

Earth Observation Payload Data Ground Systems Infrastructure Evolution 2011-2014




LTDP SAFE

SAFE Metadata Model for Auxiliary data

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1 Introduction

1.1 Purpose

The purpose of this document is to analyse the suitability of the OGC's O&M and Earth Observation Metadata Profile of O&M for meta-dating EO Auxiliary Files. Resulting of this analysis a new metadata schema devoted for EO Auxiliary Files meta-dating is proposed.

1.2 Scope

As no schema or metadata standard has been previously defined for EO Auxiliary Files this document provides, after analysing needs and inputs a new schema devoted for inclusion of auxiliaries into its schemas in specialized manner.

This analysis has been requested as results of the action PDR-C_A10 (see [PDR_C_REP]) within the LTDP-SAFE project. The results obtained from this analysis will be used as a basis to update the SAFE documentation.

1.3 Document Structure

This document is structured as follows:

- Introduction.
- Analysis of OGC O&M and EO Metadata Profile of O&M, including the analysis of
 - The OGC Observations and Measurements (O&M) schema
 - EO Metadata Profile of O&M
- Review and classification of EO Auxiliary Files
- Presentation of the results of the trade-off and proposed schema for meta-dating EO Auxiliary Files
 - Trade-off results
 - Proposed metadata schema for EO Auxiliary Files

1.4 Document Status

This is the first version of the document issued for open discussion in the SAFE Wiki/Forum web page (<http://wiki.services.eoportal.org/tiki-index.php?page=LTDP+SAFE+Wiki>) before the PDR.

1.5 Applicable Documents

The following table lists the Applicable Documents that have a direct impact on the contents of this document.

Acronym	Title	Reference	Issue
[SAFE_PRIMER]	STANDARD ARCHIVE FORMAT FOR EUROPE PRIMER	PGSI-GSEG-EOPG-FS-010-0001	2.0
[SAFE_CORE]	STANDARD ARCHIVE FORMAT FOR EUROPE CORE SPECIFICATIONS	PGSI-GSEG-EOPG-FS-05-0001	2.0
[SAFE_REC_SPEC]	STANDARD ARCHIVE FORMAT FOR EUROPE RECOMMENDATION FOR SPECIALIZATIONS	PGSI-GSEG-EOPG-FS-05-0002	2.0

Acronym	Title	Reference	Issue
[SRR_REP]	SAFE SRR Review Report	SAFE-GMV-REP-001	1.0
[SSS]	Software System Specification	SAFE-GMV-SSS-001	N/A

Table 1-1: Applicable Documents

1.6 Reference Documents

Acronym	Title	Reference	Issue
[ALOS]	Format Description of the ALOS Ancillary Information Files	NEB-01009A-8 (ALOS-AFFT-E01)	A-8
[LTDP Guidelines]	European LTDP Common Guidelines	GSCB-LTDP-EOPG-GD-09-0002 – 30/09/2010	1.1
[OGC-GML]	Geography Markup Language (GML) — Extended schemas and encoding rules	OGC 10-129r1	3.3
[OGC-EOP]	Earth Observation Metadata Profile of Observations and Measurements	OGC 10-157r3	1.0
[OGC-O&M]	Observations and Measurements - XML Implementation	OGC 10-025r1	2.0

Table 1-2: Reference Documents

1.7 Acronyms and Abbreviations

Acronym	Meaning
ALT	Altimeter
ATM	Atmospheric
ATT	Attitude
CAT	Category
CHA	Characterisation
EO	Earth Observation
EOM	Earth Observation Metadata
EOP	EO Metadata Profile of O&M
ES	Earth Surface
FOI	Feature of Interest
LMB	Limb Looking
LTDP	Long Term Data Preservation
LUT	Look-up Table
OGC	Open Geospatial Consortium
O&M	Observations and Measurements
ORB	Orbit
OPT	Optical

