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**BiometricsInformation technology — Identity attributes verification services — Part 2:
RESTful specification**

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

~~Attention is drawn~~ISO and IEC draw attention to the possibility that ~~some of the elements~~implementation of this document may ~~be~~involve the ~~subject~~use of (a) patent(s). ISO and IEC take no position concerning ~~the evidence, validity or applicability~~ of ~~any claimed~~ patent rights, ~~in respect thereof~~. As of the date of publication of this document, ISO and IEC had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents and <https://patents.iec.ch>. ISO and IEC shall not be held responsible for identifying any or all such patent rights. ~~Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see <https://patents.iec.ch>).~~

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 37, *Biometrics*.

A list of all parts in the ISO/IEC 30108 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

Introduction

This document defines the architecture, operations, data elements and basic requirements for Identity Attributes Verification Services (IAVSs), thereby providing a framework for the implementation of generic identity services within a service-oriented environment. An identity in the context of IAVS comprises a subject, biographic data and biometric data. Other parts of the ISO/IEC 30108 series are intended to define specific IAVS implementations (or bindings) within specific environments, for example, Simple Object Access Protocol (SOAP) ~~Web~~web services.

IAVS services are generic in nature, being modality-neutral and not targeted at any particular business application. These services include those related to the management, transformation and biometric comparison identity data. Services are invoked by an IAVS requester and implemented by an IAVS service provider (responder). IAVS does not prescribe the architecture or business logic of either the requester or service provider.

In IAVS two categories of identity services are defined: primitive and aggregate. Primitive services are more atomic and well-defined, whereas the aggregate services tend to be higher level and enable more flexibility on the part of the IAVS service provider.

In IAVS two identity models are also defined: person-centric and encounter-based. Person-centric systems maintain a single up-to-date record (set of data) for a given person, whereas an encounter-based system retains data related to each interaction the person has with the system.

This document represents a version of IAVS defined in ISO/IEC 30108-1, but using a representational state transfer (RESTful) approach.

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Information Technology — Identity Attributes Verification Services — Part 2: RESTful specification

1 Scope

The ISO/IEC 30108 series defines biometric services used for identity assurance that are invoked over a services-based framework. It provides a generic set of biometric and identity-related functions and associated data definitions to allow remote access to biometric services.

Although focused on biometrics, this standard the ISO/IEC 30108 series will necessarily include support for other related identity assurance mechanisms such as biographic and document capabilities. IAVS is Identity attributes verification services (IAVSs) are intended to be compatible with and used in conjunction with other biometric standards as described in ISO/IEC 30108-1.

This part of ISO/IEC 30108 document implements the specification provided in part ISO/IEC 30108-1 using Representational State Transfer representational state transfer (REST).

Specification of biometric functionality is limited to remote (backend) services. Services between a client-side application and biometric capture devices are not within the scope of this standard document.

Integration of biometric services as part of an authentication service or protocol is not within the scope of this standard document.

2 Normative References

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ECMA Standard ECMA-404 (2017 2nd Edition) The JSON Data Interchange Format ISO/IEC 21778

Hyper Text Transfer Protocol (HTTP/1.1) RFC 7230 [<https://httpwg.org/specs/rfc7230.html>]

Hypertext Transfer Protocol (HTTP/1.1): Semantics and Content RFC 7231¹

JSON Schema: A Media Type for Describing JSON Documents [<http://json-schema.org/draft/2019-09/json-schema-core.html>]

YAML Ain't Markup Language (YAML™) Version 1.2: 3rd Edition, Patched at 2009-10-01 [<https://yaml.org/spec/1.2/spec.html>]

ISO/IEC 19785-3, ISO/IEC 30108-1, Information technology — Common Biometric Exchange Formats Framework — Part 3: Patron format specifications

¹ <https://tools.ietf.org/html/rfc7231#section-6>

~~ISO/IEC 30108-1, Biometrics — Identity attributes verification services~~Assurance Services — Part 1:
IAVSBIAS services

ISO/IEC 2382-37, Information technology — Vocabulary — Part 37: Biometrics

~~RFC 3339 — Date and Time on the Internet: Timestamps~~²

3 Terms and ~~Definitions~~definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 30108-1 and ISO/IEC 2382-37 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Symbols and ~~Abbreviated Terms~~abbreviated terms

For the purposes of this document, the symbols and abbreviated terms in ISO/IEC 30108-1 and the following apply.

<u>BIR</u>	<u>biometric information record</u>
BRA	ISO Biometric Registration Authority
IAVS	Identity Attributes Verification Services
BIR	Biometric Information Record
CBEFF	Common Biometric Exchange Formats Framework (defined in ISO/IEC 19785 series)
<u>EFTS</u>	<u>electronic fingerprint transmission specification</u>
ID	<u>Identity / Identification / Identifier</u> <u>identity / identification / identifier</u>
<u>IAVS</u>	<u>identity attributes verification services</u>
JSON	JavaScript Object Notation
REST	Representational State Transfer <u>representational state transfer</u>
SOAP	Simple Object Access Protocol
<u>UUID</u>	<u>universally unique identifier</u>
YAML	Yet Another Markup Language ^[3]

5 Conformance

ISO/IEC 30108-1:2015, Annex A specifies the conformance requirements for systems/components claiming conformance to this document.

² <https://www.rfc-editor.org/rfc/rfc3339>

6 System ~~Context~~context

This clause provides an overview of ~~Representational State Transfer~~representational state transfer (REST), in the scope of IAVS.

The specification included in this document has been written in OpenAPI™,³ using YAML™ (Yet Another Markup Language)⁴ as the specification language. OpenAPI is an extended way to specify RESTful services, allowing a variety of tools to develop client and server applications, as well as using data in any of the data formats typically used in RESTful services, e.g., JSON (JavaScript Object Notation) or XML (eXtensible Markup Language).

