Analysis of differences between Regulation (EU) 73/2010 vs. EASA Opinion 02/2018; regarding Data Set Specification, Data Exchange & Metadata requirements							
Topic	**Regulation 73/2010**		**Opinion 02/2018**		**AMC & GM**		**Conclusion & Comments**
DEFINITIONS							
Data Quality Definition	3. 'data quality' means a degree or level of confidence that the data provided meets the requirements of the data user in terms of accuracy, resolution and integrity;	Article 3 Definitions	'data quality' means a degree or level of confidence that the provided data meets the user's data requirements in terms of accuracy, resolution, integrity (or equivalent assurance level), traceability, timeliness, completeness, and format;	Annex I Definitions of Terms used in Annex II to XIII	n/a	n/a	4 additional criteria added based on ICAO Annex 15 (Amdt 40)
completeness (of data)	n/a	n/a	'completeness (of data)' means the degree of confidence that all data needed to support the intended use is provided;	Annex I Definitions of Terms used in Annex II to XIII	n/a	n/a	New definition
format (of data)	n/a	n/a	'format (of data)' means a structure of data items, records and files arranged to meet standards, specifications or data quality requirements;	Annex I Definitions of Terms used in Annex II to XIII	n/a	n/a	New definition
timeliness (of data)	n/a	n/a	'timeliness (of data)' means the degree of confidence that the data is applicable to the period of its intended use;	Annex I Definitions of Terms used in Annex II to XIII	n/a	n/a	New definition
traceability (of data)	n/a	n/a	'traceability (of data)' means the degree to which a system or a data product can provide a record of the changes made to that product and thereby enable an audit trail to be followed from the end-user to the party originating data;	Annex I Definitions of Terms used in Annex II to XIII	n/a	n/a	New definition
IAIP vs. Aeronautical Information Product	7. 'integrated aeronautical information package' (hereinafter IAIP) means a package which consists of the following elements: (a) aeronautical information publications (hereinafter AIP), including amendments; (b) supplements to the AIP; (c) the NOTAM, as defined in point 17 and pre-flight information bulletins; (d) aeronautical information circulars; and (e) checklists and lists of valid NOTAMs;	Article 3 Definitions	'aeronautical information product' means aeronautical data and aeronautical information provided either as digital data sets or as a standardised presentation in paper or electronic media. Aeronautical information products include: — Aeronautical Information Publication (AIP), including Amendments and Supplements — Aeronautical Information Circulars (AIC) — Aeronautical charts — NOTAM — Digital data sets	Annex I Definitions of Terms used in Annex II to XIII	n/a	n/a	In order to take into account the concept of 'integrated aeronautical information package' being replaced by 'aeronautical information product' as per amendment 40 to ICAO Annex 15. Mainly Digital data set added
data set	n/a	n/a	'data set' means an identifiable collection of data;	Annex I Definitions of Terms used in Annex II to XIII	n/a	n/a	New definition

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data set series	n/a	n/a	'data set series' means a collection of data sets sharing the same product specification;	Annex I Definitions of Terms used in Annex II to XIII	n/a	n/a	New definition
data product specification'	n/a	n/a	'data product specification' means a detailed description of a data set or data set series together with additional information that will enable it to be created, supplied to and used	Annex I Definitions of Terms used in Annex II to XIII	n/a	n/a	New definition
feature	n/a	n/a	'feature' means an abstraction of real world phenomena;	Annex I Definitions of Terms used in Annex II to XIII	n/a	n/a	New definition
feature attribute	n/a	n/a	'feature attribute' means the characteristic of a feature that has a name, a data type and a value domain associated with it;	Annex I Definitions of Terms used in Annex II to XIII	n/a	n/a	New definition
feature type	n/a	n/a	'feature type' means a class of real world phenomena with common properties, which forms the basic level of classification in a feature catalogue;	Annex I Definitions of Terms used in Annex II to XIII	n/a	n/a	New definition
metadata	n/a	n/a	'metadata' means data about data;	Annex I Definitions of Terms used in Annex II to XIII	n/a	n/a	New definition
survey data	11. 'survey data' means geospatial data that is determined by measurement or survey;	Article 3 Definitions	n/a	n/a	n/a	n/a	Term is not used anymore
next intended user	14. 'next intended user' means the entity that receives the aeronautical information from the aeronautical information service provider;	Article 3 Definitions	n/a	n/a	n/a	n/a	Term is not used anymore See AIS.OR.340 Metadata requirements Each data set shall include a minimum set of metadata that needs to be provided to the next ~~intended~~ user.
direct electronic connection	15. 'direct electronic connection' means a digital connection between computer systems such that data may be transferred between them without manual interaction;	Article 3 Definitions	n/a	n/a	The exchange of aeronautical data and aeronautical information may be done by a number of electronic exchanges avoiding the need of manual interaction with the data itself.	GM1 AIS.OR.210(b) Exchange of aeronautical data and information. ELECTRONIC MEANS	Term "Electronic means" is used instaed, see AIS.OR.210 Exchange of aeronautical data and aeronautical information, etc.

