

# **Persistent Infrastructure Identity (PIID)**

## **Governance & Registry Framework**

### **Foundational Principles for the Global Infrastructure Identity Standard (GIIS)**

**Version 1.0**

**Issued by:**  
UMIP Inc.

**Founded by:**  
Trevor Vick

**Founding Steward of the PIID Framework**

**In support of the Global Infrastructure Identity Standard (GIIS)**

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# Document Control

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# Executive Summary

The global built environment lacks a persistent, neutral identity system capable of consistently referencing physical infrastructure assets across their lifecycle.

Buildings, facilities, and infrastructure systems are referenced today through fragmented identifiers including parcel numbers, addresses, internal database identifiers, asset management records, and proprietary platform references. These identifiers frequently change as assets are transferred, systems are upgraded, or data environments evolve.

This fragmentation creates what is increasingly recognized as the **Infrastructure Identity Gap**, a structural limitation that prevents reliable continuity of infrastructure records across industries and over time.

Persistent Infrastructure Identity (PIID) establishes a **persistent and globally unique identity reference for infrastructure assets**, enabling consistent referencing across industries including construction, insurance, real estate, infrastructure operations, finance, and regulatory systems.

The PIID framework provides a neutral identity layer designed to support interoperability between systems without requiring those systems to relinquish control over their underlying data.

This document establishes the **governance principles, registry structure, and stewardship model** guiding the issuance and long-term integrity of PIID identifiers.

UMIP Inc., founded by Trevor Vick, serves as the **initial steward of the PIID framework and registry**.

The objective of this governance framework is to support responsible adoption and long-term trust in Persistent Infrastructure Identity as a foundational identity layer for the built environment.

# 1. Foundational Statement

Physical infrastructure forms the backbone of modern economies, yet the systems used to reference infrastructure assets remain fragmented across industries and data environments.

Buildings and infrastructure systems generate extensive records throughout their lifecycle, including:

- construction documentation
- inspections and certifications
- insurance underwriting and claims
- maintenance and operational records
- environmental and climate risk analysis
- ownership and financial transactions

Without a persistent identity layer, these records are often stored in disconnected systems that cannot reliably reference the same asset over time.

Persistent Infrastructure Identity (PIID) was developed to address this structural challenge by establishing a **persistent, neutral identity layer for infrastructure assets**.

PIID enables consistent cross-platform referencing without altering how organizations maintain or control their own operational data.

This framework outlines the governance principles supporting the issuance and stewardship of PIID identifiers.

