



# EUROCONTROL Guidelines for Aeronautical Information Publication (AIP) distribution on the Internet

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Abstract	
<p>The purpose of this document is to provide guidance and best practices to help AISPs distribute State AIPs on the Internet as an official/authoritative source of information while satisfying the needs of DAT providers as main next intended users.</p>	
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## DOCUMENT APPROVAL

AUTHORITY	NAME AND SIGNATURE	DATE
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## DOCUMENT CHANGE RECORD

The following table records the complete history of the successive editions of the present document.

EDITION NUMBER	EDITION DATE	REASON FOR CHANGE	PAGES AFFECTED
1.0	October 2017	Released issue agreed by the AIM/SWIM Team	All
2.0	9 December 2024	- Inclusion of guidelines related to potentials savings in the AIP amendment process timeline using direct electronic distribution	All

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## **EXECUTIVE SUMMARY**

The number of aeronautical information service providers (AISP) shifting from the publication of their national Aeronautical Information Publication (AIP) as a paper product to the provision of the AIP as an electronic product has significantly increased over the last decade.

The purpose of this document is to provide guidance and best practices to help AISPs distribute the State AIP on the Internet as an official/authoritative source of information while satisfying the needs of DAT providers as main next intended users.





# 1 Introduction

## 1.1 Purpose of the document

The number of aeronautical information service providers (AISPs) shifting from the publication of their national Aeronautical Information Publication (AIP) as a paper product to the provision of the AIP as an electronic product has significantly increased over the last decade.

The purpose of this document is to provide guidance and best practices to help AISPs distribute the State AIP on the Internet as an official/authoritative source of information while satisfying the needs of DAT providers as main next intended users.

The need for this document was initially expressed in 2015 in light of the difficulties experienced by DAT providers when making operational use of the content of the AIP published online due to restrictive disclaimers. In addition, the AISPs were seeking a harmonised approach for the provision of the AIP on the Internet while satisfying the regulatory requirements and additional expectations of DAT providers.

The second edition of this document required some adjustments taking into account the adopted EU regulatory framework (ATM/ANS regulations) requiring, inter alia, the provision of the electronic AIP (eAIP) and other changes including the reduction of the necessary timeline for AIP amendment preparation using direct electronic distribution.

## 1.2 EUROCONTROL Guidelines

EUROCONTROL guidelines, as defined in the EUROCONTROL Regulatory and Advisory Framework (ERAF), are advisory materials and contain:

*“Any information or provisions for physical characteristic, configuration, material, performance, personnel or procedure, the use of which is recognised as contributing to the establishment and operation of safe and efficient systems and services related to ATM in the EUROCONTROL Member States.”*

Therefore, the application of this EUROCONTROL guidelines document is not mandatory.

In addition, the EUROCONTROL Regulatory and Advisory Framework specifies that:

*“EUROCONTROL Guidelines may be used, inter alia, to support implementation and operation of ATM systems and services, and to:*

- *complement EUROCONTROL Rules and Specifications;*
- *complement ICAO Recommended Practices and Procedures;*
- *complement EC legislation;*
- *indicate harmonisation targets for ATM Procedures;*
- *encourage the application of best practice;*
- *provide detailed procedural information.”*

These EUROCONTROL Guidelines have been developed under the EUROCONTROL Regulatory and Advisory Framework (ERAF) and is maintained by EUROCONTROL in accordance with this Framework.

## 1.3 Structure of the document

This document comprises the following chapters:

Chapter 1: Introduction

Chapter 2: Requirements and expectations with regard to the provision of the AIP on the Internet

Chapter 3: Guidance for AIP distribution on the Internet

Chapter 4: Best practices

Annex A: ICAO and EU requirements relevant to the provision of the AIP on the Internet

Annex B: States in the EUR/NAT region with the AIP on the Internet

Annex C: Document update procedures

## 1.4 Applicability

This document is intended to be read and used by all air navigation service providers (ANSPs) in the EUROCONTROL Member States (41) and Comprehensive Agreement States (2).

This document is referenced in the guidance material (GM) to [ATM-ANS Regulation \(EU\) 373/2017](#), Annex VI – Part-AIS - *GM1 AIS.OR.400(a) Distribution services | Delivery method (e)*.

EUROCONTROL makes no warranty for the information contained in this document, nor does it assume any liability for its completeness or usefulness. Any decision taken on the basis of this information is at the sole responsibility of the user.

## 1.5 Conventions

The following conventions are used in Chapter 3 for denoting requirements, recommendations and optional elements:

- 'must' indicates a statement, the compliance with which is mandatory to achieve the implementation of these EUROCONTROL Guidelines;
- 'should' indicates something that is a recommendation and not specifically required to meet or satisfy the identified objective(s);
- 'may' indicates an optional element.

## 1.6 Maintenance of the Guidelines

These EUROCONTROL Guidelines have been developed under the EUROCONTROL Regulatory and Advisory Framework (ERAF) and are maintained by EUROCONTROL in accordance with this Framework and in line with the EUROCONTROL Standards Development Procedures. The procedures are described in detail in ANNEX C.

