

Data product specification for Austrian aerodromes

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Version	Date	Reason for Change	Affected Sections
0.1	2014-23-02	Creation of document	All
1.0	2015-06-01	Final version, adaption of graphics and text	All
1.1	2016-02-01	New address Austro Control	Chapter 5.2, 5.3
1.2	2017-05-05	New features and attributes: Surface characteristics, Markings, Lightings, Airport Hotspot, Roads, Buildings, Boundaries (ATC service). ARP served city ACFT Stand Visual Docking Station Slope of RWY SWY VASIS	Annex A, B, C

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1. SCOPE

This document specifies a harmonised data specification for the supply of aeronautical data to be published in the Austrian AIP as defined in Annex I of the Aeronautical Data Quality (ADQ) Regulation [Commission Regulation (EU) No 73/2010] and is, thus, the basis for implementing the rules according to Article 4 and Article 5 of the ADQ Regulation.

This document compromises in particular aeronautical data and information related to Austrian aerodromes.

Purpose

This data product specification is intended for individuals responsible for collecting electronic aeronautical data and defines the technical requirements for data collection.

The purpose of these guidelines is:

- To provide a consistent basis for data collection agencies and their contracted survey companies.
- To provide a technical documentation of the requirements of the detection of the quality assurance up to the submission of data
- To provide a definition of all values and characteristics (features and attributes) of the data that is necessary.
- To provide a summary of quality and integrity requirements of international standards, especially of the Aeronautical Data Quality (ADQ) Regulation [Commission Regulation (EU) No 73/2010] and the ICAO Annex 15.

2. OVERVIEW

2.1. Name and acronyms

Data specification for aeronautical data related to Austrian aerodromes.

DPS Austrian aerodromes

2.2. Informal description

This Data Product Specification describes the features and attributes which are related to aerodromes. The geospatial data shall be delivered in schema based XML files, other non-geospatial aerodrome-related data in readable digital formats (e.g. DOC, DOCX, XLS, XLSX, TXT, XML ...).

2.3. Normative References

[COMMISSION REGULATION (EU) No 73/2010]	COMMISSION REGULATION (EU) No 73/2010 of 26 January 2010 laying down requirements on the quality of aeronautical data and aeronautical information for the single European sky
[ECTRL 1]	ECTRL Data Origination Specification (1.0) - Volume 1
[ECTRL 2]	ECTRL Data Origination Specification (1.0) - Volume 2
[ICAO Annex 4]	ICAO Annex 4 - Aeronautical Charts
[ICAO Annex 15]	ICAO Annex 15 - Aeronautical Information Services
[ICAO Doc 9674]	ICAO Doc 9674 - World Geodetic System - 1984 (WGS-84) Manual
[ISO 19111]	EN ISO 19111:2003, Geographic information – Spatial referencing by coordinates
[ISO 19115]	EN ISO 19115:2005, Geographic information – Metadata
[ISO 19131]	EN ISO 19131:2007, Geographic information – Data product specification

2.4. Information about the creation of the specification

Document title:	Data product specification for Austrian aerodromes
Reference date:	2015-01-09
Responsible party:	Austro Control GmbH - ATM/AIM-SDM
Language:	English

2.5. Terms and definitions

Many of terms and definitions in this document are taken from the International Standards ISO 19131 (Geographic Information – Data product specification).

2.6. Symbols and abbreviations

This is a list of abbreviations and acronyms used in the data specification

ADQ	Aeronautical Data Quality
AICM	Aeronautical Information Conceptual Model
AIM	Aeronautical Information Management
AIS	Aeronautical Information Service
AIXM	Aeronautical Information Exchange Model
ATM	Air Traffic Management
DPS	Data Product Specification
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
ISO	International Organization for Standardization
ITRS	International Terrestrial Reference System
ITRF	International Terrestrial Reference Frame
PDF	Portable Document Format
PLX	Planning Extension (workflow tool)
SDM	Static Data Management
UML	Unified Modelling Language
VFR	Visual Flight Rules
XML	Extended Markup Language
XSD	XML Schema Definition

2.7. Conformance

Any dataset claiming conformance with this data specification shall pass the requirements as described in the Commission Regulation (EU) No 73/2010.

3. SPECIFICATION SCOPE

3.1. General specification scope

This data product specification is valid for all aeronautical data, which are published in the Austrian Aeronautical Information Publication (AIP) and are related to Austrian aerodromes.

This data product specification applies to:

- Survey data, categorized as critical or essential data, shall be subject to a full initial survey
- Survey data, where changes are detected, re-survey of the relevant data shall be undertaken

This data product specification applies to:

- Austrian aerodromes and heliports, for which IFR or special VFR procedures have been published in the Austrian AIP.

This data product specification does not apply to the publication (product) and the dissemination of digital aeronautical data.

This data product specification specifies minimum requirements. In cases where it is appropriate the minimum requirements can be exceeded.

4. IDENTIFICATION INFORMATION

Title:	Data product specification for Austrian aerodromes
Abstract:	This data product specification is valid for all aeronautical data, that have to be published in the Austrian Aeronautical Information Publication (AIP) and are related to Austrian aerodromes
Topic categories:	Transportation (018)
Geographic description:	This data product specification is valid for aerodromes in the state territory of Austria
Purpose:	The purpose of this document is to specify a harmonised data specification for aeronautical spatial data related to Austrian aerodromes.
Spatial representation type:	Vector (001)
Spatial resolution:	See chapter 7.
Supplementary information:	The structure follows the ISO standard for data specification (ISO19131).

5. DATA CONTENT AND STRUCTURE

5.1. Feature based data

5.1.1. Narrative information

The provided XML template with features and their attributes for geospatial data exchange is based on the Aeronautical Information Exchange Model (AIXM). The XML template is a derived and simplified version of AIXM for the purpose of the electronic and digital transfer of originated aeronautical data and information related to Austrian aerodromes. In addition the XML template is independent of the version of AIXM in order to simplify the adaptation to future AIXM versions. The AIXM XML Schema is an XML specification intended for computer to computer exchange of the aeronautical information.

5.2. Feature catalogue for geospatial aerodrome related data

Feature Catalogue

Name:	Feature Catalogue for geospatial data and information related to Austrian aerodromes.
Scope:	Identification of all geospatial entities and their attributes.
Field of Application:	Publication of aerodrome related data in the AIP Austria.
Version Number:	1.0
Version Date:	2015-01-09
Feature Catalogue Producer:	
Producer Name:	David Malkic
Producer Organisation:	Austro Control GmbH
Producer Address:	Wagramer Straße 19, A-1220 Wien
Producer Country:	Austria
Phone:	+43(0)517033282
Facsimile:	+43(0)517032036
Electronic Mail Address:	aim.sdm@austrocontrol.at

See Annex A for details.

5.3. Feature catalogue for non-geospatial aerodrome related data

The structure for non-geospatial aerodrome related data is given by ICAO Annex 15 – Aeronautical Information Services, Appendix 1, especially part APP 1-29 ff.

For existing data consult the latest AIP (Aeronautical Information Publication):

<http://aim.austrocontrol.at/aip/>

Feature Catalogue

Name:	Feature Catalogue for non-geospatial data and information related to Austrian aerodromes
Scope:	Identification of all non-geospatial entities and their attributes.
Field of Application:	Publication of aerodrome related data in the AIP Austria.
Version Number:	1.0
Version Date:	2015-01-09
Feature Catalogue Producer:	
Producer Name:	David Malkic
Producer Organisation:	Austro Control GmbH
Producer Address:	Wagramer Straße 19, A-1220 Wien
Producer Country:	Austria
Phone:	+43(0)517033282
Facsimile:	+43(0)517032036
Electronic Mail Address:	aim.sdm@austrocontrol.at

See Annex B for details.

6. REFERENCE SYSTEMS

6.1. Horizontal reference system

The horizontal reference system for the publication of all co-ordinate data shall be the **World Geodetic System-1984 (WGS-84)**. The WGS-84 co-ordinate system is aligned with the International Terrestrial Reference System (ITRS), realised through the International Terrestrial Reference Frame (ITRF) at a defined epoch. ICAO Annex 15 identifies the **ITRF 2000** (i.e. frame ITRF 2000 at epoch January 01, 2000) as the appropriate epoch for the determination of horizontal co-ordinates.

If aeronautical data items have been surveyed in a different ITRF version to ITRF 2000, or in any other reference frame, the appropriate ITRF transformation shall be applied to the data to produce co-ordinates in a world-wide, consistent reference frame (WGS-84 / ITRF 2000)

Following information for the reference system shall be considered:

Name element	Entry	Comments
Coordinate system name	WGS-84	
Coordinate system alias	WGS-84, ITRF 2000 (Epoch 2000-01-01)	
Coordinate system type	geodetic	
Datum realization epoch	2000 -01-01	
Datum validity	Latitude: [-90°, 90°] Longitude: [-180°, 180°]	
Reference ellipsoid	WGS-84	
Semi-major axis	6378137,0 m	
Inverse flattening	298,257223563	
Remarks	See website: http://itrf.ensg.ign.fr/	

6.2. Vertical reference system

All surveyed vertical aeronautical data points shall be expressed as a height relative to Mean Sea Level (MSL).

The sufficient geoid model in order to meet the ICAO requirements to determine the MSL reference surface in Austria shall be the **Austrian Geoid 2008**.

Information about the Austrian Geoid 2008

http://www.bev.gv.at/portal/page?_pageid=713,2157077&_dad=portal&_schema=PORTAL

<http://www.ovg.at/index.php?id=1341&L=0%2C>

Listed below are the information about the Austrian Geoid 2008

Element name	Entry	Comments
Vertical datum name	Austrian Geoid 2008	
Datum validity	Österreich	
Citation	<p>Österreichische Zeitschrift für Vermessung und Geoinformation, vol.96, Seite 3-14, 2008</p> <p>Project GEOnAUT / Austrian Geoid 2007</p> <p>Autoren: Pail, R.; Kühtreiber, N.; Wiesenhofer, B.; Hofmann-Wellenhof, B.; Of, G.; Steinbach, O.; Höggerl, N.; Imrek, E.; Ruess, D.; Ullrich, C</p>	

6.3. Temporal reference system

The Gregorian calendar shall be used for as a reference system for date values, and the Universal Time Coordinated (UTC) or the local time including the time zone as an offset from UTC shall be used as a reference system for time values.

7. DATA QUALITY

The following table lists aerodrome data with the quality requirements and, if associated, the regulation.

Data	Type of geodata	Integrity classification	Accuracy	Confidence Level	Publication Resolution	Chart Resolution	Type of AIP publication	Feature	Attribute	Regulation
Aerodrome/heliport elevation	vertical	essential	0.5 m or 1 ft surveyed	95%	1 m or 1 ft	1 m or 1 ft	Chart, Text	AerodromeHeliport	AerodromeHeliportElevation	Annex 4, 14, 15, Doc 9674
Aerodrome/heliport magnetic variation	angle	essential	1° surveyed	95%	1°	1°	Chart, Text	AerodromeHeliport	AerodromeHeliportMagneticVariation	Annex 4, 14, 15, Doc 9674
Aerodrome/heliport reference point	coordinates	routine	30 m surveyed/calculated	95%	1 sec	1 sec	Chart, Text	AerodromeHeliport	AerodromeHeliportReferencePoint	Annex 4, 14, 15, Doc 9674
WGS-84 geoid undulation at aerodrome/heliport elevation position	vertical	essential	0.5 m or 1 ft surveyed	95%	1 m or 1 ft	1 m or 1 ft	Text	AerodromeHeliport	AerodromeHeliportGeoidUndulation	Annex 4, 14, 15, Doc 9674
Apron boundaries (polygon)	coordinates	routine	1 m surveyed	95%	1/10 sec	1 sec	Chart	ApronElement	ApronElementExtent	Annex 4, 14, 15
Parking guidance line points (Elevation, height)	vertical	essential	1 m surveyed	95%			Chart	GuidanceLine	GuidanceLinePointElevation	Annex 14
Parking guidance line points (Position)	coordinates	essential	0.5 m surveyed	95%	1/100 sec	1/100 sec	Chart	GuidanceLine	GuidanceLinePoint	Annex 4, 14, 15

Data	Type of geodata	Integrity classification	Accuracy	Confidence Level	Publication Resolution	Chart Resolution	Type of AIP publication	Feature	Attribute	Regulation
Aircraft/helicopter standpoints / INS checkpoints	coordinates	routine	0.5 m surveyed	95%	1/100 sec	1/100 sec	Chart, Text	AircraftStand	AircraftStandPoint	Annex 4, 14, 15, Doc 9674
De-icing/anti-icing facility (polygon)	coordinates	routine	1 m surveyed	95%	1/10 sec	1 sec	Chart	DeicingArea	DeicingAreaExtent	Annex 4, 14, 15
Accelerate-stop distance available	lateral	critical	1 m surveyed	95%	1 m or 1 ft	1 m	Chart, Text	RunwayDeclaredDistance	DeclaredDistance	Annex 4, 14, 15
Clearway length and width	lateral	essential	1 m surveyed	95%	1 m or 1 ft		Chart, Text	RunwayProtectArea	ProtectionAreaDimension	Annex 14, 15
Displaced threshold distance	lateral	routine	1 m surveyed	95%	1 m or 1 ft		Chart, Text	RunwayDeclaredDistance	DeclaredDistance	Annex 14, 15
Geometric centre of TLOF or FATO thresholds, heliports	coordinates	critical	1 m surveyed	95%	1/100 sec	1 sec	Text	RunwayCentreLinePoint TouchDownLiftOff	CentreLinePoint TouchDownLiftOffAimingPoint	Annex 4, 15, Doc 9674
Landing distance available	lateral	critical	1 m or 1 ft surveyed	95%	1 m or 1 ft	1 m (AD chart), 0.5 m (AOC chart)	Chart, Text	RunwayDeclaredDistance	DeclaredDistance	Annex 4, 14, 15, Doc 9674

Data	Type of geodata	Integrity classification	Accuracy	Confidence Level	Publication Resolution	Chart Resolution	Type of AIP publication	Feature	Attribute	Regulation
Runway and FATO bearing	angle	routine	1/100° surveyed	95%	1/100°	1°	Chart, Text	RunwayDirection	TrueBearing	Annex 4, 14, 15, Doc 9674
Runway and FATO length, TLOF dimensions	lateral	critical	1 m or 1 ft surveyed	95%	1 m or 1 ft	1 m (AD chart), 0.5 m (AOC chart)	Chart, Text	Runway TouchDownLiftOff	RunwayDimensions TouchDownLiftOffDimensions	Annex 4, 14, 15, Doc 9674
Runway centre line points (Elevation, height)	vertical	critical	0.25 m surveyed	95%			Chart	RunwayCentrelinePoint	CentreLinePointElevation	Annex 14
Runway centre line points (Position)	coordinates	critical	1 m surveyed	95%	1/100 sec	1/100 sec	Chart	RunwayCentrelinePoint	CentreLinePoint	Annex 4, 14, Doc 9674
Runway end	coordinates	critical	1 m surveyed	95%	1/100 sec	1 sec	Chart, Text	RunwayCentrelinePoint	CentreLinePoint	Annex 4, 14, 15, Doc 9674
Runway or FATO threshold, non-precision approaches	vertical	essential	0.5 m or 1 ft surveyed	95%	1 m or 1 ft	1 m or 1 ft	Chart, Text	RunwayCentrelinePoint	CentreLinePointElevation	Annex 4, 14, 15, Doc 9674
Runway or FATO threshold, precision approaches	vertical	critical	0.25 m or 1 ft surveyed	95%	0.1 m or 0.1 ft	0.5 m or 0.1 ft	Chart, Text	RunwayCentrelinePoint	CentreLinePointElevation	Annex 4, 14, 15, Doc 9674
Runway shoulder width	lateral	essential	1 m surveyed	95%	1 m or 1 ft			Runway	RunwayShoulder	Annex 14, 15

Data	Type of geodata	Integrity classification	Accuracy	Confidence Level	Publication Resolution	Chart Resolution	Type of AIP publication	Feature	Attribute	Regulation
Runway threshold	coordinates	critical	1 m surveyed	95%	1/100 sec	1 sec	Chart, Text	RunwayCentrelinePoint	CentreLinePoint	Annex 4, 14, 15, Doc 9674
Runway width	lateral	essential	1 m or 1 ft surveyed	95%	1 m or 1 ft	1 m	Chart, Text	Runway	RunwayDimensions	Annex 4, 14, 15
Stopway length and width	lateral	critical	1 m or 1 ft surveyed	95%	1 m or 1 ft	1 m, 0.5 m (AOC chart)	Chart, Text	RunwayProtectArea	ProtectionAreaDimension	Annex 4, 14, 15, Doc 9674
Take-off distance available	lateral	critical	1 m surveyed	95%	1 m or 1 ft	1 m	Chart, Text	RunwayDeclaredDistance	DeclaredDistance	Annex 4, 14, 15
Take-off run available	lateral	critical	1 m surveyed	95%	1 m or 1 ft	1 m	Chart, Text	RunwayDeclaredDistance	DeclaredDistance	Annex 4, 14, 15
WGS-84 geoid undulation at runway or FATO threshold, TLOF geometric centre, non-precision approaches	vertical	essential	0.5 m or 1 ft surveyed	95%	1 m or 1 ft	1 m or 1 ft	Text	RunwayCentrelinePoint TouchDownLiftOff	CentreLinePointGeoidUndulation TouchDownLiftOffGeoidUndulation	Annex 4, 14, 15, Doc 9674
WGS-84 geoid undulation at runway or FATO threshold, TLOF geometric centre, precision approaches	vertical	critical	0.25 m or 1 ft surveyed	95%	0.1 m or 0.1 ft	0.5 m or 0.1 ft	Text	RunwayCentrelinePoint TouchDownLiftOff	CentreLinePointGeoidUndulation TouchDownLiftOffGeoidUndulation	Annex 4, 14, 15, Doc 9674

Data	Type of geodata	Integrity classification	Accuracy	Confidence Level	Publication Resolution	Chart Resolution	Type of AIP publication	Feature	Attribute	Regulation
Exit guidance line	coordinates	essential	0.5 m surveyed	95%	1/100 sec	1 sec	Chart	GuidanceLine	GuidanceLinePoint	Annex 4, 14, 15
Ground taxiway centre line points, air taxiways and transit routes points	coordinates	essential	0.5 m surveyed/calculated	95%	1/100 sec	1/100 sec	Chart	GuidanceLine	GuidanceLinePoint	Doc 9674
Runway holding position	coordinates	critical	0.5 m surveyed	95%	1/100 sec	1 sec	Chart	TaxiHoldingPosition	TaxiHoldingPositionPoint	Annex 4, 14, 15
Taxiway centre line points (Elevation, height)	vertical	essential	1 m surveyed	95%				GuidanceLine	GuidanceLinePointElevation	Annex 14
Taxiway centre line points (Position)	coordinates	essential	0.5 m surveyed	95%	1/100 sec	1/100 sec	Chart	GuidanceLine	GuidanceLinePoint	Annex 4, 14, 15, Doc 9674
Taxiway intersection marking line	coordinates	essential	0.5 m surveyed	95%	1/100 sec	1 sec	Chart	TaxiwayElement	TaxiwayElementExtent	Annex 4, 14, 15
Taxiway shoulder width	lateral	essential	1 m surveyed	95%	1 m or 1 ft			Taxiway	TaxiwayShoulder	Annex 14, 15
Taxiway width	lateral	essential	1 m surveyed	95%	1 m or 1 ft		Chart, Text	Taxiway	TaxiwayDimensions	Annex 14, 15

8. METADATA

8.1. Regulations and references

[ISO 19131] Geographic information - Data product specification	"The core metadata elements as defined in ISO 19115 shall be included with the data product. Any additional metadata items required to be supplied shall be stated in the data product specification. The format and encoding of the metadata shall be stated in the data product specification."
[ISO 19115] Geographic information - Metadata	<p>This International Standard (ISO 19115) defines an extensive set of metadata elements; typically only a subset of the full number of elements is used. However, it is essential that a basic minimum number of metadata elements be maintained for a dataset. Listed are the core metadata elements required to identify a dataset, typically for catalogue purposes.</p> <p>This list contains metadata elements answering the following questions: "Does a dataset on a specific topic exist ('what')?", "For a specific place ('where')?", "For a specific date or period ('when')?" and "A point of contact to learn more about or order the dataset ('who')?"</p> <p><i>Dataset title</i> <i>Dataset reference date</i> <i>Geographic location of the dataset</i> <i>Dataset language</i> <i>Dataset character set</i> <i>Dataset topic category</i> <i>Abstract describing the dataset</i> <i>Metadata language</i> <i>Metadata character set</i> <i>Metadata point of contact</i> <i>Metadata date stamp</i></p>
[ADQ] Commission Regulation (EU) No 73/2010	<p>Annex I, Part A:</p> <p>1. The aeronautical data and aeronautical information [...] shall be provided according to a common data set specification which shall:</p> <p>h) base the description of the metadata information on the ISO standard referred to in point 15 of Annex III;</p> <p>i) include the metadata items listed in Annex I, Part C.</p> <p>The metadata [...] shall include the following items, as a minimum:</p> <p>(a) <i>the data originator of the data</i>; (b) <i>amendments made to the data</i>; (c) <i>the persons or organisations that have interacted with the data and when</i>; (d) <i>details of any validation and verification of the data that has been performed</i>; (e) <i>effective start date and time of the data</i>; (f) <i>for geospatial data</i>: — <i>the earth reference model used</i>,</p>

	<ul style="list-style-type: none"> — the coordinate system used; (g) for numerical data: — the statistical accuracy of the measurement or calculation technique used, — the resolution, — the confidence level as required by the ICAO standards referred to in points 1 and 12 of Annex III and in other relevant ICAO standards; (h) details of any functions applied if data has been subject to conversion/transformation; (i) details of any limitations on the use of the data.
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8.2. Metadata elements

Listed below are the core metadata elements (mandatory and recommended optional) required for describing a dataset.