Acronym	Meaning
PAR	Parameter(s)
PDGS	Payload Data Ground System
PDR	Preliminary Design Review
PDR-C	Preliminary Design Review - Core
SAFE	Satellite Archive Format for Europe
SAR	Synthetic Aperture Radar
SSP	Synthesis and Systematic EO Product
WE	Weather

Table 1-3: Acronyms

2 Analysis of OGC EOP O&M

2.1 Analysis of OGC EOP O&M

This section is set to review the structure and contents of the metadata schemas provided by the OGC's Metadata Profile of O&M. This review is needed to clearly understand whether or not this schema is suitable for the inclusion of additional metadata elements referred to EO auxiliary files. The present section is arranged as follows:

1. OGC Observations and Measurements (O&M).
2. EO Metadata Profile of O&M.

2.1.1 OGC Observations and Measurements (O&M)

The OGC's Observations and Measurements (O&M) Specification constitutes a standardized format for encoding the results of observations and measurements. O&M describes a conceptual model that relates the different aspects of the data gathering process to one another.

According to O&M an observation is an event which occurs at a certain point in time and that generates a value for the observed phenomenon. Besides the time and value of a measurement, O&M is capable of describing other measurement properties, e.g. the process used to generate the measurement value as well as the location and quality of the measurement. O&M considers a measurement value to be an approximation of an attribute of the observed feature of interest (FOI). In addition, this information is regarded as metadata for further analysis and interpretation of the data.

The O&M schemata not only enable the definition of observations but also of phenomena. Based upon these definitions, dictionaries can be designed to define the phenomena used in a certain application domain. Such a dictionary forms the basis for a general understanding of sensor data.

2.1.2 EO Metadata Profile of O&M

Earth Observation data and derived products, which shall be understood as collections of data, can be basically characterized by encoding their date of acquisition, location and processing level. These basic characteristics, in many cases are not enough to discover, within a catalogue, products of interest.

The construction of EO profile of O&M specification follows a layered approach, aimed at the creation of a set of schemas capable to store and preserve the metadata of EO products within their corresponding collections. The final goal is to provide the information required by OGC compliant clients and/or viewers exploiting EO data. To do so, O&M has been extended by adding the **EOP** schema as base layer, which describe basic features applicable for any kind of EO products, whatever the nature of the sensing principles or means.

Over this base layer specialised schemas had been set in order to accomplish the specific needs for metadata identified for different types of sensors namely; Optical (OPT), Synthetic Aperture Radar (SAR), Atmospheric (ATM), Altimeter (ALT), Limb Looking (LMB) and Synthesis and Systematic EO Product (SSP). Further specialization is conducted by means of mission devoted schemas; such is the case of Sentinel 1 (SEN1), which extends SAR.

As explained before, the EO metadata profile extends the O&M properties with information which is specific for earth observation data. Details on how O&M is extended are given in the next table (Table 2-1).

Element		Description
Phenomenon time (mandatory)	om:phenomenonTime	The acquisition duration
Result time (mandatory)	om:resultTime	The time when the result becomes available
Procedure (mandatory)	eop:EarthObservationEquipment	The Platform/Instrument/Sensor used for the acquisition and the acquisition parameters
Observed property (mandatory)	xlink	xlink reference
Feature of interest (mandatory)	eop:footprint	The observed area (or its projection) on the ground i.e. the footprint of acquisition
Result (optional)	eop:EarthObservationResult	The metadata describing the Earth Observation result composed of the browse, mask and product descriptions
Metadata (mandatory)	eop:earthObservationMetadata	General properties such as the data identifier, the downlink and archiving information

Table 2-1: Elements of the EO Metadata Profile of O&M

3 Review and classification of EO Auxiliary Files

Once described the current version of the OGC's EO Metadata Profile of O&M prior to determining if its suitability for meta-dating EO auxiliary files a review of the existing files, categorising them, has been carried. To do so the auxiliaries corresponding to the following missions/sensors had been analysed:

- **ENVISAT:** MERIS, ASAR, AATSR, DORIS, RA-2 and MWR.
- **ALOS:** PALSAR, AVNIR-2, PRISM.

