Open Geospatial Consortium

OGC Web Services (OWS) Context Conceptual Model

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Contents

i. Abstract

This standard describes the use cases, requirements, conceptual data model of the OWS Context encoding standard. The goal of this standard is to provide a core model, which is extended and encoded as defined in extensions to this standard. A Context reference a fully configured service set to be defined and consistently interpreted by clients.

The OGC Web Services Context Document (OWS Context) was created to allow a set of configured information resources (service set) to be passed between applications primarily as a collection of services. OWS Context is developed to support in-line content as well. The goal is to support use cases such as the distribution of search results, the exchange of a set of resources such as OGC Web Feature Service (WFS), Web Map Service (WMS), Web Map Tile Service (WMTS), Web Coverage Service (WCS) and others in a 'common operating picture'. Additionally OWS Context can deliver a set of configured processing services (Web Processing Service (WPS)) parameters to allow the processing to be reproduced on different nodes.

OWS Context is aimed at replacing previous OGC attempts at providing such a capability (the Web Map Context WMC) which was reasonably successful but limited to WMS. Other work on the 'Location Organizer Folder (LOF)' was also taken into consideration. The concept of OWS Context, and the first prototype document was produced as part of OGC testbed OWS-7. See 10-035r1, Information Sharing Engineering Report. In order to achieve mass market appeal, as well as being useful to a wider community, the use of OWS Context support to other existing standards was considered. Multiple encoding formats for OWS Context have been developed (ATOM, JSON). Each of these is described in a separate OWS Context Extensions to the Core model.

This document concentrates on describing the OWS Context Model in abstract terms using UML. The document defines requirements and use cases. It also includes an abstract test suite to verify that encodings are compliant with the core specification. The intent of OWS Context is to allow many types of OGC Data Delivery service to be referenced and therefore exploited (for example, not just WMS but also WFS, WCS and WPS) but it does not explicitly define the encoding of these services in the core (only the general approach to be used for different types of service interface). Service explicit encodings are defined within the extension documents for ATOM and JSON.

The abbreviation owc is used throughout this document for OWS Context.

ii.   Keywords

The following are keywords to be used by search engines and document catalogues

COP, Common Operating Picture, owc, Context

iii.   Preface

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iv.   Submitting organizations

The following organizations submitted this Implementation Specification to the Open Geospatial Consortium Inc. as an Implementation Specification:

- Envitia
- Intergraph
- ImageMatters
- NGA
- Terradue
- USGS

v.   Submitters

All questions regarding this submission should be directed to the editor or the submitters:

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Matt Tricomi	USGS
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1. Scope

This document defines the data model of the OWS Context document and the intended semantics of each element of the document. It also defines the requirements and the abstract test cases against which encoding specifications using specific carrier standards can be validated as compliant with OWS Context.

2. Conformance

This document defines a standardisation target for encodings which implement the OWS Context information model in order to allow different encodings to have equivalent content and semantics so that they can be interoperable; it establishes a core requirements class: http://www.opengis.net/spec/owc/1.0/req/core with URI of http://www.opengis.net/spec/owc/1.0/req/core as well as a number of extensions, one per chosen service type. Requirements and conformance test URIs defined in this document are relative to http://www.opengis.net/spec/owc/1.0. All requirements in this specification are part of the core requirement stated above.

Conformance with this standard shall be checked using all the relevant tests specified in Annex A (normative) of this document. The framework, concepts, and methodology for testing, and the criteria to be achieved to claim conformance are specified in the OGC Compliance Testing Policies and Procedures and the OGC Compliance Testing web site.

In order to conform to this OGC™ interface standard, an encoding standard shall choose to implement any one of the conformance levels specified in Annex A (normative).

3. References

The following normative documents contain provisions that, through reference in this text, constitute provisions of this document. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. For undated references, the latest edition of the normative document referred to applies.

1. ISO19115:2003 Metadata Standard for Geographic Information.
2. OGC 08-131r3 - The Specification Model — A Standard for Modular specifications

4. Terms and Definitions

The following terms and definitions are used throughout this document:

4.1 Common Operating Picture

A COP is a single identical display of relevant information shared by more than one command. A common operational picture facilitates collaborative planning and assists all echelons to achieve situational awareness.

4.2 Context Document

A context document is a document describing the set of resources and their configuration, and ancillary information (area of interest, etc.) which defines the information representation of a common operating picture.

4.3 Resource

A resource is a configured set of information which is uniquely identifiable to a user. This can be realised as in-line or external content or by one or more configured web services.

4.4 Area Of Interest

An area of interest is a geographic area which is significant to a user.

5. Conventions

This sections provides details and examples for any conventions used in the document. Examples of conventions are symbols, abbreviations, use of XML schema, or special notes regarding how to read the document.

5.1 Abbreviated Terms

owc - OGC Web Services Context

5.2 UML notation

Unified Modeling Language (UML) static structure diagrams appearing in this specification are used as described in Sub clause 5.2 of OGC Web Service Common [OGC 06-121r9]. Further, the following conventions hold:

- UML elements having a package name of "OWS Common" are those defined in the UML model of OWS Common [OGC 06-121r9].

- UML elements having a package name of GML are those defined in the UML model of GML [OGC 07-036].

- UML elements not qualified with a package name are those defined in this Standard.

- UML data type Any is used here as an equivalence to XML's xsd:any.

5.3 Data dictionary tables

The UML model data dictionary is specified herein in a series of tables. The contents of the columns in these tables are described in Sub clause 5.5 of [OGC 06-121r9]. The contents of these data dictionary tables are normative, including any table footnotes. For the reader's convenience, table rows describing inherited components are shaded.

5.4 Core and Extension Breakdown

The OWS context standard follows the modular specification design pattern identified in REF 3. It was decided that the requirements would be split both on the basis of core and then specific service types (WMS, WFS etc.) and also on the basis of specific encoding of the document.
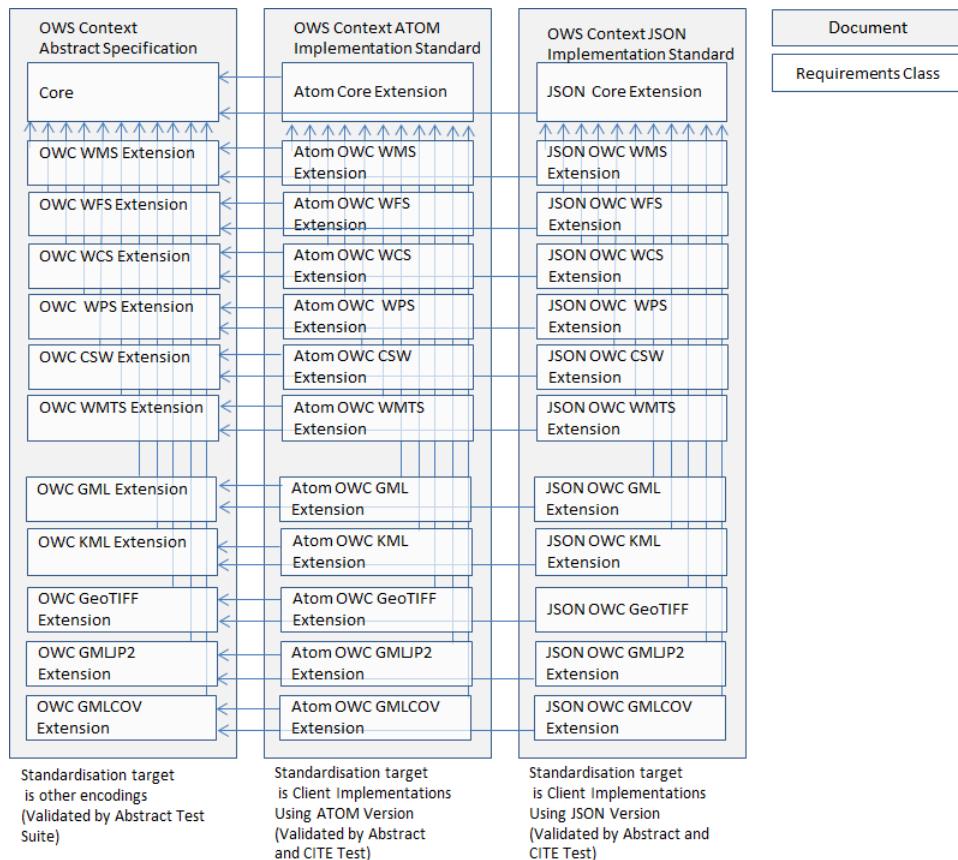
Figure 1 - OWS Context Requirement Class and Document Breakdown