Metadata Element [ISO 19115]	Regulation	Description
Dataset title MD_Metadata > MD_DataIdentification.citation > CI_Citation.title	ISO 19115 Core	Title of the dataset e.g. Aerodrome Heliport/Runway XY
Dataset responsible party MD_Metadata.identificationInfo > MD_Identification.pointOfContact > CI_ResponsibleParty CI_ResponsibleParty.role: with CI_RoleCode = originator	ADQ: a) Data originator of data ICAO Annex 15: Data originator identifier	Name of organization and persons who are collecting the data e.g. name of surveyor's office
Lineage MD_Metadata.dataQualityInfo > DQ_DataQuality.lineage > LI_Lineage.processStep > LI_ProcessStep	ADQ: b) Information about amendments made to the data ADQ: c) The persons or organisations that have interacted with the data and when ADQ: d) Details of any validation and verification of the data that has been performed ADQ: h) Details of any functions applied if data has been subject to conversion/transformation ;	LI_ProcessStep.description: Details of any validation and verification of the data that has been performed LI_ProcessStep.description: Origination method horizontal LI_ProcessStep.description: Origination method vertical LI_ProcessStep.processor: The persons or organisations that have interacted with the data and when LI_ProcessStep.dateTime: Date and time of processing the data

Metadata Element [ISO 19115]	Regulation	Description
Geographic location of the dataset MD_Metadata > MD_DataIdentification.extent > EX_Extent > EX_GeographicExtent > EX_GeographicBoundingBox or EX_GeographicDescription	ISO 19115 Core ICAO Annex 15: Area of coverage	Coordinates or Bounding Box of a feature e.g. Latitude / Longitude of Runway Centre Line Point.
Abstract describing the dataset MD_Metadata > MD_DataIdentification.abstract	ISO 19115 Core	Short description about the dataset, this will be covered by the dataset title.
Data Quality MD_Metadata.dataQualityInfo > DQ_DataQuality.report > DQ_QuantitativeAttributeAccuracy	ADQ: g) For numerical data: — the statistical accuracy of the measurement or calculation technique used, — the resolution, — the confidence level as required by the ICAO standards referred to in points 1 and 12 of Annex III and in other relevant ICAO standards; ICAO Annex 15: Horizontal accuracy, Horizontal confidence level, Horizontal resolution, Vertical accuracy, Vertical confidence level, Vertical resolution, Integrity	These attributes are mandatory for coordinates: Horizontal accuracy Horizontal confidence level Horizontal resolution Vertical accuracy Vertical confidence level Vertical resolution Integrity Accuracy, confidence level and resolution are described in the chapter 7, data quality. The integrity classification (routine, essential and critical) is defined in ICAO Annex 15.
Constraints MD_Metadata.identificationInfo > MD_DataIdentification.resource Constraints which can contain MD_LegalConstraints or MD_SecurityConstraints	ADQ: i) details of any limitations on the use of the data.	Limitations on the use of the data can be declared for the data to be delivered.

8.3. Delivery of metadata and format

The XML schema has defined fields for metadata information. There are for example fields for data verification or data origination.

8.3.1. Planning Extensions (PLX)



PLX is integrated with a Task/Workflow management Engine that supports the implementation of the AIS Data Process.

PLX supports an automated, customizable workflow management (work orders, status, sequencing, etc.) component, enabling data originators to transfer aeronautical data and information and personnel to assign, delegate, schedule and track work packages during the process of aeronautical data and information including validation, verification and publication of the data.

PLX also allows storing of metadata for every data entry. If data is **delivered via PLX**, most of the metadata requirements regarding the Commission Regulation (EU) No 73/2010 and ICAO standards and recommended practices are already automatically covered.

9. DELIVERY INFORMATION

9.1. Commission Regulation (EU) No 73/2010

Article 5 - Data exchange

1. The parties referred to in Article 2(2) shall ensure that the aeronautical data and aeronautical information referred to in the second subparagraph of Article 2(1) are transferred between themselves by direct electronic connection.

Article 2 - Scope

2. This Regulation shall apply to the following parties:

- (a) air navigation service providers;
- (b) operators of those aerodromes and heliports, for which instrument flight rules (IFR) or Special-visual flight rules (VFR) procedures have been published in national aeronautical information publications;
- (c) public or private entities providing, for the purposes of this Regulation:
 - (i) services for the origination and provision of survey data;
 - (ii) procedure design services;
 - (iii) electronic terrain data;
 - (iv) electronic obstacle data.

9.2. Way of delivery

PLX shall be used by the data originator to properly supply Austro Control with data in order to comply with the data quality requirements of Commission Regulation (EU) No.73/2010 (Annex IV). Supplied data must be approved by the responsible authority by means of PLX. A guideline for the supply of data by using PLX is made available by Austro Control GmbH.

Details on how to proceed with respect to the supply and further process (e.g. approval) of aeronautical data are announced on the website of the Austro Control GmbH. The link to the published requirements regarding aeronautical data is:

http://www.austrocontrol.at/flugsicherung/aim_services/datenauflieferung_gemaess_adg

9.2.1. Delivery of geospatial aerodrome related data

Aerodrome related geospatial data, which are specified in the feature catalogue as described in chapter 5, shall be delivered in a specified XML format to support the data exchange by direct electronic connection. Austro Control GmbH provides XML template files and XML schema files (XSD) that fully comply with the feature catalogue.

The data originator shall deliver XML files that are valid against the provided XML schema. The data originator shall create new XML files and shall not change or use the provided XML template files.

For an example of a valid XML see Annex C.

9.2.2. Delivery of aerodrome related Charting files

Aerodrome related data only published in aeronautical charts (see column “Type of AIP publication” in table of data items in chapter 7) can alternatively be delivered as georeferenced graphical files (e.g. .dgn, .dwg, .dxf ...).

9.2.3. Delivery of non-geospatial aerodrome related data

Aerodrome related data, which are not specified in the feature catalogue for geospatial data and cannot, thus, be expressed by means of the specified XML format, shall be delivered in digital plain text formats that allow to copy and paste the data during the AIS process.

Proper digital file formats are DOC, DOCX, XLS, XLSX, TXT, and XML. Examples for non-geospatial aerodrome related data are aerodrome administration data, operational hours, description of services and facilities et cetera.

10. DATA CAPTURE

The “Eurocontrol Specification for the Origination of Aeronautical Data” has been designed to support Commission Regulation (EU) 73/2010, laying down requirements on the quality of aeronautical data and aeronautical information for the single European sky. This specification concerns the origination of aeronautical data and, therefore, specifically supports Article 6(4) and (6) of Commission Regulation (EU) 73/2010.

This specification has been issued in two volumes:

- Eurocontrol Specification for the Origination of Aeronautical Data Volume 1: Compliance Material for Comission Regulation (EU) 73/2010
- Eurocontrol Specification for the Origination of Aeronautical Data Volume 2: Guidance Material

The EUROCONTROL specification provides guidance and comprehensive requirements, stemming from different recognised sources, which should be met when originating aeronautical data in order to comply with requirements concerning the quality of aeronautical data and aeronautical information.

11. BIBLIOGRAPHY

Aeronautical Information Exchange Model

http://www.eurocontrol.int/aim/public/standard_page/aixm.html

AIXM 5.1 Conceptual Model

<http://www.aixm.aero>

http://www.aixm.aero/public/standard_page/download.html

Austro Control GmbH

<http://www.austrocontrol.at>

BEV – Bundesamt für Eich und Vermessungswesen

<http://www.bev.gv.at>

OGV - Österreichische Gesellschaft für Vermessung und Geoinformation – The Austrian Geoid 2007

<http://www.ovg.at/index.php?id=1341>

IDS – Ingegneria dei sistemi S.p.A.

<http://www.idscompany.it/index.php>

ADQ relevant rules regarding the origination of aeronautical data published on the following website of Austro Control GmbH

http://www.austrocontrol.at/flugsicherung/aim_services/datenauflieferung_gemaess_adq

12. ANNEX A: Feature catalogue for geo-spatial aerodrome related data

Obligation and option

Listed below are colours for mandatory, optional and conditional data items. The “red” colour indicates that the element is mandatory. No colour indicates that the element is optional. The “blue” colour indicates that the element is mandatory under certain conditions.

	Mandatory attribute
	Optional attribute

Features and objects

	Feature
	Object

Note: An object cannot exist alone and must be part of a feature.

Note: Attributes are only explained once in detail.

Example

Attribute name	Data type	Definition
AerodromeHeliportReferencePoint		
TypeAmendment	codeTypeAmendment	Amendments made to the data (Add, change or delete), applicable for each feature type.
Remark	string	Remark
Point		
Elevation		
GeoidUndulation		
DataConversion		

Feature

Definition

Mandatory attribute

Objects

Optional attribute

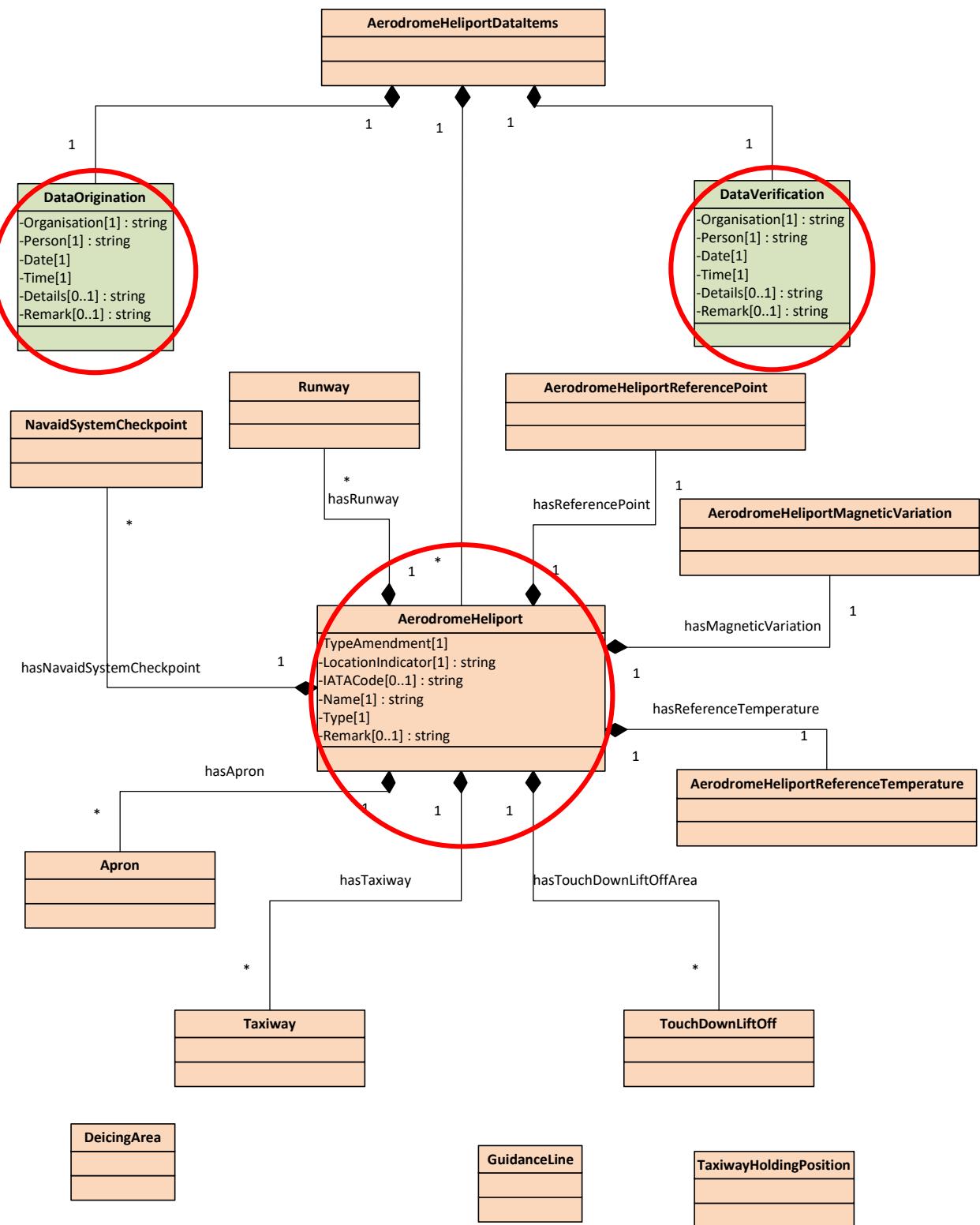


Figure 1: Feature: Aerodrome Heliport overview UML

This figure shows an overview of the data model for Aerodrome Heliport feature.

Important: The information about data origination, the data verification, the type of amendment and the feature Aerodrome Heliport with its unique attributes are essential parts of any data delivery.

12.1. Attribute: Type of amendment

This object is mandatory to indicate the type of amendment of the data.

The type of amendment made to the data, applicable for each feature type.

Attribute name	Data type	Definition
TypeAmendment	codeTypeAmendment	Amendments made to the data (Add, change or delete), applicable for each feature type.

12.2. Object: Data origination

This object is mandatory to provide information about the data origination.

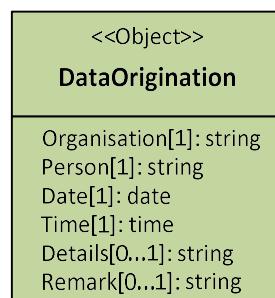


Figure 2: Object: DataOrigination

The data origination is mandatory for each data delivery.

Object Attributes Details:

Attribute name	Data type	Definition
Organisation	string	Name of the organisation which has performed the data origination
Person	string	Name of the person who has performed the data origination
Date	date	Date, when the data origination was performed
Time	time	Time, when the data origination was performed
Details	string	Details of any validation and origination of the data that has been performed
Remark	string	Remark

12.3. Object: Data verification

This object is mandatory to provide evidence of data verification.

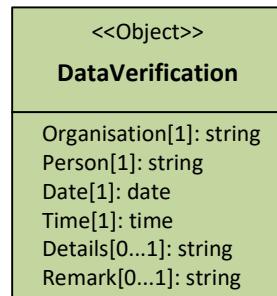


Figure 3: Object: DataVerification

The data verification is mandatory for each data delivery.

Object Attributes Details:

Attribute name	Data type	Definition
Organisation	string	Name of the organisation which has performed the data verification
Person	string	Name of the person who has performed the data verification
Date	date	Date, when the data verification was performed
Time	time	Time, when the data verification was performed
Details	string	Details of any validation and verification of the data that has been performed
Remark	string	Remark

12.4. Object: Data conversion

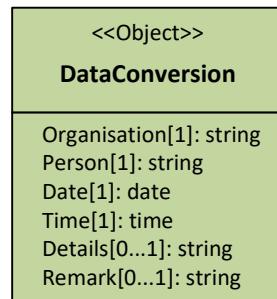


Figure 4: Object: DataConversion

Object Attributes Details:

Attribute name	Data type	Definition
Organisation	string	Name of the organisation which has performed the data conversion.
Person	string	Name of the person who has performed the data conversion.
Date	date	Date, when the data conversion was performed
Time	time	Time, when the data conversion was performed
Details	string	Details of any conversion of the data that has been performed
Remark	string	Remark

12.5. Object Bearing

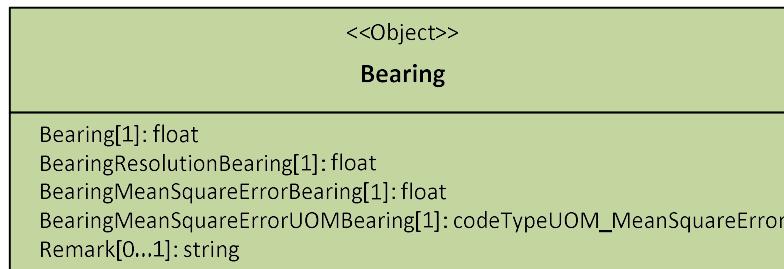


Figure 5: Object: Bearing

Object Attributes Details:

Attribute name	Data type	Definition
Bearing	float	The measured angle between the runway direction and True North at a given position. Note: The True North is the north point at which the meridian lines meet.
BearingResolution	float	The resolution of the true bearing (e.g. 0.01 means that 2 digits after the decimal point are relevant).
BearingMeanSquareError	float	Accuracy of the value of the true bearing.
BearingMeanSquareErrorUOM	codeTypeUOM_Mean SquareError	The unit of measurement for the bearing mean square error (code list: FT, M).
Remark	string	Remark

12.6. Object: Point

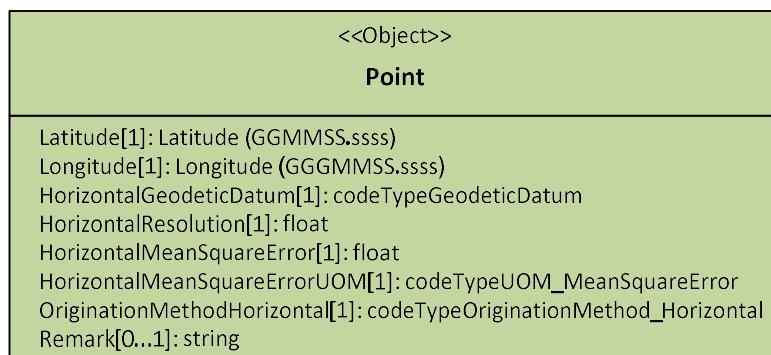


Figure 6: Object: Point

Object Attributes Details:

Attribute name	Data type	Definition
Latitude	Latitude	The latitude of the position of the point.

	(GGMMSS.ssss)	
Longitude	Longitude (GGGMSS.ssss)	The longitude of the position of the point.
HorizontalGeodeticDatum	codeTypeGeodeticDatum	A code indicating the geodetic datum in which the geographical co-ordinates are expressed (code list: WGS-84 (ITRF 2000)).
HorizontalResolution	float	The resolution of the aiming point coordinates (e.g. 0.01 means that 2 digits after the decimal point are relevant).
HorizontalMeanSquareError	float	The horizontal distance from the stated geographical position within which there is a defined confidence of the true position of the aiming point falling.
HorizontalMeanSquareErrorUOM	codeTypeUOM_MeanSquareError	The unit of measurement for the value expressing the accuracy of the geographical co-ordinates of the aiming point (code list: NM, KM, M, FT).
OriginationMethodHorizontal	codeTypeOriginationMethod_Horizontal	The method of how the geographical co-ordinates were generated.
Remark	string	Remark

12.7. Object: (Point) Elevation

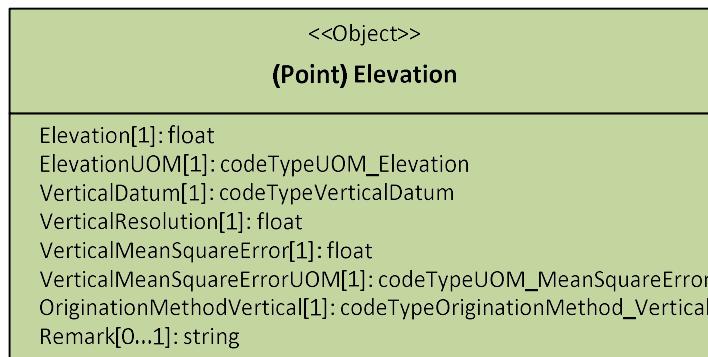


Figure 7: Object: Elevation

Object Attributes Details:

Attribute name	Data type	Definition
Elevation	float	The value of the aiming point elevation. The elevation is the vertical distance of the position measured from Mean Sea Level.
ElevationUOM	codeTypeUOM_Elevation	The unit of measurement for the aiming point elevation (code list: FT, M).

Attribute name	Data type	Definition
VerticalDatum	codeTypeVerticalDatum	A reference surface with respect to which elevations and/or depths are specified (code list: Austrian Geoid 2008).
VerticalResolution	float	The resolution of the aiming point elevation (e.g. 0.01 means that 2 digits after the decimal point are relevant).
VerticalMeanSquareError	float	The vertical distance from the stated elevation within which there is a defined confidence of the true position falling.
VerticalMeanSquareErrorUOM	codeTypeUOM_MeanSquareError	The unit of measurement for the aiming point elevation accuracy (code list: FT, M).
OrigionationMethodVertical	codeTypeOrigionationMethod_Vertical	The method of how the elevation was generated.
Remark	string	Remark

12.8. Object: (Point) Geoid Undulation

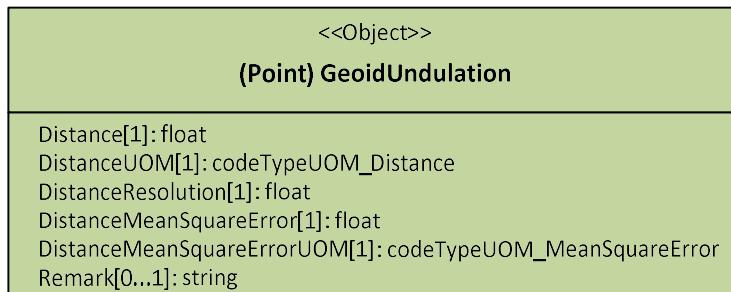


Figure 8: Object: GeoidUndulation

Object Attributes Details:

Attribute name	Data type	Definition
Distance	float	A distance separating the geoid and the ellipsoid at that position. In respect of WGS-84 geodetic datum, the difference between the WGS-84 ellipsoidal height and geoidal height represents geoidal undulation.
DistanceUOM	codeTypeUOM_Distance	The unit of measurement for geoid undulation (code list: FT, M).
DistanceResolution	float	The resolution of the geoid undulation (e.g. 0.01 means that 2 digits after the decimal point are relevant).