Once listed the auxiliaries, they had been categorized accordingly with its use, characteristics and nature. As result of this exercise seven categories were established, providing high level information on the type of auxiliary. These categories are briefly described here below:

- **Earth Surface (ES):** Indicates that the file contains information which is spatially explicit.
- **Parameters (PAR):** Files containing parameters (including configuration files), whatever its use.
- **Weather (WE):** Files containing information about weather (analysis or forecast) and climatology.
- **Look-up tables (LUT):** Files containing look-up tables.
- **Characterisation file (CHA):** Files containing information on the characteristics of a given file or related to specific information
- **Orbit (ORB):** Files containing information about the orbit predicted or restituted.
- **Attitude Data (ATT):** Files containing information on the attitude of the spacecraft.

The results of this task are shown in the following table (Table 3-1), where the analysed auxiliary files had been listed, pairing them with its assigned category (recorded in the column "CAT.")

MISSION	SENSOR	DESCRIPTION	CAT
ENVISAT	All	FOS Orbit State Vectors/ENVISAT Orbit Data Files (predicted and restituted)	ORB
ENVISAT	All	UTC/SBT Time Conversion	PAR
ENVISAT	MERIS	Aerosol Climatology Data File	WEA
ENVISAT	MERIS	Atmosphere Parameters Data File	PAR
ENVISAT	MERIS	Cloud Measurement Parameters Data File	PAR
ENVISAT	MERIS	Coastline/Land/Ocean Data File for MERIS	ES
ENVISAT	MERIS	Digital Elevation Model for MERIS	ES
ENVISAT	MERIS	Digital Roughness Model Data File	ES
ENVISAT	MERIS	ECMWF Data Files for MERIS	WEA
ENVISAT	MERIS	Land Aerosols Parameters Data File	PAR
ENVISAT	MERIS	Land Vegetation Index Parameters Data File	PAR
ENVISAT	MERIS	Level 2 Control Parameters Data File	PAR
ENVISAT	MERIS	MERIS Instrument Data File	PAR
ENVISAT	MERIS	MERIS Level 1b Control Parameters Data File	PAR
ENVISAT	MERIS	Ocean Aerosols Parameters Data File	PAR
ENVISAT	MERIS	Ocean I Parameters Data File	PAR
ENVISAT	MERIS	Ocean II Parameters Data File	PAR
ENVISAT	MERIS	Radiometric Calibration Data File	PAR
ENVISAT	MERIS	Surface Confidence Map File	ES
ENVISAT	MERIS	Water Vapour Parameters Data File	PAR
ENVISAT	ASAR	External Calibration Data	PAR
ENVISAT	ASAR	External Characterisation Data	CHA
ENVISAT	ASAR	Instrument Characterisation File	CHA
ENVISAT	ASAR	Processor Configuration File	PAR
ENVISAT	AATSR	AATSR Instrument Characterisation File	PAR
ENVISAT	AATSR	AATSR L1B Processor Configuration File	PAR
ENVISAT	AATSR	AATSR L2 Processor Configuration File	PAR
ENVISAT	AATSR	Browse LUT	LUT