The core context document is largely agnostic of any particular resource type, covering the basic structure and the extension model. A requirement class is then defined for each resource offering. This document covers all of the requirement classes for the conceptual model (the left grey box in figure 1 above). These standardization target resources include services (WMS, WFS), encodings for in-line content (GML, GeoTiff) and storage for external content (GeoPackage).

Various potential OWS Context encodings have been considered, in particular there are clear requirements for both an XML (Atom) encoding and a JSON Encoding. These are the subject of separate documents (Implementation Specifications).

This standard recommends that any implementer of an application profile which defines an extensions conceptual model should define both an XML (Atom) and a JSON Encoding of the extension.

6. Use Cases and Requirements

The Context Document goal is to support the exchange of a common operating picture or view between human users or applications such that the area of interest, time range, resources and their configuration is unambiguously exchanged between applications.

6.1 Use Cases

The OWS Context document is aimed at meeting a range of user context exchange requirements around shared situational awareness. Possible uses of the context document include:

1. Exchange of a common view or common operating picture for shared situational awareness.
2. Exchange of discovery results from various catalogue searches, to avoid duplication of effort.
3. Exchange of configuration and/or results of an analysis or processing activity

The exchange of a common operating picture is recognized as the most important usage of the OWS Context Document. As part of this there is the recognition that in some cases the services referenced may not be available. Therefore information outputs from services may be included as in-line content or referenced as external content in a container such as a GeoPackage, and some descriptive information (for example overlays or thumbnails) may need to be carried in the context document itself or alongside it.

6.2 Overview of Key Requirements

The above use cases lead to the following general requirements for an OWS Context document. All of these requirements are implicit in the core requirement class http://www.opengis.net/spec/owc/1.0/req/core shown (and detailed in section 7).

6.2.1 Definition of Geographic Area
The Context Document shall provide the capability to identify the geographic area of interest of the common operating picture.

Requirement: http://www.opengis.net/spec/owc/1.0/req/core/ContextClass

6.2.2 Definition of Temporal Interval
The Context Document shall provide the capability to identify the temporal extent of the COP (one or more time envelopes).

Requirement: http://www.opengis.net/spec/owc/1.0/req/core/ContextClass

6.2.3 Support a series of Configured Resources

The Context Document shall provide the capability to define a series of configured resources together which provide relevant information to the COP User.

Requirement: http://www.opengis.net/spec/owc/1.0/req/core/ContextClass

6.2.4 Order of Configured Resources

The Context Document shall define the order of precedence of the resources included (this could be interpreted as, for example, the order of display by visualization clients)

Requirement: http://www.opengis.net/spec/owc/1.0/req/core/ContextClass.

6.2.5 Support Multiple Service Types and Parameters

The Context Document shall allow any service type to be specified and any rules to be specified.

Requirement: http://www.opengis.net/spec/owc/1.0/req/core/ResourceClass

6.2.6 Allow Clients to decide if service is supported

The Context Document shall provide information to allow clients to test if a service matches a supported profile in order to understand if they can interpret it.

Requirement: http://www.opengis.net/spec/owc/1.0/req/core/OfferingClass

6.2.7 Support for visualization and other client types

The Context Document shall allow information targeted at different representations to be included (i.e. not just targeted at geographic visualization or just visualization).

Requirement: http://www.opengis.net/spec/owc/1.0/req/core/StyleSet

6.2.8 Allow resources to be enabled or disabled

The Context Document shall allow information to be marked as enabled or disabled, i.e. it is to be presented to the user when the context is opened or it isn't. Source: WMC Specification: which has an on/off option (layer displayed or not when loaded).

Requirement: http://www.opengis.net/spec/owc/1.0/req/core/ResourceClass

6.2.9 Association of Information with embedded Content

It shall be possible to associate information with embedded graphics information.

Requirement: http://www.opengis.net/spec/owc/1.0/req/core/ResourceClass

6.2.10 Support for In-line Content

The Context Document should allow the in-line inclusion of a resource (literal value of a resource) in the context document.

Requirement: http://www.opengis.net/spec/owc/1.0/req/core/ResourceClass

6.2.11 Support for External Content

The Context Document should allow reference to a literal value of a resource in a container external to the context document.

Requirement: http://www.opengis.net/spec/owc/1.0/req/core/ResourceClass

6.2.12 Support for Chained Services

The Context Document should allow the definition of a chain of processing services in order to define a resource. **Not included in version 1 of the specification.**

6.2.13 Support for capturing Resource Parameter

The Context Document should allow the parameters which define the resource or processing service steps to be captured.

