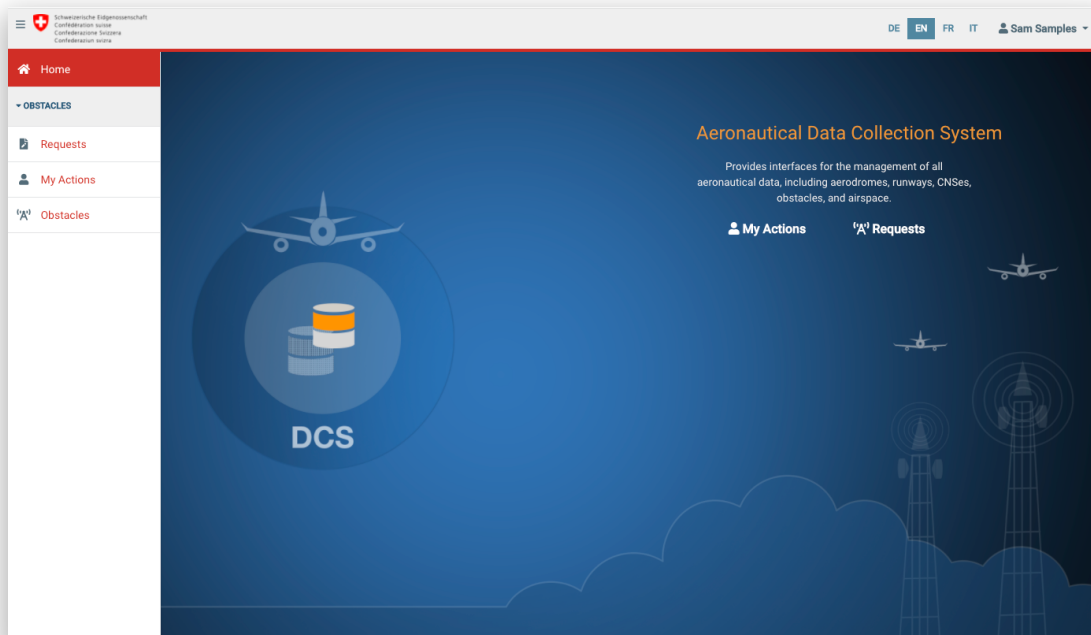


# Aeronautical Data Collection Service Specification



## 17 Obstacle export kml

Exported on Oct 3, 2022 7:40 AM



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<b>Title</b>	Obstacle export kml
<b>ID</b>	17
<b>Planned Release</b>	0.3
<b>Status</b>	<b>FINAL</b>
<b>Revision</b>	1.01 of 2022-05-20: Filenames (ID 17.01 1702), editorial 1.1 od 2022-09-30: Attribute "small" added <SimpleData>

Approval	Name	Date
<b>Author</b>	<a href="#">Ruedi Schneeberger</a>	2022-02-24
<b>Reviewer</b>		
<b>Developer</b>	<a href="#">Zachary Light</a>	2022-03-02
<b>Approver</b>	Markus Luginbuehl	2022-03-09

### Summary

- kml

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## 1 Technical Specification (Appendix to Contract)

ID	Mandatory Requirements	Interpretation / Clarification	SP
<b>TPTS24</b>	The web platform must be able to export specific data (at least in XML, PDF, XLS, CSV, KML, TXT, GeoJSON, SHP, geoTIFF and GeoPackage formats).		<b>2</b>



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## 2 Introduction

Obstacle data is available as KMZ (zipped KML). The KMZ allows the viewing of the obstacles in an 2D or 3D earth viewer. At the same time it serves the delivery of active obstacles to the data users and as a base for creating and updating aeronautical information products (AIP and charts).



### 3 Definitions and Abbreviations

<i>Active_Obstacles</i>	The file Active_Obstacle_<yyyy-mm-dd_hhmmss+...>.kml
DCS	Data Collection System
<i>DCS_Obstacles</i>	The file DCS_Obstacle_<yyyy-mm-dd_hhmmss+...>.kml
effectiveDate	The date of the last change of the obstacle. This change can be: <ul style="list-style-type: none"> <li>• The obstacle has been activated or inactivated</li> <li>• Some properties of the obstacle have changed (e.g geometry, marking or lighting)</li> </ul>
KML	Keyhole Markup Language
OMS	Obstacle Management System (The system in use at FOCA before its replacement by DCS)
Penultimate AIRAC date	second to last AIRAC Date $\text{penultimateAIRAC} = \text{Truncate}(\text{Date}(T_{\text{export}}) - 2022-01-27) / 28) - 1) * 28$
$T_{\text{export}}$	The instance in time of the export
UUID	Universally Unique Identifier, a 128 bit number that is used to identify information across a computer system.