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					The transmission of aeronautical data and aeronautical information may be done by different electronic means avoiding the need of manual interaction with the data itself.	GM1 ATM/ANS.OR.A.085(c) Aeronautical data quality management ELECTRONIC MEANS	Term "Electronic means" is used instaed, see ATM/ANS.OR.A.085 Aeronautical data quality management c)
					The transmission of aeronautical data and aeronautical information may be done by different electronic means avoiding the need of manual interaction with the data itself.	AMC/GM TO APPENDIX 1 (TO ARTICLE 3(5)) 'REQUIREMENTS FOR PARTIES ORIGINATING DATA' GM1 10. Data transmission ELECTRONIC MEANS	
							Commission Regulation (EU) No 139/2014 ADR.OPS.A.050 Data transmission The aerodrome operator shall ensure that aeronautical data is transmitted by electronic means.
digital NOTAM	18. 'digital NOTAM' means a data set that contains the information included in a NOTAM in a structured format which can be fully interpreted by an automated computer system without human interpretation;	Article 3 Definitions	n/a	n/a	n/a	n/a	Term is not used anymore
DATA SET SPECIFICATION							
Data set	The parties referred to in Article 2(2) shall provide aeronautical data and aeronautical information in accordance with the data set specifications described in Annex I.	Article 4 Data set	An AIS provider shall ensure that: (a) aeronautical data and aeronautical information are provided in accordance with the specifications laid down in the aeronautical data catalogue, specified in Appendix 1 to Annex III (Part-ATM/ANS.OR);	Annex VI of Reg. 2017/373 (Part-AIS) AIS.OR.200 General	The aeronautical data catalogue presents the scope of data that can be collected and maintained by the AIS providers and provides a common terminology that can be used by data originators and service providers.	GM1 AIS.OR.200 General AERONAUTICAL DATA CATALOGUE	The data set specifications are contained in the aeronautical data catalogue which is in Appendix 1 to Annex III of Regulation 2017/373
			When originating, processing or transmitting data to the AIS provider, service providers shall: (a) ensure that aeronautical data within Appendix 1 to this Part-ATM/ANS.OR conform to the aeronautical data catalogue specifications;.	Annex III of Reg. 2017/373 (Part-ATM/ANS.OR) ATM/ANS.OR.A.085 Aeronautical data quality management	The aeronautical data catalogue presents the scope of data that can be collected and maintained by the aeronautical information services providers and provides a common terminology that can be used by data originators and service providers.	GM1 ATM/ANS.OR.A.085 Aeronautical data quality management PURPOSE	

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			(5) When aeronautical data and aeronautical information is originated by parties other than service providers regulated by this Regulation or other than aerodrome operators regulated by Regulation (EU) No 139/2014, Member States shall ensure that: (i) those aeronautical data and aeronautical information meet the requirements laid down in: (A) ATM/ANS.OR.A.085, except those in points (e), (g) and (h);	Article 3 of Reg. 2017/373 (for data origination)	(a) In order to ensure that parties originating data and aeronautical information comply with the provisions relevant to them, Member States should ensure that, at national level, such parties can document data origination activities, especially their working methods and operating procedures. etc...	AMC1 Article 3(5) Provision of ATM/ANS, flight procedure design and airspace structure design, and ATM network functions AERONAUTICAL INFORMATION — DATA ORIGINATION	
			When originating, processing or transmitting data to the AIS provider, the aerodrome operator shall ensure that aeronautical data within Appendix 1 to Annex III (Part-ATM/ANS.OR) of Commission Implementing Regulation (EU) No 2017/373 conform to the data catalogue specifications.	Annex IV of Reg. 139/2014 (Part-ADR.OPS) ADR.OPS.A.030 Aeronautical data catalogue	The aeronautical data catalogue presents the scope of data that can be collected and maintained by the aeronautical information services providers and provides a common terminology that can be used by data originators and service providers.	GM1 ADR.OPS.A.030 Aeronautical Data Catalogue GENERAL	
DATA SET SPECIFICATIONS	DATA SET SPECIFICATIONS REFERRED TO IN ARTICLE 4	ANNEX I	Data Catalogue	Appendix 1 to ANNEX III	n/a	n/a	The NPA text introduces the data catalogue, which partially covers the data set specifications foreseen in Article 4 of Regulation 73/2010. The aeronautical data catalogue in Appendix 1 to Annex III (ATM/ANS.OR) is transposed from the ICAO one. The data set specifications are identified throughout the data quality requirements in Part-AIS. The aeronautical data catalogue covers: — definition of aeronautical features — the values of each attributes and the definition of a temporal model — the constraints of the possible values — the naming convention — the description of geometrical elements The description of the metadata