MISSION	SENSOR	DESCRIPTION	CAT
ENVISAT	AATSR	Cloud Test LUTs	LUT
ENVISAT	AATSR	Digital Elevation Model for AATSR	ES
ENVISAT	AATSR	General Calibration File	PAR
ENVISAT	AATSR	L1B Characterisation File	CHA
ENVISAT	AATSR	Land Sea Mask for AATSR	ES
ENVISAT	AATSR	LST Retrieval Coefficients/Data	PAR
ENVISAT	AATSR	SST Retrieval Coefficients	PAR
ENVISAT	AATSR	Visible Calibration File	PAR
ENVISAT	DORIS	DORIS Navigator Level 0	ORB
ENVISAT	DORIS	DORIS Precise Orbit State Vectors	ORB
ENVISAT	DORIS	DORIS Preliminary Orbit State Vectors	ORB
ENVISAT	RA-2/MWR	Altitude of Meteorological Grid Points	WEA
ENVISAT	RA-2/MWR	ECMWF Forecast and Analysis Meteorological Data Files for RA-2/MWR	WEA
ENVISAT	RA-2/MWR	Cartwright Amplitudes File	PAR
ENVISAT	RA-2/MWR	Coefficient Map for the Ocean Tide Calculation – solution 1	PAR
ENVISAT	RA-2/MWR	Coefficient Map for the Ocean Tide Calculation – solution 2	PAR
ENVISAT	RA-2/MWR	Coefficients Maps for the Tidal Loading Calculation – solution 1	PAR
ENVISAT	RA-2/MWR	Coefficients Maps for the Tidal Loading Calculation – solution 2	PAR
ENVISAT	RA-2/MWR	Geoid Height Map	ES
ENVISAT	RA-2/MWR	Ice 1/Sea Ice Configuration System File	PAR
ENVISAT	RA-2/MWR	Land/Sea Mask Map	ES
ENVISAT	RA-2/MWR	Mean Sea Surface Elevation	ES
ENVISAT	RA-2/MWR	Model Ionospheric Coefficients File	PAR
ENVISAT	RA-2/MWR	Modified Dip Map File	ES
ENVISAT	RA-2/MWR	MWR Characterisation File	CHA
ENVISAT	RA-2/MWR	MWR Configuration File	PAR
ENVISAT	RA-2/MWR	MWR Side Lobes Temperature File	PAR
ENVISAT	RA-2/MWR	Ocean Depth/Land Elevation Map for RA-2/MWR	ES
ENVISAT	RA-2/MWR	Ocean/Ice 2 Configuration System File	PAR
ENVISAT	RA-2/MWR	Platform Data File	PAR
ENVISAT	RA-2/MWR	Pole Location Position Data File	ES
ENVISAT	RA-2/MWR	RA-2 Characterisation File	CHA
ENVISAT	RA-2/MWR	RA-2 Configuration File	PAR
ENVISAT	RA-2/MWR	RA-2 Flight IF Mask Data	PAR
ENVISAT	RA-2/MWR	RA-2 Flight IF Mask Data (Chain A)	PAR
ENVISAT	RA-2/MWR	RA-2 Flight IF Mask Data (Chain B)	PAR
ENVISAT	RA-2/MWR	RA-2 Slope Model for Antarctica Data File	ES
ENVISAT	RA-2/MWR	RA-2 Slope Model for Greenland Data File	ES
ENVISAT	RA-2/MWR	RA-2 USO File	PAR
ENVISAT	RA-2/MWR	RA-2/MWR Constants File	PAR
ENVISAT	RA-2/MWR	Sea State Bias Table File	PAR
ENVISAT	RA-2/MWR	Solar Activity Data File	PAR
ALOS	All	Conventional orbit data	ORB
ALOS	All	Coordinates Transformation Matrix	PAR
ALOS	All	Precision Attitude Data	ATT
ALOS	All	Precision orbit data	ORB
ALOS	PRISM	Precision Parameter for PRISM	PAR
ALOS	All	Time Difference Information	PAR

Table 3-1: Classification of EO auxiliary files

4 Trade-off results and proposed schema for meta-dating EO Auxiliary Files

4.1 Trade-off results

The results of review of the OGC EO Metadata Profile of O&M were confronted with the Classification of EO auxiliary categories described in the Table 3-1. Resulting of this cross check, we can state that:

1. Because the disparity on the nature, formats, collection and generation means and thematic content of the EO auxiliary files, metadata about these files cannot be recorded within the current OGC's metadata schemas.
2. Auxiliary files are referenced within the EO Metadata Profile of O&M by the `eop:EarthObservationMetadata` element. In turn this element contains a simple type named `eop:auxiliaryDataSetFilename`.
3. If `eop:auxiliaryDataSetFilename` is filled, due to a cascade effect, the other EOP mandatory elements/fields shall be filled in order to be compliant with the standard.
4. While we are able to easily fill `eop:auxiliaryDataSetFilename` for any SAFE auxiliary file, filling the other mandatory fields of EOP is not possible due to the previous statements.

