



# **Intelligence Community and Department of Defense Technical Specification**

---

## **SOAP Service Encoding Specification for Content Discovery and Retrieval: Manage**

**Version 1**

09 May 2014

Distribution Notice:

This document has been approved for Public Release and is available for use without restriction.

## Table of Contents

Chapter 1 - Introduction .....	1
1.1 - Service Overview .....	1
1.2 - Scope .....	2
1.3 - Artifact Overview .....	3
1.4 - Enterprise Need .....	4
1.5 - Conventions .....	5
1.5.1 - Namespaces .....	5
1.6 - Conformance .....	6
1.7 - CDR Resource Type and CDR Resource Description URIs .....	6
1.8 - Security .....	7
Chapter 2 - Service Behavior .....	8
2.1 - M-Create .....	8
2.2 - M-Read .....	8
2.3 - M-Update .....	8
2.4 - M-Delete .....	8
2.5 - M-Search .....	9
Chapter 3 - Service Interfaces .....	10
3.1 - M-Create Function .....	10
3.1.1 - Preconditions .....	10
3.1.2 - Input .....	10
3.1.2.1 - Header .....	10
3.1.2.2 - Body .....	12
3.1.2.3 - M-Create Request Example .....	13
3.1.3 - Output .....	14
3.1.3.1 - Header .....	14
3.1.3.2 - Body .....	14
3.1.3.3 - M-Create Response Example .....	16
3.1.4 - Post-condition .....	16
3.1.5 - Fault Conditions .....	16
3.1.5.1 - Fault Message Example .....	18
3.2 - M-Read Function .....	19
3.2.1 - Preconditions .....	19
3.2.2 - Input .....	19
3.2.2.1 - Header .....	20
3.2.2.2 - Body .....	21
3.2.2.3 - M-Read Request Example .....	21
3.2.3 - Output .....	21
3.2.3.1 - Header .....	21
3.2.3.2 - Body .....	21
3.2.3.3 - M-Read Response Example .....	22
3.2.4 - Post-conditions .....	22
3.2.5 - Fault Conditions .....	22
3.3 - M-Update Function .....	23
3.3.1 - Preconditions .....	24
3.3.2 - Input .....	24
3.3.2.1 - Header .....	24

3.3.2.2 - Body .....	25
3.3.2.3 - M-Update Request Example .....	25
3.3.3 - Output .....	26
3.3.3.1 - Header .....	26
3.3.3.2 - Body .....	26
3.3.3.3 - M-Update Response Example .....	26
3.3.4 - Post-conditions .....	27
3.3.5 - Fault Conditions .....	27
3.4 - M-Delete Function .....	29
3.4.1 - Preconditions .....	29
3.4.2 - Input .....	29
3.4.2.1 - Header .....	29
3.4.2.2 - Body .....	31
3.4.2.3 - M-Delete Request Example .....	31
3.4.3 - Output .....	31
3.4.3.1 - Header .....	31
3.4.3.2 - Body .....	32
3.4.3.3 - M-Delete Response Example .....	32
3.4.4 - Post-conditions .....	32
3.4.5 - Fault Conditions .....	32
3.5 - M-Search Function .....	33
Appendix A - Feature Summary .....	35
A.1 - SM Feature Comparison .....	35
Appendix B - Change History .....	36
B.1 - Changes Based on Query Management .....	36
Appendix C - Mapping to Specification Framework .....	38
Appendix D - Glossary .....	39
Appendix E - Bibliography .....	41
Appendix F - Points of Contact .....	44
Appendix G - IC CIO Approval Memo .....	45

## List of Figures

Figure 1 - CDR Resource Model .....	2
Figure 2 - CDR Architecture Documents .....	4
Figure 3 - Example Notation Convention .....	5
Figure 4 - General M-Create Request Example .....	14
Figure 5 - General M-Create Response Example .....	16
Figure 6 - Example Manage SOAP Fault .....	19
Figure 7 - General M-Read Request Example .....	21
Figure 8 - General M-Read Response Example .....	22
Figure 9 - General M-Update Request Example .....	26
Figure 10 - General M-Update Response Example .....	27
Figure 11 - General M-Delete Request Example .....	31
Figure 12 - General M-Delete Request Example .....	32

## List of Tables

Table 1 - Namespaces .....	6
Table 2 - CDR Resource Type URIs .....	7
Table 3 - CDR Resource Description Vocabulary URIs .....	7
Table 4 - Header Elements for M-Create Request .....	11
Table 5 - M-Create Properties Defined in cdrm: Namespace .....	12
Table 6 - Elements and Attributes of M-Create Request Message Body .....	13
Table 7 - Header Elements for M-Create Response .....	14
Table 8 - Elements and Attributes of M-Create Response Message Body .....	15
Table 9 - List of M-Create Function Faults .....	17
Table 10 - Headers Element for M-Read Request .....	20
Table 11 - Headers Element for M-Read Response .....	21
Table 12 - List of M-Read Function Faults .....	23
Table 13 - Header Elements for M-Update Request .....	24
Table 14 - Header Elements for M-Update Response .....	26
Table 15 - List of M-Update Function Faults .....	28
Table 16 - Header Elements for M-Delete Request .....	30
Table 17 - Header Elements for M-Delete Response .....	31
Table 18 - List of M-Delete Function Faults .....	33
Table 19 - Feature Summary Legend .....	35
Table 20 - SM Feature Comparison .....	35
Table 21 - DES Version Identifier History .....	36
Table 22 - Summary of Changes from QM v1.0 .....	36
Table 23 - Mapping to CDR Specification Framework Input Variables .....	38
Table 24 - Mapping to CDR Specification Framework Output Variables .....	38

## Chapter 1 - Introduction

### 1.1 - Service Overview

The Manage Component, as defined by the IC / DoD Content Discovery and Retrieval ( CDR ) Specification Framework (CDR-SF) [\[7\]](#), serves as the primary mechanism to manage CDR Resources, where a CDR Resource is defined as one explicitly created and used to support CDR functions. A Saved Search is an example of a CDR Resource; in particular, a Saved Search is used by the Query Management Execute (QM-Execute) function.

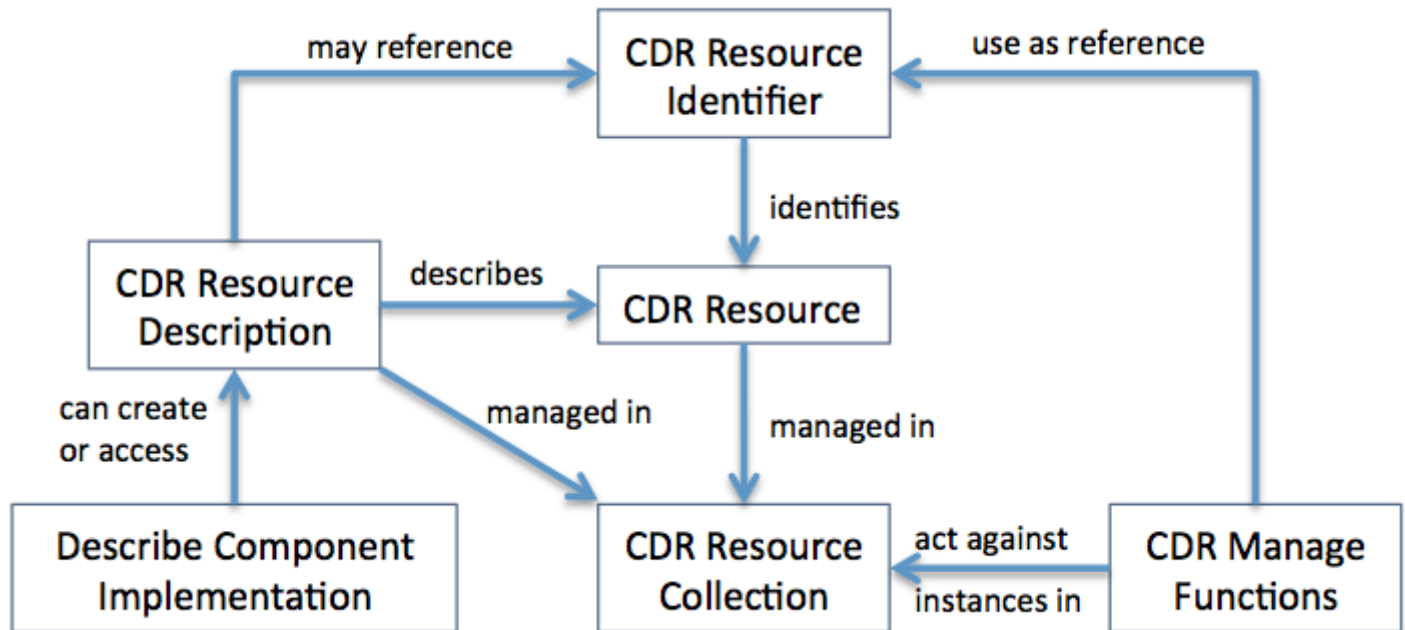
This specification defines requirements and provides guidance for the realization of the CDR Manage Component, hereafter termed the Manage Service in this document, as a web service using the SOAP <sup>1</sup> style binding. The content of this specification describes the Manage Service's behavior, interface and other aspects in detail, providing enough information for Manage Service providers and consumers to create and use CDR- conformant Manage Services. Specific uses of the Manage Service, such as to create, read, update, delete, and search for Saved Searches, will be elaborated as profiles in the corresponding documents for those uses. The Manage Service interfaces may be implemented to act on any CDR Resource type but actual use will always be in the context of a particular identified resource type.

The Manage Service provides a coordinated set of functions that enables service consumers to create, read, update, delete, and search for instances of any defined type of CDR Resources. The resource model presented in [Figure 1](#) provides an overview of the information that supports Manage functionality. The CDR Resource type corresponding to specific uses of Manage is associated with a Uniform Resource Identifier (URI) (see [Table 2](#) ), where the Web-accessible resource accessed through that URI will identify the structure and semantics of the CDR Resource type designed for that use. For example, Query Management ( QM ) defines the Saved Search type as the CDR Resource relevant to that use.