## 4 Requirement Specifications

ID	Requirement	Example / User Story
17.01	<p>The file <b>Active_Obstacle.kmz</b> is a zipped archive containing:</p> <ul style="list-style-type: none"> <li>• <b>Active_Obstacle_&lt;yyyy-mm-dd_hhmmss+...&gt;.kml</b> : File containing all <u>active obstacles</u></li> <li>• Active_Obstacle_&lt;yyyy-mm-dd_hhmmss+...&gt;.kml.sha512 containing a SHA-512 checksum of the Active_Obstacle_&lt;yyyy-mm-dd-hhmmss+...&gt;.kml file</li> <li>• signature : Folder containing the chart symbols for the point obstacles as png files</li> </ul>	<u>Active obstacles</u> are specified in 17.06
17.02	<p>The file <b>DCS_Obstacle.kmz</b> is a zipped archive containing:</p> <ul style="list-style-type: none"> <li>• <b>DCS_Obstacle_&lt;yyyy-mm-dd_hhmmss+...&gt;.kml</b> : File containing <u>inactive and active obstacles</u></li> <li>• DCS_Obstacle_&lt;yyyy-mm-dd_hhmmss+...&gt;.kml.sha512 containing a SHA-512 checksum of the DCS_Obstacle_&lt;yyyy-mm-dd_hhmmss+...&gt;.kml file</li> <li>• signature : Folder containing the chart symbols for the point obstacles as png files</li> </ul>	<u>inactive and active obstacles</u> are specified in 17.08
17.03	<p>The the structure and format of the <i>Active_Obstacles</i> and <i>DCS_Obstacles</i> is KML according to the OGC® KML specification Version 2.2 with extension as specified in <a href="https://portal.ogc.org/files/?artifact_id=27810">https://portal.ogc.org/files/?artifact_id=27810</a></p>	See <a href="#">KML Structure and Format</a> for more details.
17.04	<i>Active_Obstacles</i> and <i>DCS_Obstacles</i> are exported (at $T_{export}$ ) every day at approx. 00:05 UTC	
17.05	<b>&lt;yyyy-mm-dd_hhmmss&gt;</b> in the kml-Filename is the datetime of $T_{export}$	
17.06	<p><i>Active_Obstacles</i> contains:</p> <ul style="list-style-type: none"> <li>• All obstacles with status Active ("state"=A) and "effectiveDate" &lt;= <math>T_{export}</math></li> </ul>	
17.08	<p><i>DCS_Obstacles</i> contains</p> <ul style="list-style-type: none"> <li>• All obstacles with status Active ("state"=A)</li> <li>• All obstacles with status Inactive ("state"=I) AND "effectiveDate" &gt;= <math>T_{export}</math> - 30 days</li> </ul>	
The content of <i>Active_Obstacles</i> and <i>DCS_Obstacles</i> is defined below.		
17.09	Each obstacle is provided as a <code>kml:Placemark</code>	
17.10	<p>The supported geometry types are</p> <ul style="list-style-type: none"> <li>• <code>kml:Point</code></li> <li>• <code>kml:LineString</code></li> <li>• <code>kml:Polygon</code></li> </ul>	
17.29	A single obstacle can consist of multiple point geometries but only one linestring or polygon.	



ID	Requirement	Example / User Story
17.11	Linestrings and polygon obstacles are represented as <code>kml:MultiGeometry</code> with the first coordinate duplicated as separate <code>kml:Point</code>	The <code>kml:Point</code> is used by Google Earth to place the label
17.12	The horizontal positions are referenced to WGS-84 longitude, latitude in decimal degrees (epsg:4326).	
17.13	The elevations are mean sea level elevations of the obstacle top in Swiss LN02 (epsg:5728)	
17.14	<p>The <code>kml:name</code> contains the Registration Number.</p> <p>The Registration Number is a 10 character text string.</p> <p>There are two types for registration numbers supported:</p> <ul style="list-style-type: none"> <li><code>&lt;mmm&gt;&lt;CC&gt;&lt;nnnnn&gt;</code> : for obstacles transferred from OMS</li> <li><code>&lt;CC&gt;&lt;zzzzzzzz&gt;</code> : for obstacles collected in DCS</li> </ul> <p>Where:</p> <ul style="list-style-type: none"> <li><code>&lt;mmm&gt;</code> is a 3 digit number</li> <li><code>&lt;nnnnn&gt;</code> is a 5 digit number</li> <li><code>&lt;zzzzzzzz&gt;</code> is a 8 digit number</li> <li><code>&lt;CC&gt;</code> is the two letter abbreviation for the Canton (of the first point of the obstacle) or "HL" for power lines.</li> </ul>	<pre>&lt;name&gt;215ZH30387&lt;/name&gt;&lt;name&gt;SH21001234&lt;/name&gt;</pre>
17.30	The <code>kml:styleURL</code> indicates the style to apply for graphical representation of the feature.	<pre>&lt;styleUrl&gt;#ms_pole_lighted&lt;/styleUrl&gt;&lt;styleUrl&gt;#ms_cable_spheres&lt;/styleUrl&gt;</pre> <p>See <a href="#">10.14 Obstacle data presentation rules</a> for a style map</p>
17.15	Specific information for each obstacle is provided as extended <code>kml:SimpleData</code> :	<p>See <a href="#">KML Structure and Format</a> for more details.</p> <p>The obstacle data specific extensions are specified in 17.16 - 17.28</p>
17.16	UUID of the obstacle	<pre>&lt;SimpleData name="uuid"&gt;378ea5e5-a620-45bb-a0ae-aa707e570f35&lt;/SimpleData&gt;</pre>
17.17	VOID	
17.18	Airport reference if the obstacle is within the obstacle limitation surface perimeter	<pre>&lt;SimpleData name="airport"&gt;LSZH&lt;/SimpleData&gt;</pre>
17.19	<p>Obstacle Type according to AIMX 5.1.1. The following types are currently used:</p> <ul style="list-style-type: none"> <li>BRIDGE</li> <li>BUILDING</li> <li>CABLE_CAR</li> <li>CATENARY</li> <li>CRANE</li> <li>POLE</li> <li>STACK</li> <li>TRANSMISSION_LINE</li> <li>VEGETATION</li> <li>WINDMILL</li> </ul>	<pre>&lt;SimpleData name="obstacleType"&gt;POLE&lt;/SimpleData&gt;</pre>
17.20	<p>Status:</p> <ul style="list-style-type: none"> <li>A = active (the obstacle is present)</li> </ul>	<pre>&lt;SimpleData name="state"&gt;A&lt;/SimpleData&gt;</pre>