Requirement: http://www.opengis.net/spec/owc/1.0/req/core/ResourceClass

7. OWS Context Data Model

7.1 Overview

This clause specifies the underlying OWS Context data model for which an encoding can be created. It defines the mandatory requirements for context encoding and the necessary semantics of how that encoding should be interpreted. The conceptual model is broken down into various packages. These are shown in Figure 1 below.
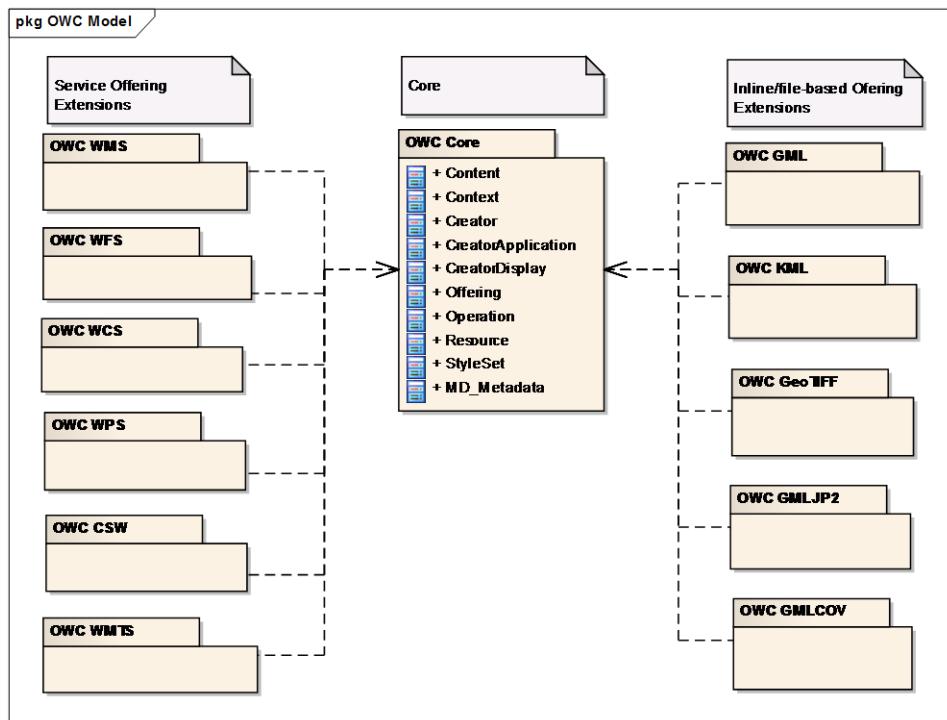
Figure 2 – OWS Context Standard Packages

7.2 Core Conceptual Model

The requirements within this section fall within the ows context core requirement class.

Requirement Class:	http://www.opengis.net/spec/owc/1.0/req/core
Scope:	All requirements in this subsection relate to the above requirement class.
Dependencies:	None
Description:	The OWS Context conceptual model is shown in the UML Diagram below.
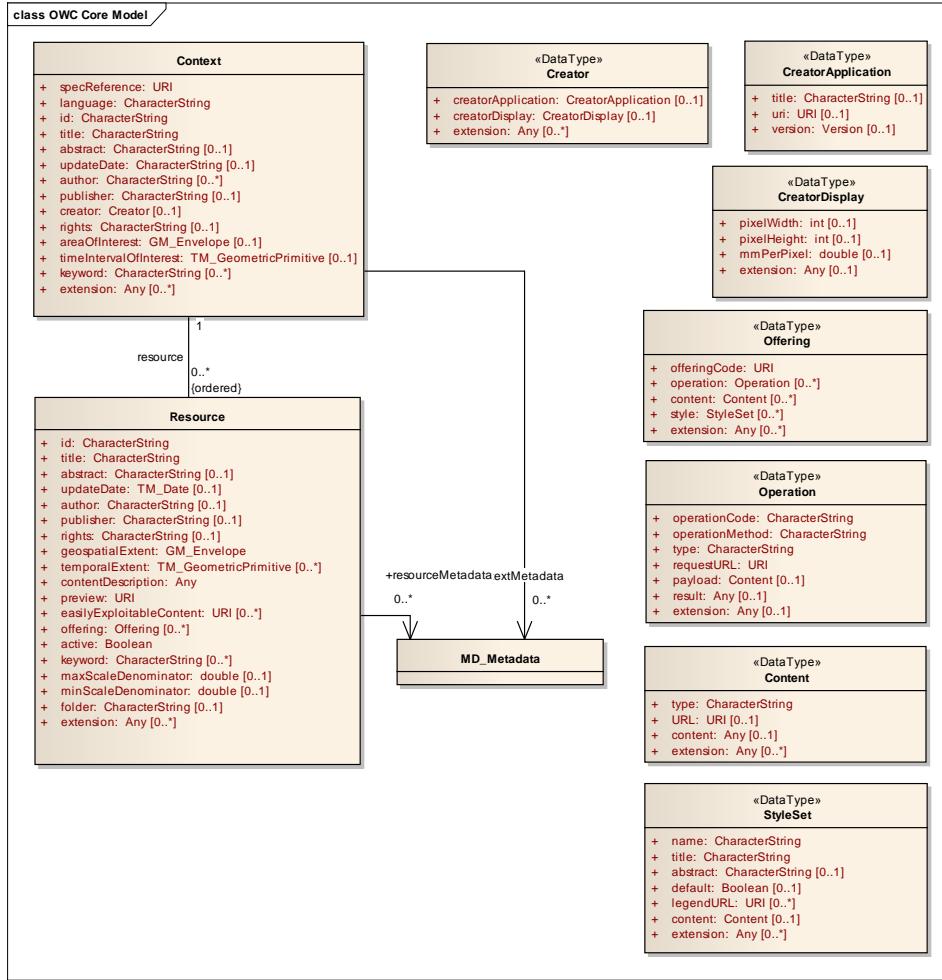
Figure 3 – UML Class Diagram of OWS Context

The role of each class and attribute in the model above is described in the tables below.

7.2.1 Class ows:Context

Requirement ID: http://www.opengis.net/spec/owc/1.0/req/core/ContextClass

Requirement Txt: Implementations shall support the encoding of all of the mandatory and optional parameters of the Context Class and meet all of the tabulated constraints and notes

This class is the overall container class for the context document. Its properties are documented below.

Name	Definition	Data type and Value	Multiplicity and Use
specReference	Specification Reference identifying that this is an owc Context document	URI	One (mandatory)
language	Language used in the owc Context document	CharacterString	One (mandatory)
id	Unique Identifier assigned to the OWS Context Document	CharacterString	One (mandatory)
title	A Human Readable Title for the OWS Context Document	CharacterString	One (mandatory)
abstract	Description of the Context Document Purpose/Content	CharacterString	Zero or one (optional)
updateDate	Date when the Context Document was updated	CharacterString	Zero or one (optional)
author	Identifier for the author of the document	CharacterString	Zero or more (optional)
publisher	Identifier for the publisher of the document	CharacterString	Zero or one (optional)
creator	The tool/application used to create the context document and its properties	Creator	Zero or one (optional)

Name	Definition	Data type and Value	Multiplicity and Use
rights	Rights which apply to the context document [c]	CharacterString	Zero or one (optional)
areaOfInterest	Geographic area of interest of the users of the context document [a,b]	GM_Envelope	Zero or one (optional)
timeIntervalOfInterest	A date/time interval relevant to the context document [a].	TM_GeometricPrimitive	Zero or one (optional)
keyword	Keyword related to this context document. Shall support an optional codelist parameter.	CharacterString	Zero or more (optional)
resource	The description of a resource and its access parameters and configuration [d].	owc:Resource	Zero or more (optional)
contextMetadata	Additional metadata describing the context document itself. The format recommendation is ISO19115 complaint metadata. The metadata standard used should be specified	Association	Zero or more (optional)
extension	Any encoding should allow the user to extend the context content to include custom items	n/a	Zero or more (optional)

Table 1- Context Class Properties

[a] These properties define the geographic area of interest and date/time interval of interest to the context user. They do not define the bounding extent (either in geographic area or time) of the referenced resources. The intention is not to provide the overall bounds or clipping extent but simply to indicate to a Context Document client the expected view of the information in area and time.