Attribute name	Data type	Definition
DistanceMeanSquareError	float	The accuracy of the value of the geoid undulation.
DistanceMeanSquareErrorUOM	codeTypeUOM_Mean SquareError	The unit of measurement for the geoid undulation accuracy (code list: FT, M).
Remark	string	Remark

12.9. Object: Dimensions

<<Object>>
Dimensions
Length[1]: float LengthUOM[1]: codeTypeUOM_Distance LengthResolution[1]: float LengthMeanSquareError[1]: float LengthMeanSquareErrorUOM[1]: codeTypeUOM_MeanSquareError Width[1]: float WidthUOM[1]: codeTypeUOM_Distance WidthResolution[1]: float WidthMeanSquareError[1]: float WidthMeanSquareErrorUOM[1]: codeTypeUOM_MeanSquareError Remark[0...1]: string

Figure 9: Object: Dimensions

Object Attributes Details:

Attribute name	Data type	Definition
Length	float	The value of the physical length of the element.
LengthUOM	codeTypeUOM_Distance	The unit of measurement for the length of the element (code list: NM, KM, M, FT).
LengthResolution	float	The resolution of the element length (e.g. 0.01 means that 2 digits after the decimal point are relevant).
LengthMeanSquareError	float	Accuracy of the value of the physical length of the element.
LengthMeanSquareErrorUOM	codeTypeUOM_MeanSquareError	The unit of measurement for the length accuracy of the element (code list: NM, KM, M, FT).
Width	float	The value of the physical width of the element.
WidthUOM	codeTypeUOM_Distance	The unit of measurement for the width of the element (code list: NM, KM, M, FT).
WidthResolution	float	The resolution of the element width (e.g. 0.01 means that 2 digits after the decimal point are relevant).
WidthMeanSquareError	float	Accuracy of the value of the physical width of the element.
WidthMeanSquareErrorUOM	codeTypeUOM_MeanSquareError	The unit of measurement for the width accuracy of the element (code list: NM, KM, M, FT).
Remark	string	Remark.

12.10. Object: Distance

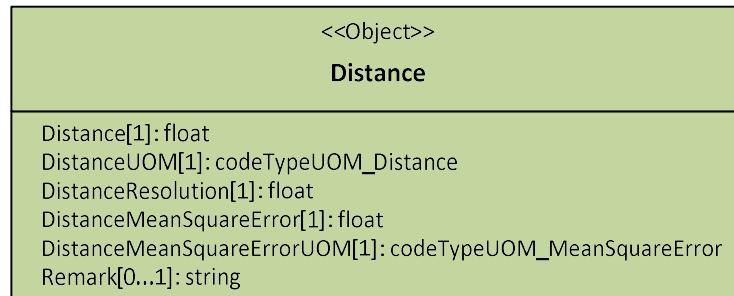


Figure 10: Object: Distance

Object Attributes Details:

Attribute name	Data type	Definition
Distance	float	The distance of the element
DistanceUOM	codeTypeUOM_Distance	The unit of measurement for distance (code list: FT, M).
DistanceResolution	float	The resolution of the distance (e.g. 0.01 means that 2 digits after the decimal point are relevant).
DistanceMeanSquareError	float	The accuracy of the value of the distance.
DistanceMeanSquareErrorUOM	codeTypeUOM_MeanSquareError	The unit of measurement for the distance accuracy (code list: FT, M).
Remark	string	Remark

12.11. Object: Surface characteristics

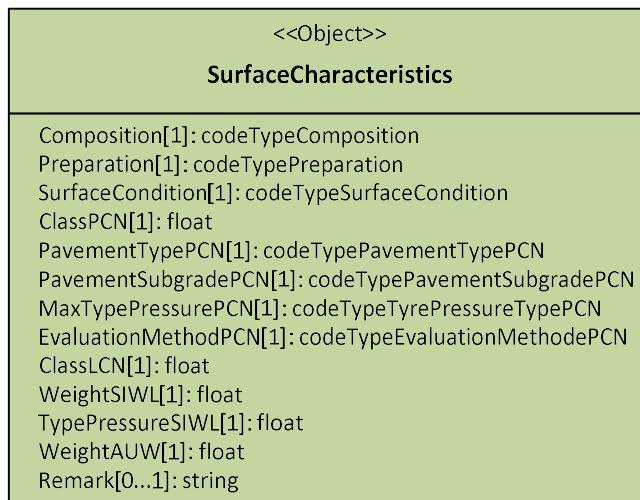


Figure 11: Object: SurfaceCharacteristics

Object Attributes Details:

Attribute name	Data type	Definition
Composition	codeTypeComposition	The type of the predominant material of which a surface of the movement area is composed (code list e.g.: ASPH, BITUM, GRASS ...)
Preparation	codeTypePreparation	The preparation technique(s) applied to a surface composition (code list e.g.: NATURAL, PAVED, OTHER ...)
SurfaceCondition	codeTypeCondition	The quality of the surface, as a category.
ClassPCN	float	The bearing strength of a pavement for unrestricted operations.
PavementTypePCN	codeTypePCNPavementType	The pavement behaviour (rigid or flexible) used for the Pavement Classification Number (PCN) determination, as a category.
PavementSubgradePCN	codeTypePCNSubgradeType	A categorized indication of the pavement subgrade strength related to the Pavement Classification Number (PCN).
MaxTypePressurePCN	codeTypePCNTyrePressureType	The maximum allowable tire pressure category related to the Pavement Classification Number (PCN), as a category.
EvaluationMethodPCN	codeTypePCNMethodType	The method used to rate a runway pavement.
ClassLCN	float	A value which denotes the peak bearing moment the surface can handle repeatedly without

		shortening its service life.
WeightSIWL	float	The maximum calculated load on each tire of a landing gear assembly that a movement area surface can support.
TypePressureSIWL	float	The maximum aircraft tire pressure that a movement area surface can support.
WeightAUW	float	The maximum total value of the weight of an aircraft that a movement area surface may support, regardless of the landing gear configuration of the aircraft.
Remark	string	Remark

12.12. Object: Surface marking

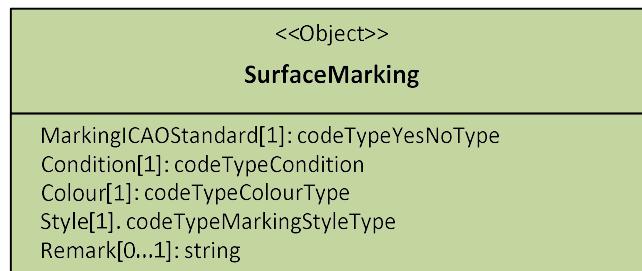


Figure 12: Object: SurfaceMarking

Object Attributes Details:

Attribute name	Data type	Definition
Marking		
MarkingICAOStandard	codeTypeYesNoType	Indicates if the marking is ICAO standard as described in Annex 14.
Condition	codeTypeCondition	The quality of the marking such as good, fair, poor and other (code list: GOOD, FAIR, POOR, EXCELLENT, OTHER)
Remark	string	Remark
MarkingElement		
Colour	codeTypeColourType	The colour of the marking.
Style	codeTypeMarkingStyle Type	The style of the marking line, such as continuous, dotted, etc (codelist: SOLID, DASHED, DOTTLED, OTHER)
Remark	string	Remark
MarkingExtent		

12.13. Feature Type: Aerodrome Heliport

Feature Type Name:	AerodromeHeliport
Feature Type Definition:	A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft/helicopters.

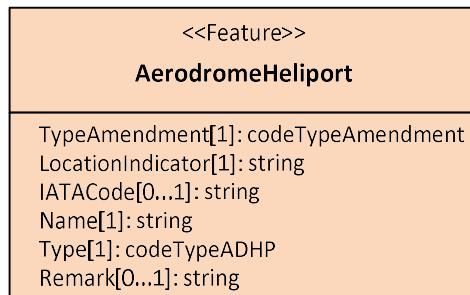


Figure 13: Feature Type: Aerodrome Heliport

Feature Attributes Details:

Attribute name	Data type	Definition
AerodromeHeliport		
TypeAmendment	codeTypeAmendment	Amendments made to the data (Add, change or delete), applicable for each feature type.
LocationIndicator	string	The four letter ICAO location indicator of the aerodrome/heliport, as listed in ICAO DOC 7910.
IATACode	string	The identifier that is assigned to a location in accordance with rules (resolution 767) governed by the International Air Transport Association (IATA).
Name	string	The primary official name of an aerodrome as designated by an appropriate authority.
Type	codeTypeADHP	A code specifying the type of aerodrome. For example, aerodrome only, combined aerodrome/heliport or simple landing site (code list: AD [Aerodrome only], AH [Aerodrome/Heliport], HP [Heliport only], LS [Landing site])
Remark	string	Remark

12.14. Feature Type: Aerodrome Heliport Reference Point

Feature Type Name:	AerodromeHeliportReferencePoint
Feature Type Definition:	Identifies the Airport Reference Point

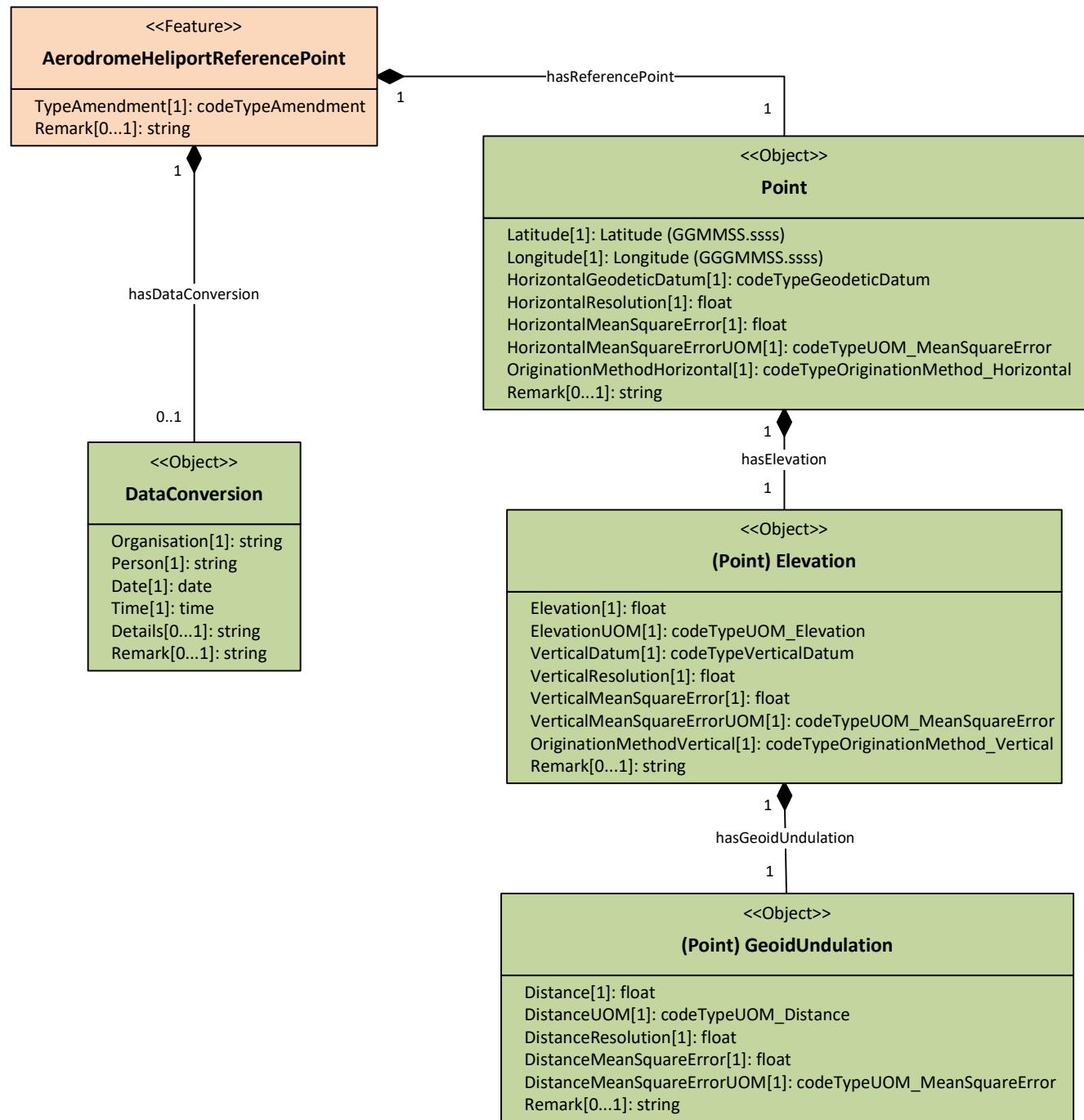


Figure 14: Feature Type: Aerodrome Heliport Reference Point

Feature Attributes Details:

Attribute name	Data type	Definition
AerodromeHeliportReferencePoint		
TypeAmendment	codeTypeAmendment	Amendments made to the data (Add, change or delete), applicable for each feature type.
Remark	string	Remark
Point		
Elevation		
GeoidUndulation		
DataConversion		

12.15. Feature Type: Airport Hotspot

Feature Type Name:	AirportHotspot
Feature Type Definition:	A location on aerodrome movement area with a history or potential risk of collision or runway incursion, and where heightened attention by pilots/drivers is necessary.

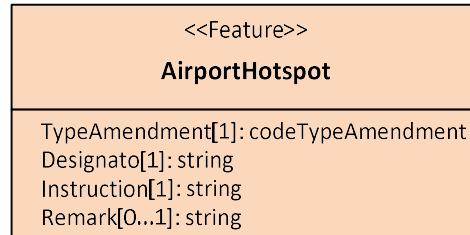


Figure 15: Feature Type: AirportHotspot

Feature Attributes Details:

Attribute name	Data type	Definition
AirportHotspot		
TypeAmendment	codeTypeAmendment	Amendments made to the data (Add, change or delete), applicable for each feature type.
Designato	string	A coded identifier by which the hot spot is labelled on airport maps.
Instruction	string	Action to be taken by the crew and/or vehicle drivers when approaching the hot spot.
Remark	string	Remark
Point		
Elevation		
GeoidUndulation		
DataConversion		

12.16. Feature Type: Magnetic Variation

Feature Type Name:	AerodomeHeliportMagneticVariation
Feature Type Definition:	The angular difference between True North and Magnetic North measured at a given position and date.

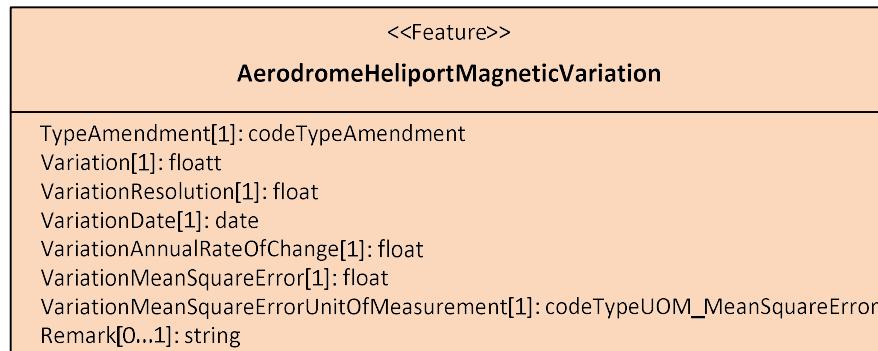


Figure 16: Feature Type: Aerodrome Heliport Magnetic Variation

Feature Attributes Details:

Attribute name	Data type	Definition
AerodromeHeliportMagneticVariation		
TypeAmendment	codeTypeAmendment	Amendments made to the data (Add, change or delete), applicable for each feature type.
Variation	float	The angular difference between True North and Magnetic North measured at a given position and date.
VariationResolution	float	The resolution of the magnetic variation (e.g. 0.01 means that 2 digits after the decimal point are relevant).
VariationDate	date	The date on which the magnetic variation had this value.
VariationAnnualRateOfChange	float	The annual rate of change of the magnetic variation. The unit of measurement would be degrees/year and can be positive or negative.
VariationMeanSquareError	float	The accuracy of the magnetic variation in angle degrees.
VariationMeanSquareErrorUnitOfMeasurement	codeTypeUOM_MeanSquareError	The unit of measurement for the variation accuracy (code list: FT, M).
Remark	string	Remark

12.17. Feature Type: Reference Temperature

Feature Type Name:	AerodromeHeliportReferenceTemperature
Feature Type Definition:	The monthly mean of the daily maximum temperatures for the hottest month of the year at an aerodrome.

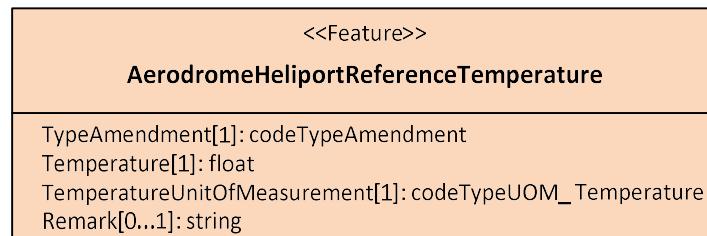


Figure 17: Feature Type: Aerodrome Heliport Reference Temperature

Feature Attributes Details:

Attribute name	Data type	Definition
AerodromeHeliportReferenceTemperature		
TypeAmendment	codeTypeAmendment	Amendments made to the data (Add, change or delete), applicable for each feature type.
Temperature	float	The monthly mean of the daily maximum temperatures for the hottest month of the year at an aerodrome.
TemperatureUnitOfMeasurement	codeTypeUOM_Temperature	A unit of measurement for temperature (code list: C, F, K, OTHER).
Remark	string	Remark

12.18. Feature Type: Runway

Feature Type Name:	Runway
Feature Type Definition:	A defined rectangular area on a land aerodrome/heliport prepared for the landing and take-off of aircraft.

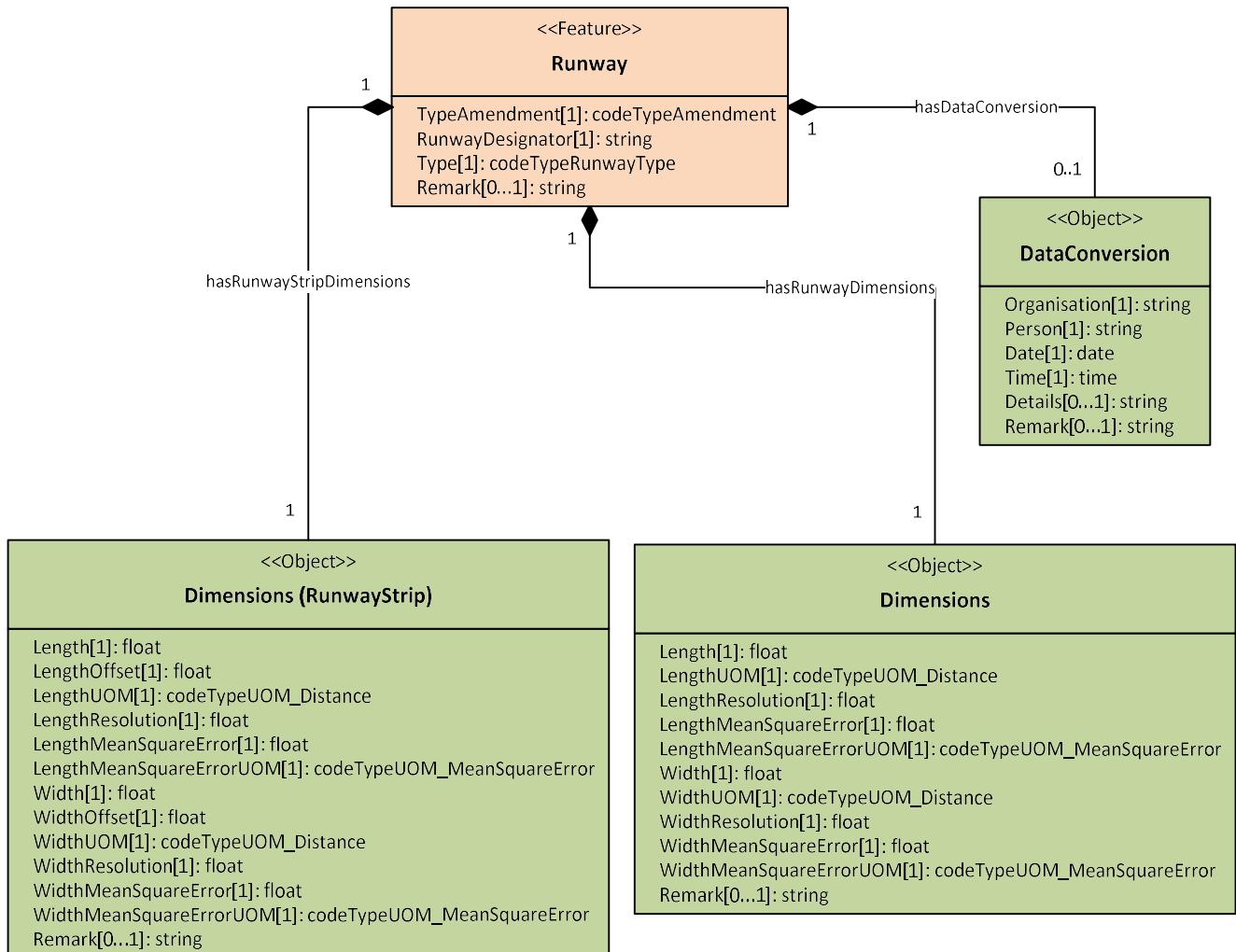


Figure 18: Feature Type: Runway

Feature Attributes Details:

Attribute name	Data type	Definition
Runway		
TypeAmendment	codeTypeAmendment	Amendments made to the data (Add, change or delete), applicable for each feature type.
RunwayDesignator	string	The full textual designator of the runway, used to uniquely identify it at an aerodrome/heliport which has more than one (e.g. 09/27, 02R/20L, RWY 1).
Type	codeTypeRunwayType	The type can be either runway for airplanes or final approach and take off area (FATO) for helicopters (code list: RWY, FATO, OTHER).
Remark	String	Remark
RunwayStripDimensions		
Dimensions		
DataConversion		

12.19. Feature Type: Runway Element

Feature Type Name:	RunwayElement
Feature Type Definition:	Runway element may consist of one or more polygons not defined as other portions of the runway class.