Under the light of the abovementioned reasons, we can state that neither EOP nor O&M metadata schemas are suitable for meta-dating the SAFE's auxiliary files. For this reason we are proposing a new metadata schema, specially designed for this purpose. The new schema is described in the following section (section 4.2) of this document.

4.2 Proposed metadata schema for EO Auxiliary files

The complex task of defining a metadata schema for EO Auxiliary Files which are characterised its disparity; disparate nature, formats, collection and generation means and thematic content etc. has been driven by three main drivers:

1. The resulting schema shall be extensible, capable for further extensions devoted for the inclusion of new, or previously undefined or unidentified, auxiliary file types.
2. The schema shall lead with the uncertainty on the nature of the data to be modelled.
3. The schema shall be open enough towards being easily accomplished without needing complex operations and/or collection of further extra-information on the file being meta-dated.
4. The resulting schema shall be compliant with the standard encoding defined by GML 3.3.0

Following these guidelines a new schema has been designed for auxiliary files meta-dating. A high level description of the schema is contained in the following table (Table 4-1). Additional information on the value types expected is shown in table 4-2.

Field	Card.	Type	Field Description
safe-aux:fileInformation	1	n/a	General information about the file
safe-aux:identifier	1	n/a	Identifier (doi) of the auxiliary file
safe-aux:name	1	string	Name of the auxiliary file
safe-aux:version	0...1	string	Version of the auxiliary file
safe-aux:size	0...1	string	Size of the auxiliary file (including units)
safe-aux:description	0...1	string	Short description of the auxiliary file
safe-aux:archivedIn	0...1	string	Archive centre
safe-aux:format	1	string	Format of the file
safe-aux:compressed	1	string	Flag indicating if the file is compressed
safe-aux:compressMethod	0...1	boolean	Description of the compressing method
safe-aux:specificationReference	0...1	string	Reference to the file specification, document version and document date
safe-aux:creationDate	0...1	string	Date when the file was created
safe-aux:fileTypeInfoInformation	1	date	Specific information about the auxiliary file
safe-aux:fileType	1	n/a	File type, according with the following classification: EARTH SURFACE, PARAMETERS, LUT, WEATHER, PRODUCT CHARACTERISATION, ORBIT, ATTITUDE DATA, SW PACKAGE or OTHER
safe-aux:earthSurface	0...1	n/a	Files containing spatially explicit information, also known as geo-information
safe-aux:earthSurfaceRepresentation	1	safe-aux:FormatRepValueType	EARTH SURFACE type representation organization: Raster o vector
safe-aux:vectorTopology	0...1	safe-aux:VectorTopologyValueType	Topology of vector based auxiliary files: Point, line, polyline or polygon
safe-aux:rasterInformation	0...1	n/a	General information describing raster files
safe-aux:rasterResolution	0...∞	n/a	Cell size, or spatial resolution, of raster data auxiliary files
safe-aux:xResolution	1	double	x dimension ground sample distance per pixel (resolution)
safe-aux:yResolution	1	double	y dimension ground sample distance per pixel (resolution)
safe-aux:zResolution	0...1	double	z dimension ground sample distance (resolution)
safe-aux:rasterUnits	1	n/a	Dimension units of raster files
safe-aux:xyUnits	1	gml:UnitOfMeasureType	x and y dimension units
safe-aux:zUnits	0...1	gml:UnitOfMeasureType	z dimension units
safe-aux:SpatialDomain	0...1	n/a	Spatial domain of any EARTH SURFACE type auxiliary file, bounding box defined by its west, east, north and south coordinates
safe-aux:westBoundingCoordinate	1	gml:point/gml:pos	West bounding coordinate
safe-aux:eastBoundingCoordinate	1	gml:point/gml:pos	East bounding coordinate
safe-aux:northBoundingCoordinate	1	gml:point/gml:pos	North bounding coordinate
safe-aux:southBoundingCoordinate	1	gml:point/gml:pos	South bounding coordinate