A goal for this document is to be as open as possible. To that end, this specification is also available in an electronic OpenAPI™ file, available at <https://standards.iso.org/iso-iec/30108-2/ed-1>.

The specification is ~~done~~written according to the following ~~normative references~~references:

- ~~—~~ ECMA Standard ECMA-404 (2017 2nd Edition) The JSON Data Interchange Format ISO\IEC 21778
- ~~—~~ Hyper Text Transfer Protocol (HTTP/1.1) RFC 7230 [<https://httpwg.org/specs/rfc7230.html>][<https://httpwg.org/specs/rfc7230.html>]
- ~~—~~ Hypertext Transfer Protocol (HTTP/1.1): Semantics and Content RFC 7231
- ~~—~~ JSON Schema: A Media Type for Describing JSON Documents [<http://json-schema.org/draft/2019-09/json-schema-core.html>][<http://json-schema.org/draft/2019-09/json-schema-core.html>]
- ~~—~~ YAML Ain't Markup Language (YAML™) Version 1.2: 3rd Edition, Patched at 2009-10-01 [<https://yaml.org/spec/1.2/spec.html>][<https://yaml.org/spec/1.2/spec.html>]

All ~~clauses 7.x.x.2, titled~~subclauses within Clause 7 entitled "REST method", ~~indicates~~ (numbered 7.x.x.2) ~~indicate~~ the HTTP method used, among the ~~possible ones of various possibilities~~: GET, POST, DELETE, PUT and PATCH.

Within this document, when a YAML™ specification is given (e.g., all ~~clauses~~subclauses numbered 7.x.x.5), it shall be placed within an OpenAPI™ file, in the section indicated, ~~considering~~taking into account the template provided in Annex A.

7 ~~identity~~Identity assurance services

7.1 Introduction

7.1 General

This clause defines two categories of IAVS services: primitive and aggregate. Primitive services are lower-level operations that are used to request a specific capability. Aggregate services operate at a higher-level, performing a sequence of primitive operations in a single request. (An example of such a sequence would be a negative search where a 1:N identification which results in no matches being found is immediately followed by the addition of the biometric sample into that search population.) Implementers are not

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restricted to one or the other but they may provide (and requesters may use) a mixture of both primitive and aggregate types.

Aggregate services do not have to utilize primitive services.

Each service is identified by an *<interface>* tag and must include a *name* attribute. Service parameters are identified by a *<parameter>* tag and must include a *name*, *type*, and *direction* attribute. The *direction* attribute specifies whether the parameter is an input parameter (*in*), an output parameter (*out*), or an input/output parameter (*inout*). Parameters may also include a *use* attribute to indicate if the parameter is required, optional, or conditional. If the parameter is conditional, the service description must identify the conditions.

7.2 Primitive ~~Services~~services

7.2.1 Introduction

IAMS specifies the following set of primitive services.

7.2.2 Add Subject To Gallery

7.2.2.1 Description

The *Add Subject To Gallery* service shall register a subject to a given gallery or population group. As an optional parameter, the value of the claim to identity by which the subject is known to the gallery may be specified. This claim to identity shall be unique across the gallery. If no claim to identity is specified, the subject ID (assigned with the *Create Subject* service) shall be used as the claim to identity. Additionally, in the encounter-centric model, the encounter ID associated with the subject's biometrics that will be added to the gallery shall be specified.

NOTE In the IAMS model, the creation and management of galleries are the responsibility of the service provider implementation. Services are not exposed to the requester for this purpose.

7.2.2.2 REST method

POST

7.2.2.3 Parameters

- *Gallery ID* --- the identifier of the gallery or population group to which the subject will be added.
- *Subject ID* --- the identifier of the subject.
- *Identity Claim (optional)* --- the identifier by which the subject is known to the gallery.
- *Encounter ID (conditional)* --- the identifier of the encounter, required for encounter-centric models.

7.2.2.4 Responses

In addition to the generic HTTP responses defined in 9.2, the execution of this service shall provide one of the following responses listed in Table 1 (see 9.3 for the definitions of each ~~Error Condition Code~~:error condition code).

Table 1 — Particular responses for *Add Subject To Gallery* service

HTTP Status Code/status code	HTTP Status Code Meaning/status code meaning	Error Condition Code condition code	Description

200	OK	SUCCESS	
400	Bad Request	INVALID_IDENTITY_CLAIM	
		INVALID_SUBJECT_ID	
		INVALID_ENCOUNTER_ID	
404	Not Found	UNKNOWN_GALLERY	
		UNKNOWN_SUBJECT	
		UNKNOWN_IDENTITY_CLAIM	
		UNKNOWN_ENCOUNTER	
500	Internal Server Error	CANNOT_STORE_DATA	
		INTERNAL_DATABASE_ERROR	

7.2.2.5 YAML specification

To be placed in section #/paths:

/addSubjectToGallery:

post:

summary: Add Subject To Gallery

parameters:

- name: galleryID
 - in: query
 - required: true
 - schema:
 - type: string
- name: subjectID
 - in: query
 - required: true
 - schema:
 - type: string
- name: identityClaim
 - in: query
 - required: false
 - schema:
 - type: string
- name: encounterID
 - in: query
 - required: false #conditional
 - schema:
 - type: string

responses:

200:

\$ref: '#/components/responses/success'

400:

description: Bad Request

content:

application/json:

schema:

oneOf:

- \$ref: '#/components/schemas/invalidIdentityClaim'
- \$ref: '#/components/schemas/invalidSubjectId'
- \$ref: '#/components/schemas/invalidEncounterId'

404:

description: Not Found