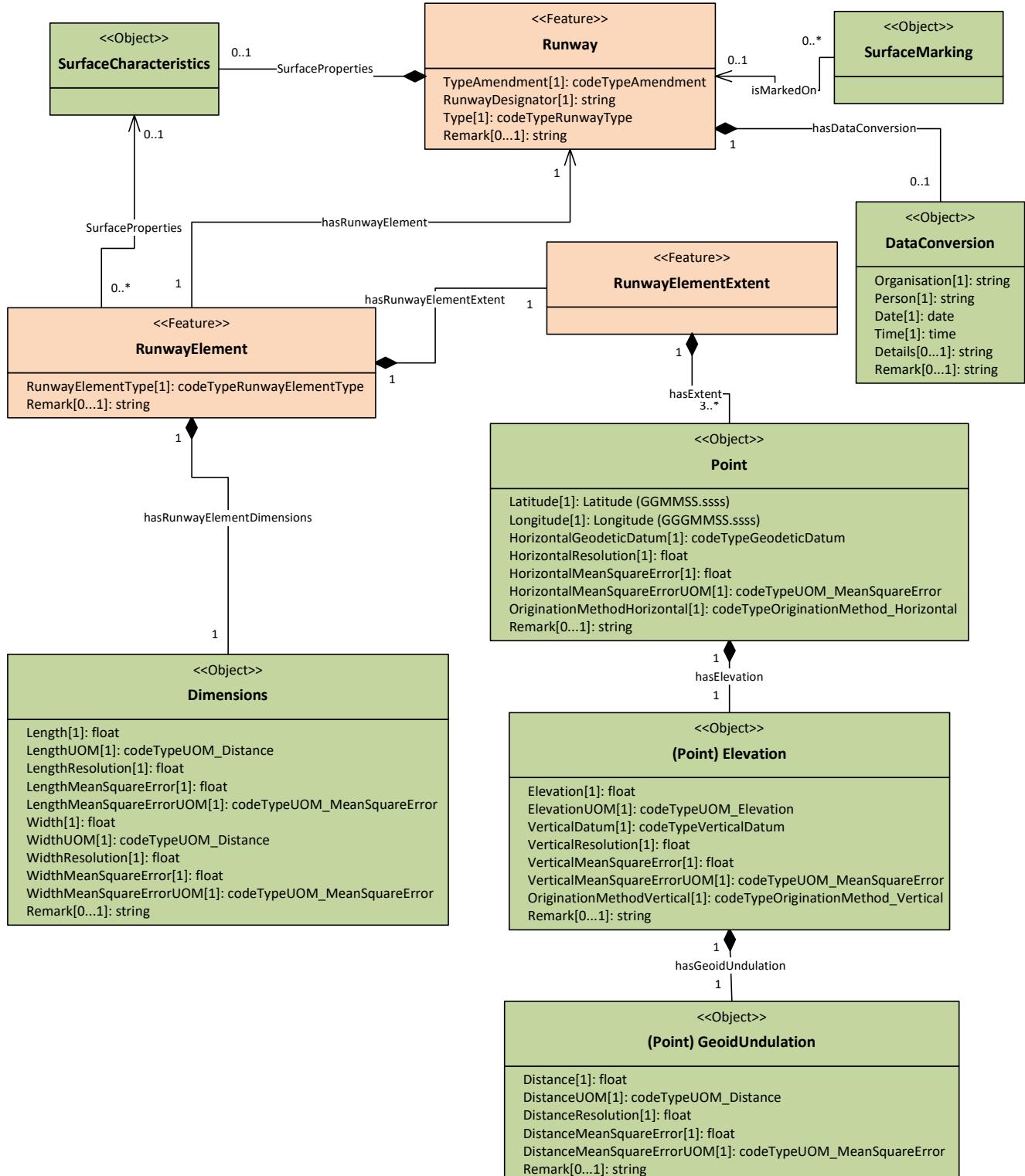


Figure 19: Feature Type: Runway Element

Feature Attributes Details:

Attribute name	Data type	Definition
Runway		
RunwayElement		
RunwayElementType	codeTypeRunwayElementType	The type of runway element (code list: NORMAL [Default type], INTERSECTION [Intersection element], DISPLACED [Element between the start of the runway and the position of the displaced threshold], SHOULDER [Shoulder element], OTHER).
Remark	string	Remark
Dimensions		
RunwayElementExtent		
Point		
Elevation		
GeoidUndulation		
DataConversion		

12.20. Feature Type: Runway Centre Line Point

Feature Type Name:	RunwayCentreLinePoint
Feature Type Definition:	An operationally significant position on the centre line of a runway direction. A typical example is the runway threshold.

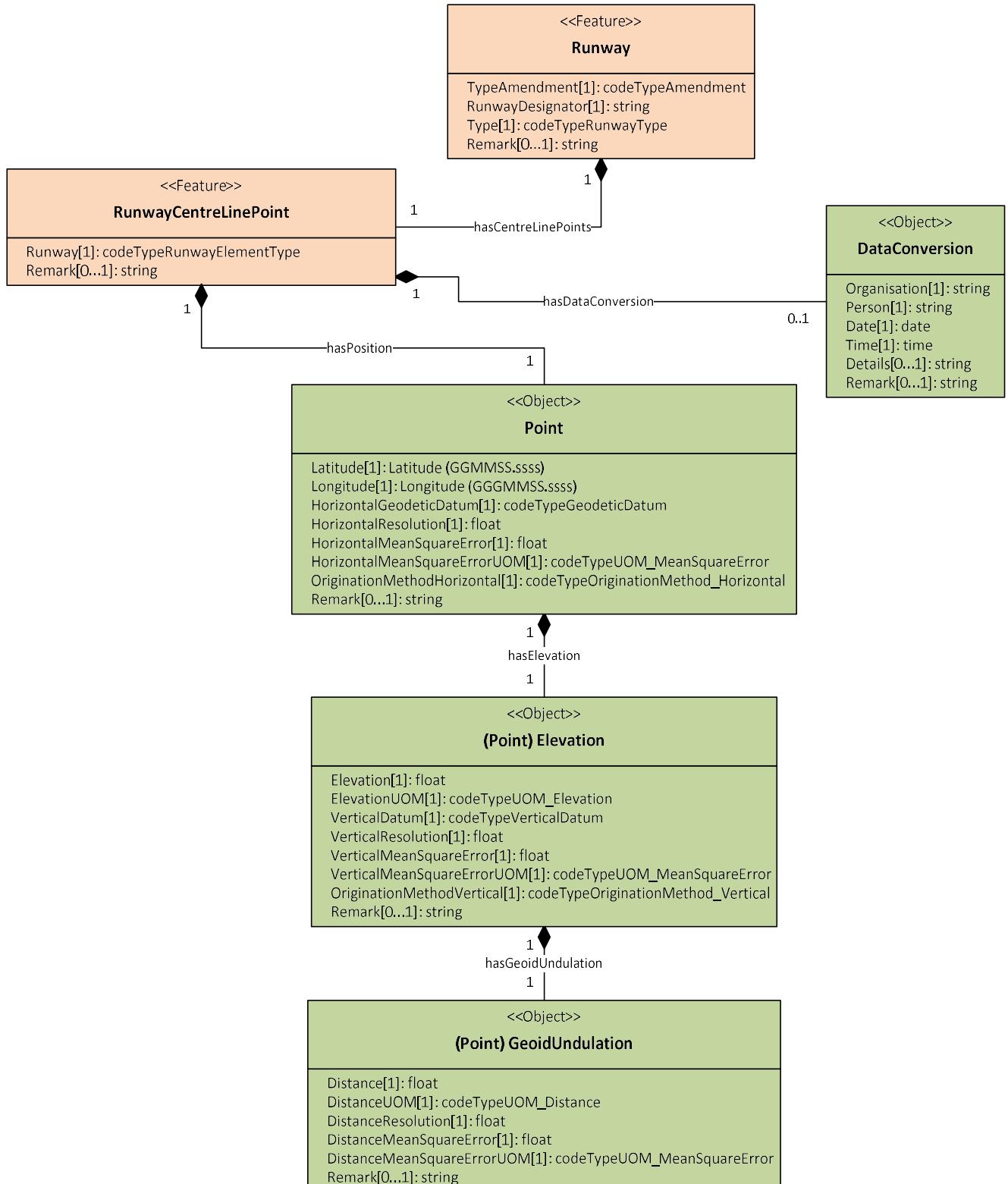


Figure 20: Feature Type: Runway Centre Line Point

Feature Attributes Details:

Attribute name	Data type	Definition
Runway		
RunwayCentreLinePoint		
RunwayDirectionDesignator	string	The full textual designator of the landing and take-off direction (e.g. 27, 35L, 01R). It must have between 2 and 3 characters, of which the first 2 may be only digits, which indicate an integer value between 01 and 36, inclusive.
RunwayCentreLinePoint Designator	string	A code or name by which the centre line point is identified locally at the airport.
Role	codeTypeRunwayCentreLinePointType	The role of the point along the runway direction centreline (code list: START [Physical start of a runway direction], THR [Threshold], DISTHR [Displaced threshold], TDZ [Touchdown zone], MID [The mid point of the runway], END [Physical end of a runway direction], START_RUN [Start of take off run], LAHSO [Point indicating land and hold short operation location], OTHER)
Remark	string	Remark
Point		
Elevation		
GeoidUndulation		
DataConversion		

12.21. Feature Type: Runway Direction

Feature Type Name:	RunwayDirection
Feature Type Definition:	One of the two landing and take-off directions of a runway for which attributes like TORA, TODA, LDA, etc. may be defined.

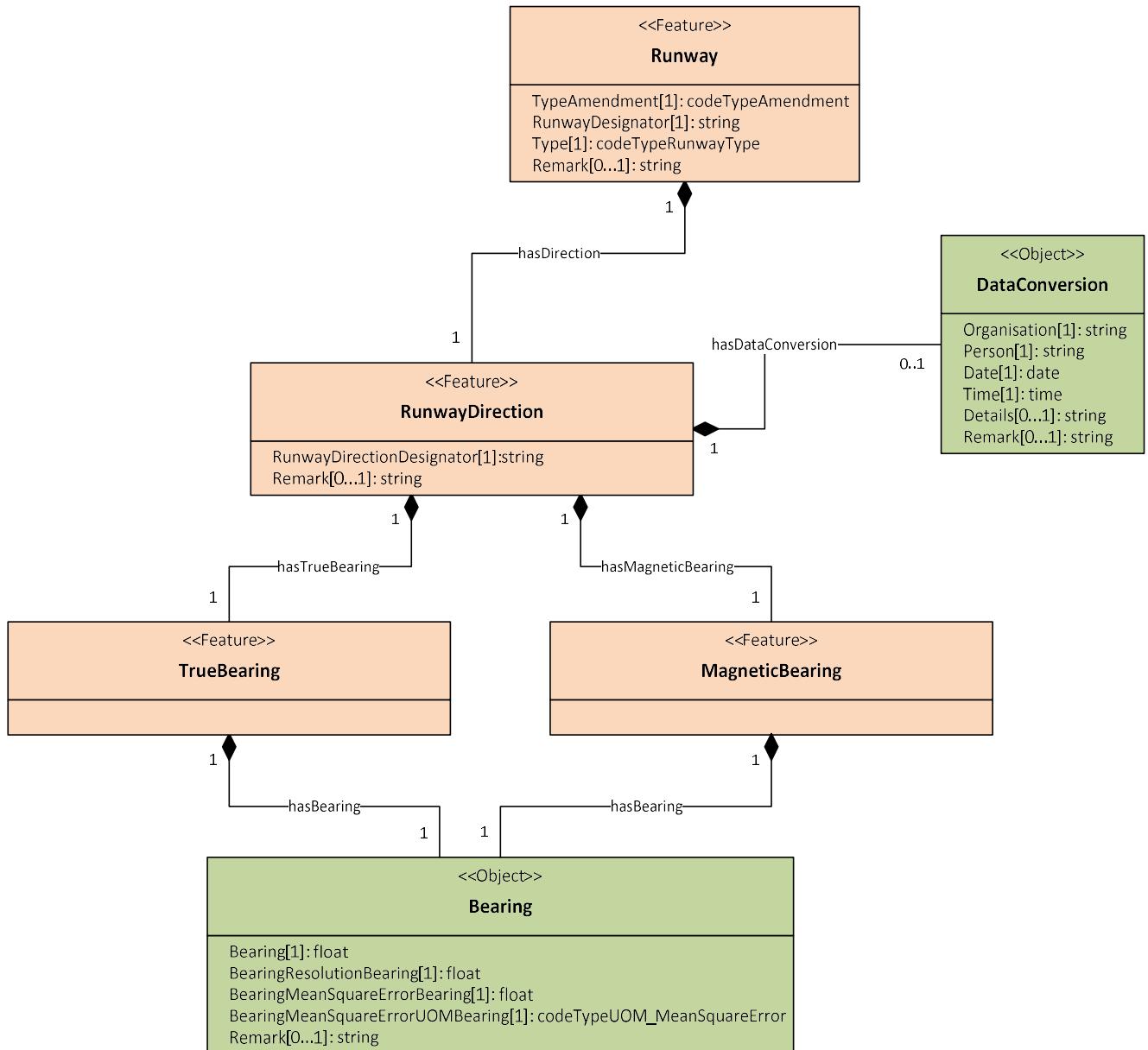


Figure 21: Feature Type: Runway Direction

Feature Attributes Details:

Attribute name	Data type	Definition
Runway		
RunwayDirection		
RunwayDirectionDesignator	String	The full textual designator of the landing and take-off direction (e.g. 27, 35L, 01R). It must have between 2 and 3 characters, of which the first 2 may be only digits, which indicate an integer value between 01 and 36, inclusive.
Remark	string	Remark
TrueBearing		
Bearing		
MagneticBearing		
Bearing		

12.22. Feature Type: Runway Declared Distance

Feature Type Name:	RunwayDeclaredDistance
Feature Type Definition:	A conventional operational distance declared for a runway direction. For example, TORA, TODA, LDA, ASDA.

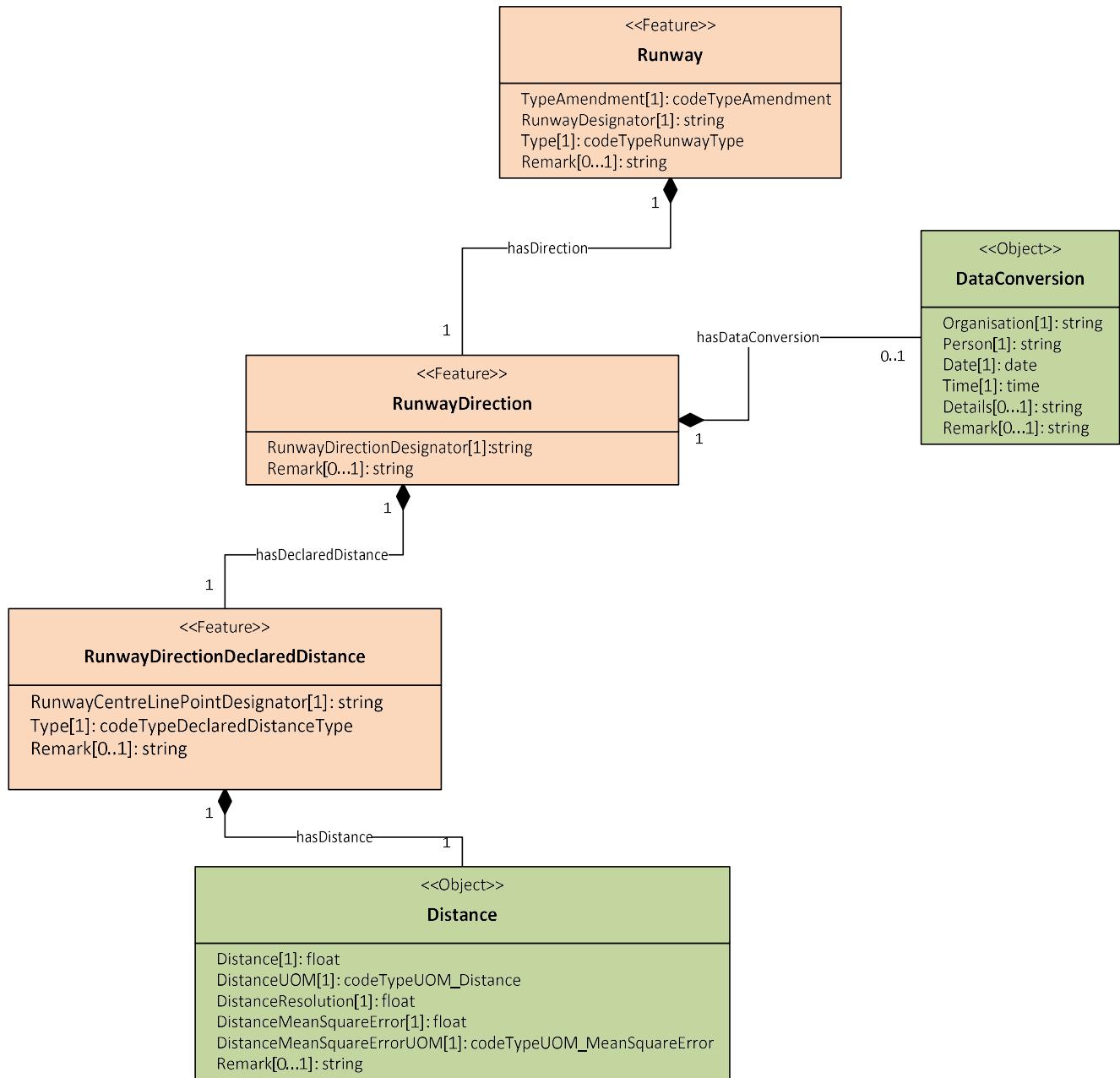


Figure 22: Feature Type: Runway Declared Distance

Feature Attributes Details:

Attribute name	Data type	Definition
Runway		
RunwayDirection		
RunwayDeclaredDistance		
RunwayCentreLinePoint Designator	string	A code or name by which the centre line point is identified locally at the airport.
Type	codeTypeDeclaredDistanceType	A code indicating the type of a conventional declared distance (code list: LDA [landing distance available], TORA [Take-off run available], TODA [Take-off distance available], ASDA [Accelerate-stop distance available], DTHR [threshold displacement]).
Remark	string	Remark
Distance		
DataConversion		

12.23. Feature Type: Runway Protection Area

Feature Type Name:	RunwayProtectionArea
Feature Type Definition:	An area situated in the vicinity of a runway or provided to protect aircraft during manoeuvring, take-off and landing operations.

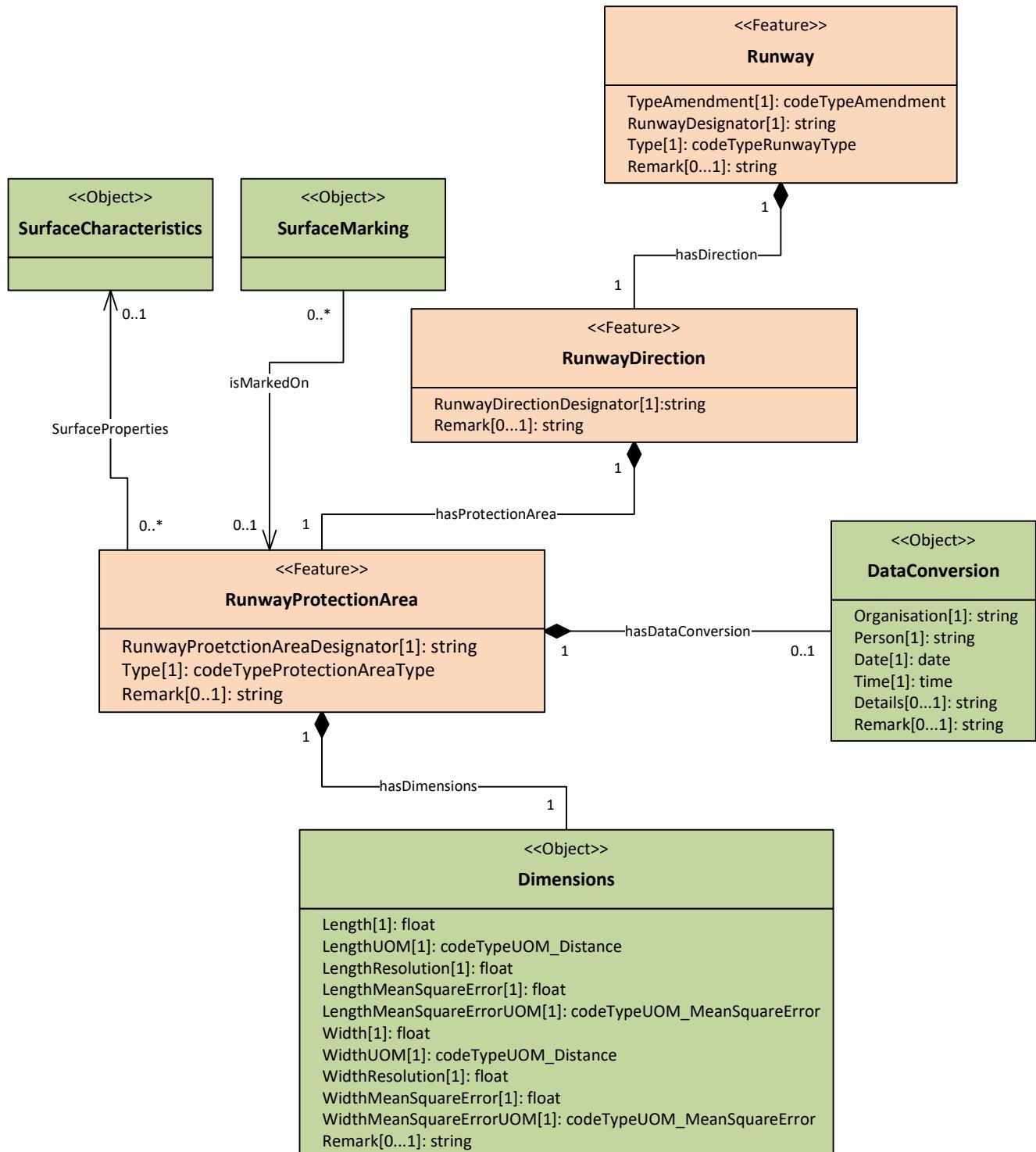


Figure 23: Feature Type: Runway Protection Area

Feature Attributes Details:

Attribute name	Data type	Definition
Runway		
RunwayDirection		
RunwaProtectionAreaDesignator	String	The full textual designator of the runway protection area.
Type	codeTypeRunwayProtectionAreaType	A code indicating the type of protection area (code list: CWY [clearway], RESA [runway end safety area], OFZ [obstacle free zone or surface], IOFZ [inner obstacle free zone or surface], POFZ [precision obstacle free zone], ILS [ILS protection area], VGSI [visual glide slope indicator protection area], STOPWAY [abandoned take-off area]).
Remark	string	Remark
Dimensions		
DataConversion		

12.24. Feature Type: Touch Down Lift Off

Feature Type Name:	TouchDownLiftOff
Feature Type Definition:	A load bearing area on which a helicopter may touch down or lift-off.