[b] The Coordinate Reference System shall be unambiguous. It should either be implicit in the choice of encoding of AOI or explicitly defined.

^c The rights described apply to the Context Document itself not to any of its contents.

^d Resources are ordered. Clients would normally interpret this in terms of display order. How the encoding defines the order of layers in relation to display shall be defined in the encoding specification.

7.2.2 Class owc:Resource

Requirement ID: http://www.opengis.net/spec/owc/1.0/req/core/ResourceClass

Requirement Txt: Implementations shall support the encoding of all of the mandatory and optional parameters of the Resource Class and meet all of the tabulated constraints and notes

This class describes the resource elements which supply the information layers used in the Context Document. Resource, while it can be used bare, is typically classified by owc:MediaCode indicating the type of information encoded in the resource. The resource offers multiple ways to pass a configured resource, in-line content, by absolute URI and by service Content which needs to be interpreted by an intelligent client. While there may be limitations in the individual encoding, each of these types shall be semantically equivalent, i.e. alternative representations of the same information (they can for example have different resolutions but should not show fundamentally different information).

Name	Definition	Data type and Value	Multiplicity and Use
id	Unique Identifier assigned to the owc Resource. Used to reference a resource from other resources	CharacterString	One (mandatory)
title	A Human Readable Title for the owc Resource.	CharacterString	One (mandatory)
abstract	Description of the Context Document Purpose/Content	CharacterString	Zero or one (optional)
updateDate	Date when the resource definition was updated	CharacterString	Zero or one (optional)
author	Identifier for the author of the	CharacterString	Zero or one

Name	Definition	Data type and Value	Multiplicity and Use
	resource definition		(optional)
publisher	Identifier for the publisher of the resource definition	CharacterString	Zero or one (optional)
rights	Rights which apply to the resource definition[a]	CharacterString	Zero or one (optional)
geospatialExtent	The geographic extent of the resource[b]	GM_Envelope	Zero or one (optional)
temporalExtent	The temporal extent of the content of the resource	TM_GeometricPrimitive	Zero or one (optional)
preview	A URI identifying a preview of the resource	URI	Zero or more (optional)
contentByRef	A URI identifying a service which will return an immediately exploitable result by simply requesting based on the URI. The expectation is that the return type of this call will be a well-known format	URI	Zero or more (optional)
offering	Service or inline content offering for the resource targeted at OGC compliant clients	owc:OfferingType	Zero or more (optional)
active	This flag indicates the state of the resource within the context document. It can be interpreted by the caller as required (this may be defined in a profile or in the specific service extensions) c	Boolean Default=TRUE	Zero or one (optional)
keyword	Keyword related to this resource definition. Shall support an	CharacterString	Zero or more

Name	Definition	Data type and Value	Multiplicity and Use
	optional codelist parameter.		(optional)
minScaleDenominator	Minimum scale for the display of the layer.	double	Zero or one (optional)
maxScaleDenominator	Maximum scale for the display of the layer.	double	Zero or one (optional)
resourceMetadata	Metadata about the resource itself	Association	Zero or more (optional)
folder	Definition of the folder structure in which the resource is placed.	CharacterString	Zero or more (optional)
extension	Any encoding should allow the user to extend the resource content to include custom items	n/a	Zero or more (optional)

Table 2- Resource Class Properties

[a] The semantics of rights is not defined here and needs to be defined in extension packages.

[b] The geospatial extent indicates to a client that data that intersects with this area needs to be retrieved and, if relevant portrayed. There is no specific requirement to hard clip the data to this boundary.

[c] The temporal extent indicates to a client that data that intersects with this time interval needs to be retrieved, and, if relevant, portrayed. There is no specific requirement to hard clip the data to this boundary.

[d] The scale denominator is defined with respect to a "standardized rendering pixel size" of 0.28 mm × 0.28 mm (millimeters). The definition is the same used in WMS 1.3.0 [OGC 06-042] and in Symbology Encoding Implementation Specification 1.1.0 [05-

077r4]. Frequently, the true pixel size is unknown and 0.28 mm is a common actual size for current displays.

7.2.3 Datatype owc:Offering

Requirement ID:	http://www.opengis.net/spec/owc/1.0/req/core/OfferingClass
Requirement Txt:	Implementations shall support the encoding of all of the mandatory and optional parameters of the Offering Class and meet all of the tabulated constraints and notes

This datatype class defines the properties of a specific service binding or inline content for an offering. The service binding is primarily characterized by a series of parameters. The parameters valid for a specific type of service binding, e.g. WFS are defined outside of the OWS Context core specification. Each specific service binding is defined by a URI which references a requirement class.

Name	Definition	Data Type and Values	Multiplicity and Use
offeringCode	Code identifying the type of service offering [a]	URI	One (mandatory)
operation	Operations used to invoke the service [a]	owc:Operation	Zero or more (optional)
content	inline content	owc:Content	Zero or more (optional)
styleSet	Style sets to style the in-line content	owc:StyleSet	Zero or more (optional)
extension	Application specific content	n/a	Zero or more (optional)

Table 3- Offering Class Properties

[a] Operations of a specific service request should be defined in a separate extension of this document. Additional, custom additions are supported on an ad-hoc basis without changing the core service offering type. Any modification of the parameter field types or semantics would require a new service offering code value.

7.2.4 Datatype owc:Operation

Requirement ID: http://www.opengis.net/spec/owc/1.0/req/core/OperationClass

Requirement Txt: Implementations shall support the encoding of all of the mandatory and optional parameters of the Operation Class and meet all of the tabulated constraints and notes

Definition of the operation either to get the information or to get the capabilities. Note that service specific extension requirements may mandate more than one owc:operation.

Name	Definition	Data Type and Values	Multiplicity and Use
code	Code identifying the type of Operation[a]	CharacterString	One (mandatory)
method	Name of openration method request	CharacterString	One (mandatory)
serviceURL	Service Request URL[b]	URI	1..N
type	MIMEType of the return result	CharacterString	One (mandatory)
payload	Payload for non-http get operations[c]	Owc:Content	Zero or one (optional)
result	result of the operation (optional)	Any	Zero or one (optional)
extension	Application specific content	n/a	Zero or more (optional)

Comment [PwD1]: Inserted to match UML diagram

Table 4- Operation Class Properties

a Typically the OGC Service request type, e.g. "GetCapabilities" or "GetMap".

b Full request URL for an http:get, and request URL http:post.

c Post and SOAP Payloads. Note not necessarily XML (defined by MimeType).

7.2.5 Datatype owc:Content

Requirement ID: http://www.opengis.net/spec/owc/1.0/req/core/ContentClass

Requirement Txt: Implementations shall support the encoding of all of the mandatory and optional parameters of the Content Class and meet all of the tabulated constraints and notes

Name	Definition	Data Type and Values	Multiplicity and Use
type	Type of the inline content	CharacterString	One (mandatory)
URL	Referenced Content [a]	URL	One (mandatory)
content	Actual content in the content element [a]	Any	One (mandatory)
extension	Application specific content	n/a	Zero or more (optional)

Table 5- Content Class Properties

[a]: URL and content elements are mutually exclusive. One and only one should be populated in a specific content element.