Field	Card.	Type	Field Description
safe-aux:RefSystem	0...1	gml:CodeWithAuthorityType	ID of the coordinate system (cartographic reference system) of auxiliary EARTH SURFACE type files
safe-aux:Theme	1	n/a	Auxiliary EARTH SURFACE type file thematic groups
safe-aux:mask	0...1	safe-aux:MaskValueType	Mask type: land-sea, land, sea, cloud, ice, coast line or other
safe-aux:elevation	0...1	safe-aux:ElevationValueType	Elevation type: DEM, ocean depth (bathymetry), sea surface elevation, geoid height or other
safe-aux:earthMorphology	0...1	safe-aux:EarthMorphologyValueType	Earth morphology: Roughness, slope, aspect or other
safe-aux:points	0...1	safe-aux:PointsValueType	Georeferenced points: Ground control points, tie points, pole location or other
safe-aux:temperature	0...1	safe-aux:TemperatureValueType	Temperature: Sea Surface Temperature, Land Surface Temperature, Air Temperature or other
safe-aux:parameters	0...1	safe-aux:ParametersValueType	Information about auxiliary files containing or considered as parameters. Allowed values are: EARTH SURFACE, ATMOSPHERE, WEATHER, PLATFORM, SENSOR, INSTRUMENT, PROCESSOR, LUT, CALIBRATION, COORDINATES TRANSFORMATION, TIME CONVERSION or OTHER
safe-aux:characterisationFile	0...1	safe-aux:characterisationFileValueType	Auxiliary files providing information (characteristics) of any kind of elements
safe-aux:lut	0...1	n/a	General information describing look-up tables
safe-aux:nLutCols	1	positive integer	Specification of the number of columns of a LUT
safe-aux:nLutRows	1	positive integer	Specification of the number of rows of a LUT file
safe-aux:LutSpecificDescription	0...1	safe-aux:LutSpecificDescriptionValueType	Description of LUT files
safe-aux:weather	0...1	safe-aux:WeatherValueType	Auxiliary files related to atmospheric or weather conditions, observations, analysis, models, etc.
safe-aux:orbit	0...1	safe-aux:OrbitValueType	Auxiliary files related to the orbit of the spacecraft: Predicted, precise or other orbits

Table 4-1: Proposed metadata schema for EO Auxiliary files

safe-aux Value Types
<safe-aux:FileTypeValueType>
<pre> <simpleType name="FileTypeValueType"> <union memberTypes="safe-aux:FileTypeValueEnumerationType safe-aux:FileTypeValueOtherType"/> </simpleType> <simpleType name="FileTypeValueEnumerationType"> <restriction base="string"> <enumeration value="EARTH SURFACE"/> <enumeration value="PARAMETERS"/> <enumeration value="LUT"/> <enumeration value="WEATHER"/> <enumeration value="CALIBRATION"/> <enumeration value="PROCESSOR"/> <enumeration value="PRODUCT CHARACTERISATION FILE"/> <enumeration value="ORBIT"/> <enumeration value="ATTITUDE DATA"/> <enumeration value="SW PACKAGE"/> </restriction> </simpleType> <simpleType name="FileTypeOtherType"> <restriction base="string"> <pattern value="other: \w{2,}"/> </restriction> </simpleType> </pre>
<safe-aux:FormatEarthSurfaceRepValueType>
<pre> <simpleType name="FormatEarthSurfaceRepValueEnumerationType"> <restriction base="string"> <enumeration value="RASTER"/> <enumeration value="VECTOR"/> </restriction> </simpleType> </pre>
<safe-aux:VectorTopologyValueType>
<pre> <simpleType name="VectorTopologyValueEnumerationType"> <restriction base="string"> <enumeration value="POINT"/> <enumeration value="POLYGON"/> <enumeration value="LINE"/> <enumeration value="POLYLINE"/> </restriction> </simpleType> </pre>
<safe-aux:MaskValueType>
<pre> <simpleType name="MaskValueType"> <union memberTypes="safe-aux:MaskValueEnumerationType safe-aux:MaskValueOtherType"/> </simpleType> <simpleType name="MaskValueEnumerationType"> <restriction base="string"> <enumeration value="LAND-SEA"/> <enumeration value="LAND"/> <enumeration value="SEA"/> <enumeration value="CLOUD"/> <enumeration value="SNOW"/> <enumeration value="ICE"/> </restriction> </simpleType> <simpleType name="MaskValueOtherType"> <restriction base="string"> <pattern value="other: \w{2,}"/> </restriction> </simpleType> </pre>
<safe-aux:ElevationValueType>