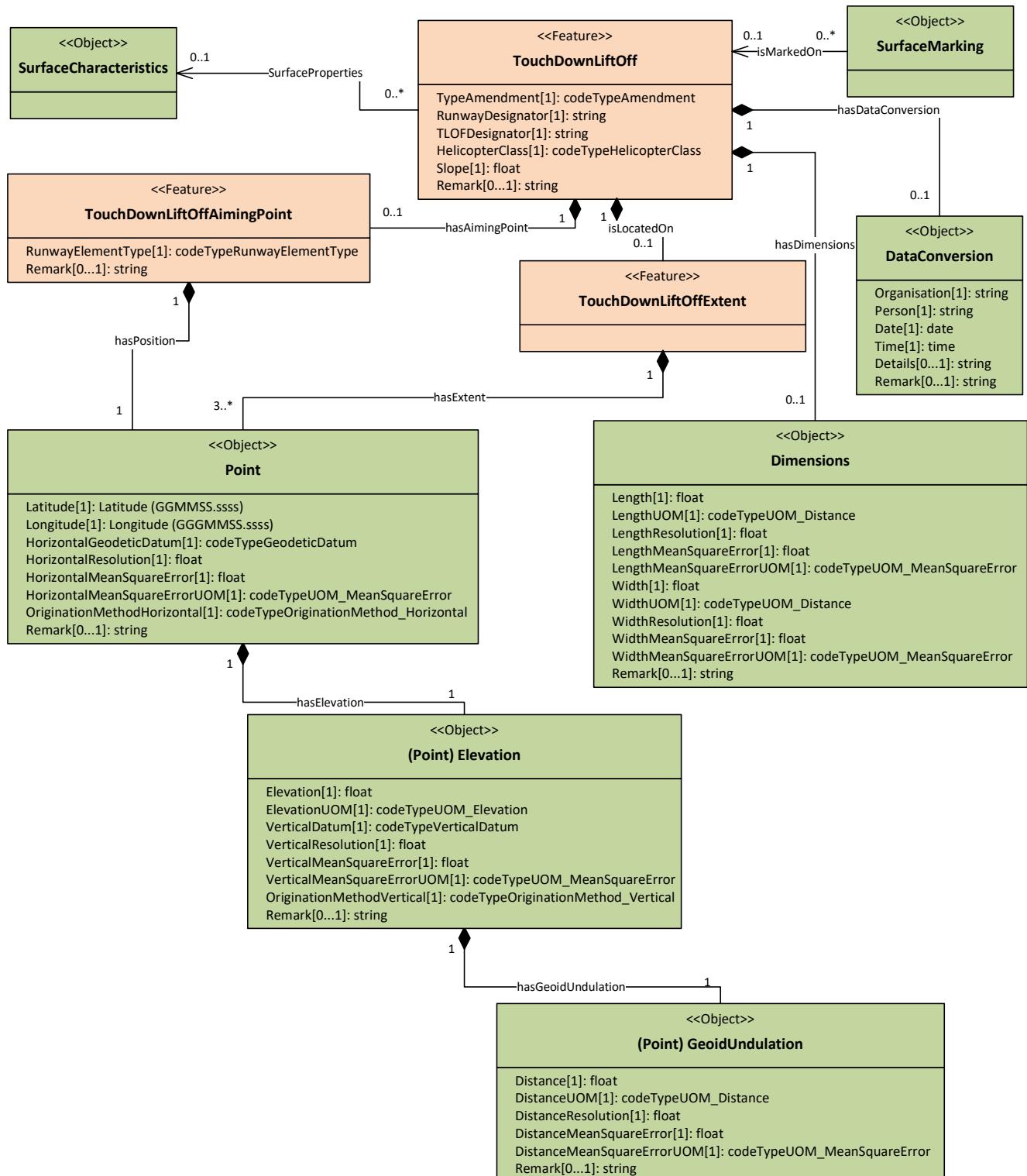


Figure 24: Feature Type: Toch Down Lift Off

Feature Attributes Details:

Attribute name	Data type	Definition
TouchDownLiftOff		
TypeAmendment	codeTypeAmendment	Amendments made to the data (Add, change or delete), applicable for each feature type.
RunwayDesignator	string	The full textual designator of the runway, used to uniquely identify it at an aerodrome/heliport which has more than one (e.g. 09/27, 02R/20L, RWY 1).
TLOFDesignator	string	The textual designator of the touch down and lift-off area.
HelicopterClass	Fehler! Verweisquelle konnte nicht gefunden werden.	The class of a helicopter based on its performance during a critical power unit failure after take-off (code list: 1, 2, 3, OTHER).
Slope	float	The slope (rate of upward inclination of the surface from the horizontal) of the surface of a feature. This value is always expressed as a percent.
Remark	string	Remark
DataConversion		
TouchDownLiftOffDimensions		
Dimensions		
TouchDownLiftOffAimingPoint		
Point		
Elevation		
GeoidUndulation		
TouchDownLiftOffExtent		
Point		
Elevation		
GeoidUndulation		

12.25. Feature Type: Taxiway

Feature Type Name:	Taxiway
Feature Type Definition:	A defined path at an aerodrome/heliport established for the taxiing.

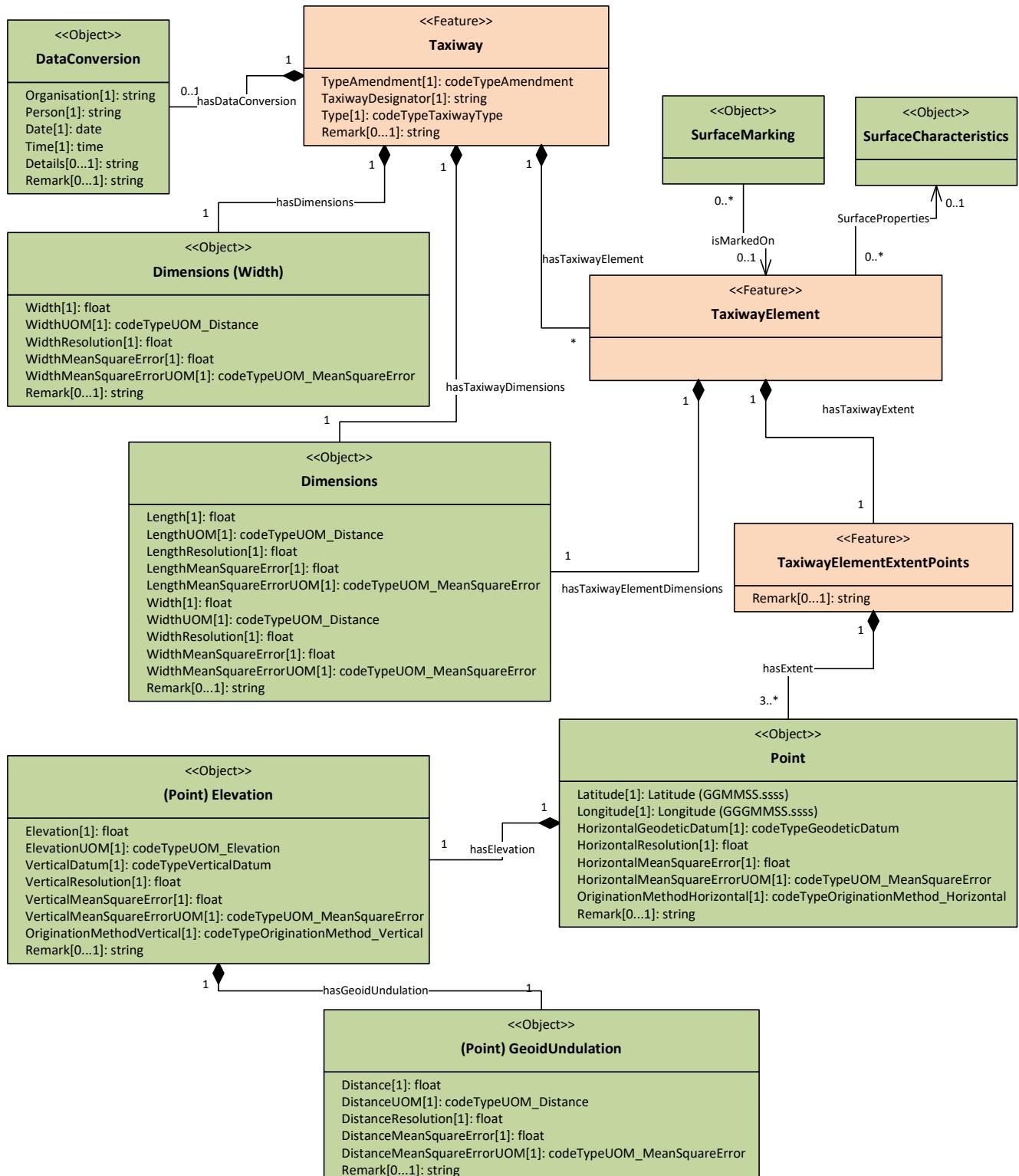


Figure 25: Feature Type: Taxiway

Feature Attributes Details:

Attribute name	Data type	Definition
Taxiway		
TypeAmendment	codeTypeAmendment	Amendments made to the data (Add, change or delete), applicable for each feature type.
TaxiwayDesignator	string	The textual designator of the taxiway.
Type	codeTypeTaxiwayType	A code indicating a type of taxiway. For example: air taxiway, ground exit/turnoff, rapid exit/turnoff, stub, turn around, etc. (code list: AIR [Air taxiway], GND [Ground taxiway], EXIT [Exit/Turnoff taxiway], FASTEXIT [Rapid exit/turnoff taxiway], STUB [Stub taxiway], TURN_AROUND [Turn around taxiway], PARALLEL [Parallel taxiway], BYPASS [Bypass holding bay], OTHER)
Remark	string	Remark
DataConversion		
DimensionsWidth		
Dimensions		
TaxiwayElement		
Dimensions		
TaxiwayElementExtentPoints		
Point		
Elevation		
GeoidUndulation		

12.26. Feature Type: Navaid system checkpoint

Feature Type Name:	NavaidSystemCheckpoint
Feature Type Definition:	A point established and marked on the surface of an aerodrome allowing the checking of a navigation system (like VOR, GNSS, etc.) or initialisation of an inertial navigation system.areas.

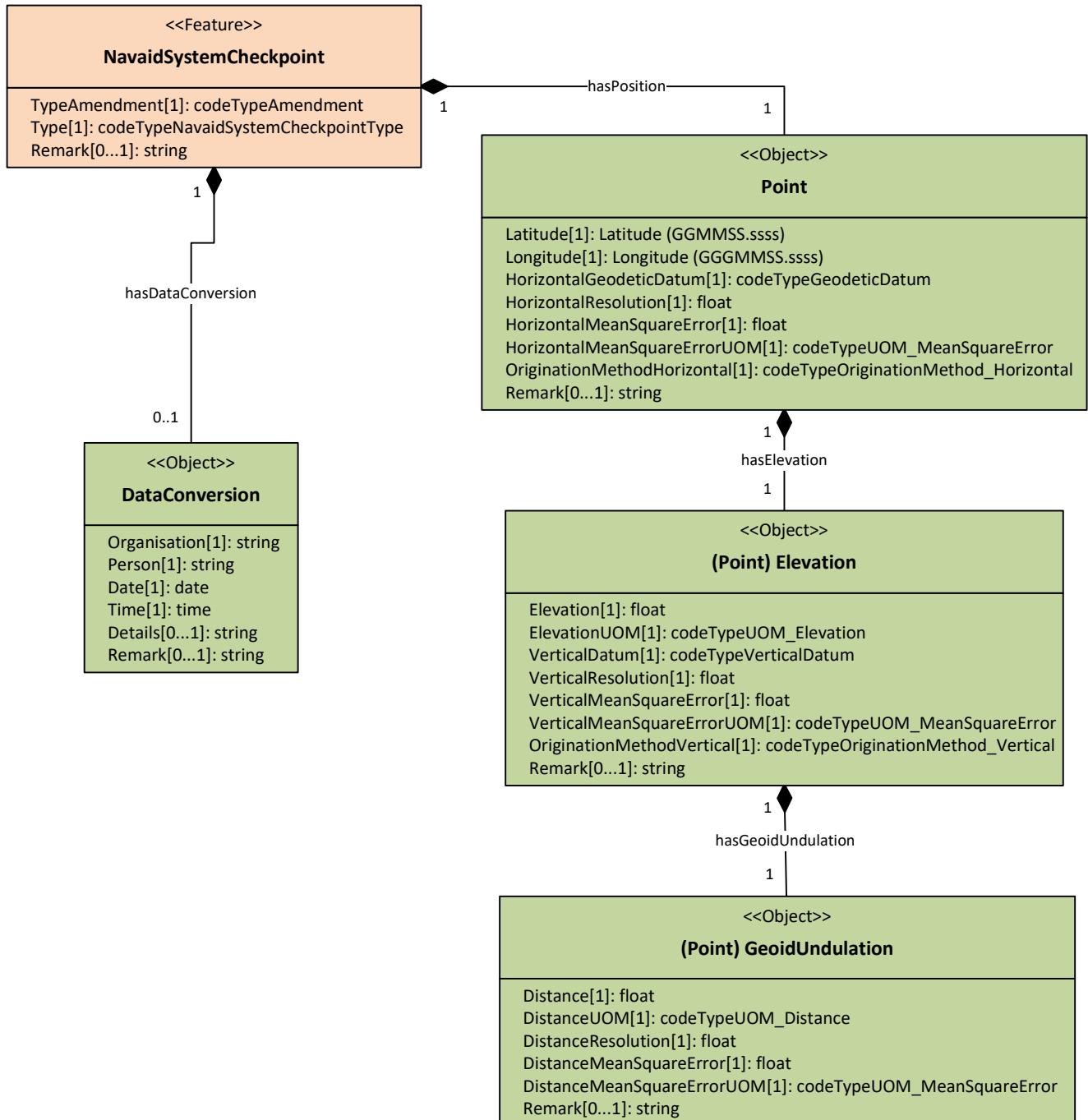


Figure 26: Feature Type: Navaid System checkpoint

Feature Attributes Details:

Attribute name	Data type	Definition
NavaidSystemCheckpoint		
TypeAmendment	codeTypeAmendment	Amendments made to the data (Add, change or delete), applicable for each feature type.
Type	codeTypeNavaidSystemCheckpointType	The type of navigation system for which the checkpoint has been established. For example, INS, VOR, GNSS, etc.
Remark	string	Remark
Point		
Elevation		
GeoidUndulation		
DataConversion		

12.27. Feature Type: Apron

Feature Type Name:	Apron
Feature Type Definition:	A defined area, on a land aerodrome/heliport, intended to accommodate aircraft/helicopters for purposes of loading and unloading passengers, mail or cargo, and for fuelling, parking or maintenance.

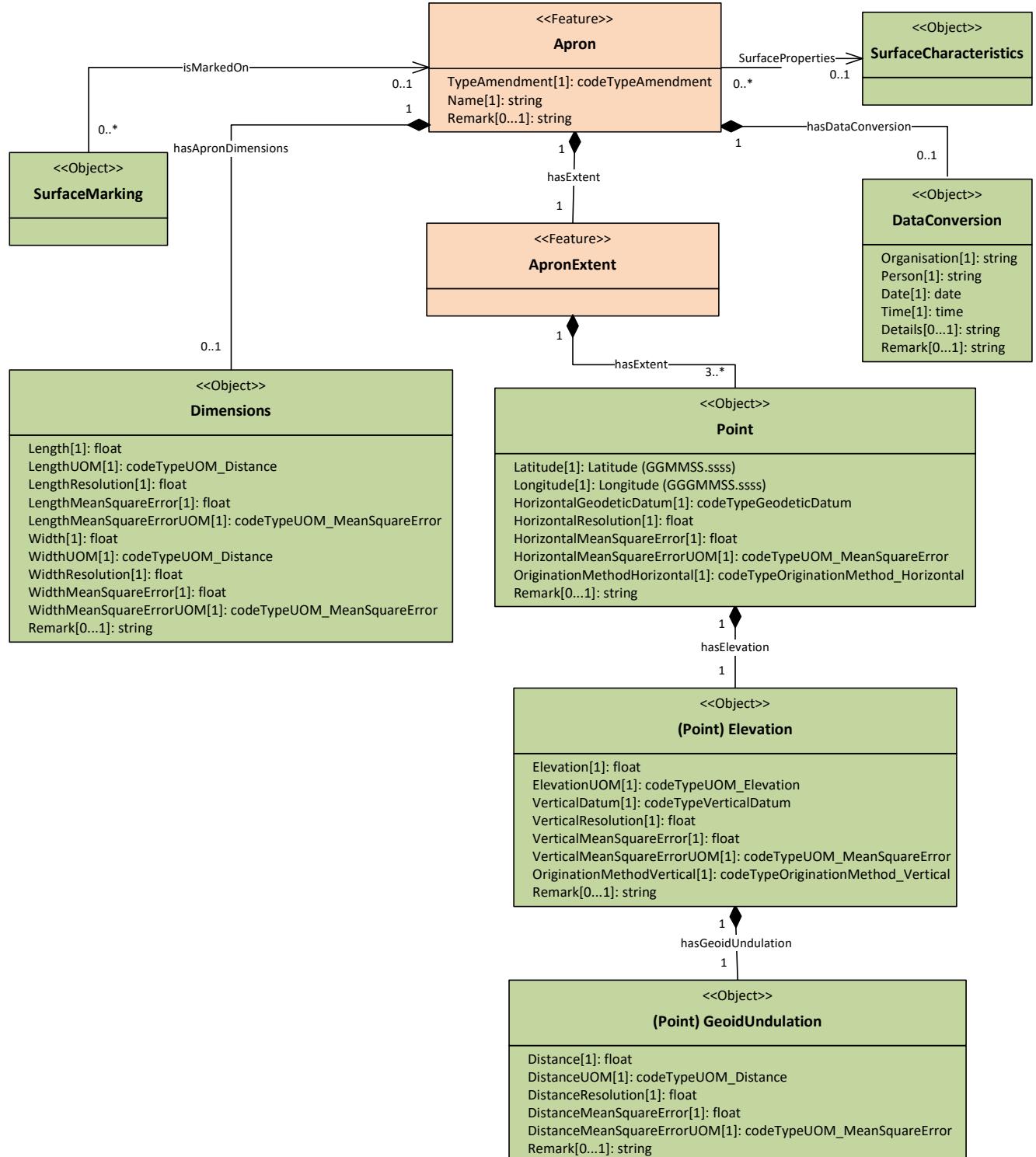


Figure 27: Feature Type: Apron

Feature Attributes Details:

Attribute name	Data type	Definition
Apron		
TypeAmendment	codeTypeAmendment	Amendments made to the data (Add, change or delete), applicable for each feature type.
Name	string	The full textual name or designator used to identify an apron at an aerodrome/heliport.
Remark	string	Remark
Dimensions		
ApronExtent		
Point		
Elevation		
GeoidUndulation		

12.28. Feature Type: Deicing Area

Feature Type Name:	DeicingArea
Feature Type Definition:	An area comprising an inner area for the parking of an aircraft to receive de-icing treatment and an outer area for the manoeuvring of two or more mobile de-icing equipment.

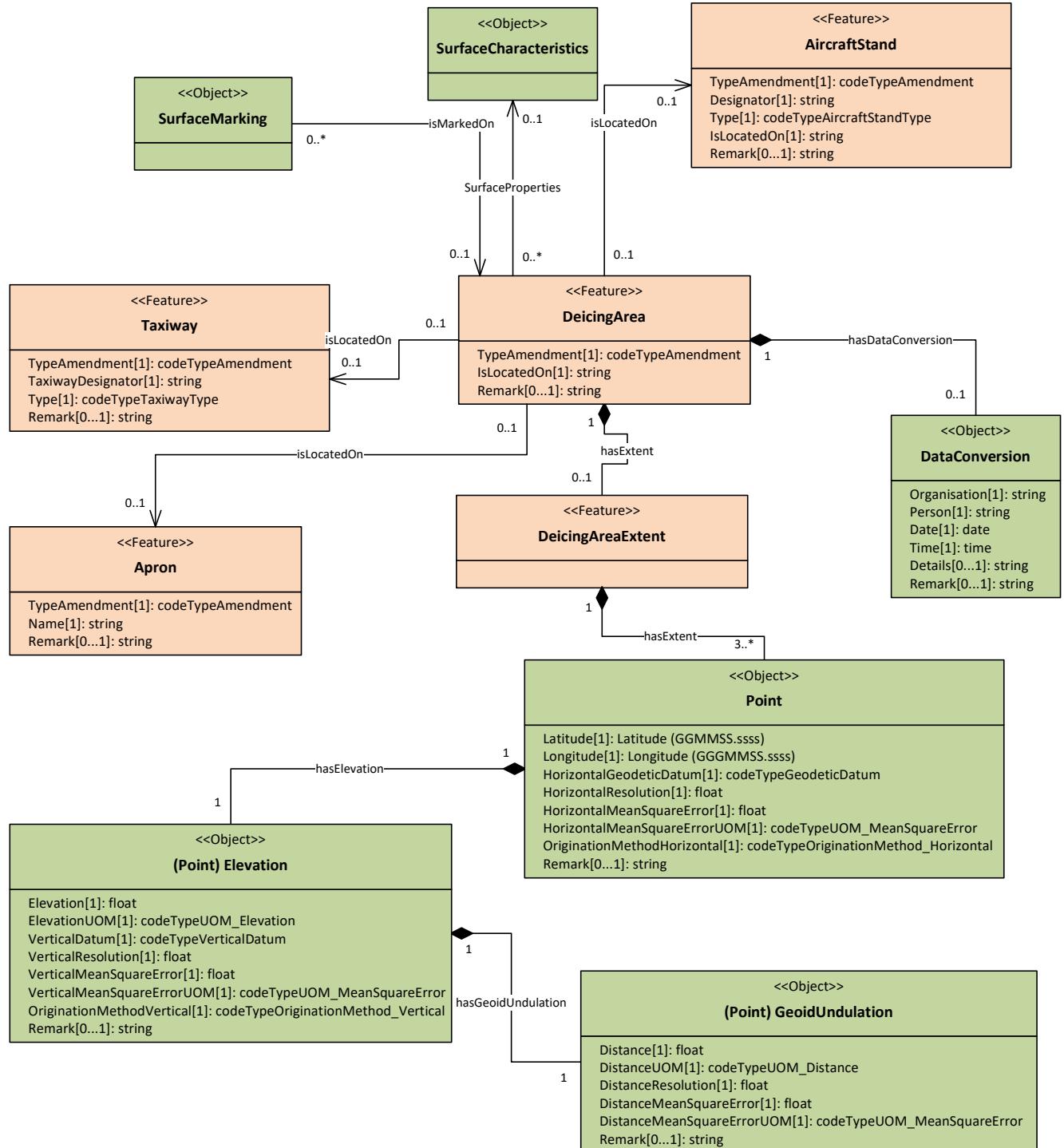


Figure 28: Feature Type: Deicing Area

Feature Attributes Details:

Attribute name	Data type	Definition
DeicingArea		
TypeAmendment	codeTypeAmendment	Amendments made to the data (Add, change or delete), applicable for each feature type.
IsLocatedOn	string	The full textual name or designator used to identify where the deicing area is located.
Remark	string	Remark
DataConversion		
(List of) DeicingAreaExtent(points)		
Point		
Elevation		
GeoidUndulation		

12.29. Feature Type: Aircraft Stand

Feature Type Name:	AircraftStand
Feature Type Definition:	A designated area on an apron intended to be used for parking an aircraft.

