

Committee Draft ISO/IEC CD	
Date: 2005-12-28	Reference number: ISO/JTC 1/SC 32N1393
Supersedes document SC 32N1172	

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ISO/IEC CD 20944-41:200x(E) Title: Information technology - Metadata Registry Interoperability & Bindings (MDR-IB) Part 41: C API binding Project: 1.32.17.01.41.00
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Introductory note: The attached document is hereby submitted for a three-month letter ballot to the National Bodies of ISO/IEC JTC 1/SC 32. The ballot starts 2005-12-28. Medium: E No. of pages: 17
--

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Reference number of working document: **ISO/IEC JTC1 SC32 N1393**

Date: 2005-12-25

Reference number of document: **ISO/IEC CD2 20944-41**
[Release Sequence #8]

Committee identification: **ISO/IEC JTC1 SC32 WG2**

SC32 Secretariat: **US**

**Information technology —
Metadata Registries Interoperability and Bindings (MDRIB) —
Part 41: C API binding**

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Document type: **International standard**
Document subtype: **if applicable**
Document stage: **(30) Committee**
Document language: **E**

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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ISO/IEC 20944-41 was prepared by Technical Committee ISO/IEC JTC1, *Information Technology*, Subcommittee SC32, *Data Management and Interchange*.

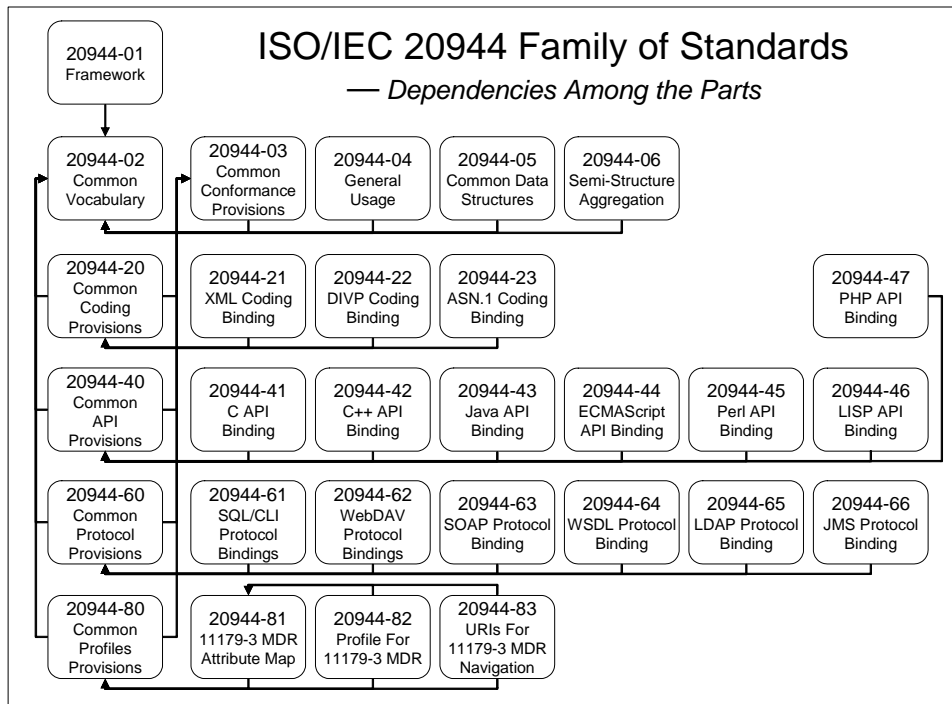
ISO/IEC 20944 consists of the following parts, under the general title *Information technology — Metadata Registries Interoperability and Bindings (MDRIB)*:

- *Part 01: Framework*
- *Part 02: Common vocabulary*
- *Part 03: Common provisions for conformance*
- *Part 04: Generic usage*
- *Part 05: Common data structures and services*
- *Part 06: Semi-structured aggregation*
- *Part 20: Common provisions for coding bindings*
- *Part 21: XML coding binding*
- *Part 22: DIVP coding binding*
- *Part 23: ASN.1 coding binding*
- *Part 40: Common provisions for application programming interface (API) bindings*
- *Part 41: C API binding*