7.2.6 Datatype owc:StyleSet

Requirement ID: http://www.opengis.net/spec/owc/1.0/req/core/StyleSetClass

Requirement Txt: Implementations shall support the encoding of all of the mandatory and optional parameters of the StyleSet Class and meet all of the tabulated constraints and notes

This datatype class defines a portrayal style for a resource content or serviceContent element. It can be specified at a resource level or at a service offering level (when it only applies to the offering.

Name	Definition	Data Type and Values	Multiplicity and Use

Name	Definition	Data Type and Values	Multiplicity and Use
name	Unique name of the styleSet within a given offering	CharacterString	One (mandatory)
title	A Human Readable Title for the OWS Context Document	CharacterString	One (mandatory)
abstract	Description of the Style	CharacterString	Zero or one (optional)
default	Whether this Styleset is the one to be used as default (initial display)	Boolean Default=FALSE	Zero or one (optional)
legendURL	URL of a legend image for the style	URL	Zero or one (optional)
content	The in-line or an external reference to the style definition	URI	Zero or one (optional)
extension	Any encoding should allow the user to extend the style definition to include custom items	n/a	Zero or more (optional)

Table 6- StyleSet Class Properties

Note: StyleSet cannot be derived from the service request, and it is a list of relevant styles which could be applied if the service supports dynamic styling, for example if the WMS is an FPS and supports SLD. The intention is that the client could visualize the layer using the getMap Call (which would have a defined styling) but could also offer the user a selection of alternative styles for the layer. These would be derived from the style list parameter.

7.2.7 Datatype owc:Creator

Requirement ID: http://www.opengis.net/spec/owc/1.0/req/core/CreatorClass

Requirement Txt: Implementations shall support the encoding of all of the mandatory and optional parameters of the Creator Class and meet all of the tabulated constraints and notes

This datatype class provides place to encode information related to the creator of the con text document. It includes the creator application and any relevant properties or settings for the application.

Name	Definition	Data Type and Values	Multiplicity and Use
creatorApplication	The name, reference and version of the creator application used to create the context document	CreatorApplication	Zero or one (optional)
creatorDisplay	Properties of the display in use when the context document was created (for display based applications only).	CreatorDisplay	Zero or one (optional)
extension	Any encoding should allow the user to extend the Creator information to include custom items	n/a	Zero or more (optional)

Table 7- Creator Class Properties

7.2.8 Datatype owc:CreatorApplication

Requirement ID:

http://www.opengis.net/spec/owc/1.0/req/core/CreatorApplication Class

Requirement Txt: Implementations shall support the encoding of all of the mandatory and optional parameters of the CreatorDisplay Class and meet all of the tabulated constraints and notes

This datatype class provides place to encode information related to the creator context when the document was produced. It includes the creator application and relevant properties or settings for the application.

Name	Definition	Data Type and Values	Multiplicity and Use
title	Title or name of the application (for display purposes)	CharacterString	Zero or one (optional)
uri	URI describing the creator application.	URI	Zero or one (optional)
version	Version of the application.	CharacterString	Zero or one (optional)

Table 8- CreatorApplication Class Properties

7.2.9 Datatype owc:CreatorDisplay

Requirement ID: http://www.opengis.net/spec/owc/1.0/req/core/CreatorDisplayClass

Requirement Txt: Implementations shall support the encoding of all of the mandatory and optional parameters of the CreatorDisplay Class and meet all of the tabulated constraints and notes

This datatype class provides place to encode information related to the display area used in the creator application when the OWS Context document was produced. This set of properties only applies to creator applications which are using a geographic display and is supporting information to the exploiter of the OWS Context document. Note the elements within creator display are intended as supporting information (metadata) for clients and not properties which should control the display size of the client opening the document.

Name	Definition	Data Type and Values	Multiplicity and Use
pixelWidth	Pixel width of the display specified by Area of Interest.	Integer	Zero or one (optional)
pixelHeight	Pixel height of the display specified by Area of Interest.	Integer	Zero or one (optional)
mmPerPixel	The number of mm per pixel for the display. If no value is available	Double	Zero or one (optional)

Name	Definition	Data Type and Values	Multiplicity and Use
	the field should be set to NULL.		
extension	Any encoding should allow the user to extend the display information to include custom items	n/a	Zero or more (optional)

Table 9- CreatorDisplay Class Properties

7.3 owc:WMS Offering Extension

Requirement Class: http://www.opengis.net/spec/owc/1.0/req/wms

Scope: All requirements in this subsection relate to the above requirement class)

Dependencies: http://www.opengis.net/spec/owc/1.0/req/core

Description: This class describes the extension to the OWS Context Core which supports Web Map Service (WMS) Service offerings.

Requirement ID: http://www.opengis.net/spec/owc/1.0/req/wms/GetCapabilities

Requirement Txt: Encodings of OWS Context for this extension will require the encoding of only one GetCapabilities request in an offering.

Requirement ID: http://www.opengis.net/spec/owc/1.0/req/wms/GetMap

Requirement Txt: Encodings of OWS Context for this extension will require the encoding of one and only one GetMap request in an offering.

Requirement ID: http://www.opengis.net/spec/owc/1.0/req/wms/content

Requirement Txt: Encodings of OWS Context for this extension will exclude the encoding of owc:content in an offering.

Requirement ID: http://www.opengis.net/spec/owc/1.0/req/wms/styles

Requirement Txt: Where additional styles are provided the client shall treat these as alternatives to any style specifically encoded in the GetMap call (e.g SLD reference). There is no specific requirement for the client to use these.

7.3.1 Summary of Valid Attributes

Attribute	Value	Constraint
operation	GetCapabilities	One (mandatory)
operation	GetMap	One (mandatory)
content	-	Zero (forbidden)
style	SLD or Txt	Zero or more (optional)

7.3.2 Supported Standards Within This Extension

1. WMS 1.3.0   Web Map Service (06-042)
2. WMS 1.1.1   Web Map Service (01-068r3)
3. SLD-WMS 1.1.0   Styled Layer Descriptor Profile (05-078r4)

7.4 owc:WFS Offering Extension

This class describes the extension to the OWS Context Core which supports Web Feature Service (WFS) Service offerings.

Requirement Class:	http://www.opengis.net/spec/owc/1.0/req/wfs
Scope:	All requirements in this subsection relate to the above requirement class)
Dependencies:	http://www.opengis.net/spec/owc/1.0/req/core
Requirement ID:	http://www.opengis.net/spec/owc/1.0/req/wfs/GetCapabilities
Requirement Txt:	Encodings of OWS Context for this extension will require the encoding of a one and only one GetCapabilities request in an offering.
Requirement ID:	http://www.opengis.net/spec/owc/1.0/req/wfs/GetFeature
Requirement Txt:	Encodings of OWS Context for this extension will require the encoding of one and only one GetFeature request in an offering.
Requirement ID:	http://www.opengis.net/spec/owc/1.0/req/wfs/content
Requirement Txt:	Encodings of OWS Context for this extension will exclude the encoding of owc:content in an offering.

