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# **IEEE P1484.2.6/D8, 2001-11-25 Draft Standard for Learning Technology — Public and Private Information (PAPI) for Learners (PAPI Learner) — Data Element Registry**

Sponsored by the Learning Technology Standards Committee  
of the IEEE Computer Society

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*This document is also available at:*

<http://edutool.com/papi>

*This note will be removed upon reaching the final draft of this IEEE document.]*

## Introduction

(This introduction is not part of IEEE P1484.2.6, Public and Private Information (PAPI) for Learners — Data Element Registry.)

\*\* TO BE SUPPLIED \*\*

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# 1 Overview

## Abstract

The Public and Private Information (PAPI) for Learners (PAPI Learner) Standard describes "portable" learner records. The PAPI Learner Standard is a data interchange specification, i.e., it is used for communication among cooperating systems ("cooperation" may be achieved by conformance to the PAPI Learner Standard and, possibly, other specifications). The data is exchanged: (1) via external specification, i.e., only PAPI Learner coding bindings are used while some other data communication method is mutually agreed upon by data exchange participants, (2) via control transfer mechanism to facilitate data interchange, e.g., PAPI Learner API bindings, or (3) via data and control transfer mechanisms, e.g., PAPI Learner protocol bindings.

An important feature of the PAPI Learner Standard is the logical division, separate security, and separate administration of several types of learner information. These types of information are also known as "profile information" and "learner profiles". The PAPI Learner Standard may be integrated with other systems, protocols, formats, and technologies. The PAPI Learner Standard is organized as the following Parts:

- IEEE 1484.2.1, "*Standard for Learning Technology — Public and Private Information (PAPI) for Learners (PAPI Learner) — Core Features*": The main data model and references to other standards.
- IEEE 1484.2.2, "*Guide for Learning Technology — Public and Private Information (PAPI) for Learners (PAPI Learner) — Rationale*": An explanation of important decisions during the development of this Standard.
- IEEE 1484.2.3, "*Guide for Learning Technology — Public and Private Information (PAPI) for Learners (PAPI Learner) — Learner Information Security Issues*": Information and recommendations on important security issues for implementations.
- IEEE 1484.2.4, "*Guide for Learning Technology — Public and Private Information (PAPI) for Learners (PAPI Learner) — Examples and Illustrations*": Information for implementers.
- IEEE 1484.2.5, "*Standard for Learning Technology — Public and Private Information (PAPI) for Learners (PAPI Learner) — Registration Authority Process*": How data elements, value space, coding schemes, code sets, etc. are registered.
- IEEE 1484.2.6, "*Standard for Learning Technology — Public and Private Information (PAPI) for Learners (PAPI Learner) — Data Element Registry*": The registry of data elements, value space, coding schemes, code sets, etc..
- IEEE 1484.2.21, "*Standard for Learning Technology — Public and Private Information (PAPI) for Learners (PAPI Learner) — Learner Contact Information*", e.g., name, postal address, telephone number, etc..
- IEEE 1484.2.22, "*Standard for Learning Technology — Public and Private Information (PAPI) for Learners (PAPI Learner) — Learner Relations Information*", e.g., classmates, teammates, mentors, etc..
- IEEE 1484.2.23, "*Standard for Learning Technology — Public and Private Information (PAPI) for Learners (PAPI Learner) — Learner Security Information*", e.g., public keys, private keys, credentials, etc..

- IEEE 1484.2.24, *"Standard for Learning Technology — Public and Private Information (PAPI) for Learners (PAPI Learner) — Learner Preference Information"*, e.g., as useful and unusable I/O devices, learning styles, physical limitations, etc..
- IEEE 1484.2.25, *"Standard for Learning Technology — Public and Private Information (PAPI) for Learners (PAPI Learner) — Learner Performance Information"*, e.g., grades, interim reports, log books, etc..
- IEEE 1484.2.26, *"Standard for Learning Technology — Public and Private Information (PAPI) for Learners (PAPI Learner) — Learner Portfolio Information"*, e.g., accomplishments and works, etc..

NOTE — The phrase "this Part" or "this Part of this Standard" self-refers to an individual part of the PAPI Learner Standard. The phrase "this Standard" or "the PAPI Learner Standard" refers to the whole collection of parts.