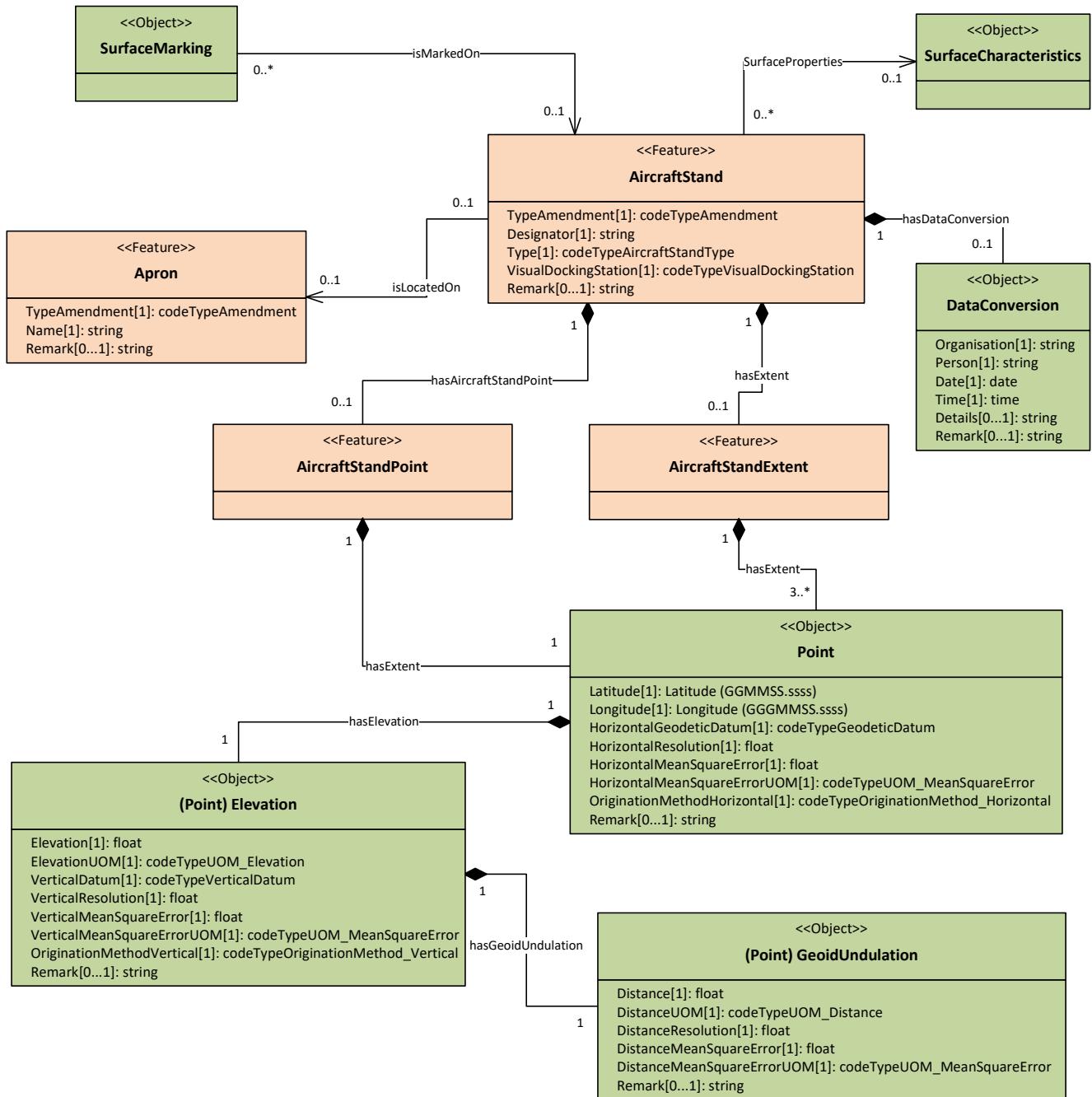


Figure 29: Feature Type: Aircraft Stand

Feature Attributes Details:

Attribute name	Data type	Definition
AircraftStand		
TypeAmendment	codeTypeAmendment	Amendments made to the data (Add, change or delete), applicable for each feature type.
Designator	string	The textual designator of the gate/stand (e.g. 13, 84 A).
Type	codeTypeAircraftStandType	A code identifying the characteristics of a stand (code list: NI [nose-in parking position], ANG_NI [angled nose-in parking position], ANG_NO [angled nose-out parking position], PARL [parallel (to building) parking position], RMT [remote parking position], ISOL [isolated parking position], OTHER).
VisualDockingStation	codeTypeVisualDockingStationType	A device used at the aircraft stands in order to help the pilot align and position the aircraft (code list: AGNIS, PAPA, SAFE_GATE, SAFE_DOC, APIS, A_VDGS, AGNIS_STOP, AGNIS_PAPA, OTHER).
IsLocatedOn	string	The full textual name or designator used to identify where the Aircraft Stand is located.
Remark	string	Remark
DataConversion		
AircraftStandPoint		
Point		
Elevation		
GeoidUndulation		
AircraftStandExtent		
Point		
Elevation		
GeoidUndulation		

12.30. Feature Type: Aircraft Ground Service

Feature Type Name:	AircraftGroundService
Feature Type Definition:	A kind of maintenance, support or supply service provided to aircraft at the ground.

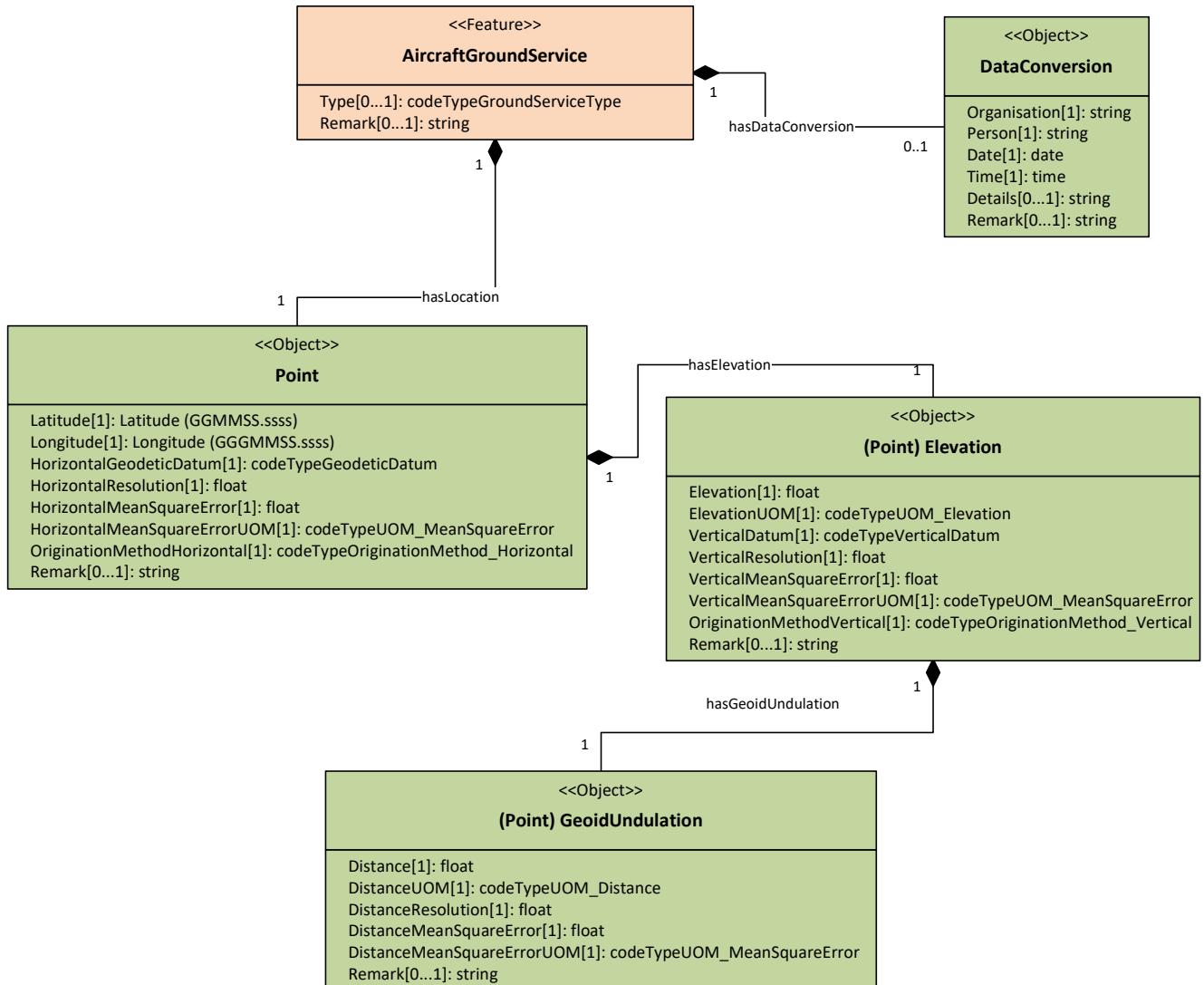


Figure 30: Feature Type: Aircraft Ground Service

Feature Attributes Details:

Attribute name	Data type	Definition
AircraftGroundService		
TypeAmendment	codeTypeAmendment	Amendments made to the data (Add, change or delete), applicable for each feature type.
Type	codeTypeAircraftGroundServiceType	The type of ground service.
Remark	string	Remark
DataConversion		
Point		
Elevation		
GeoidUndulation		

12.31. Feature Type: Taxiway Holding Position

Feature Type Name:	TaxiwayHoldingPosition
Feature Type Definition:	A designated position intended for traffic control at which taxiing aircraft and vehicles shall stop and hold until further cleared to proceed, when so instructed by the aerodrome control tower.

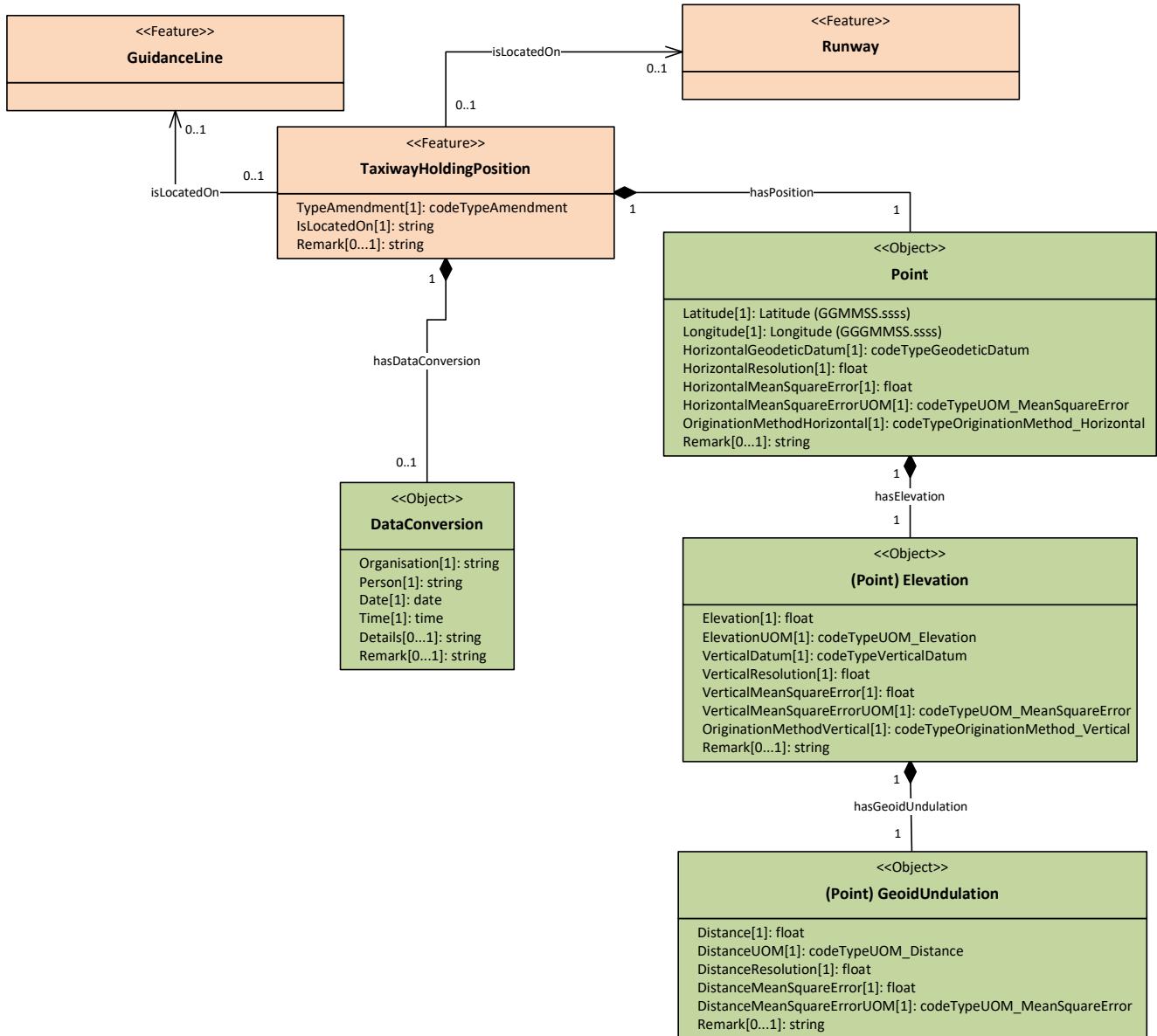


Figure 31: Feature Type: Taxiway Holding Position

Feature Attributes Details:

Attribute name	Data type	Definition
TaxiwayHoldingPosition		
TypeAmendment	codeTypeAmendment	Amendments made to the data (Add, change or delete), applicable for each feature type.
IsLocatedOn	string	The full textual name or designator used to identify where the Taxi Holding Position is located.
Remark	string	Remark
Point		
Elevation		
GeoidUndulation		
DataConversion		

12.32. Feature Type: Guidance Line

Feature Type Name:	GuidanceLine
Feature Type Definition:	A line used to guide aircraft on and between airport movement areas.

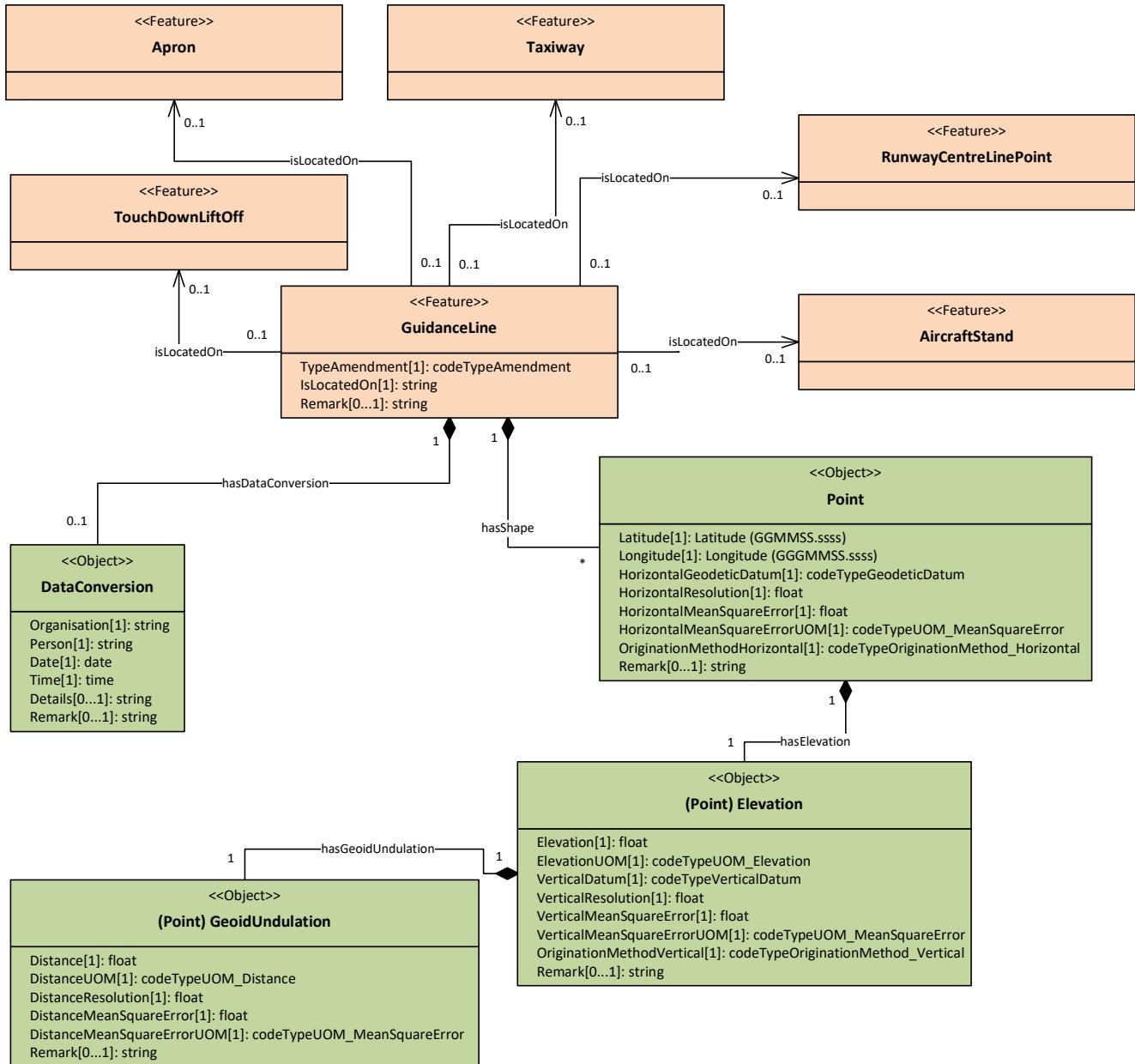


Figure 32: Feature Type: Guidance Line

Feature Attributes Details:

Attribute name	Data type	Definition
GuidanceLine		
TypeAmendment	codeTypeAmendment	Amendments made to the data (Add, change or delete), applicable for each feature type.
Designator	string	The free-text identifier of the Guidance Line.
Type	codeTypeGuidanceLineType	The type of guidance line (code list: RWY [Taxi line on a runway surface], TWY [Taxi line on a taxiway surface], APRON [Taxi line on the apron surface], GATE_TLANCE [Taxi line on the apron surface, leading to a gate/stand], LI_TLANCE [Lead-in taxi line], LO_TLANCE [Lead-out taxi line], AIR_TLANCE [A virtual taxi line in the air, used by helicopters]).
IsLocatedOn	string	The full textual name or designator used to identify where the Guidance Line is located.
Remark	string	Remark
Point		
Elevation		
GeoidUndulation		
DataConversion		

12.33. Feature Type: Lighting

Feature Type Name:	Lighting
Feature Type Definition:	One or more light sources located on the ground and that provide visual assistance for air and ground navigation.