7.4.1 Summary of Valid Attributes

Attribute	Value	Multiplicity

Attribute	Value	Multiplicity
operation	GetCapabilities	One (mandatory)
operation	GetFeature	One (mandatory)
content	-	Zero (forbidden)
style	SLD or Txt	Zero or more (optional)

7.4.2 Supported Standards Within This Extension

4. WFS 2.0   Web Feature Service 2.0 (also ISO 19142) (09-025r1)
5. WFS 1.1.0   Web Feature Service (04-094)
6. WFS 1.0.0   Web Feature Service (02-058)

7.5 owc:WCS Offering Extenstion

This class describes the extension to the OWS Context Core which supports Web Coverage Service (WCS) offerings.

Requirement Class: http://www.opengis.net/spec/owc/1.0/req/wcs

Scope: All requirements in this subsection relate to the above requirement class

Dependencies: http://www.opengis.net/spec/owc/1.0/req/core

Requirement ID: http://www.opengis.net/spec/owc/1.0/req/wcs/GetCapabilities

Requirement Txt: Encodings of OWS Context for this extension will require the encoding of a one and only one GetCapabilities request in an offering.

Requirement ID: http://www.opengis.net/spec/owc/1.0/req/wcs/GetCoverage

Requirement Txt: Encodings of OWS Context for this extension will require the encoding of one and only one GetCoverage request in an offering.

Requirement ID: http://www.opengis.net/spec/owc/1.0/req/wcs/content

Requirement Txt: Encodings of OWS Context for this extension will exclude the encoding of owc:content in an offering.

7.5.1 Summary of Valid Attributes

Attribute	Value	Multiplicity

Attribute	Value	Multiplicity
operation	GetCapabilities	One (mandatory)
operation	GetCoverage	One (mandatory)
content	-	Zero (forbidden)
style	SLD or Txt	Zero or more (optional)

7.5.2 Supported Standards Within This Extension

1. WCS 2.0 Web Coverage Standard 2.0 - Core (09-110r3)
2. WCS 1.1.0 Web Coverage Service (WCS) (06-083r8)
3. WCS 1.0 Web Coverage Service (WCS) (03-065r6)

7.6 owc:WPS Offering Extension

This class describes the extension to the OWS Context Core which supports Web Processing Service (WPS) offerings.

Requirement Class:	http://www.opengis.net/spec/owc/1.0/req/wps
Scope:	All requirements in this subsection relate to the above requirement class
Dependencies:	http://www.opengis.net/spec/owc/1.0/req/core
Requirement ID:	http://www.opengis.net/spec/owc/1.0/req/wps/GetCapabilities
Requirement Txt:	Encoding of OWS Context for this extension will require the encoding of a one and only one GetCapabilities request in an offering.
Requirement ID:	http://www.opengis.net/spec/owc/1.0/req/wps/Execute
Requirement Txt:	Encoding of OWS Context for this extension will require the encoding of one and only one Execute request in an offering.
Requirement ID:	http://www.opengis.net/spec/owc/1.0/req/wps/content
Requirement Txt:	Encoding of OWS Context for this extension will exclude the encoding of owc:content in an offering.

7.6.1 Summary of Valid Attributes

Attribute	Value	Multiplicity
operation	GetCapabilities	One (mandatory)
operation	Execute	One (mandatory)

Attribute	Value	Multiplicity
content	-	Zero (forbidden)
style	SLD or Txt	Zero or more (optional)

7.6.2 Supported Standards Within This Extension

1. WPS 1.0.0   Web Processing Service (05-007r7)

7.7 owc:CSW Offering Extenstion

This class describes the extension to the OWS Context Core which supports Catalogue Services (CSW) offerings.

Requirement Class:	http://www.opengis.net/spec/owc/1.0/req/csw
Scope:	All requirements in this subsection relate to the above requirement class
Dependencies:	http://www.opengis.net/spec/owc/1.0/req/core
Requirement ID:	http://www.opengis.net/spec/owc/1.0/req/csw/GetCapabilities
Requirement Txt:	Encodings of OWS Context for this extension will require the encoding of a one and only one GetCapabilities request in an offering.
Requirement ID:	http://www.opengis.net/spec/owc/1.0/req/csw/GetRecords
Requirement Txt:	Encodings of OWS Context for this extension will require the encoding of one and only one GetRecords request in an offering.
Requirement ID:	http://www.opengis.net/spec/owc/1.0/req/csw/content
Requirement Txt:	Encodings of OWS Context for this extension will exclude the encoding of owc:content in an offering.

7.7.1 Summary of Valid Attributes

Attribute	Value	Multiplicity
operation	GetCapabilities	One (mandatory)
operation	GetRecords	One (mandatory)
content	-	Zero (forbidden)
style	SLD or Txt	Zero or more (optional)

7.7.2 Supported Standards Within This Extension

1.   CSW 2.0.2   Catalogue Service IS (07-006r1)

7.8 owc:WMTS Offering Extension

This class describes the extension to the OWS Context Core which supports Web Map
Tiling Service Extensions (WMTS) offerings.

Requirement Class:	http://www.opengis.net/spec/owc/1.0/req/wmts
Scope:	All requirements in this subsection relate to the above requirement class
Dependencies:	http://www.opengis.net/spec/owc/1.0/req/core
Requirement ID:	http://www.opengis.net/spec/owc/1.0/req/wmts/GetCapabilities
Requirement Txt:	Encodings of OWS Context for this extension will require the encoding of a one and only one GetCapabilities request in an offering.
Requirement ID:	http://www.opengis.net/spec/owc/1.0/req/wmts/GetTile
Requirement Txt:	Encodings of OWS Context for this extension will require the encoding of one or more GetTile requests in an offering to satisfy one information request.
Requirement ID:	http://www.opengis.net/spec/owc/1.0/req/wmts/content
Requirement Txt:	Encodings of OWS Context for this extension will exclude the encoding of owc:content in an offering.

7.8.1 Summary of Valid Attributes

Attribute	Value	Multiplicity
operation	GetCapabilities	One (mandatory)
operation	GetTile [a]	One or more (mandatory)
content	-	Zero (forbidden)
style	Txt	Zero or more (optional)

[a]The WMTS requires multiple tiles to satisfy one viewing request, hence multiple
operations are allowed, but with the goal of satisfying one display request.

7.8.2 Supported Standards Within This Extension

1. WMTS 1.0.0   Web Map Tile Service (07-057r7)

7.9 owc:GML Offering Extension

This class describes the extension to the OWS Context Core which supports inline or referenced GML offerings; this can include referencing local files or into databases.

Requirement Class: http://www.opengis.net/spec/owc/1.0/req/gml

| **Scope**: | All requirements in this subsection relate to the above requirement class |

Dependencies: http://www.opengis.net/spec/owc/1.0/req/core

Requirement ID: http://www.opengis.net/spec/owc/1.0/req/gml/content

Requirement Txt: An encoding of this extension shall use the content element to capture the GML content. No operation elements should be present.

Requirement ID: http://www.opengis.net/spec/owc/1.0/req/gml/style

Requirement Txt: An encoding of this content shall allow the encoding of associated style information, including specification of a default.