## 1.1 Scope

The PAPI Learner Standard is a multi-part standard that specifies the semantics and syntax of learner information. Learner information is information associated learners and used by learning technology systems. Learner information may be created, stored, retrieved, used, etc., by learning technology systems, individuals (e.g., teachers, learners, etc.), and other entities.

The PAPI Learner Standard defines and/or references elements for recording descriptive information about: knowledge acquisition, skills, abilities, personal contact information, learner relationships, security parameters, learner preferences and styles, learner performance, learner-created portfolios, and similar types of information. This Standard permits different views of the learner information (perspectives: learner, teacher, parent, school, employer, etc.) and substantially addresses issues of privacy and security.

This Part only specifies the data element registry that is associated with Parts 1 and 21-26. This Part is an information resource that describes the meaning and representational form of data elements, including registration identifiers, definitions, names, value spaces, metadata and administrative attributes, etc., for certain data elements referenced in other parts of the PAPI Learner Standard.

Part 5, Registration Authority Process, specifies the processes and procedures for creating, administering, and maintaining data elements in this Part (Part 6, Data Element Registry).

## 1.2 Purpose

The purpose of this Part is to support an efficient administration process for specifying certain data elements that are used within the PAPI Learner Standard. The combination of a registry and a registration authority process may be used for maintaining certain tabular information, e.g., relationship types (learner relations information), security methods (learner security information), coding schemes (learner performance information), and so on.

Some implementations may use features of Part 6 to support user, vendor, institution, or industry extensions to the PAPI Learner Standard.

## 1.3 Document organization

This Standard is updated according to the processes and procedures of Part 5, Registration Authority Process. This Standard is intended to be printed and published on a regular basis, but the printed copy may be out of data with respect to the "official" edition of this Standard, the edition that has been approved by the Registration Authority Process. It is \*\*\*

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- IEEE P1484.2.1/D8, Standard for Learning Technology — Public and Private Information (PAPI) for Learners (PAPI Learner) — Core Features
- IEEE P1484.2.5/D8, Standard for Learning Technology — Public and Private Information (PAPI) for Learners (PAPI Learner) — Registration Authority Process
- IEEE P1484.3/D3, Standard for Learning Technology — Glossary
- IEEE P1484.14.1/D2, Guide for Learning Technology — Data Extension Techniques
- IETF RFC 1630, Universal Resource Identifiers in WWW
- IETF RFC 2068, Hypertext Transfer Protocol — HTTP/1.1
- IETF RFC 2396, Uniform Resource Identifiers (URI): Generic Syntax
- ISO 639 Codes for the representation of names of languages — Alpha-2 code
- ISO 639-2T Codes for the representation of names of languages — Part 2: Alpha-3 code
- ISO/IEC 2382, Information Technology — Vocabulary (multiple parts)
- ISO 3166-1 Codes for the representation of names of countries and their subdivisions — Part 1: Country codes
- ISO/IEC 8824-1:1998 Information technology — Abstract Syntax Notation One (ASN.1): Specification of basic notation
- ISO/IEC 11179, Information Technology — Data Management and Interchange — Metadata Registries (MDR)
- ISO/IEC 11404, Information Technology — Programming languages, their environments and system software interfaces — Language-independent datatypes

## 3 Definitions

### 3.1 Definitions incorporated via normative reference

The following terms and their definitions have been incorporated via the normative references in the following order (lowest precedence to highest precedence):

- ISO/IEC 2382, Information Technology — Vocabulary (multiple parts)
- ANSI, American National Standard Dictionary for Information Technology (ANSDIT)
- ISO/IEC 11179, Information Technology — Data Management and Interchange — Metadata Registries (MDR), Part 1: Framework
- IEEE 1484.3, Glossary

- IEEE 1484.2.1, PAPI Learner — Core Features

### 3.2 reverse DNS mangle

The transformation of a character string that is constructed by (1) taking an internet domain name, (2) reversing all the segments, and (3) converting special characters (i.e., not letters or digits) to underscores. Example: `"xyz.foobar.com"` becomes `"com.foobar.xyz"` and results in `"com_foobar_xyz"`.

### 3.3 Acronyms and abbreviations

- DNS: domain naming service
- HCI: human-computer interface
- NVP: name-value pair
- SC/C: strictly conforming/conforming
- SPM: smallest permitted maximum
- XML: Extensible Markup Language

## 4 Conformance

A registry is considered *used* if at least one of its data elements or permissible values are used or normatively referenced. A conforming implementation shall conform to the requirements of registries for which it uses. An implementation is dependent upon a registry when it uses at least one of its data elements or permissible values. A conforming implementation shall, within 6 months of publication, incorporate all updates from dependent registries.