ID	Requirement	Example / User Story
	<ul style="list-style-type: none"> <li>I = inactive (the obstacle has been removed)</li> </ul>	
17.21	Max. Height above ground level in meter	<SimpleData name="maxHeightAGL">99.0</SimpleData>
17.22	Max. Elevation. The largest of the top elevations above mean sea level of all obstacle points in meter	<SimpleData name="topElevationAMSL">534</SimpleData>
17.31	Radius of obstacle in meter if it has a horizontal extent (e.g. boom length of a crane)	<SimpleData name="radius">34.5</SimpleData>
17.23	Effective date of the obstacle (the date of the last update of the obstacle)	<SimpleData name="effectiveDate">2021-06-09</SimpleData>
17.24	<p><b>In DCS_Obstacles only !</b></p> <p>Estimated end date of the obstacle , only provided if the obstacle is not a permanent object. The estimated end date is only provided as a hint for charting and does not imply that the obstacle will be inactive at that date.</p>	<SimpleData name="estEndDate">2022-05-10</SimpleData>
17.29	<p><b>In DCS_Obstacles only !</b></p> <p>Modification Information:</p> <ul style="list-style-type: none"> <li>YES: the obstacle has been modified since the penultimate AIRAC date. (effective date &gt;= penultimateAIRAC)</li> <li>NO: the obstacle has not been modified since the penultimate AIRAC date</li> </ul>	<SimpleData name="modified">YES</SimpleData>
17.25	<p>Marking information:</p> <ul style="list-style-type: none"> <li>NONE : no marking</li> <li>RED_WHITE_RED</li> <li>ORANGE_CANVAS</li> <li>ORANGE_SPHERES</li> <li>CABLE_WARNER</li> <li>MARKED (type of marking unknown)</li> </ul>	<SimpleData name="marking">RED_WHITE_RED</SimpleData>
17.26	<p>Lighting information:</p> <ul style="list-style-type: none"> <li>NONE : no lighting</li> <li>LOW : Low intensity light</li> <li>MEDIUM : Medium intensity light</li> <li>HIGH : High intensity light (can have low intensity light during the night)</li> <li>LIGHTED (intensity of lighting unknown)</li> </ul>	<SimpleData name="lighting">NONE</SimpleData>
17.27	<p>Group information:</p> <ul style="list-style-type: none"> <li>YES : the obstacle represents multiple obstacles in the immediate vicinity</li> <li>NO : the obstacle is representing a single obstacle</li> </ul>	<SimpleData name="group">NO</SimpleData>
17.28	<p><b>In DCS_Obstacles only !</b></p> <p>Publication: a comma separated string with the following possible entries</p>	<SimpleData name="publication">AD_INFO,VAC</SimpleData>



ID	Requirement	Example / User Story
	<ul style="list-style-type: none"><li>• VAC : The obstacle has to be shown on the Visual Approach Chart</li><li>• AD_INFO : The obstacle has to be shown on the Aerodrome/Heliport Chart</li><li>• AOC : The obstacle has to be shown in the Aerodrome Obstacle Chart Type A</li></ul>	
17.29	<p>Small obstacles near airports:</p> <ul style="list-style-type: none"><li>• YES : If the obstacle is located within the obstacle limitation surface perimeter AND the max. height above ground level is less than 60 m inside built-up area or less than 25 m outside built-up area.</li><li>• NO : otherwise</li></ul>	<pre>&lt;SimpleData name="small"&gt;YES&lt;/SimpleData&gt;</pre>