# Persistent Infrastructure Identity (PIID) Governance Framework

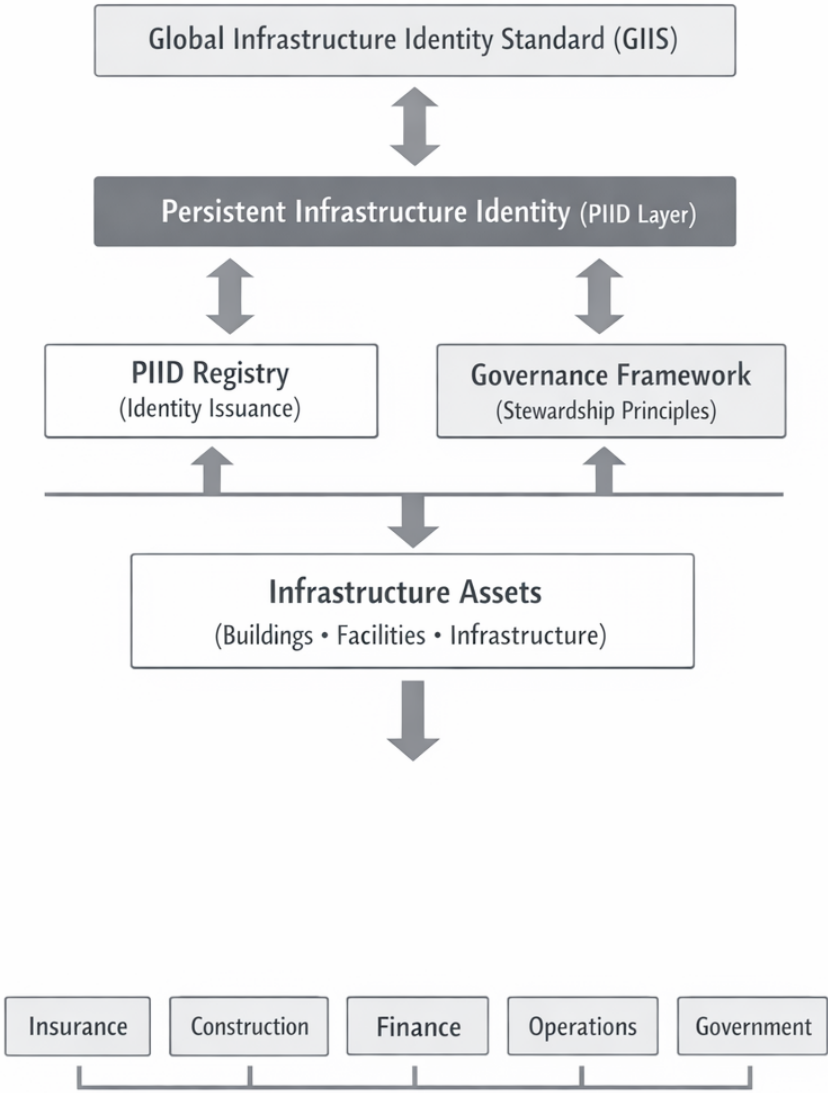


Figure 1. The Persistent Infrastructure Identity framework establishes a neutral identity layer enabling consistent referencing of infrastructure assets across independent systems and industries.

## 2. Purpose and Scope

The purpose of the PIID Governance & Registry Framework is to define the foundational principles governing the issuance, stewardship, and long-term integrity of Persistent Infrastructure Identity identifiers.

This document establishes:

- governance principles guiding the PIID framework
- the structure and role of the PIID Registry
- stewardship responsibilities for registry administration
- principles supporting industry participation and interoperability

This document does **not** constitute:

- a technical implementation specification
- a database architecture description
- a legal title registry
- a regulatory framework

Technical implementation details of the PIID registry infrastructure and issuance processes remain within the administrative control of UMIP Inc.

## 3. Definitions

### **Persistent Infrastructure Identity (PIID)**

A persistent and globally unique identifier assigned to a defined physical infrastructure asset for the purpose of enabling consistent cross-system reference over time.

### **Infrastructure Asset**

A defined physical structure or facility within the built environment, including buildings, facilities, and related infrastructure components.

### **PIID Registry**

The authoritative administrative system responsible for issuing, maintaining, and resolving Persistent Infrastructure Identity identifiers.

### **Stewardship**

The administrative responsibility for maintaining registry integrity, identifier continuity, and governance transparency.

### **Identity Issuance**

The administrative process through which a persistent identifier is assigned to an infrastructure asset within the PIID registry.

### **Registry Integrity**

The maintenance of accurate, non-duplicative, and persistent identifier records within the registry environment.

### **Data Neutrality**

The principle that PIID identifiers serve as neutral references and do not convey ownership or control of the data associated with an infrastructure asset.

### **Global Infrastructure Identity Standard (GIIS)**

The broader initiative supporting the development of persistent identity frameworks for infrastructure assets.

## 4. Governance Principles

The PIID framework is guided by seven core governance principles.

### **Persistence**

PIIDs are designed to remain permanently associated with the infrastructure asset they reference.

### **Uniqueness**

Each PIID corresponds to a single defined infrastructure asset. Duplicate issuance is prevented through registry validation processes.

### **Neutrality**

PIIDs function as neutral identifiers and do not encode ownership, valuation, or proprietary information.

### **Interoperability**

The framework is designed to support cross-platform referencing and interoperability between independent systems.

### **Transparency**

Governance practices prioritize transparency in registry administration and framework development.

### **Registry Integrity**

Administrative safeguards are maintained to preserve the accuracy, persistence, and non-duplication of identifiers.

### **Stewardship Accountability**

Registry administration operates under a stewardship model designed to maintain long-term trust in the identity system.

## 5. PIID Registry Structure

The PIID Registry serves as the authoritative administrative reference environment for Persistent Infrastructure Identity identifiers.

The registry performs several primary functions:

- identifier issuance
- identifier resolution
- duplicate detection and prevention
- registry integrity management
- persistent identity continuity

The registry does not store operational infrastructure data. Instead, it provides the persistent identity reference used by external systems.

External platforms may associate data with PIIDs within their own environments while maintaining control over that data.