## 5 Functionality

This Part provides data element registry for PAPI Learner implementations. Implementations of the PAPI Learner Standard may use on-line or machine-readable versions of this Part.

## 6 Conceptual model

A data element registry, conceptually, is tabular information that specifies requirements for data elements. These specifications may include registration identifiers, definitions, names, value spaces, metadata and administrative attributes, etc.. A registry may be used as a specification technique when there are many entities, e.g., data elements, that have a similar structure for specification.

## 7 Semantics

The tabular information represents the technical requirements of the specification.

Each clause of this Standard specifies additional technical requirements.

Data elements are registered according to ISO/IEC 11179 Part 3 with the following attributes:

- ISO/IEC 11179, Part 3, subclause 4.5.2, Administration and Identification Metamodel Region Attributes.
- ISO/IEC 11179, Part 3, subclause 4.6.2, Naming and Definition Metamodel Region Attributes.
- ISO/IEC 11179, Part 3, subclause 4.8.4 Data Element Concept Metamodel Administration Region Attributes.
- ISO/IEC 11179, Part 3, subclause 4.9.3, Conceptual and Value Domain Administration Metamodel Region Attributes.
- ISO/IEC 11179, Part 3, subclause 4.10.2, Data Element Administration Metamodel Region Attributes.

Except for entries explicitly defined in the text of this Part, the following ISO/IEC 11179-3 attributes shall be recorded by all entries in the data element registry:

- **administration record:** administrative status, creation date, item identifier, last change date, origin, registration status, unresolved issue, until date
- **contact:** cell phone number, contact mail address, contact name, contact title, electronic mail address, fax number, pager number, phone number, telex number
- **item identifier:** data identifier, item registration authority identifier, version
- **language identification:** country identifier, language identifier
- **organization:** organization name, organization mail address
- **reference document:** reference document identifier, reference document language, reference document title, type description
- **submission:** submission contact
- **context:** administration record, context description
- **definition:** definition language, definition source reference, definition text
- **designation:** designation language, name
- **property:** property administration record
- **permissible value:** permissible value begin date, permissible value end date
- **unit of measure:** unit of measure name, unit of measure precision
- **value:** value item
- **value domain:** value domain administration record, value domain datatype, value domain format, value domain maximum character quantity, value domain unit of measure, value domain relationship type description
- **value meaning:** value meaning begin date, value meaning description, value meaning end date, value meaning identifier
- **derivation rule:** derivation rule administration record, derivation rule description
- **representation class:** representation class administration record

Additionally, all elements of the data element registry have the following attributes:

- **namespace:** The namespace associated with the identifier of the registry. The namespace is either "global" or the reverse DNS mangle of a domain name, e.g., "com\_foobar\_xyz".
- **consensus level:** The level of consensus associated with registry element. The consensus level is:
  - "approved": the consensus level as an ISO/IEC standard (e.g., stage 60)
  - "draft": the consensus level as a ISO/IEC DIS/FDIS (e.g., stage 40 and 50)
  - "committee": the consensus level as a ISO/IEC CD/FCD (e.g., stage 30)

- **"preparatory"**: some lesser consensus level (e.g., ISO/IEC stages 00, 10, and 20)
- **"private"**: intended for private use
- **"other"**: none of the above attributes apply
- **consensus region**: The region for consensus: "international", "regional", "national", "provincial", "other". See ISO/IEC Guide 2.

Identifiers use the following formats and types:

- "[0-9]\*": Begins with digit: the identifier is not invalid.
- "[a-zA-Z]\*" (**Type 0**): Begins with letter: an identifier that has reached **"approved"** consensus level.
- "\_[0-9a-zA-Z]\*" (**Type 1**): Begins with a single underscore, followed by a letter or digit: an identifier in **"committee"** or **"draft"** consensus level. NOTE — As a registry entry transitions from **"committee"** to **"draft"** to **"approved"** consensus status, its identifier may change, e.g., "\_sc36\_12345\_cd1\_feature\_x" to "\_trial\_usage\_feature\_x" to **"papi\_learner\_feature\_x"**.
- "\_\_[0-9a-zA-Z]\*" (**Type 2**): Begins with two underscores, followed by a letter or digit: either (1) an identifier for **"private"** or **"other"** use, and uses reverse DNS mangling, e.g., "\_\_com\_foobar\_xyz\_feature\_x", (2) an identifier registered in this Part (Part 6, Data Element Registry) according to Part 5, or (3) a prefix identifier, followed by an underscore, followed by a private use identifier.
- "\_\_\_[0-9a-zA-Z]\*" (**Type 3**): Begins with three underscores: this kind of identifier is unspecified by this Part.
- All identifier characters shall be from the set of letters, digits, and underscore — as specified in ISO/IEC TR 10176.