For all uses, the CDR Resource Description shown on the left-hand-side of [Figure 1](#) comprises the characteristic description metadata that aids in the discovery of CDR Resource instances. Some of this description, e.g., the date the resource was created in CDR Resource Collection, will be generated as part of the resource creation or update. Other description, such as a link to applicable policies, will be supplied by someone with responsibility for the resource. It is anticipated that a basic description vocabulary appropriate for any CDR Resource will contain a general set of properties (e.g., last modification date) while the description vocabulary associated with a particular resource type will add additional properties (e.g. query language for a Saved Search instance).

---

<sup>1</sup>SOAP is a protocol used by web services in the exchange of structured information.[\[18\]](#)



**Figure 1 : CDR Resource Model**

The ability to save and retrieve resource instances over time will require implementers to adopt a persistence mechanism, which this document refers to as a CDR Resource Collection. The implementation of the CDR Resource Collection is not in the scope of this document but the logical construct of a CDR Resource Collection MUST NOT be interpreted as requiring a separate physical implementation for each CDR Resource type.

This document specifies the standard interfaces to the functionality provided by the Manage Service. The CDR Manage specifications define the functions:

- M-Create
- M-Read
- M-Update
- M-Delete
- M-Search

The M-prefix is used to emphasize that these functions are defined for managing CDR Resources. While these functions may have wider applicability, defining such applicability is beyond the current scope.

## 1.2 - Scope

This specification is limited to the interactions that occur between an Initiating Consumer and the Manage Service as described in the CDR Reference Architecture (CDR-RA) [\[1\]](#) and CDR Specification Framework (CDR-SF) [\[7\]](#).



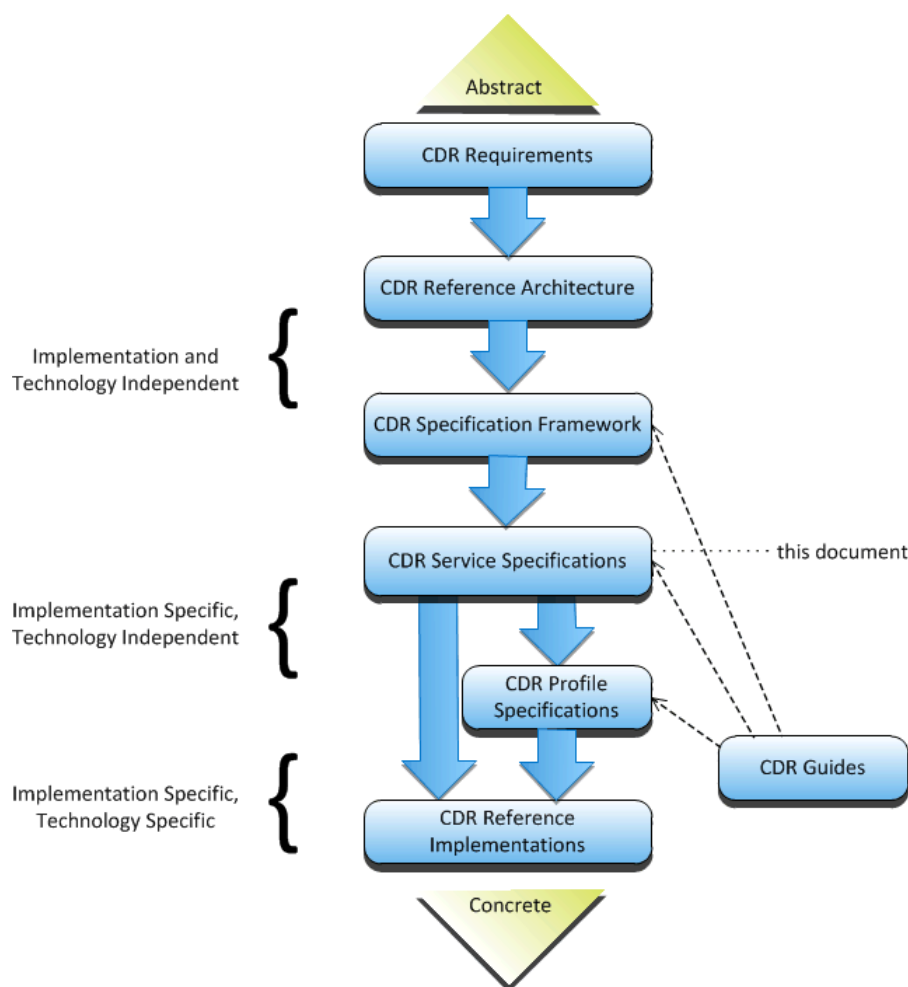
This specification provides the description of the Manage Service Behavior in terms of the message exchange patterns necessary to enable service consumers to create, read, update, delete, search for CDR Resources.

The scope of this specification is limited as follows:

- Versioning of the managed CDR resources is not defined
- A CDR resource update is a full replacement of the target resource. Partial update of the CDR resource is out of scope.

## 1.3 - Artifact Overview

This specification is a part of the set of specifications that define the concrete, implementation-specific guidance for the services defined under the auspices of the CDR Integrated Project Team ( IPT ). The CDR-RA [\[1\]](#) prescribes an abstract-to-concrete model for the development of architecture elements and guidance for content discovery and retrieval. Each layer or tier of the model is intended to provide key aspects of the overall guidance to achieve the goals and objectives for joint DoD / IC content discovery and retrieval. [Figure 2](#) , discussed in detail within the CDR-RA [\[1\]](#) illustrates this model.



**Figure 2 : CDR Architecture Documents**

As illustrated in [Figure 2](#) , the CDR-SF <sup>[7]</sup> derives from the CDR-RA and describes behavior in terms of the capabilities, components, and usage patterns defined in the CDR-RA. Multiple CDR Service Specifications are derived from the CDR-SF, with separate specifications associated with the components of the architecture (e.g., Manage) and, for each service, separate specifications to address Representational State Transfer ( REST ) and SOAP implementations.

This document is a specification for implementing the CDR Manage Service as a SOAP Web Service. It is intended to parallel the corresponding REST specification, the IC / DoD REST Interface Encoding Specification for CDR Manage,<sup>[3]</sup> as closely as possible, to minimize the difficulties in interoperating. Additional CDR Guides, Profile Specifications, or Reference Implementations may provide additional guidance on implementing this specification in a particular context.

## 1.4 - Enterprise Need

Enterprise needs and requirements for this specification can be found in the following policies and implementation guidance:

- IC Information Technology Enterprise (IC ITE)
  - Intelligence Community Information Technology Enterprise (IC ITE) Increment 1 Implementation Plan<sup>[10]</sup>
- 500 Series:
  - Intelligence Community Directive (ICD) 500, Director Of National Intelligence Chief Information Officer<sup>[11]</sup>
  - Joint IC/DoD Memorandum, IC and DoD Commitment to an Interoperable Service-Based Environment (13 Jul 07)<sup>[17]</sup>

## 1.5 - Conventions

The key words "MUST," "MUST NOT," "REQUIRED," "SHALL," "SHALL NOT," "SHOULD," "SHOULD NOT," "RECOMMENDED," "MAY," and "OPTIONAL" in this specification are to be interpreted as described in the IETF RFC 2119.<sup>[14]</sup> When these words are not capitalized, they are meant in their natural-language sense.

When describing concrete eXtensible Markup Language ( XML ) schemas and example XML documents, this specification uses XPath as the notational convention. Each member of an XML schema is described using an XPath notation (e.g., /x:RootElement/x:ChildElement/@Attribute). The use of {any} indicates the presence of an element wildcard (<xs:any/>). The use of @{any} indicates the presence of an attribute wildcard (<xs:anyAttribute>).

A parameter contained in curly brace, generally represented in the form {name}, is meant to be replaced with an actual value determined at run-time. An optional parameter in a URL template is one whose name is followed by ?, e.g., {name?} and these MAY be replaced by an empty string.

Examples in this text are distinguished by a blue border as shown in [Figure 3](#) . These are meant to be illustrative and represent one way that the described syntax can be used.

```
<atom:entry>
<atom:title>This is an example.</atom:title>
</atom:entry>
```

**Figure 3 : Example Notation Convention**

Examples are typically provided or referenced for each function.

### 1.5.1 - Namespaces

Namespaces referenced in this document and the prefixes used to represent them are listed in [Table 1](#) . The namespace prefix of any XML Qualified Name (QName) used in any example in this document should be interpreted using the information in [Table 1](#)

**Table 1 - Namespaces**

Prefix	URI	Description
soap	<a href="http://www.w3.org/2003/05/soap-envelope">http://www.w3.org/2003/05/soap-envelope</a>	SOAP Version 1.2
wsa	<a href="http://www.w3.org/2005/08/addressing">http://www.w3.org/2005/08/addressing</a>	WS-Addressing
wsaw	<a href="http://www.w3.org/2006/05/addressing/wsdl">http://www.w3.org/2006/05/addressing/wsdl</a>	WS-Addressing – SOAP Binding
cdrm	urn:cdr:manage:1	CDR Manage at the indicated version
cdrs	urn:cdr:search:3.0	CDR Search at the indicated version
xs	<a href="http://www.w3.org/2001/XMLSchema">http://www.w3.org/2001/XMLSchema</a>	XML Schema
atom	<a href="http://www.w3.org/2005/Atom">http://www.w3.org/2005/Atom</a>	Atom Syndication Format <sup>[16]</sup>

Many of the examples will include an entry such as <atom:entry xmlns ... > to indicate that the full XML would include the appropriate namespace declarations but the full declarations have not been included as part of the example for brevity and ease of maintaining this specification. Any use of namespaces included in [Table 1](#) should be interpreted as defined in [Table 1](#). The use of elements from the atom namespace is consistent with the Atom Syndication Format.

## 1.6 - Conformance

This specification defines an interface to a Manage Service to which an implementation and a subsequent deployment MUST conform. A deployment is an instance of an implementation. For an implementation to conform to this Manage specification, the implementation MUST adhere to all mandatory aspects of the specification.