## 6. Identity Issuance Framework

PIIDs may be issued based on verified infrastructure reference datasets, including:

- parcel records
- structured address systems
- geospatial building footprints
- infrastructure asset boundary definitions

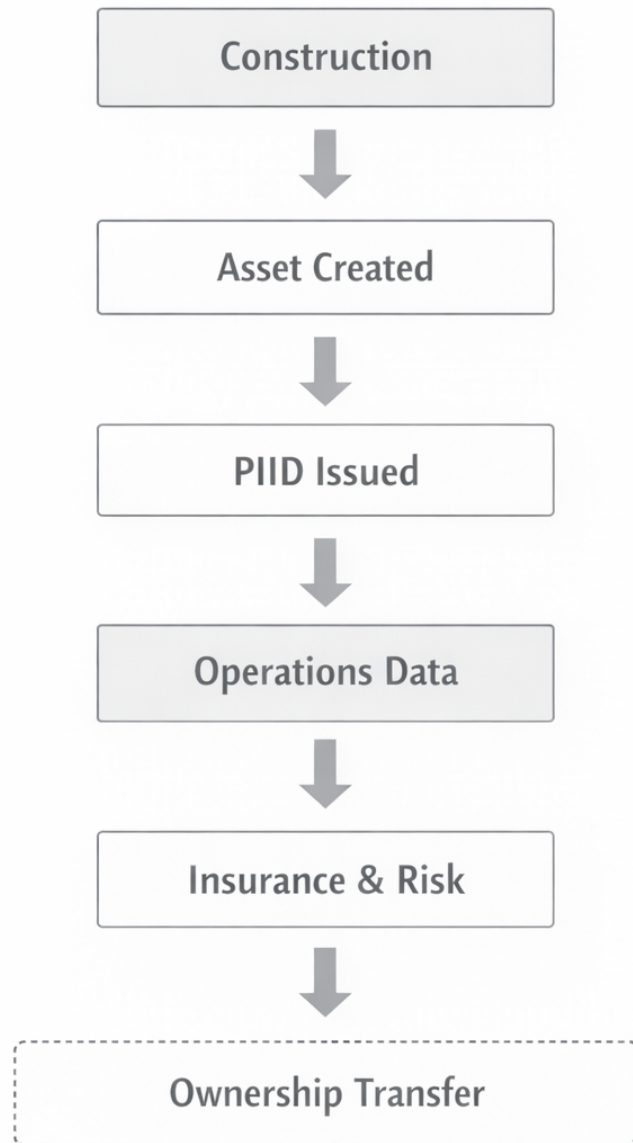
The issuance framework is designed to ensure that identifiers are uniquely associated with defined infrastructure assets and remain persistent over time.

Large-scale registry seeding may be used to establish baseline coverage across infrastructure datasets.

Specific technical implementation methods used to maintain issuance integrity are not disclosed within this governance framework.

## Infrastructure Identity Lifecycle Model

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Figure 2. A Persistent Infrastructure Identity establishes *continuity of reference* across the lifecycle of an infrastructure asset.

## 7. Stewardship and Administrative Authority

UMIP Inc. serves as the **initial issuing and administrative steward** of the PIID framework and registry.

Persistent Infrastructure Identity was originated through the work of **Trevor Vick and UMIP Inc.** as part of a broader effort to address systemic infrastructure identity fragmentation.

Stewardship responsibilities include:

- maintaining registry infrastructure
- ensuring identifier persistence
- administering identity issuance processes
- supporting framework transparency
- facilitating industry participation

Future governance structures may incorporate broader industry participation through advisory bodies or standards collaboration.

## 8. Data Neutrality and Interoperability

PIID is designed to function as a neutral identity layer.

The PIID registry:

- does not claim ownership of infrastructure data
- does not control third-party operational records
- does not replace existing data systems

Instead, PIIDs provide a common reference framework that allows independent systems to associate data with infrastructure assets consistently.

This identity layer enables interoperability between otherwise disconnected data environments.

## 9. Conflict Resolution and Registry Integrity

Registry integrity requires administrative mechanisms for resolving potential conflicts, including:

- duplicate identity issuance
- conflicting infrastructure boundary definitions
- geospatial discrepancies

Administrative validation procedures are maintained to detect and prevent duplicate or conflicting identifiers.

Where disputes arise, registry administrators may conduct review procedures to maintain identifier continuity and registry accuracy.

## 10. Industry Participation

The PIID framework is designed to support participation across the built environment ecosystem.

Potential participants include:

- infrastructure owners and operators
- construction and engineering firms
- insurance carriers
- property data providers
- financial institutions
- government agencies
- software platforms

Organizations may reference PIIDs within their systems to enable consistent infrastructure identification across workflows.

# 11. Future Governance Evolution

As adoption expands, governance structures may evolve to incorporate broader industry collaboration.

Future developments may include:

- advisory councils
- working groups
- interoperability frameworks
- conformance guidelines
- collaboration with global standards organizations

The long-term objective is to ensure that Persistent Infrastructure Identity operates as a trusted, neutral identity framework supporting the global built environment.

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# Document 2

## Persistent Infrastructure Identity (PIID)

### Technical Specification

#### Version 1.0

Issued by **UMIP Inc.**  
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### Purpose

The PIID Technical Specification defines the structural and functional characteristics of Persistent Infrastructure Identity identifiers.