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	1. The aeronautical data and aeronautical information referred to in points (a), (b) and (d) of the second subparagraph of Article 2(1) shall be provided according to a common data set specification which shall:	PART A, 1. IAIP, aerodrome mapping and electronic obstacle data	n/a	n/a	(b) The exchange model used should:	AMC1 AIS.TR.210 Exchange of aeronautical data and aeronautical information	There are requirements listed that have nothing to do with the exchange model, but with the coneceptual(logical) model, e.g. UML
	(a) be documented either: — by using the unified modelling language (UML), specified in the document referred to in point 13 of Annex III, in the form of class diagrams and associated definitions for classes, attributes, associations and lists of values, or	PART A, 1.a IAIP, aerodrome mapping and electronic obstacle data	n/a	n/a	(1) use the unified modelling language (UML) to describe the aeronautical information features and their properties, associations and data types;	AMC1 AIS.TR.210 Exchange of aeronautical data and aeronautical information EXCHANGE MODELS	In the AMC UML is still used, Feature Catalogue is not. But, Feature Catalogue is required for Aerodrome mapping data sets.
	— by using a feature catalogue specified in accordance with the ISO standard referred to in point 25 of Annex III;		The content and structure of aerodrome mapping data sets shall be defined in terms of an application schema and a feature catalogue	AIS.TR.365 Aerodrome mapping data sets	ISO Standard 19109 contains standards for application schemas, while ISO Standard 19110 describes the feature cataloguing methodology for geographic information.	GM1 AIS.TR.365(d) Aerodrome mapping data sets	Feature Catalogue is required for Aerodrome mapping data sets. Application schema requirement is new.
	(b) define, as individual data elements, each aeronautical feature for which the information is requested to be published in accordance with the ICAO standards referred to in point 10 of Annex III and the Eurocae document referred to in point 24 of Annex III;	PART A, 1.b IAIP, aerodrome mapping and electronic obstacle data	n/a	n/a	(6) cover all the features, attributes, data types and associations of the aeronautical information model;	AMC1 AIS.TR.210 Exchange of aeronautical data and aeronautical information EXCHANGE MODELS	There is still a reference to ICAO Annex 15 as the Data Catalogue is part of ICAO ANNEX 15 documentation. EUROCAE ED-99 (Aerodrome Mapping data) is not mentioned in the new rule anymore. The term aeronautical information model is not defined in the Opinion!
	(c) provide for each attribute the definition of its allowable values in the form of a data type, a range of values or an enumerated list;	PART A, 1.c IAIP, aerodrome mapping and electronic obstacle data	See Topic Data set	See Topic Data set	See Topic Data set	See Topic Data set	The Data catalogue defines some basic data types for each property (e.g. Text, Date, Point, Distance, Elevation, Code list, etc) but does not provide any further details such as range of values or enumerated lists.
			n/a	n/a	(2) include data value constraints and data verification rules;	AMC1 AIS.TR.210 Exchange of aeronautical data and aeronautical information EXCHANGE MODELS	Instead of allowable values the term data value constraint is used in the AMC.

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	(d) include the definition of a temporal model, UTC based, which can express the complete lifecycle of an aeronautical feature: — from the creation date and time to the date and time of permanent withdrawal, — including the permanent changes that create new baselines for that feature;	PART A, 1.d IAIP, aerodrome mapping and electronic obstacle data	n/a	n/a	(4) include a temporality model to enable capturing the evolution of the properties of an aeronautical information feature during its life cycle.	AMC1 AIS.TR.210 Exchange of aeronautical data and aeronautical information EXCHANGE MODELS	permanent changes that create new baselines for that feature is replaced by evolution of the properties of an aeronautical information
	(e) include the definition of the rules that may constrain the possible values of the feature properties or the temporal variation of these values. This shall include, as a minimum: — constraints that impose accuracy, resolution and integrity for positional (horizontal and vertical) data, — constraints that impose the timeliness of the data;	PART A, 1.e IAIP, aerodrome mapping and electronic obstacle data	n/a	n/a	(2) include data value constraints and data verification rules;	AMC1 AIS.TR.210 Exchange of aeronautical data and aeronautical information EXCHANGE MODELS	In the new rule no minimum of the data verification rules is defined!
	(f) apply a naming convention for features, attributes and associations, which avoids the use of abbreviations;	PART A, 1.f IAIP, aerodrome mapping and electronic obstacle data	n/a	n/a	n/a	n/a	Just references to aeronautical data catalogue
	(g) base the description of geometrical elements (point, curve, surface) on the ISO standard referred to in point 14 of Annex III;	PART A, 1.g IAIP, aerodrome mapping and electronic obstacle data	(a) A standard for geographic information shall be used as a reference framework.	AIS.TR.335 General— Digital data sets	The ISO 19100 series of standards for geographic information may be used as a reference framework.	GM1 AIS.TR.335(a) General— Digital data sets ISO	The data catalogue defines 3 basic geometrical elements i.e. Point, Line, Polygon. Just a GM referring to the ISO 19100 series but not to 19107!
	(h) base the description of the metadata information on the ISO standard referred to in point 5 of Annex III;	PART A, 1.h IAIP, aerodrome mapping and electronic obstacle data	n/a	n/a	Further explanation on the schema required for describing geographic information and services by means of metadata may be found in the International Organisation for Standardisation, ISO 19115 — Geographic information — Metadata, Part I.	GM1 AIS.TR.225 Metadata ISO	