## 1.7 - CDR Resource Type and CDR Resource Description URIs

[Table 2](#) and [Table 3](#) list the URI s for CDR Resource Types and CDR Resource Description Vocabularies that are currently defined as part of or recognized by the CDR specification set.<sup>2</sup> These are acceptable values for the resourceType parameter and descriptionVocabulary attributes defined in [Section 3.1.2 - Input](#). Use of the term CDR Resource throughout this specification should be interpreted as referring to any of the resource types identified in [Table 2](#) or subsequently defined as additional resource types.

[Table 2](#) and [Table 3](#) reference CDR Resource Types and description vocabularies by name and specify a URI that uniquely identifies each CDR Resource type and vocabulary. The URI may be either Uniform Resource Locator (URL) or Uniform Resource Name (URN) Each URL MUST link to a resource that defines the structure and semantics of a CDR Resource Type or Description Vocabulary. Each URN MUST be associated with a means, such as a Profile Specification or a CDR Guide, to retrieve the detailed definitions of the CDR Resource Type or description vocabulary.

<sup>2</sup>The Subscription and Saved Result Set resource types are notional in that the corresponding Manage profiles have been discussed but have not been explicitly defined.

**Table 2 - CDR Resource Type URIs**

Name	URI	Description
Saved Search QM v1	urn:cdr:resourceType:qmv1	Definition for Saved Search using the Atom format as defined in the QM v1.0 specifications
Saved Search OS	urn:cdr:resourceType:ssos:1.0	Definition for Saved Search using OpenSearch format
Saved Search XML	urn:cdr:resourceType:ssxml:1.0	Definition for Saved Search using XML to specify information as payload
Saved Search OS Broker	urn:cdr:resourceType:ssosb:1.0	Definition for Saved Search using OpenSearch format for brokered search
Saved Search XML Broker	urn:cdr:resourceType:ssxmlb:1.0	Definition for Saved Search using XML to specify information as payload for brokered search
Subscription	urn:cdr:resourceType:sub:1.0	Definition for Subscription (notional)
Saved Result Set	urn:cdr:resourceType:srs:1.0	Definition for Saved Result Set (notional)

**Table 3 - CDR Resource Description Vocabulary URIs**

Name	URI	Description
CDR Resource	urn:cdr:resourceVocab:res:1.0	Definition for basic CDR Resource vocabulary
Saved Search	urn:cdr:resourceVocab:ss:1.0	Definition for Saved Search vocabulary
Subscription	urn:cdr:resourceVocab:sub:1.0	Definition for Subscription vocabulary
Saved Result Set	urn:cdr:resourceVocab:srs:1.0	Definition for Saved Result Set vocabulary

Additional acceptable values for resource types and description vocabularies MAY be defined in the future and MUST also be identified by Name and by a URI that is associated with detailed definitions of the new resource type or new description vocabulary. Additional acceptable values are anticipated to include new versions of those currently identified as part of or recognized by the CDR specification set.

## 1.8 - Security

This specification does not directly address security concerns. It will be necessary for any implementation of this specification to address security concerns relevant to the systems with which they interact and the corresponding governance bodies. Several aspects of Manage, to include appropriate access to CDR Resource instances, should be addressed in the detailed security plan of an implementation, but are out of scope for this document.

## Chapter 2 - Service Behavior

As defined in the CDR-SF, Manage behavior is realized through five activities – create, read, update, delete and search – and is accessed through the use of the M-Create, M-Read, M-Update, M-Delete and M-Search interfaces.

### 2.1 - M-Create

The M-Create function is used to insert a new CDR Resource instance into the CDR Resource Collection. The create process will assign a unique CDR Resource Identifier through which other Manage Functions will refer to the resource instance for subsequent activities. M-Create may also create a CDR Resource Description.

### 2.2 - M-Read

The M-Read function is used to retrieve a CDR Resource from the Collection. It refers to the CDR Resource through its CDR Resource Identifier. M-Read may also be used to retrieve the CDR Resource Description.

### 2.3 - M-Update

The M-Update function is used to change a CDR Resource being managed through the CDR Resource Collection. It refers to the CDR Resource through its CDR Resource Identifier. M-Update replaces the existing CDR Resource and the CDR Resource Description with the input provided and does not support partial updates.

### 2.4 - M-Delete

The M-Delete function is used to remove a CDR Resource instance and its description from the CDR Resource Collection. It refers to the CDR Resource through its CDR Resource Identifier. The M-Delete section of CDR-SF <sup>1</sup> discusses considerations when deleting a CDR Resource. These considerations include but are not limited to whether:

- the CDR Resource instance is logically marked as deleted or physically removed from the CDR Resource Collection;
- the CDR Resource instance can be undeleted;
- the associated description of the CDR Resource instance is deleted or marked as representing a deleted instance;
- the deleted CDR Resource instance can be included in search results of M-Search and under which conditions may it appear;
- the consumer is asked to verify the delete request before it is carried out.

<sup>1</sup>The CDR-SF <sup>[7]</sup> has yet to be updated to include the Manage Component. The material referred to here will draw from the QM-Delete section of QM v1.0.<sup>[8]</sup>

The choice of such M-Delete behavior may be configured using M-Delete Properties but such definition of M-Delete Properties is outside the current scope of this specification.

## **2.5 - M-Search**

The M-Search function enables a prospective consumer to interrogate the CDR Resource Collection to determine if a suitable CDR Resource has already been created and is being managed. The search may be based on anything searchable in the CDR Resource or the CDR Resource Description. Generic search terms can be used to provide functionality that responds with a 'list' of the contents of the CDR Resource Collection. This capability SHOULD leverage the CDR Search discovery approach.

## Chapter 3 - Service Interfaces

The service interface contains the technical descriptions <sup>1</sup> of the functions through which the consumer will interact with the service. Support for input and output parameters for each function is described in associated input and output tables in terms of what is expected of the Manage Service and what is expected in terms of a consumer interacting with the service.

### 3.1 - M-Create Function

A Manage Service MUST implement the M-Create Function.

#### 3.1.1 - Preconditions

The following preconditions MUST be satisfied if the M-Create function is to correctly process input and generate results and post-conditions as described:

1. The requester is authenticated and authorized according to applicable policy requirements for the M-Create Function implementation.
2. A CDR Resource Collection exists and is available.

#### 3.1.2 - Input

The input to the CDR M-Create function MUST be a valid SOAP <sup>2</sup> message that meets criteria identified in this section. The input SHOULD be directed to the SOAP Endpoint address identified by the implementer.

##### 3.1.2.1 - Header

The header of the SOAP input message MUST contain the Action element, as defined in WS-Addressing<sup>[19]</sup> and shown in [Table 4](#) . The purpose of this element is to provide an indication of message intent; for the request, this conveys to the service which behavior to invoke. The header MAY also contain a separate To element to separately indicate the address of the intended receiver of the request. The receiver address can also be included as part of the Action URI .

In addition, the header MUST contain an element identifying the CDR Resource type and MAY include M-Create property elements, both as defined in [Table 4](#) . Other elements defined outside the scope of this document, such as other WS-Addressing elements, MAY be added to the SOAP header.

---

<sup>1</sup>The Manage Service is intended to conform as described by the Manage Component section of the CDR-SF. <sup>[7]</sup>

<sup>2</sup>Consult the relevant standards registry (such as the ICSR or DISR ) to determine the appropriate current version of the SOAP standard to use. Examples in this document use SOAP 1.2.<sup>[18]</sup>



**Table 4 - Header Elements for M-Create Request**

Element Name and Description	Support
<b>/wsa:To</b>  An XML element whose content MUST be of type xs:anyURI. This element conveys the value of the address of the intended receiver of this request.	MAY be supported by service.  MAY be provided by consumer.
<b>/wsa:Action</b>  An XML element whose content MUST be of type xs:anyURI. This element conveys the value of the [action] property and indicates to a web service which operation should be invoked.	MUST be supported by service.  MUST be provided by consumer with a value of urn:cdr:manage:1:createRequest
<b>/cdrm:resourceType</b>  An XML element whose content {CDRresourceType} MUST be of type xs:anyURI and MUST convey a value that references the definition of the structure and semantics of a recognized CDR Resource.	MUST be supported by service.  MUST be provided by consumer with a value as defined in <a href="#">Section 1.7 - CDR Resource Type and CDR Resource Description URIs</a> .
<b>/cdrm:MCreateProperties</b>  An XML element that serves as a wrapper for the information through which the Manage consumer may specify and configure optional behavior supported by the M-Create function implementation.	MAY be supported by service.  MAY be provided by consumer.
<b>/cdrm:MCreateProperties/{MCreateProperties}</b>  Child elements that the Manage consumer may specify to configure optional behavior supported by the M-Create function implementation.	MAY be supported by service.  MAY be provided by consumer.

M-Create properties {MCreateProperties} provide a means for both configuration and extensibility. [Table 5](#) defines properties related to the cdrm: namespace.

**Table 5 - M-Create Properties Defined in cdrm: Namespace**

M-Create Properties Definition	Support
<p><b>/cdrm:MCreateProperties/output</b></p> <p>The value controls whether the resource or its description is included in the M-Create output or the output of other Manage functions. The description comprises both those description elements generated as part of the resource creation or update and those provided as input during M-Create or M-Update use; see discussion of description on <a href="#">Section 1.1 - Service Overview</a>.</p> <p>Valid values are as follows:</p> <ul style="list-style-type: none"> <li>• resource: only the resource is included in the output</li> <li>• description: only the description is included in the output</li> <li>• all: both the resource and the description are included in the output</li> <li>• none: neither the resource nor the description is included in the output</li> </ul> <p>The default value is none.</p>	<p>MAY be supported by service.</p> <p>MAY be included by consumer in input if supported by service.</p>

Definition and use of M-Create properties MAY be supported by an implementation; if supported, the properties MAY be included by the consumer in the input. An implementation SHOULD ignore properties it does not support. Additional values enabling more selective output or additional M-Create properties may be defined in future versions of this specification.