7.9.1 Summary of Valid Attributes

Attribute	Value	Multiplicity
operation	-	Zero (forbidden)
content	GML Content in-line or local reference	One (mandatory)
style	SLD or Txt	Zero or more (optional)

7.9.2 Supported Standards Within This Extension

1. GML 3.3   Geography Markup Language (GML) (10-129r1)
2. GML 3.2.1   Geography Markup Language (GML) (07-036)
3. GML 3.1.1   Geography Markup Language (GML) (03-105r1)
4. GML 3.0   Geography Markup Language (GML) (02-023r4)
5. GML 2.1.2   Geography Markup Language (02-069)
6. GML 2.1.1   Geography Markup Language (02-009)

7.10 owc:KML Offering Extension

This class describes the extension to the OWS Context Core which supports in-line or referenced KML offerings ; this can include referencing local files or into databases.

Requirement Class: http://www.opengis.net/spec/owc/1.0/req/kml

Scope:	All requirements in this subsection relate to the above requirement class

Dependencies: http://www.opengis.net/spec/owc/1.0/req/core

Requirement ID: http://www.opengis.net/spec/owc/1.0/req/kml/content

Requirement Txt: An encoding of this extension shall use the content element to capture the KML content. No operation elements should be present.

Requirement ID: http://www.opengis.net/spec/owc/1.0/req/kml/style

Requirement Txt: An encoding of this content shall not allow the encoding of associated style information as it is present within the KML Document body.

7.10.1 Summary of Valid Attributes

Attribute	Value	Multiplicity
operation	-	Zero (forbidden)
content	KML Content in-line or local reference	One (mandatory)
style	-	Zero (forbidden)

7.10.2 Supported Standards Within This Extension

1. KML 2.2.0   OGC KML (07-147r2)

7.11 owc:GeoTIFF Offering Extension

This class describes the extension to the OWS Context Core which supports in-line or referenced GeoTIFF offerings. ; this can include referencing local files or into databases.

Requirement Class: http://www.opengis.net/spec/owc/1.0/req/geotiff

Scope:	All requirements in this subsection relate to the above requirement class

Dependencies:	http://www.opengis.net/spec/owc/1.0/req/core
Requirement ID:	http://www.opengis.net/spec/owc/1.0/req/geotiff/content
Requirement Txt:	An encoding of this extension shall use the content element to reference a GeoTIFF file. No operation elements should be present.
Requirement ID:	http://www.opengis.net/spec/owc/1.0/req/GeoTIFF/style
Requirement Txt:	An encoding of this content shall not allow the encoding of associated style information, as none is required to visualize a GeoTIFF image.

7.11.1 Summary of Valid Attributes

Attribute	Value	Multiplicity
operation	-	Zero (forbidden)
content	Local reference to a GeoTIFF File	One (mandatory)
style	-	Zero (forbidden)

7.11.2 Supported Standards Within This Extension

GeoTIFF Revision 1.0 (www.pubdoc.org/fileformat/rasterimage/tiff/**geotiff**.**pdf**)

7.12 owc:GMLJP2 Offering Extension

This class describes the extension to the OWS Context Core which supports in-line and referenced GMLJP2 offerings; this can include referencing local files or into databases.

Requirement Class:	http://www.opengis.net/spec/owc/1.0/req/gmljp2
Scope:	All requirements in this subsection relate to the above requirement class
Dependencies:	http://www.opengis.net/spec/owc/1.0/req/core
Requirement ID:	http://www.opengis.net/spec/owc/1.0/req/gmljp2/content
Requirement Txt:	An encoding of this extension shall use the content element to reference a GMLJP2 file. No operation elements should be present.
Requirement ID:	http://www.opengis.net/spec/owc/1.0/req/GMLJP2/style

Requirement Txt: An encoding of this content shall not allow the encoding of associated style information, as none is required to visualize a GMLJP2 image.

7.12.1 Summary of Valid Attributes

Attribute	Value	Multiplicity
operation	-	Zero (forbidden)
content	Local reference to a GMLJP2 File	One (mandatory)
style	-	Zero (forbidden)

7.12.2 Supported Standards Within This Extension

1. GMLJP2 1.0.0   GML in JPEG 2000 for Geographic Imagery (05-047r3)

7.13 owc:GMLCOV Offering Extension

This class describes the extension to the OWS Context Core which supports in-line or referenced GMLCOV offerings. This can include references into databases.

Requirement Class: http://www.opengis.net/spec/owc/1.0/req/gmlcov

Scope: All requirements in this subsection relate to the above requirement class

Dependencies: http://www.opengis.net/spec/owc/1.0/req/core

Requirement ID: http://www.opengis.net/spec/owc/1.0/req/gmlcov/content

Requirement Txt: An encoding of this extension shall use the content element to contain or reference GML which will then reference coverage image files. No operation elements should be present.

Requirement ID: http://www.opengis.net/spec/owc/1.0/req/GMLCOV/style

Requirement Txt: An encoding of this content shall not allow the encoding of associated style information, as none is required to visualize a GMLCOV image.

7.13.1 Summary of Valid Attributes

Attribute	Value	Multiplicity
operation	-	Zero (forbidden)
content	Inline content or Local reference to a GML File	One (mandatory)
style	-	Zero (forbidden)

7.13.2 Supported Standards Within This Extension

TBD

Annex A: Conformance Class Abstract Test Suite (Normative)

An OWS Context Encoding implementation shall satisfy the following characteristics to be conformant with this specification.

A.1   Conformance Test Class: core

The OGC URI identifier of this conformance class is: http://www.opengis.net/spec/owc/1.0/conf/core. Tests identifiers below are shown in full but all relate to http://www.opengis.net/spec/owc/1.0/.

Fully Implements the Context Class.

Test id:

http://www.opengis.net/spec/owc/1.0/conf/core/ContextClass

Test Purpose:

To test requirement http://www.opengis.net/spec/owc/1.0/req/core/ContextClass:

Test Method:

Review all rows of the owc: Context Class and confirm that an encoding rule is defined for each element in the encoding specification.

Fully Implements the Resource Class

Test id:

http://www.opengis.net/spec/owc/1.0/conf/core/ResourceClass

Test Purpose:

To test requirement: http://www.opengis.net/spec/owc/1.0/req/core/ResourceClass

Test Method:

Review all rows of the owc: Resource Class and confirm that an encoding rule is defined for each element in the encoding specification.

Fully Implements the Offering Class

Test id:

http://www.opengis.net/spec/owc/1.0/conf/core/OfferingClass

Test Purpose:

To test requirement http://www.opengis.net/spec/owc/1.0/req/core/OfferingClass |

Test Method:

Review all rows of the owc:Offering Class and confirm that an encoding rule is defined for each element in the encoding specification. Fully Implements the Operation Class

Test id:

http://www.opengis.net/spec/owc/1.0/conf/core/OperationClass

Test Purpose:

To test requirement: http://www.opengis.net/spec/owc/1.0/req/core/OperationClass

Test Method:

Review all rows of the owc:Operation class and confirm that an encoding rule is defined for each element in the encoding specification.

A.1.1   Fully Implements the Content Class

Test id:

http://www.opengis.net/spec/owc/1.0/conf/core/ContentClass

Test Purpose:

To test requirement: http://www.opengis.net/spec/owc/1.0/req/core/ContentClass

Test Method:

Review all rows of the owc:Content class and confirm that an encoding rule is defined for each element in the encoding specification.