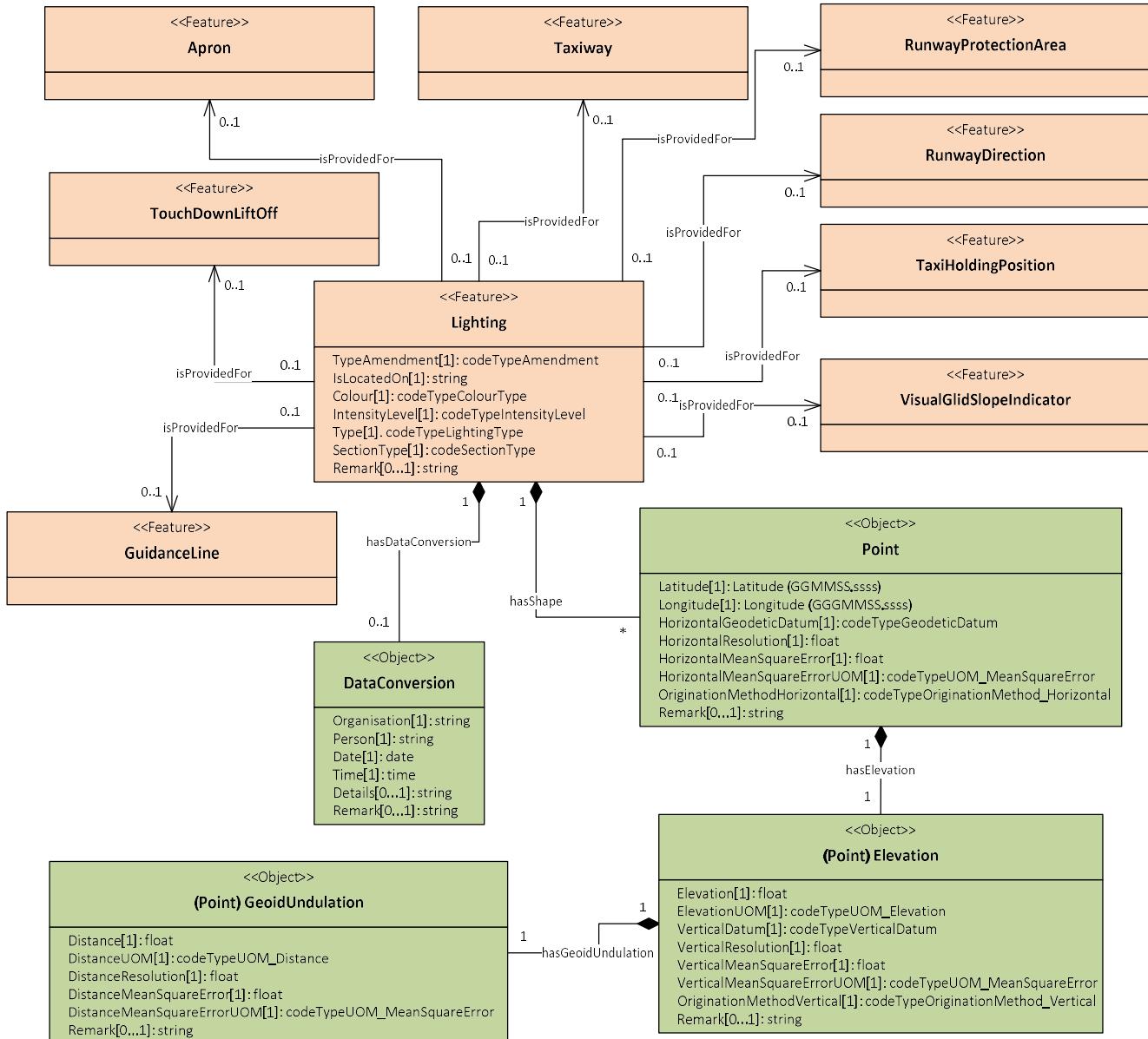


Figure 33: Feature Type: Lighting

Feature Attributes Details:

Attribute name	Data type	Definition
Lighting		
TypeAmendment	codeTypeAmendment	Amendments made to the data (Add, change or delete), applicable for each feature type.
Colour	codeTypeColourType	A code indicating the colour of the light.
IntensityLevel	codeTypeIntensityLeve lType	A code indicating the relative intensity of the light.
Intensity	float	The exact value of the intensity of the light.
Type	codeTypeLightingType	A code indicating the type of light source.
SectionType	codeTypeSectionType	A code indicating the part of the feature (e.g. Apron, Taxiway etc.) served by the lighting system.
Remark	string	Remark
Point		
Elevation		
GeoidUndulation		
DataConversion		

12.34. Feature Type: Visual Glide Slope Indicator

Feature Type Name:	Visual Glide Slope Indicator
Feature Type Definition:	A visual guidance system that provides "below/above glidepath" information to an aircraft executing an approach to a specific runway direction.

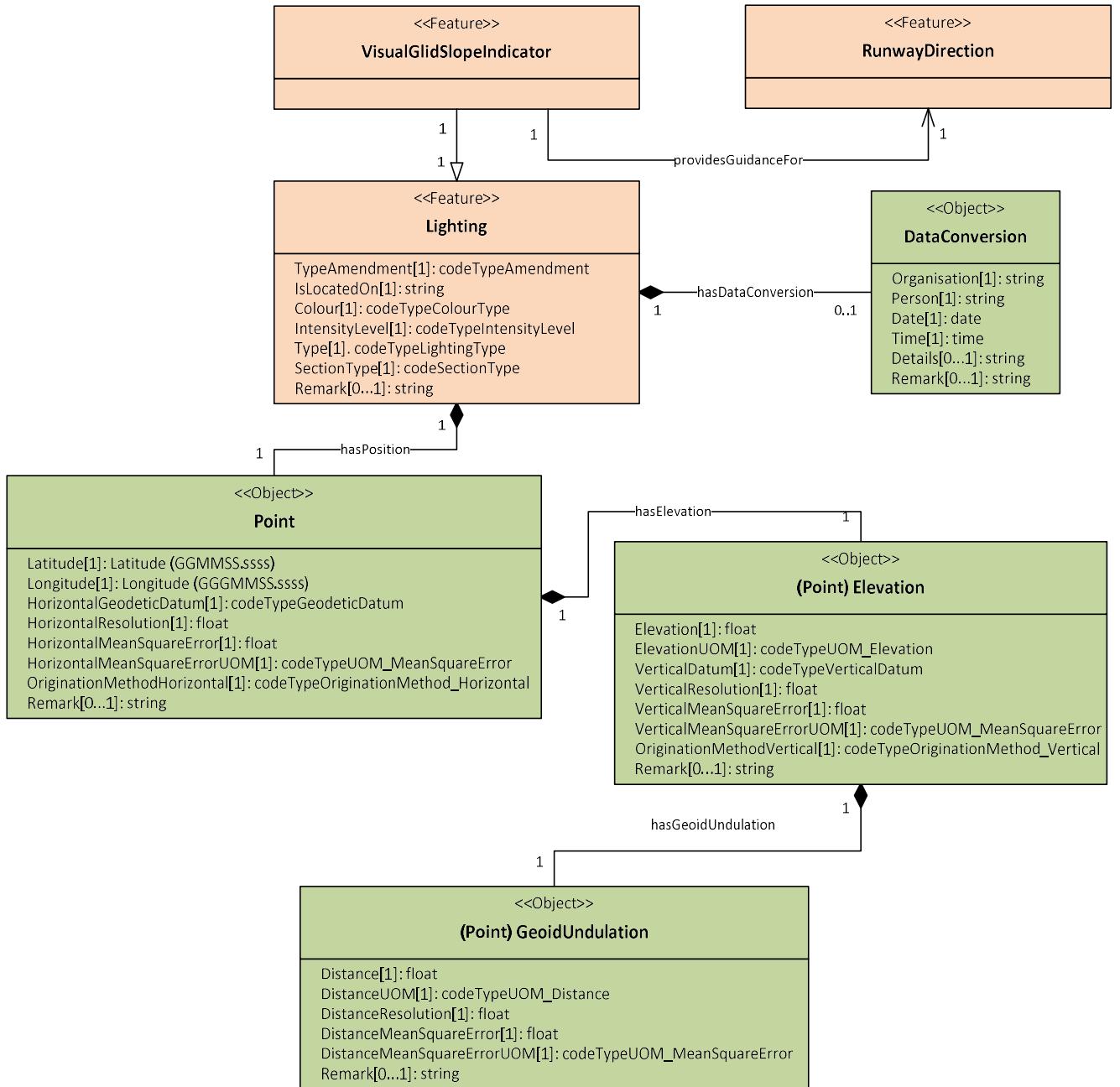


Figure 34: FeatureType: Visual Glide Slope Indicator

Feature Attributes Details:

Attribute name	Data type	Definition
Visual Glide Slope Indicator		
TypeAmendment	codeTypeAmendment	Amendments made to the data (Add, change or delete), applicable for each feature type.
Type	Fehler! Verweisquelle konnte nicht gefunden werden.	A code indicating the type of the visual approach slope indicator system. For example, VASIS, A-VASIS, PAPI, A-PAPI, etc..
Position	codeTypePositionType	A code describing a position, relative to the centreline, of the visual approach slope indicator for a FATO/RWY direction.
NumberBox	float	The number of boxes that compose the visual approach slope indicator system.
Portable	codeTypeYesNoType	A code indicating whether the visual approach slope indicator system is a portable one.
SlopeAngle	float	The appropriate approach slope angle to be used by an aircraft using the approach.
MinimumEyeHeightOverThreshold	float	The Minimum Eye Height over Threshold (MEHT) value. Also known as the threshold crossing height for the Visual Glide Slope Indicator.
EmergencyLighting	codeTypeYesNoType	The availability of a back-up lighting system to be used in case of failure of the main lighting system.
IntensityLevel	codeTypeIntensityLevelType	A code indicating the relative intensity of the lighting system.
Colour	codeTypeColourType	A code indicating the global colour of the lighting system.
Remark	string	Remark
Point		
Elevation		
GeoidUndulation		
DataConversion		

12.35. Feature Type: Buildings

Feature Type Name:	Buildings
Feature Type Definition:	Buildings (of operational significance) and other salient/prominent (aerodrome) features.

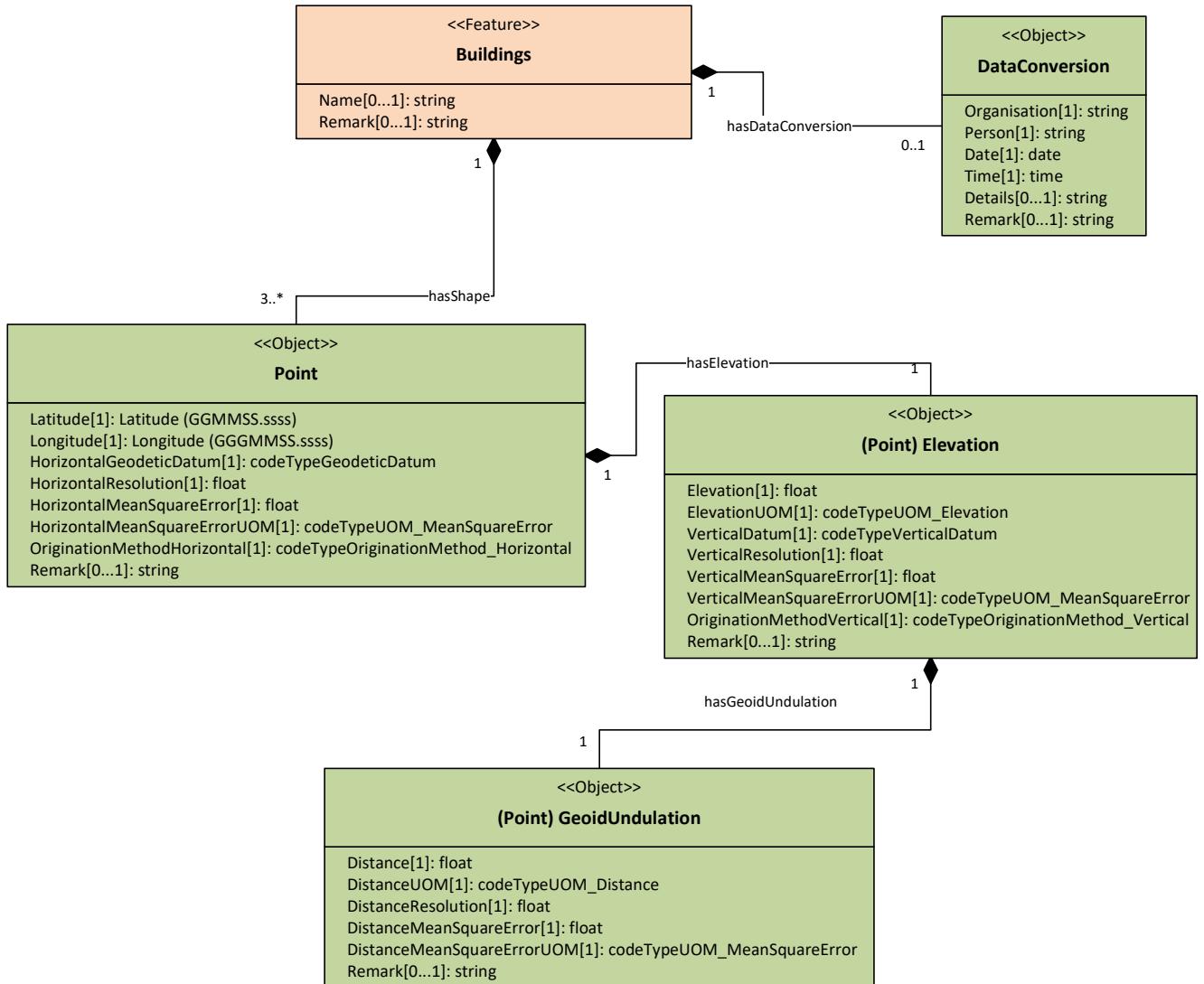


Figure 35: FeatureType: Buildings

Feature Attributes Details:

Attribute name	Data type	Definition
Buildings		
Name	string	Name of the building.
Remark	string	Remark
Point		
Elevation		
GeoidUndulation		
DataConversion		

12.36. Feature Type: Highways and Roads

Feature Type Name:	HighwaysRoads
Feature Type Definition:	All highways and roads having landmark value.

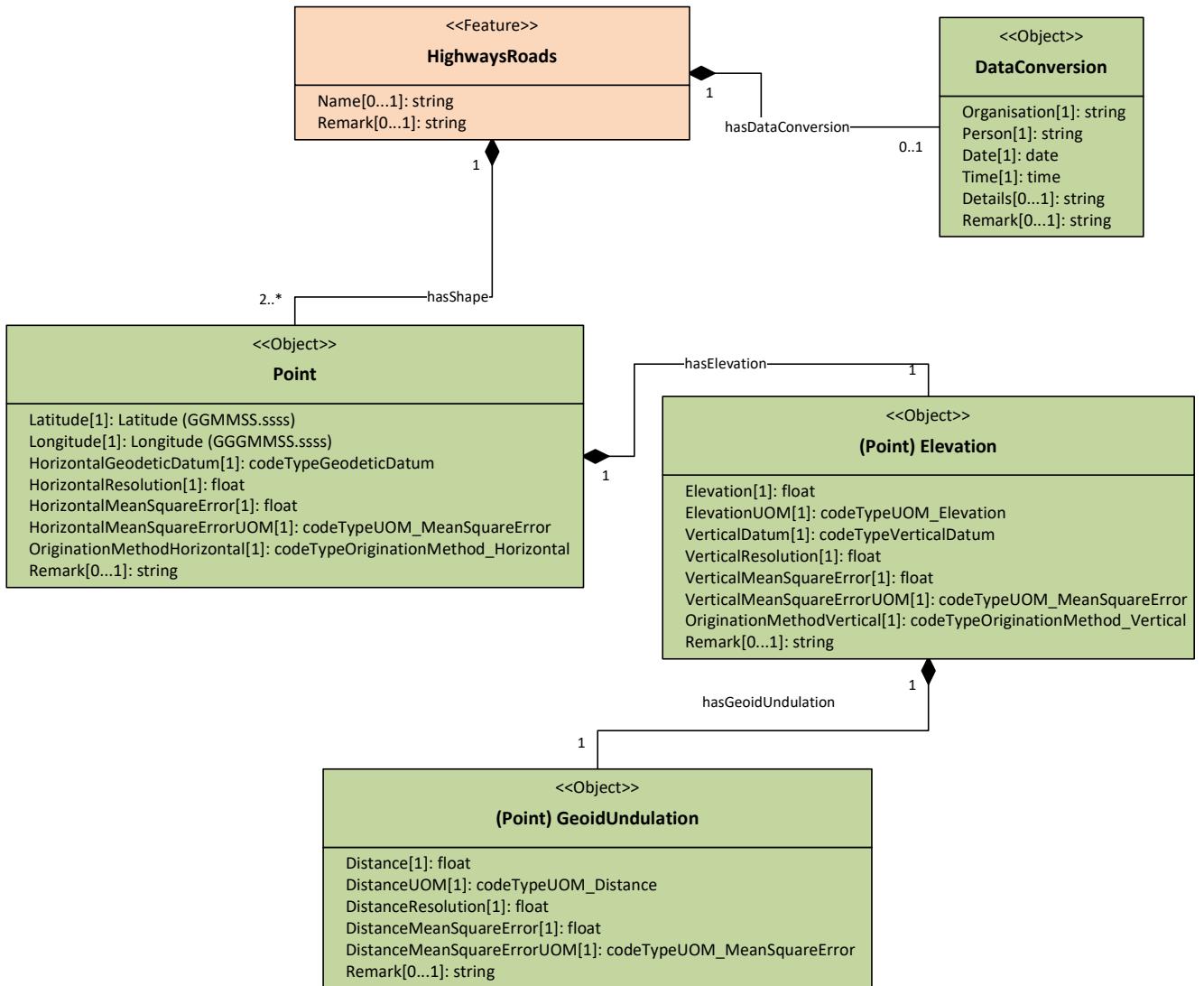


Figure 36: FeatureType: HighwayRoads

Feature Attributes Details:

Attribute name	Data type	Definition
HighwaysRoads		
Name	string	Name of highways and roads
Remark	string	Remark
Point		
Elevation		
GeoidUndulation		
DataConversion		

12.37. Feature Type: Boundaries

Feature Type Name:	Boundaries
Feature Type Definition:	Boundaries

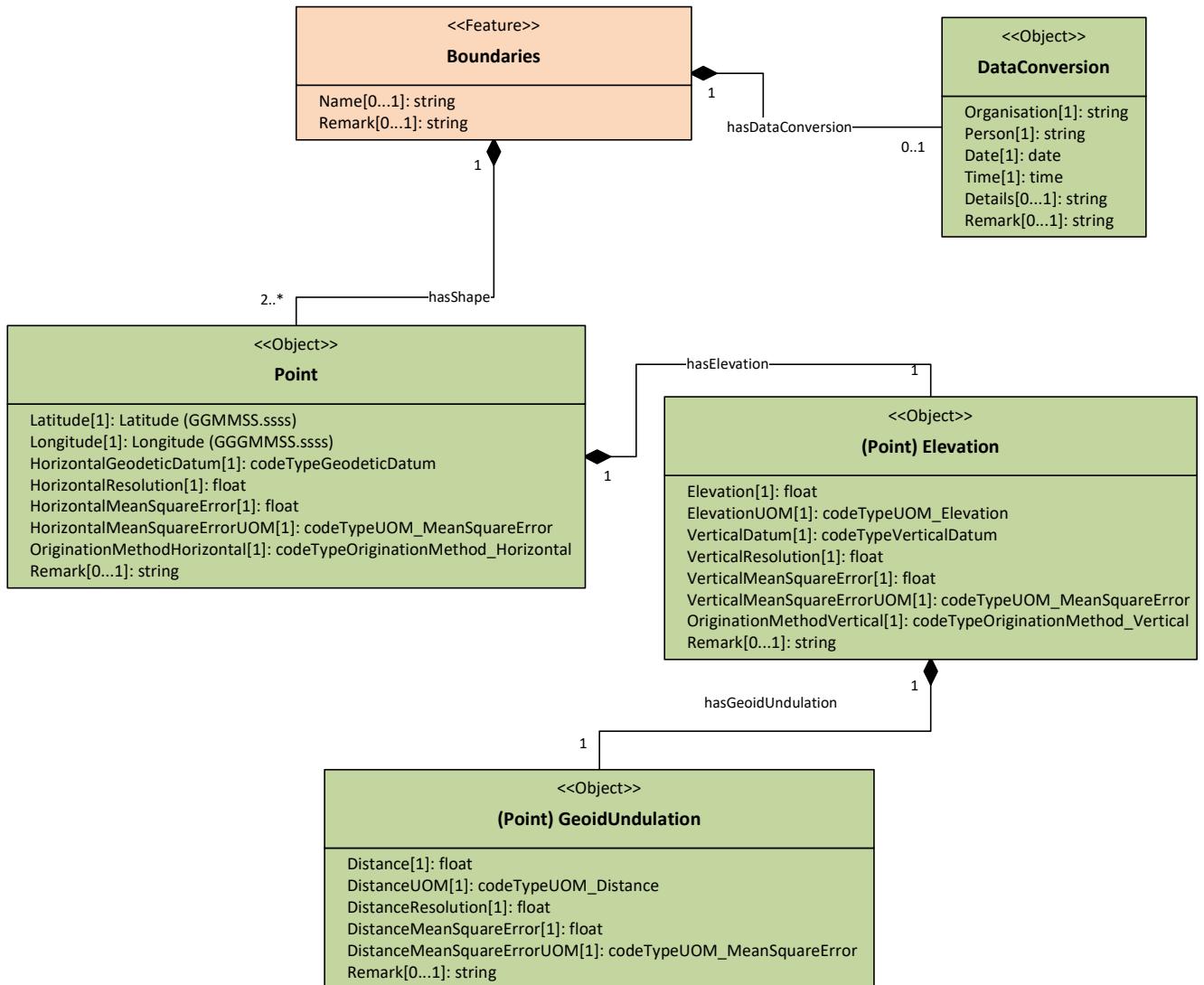


Figure 37: FeatureType: Boundaries

Feature Attributes Details:

Attribute name	Data type	Definition
Boundaries		
Name	string	Name of boundary.
Remark	string	Remark
Point		
Elevation		
GeoidUndulation		
DataConversion		

12.38. Enumerations and code lists

<<Enumeration>>
codeTypeUOM_Temperature
C = Celsius F = Fahrenheit

Figure 39: codeTypeUOM_Temperature

<<Enumeration>>
codeTypeGeodeticDatum
WGS-84 (ITRF2000) = WGS-84 (ITRF2000)

Figure 38: codeTypeGeodeticDatum

<<Enumeration>>
codeTypeUOM_Elevation
FT = Feet M = Metres

Figure 41: codeTypeUOM_Elevation

<<Enumeration>>
codeTypeUOM_Distance
NM = Nautical Miles
FT = Feet
KM = Kilometres
M = Metres
CM = Centimetres

Figure 40: codeTypeUOM_Distance

<<Enumeration>>
codeTypeUOM_MeanSquareError
NM = Nautical Miles
FT = Feet
KM = Kilometres
M = Metres
CM = Centimetres

Figure 42: codeTypeUOM_MeanSquareError

<<Enumeration>>
codeTypeAmendment
ADD = Add
CHG = Change
DEL = Delete

Figure 43: codeTypeAmendment

<<Enumeration>>
codeTypeVerticalDatum

Austrian Geoid 2008 = Austrian Geoid 2008

Figure 44: codeTypeVerticalDatum

<<Enumeration>>
codeTypeOriginationMethod_Horizontal
By geodetic survey (GPS)
By geodetic survey (terrestrial)
By geodetic survey (photogrammetry)
By geodetic survey (other)
By calculation (intersection)
By calculation (bearing/distance from point)
By calculation (other)
By definition

