

Open Geospatial Consortium Inc.

Date: 2006-07-19

Reference number of this document: OGC 06-111

Version: 1.0.1

Category: OpenGIS[®] IS Corrigendum

Editor: Arliss Whiteside

Corrigendum for OpenGIS Implementation Specification 05-096r1

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Document type:	OpenGIS [®] IS
Document subtype:	Implementation Specification Corrigendum
Document stage:	Proposed
Document language:	English

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i. Preface

This document is a corrigendum for OGC Document 05-096r1, titled “GML 3.1.1 grid CRSs profile”. This corrigendum is based on change request OGC 06-041.

ii. Document terms and definitions

This document uses the specification terms defined in Subclause 5.3 of [OGC 05-008]. In particular, the word “shall” (not “must”) is the verb form used to indicate a requirement to be strictly followed to conform to this specification.

iii. Document contributor contact points

All questions regarding this document should be directed to the editor or the contributors:

Name	Organization
Arliss Whiteside	BAE Systems E&IS

iv. Revision history

Date	Release	Editor	Primary clauses modified	Description
2006-07-18	1.0.1	Arliss Whiteside	All	Initial release

v. Changes to OGC Specifications

The other previously approved OGC™ Specifications do not need changes to accommodate the technical contents of this document.

Foreword

This document provides the details for a corrigendum for the existing OpenGIS Implementation Specification for the “GML 3.1.1 grid CRSs profile” version 1.0, and does not significantly modify that implementation specification. The current OpenGIS IS that this document provides revision notes for is 05-096r1. This document supersedes OGC 05-096r1.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The OGC shall not be held responsible for identifying any or all such patent rights.

Introduction

This document specifies a corrigendum GML 3.1.1 grid CRSs profile. This document was approved by the OGC membership on 2006-03-28. This corrigendum changes the origin to (0, 0), from (1, 1), of the coordinate system referenced by the URN “urn:ogc:def:cs:OGC:0.0:Grid2dSquareCS”.

GML 3.1.1 grid CRSs profile version 1.0 corrigendum

1 Scope

This GML 3.1.1 profile is defined for encoding definitions of grid coverage (including image) Coordinate Reference Systems (CRSs) plus related coordinate Transformations. This profile supports XML encoding of definitions of:

- a) Unrectified image CRSs, using ImageCRS elements
- b) Georectified image and grid coverage CRSs, using DerivedCRS element
- c) Coordinate Transformations for georeferencing images, using Transformation elements

This document also specifies some Universal Resource Names (URNs) for definitions in the “ogc” URN namespace, in addition to those specified in [OGC 05-010]. Additional specific URNs are defined for definitions of the datums, coordinate systems, and coordinate system axes, which are often used in definitions of grid and image CRSs. These definitions shall be used wherever applicable in XML encodings of definitions of grid and image CRSs.

This corrigendum changes the origin to (0, 0), from (1, 1), of the coordinate system referenced by the URN “urn:ogc:def:cs:OGC:0.0:Grid2dSquareCS”, to better match ISO 19123. In addition, some typographical errors are corrected in the table in Subclause 10.1.

2 Corrigendum description

2.1 Change origin of Grid2dSquareCS

Change the origin to (0, 0), from (1, 1), of the coordinate system referenced by the URN “urn:ogc:def:cs:OGC:0.0:Grid2dSquareCS”.

Replace current Subclause 10.4:

Grid 2D square coordinate system

The URN “urn:ogc:def:cs:OGC:0.0:Grid2dSquareCS” shall reference the definition of a Coordinate System for a 2D grid with square grid cells. The definition of this grid shall be the same as can be XML encoded using the GML 3.1.1 Common CRSs profile as:

```
<?xml version="1.0" encoding="UTF-8"?>
```

