

	TANZANIA CIVIL AVIATION AUTHORITY DIRECTORATE OF SAFETY REGULATIONS AIR NAVIGATION INSPECTORATE	Revision: 0 Advisory Circular
Document No: TCAA/QSP/SR/AC/ANS – 5I	Title: Formal Arrangements between AIS and Originators of Aeronautical Data / Information	Page 1 of 20

1. PURPOSE

1.1. This Advisory Circular (AC) provides information and guidance on establishing and implementing formal arrangements between originators of aeronautical data or aeronautical information and the aeronautical information service provider (AISP) so as to ensure aeronautical data or aeronautical information conforms to applicable data quality requirements.

2. REFERENCES

2.1. The verification and validation processes of Aeronautical data and aeronautical information shall be carried out in compliance with the provisions of the following documents:

- 2.1.1. Civil Aviation (Aeronautical Information Services) Regulations, 2025
- 2.1.2. Civil Aviation (Aeronautical Charts) Regulations 2017
- 2.1.3. TCAA-QSP-SR-AC-ANS- 43 Aeronautical Data Quality Requirements
- 2.1.4. ICAO Doc 10066 – PANS AIM
- 2.1.5. ICAO Doc 8126 – AIS Manual
- 2.1.6. ICAO Doc 8697 – Aeronautical Chart Manual
- 2.1.7. ICAO Doc 9839 – Manual on the Quality Management System for Aeronautical Information Services

Note: Action must be taken to ensure that latest editions of the applicable reference documents are used in the verification and validation processes of Aeronautical data and aeronautical information.

3. DEFINITIONS AND ABBREVIATIONS

3.1. The following definitions are used in this document:

- 3.1.1. **Aeronautical data:** A representation of aeronautical facts, concepts or instructions in a formalized manner suitable for communication, interpretation or processing. E.g. aerodrome location indicator <HTDA>, hours of operation <H24>.
- 3.1.2. **Aeronautical data chain:** A series of interrelated links wherein each link provides a function that facilitates the origination, transmission and use of aeronautical data for a specific purpose.
- 3.1.3. **Aeronautical information:** Information resulting from the assembly, analysis and formatting of aeronautical data. E.g. Aeronautical Information Publication (AIP), instrument flight procedures, Aeronautical Information Circulars (AIC).
- 3.1.4. **Aeronautical Information Product:** Aeronautical data and aeronautical information provided either as digital data sets or as a standardized presentation on paper or electronic media.

3.1.5. **Aeronautical Information Management (AIM):** the dynamic, integrated management of aeronautical information through the provision and exchange of quality-assured digital aeronautical data, in collaboration with all parties.

3.1.6. **Aeronautical Information Service (AIS):** A service established within the defined area of coverage responsible for the provision of aeronautical data and aeronautical information necessary for the safety, regularity and efficiency of air navigation.

3.1.7. **Data format:** A structure of data elements, records and files arranged to meet standards, specifications or data quality requirements.

3.1.8. **Data set:** An identifiable collection of data.

3.1.9. **Origination** (aeronautical data or aeronautical information): The creation of the value associated with new data or information or the modification of the value of existing data or information.

3.1.10. **Originator** (aeronautical data or aeronautical information): An entity that is accountable for data or information origination and/or from which the AIS organization receives aeronautical data and aeronautical information. The originator is also known as the aeronautical data originator.

3.1.11. **Aeronautical Data Originator (ADO):** An entity that is accountable for data or information origination and/or from which the AIS organization receives aeronautical data and aeronautical information. The term is interchangeable with originator.

3.2. The following abbreviations are used in this document:

3.2.1. ADO: Aeronautical Data Originator

3.2.2. AIC: Aeronautical Information Circular

3.2.3. AIM: Aeronautical Information Management

3.2.4. AIP: Aeronautical Information Publication

3.2.5. AIS: Aeronautical Information Service

3.2.6. ICAO: International Civil Aviation Organization

3.2.7. IFP: Instrument Flight Procedure

3.2.8. PDF: Portable Document Format

3.2.9. TCAA: Tanzania Civil Aviation Authority

4. GUIDANCE AND PROCEDURES

4.1. GENERAL

4.1.1. A key driver for the transition from AIS to AIM is the need to achieve an uninterrupted aeronautical data chain with no loss or corruption in information, in a pre-defined format and with guaranteed data quality.