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## 5 KML Structure and Format

- [KML Structure and Format](#)



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## 6 Sample Data Sets

DCS\_Obstacle.kmzActive Obstacle.kmz



## 7 KML Structure and Format

Section		Example
Document	Document structure and header information	<pre>&lt;?xml version="1.0" encoding="UTF-8" ?&gt; &lt;!--Created by Data Collection System--&gt; &lt;!--Filename: DCS_Obstacles_2022-01-26-010243- --&gt; &lt;!--Date: Wed Jan 26 01:02:43 CET 2022--&gt; &lt;kml xmlns="http://www.opengis.net/kml/2.2" xmlns:gx="http://www.google.com/kml/ext/2.2" xmlns:kml="http://www.opengis.net/kml/2.2" xmlns:atom="http://www.opengis.net/kml/2.2"&gt;   &lt;Document&gt;     &lt;name&gt;DCS_Obstacles_2022-02-22- 010243&lt;/name&gt;     &lt;description&gt;Modifications flagged since AIRAC 2021-11-30&lt;/description&gt;     &lt;!-- insert style and schema here --&gt;     &lt;!-- insert placemarks here -- &gt;   &lt;/Document&gt; &lt;/kml&gt;</pre>



<p>Style</p>	<p>Style map and a normal and highlighted style for each style used in Google Earth. This is static information The example shows map styles for:</p> <ul style="list-style-type: none"><li>• ms_pole (POLE, not lighted)</li><li>• ms_pole_lighted (POLE, lighted)</li><li>• ms_line (TRANSMISSION_LINE, not marked)</li><li>• ms_polygon (polygon obstacle, not marked)</li></ul>	<pre>&lt;!-- Point Style --&gt; &lt;StyleMap id="ms_pole"&gt;   &lt;Pair&gt;     &lt;key&gt;normal&lt;/key&gt;     &lt;styleUrl&gt;#sn_pole&lt;/styleUrl&gt;   &lt;/Pair&gt;   &lt;Pair&gt;     &lt;key&gt;highlight&lt;/key&gt;     &lt;styleUrl&gt;#sh_pole&lt;/styleUrl&gt;   &lt;/Pair&gt; &lt;/StyleMap&gt; &lt;Style id="sn_pole"&gt;   &lt;IconStyle&gt;     &lt;color&gt;ff0000ff&lt;/color&gt;     &lt;scale&gt;0.5&lt;/scale&gt;   &lt;Icon&gt;     &lt;href&gt;signature/pole.png&lt;/href&gt;   &lt;/Icon&gt; &lt;/IconStyle&gt; &lt;LabelStyle&gt;   &lt;color&gt;ff0000ff&lt;/color&gt; &lt;/LabelStyle&gt; &lt;LineStyle&gt;   &lt;color&gt;ff0000ff&lt;/color&gt;   &lt;width&gt;5&lt;/width&gt; &lt;/LineStyle&gt; &lt;/Style&gt; &lt;Style id="sh_pole"&gt;   &lt;IconStyle&gt;     &lt;color&gt;ff0000ff&lt;/color&gt;     &lt;scale&gt;1.0&lt;/scale&gt;   &lt;Icon&gt;     &lt;href&gt;signature/pole.png&lt;/href&gt;   &lt;/Icon&gt; &lt;/IconStyle&gt; &lt;LabelStyle&gt;   &lt;color&gt;ff0000ff&lt;/color&gt; &lt;/LabelStyle&gt; &lt;LineStyle&gt;   &lt;color&gt;ff0000ff&lt;/color&gt;   &lt;width&gt;5&lt;/width&gt; &lt;/LineStyle&gt; &lt;/Style&gt; &lt;StyleMap id="ms_pole_lighted"&gt;   &lt;Pair&gt;     &lt;key&gt;normal&lt;/key&gt;     &lt;styleUrl&gt;#sn_pole_lighted&lt;/styleUrl&gt;   &lt;/Pair&gt;   &lt;Pair&gt;     &lt;key&gt;highlight&lt;/key&gt;     &lt;styleUrl&gt;#sh_pole_lighted&lt;/styleUrl&gt;   &lt;/Pair&gt; &lt;/StyleMap&gt; &lt;Style id="sn_pole_lighted"&gt;   &lt;IconStyle&gt;     &lt;color&gt;ff0000ff&lt;/color&gt;     &lt;scale&gt;0.5&lt;/scale&gt;   &lt;Icon&gt;     &lt;href&gt;signature/pole_lighted.png&lt;/href&gt;   &lt;/Icon&gt; &lt;/IconStyle&gt; &lt;LabelStyle&gt;   &lt;color&gt;ff0000ff&lt;/color&gt; &lt;/LabelStyle&gt;</pre>
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Section		Example
		<pre>&lt;/LineStyle&gt; &lt;/LineStyle&gt;   &lt;color&gt;ff0000ff&lt;/color&gt;   &lt;width&gt;5&lt;/width&gt; &lt;/LineStyle&gt; &lt;/Style&gt; &lt;Style id="sh_pole_lighted"&gt;   &lt;IconStyle&gt;     &lt;color&gt;ff0000ff&lt;/color&gt;     &lt;scale&gt;1.0&lt;/scale&gt;     &lt;Icon&gt;  &lt;href&gt;signature/pole_lighted.png&lt;/href&gt;     &lt;/Icon&gt;   &lt;/IconStyle&gt; &lt;/LabelStyle&gt; &lt;LabelStyle&gt;   &lt;color&gt;ff0000ff&lt;/color&gt; &lt;/LabelStyle&gt; &lt;LineStyle&gt;   &lt;color&gt;ff0000ff&lt;/color&gt;   &lt;width&gt;5&lt;/width&gt; &lt;/LineStyle&gt; &lt;/Style&gt; &lt;Style id="ms_line"&gt;   &lt;IconStyle&gt;     &lt;Icon&gt;     &lt;/Icon&gt;   &lt;/IconStyle&gt; &lt;LabelStyle&gt;   &lt;color&gt;ffff5500&lt;/color&gt; &lt;/LabelStyle&gt; &lt;LineStyle&gt;   &lt;color&gt;ffff5500&lt;/color&gt;   &lt;width&gt;3.5&lt;/width&gt; &lt;/LineStyle&gt; &lt;PolyStyle&gt;   &lt;color&gt;7f705c5c&lt;/color&gt; &lt;/PolyStyle&gt; &lt;/Style&gt; &lt;Style id="ms_polygon"&gt;   &lt;IconStyle&gt;     &lt;Icon&gt;     &lt;/Icon&gt;   &lt;/IconStyle&gt; &lt;LabelStyle&gt;   &lt;color&gt;ff0000cc&lt;/color&gt; &lt;/LabelStyle&gt; &lt;LineStyle&gt;   &lt;color&gt;ff0000cc&lt;/color&gt;   &lt;width&gt;1.5&lt;/width&gt; &lt;/LineStyle&gt; &lt;PolyStyle&gt;   &lt;color&gt;7f0000cc&lt;/color&gt; &lt;/PolyStyle&gt; &lt;/Style&gt;</pre>