### 3.1.2.2 - Body

The body of the SOAP message SHOULD<sup>3</sup> consist of a single <cdrm:CDRresource> element. The <cdrm:CDRresource> element and its child elements and associated attributes are defined in [Table 6](#). Unless specifically noted, the remainder of the message body definition that follows will use the <cdrm:CDRresource> structure.

The child elements of <cdrm:CDRresource> MUST correspond to the value of resourceType, as defined in [Section 3.1.2.1 - Header](#). The profiles that elaborate specific uses of the Manage functions will provide additional details regarding the structure and semantics of the message body content.

<sup>3</sup>The structure that follows is RECOMMENDED and NOT REQUIRED in order to provide a mechanism for compatibility with the <atom:entry> structure defined by version 1.0 of the Query Management specifications. The use of <atom:entry> instead of <cdrm:CDRresource> as the root element is elaborated in the Query Management v1.0 specifications.<sup>[8]</sup>

**Table 6 - Elements and Attributes of M-Create Request Message Body**

Element/Attribute Name and Description	Support
<b>/cdrm:CDResource</b> An XML element that serves as a wrapper for the information defining the resource being created and the associated description for the resource.	MUST be supported by service. MUST be included by consumer in input.
<b>/cdrm:CDResource/{CDR_Resource}</b> Information corresponding to the structure and semantics of the specific CDR Resource indicated by the value of {CDResourceType}(per <a href="#">Section 3.1.2.2 - Body</a> ).	MUST be supported by service. MUST be included by consumer in input.
<b>/cdrm:CDResource/description</b> An XML element that serves as a wrapper for the information describing the resource being created.	MAY be supported by service. MAY be included by consumer in input if supported by service.
<b>/cdrm:CDResource/description/@descriptionVocabulary</b> A URI that identifies a description vocabulary desired by the consumer. If provided, the value MUST be from those included in <a href="#">Table 3</a> or otherwise defined per <a href="#">Section 1.7 - CDR Resource Type and CDR Resource Description URIs</a> . If not provided, the Service will use its default vocabulary.	MAY be supported by service. MAY be included by consumer in input if supported by service.
<b>/cdrm:CDResource/description/{description}</b> Information describing the CDR Resource. The structure and semantics of the description MUST conform to the vocabulary identified in /cdrm:CDResource/description/@descriptionVocabulary.	MAY be supported by service. MAY be included by consumer in input if supported by service.

The value assigned to {CDResourceType} as defined in [Section 3.1.2.1 - Header](#) identifies the Resource Type, as discussed in [Section 1.1 - Service Overview](#) and specified in [Section 1.7 - CDR Resource Type and CDR Resource Description URIs](#) . The message body MUST be validated against the Resource Type indicated. A fault MUST result if the validation fails.

If a value is provided for @descriptionVocabulary in the M-Create request, the indicated CDR Resource Description Vocabulary MUST be used to validate the description input against the Description Vocabulary indicated. If a Description Vocabulary is not provided, the Manage Service MAY validate against a default vocabulary. A fault MUST result if the validation fails.

### 3.1.2.3 - M-Create Request Example

[Figure 4](#) shows an example with several { } fields for which resource-specific substitutions are needed. CDR specifications that define profiles for use of Manage functions contain examples with substitutions appropriate to that use.

```

<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope">
  <soap:Header>
    <wsa:To> http://CDR.org/CDRresource </wsa:To>
    <wsa:Action> urn:createRequest </wsa:Action>
    <cdrm:resourceType>
      {CDRresourceType}
    </cdrm:resourceType>
    <cdrm:MCreateProperties>
      <cdrm:output>all</cdrm:output>
    </cdrm:MCreateProperties>
  </soap:Header>
  <soap:Body>
    <cdrm:CDRresource xmlns:cdrm="...">
      {CDRresource}
      <cdrm:description descriptionVocabulary="
{descriptionVocabulary}">
        {description}
      </cdrm:description>
    </cdrm:CDRresource>
  </soap:Body>
</soap:Envelope>

```

**Figure 4 : General M-Create Request Example**

### 3.1.3 - Output

#### 3.1.3.1 - Header

As shown in [Table 7](#), the header of the SOAP output message MUST contain the Action element as defined in WS-Addressing.<sup>[19]</sup> The purpose of the Action element is to provide an indication of message intent; for the response, this conveys to the receiver which behavior was invoked.

**Table 7 - Header Elements for M-Create Response**

Element Name and Description	Support
<b>/wsa:Action</b>  An XML element whose content MUST be of type xs:anyURI. This element conveys the value of the [action] property and indicates to a web service that this message is a response.	MUST be supported by Service with a value of urn:cdr:manage:1:createResponse

#### 3.1.3.2 - Body

The body of the SOAP message SHOULD <sup>4</sup> consist of a single <cdrm:MResponse> element. The <cdrm:MResponse> element and its child elements and associated attributes are defined in

<sup>4</sup>The structure that follows is RECOMMENDED and NOT REQUIRED in order to provide a mechanism for compatibility with the <atom:entry> structure defined by version 1.0 of the Query Management specifications. The use of <atom:entry> instead of <cdrm:CDRresource> as the root element is elaborated in the Query Management v1.0 specifications.<sup>[8]</sup>

[Table 8](#) . Unless specifically noted, the remainder of the message body definition that follows will use the <cdrm:MResponse> structure.

**Table 8 - Elements and Attributes of M-Create Response Message Body**

Element/Attribute Name and Description	Support
<b>/cdrm:MResponse</b>  An XML element that serves as a wrapper for the response information.	MUST be supported by service.
<b>/cdrm:MResponse/id</b>  Identifier for created CDR Resource. The identifier MUST conform to the pattern described above for the CDR Resource Identifier.	MUST be supported by service.
<b>/cdrm:MResponse/{CDRresource}</b>  Copy of created resource that corresponds to the input generated per <a href="#">Table 6</a> . Inclusion of the resource in the output MUST correspond to the output control defined in <a href="#">Table 5</a> . If output control is not supported by Manage Service implementation or not provided on input, then the service MUST respond using its defined default.	MAY be supported by service.
<b>/cdrm:MResponse/description/{description}</b>  Copy of description of created resource that corresponds to the input generated per <a href="#">Table 6</a> and other description generated by the M-Create implementation. Inclusion of the description in the output MUST correspond to the output control defined in <a href="#">Table 5</a> . If output control is not supported by Manage Service implementation or not provided on input, then the service MUST respond using its defined default.	MAY be supported by service.

The CDR Resource Identifier MUST take the form

`http://{anyAuthority}/{anyHierarchy}/CDRresource/{CDRresourceID}`

where

{anyAuthority} and {anyHierarchy} are unconstrained in this specification beyond what is discussed in the syntax section of Uniform Resource Identifier (URI): Generic Syntax<sup>[15]</sup>. However, the URL path MUST end with /CDRresource before the /{CDRresourceID}.

{CDRresourceID} is the unique part of the identifier assigned by the CDR Resource Collection identified as `http://{anyAuthority}/{anyHierarchy}/CDRresource` . The value for CDRresourceID is unconstrained in this specification except that it MUST be valid as defined by Uniform Resource Identifier (URI): Generic Syntax<sup>[15]</sup>.

The CDR Resource Identifier is generated for use with the CDR Resource Collection; however, the CDR Resource Identifier MUST be able to support use in other Manage Service functions

(M-Read, M-Update, M-Delete, M-Search) and any functions defined by specifications defined as profiles of the Manage Service.

### 3.1.3.3 - M-Create Response Example

[Figure 5](#) shows an example that corresponds to the M-Create request example shown in [Figure 4](#) . It includes several { } fields for which resource-specific substitutions are needed. CDR specifications that define profiles for use of Manage functions contain examples with substitutions appropriate to that use.

```
<soap:Envelope>
  <soap:Header>
    <wsa:Action> urn:cdr:manage:1:createResponse </wsa:Action>
  </soap:Header>
  <soap:Body>
    <cdrm:MResponse xmlns:cdrm="...">
      <cdrm:id> http://CDR.org/CDRresource/1234 </cdrm:id>
      {CDRresource}
      <cdrm:description>
        {description}
      </cdrm:description>
    </cdrm:MResponse>
  </soap:Body>
</soap:Envelope>
```

**Figure 5 : General M-Create Response Example**

### 3.1.4 - Post-condition

The following conditions MUST be met upon completion of M-Create:

1. The CDR Resource is available for M-Read, M-Update, M-Delete, and M-Search and it is identifiable by the CDR Resource Identifier.
2. The use of this function has been audited according to applicable policy.<sup>5</sup>

### 3.1.5 - Fault Conditions

An implementation of the M-Create function MAY provide any of the faults listed in [Table 9](#) as a SOAP Fault to the consumer. The SOAP message MUST contain the header entry of <wsa:Action>http://www.w3.org/2005/08/addressing/fault</wsa:Action> and MUST contain a single SOAP Fault element as the only child of the SOAP Body element.

An example of the Manage SOAP fault is shown in [Figure 6](#) . The fault response adheres to the SOAP 1.2 specification.<sup>[18]</sup> The /soap:Fault/Code/Value element is used to convey the general type of error condition and MUST be from the enumeration /soap:faultCodeEnum as described in the SOAP 1.2 specification section 5.4.6. In addition, for the current use of this function, the

<sup>5</sup>The use of this function may be audited according to applicable policy and may include auditing of the success or failure of the function.

fault MUST also contain the /soap:Fault/Code/Subcode element and its child element /soap:Fault/Code/Subcode/Value. The /soap:Fault/Code/Subcode/Value as listed in [Table 9](#) supports automated processing of CDR specific errors. The /soap:Fault/Reason element has one or more /soap:Fault/Reason/Text elements as its children, where the value as listed in [Table 9](#) for each /soap:Fault/Reason/Text element SHOULD be used to provide a human-readable explanation of the fault. The /soap:Fault/Reason/Text element MUST include the xml:lang attribute.

[Table 9](#) outlines the service specific fault conditions that MAY be generated by CDR M-Create function implementations.