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	(i) include the metadata items listed in Annex I, Part C.	PART A, 1.i IAIP, aerodrome mapping and electronic obstacle data	see Metadata	see Metadata	(3) include provisions for metadata	AMC1 AIS.TR.210 Exchange of aeronautical data and aeronautical information EXCHANGE MODELS	The AIS-AIM rules cover the requirements laid down in Annex I, Part C of Reg. 73/2010. Metadata items is now copied from new PANS-AIM
	2. Regarding the ISO standards, the relevant certificate issued by an appropriately accredited organisation, shall be considered as a sufficient means of compliance. The parties referred to in Article 2(2) shall accept the disclosure of the documentation related to the certification to the national supervisory authority upon the latter's request.	PART A, 2. IAIP, aerodrome mapping and electronic obstacle data	n/a	n/a	n/a	n/a	This paragraph is already covered by AMC1 ATM/ANS.OR.B.005(a) Management system with regard to ISO 9001 certificate for service providers.
	The electronic terrain data referred to in point (c) of the second subparagraph of Article 2(1) shall:	PART B Electronic terrain data sets	n/a	n/a	n/a	n/a	
	(a) be provided digitally in accordance with the ICAO standards referred to in points 9 and 12 of Annex III;	"PART B.a Electronic terrain data sets"	When terrain data sets are provided in accordance with AIS.OR.355	AIS.TR.355 Terrain data sets	n/a	n/a	Old rule just had a reference to ICAO Annex 15 requirements, New rule includes the ICAO Annex 15 requirements
	(b) include the metadata items listed in Annex I, Part C.	"PART B.b Electronic terrain data sets"	see Metadata	see Metadata	The existing formats for the exchange of electronic terrain datasets do not fully meet the requirements of the ISO 19100 series on geographic information, therefore the GeoTIFF format with metadata is preferred. Further formats may include Shape file.	GM1 AIS.OR.210(a) Exchange of aeronautical data and aeronautical information DIGITAL TERRAIN DATA	The AIS-AIM rules cover the requirements laid down in Annex I, Part C of Reg. 73/2010. Metadata items is now copied from new PANS-AIM
METADATA							
Metadata	The metadata for the data set specifications defined in Part A and Part B shall include the following items, as a minimum:	PART C Metadata	An AIS provider shall collect and preserve metadata	ANNEX VI of Reg. 2017/373 (Part-AIS) AIS.OR.225 Metadata	When collecting metadata, the protection of individuals with regard to the processing of personal data and on the free movement of such data applies, in accordance with Directive 95/46/EC on Data protection.	GM1 AIS.OR.225 Metadata PERSONAL DATA	The AIS-AIM text is based on ICAO Annex 15 and PANS-AIM. AIS.OR225 is general requirement AISOR.340 is a requirement for Digital data sets The metadata requirements are

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			Each data set shall include a minimum set of metadata to be provided to the next user.	ANNEX VI of Reg. 2017/373 (Part-AIS) AIS.OR.340 Metadata requirements	n/a	n/a	applicable to service providers, AIS providers and for data origination.
			n/a	n/a	(b) The exchange model used should: (3) include provisions for metadata;	AMC1 AIS.TR.210 Exchange of aeronautical data and aeronautical information EXCHANGE MODELS	
			The metadata to be collected shall include, as a minimum:	ANNEX VI of Reg. 2017/373 (Part-AIS) AIS.TR.225 Metadata	n/a	n/a	
			The minimum metadata for each data set shall include:	ANNEX VI of Reg. 2017/373 (Part-AIS) AIS.TR.340 Metadata requirements	n/a	n/a	AIS.TR.340 is for digital data set (whereas AIS.TR225 are general requirements for metadata collection)
			[…] service providers shall: (f) collect and transmit metadata, which shall include, as a minimum:	ANNEX III of Reg. 2017/373 (Part-ATM/ANS.OR) ATM/ANS.OR.A .085.b	n/a	n/a	
			[…] service providers shall: (b) meet the following data quality requirements: (5) the traceability of aeronautical data shall be ensured;	ANNEX III of Reg. 2017/373 (Part-ATM/ANS.OR) ATM/ANS.OR.A .085.b.5	Traceability is supported by maintaining the metadata.	GM1 ATM/ANS.OR.A.085(b)(5) Aeronautical data quality management TRACEABILITY	
			The aerodrome operator shall ensure that metadata include, as a minimum:	ADR.OPS.A.045 Metadata	n/a	n/a	
			(5) When aeronautical data and aeronautical information is originated by parties other than service providers regulated by this Regulation or other than aerodrome operators regulated by Regulation (EU) No 139/2014, Member States shall ensure that: (i) those aeronautical data and aeronautical information meet the requirements laid down in: (A) ATM/ANS.OR.A.085, except those in points (e), (g) and (h);	Article 3 of Reg. 2017/373 (for data origination)	n/a	n/a	