Figure 45: codeTypeOriginationMethod_Horizontal

<<Enumeration>>
codeTypeOriginationMethod_Vertical
By geodetic survey (GPS) By geodetic survey (terrestrial) By geodetic survey (photogrammetry) By geodetic survey (other) By calculation (intersection) By calculation (bearing/distance from point) By calculation (other) By derivation (terrain model) By derivation (other) By definition

Figure 46: codeTypeOriginationMethod_Vertical

<<Enumeration>>
codeTypeADHP
AD = Aerodrome only.
AH = Aerodrome with heliport landing area.
HP = Heliport only.
LS = Landing site.
OTHER = Other

Figure 47: codeTypeADHP

<p><<Enumeration>></p> <p>codeTypeRunwayType</p>
<p>RWY = Runway for airplanes FATO = Final Approach and Take Off Area for helicopters OTHER = Other</p>

Figure 48: codeTypeRunwayType

<p><<Enumeration>></p> <p>codeTypeRunwayElementType</p>
<p>NORMAL = The default type. INTERSECTION = Intersection element - with a runway or with a taxiway. DISPLACED = The element between the start of the runway and the position of the displaced threshold. SHOULDER = Runway or taxiway shoulder element. OTHER = Other</p>

Figure 49: codeTypeRunwayElementType

<p><<Enumeration>></p> <p>codeTypeDeclaredDistanceType</p>
<p>LDA = Landing distance available TORA = Take-off run available TODA = Take-off distance available ASDA = Accelerate-stop distance available DTHR = Threshold displacement (from the physical start of the runway direction). TODAH = Take-Off Distance Available for Helicopters RTODAH = Rejected TODA for Helicopters LDAH = LDA for Helicopters OTHER = Other</p>

Figure 50: codeTypeDeclaredDistanceType

<p><<Enumeration>></p> <p>codeTypeRunwayCentreLinePointType</p>
<p>RWY = Runway for airplanes START = Physical start of a runway direction. THR = Threshold DISTHR = Displaced threshold. TDZ = Touchdown Zone MID = The mid point of the runway END = Physical end of a runway direction START_RUN = Start of take off run LAHSO = Point indicating Land And Hold Short Operation location ABEAM_GLIDESLOPE = The point perpendicular to the Glideslope Antenna on the Runway Centreline. Also known as the Aiming Point. ABEAM_PAR = The point perpendicular to the Precision Approach Radar (PAR) Antenna on the Runway Centreline. ABEAM_ELEVATION = The point perpendicular to the Elevation Antenna on the Runway Centreline. ABEAM_TDR = The point perpendicular to the Touchdown Reflector (TDR) on the Runway Centreline. ABEAM_RER = The point perpendicular to the Runway End Reflector (RER) on the Runway Centreline. OTHER = Other.</p>

Figure 51: codeTypeRunwayCentreLinePointType

7

<p style="text-align: center;"><<Enumeration>></p> <p style="text-align: center;">codeTypeRunwayProtectionAreaType</p>	
<p>CWY = Clearway.</p> <p>RESA = Runway end safety area.</p> <p>OFZ = Obstacle free zone or surface</p> <p>IOFZ = Inner Obstacle free zone or surface</p> <p>POFZ = Precision Obstacle Free Zone</p> <p>ILS = ILS protection area. Protects ILS signal distortion by forbidding large objects in the area.</p> <p>VGSI = Visual Glide Slope Indicator (VGSI) protection area. Protects VGSI signal coverage by forbidding objects in the area.</p> <p>STOPWAY = A defined rectangular area on the ground at the end of take-off run available prepared as a suitable area in which an aircraft can be stopped in the case of an abandoned take-off.</p> <p>OTHER = Other.</p>	

Figure 52: codeTypeRunwayProtectionAreaType

<p style="text-align: center;"><<Enumeration>></p> <p style="text-align: center;">codeTypeHelicopterClass</p>	
<p>1 = Helicopter class 1.</p> <p>2 = Helicopter class 2.</p> <p>3 = Helicopter class 3.</p> <p>OTHER = Other.</p>	

Figure 53: codeTypeHelicopterClass

<p style="text-align: center;"><<Enumeration>></p> <p style="text-align: center;">codeTypeTaxiwayType</p>	
<p>AIR = Air taxiway.</p> <p>GND = Ground taxiway.</p> <p>EXIT = Exit/turnoff taxiway.</p> <p>FASTEXIT = Rapid exit/turnoff taxiway.</p> <p>STUB = Stub taxiway.</p> <p>TURN_AROUND = Turn around.</p> <p>PARALLEL = Parallel taxiway.</p> <p>BYPASS = Bypass holding bay.</p> <p>OTHER = Other.</p>	

Figure 54: codeTypeTaxiwayType

<p style="text-align: center;"><<Enumeration>></p> <p style="text-align: center;">codeTypeNavaidSystemCheckpointType</p>	
<p>INS = Inertial navigation system initialization point.</p> <p>GNSS = Global navigation satellite system.</p> <p>VOR = VHF omnidirectional radio range.</p> <p>DME = Distance Measuring Equipment.</p> <p>TACAN = Tactical Area Navigation Facility.</p> <p>NDB = Non-directional beacon.</p> <p>OTHER = Other.</p>	

Figure 55: codeTypeNavaidSystemCheckpointType

<p style="text-align: center;"><<Enumeration>></p> <p style="text-align: center;">codeTypeAircraftStandType</p>	
<p>NI = Nose-in parking position.</p> <p>ANG_NI = Angled nose-in parking position.</p> <p>ANG_NO = Angled nose-out parking position.</p> <p>PARL = Parallel (to building) parking position.</p> <p>RMT = Remote parking position.</p> <p>ISOL = Isolated parking position.</p> <p>OTHER = Other.</p>	

Figure 56: codeTypeAircraftStandType

<<Enumeration>> codeTypeVisualDockingStationType
<p>NI = Nose-in parking position. ANG_NI = Angled nose-in parking position. ANG_NO = Angled nose-out parking position. PARL = Parallel (to building) parking position. RMT = Remote parking position. ISOL = Isolated parking position. AGNIS = Azimuth Guidance for Nose-In Stand, providing centreline guidance only by using two coloured lights mounted side by side. PAPA = Parallax Aircraft Parking Aid consisting of a large grey/black box that uses the effect of perspective in order to indicate the relative position of the aircraft along the centreline. SAFE_GATE = A type of A-VDGS that uses an aircraft symbol on a display indicating the relative position along the centreline. SAFE_DOC = Safe dock allows aircraft to park up to an accuracy of 10 cm using lasers to attain the aircraft's position. APIS = Aircraft Positioning and Information System that shows azimuth information using a series of parallel and black bars which kink at their midpoint. A_VDGS = (Generic) Advanced Visual Docking Guidance System that features electronic displays which perform the functions of an AGNIS/PAPA installation, although with much greater accuracy. They may also provide collision avoidance from static objects. AGNIS_STOP = AGNIS system complemented with a simple stop light, on the side of the AGNIS display. AGNIS_PAPA = Combined AGNIS and PAPA device. OTHER = Other.</p>

Figure 58: codeTypeVisualDockingStationType

<<Enumeration>> codeTypeGuidanceLineType
<p>RWY = Taxi line on a runway surface, leading between the runway and other airport surfaces. TWY = Taxi line on a taxiway surface, leading between the taxiway and other airport surfaces. APRON = Taxi line on the apron surface. GATE_TLANE = Taxi line on the apron surface, leading to a gate/stand. LI_TLANE = Lead-in taxi line. LO_TLANE = Lead-out taxi line. AIR_TLANE = A virtual taxi line in the air, used by helicopters. OTHER = Other.</p>

Figure 57: codeTypeGuidanceLineType

<<Enumeration>> codeTypeColourType	<<Enumeration>> codeTypeSectionType
<p>YELLOW = Yellow. RED = Red. WHITE = White. BLUE = Blue. GREEN = Green. PURPLE = Purple. ORANGE = Orange. AMBER = Amber. BLACK = Black. BROWN = Brown. GREY = Grey. LIGHT_GREY = Light grey. MAGENTA = Magenta. PINK = Pink. VIOLET = Violet. OTHER = Other.</p>	<p>AFT_THR = After threshold. AIM = Aiming point. CL = Centre line. DESIG = Runway designation. DTHR = Displaced threshold. EDGE = Edge. END = End. RWY_INT = Runway intersections. SIGN = Lighted sign in the side of the holding position. STOP_BAR = Stop-bar. TDZ = Touch done zone. THR = Threshold. TWY_INT = Taxiway intersections. OTHER = Other.</p>

Figure 59: codeTypeSectionType

Figure 60: codeTypeColourType

<<Enumeration>> codeTypeIntensityLevelType
LIL = Light intensity low. LIM = Light intensity medium. LIH = Light intensity high. LIL_LIH = Low intensity for night use; high intensity for day use, as determined by a photo-cell. PREDETERMINED = A predetermined intensity step, in the approach lighting system that takes precedence for air-to-ground radio control over the runway lighting system which is set, based on expected visibility conditions. OTHER = Other.

Figure 61: codeTypeIntensityLevelType

<<Enumeration>> codeTypeLightingType
FLOOD = Flood light. STROBE = Strobe light.. OTHER = Other.

Figure 63: codeTypeLightingType

<<Enumeration>> codeTypeYesNoType
Y = Yes. N = No.

Figure 62: codeTypeYesNoType

<<Enumeration>> codeTypePositionType
LEFT = On the left side of the axis. RIGHT = On the right side of the axis. BOTH = Distributed on both sides of the axis. OTHER = Another position.

Figure 64: codeTypePositionType

<<Enumeration>> codeTypeVASISType
PAPI = Precision approach path indicator. APAPI = Abbreviated precision approach path indicator. HAPI = Helicopter approach path indicator. VASIS = Visual approach slope indicator system. AVASIS = Abbreviated visual approach slow indicator system. TVASIS = T-shaped VASIS ATVASIS = Abbreviated TVASIS 3B_VASIS = 3 bar VASIS. 3B_AVASIS = 3 bar AVASIS. 3B_ATVASIS = 3 bar ATVASIS. PVASI = Pulsating/steady burning visual approach slope indicator, normally a single light unit projecting two colours. TRCV = Tri-colour visual approach slope indicator, normally a single light unit projecting three colours. PNI = Alignment of elements system. ILU = A number of identical light units. OLS = Optical landing system for strip decks and aircraft carriers (sometimes available on ground air bases for training purposes). LCVASI = Low cost visual approach slope indicator: 3 sets of 4 white lights on 3 mounts usually on only one side of the runway. OTHER = Other type of visual approach slope indicator.OTHER = Another position.

Figure 65: codeTypeVASISType

<<Enumeration>> codeTypeComposition
<p>ASPH = Asphalt.</p> <p>ASPH_GRASS = Asphalt and grass.</p> <p>CONC = Concrete.</p> <p>CONC_ASPH = Concrete and asphalt.</p> <p>CONC_GRS = Concrete and grass.</p> <p>GRASS = Grass including portions of turf or bare earth.</p> <p>SAND = Sand.</p> <p>WATER = Water.</p> <p>BITUM = Bituminous tar or asphalt and/or oil or bitumen bound, mix-in-place surfaces (often referred to as "earth cement"). [note: A bituminous tar or asphalt surface is prepared by digging up the surface, mixing the material with bitumen or oil binder, and surfacing the surface with the resulting mixture. Bitumen is the family name for tar which is derived from coal, or asphalt which is derived from oil. .]</p> <p>BRICK = Brick.</p> <p>MACADAM = A macadam or tarmac surface consisting of water-bound crushed rock.</p> <p>STONE = Stone.</p> <p>CORAL = Coral.</p> <p>CLAY = Clay.</p> <p>LATERITE = Laterite - a high iron clay formed in tropical areas.</p> <p>GRAVEL = Gravel.</p> <p>EARTH = Earth (in general).</p> <p>ICE = Ice.</p> <p>SNOW = Snow.</p> <p>MEMBRANE = A protective laminate usually made of rubber.</p> <p>METAL = Metal - steel, aluminium.</p> <p>MATS = Landing mat portable system usually made of aluminium.</p> <p>PIERCED_STEEL = Pierced steel planking.</p> <p>WOOD = Wood.</p> <p>NON_BITUM_MIX = Non Bituminous mix.</p> <p>OTHER = Other.</p>

Figure 67: codeTypeComposition

<<Enumeration>> codeTypePreparation
<p>NATURAL = Natural surface; no treatment.</p> <p>ROLLED = Rolled.</p> <p>COMPACTED = Compacted</p> <p>GRADED = Graded.</p> <p>GROOVED = Cut or plastic grooved.</p> <p>OILED = Oiled.</p> <p>PAVED = Paved.</p> <p>PFC = Porous friction coat.</p> <p>AFSC = Aggregate friction seal coat.</p> <p>RFSC = Rubberised friction seal coat.</p> <p>NON_GROOVED = This covers such items as 'APSHALT NON GROOVED'.</p> <p>OTHER = Other.</p>

Figure 66: codeTypePreparation

<<Enumeration>>
codeTypeCondition
GOOD = Good.
FAIR = Fair.
POOR = Poor.
UNSAFE = Unsafe for use.
DEFORMED = Presenting deformations.
OTHER = Other.

Figure 74: codeTypeCondition

<<Enumeration>>
codeTypePCNPavementType
RIGID = Rigid pavement.
FLEXIBLE = Flexible pavement.
OTHER = Other.

Figure 73: codeTypePCNPavementType

<<Enumeration>>
codeTypePCNSubgradeType
A = High strength sub-grade.
B = Medium strength sub-grade.
C = Low strength sub-grade.
D = Ultra-low strength sub-grade.
OTHER = Other.

Figure 72: codeTypePCNSubgradeType

<<Enumeration>>
codeTypePCNTyrePressureType
W = High: No pressure limit.
X = Medium: Pressure limited to 1.5 MPa (217 psi).
Y = Low: Pressure limited to 1.00 MPa (145 psi).
Z = Very low: Pressure limited to 0.50 MPa (73 psi).
OTHER = Other.

Figure 71: codeTypePCNTyrePressureType

<<Enumeration>>
codeTypePCNMethodType
TECH = Technical evaluation.
ACFT = Based on aircraft experience.
OTHER = Other.

Figure 70: codeTypePCNMethodType

<<Enumeration>>
codeTypeMarkingStyleType
SOLID = Solid line.
DASHED = Dashed line.
DOTTED = Dotted line.
OTHER = Other.

Figure 69: codeTypeMarkingStyleType

<<Enumeration>>
codeTypeAircraftGroundServiceType
DEICE = De-icing service.
HAND = Handling service.
HANGAR = Hangar service.
REPAIR = Repairing service.
REMOVE = Removal of disabled aircraft.
OTHER = Other.

Figure 68: codeTypeAircraftGroundServiceType

13. ANNEX B: Feature catalogue for non geo-spatial aerodrome related data

13.1. Feature Type: Aerodrome location indicator and name

Feature Type Name:	Aerodrome/Heliport
Feature Type Definition:	ICAO location indicator allocated to the aerodrome and the name of aerodrome.

Feature Attributes:

- location indicator ICAO
- AD/HP name

13.2. Feature Type: Aerodrome administrative data

Feature Type Name:	Aerodrome/Heliport
Feature Type Definition:	Several aerodrome administrative data.

Feature Attributes:

- direction and distance of aerodrome reference point from centre of the city or town which the aerodrome serves
- reference temperature
- name of aerodrome operator, address, telephone and telefax numbers, e-mail address, AFS address and, if available, website address
- types of traffic permitted to use the aerodrome (IFR/VFR)
- remarks

13.3. Feature Type: Operational hours

Feature Type Name:	Aerodrome/Heliport operational hours
Feature Type Definition:	Detailed description of the hours of operation of services at the aerodrome

Feature Attributes:

- aerodrome operator
- customs and immigration
- health and sanitation
- fuelling
- handling
- security
- de-icing
- remarks

13.4. Feature Type: Handling services and facilities

Feature Type Name:	Aerodrome/Heliport handling services and facilities
Feature Type Definition:	Detailed description of the handling services and facilities available at the aerodrome

Feature Attributes:

- cargo-handling facilities
- fuel and oil types
- fuelling facilities and capacity
- de-icing facilities
- hangar space for visiting aircraft
- repair facilities for visiting aircraft
- remarks

13.5. Feature Type: Passenger facilities

Feature Type Name:	Aerodrome/Heliport passenger facilities
Feature Type Definition:	Brief description of passenger facilities available at the aerodrome

Feature Attributes:

- hotel(s) at or in the vicinity of aerodrome
- restaurant(s) at or in the vicinity of aerodrome
- transportation possibilities
- **medical facilities**
- bank and post office at or in the vicinity of aerodrome
- tourist office
- remarks

13.6. Feature Type: Rescue and firefighting services

Feature Type Name:	Aerodrome/Heliport rescue and firefighting services
Feature Type Definition:	Detailed description of the rescue and firefighting services and equipment available at the aerodrome

Feature Attributes:

- aerodrome category for firefighting
- rescue equipment
- capability for removal of disabled aircraft
- remarks

13.7. Feature Type: Seasonal availability - clearing

Feature Type Name:	Aerodrome/Heliport seasonal availability - clearing
Feature Type Definition:	Detailed description of the equipment and operational priorities established for the clearance of aerodrome movement areas

Feature Attributes:

- type(s) of clearing equipment
- clearance priorities
- remarks

13.8. Feature Type: Apron, taxiway and check locations/positions data

Feature Type Name:	Aerodrome/Heliport apron, taxiway and check locations/positions data
Feature Type Definition:	Details related to the physical characteristics of aprons, taxiways and locations/positions of designated checkpoints

Feature Attributes:

- surface and strength of aprons
- surface and strength of taxiways
- location and elevation to the nearest metre or foot of altimeter checkpoints
- remarks

Note: If check locations/positions are presented on an aerodrome chart, a note to that effect must be provided under this subsection

Note: Be aware that geospatial data (e.g. width of taxiway, location of checkpoints), if provided, shall be delivered according to the feature catalogue specification:

- for taxiways, see chapter 12.25,
- for apron, see chapter 12.26,
- for checkpoints, see chapter 12.26

13.9. Feature Type: Surface movement guidance and control system and markings

Feature Type Name:	Aerodrome/Heliport surface movement guidance and control system and markings
Feature Type Definition:	Brief description of the surface movement guidance and control system and runway and taxiway markings

Feature Attributes:

- use of aircraft stand identification signs, taxiway guide lines and visual docking/parking guidance system at aircraft stands
- runway and taxiway markings and lights
- stop bars (if any)
- remarks

13.10. Feature Type: Runway physical characteristics

Feature Type Name:	Aerodrome/Heliport runway physical characteristics
Feature Type Definition:	Detailed description of runway physical characteristics, for each runway

Feature Attributes:

- designations
- strength of pavement (PCN and associated data) and surface of each runway and associated stopways
- slope of each runway and associated stopways
- the existence of an obstacle-free zone
- remarks

Note: Be aware that geospatial data (e.g. coordinates for thresholds, dimensions of stopway,...), if provided, shall be delivered according to the feature catalogue specification:

- for runways, see chapter 12.18,
- for runway centre line points, see chapter 12.20,
- for taxiways, see chapter 12.25

13.11. Feature Type: Approach and runway lighting

Feature Type Name:	Aerodrome/Heliport approach and runway lighting
Feature Type Definition:	Detailed description of approach and runway lighting

Feature Attributes:

- runway designator
- type, length and intensity of approach lighting system
- runway threshold lights, colour and wing bars
- length of runway touchdown zone lights
- length, spacing, colour and intensity of runway centre line lights
- length, spacing, colour and intensity of runway edge lights
- colour of runway end lights and wing bars
- length and colour of stopway lights
- remarks

13.12. Feature Type: Other lighting, secondary power supply

Feature Type Name:	Aerodrome/Heliport other lighting, secondary supply.
Feature Type Definition:	Description of other lighting and secondary power supply

Feature Attributes:

- location, characteristics and hours of operation of aerodrome beacon/identification beacon (if any)
- location and lighting (if any) of anemometer/landing direction indicator
- taxiway edge and taxiway centre line lights
- secondary power supply including switch-over time
- remarks

13.13. Feature Type: Helicopter landing area

Feature Type Name:	Aerodrome/Heliport landing area.
Feature Type Definition:	Detailed description of helicopter landing area provided at the aerodrome

Feature Attributes:

- surface type, bearing strength and marking
- approach and FATO lighting
- remarks

Note: Be aware that geospatial data (e.g. coordinates within TLOF/FATO, True bearings of FATO...), if provided, shall be delivered according to the feature catalogue specification

- for TLOF, see chapter 12.24,
- for Bearings, see chapter 12.21

13.14. Feature Type: Local traffic regulations

Feature Type Name:	Aerodrome/Heliport local traffic regulations
Feature Type Definition:	Detailed description of regulations applicable to the traffic at the aerodrome including standard routes for taxiing aircraft, parking regulations, school and training flights and similar but excluding flight procedures.

Feature Attributes:

- [description](#)
- [remarks](#)

13.15. Feature Type: Noise abatement procedures

Feature Type Name:	Aerodrome/Heliport noise abatement procedures
Feature Type Definition:	Detailed description of noise abatement procedures established at the aerodrome.

Feature Attributes:

- [description](#)
- [remarks](#)

13.16. Feature Type: Charts related to an aerodrome

Feature Type Name:	Aerodrome/Heliport related charts
Feature Type Definition:	Several charts related to an aerodrome to be included in the following order:

- Aerodrome/Heliport Chart – ICAO
- Aircraft Parking/Docking Chart – ICAO
- Aerodrome Ground Movement Chart – ICAO
- Aerodrome Obstacle Chart – ICAO Type A (for each runway)
- Aerodrome Terrain and Obstacle Chart – ICAO (Electronic)
- Precision Approach Terrain Chart – ICAO (precision approach CAT II and III runways)

14. ANNEX C: AerodromeDataExchange_Template_1.2.xml

Example of the AerodromeDataExchange_Template_1.2.xml:

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