safe-aux Value Types
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<safe-aux:EarthMorphologyValueType>
<pre> <simpleType name="EarthMorphologyValueType"> <union memberTypes="safe-aux:EarthMorphologyValueEnumerationType safe-aux:EarthMorphologyOtherType"/> </simpleType> <simpleType name="EarthMorphologyEnumerationType"> <restriction base="string"> <enumeration value="ROUGHNESS"/> <enumeration value="SLOPE"/> <enumeration value="ASPECT"/> </restriction> </simpleType> <simpleType name="EarthMorphologyOtherType"> <restriction base="string"> <pattern value="other: \w{2,}"/> </restriction> </simpleType> </pre>
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<pre> <simpleType name="PointsValueType"> <union memberTypes="safe-aux:PointsValueEnumerationType safe-aux:PointsValueOtherType"/> </simpleType> <simpleType name="PointsValueEnumerationType"> <restriction base="string"> <enumeration value="GROUND CONTROL"/> <enumeration value="TIE"/> <enumeration value="POLE LOCATION"/> </restriction> </simpleType> <simpleType name="PointsValueOtherType"> <restriction base="string"> <pattern value="other: \w{2,}"/> </restriction> </simpleType> </pre>
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<pre> <simpleType name="TemperatureValueType"> <union memberTypes="safe-aux:TemperatureValueEnumerationType safe-aux:TemperatureValueOtherType"/> </simpleType> <simpleType name="TemperatureValueEnumerationType"> <restriction base="string"> <enumeration value="SEA"/> <enumeration value="LAND"/> <enumeration value="AIR"/> </restriction> </simpleType> <simpleType name="TemperatureValueOtherType"> <restriction base="string"> <pattern value="other: \w{2,}"/> </restriction> </simpleType> </pre>

safe-aux Value Types
<safe-aux:safe-aux:LutSpecificDescriptionValueType>
<pre> <simpleType name="LutSpecificDescriptionValueType"> <union memberTypes="safe-aux:LutSpecificDescriptionValueEnumerationType safe- aux:LutSpecificDescriptionValueOtherType"/> </simpleType> <simpleType name="LutSpecificDescriptionValueEnumerationType"> <restriction base="string"> <enumeration value="DATABASE"/> <enumeration value="VALUES RANGE"/> <enumeration value="COLORMAP"/> <enumeration value="TEST"/> </restriction> </simpleType> <simpleType name="LutSpecificDescriptionValueOtherType"> <restriction base="string"> <pattern value="other: \w{2,}"/> </restriction> </simpleType> </pre>
<safe-aux:MeteorologyValueType>
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safe-aux Value Types
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Table 4-2: safe-aux Value Types

Change Record

Issue	Revision	Date	Change Status	Origin
1	0	21st December 2012	Initial version	Juan Suárez Beltrán GMV

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