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	(a) the data originator of the data;	PART C.a Metadata	(a) the identification of the organizations or entities performing any action of originating, transmitting or manipulating the data;	ANNEX VI of Reg. 2017/373 (Part-AIS) AIS.TR.225 Metadata	The metadata collected should clearly identify the organisation or entity originating the data, as well as any organisation or entity introducing amendments the data.	AMC1 AIS.TR.225(a) Metadata DATA ACTION	
			(1) the identification of the organisations or entities performing any action of originating, transmitting or manipulating the data;	ANNEX III of Reg. 2017/373 (Part-ATM/ANS.OR) ATM/ANS.OR.A .085.f	n/a	n/a	
			(a) the identification of the organisations or entities performing any action of originating, transmitting or manipulating the aeronautical data;	ADR.OPS.A.045 Metadata	n/a	n/a	
	(b) amendments made to the data;	PART C.b Metadata	n/a	n/a	The metadata collected should clearly identify the organisation or entity originating the data, as well as any organisation or entity introducing amendments the data.	AMC1 AIS.TR.225(a) Metadata DATA ACTION	
	(c) the persons or organisations that have interacted with the data and when;	PART C.c Metadata	(a) the identification of the organizations or entities performing any action of originating, transmitting or manipulating the data;	ANNEX VI of Reg. 2017/373 (Part-AIS) AIS.TR.225 Metadata	The metadata reflecting each action performed involving origination or manipulation of the data should reflect any potential impact to the compliance with the applicable data quality requirements.	AMC1 AIS.TR.225(b) Metadata DATA QUALITY REQUIREMENTS	
			(c) the date and time the action was performed.	ANNEX VI of Reg. 2017/373 (Part-AIS) AIS.TR.225 Metadata	n/a	n/a	
			a) the name of the organisations or entities providing the data set;	ANNEX VI of Reg. 2017/373 (Part-AIS) AIS.TR.340 Metadata requirements	n/a	n/a	
			(b) the date and time when the data set was provided;		n/a	n/a	
			(1) the identification of the organisations or entities performing any action of originating, transmitting or manipulating the data;	ANNEX III of Reg. 2017/373 (Part-ATM/ANS.OR) ATM/ANS.OR.A .085.f	n/a	n/a	
			(3) the date and time the action was performed.		n/a	n/a	

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			(a) the identification of the organisations or entities performing any action of originating, transmitting or manipulating the aeronautical data;	'ADR.OPS.A.045 Metadata	n/a	n/a	
			(c) the date and time the action was performed.'		n/a	n/a	
	(d) details of any validation and verification of the data that has been performed;	PART C.d Metadata	(b) the action performed; and	ANNEX VI of Reg. 2017/373 (Part-AIS) AIS.TR.225 Metadata	n/a	n/a	
			(2) the action performed;	ANNEX III of Reg. 2017/373 (Part-ATM/ANS.OR) ATM/ANS.OR.A .085	n/a	n/a	
			(b) the action performed	'ADR.OPS.A.045 Metadata	n/a	n/a	
	(e) effective start date and time of the data;	PART C.e Metadata	(c) validity of the data set	ANNEX VI of Reg. 2017/373 (Part-AIS) AIS.TR.340 Metadata requirements	n/a	n/a	
	(f) for geospatial data: — the earth reference model used, —the coordinate system used;	PART C.f Metadata	n/a	n/a	n/a	n/a	ATM/ANS.OR.A.090 Common reference systems for air navigation For the purpose of air navigation, service providers shall use the: (a) World Geodetic System — 1984 (WGS-84) as the horizontal reference system; (b) mean sea level (MSL) datum as the vertical reference system; and AMC1 ATM/ANS.OR.A.090(b) Common reference systems for air navigation VERTICAL REFERENCE SYSTEM & GM1 ATM/ANS.OR.A.090(a) Common reference systems for air navigation HORIZONTAL REFERENCE SYSTEM — WGS-84 & GM1 ATM/ANS.OR.A.090(b) Common reference systems for air navigation MEAN SEA LEVEL & GM1 ATM/ANS.OR.A.090(b) Common reference systems for air navigation VERTICAL REFERENCE SYSTEM & AMC & GM of ADR.OPS.A.020(a) & (b) AIS.TR.355 Terrain data sets & AIS.TR.360 Obstacle data sets (6) horizontal reference system;