<p>Schema</p>	<p>Schema of the extended data:</p> <ul style="list-style-type: none"> <li>• UUID</li> <li>• Airport (comma separated list of Location Indicators of airport if inside obstacle limitation perimeter)</li> <li>• Obstacle Type (AIXM Type)</li> <li>• State (A= active, I= inactive)</li> <li>• maxHeight AGL</li> <li>• Max Elevation ASL</li> <li>• Radius</li> <li>• Effektive date</li> <li>• Estimated end date (only provided if not permanent)</li> <li>• Modified since the penultimate AIRAC (YES / NO)</li> <li>• Marking (NONE / RED_WHITE_RED / ORANGE_SPHERES / ORANGE_CANNONS / CABLE_WARNER)</li> <li>• Lighting (NONE / LOW / MEDIUM / HIGH)</li> <li>• Group (YES / NO)</li> <li>• Publication (comma separated list.) Supported values are:             <ul style="list-style-type: none"> <li>○ VAC</li> <li>○ AD_INFO</li> <li>○ AOC</li> </ul> </li> <li>• Small</li> </ul>	<pre> &lt;Schema name="dcsData" id="dcsDataId"&gt;   &lt;SimpleField type="string" name="uuid"&gt;     &lt;displayName&gt;&lt;![CDATA[uuid]]&gt;&lt;/displayName&gt;   &lt;/SimpleField&gt;   &lt;SimpleField type="string" name="airport"&gt;     &lt;displayName&gt;&lt;![CDATA[airport]]&gt;&lt;/displayName&gt;   &lt;/SimpleField&gt;   &lt;SimpleField type="string" name="obstacleType"&gt;     &lt;displayName&gt;&lt;![CDATA[obstacleType]]&gt;&lt;/display Name&gt;   &lt;/SimpleField&gt;   &lt;SimpleField type="string" name="state"&gt;     &lt;displayName&gt;&lt;![CDATA[state]]&gt;&lt;/displayName&gt;   &lt;/SimpleField&gt;   &lt;SimpleField type="float" name="maxHeightAGL"&gt;     &lt;displayName&gt;&lt;![CDATA[maxHeightAGL]]&gt;&lt;/display Name&gt;   &lt;/SimpleField&gt;   &lt;SimpleField type="float" name="topElevationAMSL"&gt;     &lt;displayName&gt;&lt;![CDATA[topElevationAMSL]]&gt;&lt;/dis playName&gt;   &lt;/SimpleField&gt;   &lt;SimpleField type="float" name="radius"&gt;     &lt;displayName&gt;&lt;![CDATA[radius]]&gt;&lt;/displayName&gt;   &lt;/SimpleField&gt;   &lt;SimpleField type="string" name="effectiveDate"&gt;     &lt;displayName&gt;&lt;![CDATA[effectiveDate]]&gt;&lt;/displa yName&gt;   &lt;/SimpleField&gt;   &lt;SimpleField type="string" name="estEndDate"&gt;     &lt;displayName&gt;&lt;![CDATA[estEndDate]]&gt;&lt;/displayNa me&gt;   &lt;/SimpleField&gt;   &lt;SimpleField type="string" name="modified"&gt;     &lt;displayName&gt;&lt;![CDATA[modified]]&gt;&lt;/displayName &gt;   &lt;/SimpleField&gt;   &lt;SimpleField type="string" name="marking"&gt;     &lt;displayName&gt;&lt;![CDATA[marking]]&gt;&lt;/displayName&gt;   &lt;/SimpleField&gt;   &lt;SimpleField type="string" name="lighting"&gt;     &lt;displayName&gt;&lt;![CDATA[lighting]]&gt;&lt;/displayName &gt;   &lt;/SimpleField&gt;   &lt;SimpleField type="string" name="group"&gt; </pre>
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Section		Example
		<pre data-bbox="740 315 1410 636">&lt;displayName&gt;&lt;![CDATA[group]]&gt;&lt;/displayName&gt; &lt;/SimpleField&gt; &lt;SimpleField type="string" name="publication"&gt;  &lt;displayName&gt;&lt;![CDATA[publication]]&gt;&lt;/displayN ame&gt; &lt;/SimpleField&gt; &lt;SimpleField type="string" name="small"&gt;  &lt;displayName&gt;&lt;![CDATA[small]]&gt;&lt;/displayName&gt; &lt;/SimpleField&gt;&lt;/Schema&gt;</pre>
Obstac les	Placemark for each obstacle	