**Table 9 - List of M-Create Function Faults**

/soap:Fault/Code/Value  /soap:Fault/Code/Subcode/Value  /soap:Fault/Reason/Text	Fault Description
soap:Sender  cdr:manage:soap:fault:security  Unauthorized Access	The Consumer is either not authenticated or not authorized to perform the requested function.
soap:Sender  cdr:manage:soap:fault:resource Type  Unsupported Resource Type	The Manage Service does not support the indicated resource type.
soap:Sender  cdr:manage:soap:fault:property  Unsupported Manage Properties	The Manage Service does not support one or more of the Manage Properties.
soap:Sender  cdr:manage:soap:fault:prop_val ue  Unsupported Manage Properties Value	The Manage Service does not support one or more values associated with a Manage Property.
soap:Sender  cdr:manage:soap:fault:syntax  Unsupported CDR Resource Syntax	The CDR Resource does not conform to the value for Resource Type.

<b>/soap:Fault/Code/Value</b> <b>/soap:Fault/Code/Subcode/Value</b> <b>/soap:Fault/Reason/Text</b>	<b>Fault Description</b>
soap:Sender cdr:manage:soap:fault:descVocab Unsupported Description Vocabulary	The Manage Service does not support the indicated description vocabulary.
soap:Sender cdr:manage:soap:fault:dsyntax Unsupported Description Vocabulary Syntax	The description does not conform to the value for Description Vocabulary.
soap:Sender cdr:manage:soap:fault:execution Service Execution Fault	The Manage Service encounters an error during execution.

### 3.1.5.1 - Fault Message Example

[Figure 6](#) shows a fault message of type “Unsupported Resource Type”.



```
<soap:Envelope>
  <soap:Header>
    <wsa:Action> http://www.w3.org/2005/08/addressing/fault </wsa:Action>
  </soap:Header>
  <soap:Body>
    <soap:Fault>
      <soap:Code>
        <soap:Value>soap:Sender</soap:Value>
        <soap:Subcode>
          <soap:Value>
            cdr:manage:soap:fault:resourceType
          </soap:Value>
        </soap:Subcode>
      </soap:Code>
      <soap:Reason>
        <soap:Text xml:lang="en">
          Unsupported Resource Type
        </soap:Text>
      </soap:Reason>
    </soap:Fault>
  </soap:Body>
</soap:Envelope>
```

**Figure 6 : Example Manage SOAP Fault**

## 3.2 - M-Read Function

A Manage Service MUST implement the M-Read Function.

### 3.2.1 - Preconditions

The following preconditions MUST be satisfied if the M-Read function is to correctly process input and generate results and post-conditions as described:

1. The requester is authenticated and authorized according to applicable policy requirements for the M-Read Function implementation.
2. The CDR Resource can be retrieved through reference to its CDR Resource Identifier for the purposes of M-Read.

### 3.2.2 - Input

The input to the CDR M-Read Function MUST be a valid SOAP<sup>6</sup> message that meets criteria identified in this section. The input SHOULD be directed to the SOAP Endpoint address identified by the implementer.

<sup>6</sup>Consult the relevant standards registry (such as the ICSR or DISR ) to determine the appropriate current version of the SOAP standard to use. Examples in this document use SOAP 1.2.<sup>[18]</sup>

### 3.2.2.1 - Header

The header of the SOAP input message **MUST** contain the Action element, as defined in WS-Addressing<sup>[19]</sup> and shown in [Table 10](#) . The purpose of this element is to provide an indication of message intent; for the request, this conveys to the service which behavior to invoke. The header **MAY** also contain a separate To element to separately indicate the address of the intended receiver of the request. The receiver address can also be included as part of the Action URI.

In addition, the header **MUST** contain an element identifying the CDR Resource Identifier and **MAY** include M-Read property elements, both as defined in [Table 10](#) . Other elements defined outside the scope of this document, such as other WS-Addressing elements, **MAY** be added to the SOAP header.

**Table 10 - Headers Element for M-Read Request**

Element Name and Description	Support
<b>/wsa:To</b>  An XML element whose content <b>MUST</b> be of type xs:anyURI. This element conveys the value of the address of the intended receiver of this request.	MAY be supported by service.  MAY be provided by consumer.
<b>/wsa:Action</b>  An XML element whose content <b>MUST</b> be of type xs:anyURI. This element conveys the value of the [action] property and indicates to a web service which operation should be invoked.	MUST be supported by service.  MUST be provided by consumer with a value of urn:cdr:manage:1:readRequest.
<b>/cdrm:id</b>  Identifier as defined in <a href="#">Section 3.1.3.2 - Body</a> .	MUST be supported by Service.  MUST be provided by Consumer.
<b>/cdrm:MReadProperties</b>  An XML element that serves as a wrapper for the information through which the Manage consumer may specify and configure optional behavior supported by the M-Read function implementation.	MAY be supported by Service.  MAY be provided by Consumer.
<b>/cdrm:MReadProperties/ {MReadProperties}</b>  Child elements that the Manage consumer may specify to configure optional behavior supported by the M-Read function implementation.	MAY be supported by Service.  MAY be provided by Consumer.

M-Read properties {MReadProperties} provide a means for both configuration and extensibility. The output parameter as defined in [Table 5](#) **MAY** be used as an M-Read property. Definition and

use of M-Read properties MAY be supported by an implementation; if supported, the properties MAY be included by the consumer in the input. An implementation SHOULD ignore properties it does not support. Additional values enabling more selective output or additional M-Read properties may be defined in future versions of this specification.

### 3.2.2.2 - Body

The body for the M-Read request is empty.

### 3.2.2.3 - M-Read Request Example

[Figure 7](#) shows an example using the CDR Resource Identifier returned in [Figure 5](#) . Note that the example is independent of the CDR Resource type.

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope">
  <soap:Header>
    <wsa:To> http://CDR.org/CDRresource </wsa:To>
    <wsa:Action> urn: readRequest </wsa:Action>
    <cdrm:id> http://CDR.org/CDRresource/1234 </cdrm:id>
    <cdrm:MReadProperties>
      <cdrm:output>all</cdrm:output>
    </cdrm:MReadProperties>
  </soap:Header>
  <soap:Body/>
</soap:Envelope>
```

**Figure 7 : General M-Read Request Example**

## 3.2.3 - Output

### 3.2.3.1 - Header

As shown in [Table 11](#) , the header of the SOAP output message MUST contain the Action element as defined in WS-Addressing.<sup>[19]</sup> The purpose of the Action element is to convey to the receiver which behavior was invoked.

**Table 11 - Headers Element for M-Read Response**

Element Name and Description	Support
<b>/wsa:Action</b>  An XML element whose content MUST be of type xs:anyURI. This element conveys the value of the [action] property and indicates to a web service that this message is a response.	MUST be supported by Service with a value of urn:cdr:manage:1:readResponse

### 3.2.3.2 - Body

The output is as defined per [Section 3.1.3.2 - Body](#) .

### 3.2.3.3 - M-Read Response Example

[Figure 8](#) shows an example that corresponds to the M-Read example shown in [Figure 7](#) . It includes several { } fields for which resource-specific substitutions are needed. CDR specifications that define profiles for use of Manage functions contain examples with substitutions appropriate to that use.