4.1.2. Data originators, such as aerodrome operators, Meteorology Organization, etc., have an essential role in ensuring that aeronautical data/information are of the required quality at origination, and transmitted in this form to the AIS.

4.1.3. Data of high quality can only be maintained if the source material is of good quality. To better control the

relationships of all stakeholders along the whole data chain from the originator to the user, agreements are required to clearly define the responsibilities of all parties involved in the national aeronautical data chain. This will help clarify the position of all parties involved in the aeronautical data chain.

- 4.1.4. The establishment of formal arrangements is a requirement from regulation 8(1)(d)(ii) of the Civil Aviation (Aeronautical Information Services) Regulations, 2025: "The Authority shall ensure that formal arrangements are established between originators of aeronautical data and aeronautical information and the AIS in relation to the timely and complete provision of aeronautical data and aeronautical information".
- 4.1.5. A formal arrangement is an agreement which lays out the requirements for how and when an Aeronautical Data Originator (ADO) shall review and provide (or submit) their aeronautical data/information to the AIS provider. The agreement also specifies the Aeronautical data quality requirements for each data element for which the agreement is being established.
- 4.1.6. The main objective of the formal arrangement is to enhance the process of data distribution in terms of quality and timeliness. This will contribute to improved safety, increased efficiency and greater cost-effectiveness for all stakeholders.

4.2. SCOPE OF AERONAUTICAL DATA OR AERONAUTICAL INFORMATION SUBJECT TO FORMAL ARRANGEMENTS

- 4.2.1. The aeronautical data and/or aeronautical information received from the originator(s) to be managed by the AIS shall include at least the following sub-domains:
 - a) National regulations, rules and procedures
 - b) Aerodromes and heliports
 - c) Airspace
 - d) Air Traffic Services (ATS) routes
 - e) Instrument flight procedures
 - f) Radio navigation aids/systems
 - g) Obstacles
 - h) Terrain; and
 - i) Geographic information.

4.3. AERONAUTICAL INFORMATION SERVICE (AIS)

- 4.3.1. The function of an Aeronautical Information Service (AIS) is to receive, collate or assemble, edit, format, publish/store and distribute aeronautical data and aeronautical information concerning the entire territory of the United Republic of Tanzania as well as those areas over the high seas for which the State is responsible for the provision of air traffic services.
- 4.3.2. In accordance with regulation 13 of the Civil Aviation (Aeronautical Information Services) Regulations, 2025 the aeronautical data and aeronautical information provided by AIS shall be of the required quality in accordance with the data quality specifications (requirements) that are contained in TCAA-QSP-SR-AC-ANS- 43 Aeronautical Data Quality Requirements.
- 4.3.3. Regulation 14 of the Civil Aviation (Aeronautical Information Services) Regulations, 2025 requires an AIS

to establish verification and validation procedures which ensure that upon receipt of aeronautical data and aeronautical information, quality requirements are met.

4.4. ORIGINATORS OF AERONAUTICAL DATA AND AERONAUTICAL INFORMATION

4.4.1. The origination of aeronautical data and aeronautical information is a critical process with respect to initiating data quality since subsequent processing of that data cannot improve its quality but only maintains it. Therefore, all parties originating aeronautical data and aeronautical information have the responsibility to provide the aeronautical data with defined data quality requirements in order to meet the user needs.

4.5. DATA INTEROPERABILITY

4.5.1. The future of aeronautical information services must prioritize the aeronautical data and information themselves over the products. There is an increasing need by industry to consume data directly from databases into systems and at a much faster pace. Therefore, the focus must also be on the data quality as opposed to how the information is presented on a printed paper product or electronic product such as PDF.

4.5.2. The consumption of data into automated systems will occur in the form of subscription to a data service. For this to be possible, the data must be of the right quality (including format) for use by any system of any country (interoperable) and the processing of it must be automated to gain the desired efficiency and ensure the data integrity. From the data, aeronautical information products can be created as needed.

4.5.3. This level of automation and interoperability is only possible if quality is the focus for the data holdings. The establishment of formal arrangements is an important step in supporting both ADOs and TCAA in reaching that point.

5. REQUIREMENTS FOR FORMAL ARRANGEMENTS

5.1. AERONAUTICAL DATA ORIGINATOR

5.1.1. An ADO provides AIS with up to date aeronautical data and information. Regular review, at least annually, of the aeronautical data/information for which the ADO is responsible must take place.