Fully Implements the StyleList Classes

Test id:

http://www.opengis.net/spec/owc/1.0/conf/core/StyleListClass

Test Purpose:

To test requirement: http://www.opengis.net/spec/owc/1.0/req/core/StyleListClass

Test Method:

Review all rows of the owc:StyleList class and confirm that an encoding rule is defined for each element in the encoding specification.

Fully Implements the Creator **Class**

Test Id:

http://www.opengis.net/spec/owc/1.0/conf/core/CreatorClass

Test Purpose:

To test requirement: http://www.opengis.net/spec/owc/1.0/req/core/CreatorClass

Test Method:

Review all rows of the owc: Creator Class and confirm that an encoding rule is defined for each element in the encoding specification.

Fully Implements the CreatorApplication **Class**

Test Id:

http://www.opengis.net/spec/owc/1.0/conf/core/CreatorApplicationClass

Test Purpose:

To test requirement: http://www.opengis.net/spec/owc/1.0/req/core/ CreatorApplicationClass

Test Method:

Review all rows of the owc: CreatorApplication Class and confirm that an encoding rule is defined for each element in the encoding specification.

A.1.2 Fully Implements the CreatorDisplay Class

Test id:

http://www.opengis.net/spec/owc/1.0/conf/core/CreatorDisplay

Test Purpose:

To test requirement: http://www.opengis.net/spec/owc/1.0/req/core/CreatorDisplay

Test Method:

Review all rows of the owc:CreatorDisplay class and confirm that an encoding rule is defined for each element in the encoding specification. Conformance Test Class: WMS Extension

Fully Implements the WMSOffering Class.

Test Id:

http://www.opengis.net/spec/owc/1.0/conf/wmsOffering

Test Purpose:

To test requirement: http://www.opengis.net/spec/owc/1.0/req/wmsOffering,

Test Method:

Review all rows of the WMSOffering Class and confirm that an encoding rule is defined for each element in the encoding specification.

A.2   Conformance Test Class: WFS Extension

Fully Implements the WFSOffering Class.

Test Id:

http://www.opengis.net/spec/owc/1.0/conf/wfsOffering

Test Purpose:

To test requirement: http://www.opengis.net/spec/owc/1.0/req/wfsOffering

Test Method:

Review all rows of the WFSService Class and confirm that an encoding rule is defined for each element in the encoding specification.

A.3   Conformance Test Class: WCS Extension

Fully Implements the WCSOffering **Class.**

Test Id:

http://www.opengis.net/spec/owc/1.0/conf/wcsOffering

Test Purpose:

To test requirement: http://www.opengis.net/spec/owc/1.0/req/wcsOffering

Test Method:

Review all rows of the WCSOffering Class and confirm that an encoding rule is defined for each element in the encoding specification.

A.4   Conformance Test Class: WPS Extension

Fully Implements the WPSOffering Class.

Test Id:

http://www.opengis.net/spec/owc/1.0/conf/wpsOffering

Test Purpose:

To test requirement: http://www.opengis.net/spec/owc/1.0/req/wpsOffering

Test Method:

Review all rows of the WPSOffering Class and confirm that an encoding rule is defined for each element in the encoding specification.

A.5   Conformance Test Class: CSW Extension

Fully Implements the CSWOffering Class.

Test Id:

http://www.opengis.net/spec/owc/1.0/conf/cswOffering

Test Purpose:

To test requirement: http://www.opengis.net/spec/owc/1.0/req/cswOffering

Test Method:

Review all rows of the CSWOffering Class and confirm that an encoding rule is defined for each element in the encoding specification.

A.6   Conformance Test Class: WMTS Extension

Fully Implements the WMTSOffering Class.

Test Id:

http://www.opengis.net/spec/owc/1.0/conf/wmtsOffering

Test Purpose:

To test requirement: http://www.opengis.net/spec/owc/1.0/req/wmtsOffering

Test Method:

Review all rows of the WMTSOffering Class and confirm that an encoding rule is defined for each element in the encoding specification.

A.7 Conformance Test Class: GML Extension

Fully Implements the GMLOffering Class.

Test Id:

http://www.opengis.net/spec/owc/1.0/conf/gmlOffering

Test Purpose:

To test requirement: http://www.opengis.net/spec/owc/1.0/req/gmlOffering

Test Method:

Review all rows of the GMLOffering Class and confirm that an encoding rule is defined for each element in the encoding specification.

A.8 Conformance Test Class: KML Extension

Fully Implements the KMLOffering Class.

Test Id:

http://www.opengis.net/spec/owc/1.0/conf/kmlOffering

Test Purpose:

To test requirement: http://www.opengis.net/spec/owc/1.0/req/kmlOffering

Test Method:

Review all rows of the KML Offering Class and confirm that an encoding rule is defined for each element in the encoding specification.

A.9 Conformance Test Class: GeoTIFF Extension

Fully Implements the GeoTIFFOffering Class.

Test Id:

http://www.opengis.net/spec/owc/1.0/conf/geotiffOffering

Test Purpose:

To test requirement: http://www.opengis.net/spec/owc/1.0/req/geotiffOffering

Test Method:

Review all rows of the GeoTIFFOffering Class and confirm that an encoding rule is defined for each element in the encoding specification.

A.10 Conformance Test Class: GMLJP2 Extension

Fully Implements the GMLJP2Offering Class.

Test Id:

http://www.opengis.net/spec/owc/1.0/conf/gmljp2Offering

Test Purpose:

To test requirement: http://www.opengis.net/spec/owc/1.0/req/gmljp2Offering

Test Method:

Review all rows of the GMLOffering Class and confirm that an encoding rule is defined for each element in the encoding specification.

A.11 Conformance Test Class: GMLCOV Extension

Fully Implements the GMLCOVOffering Class.

Test Id:

http://www.opengis.net/spec/owc/1.0/conf/gmlcovOffering

Test Purpose:

To test requirement: http://www.opengis.net/spec/owc/1.0/req/gmlcovOffering

Test Method:

Review all rows of the GMLCOVOffering Class and confirm that an encoding rule is defined for each element in the encoding specification.

A.12 Conformance Test Class: GeoPackage Extension

Fully Implements the GeoPackageOffering Class.

Test Id:

http://www.opengis.net/spec/owc/1.0/conf/gmlcovOffering

Test Purpose:

To test requirement: http://www.opengis.net/spec/owc/1.0/req/GeoPackageOffering

Test Method:

Review all rows of the GeoPackageOffering Class and confirm that an encoding rule is defined for each element in the encoding specification.

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Annex B: Revision history

Date	Release	Author(s)	Paragraph modified	Description
3rd October 2012	Draft 10	Roger Brackin, Pedro Gonçalves	Initial Document Release outside of SWG	Approved Draft Release for use in OWS-9
28th December 2012	Draft 13	Roger Brackin, Pedro Gonçalves	Document Release for TC/OpenGeo	Approved for release under TC 3 week rule /OAB/Open Geo

Annex C: Bibliography

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                         Specification

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