```
<soap:Envelope>
  <soap:Header>
    <wsa:Action> urn:cdr:manage:1:readResponse </wsa:Action>
  </soap:Header>
  <soap:Body>
    <cdrm:MResponse xmlns:cdrm="...">
      <cdrm:id> http://CDR.org/CDRresource/1234 </cdrm:id>
      {CDRresource}
      <cdrm:description>
        {description}
      </cdrm:description>
    </cdrm:MResponse>
  </soap:Body>
</soap:Envelope>
```

**Figure 8 : General M-Read Response Example**

### 3.2.4 - Post-conditions

The following conditions MUST be met upon completion of M-Read:

1. Saved Search Resource is not affected by M-Read.
2. The use of this function has been audited according to applicable policy.<sup>7</sup>

### 3.2.5 - Fault Conditions

An implementation of the M-Read function MAY provide any of the faults listed in [Table 12](#) as a SOAP Fault to the consumer. Otherwise, the format of the SOAP Fault is the same as defined in [Section 3.1.5 - Fault Conditions](#) .

<sup>7</sup> The use of this function may be audited according to applicable policy and may include auditing of the success or failure of the function.

**Table 12 - List of M-Read Function Faults**

/soap:Fault/Code/Value /soap:Fault/Code/Subcode/Value /soap:Fault/Reason/Text	Fault Description
soap:Sender cdr:manage:soap:fault:security Unauthorized Access	The Consumer is either not authenticated or not authorized to perform the requested function.
soap:Sender cdr:manage:soap:fault:identifier Resource Instance Not Found	The Manage Service cannot retrieve a CDR Resource instance corresponding to the supplied identifier.
soap:Sender cdr:manage:soap:fault:property Unsupported Manage Properties	The Manage Service does not support one or more of the Manage Properties.
soap:Sender cdr:manage:soap:fault:prop_value Unsupported Manage Properties Value	The Manage Service does not support one or more values associated with a Manage Property.
soap:Sender cdr:manage:soap:fault:execution Service Execution Fault	The Manage Service encounters an error during execution.

### 3.3 - M-Update Function

A Manage Service MUST implement the M-Update Function.

The M-Update function allows a Consumer Component to change an existing CDR Resource instance. The CDR Resource ID uniquely identifies the CDR Resource instance to be modified. Partial updates are not allowed; therefore the M-Update request MUST send a complete resource representation that is used to replace the corresponding CDR Resource instance. The CDR Resource ID will remain the same; the CDR Resource Type will remain the same. It MAY be necessary to retrieve the CDR Resource instance prior to performing the update.

### 3.3.1 - Preconditions

The following preconditions **MUST** be satisfied if the M-Update function is to correctly process input and generate results and post-conditions as described:

1. The requester is authenticated and authorized according to applicable policy requirements for the M-Update function implementation.
2. The CDR Resource can be accessed through reference to CDR Resource Identifier for purposes of M-Update.

### 3.3.2 - Input

The input to the CDR M-Update Function **MUST** be a valid SOAP <sup>8</sup> message that meets criteria identified in this section. The input **SHOULD** be directed to the SOAP Endpoint address identified by the implementer.

#### 3.3.2.1 - Header

The header of the SOAP input message **MUST** contain the Action element, as defined in WS-Addressing<sup>[19]</sup> and shown in [Table 13](#) . The purpose of this element is to provide an indication of message intent; for the request, this conveys to the service which behavior to invoke. The header **MAY** also contain a separate To element to separately indicate the address of the intended receiver of the request. The receiver address can also be included as part of the Action URI.

In addition, the header **MUST** contain an element identifying the CDR Resource Identifier and **MAY** include M-Update property elements, both as defined in [Table 13](#) . Other elements, such as other WS-Addressing elements, **MAY** be added to the SOAP header.

**Table 13 - Header Elements for M-Update Request**

Element Name and Description	Support
<b>/wsa:To</b>  An XML element whose content <b>MUST</b> be of type xs:anyURI. This element conveys the value of the address of the intended receiver of this request.	MAY be supported by Service.  MAY be provided by consumer
<b>/wsa:Action</b>  An XML element whose content <b>MUST</b> be of type xs:anyURI. This element conveys the value of the [action] property and indicates to a web service which operation should be invoked.	<b>MUST</b> be supported by Service.  <b>MUST</b> be provided by consumer with a value of urn:cdr:manage:1:updateRequest

<sup>8</sup> Consult the relevant standards registry (such as the ICSR or DISR ) to determine the appropriate current version of the SOAP standard to use. Examples in this document use SOAP 1.2.<sup>[18]</sup>

Element Name and Description	Support
<b>/cdrm:MResponse/id</b> Identifier as defined in <a href="#">Section 3.1.3.2 - Body</a> .	MUST be supported by Service.  MUST be provided by Consumer.
<b>/cdrm:MUpdateProperties</b> An XML element that serves as a wrapper for the information through which the Manage consumer may specify and configure optional behavior supported by the M-Update function implementation.	MAY be supported by Service.  MAY be provided by Consumer.
<b>/cdrm:MUpdateProperties/ {MUpdateProperties}</b> Child elements that the Manage consumer may specify to configure optional behavior supported by the M-Update function implementation.	MAY be supported by Service.  MAY be provided by Consumer.

Note that /cdrm:resourceType is not included as an entry in the header because M-Update is intended to revise the content of a CDR Resource and not the type of a resource that was created.

M-Update properties {MUpdateProperties} provide a means for both configuration and extensibility. The output parameter as defined in [Table 5](#) MAY be used as an M-Update property. Definition and use of M-Update properties MAY be supported by an implementation; if supported, the properties MAY be included by the consumer in the input. Additional values enabling more selective output or additional M-Update properties may be defined in future versions of this specification.

### 3.3.2.2 - Body

The body of the M-Update request MUST contain a complete representation of the CDR Resource as defined in [Section 3.1.2.2 - Body](#) .

### 3.3.2.3 - M-Update Request Example

[Figure 9](#) shows an example <sup>9</sup> with several { } fields for which resource-specific substitutions are needed. CDR specifications that define profiles for use of Manage functions contain examples with substitutions appropriate to that use.

<sup>9</sup> The example assumes the use of <cdrm:CDRresource> as the root element. The use of <atom:entry> instead of <cdrm:CDRresource> as the root element is elaborated in the Query Management specifications.<sup>[4] [8]</sup>

```

<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
  <soap:Header>
    <wsa:To> http://CDR.org/CDRresource </wsa:To>
    <wsa:Action> urn:updateRequest </wsa:Action>
    <cdrm:id> http://CDR.org/CDRresource/1234 </cdrm:id>
    <cdrm:MUpdateProperties>
      <cdrm:output>all</cdrm:output>
    </cdrm:MUpdateProperties>
  </soap:Header>
  <soap:Body>
    <cdrm:CDRresource xmlns:cdrm="...">
      {CDRresource}
      <cdrm:description descriptionVocabulary="
{descriptionVocabulary}">
        {description}
      </cdrm:description>
    </cdrm:CDRresource>
  </soap:Body>
</soap:Envelope>

```

**Figure 9 : General M-Update Request Example**

### 3.3.3 - Output

#### 3.3.3.1 - Header

As shown in [Table 14](#) , the header of the SOAP output message MUST contain the Action element as defined in WS-Addressing.<sup>[19]</sup> The purpose of the Action element is to provide an indication of message intent; for the response, this conveys to the receiver which behavior was invoked.

**Table 14 - Header Elements for M-Update Response**

Element Name and Description	Support
<b>/wsa:Action</b>  An XML element whose content MUST be of type xs:anyURI. This element conveys the value of the [action] property and indicates to a web service that this message is a response.	MUST be supported by Service.  MUST be provided by consumer with a value of urn:cdr:manage:1:updateResponse

#### 3.3.3.2 - Body

The output is as defined per [Section 3.1.3.2 - Body](#) .

#### 3.3.3.3 - M-Update Response Example

[Figure 10](#) shows an example that corresponds to the M-Update request example shown in [Figure 9](#) . It includes several { } fields for which resource-specific substitutions are needed. CDR



specifications that define profiles for use of Manage functions contain examples with substitutions appropriate to that use.

```
<soap:Envelope>
  <soap:Header>
    <wsa:Action> urn:cdr:manage:1:updateResponse </wsa:Action>
  </soap:Header>
  <soap:Body>
    <cdrm:MResponse xmlns:cdrm="...">
      <cdrm:id> http://CDR.org/CDRresource/1234 </cdrm:id>
      {CDRresource}
      <cdrm:description>
        {description}
      </cdrm:description>
    </cdrm:MResponse>
  </soap:Body>
</soap:Envelope>
```

**Figure 10 : General M-Update Response Example**

### 3.3.4 - Post-conditions

The following conditions MUST be met upon completion of M-Update:

1. CDR Resource reflects specified updates.
2. CDR Resource is referenced by the CDR Resource Identifier.
3. The use of this function has been audited according to applicable policy.<sup>10</sup>

### 3.3.5 - Fault Conditions

An implementation of the M-Update function MAY provide any of the faults listed in [Table 15](#) as a SOAP Fault to the consumer. Otherwise, the format of the SOAP Fault is the same as defined in [Section 3.1.5 - Fault Conditions](#).

<sup>10</sup> The use of this function may be audited according to applicable policy and may include auditing of the success or failure of the function.

**Table 15 - List of M-Update Function Faults**

/soap:Fault/Code/Value /soap:Fault/Code/Subcode/ Value /soap:Fault/Reason/Text	Fault Description
soap:Sender cdr:manage:soap:fault:security Unauthorized Access	The Consumer is either not authenticated or not authorized to perform the requested function.
soap:Sender cdr:manage:soap:fault:identifier Resource Instance Not Found	The Manage Service cannot retrieve a CDR Resource instance corresponding to the supplied identifier.
soap:Sender cdr:manage:soap:fault:property Unsupported Manage Properties	The Manage Service does not support one or more of the Manage Properties.
soap:Sender cdr:manage:soap:fault:prop_val ue Unsupported Manage Properties Value	The Manage Service does not support one or more values associated with a Manage Property.
soap:Sender cdr:manage:soap:fault:syntax Unsupported CDR Resource Syntax	The CDR Resource does not conform to the value for Resource Type.
soap:Sender cdr:manage:soap:fault:descVoc ab Unsupported Description Vocabulary	The Manage Service does not support the indicated description vocabulary.

/soap:Fault/Code/Value /soap:Fault/Code/Subcode/Value /soap:Fault/Reason/Text	Fault Description
soap:Sender cdr:manage:soap:fault:dsyntax Unsupported Description Vocabulary Syntax	The description does not conform to the value for Description Vocabulary.
soap:Sender cdr:manage:soap:fault:execution Service Execution Fault	The Manage Service encounters an error during execution.

## 3.4 - M-Delete Function

A Manage Service MUST implement the M-Delete Function

The M-Delete function removes a CDR Resource instance and its description from the CDR Resource collection managed by the Manage Component implementation. [Section 2.4 - M-Delete](#) includes a discussion of the design considerations related to the M-Delete function.

### 3.4.1 - Preconditions

The following preconditions MUST be satisfied if the M-Delete function is to correctly process input and generate results and post-conditions as described:

1. The requester is authenticated and authorized according to applicable policy requirements for the M-Delete Function implementation.
2. The CDR Resource can be accessed through reference to its CDR Resource Identifier for purposes of M-Delete.

### 3.4.2 - Input

The input to the CDR M-Delete Function MUST be a valid SOAP <sup>11</sup> message that meets criteria identified in this section. The input SHOULD be directed to the SOAP Endpoint address identified by the implementer.

#### 3.4.2.1 - Header

The header of the SOAP input message MUST contain the Action element, as defined in WS-Addressing<sup>[19]</sup> and shown in [Table 16](#) . The purpose of this element is to provide an indication of

<sup>11</sup>Consult the relevant standards registry (such as the ICSR or DISR) to determine the appropriate current version of the SOAP standard to use. Examples in this document use SOAP 1.2.

message intent; for the request, this conveys to the service which behavior to invoke. The header MAY also contain a separate To element to separately indicate the address of the intended receiver of the request. The receiver address can also be included as part of the Action URI.

In addition, the header MUST contain an element identifying the CDR Resource Identifier and MAY include M-Delete property elements, both as defined in [Table 16](#). Other elements defined outside the scope of this document, such as other WS-Addressing elements, MAY be added to the SOAP header.

**Table 16 - Header Elements for M-Delete Request**

Element Name and Description	Support
<b>/wsa:To</b>  An XML element whose content MUST be of type xs:anyURI. This element conveys the value of the address of the intended receiver of this request.	MAY be supported by Service.  MAY be provided by consumer.
<b>/wsa:Action</b>  An XML element whose content MUST be of type xs:anyURI. This element conveys the value of the [action] property and indicates to a web service which operation should be invoked.	MUST be supported by Service.  MUST be provided by consumer with a value of urn:cdr:manage:1:deleteRequest
<b>/cdrm:MResponse/id</b>  Identifier as defined in <a href="#">Section 3.1.3.2 - Body</a> .	MUST be supported by Service.  MUST be provided by Consumer.
<b>/cdrm:MDeleteProperties</b>  An XML element that serves as a wrapper for the information through which the Manage consumer may specify and configure optional behavior supported by the M-Delete function implementation.	MAY be supported by Service.  MAY be provided by Consumer.
<b>/cdrm:MDeleteProperties/ {MDeleteProperties}</b>  Child elements that the Manage consumer may specify to configure optional behavior supported by the M-Delete function implementation.	MAY be supported by Service.  MAY be provided by Consumer.

M-Delete properties {MDeleteProperties} provide a means for both configuration and extensibility, and specific properties may be defined in future versions of this specification. Definition and use of M-Delete properties MAY be supported by an implementation; if supported, the properties MAY be included by the consumer in the input. An implementation SHOULD ignore properties it does not support. Additional values enabling more selective output or additional M-Delete properties may be defined in future versions of this specification.

### 3.4.2.2 - Body

The body for the M-Delete request is empty.

### 3.4.2.3 - M-Delete Request Example

[Figure 11](#) shows an example using the CDR Resource Identifier returned in [Figure 5](#) . Note that the example is independent of the CDR Resource type.

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
  <soap:Header>
    <wsa:To> http://CDR.org/CDResource </wsa:To>
    <wsa:Action> urn:deleteRequest </wsa:Action>
    <cdrm:id> http://CDR.org/CDResource/1234 </cdrm:id>
    <cdrm:MDeleteProperties>
      <cdrm:delete>logical</cdrm:delete>
    </cdrm:MDeleteProperties>
  </soap:Header>
  <soap:Body/>
</soap:Envelope>
```