This document establishes:

- the identifier structure
- uniqueness requirements
- persistence characteristics
- interoperability guidelines

The specification ensures PIIDs can be referenced reliably across independent systems and platforms.

# Identifier Characteristics

PIIDs are designed to satisfy the following technical properties:

## Global Uniqueness

Each PIID uniquely identifies a defined infrastructure asset.

No two assets share the same PIID.

## Persistence

Once issued, a PIID remains permanently associated with the referenced infrastructure asset.

Identifiers are never reassigned.

## Neutrality

PIIDs do not encode ownership, valuation, or proprietary data.

The identifier serves solely as a persistent reference.

## System Independence

PIIDs can be referenced by any system, database, or platform without requiring modification of underlying infrastructure records.

# Identifier Structure

The PIID identifier format consists of a **20-character alphanumeric sequence** designed to provide sufficient namespace capacity for global infrastructure identity coverage.

The structure is designed to support:

- long-term identifier persistence
- namespace scalability
- cross-system compatibility

The identifier format is intentionally neutral and does not encode proprietary system logic.

## **Identifier Lifecycle**

The PIID lifecycle consists of four stages:

### **Issuance**

An identifier is assigned to a verified infrastructure asset.

### **Registry Validation**

The registry verifies uniqueness and structural integrity.

### **Active Reference**

The identifier is used by external systems to reference the asset.

### **Persistent Registry Record**

The identifier remains permanently recorded within the PIID registry.

## **Interoperability**

PIIDs are designed for integration across systems including:

- infrastructure management platforms
- insurance systems
- construction software
- geospatial data environments
- property data platforms

Organizations may incorporate PIIDs within their systems as persistent asset identifiers.

# Document 3

## PIID Registry Architecture Overview

Issued by **UMIP Inc.**

Founded by **Trevor Vick**

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### Purpose

This document provides a high-level overview of the administrative architecture supporting the PIID Registry.

The registry serves as the authoritative environment responsible for issuing and maintaining Persistent Infrastructure Identity identifiers.

This document describes the registry structure at a conceptual level.

Specific technical implementation details remain proprietary to the registry operator.

### Registry Functions

The PIID registry performs five core functions:

#### Identifier Issuance

Assigning unique identifiers to infrastructure assets.

#### Identifier Resolution

Allowing systems to confirm the existence and status of a PIID.

### **Registry Integrity**

Maintaining persistent and non-duplicative identifier records.

### **Administrative Validation**

Ensuring identifiers correspond to defined infrastructure assets.

### **Lifecycle Persistence**

Maintaining long-term continuity of issued identifiers.

## **Registry Architecture Principles**

The registry is designed around several principles:

### **Scalability**

The registry must support global infrastructure identity coverage.

### **Persistence**

Identifier records must remain durable across decades.

### **Security**

Administrative safeguards protect registry integrity.

### **Interoperability**

External systems must be able to reference PIIDs without dependency on proprietary infrastructure.

# Document 4

## PIID Industry Adoption Framework

Issued by **UMIP Inc.**

Founded by **Trevor Vick**

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### **Purpose**

The PIID Industry Adoption Framework outlines how organizations may integrate and reference Persistent Infrastructure Identity identifiers.

The objective is to support cross-industry interoperability while maintaining independence of individual systems.

### **Integration Model**

Organizations may reference PIIDs in several ways:

#### **Data Association**

Associating operational data with infrastructure assets through PIID references.

#### **System Integration**

Incorporating PIIDs into internal asset management systems.

#### **Cross-Platform Interoperability**

Using PIIDs to synchronize infrastructure references across multiple platforms.

## **Industry Applications**

PIIDs may support workflows across multiple sectors including:

### **Construction and Engineering**

Project documentation and lifecycle asset tracking.

### **Insurance**

Property underwriting, risk assessment, and claims referencing.

### **Infrastructure Operations**

Maintenance history and operational records.

### **Finance**

Infrastructure asset identification for financing and investment.

### **Government and Regulation**

Infrastructure oversight and regulatory reporting.

## **Participation Pathways**

Organizations may engage with the PIID framework through:

- platform integration
- industry collaboration
- standards development participation
- interoperability initiatives

# Conclusion

Persistent Infrastructure Identity establishes a foundational identity layer for the built environment.

By providing a persistent reference for infrastructure assets, PIID enables improved lifecycle continuity, interoperability, and infrastructure intelligence across industries.

The governance principles outlined in this document provide the institutional foundation necessary for responsible stewardship of this identity framework as adoption expands.

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