- *Part 42: C++ API binding*
- *Part 43: Java API binding*
- *Part 44: ECMAScript API binding*
- *Part 45: Perl binding*
- *Part 46: LISP binding*
- *Part 47: PHP binding*
- *Part 60: Common provisions for protocol bindings*
- *Part 61: SQL/CLI protocol binding*
- *Part 62: WebDAV protocol binding*
- *Part 63: SOAP protocol binding*
- *Part 64: WSDL protocol binding*
- *Part 65: LDAP protocol binding*
- *Part 66: JMS protocol binding*
- *Part 80: Common provisions for profiles*
- *Part 81: Attribute mapping for 11179-3 metadata registry metamodel*
- *Part 82: Profile for 11179-3 metadata registry metamodel*
- *Part 83: Uniform Resource Identifier (URI) suffixes for 11179-3 metadata registry metamodel navigation*

Introduction

The following diagram shows the organization of the ISO/IEC 20944 family of standards.



Organization of ISO/IEC 20944 family of standards.

This Part of ISO/IEC 20944 specifies the C API binding, based upon the common API binding specified in Part 40.

Information technology — Metadata Registries Interoperability and Bindings (MDRIB) — Part 41: C API binding

Editor's Note: Each part of 20944 is marked with a common sequence number ("[Release Sequence #N]") to indicate they are synchronized and harmonized among themselves. The mark "[Release Sequence #N]" does *not* imply that there are a complete set of N-1 prior drafts for any particular Part.

1 Scope

The ISO/IEC 20944 family of standards describe codings, APIs, and protocols for interacting with an ISO/IEC 11179 metadata registry (MDR).

This Part of this International Standard specifies the C programming language API binding for the 20944 family of standards.

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.

ISO/IEC 20944-02:—¹, *Information technology — Metadata Registries Interoperability and Bindings (MDRIB) — Common vocabulary*²

ISO/IEC 20944-40:—³, *Information technology — Metadata Registries Interoperability and Bindings (MDRIB) — Common provisions for application programming interface (API) bindings*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in Part 02 and the following apply⁴.

¹ To be published.

² The international standards, technical reports, and drafts of the 11179, 20943, and 20944 series are available at

<http://metadata-standards.org/11179>
<http://metadata-standards.org/20943>
<http://metadata-standards.org/20944>

³ To be published.

3.1

referenced data interchange specification

data model that is being used for a defined interoperability binding

NOTE The term *referenced data interchange specification*, defined in 20944-02, is used throughout the 20944 family of standards to reference the data model that is being used for the bindings. The *referenced data interchange specification* is tied to the bindings via normative reference, e.g., some other standard defines a data model and uses 20944, via normative reference, to provide some coding, API, or protocol bindings. For Part 82, the *referenced data interchange specification* refers to the 11179-3 metamodel. Part 04 of this International Standard, explains how other standards and specifications may use or re-use portions of the 20944 family of standards.

4 API mapping

The binding-independent API of Part 40 is mapped to the C programming language according to the following rules.

4.1 Datatype mapping

The datatypes of Part 40 are mapped as follows:

Part 40: Binding-Independent	Part 41: C API Binding
mdrib_handle	mdrib_handle
characterstring	string (maximum length 32767)
pointer	void *
str8	unsigned char []
str16	wchar_t[]
str32	wchar_t[]
int8, uint8, int16, uint16, int32, uint32, int64, uint64, int128, uint128	int8_t, uint8_t, int16_t, uint16_t, int32_t, uint32_t, int64_t, uint64_t, int128_t, uint128_t
real32, real64, real80	float, double, long double
procedure	(void *)()

4.2 Function parameter mapping

The parameters of Part 40 are the same as the parameters for this Part.

⁴ Users and implementers of this International Standard may find it useful to reference additional terms and definitions from 20944-02.

4.3 Function return mapping

The return values of Part 40 are mapped as follows:

Part 40: Binding-Independent	Part 41: C API Binding
state(success,failure)	int, success=0, failure=-1
characterstring	string (maximum length 65535)
str8	unsigned char []
str16	wchar_t[]
str32	wchar_t[]
int8, uint8, int16, uint16, int32, uint32, int64, uint64, int128, uint128	int8_t, uint8_t, int16_t, uint16_t, int32_t, uint32_t, int64_t, uint64_t, int128_t, uint128_t
real32, real64, real80	float, double, long double

4.4 Function exception mapping

The function exceptions of Part 40 are mapped as follows:

Part 40: Binding-Independent	Part 41: C API Binding
bad_conversion	errno is set

5 Procedure call signatures

5.1 Session establishment services

5.1.1 Connect

Synopsis

```
mdrib_handle mdrib_connect
(
    unsigned char *target, // repository to connect to
    unsigned char *options // connect options
)
```

5.1.2 Disconnect

Synopsis

```
int mdrib_disconnect
(
    mdrib_handle session // session handle
)
```

5.1.3 Open

Synopsis

```
mdrib_handle mdrib_open
(
    mdrib_handle session, // session handle
    unsigned char *node, // portion of repository to open
    unsigned char *options // connect options
)
```

5.1.4 Close

Synopsis

```
int mdrib_close
(
    mdrib_handle session // session handle
)
```

5.2 Session parameter services

5.2.1 Get path

Synopsis

```
unsigned char *mdrib_get_path
(
    mdrib_handle session // session handle
)
```

5.3 Security services

5.3.1 Request Authorization/Authentication

Synopsis

```
int mdrib_request_auth
(
    mdrib_handle session, // session handle
    unsigned char *auth_type, // auth type
    unsigned char *auth_options // auth options
)
```

5.3.2 Response Authorization/Authentication

Synopsis

```

int mdrib_response_auth
(
    mdrib_handle session, // session handle
    unsigned char *auth_type, // auth type
    (*int)() auth_handler() // auth handler function
)

```

5.4 Data transfer services

5.4.1 Get value

Synopsis

```

int mdrib_get_value
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier, // [in] src object name
    unsigned char *dst_label_type, // [in] saved label: typeof
    mdrib_object *dst_label_ptr, // [out] saved label: ptr to
    unsigned char *dst_type_type, // [in] saved type: typeof
    mdrib_object *dst_type_ptr, // [out] saved type: ptr to
    unsigned char *dst_object_type, // [in] saved value: typeof
    mdrib_object *dst_object_ptr, // [out] saved value: ptr to
    unsigned char *dst_proplist_type, // [in] saved proplist: typeof
    mdrib_object *dst_proplist_ptr, // [out] saved proplist: ptr to
)

```

5.4.2 Typed get value

Synopsis

```

unsigned char *mdrib_get_value_as_str8
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier // [in] src object name
)

wchar_t *mdrib_get_value_as_str16
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier // [in] src object name
)

wchar_t *mdrib_get_value_as_str32
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier // [in] src object name
)

int8_t mdrib_get_value_as_int8
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier // [in] src object name
)

```

```
uint8_t mdrib_get_value_as_uint8
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier // [in] src object name
)

int16_t mdrib_get_value_as_int16
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier // [in] src object name
)

uint16_t mdrib_get_value_as_uint16
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier // [in] src object name
)

int32_t mdrib_get_value_as_int32
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier // [in] src object name
)

uint32_t mdrib_get_value_as_uint32
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier // [in] src object name
)

int64_t mdrib_get_value_as_int64
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier // [in] src object name
)

uint64_t mdrib_get_value_as_uint64
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier // [in] src object name
)

int128_t mdrib_get_value_as_int128
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier // [in] src object name
)

uint128_t mdrib_get_value_as_uint128
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier // [in] src object name
)
```

```
float mdrib_get_value_as_real32
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier // [in] src object name
)
```

```
double mdrib_get_value_as_real64
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier // [in] src object name
)
```

```
long double mdrib_get_value_as_real80
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier // [in] src object name
)
```

5.4.3 Put value

Synopsis

```
int mdrib_put_value
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier, // [in] src object name
    unsigned char *src_label_type, // [in] assigned label: typeof
    mdrib_object src_label_ptr, // [in] assigned label: ptr to
    unsigned char *src_type_type, // [in] assigned type: typeof
    mdrib_object src_type_ptr, // [in] assigned type: ptr to
    unsigned char *src_object_type, // [in] assigned value: typeof
    mdrib_object src_object_ptr, // [in] assigned value: ptr to
    unsigned char *src_proplist_type, // [in] assigned proplist: typeof
    mdrib_object src_proplist_ptr, // [in] assigned proplist: ptr to
)
```

