    a. **Governing authorit(ies).**
    b. **Administering authority** (if any).
    c. **Primary document.**
    d. All **governed parties** fulfilling **roles** defined in the GF (e.g., **issuers**, **verifiers**, **trust registries**).
2. The following SHOULD have **public DIDs** or **DID URLs** compliant with the ToIP Technology Architecture Specification:
    a. Each **controlled document.**
    b. Each **policy**, **rule** or other normative subcomponent of a **controlled document.**
3. All **DIDs** and **DID URLs** specified in this section are subject to the following **policies**:
    a. The **DID** for a GF document MUST remain the same for all versions of the document it identifies.
    b. A new `versionId` parameter value MUST be assigned for every version of the identified document.
4. The GF MUST include one or more **policies** specifying the format for version identifier values and the **process** for assigning them.
    a. These **policies** SHOULD be the same for all versions of all documents in the GF.
    b. It is RECOMMENDED to use sequential integers for every version starting with "1".
    c. The use of minor version numbers (e.g., "1.1", "1.2", "1.3") is NOT RECOMMENDED.

5. A **DID URL** that includes a resource parameter with a value of true MUST return the identified document directly.
    a. If this **DID URL** does not include a `versionId` parameter value, it MUST return the current version of the identified document
    b. If this **DID URL** includes a `versionId` parameter value, it MUST return the identified version of the identified document.
    c. If this **DID URL** includes a `versionId` parameter value for a version that does not exist, it MUST return a "Resource Not Found" error.

4. Verification Requirements

To support the verifiability needed for **transitive trust**, the following verification **requirements** apply to ToIP-compliant GFs:

1. The **governing authority** SHOULD publish a digital signature in its current **DID document** over the hash of the current version of its **primary document**.
2. The **governing authority** or **administering authority** SHOULD:
    a. Register the public DID and all authorized **roles** for a **governed party** in a **trust registry**.
    b. Issue **verifiable credentials** to all **governed parties** serving in a **role** defined by the GF.
    c. Issue those same **verifiable credentials** in a publicly available **credential registry** as specified by the GF.
3. If the GF includes **certification policies,** the qualified **certifying parties** SHOULD:
    a. Issue **certification credentials** to **governed parties** as directed by the GF.
    b. Issue those same **verifiable credentials** in a publicly available **credential registry** as specified by the GF.

5. Transparency Requirements

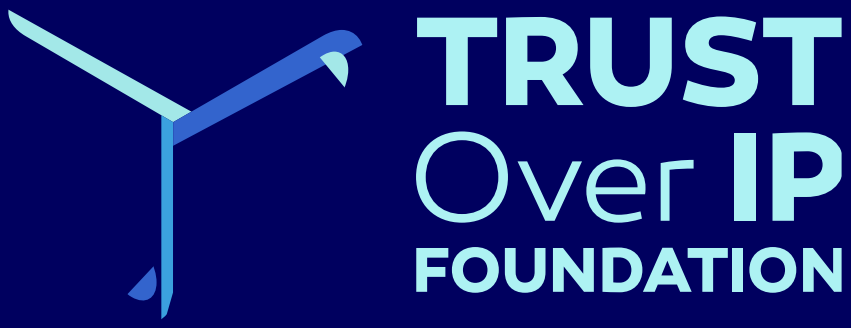
To support the transparency needed for **transitive trust**, a publicly available ToIP-compliant GF:

1. MUST be published at a publicly-accessible URL.
2. MUST have a **DID.**
3. MUST publish the following in the corresponding **DID document:**
    a. An `alsoKnownAs` property whose value is the publicly accessible URL.
    b. The public key(s) for the DID.
    c. All **service endpoints** specified in the GF.
4. SHOULD be localized into all human languages required by its **trust community**.
5. SHOULD be accessible under the W3C Accessibility Guidelines.

6. Technical Interoperability Requirements

To support the interoperability needed for **transitive trust**, a publicly available ToIP-compliant GF:

1. MUST specify technical interoperability **requirements** using ToIP **specifications** and **recommendations** whenever possible.
2. SHOULD specify any additional technical interoperability **requirements** using publicly available open standard **specifications** or **specification profiles**.



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- Specifications to be implemented in code
- Recommendations to be followed in practice
- Guides to be executed in operation
- White Papers to assist in decision making
- Glossaries to be incorporated in other documents

ToIP is a membership organization with three classes—Contributor, General, and Steering.

The work of the Foundation all takes place in Working Groups, within which there are Task Forces self-organized around specific interests. All ToIP members regardless of membership class may participate in all ToIP Working Groups and Task Forces.

When you join ToIP, you are joining a community of individuals and organizations committed to solving the toughest technical and human centric problems of digital trust. Your involvement will shape the future of how trust is managed across the Internet, in commerce, and throughout our digital lives. The benefits of joining our collaborative community are that together we can tackle issues that no single organization, governmental jurisdiction, or project ecosystem can solve by themselves. The results are lower costs for security, privacy, and compliance; dramatically improved customer experience, accelerated digital transformation, and simplified cross-system integration.

To learn more about the Trust Over IP Foundation please visit our website, https://trustoverip.org.

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