## 8 Bindings and encodings

[EDITOR'S NOTE: TEXT TO BE SUPPLIED]

## 9 Administration

Part 6, Data Element Registry, shall be administered according to the processes and procedures described in Part 5, Registration Authority Process.

### 9.1 Consensus process varieties

Part 5 describes 3 kinds of consensus processes:

- **Process 1**: A formal international standards process.
- **Process 2**: A non-accredited or non-international process.
- **Process 3**: Other processes or no process.

## 9.2 Identifier registration

This Part uses all three kinds of processes for administration of this Part. Unless specified otherwise in individual provisions of this Part,

- Type 0 identifiers shall be registered only using consensus process 1.
- Type 1 identifiers shall be registered only using consensus process 1.
- Type 2 identifiers:
  - that are reversed DNS name mangled shall be registered using consensus process 1, process 2, or process 3;
  - that use pre-registered prefixes shall be registered using consensus process 1, process 2, or process 3;
  - that are not reversed DNS name mangled and not prefixed shall be registered only using consensus process 1.
- Type 2 identifier prefixes shall be registered using consensus process

NOTE — Stated equivalently,

- Consensus process 1 may register identifiers of type 0, type 1, type 2.
- Consensus process 1 may register type 2 identifier prefixes.
- Consensus process 2 may register identifiers of type 2 that are reverse DNS mangled, or type 2 using pre-registered type 2 prefixes.
- Consensus process 3 may register identifiers of type 3 that are reverse DNS mangled.

## 9.3 Identifier prefix registry

This registry is used to define the identifier prefixes to be used in Part 5 registry IDs, Clauses 10 and onward.

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with an identifier prefix), a registry prefix (based on the registry identifier), and registrant information.

### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Prefix	Registrant
iso	"iso"	Organization for International Standardization.
itlet	"itlet"	ISO/IEC JTC1 SC36 (IT for Learning, Education, and Training)
itu	"itu"	International Telecommunications Union.
ieee_ltsc	"ieee_ltsc"	IEEE Learning Technology Standards Committee.
cen_issc_ltws	"cen_issc_ltws"	CEN/ISSC Workshop on Learning Technology.

## 10 Part 1 registry: Core features

The following registries are used by Part 1, Core Features.

Unless otherwise noted, the primary key for registries is the Registry ID.

### 10.1 Locale information

The following registries are used by locale identifiers.

#### 10.1.1 Locale identifier syntax

A locale identifier is described by the following syntax:

```

locale_identifier = language_identifier |
                  language_country |
                  complete_identifier ;
language_country = language_identifier "-"
                  country_identifier ;
complete_identifier = language_country "-"
                    character_set_identifier ;
language_identifier = 2-character identifiers of ISO 639 |
                    3-character identifiers of ISO 639-2T
                    (see subclause 10.1.2) ;
country_identifier = 2-character alpha code of ISO 3166-1 |
                    3-character digit code of ISO 3166-1
                    (see subclause 10.1.3) ;
character_set_identifier = registered character set
                        (see subclause 10.1.4) ;

```

#### 10.1.2 Locale language identifier registry

Language identifiers are specified by ISO 639 and ISO 639-2T.

#### 10.1.3 Locale country identifier registry

Country identifiers are specified by ISO 3166-1.

#### 10.1.4 Locale character set identifier registry

Character set identifiers are specified by ASN.1 (ISO/IEC 8824-1).

### 10.2 Identifier kinds registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a kind of identifier), a registry value (based on the registry identifier), and a value meaning.

### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Value	Meaning
unspecified	"unspecified"	An opaque identifier.
uri	"uri"	A universal resource identifier, as defined by IETF RFC 1630 and IETF RFC 2396.
url	"url"	A universal resource locator, as defined by IETF RFC 2068.
posix_path	"posix_path"	A POSIX pathname (filename), as defined by ISO/IEC 9945-1.
shi	"iso_iec_21484_13"	A simple human identifier, as defined by 21484-13.
uuid	"uuid"	A universal unique identifier, as described by ISO/IEC 11578.
void_ptr	"void_ptr"	A "void *" pointer described by ISO/IEC 9899.

## 10.3 Core features bucket NVP registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a meaning of an NVP), an NVP-name (based on the registry identifier), an NVP-value (may be based on the registry identifier), and a NVP meaning.

### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Name-Value Pair (NVP)		
	NVP-Name	NVP-Value	NVP-Meaning

## 10.4 Media types registry

[EDITOR'S NOTE: Need to supply wording that combine IANA MIME types with non-electronic media types.]

## 11 Reserved for future editions

This Clause is reserved for future editions of this Part.

## **12 Reserved for future editions**

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## **19 Reserved for future editions**

This Clause is reserved for future editions of this Part.

## **20 Reserved for future editions**

This Clause is reserved for future editions of this Part.

## 21 Part 21 registry: Learner contact information

The following registries are used by Part 21, Learner Contact Information.

Unless otherwise noted, the primary key for registries is the Registry ID.

### 21.1 Part 21 learner contact metadata registry

\*\*\* TO BE SUPPLIED: An 11179 description of this datatype. \*\*\*

### 21.2 Part 21 learner contact reference kinds registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a kind of reference to learner contact information), a registry value (based on the registry identifier), and a value meaning.

#### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Value	Meaning
unspecified	"unspecified"	An opaque identifier.
uri	"uri"	A universal resource identifier, as defined by IETF RFC 1630 and IETF RFC 2396.
url	"url"	A universal resource locator, as defined by IETF RFC 2068.
posix_path	"posix_path"	A POSIX pathname (filename), as defined by ISO/IEC 9945-1.
shi	"iso_iec_21484_13"	A simple human identifier, as defined by 21484-13.
uuid	"uuid"	A universal unique identifier, as described by ISO/IEC 11578.
void_ptr	"void_ptr"	A "void *" pointer described by ISO/IEC 9899.

### 21.3 Part 21 learner contact bucket NVP registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a meaning of an NVP), an NVP-name (based on the registry identifier), an NVP-value (may be based on the registry identifier), and a NVP meaning.

The primary key of this registry is the fields: Registry ID, NVP-Name, NVP-Value.

### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Name-Value Pair (NVP)		
	NVP-Name	NVP-Value	NVP-Meaning

## 21.4 Part 21 learner contact telephone kinds registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a kind of telephone usage), a registry value (based on the registry identifier), and a value meaning.

### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Value	Meaning
unspecified	"unspecified"	Unspecified.
voice	"voice"	Voice communications service.
fax	"fax"	Fax service.
data	"data"	Data service without further specification.
paging	"paging"	Paging service.

## 21.5 Part 21 learner contact E-mail kinds registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a kind of E-mail addressing scheme), a registry value (based on the registry identifier), and a value meaning.

### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Value	Meaning
unspecified	"unspecified"	Unspecified.
internet	"internet"	An internet E-mail address specified by IETF RFC 822.
x400	"x400"	An X.400 address specified by ITU-T X.400.

## 21.6 Part 21 learner contact postal address kinds registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a kind of postal delivery), a registry value (based on the registry identifier), and a value meaning.

### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Value	Meaning
unspecified	"unspecified"	Unspecified.
delivery	"delivery"	A delivery address.
hold	"hold"	An address for holding deliveries.

## 22 Part 22 registry: Learner relations information

The following registries are used by Part 22, Learner Relations Information.

Unless otherwise noted, the primary key for registries is the Registry ID.

### 22.1 Part 22 learner relations metadata registry

\*\*\* TO BE SUPPLIED: An 11179 description of this datatype. \*\*\*

### 22.2 Part 22 learner relations reference kinds registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a kind of reference to learner relations information), a registry value (based on the registry identifier), and a value meaning.

### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Value	Meaning
unspecified	"unspecified"	An opaque identifier.
uri	"uri"	A universal resource identifier, as defined by IETF RFC 1630 and IETF RFC 2396.
url	"url"	A universal resource locator, as defined by IETF RFC 2068.