5.1.2. A formal arrangement identifies who the ADO is, ensuring that only the authoritative source of the data can submit data modifications to AIS.

5.1.3. The ADO plays an important role in helping to improve data quality during the implementation of a formal arrangement and in maintaining these data quality standards when modifications or removal of their data must be submitted to AIS.

5.1.4. The data quality requirements applicable from origination through to publication includes:

- Format: A structure of data elements, records and files arranged to meet standards, specifications or data quality requirements.
- Resolution: A number of units or digits to which a measured or calculated value is expressed and used.
- Accuracy: A degree of conformance between the estimated or measured value and the true value.
- Integrity: A degree of assurance that an aeronautical data and its value has not been lost or altered since

the origination or authorized amendment.

- e) Traceability: The degree that 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 originator.
- f) Timeliness: The degree of confidence that the data is applicable to the period of its intended use.
- g) Completeness: The degree of confidence that all of the data needed to support the intended use is provided.

5.2. DATA FORMAT

- 5.2.1. To support the data quality of aeronautical data/information, a formal arrangement contains the data requirements for each data element. This facilitates the submission of all data to be of the required format, resolution and accuracy.
- 5.2.2. In other words, AIS provides the Aeronautical data quality requirements to the ADO to specify what accuracy or resolution the data must be provided thereby eliminating guess work on the part of the data originator as to how each piece of data should look when they are submitting to AIS.

5.3. IMPLEMENTATION

- 5.3.1. AIS Provider is required to establish formal arrangements with data originators organizations and authorities responsible for data origination which will be supported by a formal arrangement.
- 5.3.2. The AIS provider shall reach out to all ADOs to establish a formal arrangement. The recommended steps that ADO should take in order to assist AIS Provider with a formal arrangement includes:
 - a) Engage in development of the formal arrangement.
 - b) Understand the required tasks.
 - c) Understand the data quality requirements of aeronautical data.
 - d) Identify the means of distribution to the AIS provider.
 - e) Identify responsible personnel for submitting aeronautical data to the AIS provider.
 - f) Ensure personnel are competent to carry out the specified tasks.
 - g) Identify the processes to meet the requirements identified in the formal arrangements.
 - h) Ensure the processes are known and defined.
 - i) Ensure the required resources to establish the processes.
 - j) Ensure that the tools and software are available to carry out the tasks.
 - k) Ensure the available tools and software are maintained, checked and improved, whenever applicable.
 - l) Ensure the provision and updating of aeronautical data to the AIS provider is in accordance with the AIRAC system.
 - m) Ensure the distribution of aeronautical data to the AIS provider.
 - n) Perform regular reviews, at least annually, of aeronautical data provided.

6. FORMAT FOR FORMAL ARRANGEMENTS

6.1.1. When establishing a formal arrangement, between aeronautical data and/or aeronautical information originators and the AIS provider, the agreement must include, at a minimum, the following elements:

a) INTRODUCTION

- i) Scope
- ii) Parties to the Agreement
- iii) Perspective – Regulative Environment
- iv) Entry into force and Termination (Term)
- v) Definitions and Conventions

b) DATA PROVISION SERVICE

- i) Service Description
- ii) Data management
- iii) Demonstrating compliance
- iv) Data errors or inconsistencies
- v) Contingency

c) PROCEDURAL PROVISIONS

- i) Entire agreement
- ii) Liaison

d) ATTACHMENTS

Attachment A. Aeronautical data and aeronautical information to be provided

Attachment B. Timeliness requirements

Attachment C. Metadata requirements

Attachment D. Data distribution

Attachment E. Data exchange format

6.1.2. A template for reference is provided in Appendix A to this Advisory Circular.



Tanzania Civil Aviation Authority

APPENDIX A

Insert

Organisation 1

Logo Here

Insert

Organisation 2

Logo Here

DATA PROVISION AGREEMENT

between

*[name of entity receiving the aeronautical data and aeronautical
information]*

(hereinafter the “AIS”)

and

*[name of entity providing the aeronautical data and aeronautical
information]*

(hereinafter the “The Data Originator”)

DPA: [number]

Edition: [number]

Date:

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1. INTRODUCTION

1.1 Scope

This data provision agreement sets out the terms and conditions for the supply of aeronautical data and aeronautical information (hereinafter collectively the “Data”) by [\[organization name\]](#) (hereinafter the “Data Originator”) to the aeronautical information service [\[organization name\]](#) (hereinafter the “AIS”).