**Figure 11 : General M-Delete Request Example**

The delete=logical parameter is included to illustrate a potential M-Delete property that is consistent with considerations as discussed in [Section 2.4 - M-Delete](#) , but definition of this parameter is outside the scope of this specification.

## 3.4.3 - Output

### 3.4.3.1 - Header

As shown in [Table 17](#) , the header of the SOAP output message MUST contain the Action element as defined in WS-Addressing.<sup>[19]</sup> The purpose of the Action element is to convey to the receiver which behavior was invoked.

**Table 17 - Header Elements for M-Delete Response**

Element Name and Description	Support
<b>/wsa:Action</b>  An XML element whose content MUST be of type xs:anyURI. This element conveys the value of the [action] property and indicates to a web service that this message is a response.	MUST be supported by Service.  MUST be provided by consumer with a value of urn:cdr:manage:1:deleteResponse

### 3.4.3.2 - Body

A successful M-Delete function MAY return a response. An unsuccessful QM-Delete function MUST return the appropriate fault.

### 3.4.3.3 - M-Delete Response Example

[Figure 12](#) shows an example that corresponds to the M-Delete example shown in [Figure 11](#) . CDR specifications that define profiles for use of Manage functions contain examples with substitutions appropriate to that use.

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
  <soap:Header>
    <wsa:Action> urn:cdr:manage:1:deleteResponse </wsa:Action>
  </soap:Header>
  <soap:Body>
    <cdrm:MResponse xmlns:cdrm="...">
      <cdrm:delete> Delete confirmed </cdrm:delete>
    </cdrm:MResponse>
  </soap:Body>
</soap:Envelope>
```

**Figure 12 : General M-Delete Request Example**

### 3.4.4 - Post-conditions

The following conditions MUST be met upon completion of M-Delete:

1. CDR Resource instance is no longer accessible by Manage functions.
2. The Delete function has been audited according to applicable policy.<sup>12</sup>

### 3.4.5 - Fault Conditions

An implementation of the M-Delete function MAY provide any of the faults listed in [Table 18](#) as a SOAP Fault to the consumer. Otherwise, the format of the SOAP Fault is the same as defined in [Section 3.1.5 - Fault Conditions](#) .

<sup>12</sup>The Delete function may be audited according to applicable policy regardless to the success or failure of the function.

**Table 18 - List of M-Delete Function Faults**

/soap:Fault/Code/Value /soap:Fault/Code/Subcode/Value /soap:Fault/Reason/Text	Fault Description
soap:Sender cdr:manage:soap:fault:security Unauthorized Access	The Consumer is either not authenticated or not authorized to perform the requested function.
soap:Sender cdr:manage:soap:fault:identifier Resource Instance Not Found	The Manage Service cannot retrieve a CDR Resource instance corresponding to the supplied identifier.
soap:Sender cdr:manage:soap:fault:property Unsupported Manage Properties	The Manage Service does not support one or more of the Manage Properties.
soap:Sender cdr:manage:soap:fault:prop_value Unsupported Manage Properties Value	The Manage Service does not support one or more values associated with a Manage Property.
soap:Sender cdr:manage:soap:fault:execution Service Execution Fault	The Manage Service encounters an error during execution.

### 3.5 - M-Search Function

A Manage Service SHOULD implement the M-Search Function as defined in this section. This function is RECOMMENDED and NOT REQUIRED because at an early stage (or for a limited implementation) there may not be a sufficient number of CDR Resource instances to merit an associated search capability.

The M-Search function provides the capability of searching the CDR Resource Collection, which is the repository of one or more collections of CDR Resources. M-Search MUST be compliant with CDR Search Interface as specified in CDR-RS [\[5\]](#) or CDR-SS [\[9\]](#). This can be viewed as listing all or some subset of the contents of the CDR Resource Collection. The search terms will

be those appropriate to searching for the CDR Resource(s) of interest, and SHOULD correspond to a description vocabulary as described in the Describe service specifications CDR-SD [6] or CDR-RD [2].

The relevant preconditions, inputs, outputs, post-condition, and faults are as specified in CDR-RS [5] or CDR-SS [9].



## Appendix A Feature Summary

[Table 19](#) summarizes major features by version for SM and all dependent specs. The “Required date” is the date when systems should support a feature based on the specified driver. Executive Orders, ISOO notices, ICD s and other policy documents have a variety of effective dates.

Table 19 - Feature Summary Legend

Key	Description
F	Full (able to comply and verified by spec to some degree)
P	Partial (Able to comply but not verifiable)
N	Non-compliance (Can’t comply)
N/A	Not Applicable. Feature is no longer required.
Cell Colors represent the same information as the Key value	

### A.1. SM Feature Comparison

Table 20 - SM Feature Comparison

SM Feature Comparison		
Required date	Feature	V1
	CRUD (Create, Read, Update, Delete)	F
	Search	F

## Appendix B Change History

[Table 21](#) summarizes the version identifier history for this DES.

**Table 21 - DES Version Identifier History**

Doc Revision	Revision Date	Revisions
V1	14 March 2014	Initial Release based on Query Management. For details of changes, see <a href="#">Section B.1 - Changes Based on Query Management</a>

### B.1 - Changes Based on Query Management

This section summarizes the significant changes that were made from **IC-DoD Simple Object Access Protocol (SOAP) Encoding Specification for CDR Query Management, V1.0** <sup>[8]</sup> to this document. These changes, shown in [Table 22](#), were primarily made to generalize the Query Management functionality to any identified CDR Resource, as defined, and to reformulate QM as a profile of the more general Manage Component. In addition, changes are introduced to harmonize the content of this specification with that contained in the other specifications produced by the CDR IPT, and to incorporate feedback on the specification from pilot implementations and conformance efforts.

**Table 22 - Summary of Changes from QM v1.0**

QM v1.0	Manage v1	Rationale for Change
Formulated in terms of managing saved search resource	Formulated in terms of general CDR resource	Other CDR resources identified; additional experience provided basis for generalization
Saved search model introduced	CDR Resource model generalized and revised	Generalize and improve clarity
wsa:Action header references QM	wsa:Action header references Manage	Generalize to base specification
Scope limited to saved searches; variations among saved search formats included as conditionals	Section added to define CDR resource, identify known resources (including separate saved search constructs), describe specifying new resources	Generalize and create basis for mapping to current and future work
Interfaces defined in terms of / atom:entry	Required use of Atom removed	Consensus that requiring use of Atom was overly restrictive; some Atom use not completely consistent with Atom specification

QM v1.0	Manage v1	Rationale for Change
Saved search instance identified by atom:id	CDR resource instance identified by cdrm:id	Replace questionable use of atom:id with consistent format not dependent on Atom
No Query Management properties defined	output property defined for use across Manage functions	Provide flexibility, including minimum output for use of limited bandwidth
SOAP fault general format in separate section outside of QM functions and without specific faults	Added separate fault sections to each function	Additional information aligned with Manage REST spec and consistency with other newer specs
QM-Search defined with intent to be consistent with CDR Search	M-Search directly references applicable CDR Search specs	Avoid chance for inconsistency
Mapping to Specification Framework done in each function	Mappings to Specification Framework collected in appendix	Consistency with newer specifications

## Appendix C Mapping to Specification Framework

This section explicitly ties the items in this specification to the requirements of the CDR-SF. [7] The CDR-SF identifies the requirements for creating specifications, while implementation details are outlined in this document.

At the time of the publication of this document, the CDR-SF has not been updated to reflect the specification of the Manage Component or the recasting of the Query Management Component as a profile of Manage. A draft of those changes generally substitutes the following:

- Manage (in the context of the Manage Component) for Query Management (in the context of the Query Management as represented by v1.0 of the QM specifications)
- CDR Resource for Saved Search, including such uses as CDR Resource ID for Saved Search ID
- No substitution for the QM-Execute Function because this is a unique addition for Query Management

[Table 23](#) and [Table 24](#) map the CDR-SF [7] inputs and outputs, respectively, to parameters, elements, and attributes defined in this specification. Common parameters are used across the Manage Functions and, as such, the mappings are not repeated for individual functions.

**Table 23 - Mapping to CDR Specification Framework Input Variables**

Specification Framework Variables	SOAP Manage Specification
CDR Resource Content	/cdrm:CDResource/{CDR_Resource}
Resource Type	/cdrm:resourceType
Manage Properties	{MCreateProperties} {MReadProperties} {MUpdateProperties} {MDeleteProperties}
CDR Resource ID	CDR Resource Identifier
Search Function Inputs	as defined for CDR Search and CDR Brokered Search

**Table 24 - Mapping to CDR Specification Framework Output Variables**

Specification Framework Variables	REST Manage Specification