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```
<CartesianCS xmlns="http://www.opengis.net/gml"
xmlns:gml="http://www.opengis.net/gml"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.opengis.net/gml
../commonCRSsProfile.xsd"
gml:id="Grid2dSquareCS">
  <!-- Primary editor: Arliss Whiteside. Last updated 2005-10-04-->
  <csName>2D square-cell grid based coordinate system</csName>
  <csID>
    <name codeSpace="urn:ogc:def:cs:OGC:1.0:">Grid2dSquareCS</name>
  </csID>
  <remarks>2D grid-based coordinate system for use by an image or
other continuous grid coverage. It can be used for a grid of any size,
since no grid size is defined. This coordinate system specifies that
each row coordinate value will be listed before the column coordinate
value. The grid cells are assumed to be square, with the same grid
spacing or pixel spacing in each direction.
```

In a grid coverage file, the "row" axis shall be the first axis by which grid points are sequenced, and the "column" axis shall be the second axis, as could be specified by the "scanDirection : Sequence(CharacterString)" attribute of the CV_SequenceRule class in Clause 8 of ISO 19123. With linear sequencing, the grid points in the first row shall be listed first, followed by other rows, with the grid points in each row listed in column number order. This relationship between the "row" and "column" names and the first grid points shall apply whether this Grid2dSquareCS is associated with a grid file before or after that file is recorded.

The "row" and "column" axis names are used here although the "scanDirection : Sequence(CharacterString)" attribute may provide other axis names. Use of other axis names would require defining different CartesianCSs for other names, or adding other names as additional axisID values. The following XML includes the axis names "line" and "sample" as additional axisID values.

If not otherwise identified in an image file, the "row" axis shall be the first axis whose number of pixels is identified, and the "column" axis shall be the second axis, as could be specified by the "extent[0..1] : CV_GridEnvelope" attribute of the CV_Grid class in Clause 8 of ISO 19123. In either case, the first point in the grid coverage file is assumed to be numbered (1, 1), meaning row 1, column 1.

```
The first row in a grid is sometimes called the "top" row, the first
column is sometimes called the "left" column, and the first grid point
is then called the "upperLeft" point. If desired, those names can be
used with this Grid2dSquareCS. However other names can also be used,
since this Grid2dSquareCS has been defined so that it does not depend
on such left/right, top/bottom, and up/down names. </remarks>
  <usesAxis xlink:href="urn:ogc:def:axis:OGC:1.0:Row"/>
  <usesAxis xlink:href="urn:ogc:def:axis:OGC:1.0:Column"/>
</CartesianCS>
```

This xml document references the two standard grid axes specified below.

With: (changed text highlighted in red)

Grid 2D square coordinate system

The URN "urn:ogc:def:cs:OGC:0.0:Grid2dSquareCS" shall reference the definition of a Coordinate System for a 2D grid with square grid cells. The definition of this grid shall be the same as can be XML encoded using the GML 3.1.1 Common CRSs profile as:

```
<?xml version="1.0" encoding="UTF-8"?>
<CartesianCS xmlns="http://www.opengis.net/gml"
xmlns:gml="http://www.opengis.net/gml"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.opengis.net/gml
../commonCRSsProfile.xsd"
gml:id="Grid2dSquareCS">
  <!-- Primary editor: Arliss Whiteside. Last updated 2006-07-19-->
  <csName>2D square-cell grid based coordinate system</csName>
  <csID>
    <name codeSpace="urn:ogc:def:cs:OGC:1.0:">Grid2dSquareCS</name>
  </csID>
  <remarks>2D grid-based coordinate system for use by an image or
other continuous grid coverage. It can be used for a grid of any size,
since no grid size is defined. This coordinate system specifies that
each row coordinate value will be listed before the column coordinate
value. The grid cells are assumed to be square, with the same grid
spacing or pixel spacing in each direction.
```

In a grid coverage file, the "row" axis shall be the first axis by which grid points are sequenced, and the "column" axis shall be the second axis, as could be specified by the "scanDirection : Sequence(CharacterString)" attribute of the CV_SequenceRule class in Clause 8 of ISO 19123. With linear sequencing, the grid points in the first row shall be listed first, followed by other rows, with the grid points in each row listed in column number order. This relationship between the "row" and "column" names and the first grid points shall apply whether this Grid2dSquareCS is associated with a grid file before or after that file is recorded.

The "row" and "column" axis names are used here although the "scanDirection : Sequence(CharacterString)" attribute may provide other axis names. Use of other axis names would require defining different CartesianCSs for other names, or adding other names as additional axisID values. The following XML includes the axis names "line" and "sample" as additional axisID values.

If not otherwise identified in an image file, the "row" axis shall be the first axis whose number of pixels is identified, and the "column" axis shall be the second axis, as could be specified by the "extent[0..1] : CV_GridEnvelope" attribute of the CV_Grid class in Clause 8 of ISO 19123. In either case, the first point in the grid coverage file is assumed to be numbered (0, 0), meaning row 0, column 0.

The first row in a grid is sometimes called the "top" row, the first column is sometimes called the "left" column, and the first grid point is then called the "upperLeft" point. If desired, those names can be used with this Grid2dSquareCS. However other names can also be used,

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```
since this Grid2dSquareCS has been defined so that it does not depend
on such left/right, top/bottom, and up/down names. </remarks>
  <usesAxis xlink:href="urn:ogc:def:axis:OGC:1.0:Row"/>
  <usesAxis xlink:href="urn:ogc:def:axis:OGC:1.0:Column"/>
</CartesianCS>
```