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	(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;	PART C.g Metadata	n/a	n/a	n/a	n/a	AIS.TR.355 Terrain data sets & AIS.TR.360 Obstacle data sets (7) horizontal resolution; (8) horizontal accuracy; (9) horizontal confidence level; (14) vertical resolution; (15) vertical accuracy; (16) vertical confidence level; But it is not defined to be metadata!
	(h) details of any functions applied if data has been subject to conversion/transformation;	PART C.h Metadata	(b) the action performed; and	ANNEX VI of Reg. 2017/373 (Part-AIS) AIS.TR.225 Metadata	n/a	n/a	
			(2) the action performed;	ANNEX III of Reg. 2017/373 (Part-ATM/ANS.OR) ATM/ANS.OR.A .085.f	n/a	n/a	
	(i) details of any limitations on the use of the data.	"PART C.i Metadata"	d) any limitations with regard to the use of the date set.	ANNEX VI of Reg. 2017/373 (Part-AIS) AIS.TR.340 Metadata requirements	n/a	n/a	
DATA EXCHANGE							
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 5.1 Data exchange	An AIS provider shall ensure that: (b) aeronautical data is exchanged through electronic means.	ANNEX VI of Reg. 2017/373 (Part-AIS) AIS.OR.210 Exchange of aeronautical data and aeronautical information	The exchange of aeronautical data and aeronautical information may be done by a number of electronic exchanges avoiding the need of manual interaction with the data itself.	GM1 AIS.OR.210(b) Exchange of aeronautical data and information. ELECTRONIC MEANS	Article 5.1 of Reg. 73/2010 is transposed for AIS providers, service providers, data originators and aerodrome operators.
			When originating, processing or /transmitting data to the AIS provider, service providers shall: (c) transmit aeronautical data by electronic means;	ANNEX III of Reg. 2017/373 (Part-ATM/ANS.OR) ATM/ANS.OR.A.085 Aeronautical data quality management	The transmission of aeronautical data and aeronautical information may be done by different electronic means avoiding the need of manual interaction with the data itself.	GM1 ATM/ANS.OR.A.085(c) Aeronautical data quality management ELECTRONIC MEANS	

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			(5) When aeronautical data and aeronautical information is originated by parties other than service providers regulated by this Regulation or other than aerodrome operators regulated by Regulation (EU) No 139/2014, Member States shall ensure that: (i) those aeronautical data and aeronautical information meet the requirements laid down in: (A) ATM/ANS.OR.A.085, except those in points (e), (g) and (h);	Article 3 of Reg. 2017/373 (for data origination)	n/a	n/a	
			The aerodrome operator shall ensure that aeronautical data is transmitted by electronic means.	Annex IV of Reg. 139/2014 (Part-ADR.OPS) ADR.OPS.A.050 Data transmission	n/a	n/a	
	2. Air navigation service providers shall ensure that the aeronautical data and aeronautical information referred to in the second subparagraph of Article 2(1) are transferred between themselves in accordance with the data exchange format requirements laid down in Annex II.	Article 5.2 Data exchange	An aeronautical information services provider shall ensure that: (a) the format of aeronautical data is based on an aeronautical information exchange model designed to be globally interoperable.	ANNEX VI of Reg. 2017/373 (Part-AIS) AIS.OR.210 Exchange of aeronautical data and aeronautical information	An AIS provider should use the aeronautical information exchange model (AIXM) to enable the management and distribution of aeronautical information services data in digital format.	AMC1 AIS.OR.210(a) Exchange of aeronautical data and aeronautical information EXCHANGE MODEL	Note: Parts of Annex II can still be found in the AMC and GM. Actually the new rule is more concrete here as it explicitly mentions AIXM (this was not the case in 73/2010)
					Currently, AIXM 5.1 is considered as being the minimum baseline for the exchange of aeronautical data and aeronautical information. More information on the AIXM may be found under http://www.aixm.aero.	GM1 AIS.OR.210(a) Exchange of aeronautical data and aeronautical information EXCHANGE MODEL	In the GM even AIXM version, 5.1, is mentioned.
	3. Member States may exclude digital NOTAM from the data exchange format referred to in paragraph 2.	Article 5.3 Data exchange	n/a	n/a	(a) It is recognised that, in the cases of NOTAM or digital NOTAM that are crucial to ensure the safety of flight, it is not always possible to comply with all the relevant provisions of the Regulation….	GM1 AIS.OR.330(b) NOTAM EXCEPTIONAL SITUATIONS	The possibility for Member States to exclude digital NOTAM is not foreseen in the rules. Digital NOTAM is not excluded nor explicitly included in the new rule just mentioned once in the GM for AIS.OR