CDR Resource ID	CDR Resource Identifier
CDR Resource Return	/cdrm:MResponse/{CDResource}
CDR Resource Description	/cdrm:MResponse/description/{description}
[Delete] Confirmation	/cdrm:delete

## Appendix D Glossary

This appendix lists all the acronyms and abbreviations referenced in this encoding specification.

CDR	Content Discovery and Retrieval
CDR-RA	Content Discovery & Retrieval - Reference Architecture
CDR-RS	Content Discovery & Retrieval - REST Search
CDR-SF	Content Discovery & Retrieval - Specification Framework
CDR-SS	Content Discovery & Retrieval - SOAP Search
CIO	Chief Information Officer
CVE	Controlled Vocabulary Enumeration
DISR	DoD Information Technology Standards Registry
DNI	Director of National Intelligence
DOD	Department of Defense
IC	Intelligence Community
IC CIO	Intelligence Community Chief Information Officer
IC ITE	IC Information Technology Enterprise
ICD	Intelligence Community Directive
ICS	Intelligence Community Standard
ICSR	Intelligence Community Standards Registry
IETF	Internet Engineering Task Force
IPT	Integrated Project Team
ISOO	Information Security Oversight Office
OCIO	Office of the Intelligence Community Chief Information Officer
QM	Query Management
REST	Representational State Transfer
RFC	Request for Comments
SES	Service Encoding Specification
URI	Uniform Resource Identifier

---

URL	Uniform Resource Locator
URN	Uniform Resource Name
XML	Extensible Markup Language
XSL	Extensible Stylesheet Language

## Appendix E Bibliography

### Bibliography

[1] CDR-RA

Intelligence Community/Department of Defense Content Discovery & Retrieval Integrated Project Team. *Content Discovery and Retrieval Integrated Project Team Reference Architecture (CDR-RA)*.

Available online Intelink-U at: <http://purl.org/IC/Standards/CDR-RA>

Available online at: <http://purl.org/IC/Standards/public>

[2] CDR-RD

Intelligence Community/Department of Defense Content Discovery & Retrieval Integrated Project Team. *REST Interface Specification for Content Discovery and Retrieval: Describe (CDR-RD)*.

Available online Intelink-U at: <http://purl.org/IC/Standards/CDR-RD>

Available online at: <http://purl.org/IC/Standards/public>

[3] CDR-RM

Intelligence Community/Department of Defense Content Discovery & Retrieval Integrated Project Team. *REST Interface Specification for Content Discovery and Retrieval: Manage (CDR-RM)*.

Available online Intelink-U at: <http://purl.org/IC/Standards/CDR-RM>

Available online at: <http://purl.org/IC/Standards/public>

[4] CDR-RQM V1

Intelligence Community/Department of Defense Content Discovery & Retrieval Integrated Project Team. *REST Encoding Specification for CDR Query Management*.

Available online Intelink-U at: <http://purl.org/IC/Standards/CDR-RQM>

Available online at: <http://purl.org/IC/Standards/public>

[5] CDR-RS

Intelligence Community/Department of Defense Content Discovery & Retrieval Integrated Project Team. *REST Interface Encoding Specification for Content Discovery and Retrieval: Search (CDR-RS)*.

Available online Intelink-U at: <http://purl.org/IC/Standards/CDR-RS>

Available online at: <http://purl.org/IC/Standards/public>

[6] CDR-SD

Intelligence Community/Department of Defense Content Discovery & Retrieval Integrated Project Team. *SOAP Interface Specification for Content Discovery and Retrieval: Describe (CDR-SD)*.

Available online Intelink-U at: <http://purl.org/IC/Standards/CDR-SD>

Available online at: <http://purl.org/IC/Standards/public>

[7] CDR-SF

Intelligence Community/Department of Defense Content Discovery & Retrieval Integrated Project Team. *Data Encoding Specification for Content Discovery and Retrieval: Specification Framework (CDR-SF)*.

Available online Intelink-U at: <http://purl.org/IC/Standards/CDR-SF>

Available online at: <http://purl.org/IC/Standards/public>

[8] CDR-SQM V1

Intelligence Community/Department of Defense Content Discovery & Retrieval Integrated Project Team. *SOAP Encoding Specification for CDR Query Management*.

Available online Intelink-U at: <http://purl.org/IC/Standards/CDR-SQrM> [<http://purl.org/IC/Standards/CDR-SQM>]

Available online at: <http://purl.org/IC/Standards/public>

[9] CDR-SS

Intelligence Community/Department of Defense Content Discovery & Retrieval Integrated Project Team. *SOAP Interface Encoding Specification for Content Discovery and Retrieval: Search (CDR-SS)*.

Available online Intelink-U at: <http://purl.org/IC/Standards/CDR-SS>

Available online at: <http://purl.org/IC/Standards/public>

[10] IC ITE INC1 IMPL

Office of the Director of National Intelligence. *Intelligence Community Information Technology Enterprise (IC ITE) Increment 1 Implementation Plan*. July 2012.

Available online Intelink-TS at: <http://go.ic.gov/HvBHBmY>

[11] ICD 500

Office of the Director of National Intelligence. *Director of National Intelligence Chief Information Officer*. Intelligence Community Directive 500. 7 August 2008.

Available online Intelink-TS at: <http://go.ic.gov/enm8L9x>

Available online at: [http://www.dni.gov/files/documents/ICD/ICD\\_500.pdf](http://www.dni.gov/files/documents/ICD/ICD_500.pdf)

[12] ICPG 710.1

Assistant Director of National Intelligence for . *Application of Dissemination Controls: Originator Control*. Intelligence Community Policy Guidance 710.1. 25 July 2012.

Available online Intelink-TS at: <http://go.ic.gov/yAqVQ0H>

[13] ICS 500-20

Director of National Intelligence Chief Information Officer. *Intelligence Community Enterprise Standards Compliance*. Intelligence Community Standard 500-20. 16 December 2010.

Available online Intelink-TS at: <http://go.ic.gov/QUDIJKZ>

Available online Intelink-U at: [https://intelshare.intelink.gov/sites/odni/cio/ea/library/Data%20Specifications/500-21/500\\_20\\_signed\\_16DEC2010.pdf](https://intelshare.intelink.gov/sites/odni/cio/ea/library/Data%20Specifications/500-21/500_20_signed_16DEC2010.pdf)

[14] IETF-RFC 2119

Internet Engineering Task Force. *Key words for use in RFCs to Indicate Requirement Levels*. March 1997.

Available online at: <http://tools.ietf.org/html/rfc2119>

[15] IETF-RFC 3986

Internet Engineering Task Force. *Uniform Resource Identifier (URI): Generic Syntax*. January 2005.

Available online at: <http://tools.ietf.org/html/rfc3986>



[16] IETF-RFC 4287

M. Nottingham, R. Sayre. *The Atom Syndication Format*. December 2005.

Available online at: <http://www.ietf.org/rfc/rfc4287.txt>

[17] Joint IC/DoD Memorandum

Intelligence Community Chief Information Officer, and Department of Defence Chief Information Officer. *IC and DoD Commitment to an Interoperable Service-Based Environment*. 13 July 2007.

Available online at: <http://www.docstoc.com/docs/797594/Department-of-Defense-DoD-and-Intelligence-Community-IC-Commitment-to-an-Interoperable-Services-Based-Environment--Enterprise-Services>

[18] SOAP

World Wide Web Consortium (W3C). *SOAP Version 1.2 Part 1: Messaging Framework*. W3C Recommendation 27 April 2007.

Available online at: <http://www.w3.org/TR/soap12-part1/>

[19] WS-A

World Wide Web Consortium (W3C). *Web Services Addressing 1.0 - SOAP Binding*. W3C Recommendation 9 May 2006.

Available online at: <http://www.w3.org/TR/ws-addr-soap/>

## Appendix F Points of Contact

The Intelligence Community Chief Information Officer (IC CIO) facilitates one or more collaboration and coordination forums charged with the adoption, modification, development, and governance of IC technical specifications of common concern. This technical specification was produced by the IC CIO and coordinated with these forums, approved by the IC CIO or a designated representative, and made available at DNI -sponsored web sites. Direct all inquiries about this IC technical specification to the IC CIO, an IC technical specification collaboration and coordination forum, or IC element representatives involved in those forums.

Public Website: <http://purl.org/ic/standards/public>

E-mail: [ic-standards-support@intelink.gov](mailto:ic-standards-support@intelink.gov) [mailto:ic-standards-support@intelink.gov].

## Appendix G IC CIO Approval Memo

An Office of the Intelligence Community Chief Information Officer (OCIO) Approval Memo should accompany this enterprise technical data specification bearing the signature of the Intelligence Community Chief Information Officer (IC CIO) or an IC CIO -designated official(s). If an OCIO Approval Memo is not accompanying this specification's version release package, then refer back to the authoritative web location(s) for this specification to see if a more complete package or a specification update is available.

Specification artifacts display a date representing the last time a version's artifacts as a whole were modified. This date most often represents the conclusion of the IC Element collaboration and coordination process. Once the IC Element coordination process is complete, the specification goes through an internal OCIO staffing and coordination process leading to signature of the OCIO Approval Memo. The signature date of the OCIO Approval Memo will be later than the last modified date shown on the specification artifacts by an indeterminable time period.

Upon signature of the OCIO Approval Memo, IC Elements may begin to use this specification version in order to address mission and business objectives. However, it is critical for IC Elements, prior to disseminating information encoded with this new specification version, to ensure that key enterprise services and consumers are prepared to accept this information. IC Elements should work with enterprise service providers and consumers to orchestrate an orderly implementation transition to this specification version in concert with mandatory and retirement usage decisions captured in the IC Enterprise Standards Baseline as defined in Intelligence Community Standard (ICS) 500-20.<sup>[13]</sup>