Section	Point Obstacle	Example
		<pre> &lt;Placemark&gt;   &lt;name&gt;SH21001234&lt;/name&gt;   &lt;visibility&gt;1&lt;/visibility&gt;   &lt;styleUrl&gt;#ms_crane_lighted&lt;/styleUrl&gt;   &lt;ExtendedData&gt;     &lt;SchemaData schemaUrl="#dcsDataId"&gt;       &lt;SimpleData name="uuid"&gt;7e1ae8fb- ebd4-4728-83f8-319c58edb170&lt;/SimpleData&gt;       &lt;SimpleData name="airport"&gt;LSZH&lt;/SimpleData&gt;       &lt;SimpleData name="obstacleType"&gt;CRANE&lt;/SimpleData&gt;       &lt;SimpleData name="state"&gt;A&lt;/SimpleData&gt;       &lt;SimpleData name="maxHeightAGL"&gt;99.0&lt;/SimpleData&gt;       &lt;SimpleData name="topElevationAMSL"&gt;534.2&lt;/SimpleData&gt;       &lt;SimpleData name="radius"&gt;35.4&lt;/SimpleData&gt;       &lt;SimpleData name="effectiveDate"&gt;2022-02-09&lt;/SimpleData&gt;       &lt;SimpleData name="estEndDate"&gt;2022-09-30&lt;/SimpleData&gt;       &lt;SimpleData name="modified"&gt;YES&lt;/SimpleData&gt;       &lt;SimpleData name="marking"&gt;ORANGE_CANVAS&lt;/SimpleData&gt;       &lt;SimpleData name="lighting"&gt;LOW&lt;/SimpleData&gt;       &lt;SimpleData name="group"&gt;NO&lt;/SimpleData&gt;       &lt;SimpleData name="publication"&gt;VAC,AD_INFO&lt;/SimpleData&gt;       &lt;SimpleData name="small"&gt;NO&lt;/SimpleData&gt;     &lt;/SchemaData&gt;   &lt;/ExtendedData&gt;   &lt;Point&gt;     &lt;extrude&gt;1&lt;/extrude&gt;     &lt;altitudeMode&gt;absolute&lt;/altitudeMode&gt;     &lt;coordinates&gt;       8.612961873682625,47.682293804034046,534.2     &lt;/coordinates&gt;   &lt;/Point&gt; &lt;/Placemark&gt; </pre>