1.2 Parties to the agreement

The parties to this agreement, and their responsibilities, are as follows:

Party	Official address	Legal representative	Responsibilities
<i>The Data Originator: [name of entity providing the aeronautical data and aeronautical information]</i>			The Data Originator shall provide the Data to the AIS in accordance with this agreement.
<i>The AIS: [name of entity receiving the aeronautical data and aeronautical information]</i>			The AIS shall receive the Data in accordance with this agreement.

1.3 Regulatory requirements

The following ICAO and national documents specify the regulatory requirements for the origination, collection, handling, storage, processing, transfer and distribution of the Data:

- The Civil Aviation (*Aeronautical Information Services*) Regulations, 2025
- The Civil Aviation (*Aeronautical Charts*) Regulations, 2017
- The Civil Aviation (*Units of Measurement for Air and Ground Operations*) Regulations, 2017
- The Civil Aviation (*Air Traffic Services*) Regulations, 2017
- The Civil Aviation (*Certification, Licensing and Registration of Aerodromes*) Regulations, 2024
- *Procedures for Air Navigation Services — Aircraft Operations – Volume II* (PANS-OPS, Doc 8168)
- *Procedures for Air Navigation Services — ICAO Abbreviations and Codes* (PANS-ABC, Doc 8400)
- *Procedures for Air Navigation Services — Aeronautical Information Management* (PANS-AIM, Doc 10066)
- [\[update list to reflect all applicable ICAO and national regulations\]](#)

1.4 Entry into force and termination

1.4.1 This Agreement is valid from [\[enter start date\]](#) to [\[enter end date\]](#).

Alternatively:

This Agreement shall enter into force on the date of the later signature of the Parties and shall remain in force until terminated. This Agreement may be terminated by written agreement between the Parties, or by written advance notice of **[add time period, e.g. x months]** prior to termination by either Party.

1.5 Definitions and conventions

1.5.1 For the purpose of this agreement, the definitions in Annex 15 — *Aeronautical Information Services and Procedures for Air Navigation Services — Aeronautical Information Management* (PANS-AIM, Doc 10066) shall apply, including the following definitions:

- a) 'Agreement' refers to this Data Provision Agreement;
- b) 'Data' collectively refers to the aeronautical data and aeronautical information that the Data Originator is responsible to provide to the AIS under the terms of this Agreement;
- c) 'Data Originator' refers to the legal entity responsible for the provision of aeronautical data and aeronautical information, as set out in the terms of this Agreement;
- d) 'AIS' refers to the legal entity responsible for receiving the aeronautical data and aeronautical information, as set out in the terms of this Agreement; and
- e) 'Parties' refer to the Data Originator and the AIS.

1.5.2 For the purpose of this agreement, the parties shall apply the following date and time conventions:

- a) *Co-ordinated Universal Time (UTC)*, as described in *the Civil Aviation (Units of Measurement for Air and Ground Operations) Regulations 2017*, Attachment D; and
- b) the procedures for writing the date and time in all-numeric form as described in *the Civil Aviation (Units of Measurement for Air and Ground Operations) Regulations 2017*, Attachment E.

2. DATA PROVISION SERVICE**2.1 Service description**

2.1.1 The Data Originator shall provide the Data to the AIS, incorporating all data items listed in Attachment A to this Agreement.

2.1.2 In case the Data Originator provides complete aeronautical features (e.g. runway threshold) to the AIS, Attachment A shall describe all individual data elements that compose the aeronautical feature (e.g. latitude and longitude shall be listed separately).

2.1.3 The Data shall be provided in accordance with the data quality requirements described in Attachment A to this Agreement.

2.1.4 The Data shall be provided within the date and time limits described in Attachment B to this Agreement.

2.1.5 The Data shall be provided together with the metadata items described in Attachment C to this Agreement.

2.1.6 The Data shall be transferred between the Parties by the means described in Attachment D to this Agreement.

2.1.7 The Data shall be provided in accordance with the data exchange format described in Attachment E to this Agreement.