<code>posix_path</code>	<code>"posix_path"</code>	A POSIX pathname (filename), as defined by ISO/IEC 9945-1.
<code>shi</code>	<code>"iso_iec_21484_13"</code>	A simple human identifier, as defined by 21484-13.
<code>uuid</code>	<code>"uuid"</code>	A universal unique identifier, as described by ISO/IEC 11578.
<code>void_ptr</code>	<code>"void_ptr"</code>	A <code>"void *"</code> pointer described by ISO/IEC 9899.

### 22.3 Part 22 learner relations bucket NVP registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a meaning of an NVP), an NVP-name (based on the registry identifier), an NVP-value (may be based on the registry identifier), and a NVP meaning.

The primary key of this registry is the fields: Registry ID, NVP-Name, NVP-Value.

#### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Name-Value Pair (NVP)		
	NVP-Name	NVP-Value	NVP-Meaning

### 22.4 Part 22 learner relations kinds registry

This registry is used to define the kinds of relationships among learners and other users in learner environments or of learning technology systems.

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a kind of relationship), a registry value (based on the registry identifier), and a value meaning.

#### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Value	Meaning

## 23 Part 23 registry: Learner security information

The following registries are used by Part 23, Learner Security Information.

Unless otherwise noted, the primary key for registries is the Registry ID.

### 23.1 Part 23 learner security metadata registry

\*\*\* TO BE SUPPLIED: An 11179 description of this datatype. \*\*\*

### 23.2 Part 23 learner security reference kinds registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a kind of reference to learner security information), a registry value (based on the registry identifier), and a value meaning.

#### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Value	Meaning
unspecified	"unspecified"	An opaque identifier.
uri	"uri"	A universal resource identifier, as defined by IETF RFC 1630 and IETF RFC 2396.
url	"url"	A universal resource locator, as defined by IETF RFC 2068.
posix_path	"posix_path"	A POSIX pathname (filename), as defined by ISO/IEC 9945-1.
shi	"iso_iec_21484_13"	A simple human identifier, as defined by 21484-13.
uuid	"uuid"	A universal unique identifier, as described by ISO/IEC 11578.
void_ptr	"void_ptr"	A "void *" pointer described by ISO/IEC 9899.

### 23.3 Part 23 learner security bucket NVP registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a meaning of an NVP), an NVP-name (based on the registry identifier), an NVP-value (may be based on the registry identifier), and a NVP meaning.

The primary key of this registry is the fields: Registry ID, NVP-Name, NVP-Value.

### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Name-Value Pair (NVP)		
	NVP-Name	NVP-Value	NVP-Meaning

## 23.4 Part 23 learner security credential kinds registry

This registry is used to define the kinds of authentication schemes and security credentials.

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier, a registry value (based on the registry identifier), and a value meaning.

### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Value	Meaning
unspecified	"unspecified"	Unspecified.
password	"password"	A password authentication scheme.
chalresp	"chalresp"	A challenge-response authentication scheme.
chal	"chal"	The challenge portion of a challenge-response authentication scheme.
resp	"resp"	The response portion of a challenge-response authentication scheme.
rbac	"rbac"	A role-based access control system.
role	"role"	A role in a role-based access control system.
user_id	"user_id"	A user ID in a user identification system.
biotemp	"biotemp"	A biometric template.

## 24 Part 24 registry: Learner preference information

The following registries are used by Part 24, Learner Preference Information.

Unless otherwise noted, the primary key for registries is the Registry ID.

## 24.1 Part 24 learner preference metadata registry

\*\*\* TO BE SUPPLIED: An 11179 description of this datatype. \*\*\*

## 24.2 Part 24 learner preference reference kinds registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a kind of reference to learner preference information), a registry value (based on the registry identifier), and a value meaning.

### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Value	Meaning
unspecified	"unspecified"	An opaque identifier.
uri	"uri"	A universal resource identifier, as defined by IETF RFC 1630 and IETF RFC 2396.
url	"url"	A universal resource locator, as defined by IETF RFC 2068.
posix_path	"posix_path"	A POSIX pathname (filename), as defined by ISO/IEC 9945-1.
shi	"iso_iec_21484_13"	A simple human identifier, as defined by 21484-13.
uuid	"uuid"	A universal unique identifier, as described by ISO/IEC 11578.
void_ptr	"void_ptr"	A "void *" pointer described by ISO/IEC 9899.