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	4. Aeronautical information service providers shall ensure that all aeronautical data and aeronautical information within the AIPs, AIP amendments and AIP supplements provided by a Member State are made available to the next intended user, as a minimum:	Article 5.4 Data exchange	(c) An AIS provider shall ensure that aeronautical data and aeronautical information are available for: (1) personnel involved in flight operations, including flight crews, flight planning, and flight simulators; and (2) air traffic services providers responsible for flight information service, and the services responsible for pre-flight information.	ANNEX VI of Reg. 2017/373 (Part-AIS) AIS.OR.105 Responsibilities of aeronautical information services providers	The DAT provider (provider of data services) are not specifically specified in this paragraph as being an entity receiving the aeronautical data and aeronautical information from the AIS provider. However, they are considered as being covered in AIS.OR.105(c)(1). They also receive, assemble, translate, select, format, distribute and/or integrate aeronautical data and information that is released by an authoritative source for use in aeronautical databases on certified aircraft application/equipment.	GM1 AIS.OR.105(c) Responsibilities of aeronautical information services providers DAT PROVIDER	next intended user is replaced by a list of particular users
	(a) in accordance with the publication requirements identified in the ICAO standards referred to in points 4 and 8 of Annex III;	Article 5.4 (a) Data exchange	n/a	n/a	n/a	n/a	No references to ICAO Annex 15 is necessary, no paper copy requirement.
	b) in a way that allows the content and format of the documents to be directly readable on a computer screen; and	Article 5.4 (b) Data exchange	(a) The AIP, AIP amendments and AIP supplements shall be provided as an 'electronic AIP' (eAIP) and/or on paper.	ANNEX VI of Reg. 2017/373 (Part-AIS) AIS.TR.305 Aeronautical information publication (AIP)	n/a	n/a	New rule uses explicitly the term eAIP!
	c) in accordance with the data exchange format requirements laid down in Annex II.	Article 5.4 (c) Data exchange	n/a	n/a	see above Article 5.2 Data exchange	see above Article 5.2 Data exchange	Parts of Annex II can still be found in the AMC and GM.
AERONAUTICAL DATA EXCHANGE FORMAT	AERONAUTICAL DATA EXCHANGE FORMAT REQUIREMENTS REFERRED TO IN ARTICLE 5	ANNEX II	n/a	n/a	n/a	n/a	
	1. The aeronautical data and aeronautical information referred to in points (a), (b) and (d) of the second subparagraph of Article 2(1) shall be formatted	PART A 1. IAIP, aerodrome mapping and electronic obstacle data	Except for terrain data, the exchange format of aeronautical data shall: […]	ANNEX VI of Reg. 2017/373 (Part-AIS) AIS.TR.210 Exchange of aeronautical data and aeronautical information	(b) The exchange model used should: (5) apply a commonly used data encoding format;	AMC1 AIS.TR.210 Exchange of aeronautical data and aeronautical information EXCHANGE MODELS	

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			n/a	n/a	(a) The intent of using a commonly used data encoding format, as referred to in AMC1 AIS.TR.210 above, is to ensure interoperability of aeronautical data exchange between agencies and organisations involved in the data processing chain.	GM1 AIS.TR.210 Exchange of aeronautical data and aeronautical information ENABLING EXCHANGE	
			n/a	n/a	(b) The exchange model used should: (7) provide an extension mechanism by which groups of users can extend the properties of existing features and add new features which do not adversely affect global standardisation.	AMC1 AIS.TR.210 Exchange of aeronautical data and aeronautical information EXCHANGE MODELS	
	— use the extensible mark-up language (XML) specification as defined in the ISO standard referred to in Annex III point 17 for data encoding,		n/a	n/a	(b) Examples of commonly used data encoding formats include extensible markup language (XML), geography markup language (GML), and JavaScript object notation (JSON).	GM1 AIS.TR.210 Exchange of aeronautical data and aeronautical information ENABLING EXCHANGE	XML is just mentioned as one of many example of data encoding
	— be expressed in the form of an XML schema; in addition, a schematron as defined in the ISO standard referred to in point 19 of Annex III may be used for expressing business rules,		n/a	n/a	n/a	n/a	
	— enable the exchange of data for both individual features and feature collections,		a) enable the exchange of data for both individual features and feature collections;	"ANNEX VI of Reg. 2017/373 (Part-AIS) AIS.TR.210 Exchange of aeronautical data and aeronautical information"	n/a	n/a	
	— enable the exchange of baseline information as a result of permanent changes,		(b) enable the exchange of baseline information as a result of permanent changes;		n/a	n/a	