2.2 Data management

2.2.1 The Data Originator shall follow the requirements from regulation 41(7) of the Civil Aviation (*Aeronautical Information Services*) *Regulations*, 2025 concerning the advance notice of changes to the Data (for ATS providers refer to **regulation 25 of the Civil Aviation(Air Traffic Services) Regulations, 2017 and for aerodrome operators refer to regulation 33(4) of the Civil Aviation (Aerodromes Designs and Operations) Regulations, 2024**).

2.2.2 The Data Originator shall be responsible for the timely provision of the Data. The Data Originator accepts that the Data shall be subject to validation and verification by the AIS and that, if queries arise, this may delay final acceptance and hence publication in the aeronautical information products.

2.2.3 The Data Originator shall be responsible to submit the Data in sufficient time to meet the AIRAC publication cycle. The Data Originator acknowledges that if the Data is not provided on time, the Data shall not be released for publication. In exceptional circumstances, a NOTAM may need to be issued, if deemed necessary.

2.2.4 The Data Originator shall be responsible to maintain the validity of the Data. The Data Originator shall provide updates to the Data whenever required by *[organisation name]*, national regulations or whenever a change is made that requires an update of the Data.

2.2.5 The Data Originator shall be responsible for documenting any changes made to the Data.

2.2.6 If any third party is involved in the origination of the Data, or parts of the Data, the Data Originator shall remain responsible to ensure that the third party documents any changes made to the Data.

2.3 Demonstrating compliance

2.3.1 The Data Originator shall ensure that the Data is originated and processed in accordance with international best practices and guidelines, namely:

- Doc 8168 — *Procedures for Air Navigation Services — Aircraft Operations*
- Doc 9674 — *World Geodetic System – 1984 (WGS-84) Manual*
- EUROCAE ED-77 / RTCA DO-201A, *Standards for Aeronautical Information*
- EUROCAE ED-99D / RTCA DO-272D, *User Requirements for Aerodrome Mapping Information*
- *[update list to reflect all applicable standards, specifications, guidance material ...]*

2.4 Data errors or inconsistencies

2.4.1 In the event of the AIS discovering a data error or inconsistency in the Data, and provided that the Data is still subject to validation and verification by the AIS prior to publication or distribution, the AIS shall *[describe the actions to be taken by the AIS when discovering a data error or inconsistency during validation and verification prior to publication or distribution]*.

2.4.2 In the event of the Data Originator receiving a notification from the AIS that the Data, which is still subject to validation and verification by the AIS prior to publication or distribution, contained a data error or inconsistency, the Data Originator shall *[describe the actions to be taken by the Data Originator when notified that the Data contains a data error or inconsistency detected during validation and verification prior to publication or distribution]*.

2.4.3 In the event of the AIS discovering a data error or inconsistency in the Data, and provided that the Data has already been published or distributed, the AIS shall *[describe the actions to be taken by the AIS when discovering a data error or inconsistency after publication or distribution]*.

2.4.4 In the event of the Data Originator receiving a notification from the AIS that the Data, which has already been published or distributed, contained a data error or inconsistency, the Data Originator shall *[describe the actions to be taken by the Data Originator when notified that the Data contains a data error or inconsistency detected after publication or distribution]*.

2.5 Contingency

2.5.1 In the event that the Data Originator cannot guarantee the continuity of the provision of the Data, the Data Originator shall *[describe the actions to be taken by the Data Originator when the Data Originator cannot guarantee the continuity of the provision of the Data]*.

2.5.2 In the event that the Data Originator cannot guarantee the continuity of the provision of the Data, the AIS shall *[describe the actions to be taken by the AIS when the Data Originator cannot guarantee the continuity of the provision of the Data]*.

2.5.3 In the event that the AIS cannot guarantee the continuity of receipt and processing of the Data, the AIS shall *[describe the actions to be taken by the AIS when the AIS cannot guarantee the continuity of receipt and processing of the Data]*.

2.5.4 In the event that the AIS cannot guarantee the continuity of receipt and processing of the Data, the Data Originator shall *[describe the actions to be taken by the Data Originator when the AIS cannot guarantee the continuity of the receipt and processing of the Data]*.

3. PROCEDURAL PROVISIONS

3.1 Entire agreement

3.1.1 This Agreement forms the entire agreement and understanding of the Parties and supersedes all previous agreements whether written or oral between the Parties, including any previous agreement or understanding varying or extending the same. There are no further or other agreements or understandings, written or oral, in effect between the Parties with respect to the scope of this Agreement.