Section		Example
	<p>Line Obstacle Multi part geometry with first point of the line as a &lt;Point&gt; and all points as &lt;LineString&gt;</p>	<pre> &lt;Placemark&gt;   &lt;name&gt;HL21000123&lt;/name&gt;   &lt;visibility&gt;1&lt;/visibility&gt;   &lt;styleUrl&gt;#ms_line&lt;/styleUrl&gt;   &lt;ExtendedData&gt;     &lt;SchemaData schemaUrl="#dcsDataId"&gt;       &lt;SimpleData name="uuid"&gt;c58f13d2- 021b-45ae-9e51-34e6a21472d0&lt;/SimpleData&gt;       &lt;SimpleData name="obstacleType"&gt;TRANSMISSION_LINE&lt;/SimpleD ata&gt;       &lt;SimpleData name="state"&gt;A&lt;/SimpleData&gt;       &lt;SimpleData name="maxHeightAGL"&gt;60.0&lt;/SimpleData&gt;       &lt;SimpleData name="topElevationAMSL"&gt;582.5&lt;/SimpleData&gt;       &lt;SimpleData name="effectiveDate"&gt;2020-01-23&lt;/SimpleData&gt;       &lt;SimpleData name="modified"&gt;NO&lt;/SimpleData&gt;       &lt;SimpleData name="marking"&gt;NONE&lt;/SimpleData&gt;       &lt;SimpleData name="lighting"&gt;NONE&lt;/SimpleData&gt;       &lt;SimpleData name="group"&gt;NO&lt;/SimpleData&gt;       &lt;SimpleData name="small"&gt;NO&lt;/SimpleData&gt;     &lt;/SchemaData&gt;   &lt;/ExtendedData&gt;   &lt;MultiGeometry&gt;     &lt;Point&gt;       &lt;extrude&gt;1&lt;/extrude&gt;      &lt;altitudeMode&gt;absolute&lt;/altitudeMode&gt;     &lt;coordinates&gt; 8.986703888888888,47.64232916666667,582.501     &lt;/coordinates&gt;     &lt;/Point&gt;     &lt;LineString&gt;       &lt;extrude&gt;1&lt;/extrude&gt;      &lt;altitudeMode&gt;absolute&lt;/altitudeMode&gt;     &lt;coordinates&gt; 8.986703888888888,47.64232916666667,582.501 8.987806944444444,47.6459125,573.599 8.986268333333333,47.650205833333333,556.499 8.986073333333334,47.654930833333333,507.3 8.988448055555557,47.656473333333333,490.602 8.99014454134434,47.65757500013223,493.499     &lt;/coordinates&gt;     &lt;/LineString&gt;   &lt;/MultiGeometry&gt; &lt;/Placemark&gt; </pre>



Polygon obstacle  
Multi part geometry with first  
point of the polygon as a  
<Point> and all points as  
<LinearRing>

```
<Placemark>
  <name>216ZH40090</name>
  <visibility>1</visibility>
  <styleUrl>#ms_polygon</styleUrl>
  <ExtendedData>
    <SchemaData schemaUrl="#dcsDataId">
      <SimpleData name="uuid">640844cb-
9736-4f23-9acf-31eb094fd625</SimpleData>
      <SimpleData
name="obstacleType">CATENARY</SimpleData>
      <SimpleData
name="state">A</SimpleData>
      <SimpleData
name="maxHeightAGL">62.0</SimpleData>
      <SimpleData
name="topElevationAMSL">772</SimpleData>
      <SimpleData
name="effectiveDate">2021-10-11</SimpleData>
      <SimpleData
name="modified">NO</SimpleData>
      <SimpleData
name="marking">CABLE_WARNER</SimpleData>
      <SimpleData
name="lighting">NONE</SimpleData>
      <SimpleData
name="group">NO</SimpleData>
      <SimpleData
name="small">NO</SimpleData>
    </SchemaData>
  </ExtendedData>
  <MultiGeometry>
    <Polygon>
      <extrude>1</extrude>
      <tessellate>1</tessellate>

<altitudeMode>absolute</altitudeMode>
      <outerBoundaryIs>
        <LinearRing>
          <coordinates>

8.885462359096055,47.43891211148467,636.0

8.881928388968733,47.44158298980589,750.0

8.883152973387514,47.441756605440574,772.0

8.886363026465656,47.44034013346709,700.0

8.885462359096055,47.43891211148467,636.0
          </coordinates>
        </LinearRing>
      </outerBoundaryIs>
    </Polygon>
    <Point>
      <extrude>1</extrude>

<altitudeMode>absolute</altitudeMode>
      <coordinates>

8.885462359096055,47.43891211148467,636.0
      </coordinates>
    </Point>
  </MultiGeometry>
</Placemark>
```