## 24.3 Part 24 learner preference bucket NVP registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a meaning of an NVP), an NVP-name (based on the registry identifier), an NVP-value (may be based on the registry identifier), and a NVP meaning.

The primary key of this registry is the fields: Registry ID, NVP-Name, NVP-Value.

### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Name-Value Pair (NVP)

	NVP-Name	NVP-Value	NVP-Meaning

## 24.4 Part 24 learner preference names registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a name of a "bundle" of preferences), a registry value (based on the registry identifier), and a value meaning.

### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Value	Meaning

## 24.5 Part 24 learner preference HCI devices

The following are registries for human-computer interface device preferences.

### 24.5.1 Part 24 learner preference HCI kinds registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a preference name), a registry value (based on the registry identifier), and a value meaning.

NOTE — This subclause is harmonized with Part 24, subclause 5.2.1.

### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Value	Meaning
unspecified	"unspecified"	Unspecified.
security	"security"	Security I/O devices.
text	"text"	Text I/O devices.
speech	"speech"	Speech I/O devices.
graphics	"graphics"	Graphics I/O devices.
audio	"audio"	Audio I/O devices.

<b>video</b>	<b>"video"</b>	Video I/O devices.
<b>tactile</b>	<b>"tactile"</b>	Tactile I/O devices.
<b>session</b>	<b>"session"</b>	Session I/O devices.
<b>other</b>	<b>"other"</b>	Other I/O devices.

### 24.5.2 Part 24 learner preference HCI device context label registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with an agreed upon context label), a registry value (based on the registry identifier), and a value meaning.

#### Minimum set of permissible values

The following are the minimum set of permissible values.

<b>Registry ID</b>	<b>Value</b>	<b>Meaning</b>

### 24.5.3 Part 24 learner preference HCI device preference name registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a name of a preference), a registry value (based on the registry identifier), and a value meaning.

#### Minimum set of permissible values

The following are the minimum set of permissible values.

<b>Registry ID</b>	<b>Value</b>	<b>Meaning</b>

### 24.5.4 Part 24 learner preference HCI device preference rating registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a meaning of a preference rating), a registry value (based on the registry identifier), and a value meaning.

#### Minimum set of permissible values

The following are the minimum set of permissible values.

<b>Registry ID</b>	<b>Value</b>	<b>Meaning</b>

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### 24.5.5 Part 24 learner preference HCI device preference priority registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a meaning of a preference priority), a registry value (based on the registry identifier), and a value meaning.

#### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Value	Meaning

### 24.5.6 Part 24 learner preference HCI device names registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a name of a device), a registry value (based on the registry identifier), and a value meaning.

#### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Value	Meaning

### 24.5.7 Part 24 learner preference HCI device kinds registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a kind of device), a registry value (based on the registry identifier), and a value meaning.

#### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Value	Meaning

### 24.5.8 Part 24 learner preference HCI device method registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a kind of device method), a registry value (based on the registry identifier), and a value meaning.

#### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Value	Meaning

### 24.5.9 Part 24 learner preference HCI device protocol registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a kind of device protocol), a registry value (based on the registry identifier), and a value meaning.

#### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Value	Meaning

### 24.5.10 Part 24 learner preference HCI device coding registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a kind of device coding), a registry value (based on the registry identifier), and a value meaning.

#### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Value	Meaning

### 24.5.11 Part 24 learner preference HCI device encoding registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a kind of device encoding), a registry value (based on the registry identifier), and a value meaning.

**Minimum set of permissible values**

The following are the minimum set of permissible values.

Registry ID	Value	Meaning

**24.5.12 Part 24 learner preference HCI device other registry**

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with other device preference information), a registry value (based on the registry identifier), and a value meaning.

**Minimum set of permissible values**

The following are the minimum set of permissible values.

Registry ID	Value	Meaning

**24.6 Part 24 learner preference cognitive preferences registry**

This subclause is reserved for future editions of this Part.

**25 Part 25 registry: Learner performance information**

The following registries are used by Part 25, Learner Performance Information.

Unless otherwise noted, the primary key for registries is the Registry ID.

**25.1 Part 25 learner performance metadata registry**

\*\*\* TO BE SUPPLIED: An 11179 description of this datatype. \*\*\*

**25.2 Part 25 performance reference kinds registry**

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a kind of reference to learner performance information), a registry value (based on the registry identifier), and a value meaning.