5.4.4 Typed put value

Synopsis

```
int mdrib_put_value_as_str8
(
    mdrib_handle session, // [in] session handle
    unsigned char *dst_identifier, // [in] dst object name
    str8 src_value // [in] src value
)
```

```
int mdrib_put_value_as_str16
(
    mdrib_handle session, // [in] session handle
    unsigned char *dst_identifier, // [in] dst object name
    str16 src_value // [in] src value
)
```

```
int mdrib_put_value_as_str32
(
    mdrib_handle session, // [in] session handle
    unsigned char *dst_identifier, // [in] dst object name
    str32 src_value // [in] src value
)

int mdrib_put_value_as_int8
(
    mdrib_handle session, // [in] session handle
    unsigned char *dst_identifier, // [in] dst object name
    int8 src_value // [in] src value
)

int mdrib_put_value_as_uint8
(
    mdrib_handle session, // [in] session handle
    unsigned char *dst_identifier, // [in] dst object name
    uint8 src_value // [in] src value
)

int mdrib_put_value_as_int16
(
    mdrib_handle session, // [in] session handle
    unsigned char *dst_identifier, // [in] dst object name
    int16 src_value // [in] src value
)

int mdrib_put_value_as_uint16
(
    mdrib_handle session, // [in] session handle
    unsigned char *dst_identifier, // [in] dst object name
    uint16 src_value // [in] src value
)

int mdrib_put_value_as_int32
(
    mdrib_handle session, // [in] session handle
    unsigned char *dst_identifier, // [in] dst object name
    int32 src_value // [in] src value
)

int mdrib_put_value_as_uint32
(
    mdrib_handle session, // [in] session handle
    unsigned char *dst_identifier, // [in] dst object name
    uint32 src_value // [in] src value
)

int mdrib_put_value_as_int64
(
    mdrib_handle session, // [in] session handle
    unsigned char *dst_identifier, // [in] dst object name
    int64 src_value // [in] src value
)
```

```

int mdrib_put_value_as_uint64
(
    mdrib_handle session, // [in] session handle
    unsigned char *dst_identifier // [in] dst object name
    unit64 src_value // [in] src value
)

int mdrib_put_value_as_int128
(
    mdrib_handle session, // [in] session handle
    unsigned char *dst_identifier, // [in] dst object name
    int128 src_value // [in] src value
)

int mdrib_put_value_as_uint128
(
    mdrib_handle session, // [in] session handle
    unsigned char *dst_identifier, // [in] dst object name
    uint128_t src_value // [in] src value
)

int mdrib_put_value_as_real32
(
    mdrib_handle session, // [in] session handle
    unsigned char *dst_identifier, // [in] dst object name
    float src_value // [in] src value
)

int mdrib_put_value_as_real64
(
    mdrib_handle session, // [in] session handle
    unsigned char *dst_identifier, // [in] dst object name
    double src_value // [in] src value
)

int double mdrib_put_value_as_real80
(
    mdrib_handle session, // [in] session handle
    unsigned char *dst_identifier, // [in] dst object name
    long double src_value // [in] src value
)

```

5.5 Miscellaneous

5.5.1 Make Object message

Synopsis

```

integer mdrib_make_object
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier, // [in] src object name
    unsigned char *src_label_type, // [in] assigned label: typeof

```



```
mdrib_object src_label_ptr, // [in] assigned label: ptr to
unsigned char *src_type_type, // [in] assigned type: typeof
mdrib_object src_type_ptr, // [in] assigned type: ptr to
unsigned char *src_object_type, // [in] assigned value: typeof
mdrib_object src_object_ptr, // [in] assigned value: ptr to
unsigned char *src_proplist_type, // [in] assigned proplist: typeof
mdrib_object src_proplist_ptr, // [in] assigned proplist: ptr to
)
```

5.5.2 Remove Object message

Synopsis

```
integer mdrib_remove_object
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier, // [in] src object name
)
```

5.5.3 Link Object message

Synopsis

```
integer mdrib_link_object
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier, // [in] src object name
    unsigned char *dst_identifier, // [in] dst object name
    unsigned char *link_type // [in] link type: soft, hard
)
```

5.5.4 List Object message

Synopsis

```
string mdrib_list_object
(
    mdrib_handle session, // [in] session handle
    unsigned char *src_identifier // [in] src object name (wildcard)
)
```

6 Conformance

A conforming implementation shall conform to:

- the requirements of ISO/IEC 20944-03
- the requirements of ISO/IEC 20944-40
- the requirements of this Part