## 7.1 Changes to kml:SimpleDate from OMS export to DCS export

OMS export	DCS expot	Comment
<pre>&lt;SimpleData name="omsId"&gt;13210&lt;/Simple Data&gt;</pre>	<pre>&lt;SimpleData name="uuid"&gt;55fa1423-9200- 4d57-9d63- 04cf2c395af2&lt;/SimpleData&gt;</pre>	changed from an OMS internal identifier to a UUID
<pre>&lt;SimpleData name="registrationNumber"&gt; 205-HL-1&lt;/SimpleData&gt;</pre>		No longer supported as Simple Date Registration number is only provided in the kml <name> tag Registration Number format changed to a 10 character text with no "-" No airport reference in the Registration Number
	<pre>&lt;SimpleData name="airport"&gt;LSZH&lt;/SimpleD ata&gt;</pre>	New data element. Only provided if the obstacle has a reference to an airport
<pre>&lt;SimpleData name="obstacleType"&gt;Power line&lt;/SimpleData&gt;</pre>	<pre>&lt;SimpleData name="obstacleType"&gt;TRANSMIS SION_LINE&lt;/SimpleData&gt;</pre>	No change of name obstacle Types have changed. Types are according to AIXM 5.1.1 specification
<pre>&lt;SimpleData name="signature"&gt;OEI&lt;/Simp leData&gt;</pre>		No longer supported The symbol type is different for each obstacle type and is provided in the <styleURL> tag
<pre>&lt;SimpleData name="state"&gt;A&lt;/SimpleData &gt;</pre>	<pre>&lt;SimpleData name="state"&gt;A&lt;/SimpleData&gt;</pre>	No change
<pre>&lt;SimpleData name="maxHeightAGL"&gt;60.0&lt;/ SimpleData&gt;</pre>	<pre>&lt;SimpleData name="maxHeightAGL"&gt;60.0&lt;/Si mpleData&gt;</pre>	No change
<pre>&lt;SimpleData name="topElevationAMSL"&gt;48 2&lt;/SimpleData&gt;</pre>	<pre>&lt;SimpleData name="topElevationAMSL"&gt;482&lt; /SimpleData&gt;</pre>	No change
	<pre>&lt;SimpleData name="radius"&gt;35.4&lt;/SimpleDa ta&gt;</pre>	New data element indicating the radius of a point obstacle that has a circular



OMS export	DCS expot	Comment
		shape (e.g. boom length of a crane or radius of rotor blades of a wind turbine)
<pre>&lt;SimpleData name="startOfConstruction" &gt;1950-01-01&lt;/SimpleData&gt;</pre>	<pre>&lt;SimpleData name="effectiveDate"&gt;2022- 04-01&lt;/SimpleData&gt;</pre>	<p>name changed from "startOfConstruction" to "effectiveDate". The effectiveDate is the date when the obstacle was last modified (a change any obstacle property is a modification: change of state, geometry, marking, lighting etc). When the obstacle was constructed is irrelevant for the data user</p>
<pre>&lt;SimpleData name="duration"&gt;PERM&lt;/SimpleData&gt;</pre>	<pre>&lt;SimpleData name="estEndDate"&gt;2022-09- 30&lt;/SimpleData&gt;</pre>	<p>name changed from "duration" to "estEndDate" Only temporary obstacles (e.g. cranes) have an estimated end date. Permanent obstacles (e.g. buildings) don't have an estimated end date and there is no "estEndDate" simple data element for permanent obstacles. Only provided when not permanent</p>
	<pre>&lt;SimpleData name="modified"&gt;YES&lt;/SimpleData&gt;</pre>	<p>New data element indicating if the obstacle has been modified since the penultimate AIRAC date</p>



OMS export	DCS expot	Comment
<code>&lt;SimpleData name="totalLength"&gt;0.0&lt;/SimpleData&gt;</code>		no longer supported
<code>&lt;SimpleData name="constructionConfirmed"&gt;2021-12-06&lt;/SimpleData&gt;</code>		no longer supported
<code>&lt;SimpleData name="sanctionText"&gt;No Marking and/or Lighting&lt;/SimpleData&gt;</code>	<code>&lt;SimpleData name="marking"&gt;NONE&lt;/SimpleData&gt;</code>	Instead of "sanctionText" there are two new data elements "marking" and "lighting"
	<code>&lt;SimpleData name="lighting"&gt;NONE&lt;/SimpleData&gt;</code>	
<code>&lt;SimpleData name="abortionAccomplished"&gt;2021-12-13&lt;/SimpleData&gt;</code>		No longer supported Same as "state" = I and "effectiveDate" = 2021-12-13
<code>&lt;SimpleData name="coordCH1903"&gt;</code>		Swiss coordinate system no longer supported. Coordinates are provided as WGS-84 Longitude, Latitude, Elevation in <coordinate> tag
	<code>&lt;SimpleData name="group"&gt;NONE&lt;/SimpleData&gt;</code>	New data element indicating that the obstacle represents a group of obstacles
	<code>&lt;SimpleData name="publication"&gt;AD_INFO, VAC&lt;/SimpleData&gt;</code>	New data element (for skyguide use only) Only provided when required
	<code>&lt;SimpleData name="small"&gt;NO&lt;/SimpleData&gt;</code>	New data element NO for all obstacles without reference to an airport or large obstacles with a reference to an airport YES for small obstacles with a reference to an airport