**Minimum set of permissible values**

The following are the minimum set of permissible values.

Registry ID	Value	Meaning
unspecified	"unspecified"	An opaque identifier.
uri	"uri"	A universal resource identifier, as defined by IETF RFC 1630 and IETF RFC 2396.
url	"url"	A universal resource locator, as defined by IETF RFC 2068.
posix_path	"posix_path"	A POSIX pathname (filename), as defined by ISO/IEC 9945-1.
shi	"iso_iec_21484_13"	A simple human identifier, as defined by 21484-13.
uuid	"uuid"	A universal unique identifier, as described by ISO/IEC 11578.
void_ptr	"void_ptr"	A "void *" pointer described by ISO/IEC 9899.

### 25.3 Part 25 learner performance bucket NVP registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a meaning of an NVP), an NVP-name (based on the registry identifier), an NVP-value (may be based on the registry identifier), and a NVP meaning.

The primary key of this registry is the fields: Registry ID, NVP-Name, NVP-Value.

#### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Name-Value Pair (NVP)		
	NVP-Name	NVP-Value	NVP-Meaning

### 25.4 Part 25 learner performance granularity registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a kind of granularity), a registry value (based on the registry identifier), and a value meaning.

#### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Value	Meaning

## 25.5 Part 25 learner performance coding scheme, metric, value registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a coding scheme), a coding scheme (based on the registry identifier), an optional metric, an optional value, and a value meaning.

The primary key of this registry is the fields: Registry ID, Scheme, Metric, Value.

### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Coding			
	Scheme	Metric	Value	Meaning

## 26 Part 26 registry: Learner portfolio information

The following registries are used by Part 26, Learner Portfolio Information.

Unless otherwise noted, the primary key for registries is the Registry ID.

### 26.1 Part 26 learner portfolio metadata registry

\*\*\* TO BE SUPPLIED: An 11179 description of this datatype. \*\*\*

### 26.2 Part 26 learner portfolio reference kinds registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a kind of reference to learner portfolio information), a registry value (based on the registry identifier), and a value meaning.

### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Value	Meaning

<code>unspecified</code>	<code>"unspecified"</code>	An opaque identifier.
<code>uri</code>	<code>"uri"</code>	A universal resource identifier, as defined by IETF RFC 1630 and IETF RFC 2396.
<code>url</code>	<code>"url"</code>	A universal resource locator, as defined by IETF RFC 2068.
<code>posix_path</code>	<code>"posix_path"</code>	A POSIX pathname (filename), as defined by ISO/IEC 9945-1.
<code>shi</code>	<code>"iso_iec_21484_13"</code>	A simple human identifier, as defined by 21484-13.
<code>uuid</code>	<code>"uuid"</code>	A universal unique identifier, as described by ISO/IEC 11578.
<code>void_ptr</code>	<code>"void_ptr"</code>	A <code>"void *"</code> pointer described by ISO/IEC 9899.

### 26.3 Part 26 learner portfolio bucket NVP registry

For the registry entries of this subclause, each registry entry describes a permissible value that includes a registry identifier (associated with a meaning of an NVP), an NVP-name (based on the registry identifier), an NVP-value (may be based on the registry identifier), and a NVP meaning.

The primary key of this registry is the fields: Registry ID, NVP-Name, NVP-Value.

#### Minimum set of permissible values

The following are the minimum set of permissible values.

Registry ID	Name-Value Pair (NVP)		
	NVP-Name	NVP-Value	NVP-Meaning

## 27 Annex A: Document development (informative)

*This Annex is informative and not normative.*

NOTE — This Annex will be removed prior to publishing of this Standard.

### 27.1 Revision history

- **Draft 8, 2001-11-25**, the current draft. Split information types into several documents.

### 27.2 Release notes for this document

The following notes apply to this release of this document:

- The registries need review to verify the "vocabularies" of drafts 6 and 7 are now properly recorded draft 8 of this Part.

### 27.3 Resolved issues

The following issues have been resolved:

- Document has been split into several small, separate documents.

### 27.4 Open issues

The following issues are outstanding:

- Review of Part 5, Registration Authority Process.

### 27.5 Comments on this document

All comments are appreciated. Please return all comments on this release of this document by **Friday, 2002-02-22 23:00 UTC**. The Technical Editor may be contacted at the following:

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