This xml document references the two standard grid axes specified below.

2.2 Correct typographical errors in Subclause 10.1

Correct typographical errors in Subclause numbers in Table in Subclause 10.1

Replace current Subclause 10.4:

Overview

This clause specifies a standard set of definitions and corresponding URNs that shall be used whenever applicable for unrectified and georectified images. Most of these definitions are encoded using this GML 3.1.1 Grid CRSs profile.

Whenever applicable, CRS definitions for images shall use the eight URNs in the “ogc” URN namespace that are specified in Table 2. The first two these URNs use the format for not-completely-specified objects specified in Subclause 7.2 of “URNs of definitions in ogc namespace” [OGC 05-010]. The remaining six of these URNs use the format for single objects specified in Subclause 7.1.

Table 1 — Standard URNs for unrectified images CRSs

URN	Object name & gml:id	Definition specified in
urn:ogc:def:crs:OGC:0.0:ImageCRSPixelCenter:TBD ^a	ImageTBDCRSPixelCenter	Subclause 9.2
urn:ogc:def:crs:OGC:0.0:ImageCRSPixelCorner:TBD ^a	ImageTBDCRSPixelCorner	Subclause 9.3
urn:ogc:def:cs:OGC:0.0:Grid2dSquareCS	Grid2dSquareCS	Subclause 9.4
urn:ogc:def:axis:OGC:0.0:Row	Row	Subclause 9.5
urn:ogc:def:axis:OGC:0.0:Column	Column	Subclause 9.6
urn:ogc:def:datum:OGC:0.0:ImageDatumPixelCenter	ImageDatumPixelCenter	Subclause 9.7
urn:ogc:def:datum:OGC:0.0:ImageDatumPixelCorner	ImageDatumPixelCorner	Subclause 9.8
urn:ogc:def:uom:OGC:0.0:GridSpacing	GridSpacing	Subclause 9.9
^a This “TBD” shall be replaced by the image identifier alphanumeric character string.		

With: (changed text highlighted in red)

Overview

This clause specifies a standard set of definitions and corresponding URNs that shall be used whenever applicable for unrectified and georectified images. Most of these definitions are encoded using this GML 3.1.1 Grid CRSs profile.

Whenever applicable, CRS definitions for images shall use the eight URNs in the “ogc” URN namespace that are specified in Table 2. The first two these URNs use the format for not-completely-specified objects specified in Subclause 7.2 of “URNs of definitions in ogc namespace” [OGC 05-010]. The remaining six of these URNs use the format for single objects specified in Subclause 7.1.

Table 2 — Standard URNs for unrectified images CRSs

URN	Object name & gml:id	Definition specified in
urn:ogc:def:crs:OGC:0.0:ImageCRSPixelCenter:TBD ^a	ImageTBDCRSPixelCenter	Subclause 10.2
urn:ogc:def:crs:OGC:0.0:ImageCRSPixelCorner:TBD ^a	ImageTBDCRSPixelCorner	Subclause 10.3
urn:ogc:def:cs:OGC:0.0:Grid2dSquareCS	Grid2dSquareCS	Subclause 10.4
urn:ogc:def:axis:OGC:0.0:Row	Row	Subclause 10.5
urn:ogc:def:axis:OGC:0.0:Column	Column	Subclause 10.6
urn:ogc:def:datum:OGC:0.0:ImageDatumPixelCenter	ImageDatumPixelCenter	Subclause 10.7
urn:ogc:def:datum:OGC:0.0:ImageDatumPixelCorner	ImageDatumPixelCorner	Subclause 10.8
urn:ogc:def:uom:OGC:0.0:GridSpacing	GridSpacing	Subclause 10.9
a This “TBD” shall be replaced by the image identifier alphanumeric character string.		