3.1.2 Any amendments and modifications to this Agreement may be made at any time by written agreement by both Parties.

3.2 Liaison

3.2.1 The Data Originator and the AIS shall each appoint an Accountable Manager for the implementation and operation of this Agreement. These nominated managers will act as points of contact for all issues regarding the implementation and operation of this Agreement.

3.2.2 The Data Originator Accountable Manager and the AIS Accountable Manager shall have the authority to take decisions regarding the operation and distribution of the Data on behalf of their respective organisations. All communications between the parties regarding the implementation and operation of this Agreement shall be coordinated by these managers.

3.2.3 The Accountable Managers and their respective administrative contacts are:

Party	Accountable Manager	Administrative Contact
<i>[Insert Data Originator details here]</i>	<i>[Insert Primary Contact details here, including name, job title, address, telephone and email]</i>	<i>[Insert Administrative Contact details here, including name, job title, address, telephone and email]</i>
<i>[Insert AIS details here]</i>	<i>[Insert Primary Contact details here, including name, job title, address, telephone and email]</i>	<i>[Insert Administrative Contact details here, including name, job title, address, telephone and email]</i>

Data Originator Accountable Manager:

Name
Title
Date
Signature

AIS Accountable Manager:

Name
Title
Date
Signature

Attachment A**AERONAUTICAL DATA AND AERONAUTICAL
INFORMATION TO BE PROVIDED****Example:**

Refer to TCAA-QSP-SR-AC-ANS- 43 Aeronautical Data Quality Requirements:

- *Table A1-1 Aerodrome data;*
- *Table A1-2 Airspace data;*
- *Table A1-3 ATS and other routes data;*
- *Table A1-4 Instrument flight procedure data;*
- *Table A1-5 Radio navigation aids/systems data;*
- *Table A1-6 Obstacle data;*
- *Table A1-7 Geographic data;*
- *Table A1-8 Terrain data;*
- *Table A1-9 Data types; and*
- *Table A1-10 Information about national and local regulation, services and procedures.*

Attachment B**TIMELINESS REQUIREMENTS****Example #1:**

The timely submission of the Data shall be made in accordance with the requirements indicated in the Civil (Aeronautical Information Services) Regulations.

Example #2:

On initial provision of the Data, or where the Data is subject to a planned update, the following minimum Data submission periods apply:

Aeronautical information products

- a) *AIP Amendments – xxx days in advance;*
- b) *AIP Supplements – xxx days in advance;*
- c) *Aeronautical Information Circulars (AICs) – xxx days in advance;*
- d) *NOTAM – as required.*

- a) *en-route chart – xxx days in advance;*
- b) *instrument approach chart – xxx days in advance;*
- c) *World Aeronautical Chart – xxx days in advance;*
- d) *The Aeronautical Chart – xxx days in advance;*
- e) *Standard Departure Chart – xxx days in advance;*
- f) *Standard Arrival Chart – xxx days in advance;*
- g) *etc.*

- a) *Aerodrome/heliport data – xxx days in advance;*
- b) *Airspace data – xxx days in advance;*
- c) *ATS and other routes data – xxx days in advance;*

- d) instrument flight procedures data – xxx days in advance;
- e) etc.

Example #3:

The Data shall be provided in accordance with the timelines given in the production and publication calendar of the aeronautical information product.

Attachment C**METADATA REQUIREMENTS****Example:**

The Data shall include, as a minimum, the following metadata items:

- a) the names of the organization or entities providing the data set;*
- b) the date and time when the data set was provided;*
- c) the period of validity of the data set; and*
- d) any limitations with regard to the use of the data set.*

Attachment D**DATA DISTRIBUTION****Example #1:**

All Data shall be transferred between the Parties through distribution in digital format via electronic transfer or direct input into the AIM system.

Example #2:

All Data shall be transferred between the Parties via email, with special attention to the following:

- a) use of designated email addresses;*
- b) the Data is provided in an attached file;*
- c) copy and paste actions or the retyping of the Data is avoided;*
- d) receipt of the Data is confirmed to the Data Originator; and*
- e) the Data is encrypted with a digital data error detection technique, such as hash functions or CRC.*

Attachment E**DATA EXCHANGE FORMAT****Example #1:**

The Data shall be transferred in accordance with the AIXM x.x Extensible Markup Language (XML) schema.

Example #2:

The Data shall be transferred in CSV format, in accordance with the data catalogue [insert the name and version of the data set specification].