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	— be structured in accordance with the features, attributes and associations of the data set definition described in Annex I, Part A; the mapping rules shall be documented,		(c) be in accordance with the subjects, properties of the aeronautical data catalogue and be documented through a mapping between the exchange format and the aeronautical data catalogue.		n/a	n/a	Analog to the mapping between the data set specficationand the data exchange format mentioned in 73/2010, the opinion requires a mapping between the data catalogue and the exchange format.
	— implement strictly the enumerated lists of values and range of values defined for each attribute in the data set,		see above	n/a	n/a	n/a	see above
	— comply with the geography mark-up language (GML) specification, as defined in the reference referred to in point 18 of Annex III, for the encoding of geographical information.				(b) Examples of commonly used data encoding formats include extensible markup language (XML), geography markup language (GML), and JavaScript object notation (JSON).	GM1 AIS.TR.210 Exchange of aeronautical data and aeronautical information ENABLING EXCHANGE	GML is just mentioned as one of many example of data encoding
	2. Regarding the ISO standards, the relevant certificate issued by an appropriately accredited organisation, shall be considered as a sufficient means of compliance. The parties referred to in Article 2(2) shall accept the disclosure of the documentation related to the certification to the	PART A 2. IAIP, aerodrome mapping and electronic obstacle data	n/a	n/a	n/a	n/a	This paragraph is already covered by AMC1 ATM/ANS.OR.B.005(a) Management system with regard to ISO 9001 certificate for air navigation services providers
	1. The electronic terrain data referred to in point (c) of the second subparagraph of Article 2(1) shall be provided in a common format compliant with the ISO standards referred to in points 14 to 18 of Annex III.	PART B Electronic terrain data	n/a	n/a	The existing formats for the exchange of electronic terrain datasets do not fully meet the requirements of the ISO 19100 series on geographic information, therefore the GeoTIFF format with metadata is preferred. Further formats may include Shape file.	GM1 AIS.OR.210(a) Exchange of aeronautical data and aeronautical information DIGITAL TERRAIN DATA	The existing formats for the exchange of electronic terrain datasets do not fully meet the requirements of the ISO 19100 series, therefore this paragraph is not considered relevant.

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	2. Regarding the ISO standards, the relevant certificate issued by an appropriately accredited organisation, shall be considered as a sufficient means of compliance. The parties referred to in Article 2(2) shall accept the disclosure of the documentation related to the certification to the national supervisory authority upon the latter's request.		n/a	n/a	n/a	n/a	This paragraph is already covered by AMC1 ATM/ANS.OR.B.005(a) Management system with regard to ISO 9001 certificate for air navigation services providers
NEW IN OPINION 02/2018							
Data catalogue	n/a	n/a	n/a	ANNEX III COMMON REQUIREMENTS FOR SERVICE PROVIDERS (Part-ATM/ANS.OR)Appendix 1 — AERONAUTICAL DATA CATALOGUE	n/a	n/a	
Digital data sets	n/a	n/a	n/a	ANNEX VI SPECIFIC REQUIREMENTS FOR PROVIDERS OF AERONAUTICAL INFORMATION SERVICES (Part-AIS) SECTION 3 — AERONAUTICAL INFORMATION PRODUCTS Chapter 2 — Digital data sets	See AMC & GM for particular data set	See AMC & GM for particular data set	
	n/a	n/a	'data set' means an identifiable collection of data;	ANNEX I — DEFINITIONS FOR TERMS USED IN ANNEXES II TO XIII (Part-DEFINITIONS)	n/a	n/a	

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data product specification	n/a	n/a	(b) A description of each available data set shall be provided in the form of a data product specification.	AIS.TR.335 General— Digital data sets	(a) ISO Standard 19131 specifies the requirements and outline of data product specifications for geographic information. This is intended to facilitate and support the use and exchange of digital data sets between data providers and data users. (b) The data product specification enables air navigation users to evaluate the products and determine whether they fulfil the requirements for their intended use (application). (c) This may include an overview, specification scope, data product identification, data content and structure, reference system, data quality, data capture, data maintenance, data portrayal, data product delivery, additional information, and metadata.	GM1 AIS.TR.335(b) General — Digital data sets DATA PRODUCT SPECIFICATION	
	n/a	n/a	(a) The update interval for the AIP data set and the instrument flight procedure data sets shall be specified in the data product specification.	AIS.TR.515 Data set updates	n/a	n/a	
	n/a	n/a	'data product specification' means a detailed description of a data set or data set series together with additional information that will enable it to be created, supplied to and used by another party;	ANNEX I — DEFINITIONS FOR TERMS USED IN ANNEXES II TO XIII (Part-DEFINITIONS)	n/a	n/a	