## 1.7 Definitions

The following definitions are applied for the purpose of these Guidelines:

Term	Definition
AIP	An aeronautical information product provided in a standardised presentation on the Internet as a series of PDF and/or HTML files
Data services (DAT) provider	An organisation that processes aeronautical data/information from an AIP for use on aircraft and/or provides an aeronautical database for use on aircraft applications/equipment
Assurance	The AIP published on the Internet can be used as an authoritative source for their national AIP publication
Authenticity	Evidence that the document/data is being published exclusively by the competent authority officially recognised by the State for aeronautical data provision
Availability	Access to aeronautical information products provided online should not be prevented by website unavailability
Integrity	Evidence that the document/data/file is complete and was not modified after creation whether unintentionally or for malicious purposes
Traceability	Evidence that certain content was available on the Internet at a certain point in time and can be tracked back to the publishing entity
Validity	Evidence of the period for which the content is valid, evidence of the date when the document was published and when it is effective

## 1.8 Abbreviations

The abbreviations used in these Guidelines are included in the [EUROCONTROL Air Navigation Inter-Site Acronym List \(AIRIAL\)](#).

## 1.9 Reference material

1. Commission Implementing Regulation (EU) 2017/373 of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight.
2. ICAO Annex 15 to the Convention on International Civil Aviation, Aeronautical Information Services, Sixteenth Edition, July 2018 (including amendment 42).
3. ICAO Doc 10066 Procedures for Air Navigation Services Aeronautical Information Management (PANS AIM), First Edition, 2018 (including amendment 2).
4. ICAO Doc 8126 Aeronautical Information Services Manual Seventh Edition, 2022.
5. EUROCONTROL Specification for the Electronic Aeronautical Information Publication (eAIP), Edition 3.0, dated 30 November 2021 ([EUROCONTROL-SPEC-146](#)).
6. EUROCONTROL Guidelines on Aeronautical Data Processes, Edition 1.0, dated 26 November 2020 ([EUROCONTROL-GUID-184](#)).
7. EUROCONTROL Guidelines on the Implementation of Safety Support Assessment for AIS/AIM, Edition 1.0, dated 7 December 2020 ([EUROCONTROL-GUID-182](#)).
8. EUROCONTROL Guidelines for Contingency Planning of Air Navigation Services, Edition 2.0, dated 6 April 2009 ([EUROCONTROL-GUID-118](#)).
9. EAD Operational User Handbook – Data Provider (EAD/DOC-GEKB38), Version T.0 (zero), dated 4.12.23.
10. [EASA-ICAO AIS-AIM Regulatory Matrix](#), Edition 1.0, dated 17 May 2023.

11. EUROCONTROL AIM/SWIM Team Action paper AIM/SWIM Team-16/AP08 Reducing timeline amendment preparation, dated 19.3.19.
12. EUROCONTROL AIM/SWIM Team Information paper AIM/SWIM Team-18/IP03 Action 16/07 | Reducing AIRAC AIP timeline preparation - EAD SSG Feedback, dated 6.5.20.
13. EUROCONTROL AIM Group Action paper AIMG/22/04/07 'Operational Excellence Programme (OEP) – Workstream 10', dated 15.9.22.
14. LGS [AIS website](#)
15. ENAIRE [AIS website](#)

## 2 Requirements and expectations with regard to the provision of the AIP on the Internet

### 2.1 Relevant regulatory requirements

In light of the requirement to make available the aeronautical information products (AIP) by the most expeditious means, the provision of the AIP on the Internet is now considered to be one of the fastest ways to deliver an AIS product to next intended users. The ICAO and EU requirements relevant to the provision of the AIP on the Internet and their comparison are included in Annex A.

Accordingly, most of the States in the ICAO EUR/NAT region provide their AIP on the Internet either as an electronic AIP (eAIP) or as a PDF file. Annex B lists the States in the ICAO EUR/NAT region that provide the AIP on the Internet.

### 2.2 Expectations from DAT providers

Using the Internet for accessing and downloading the content of aeronautical information products and their amendments is convenient for end-users (i.e. DAT providers). DAT providers would prefer to use the online electronic State aeronautical information and amendment service for several reasons, as in most cases information provided electronically is available earlier than information provided on paper.

- The total volume of State aeronautical information amendments provided globally increases by 20% every year, which increases the overall workload for processing the data around the database cut-off date.
- In the case of physical (postal) distribution, the period available between the DAT providers' database cut-off date (20 days before the AIRAC effective date (EFF-20d)) and the latest delivery date for postal amendments (28 days before the effective date (EFF-28d)) is insufficient to allow for processing, verification and validation. [ref.: ICAO Doc 8126, 3.5.3.3]

The following list sets out the DAT providers' expectations for efficient use of the aeronautical information products provided on the Internet and references to guidelines in Chapter 3:

- a) The online electronic version of the AIP (incl. AMDT, SUP, AIC, NOTAM summaries and data sets) should be an authoritative and official source to be used for operational purposes as per ICAO and EU requirements for consistency between formats. [Authenticity] [Assurance]
- b) The aeronautical information products provided online, and user access to those products, should not be impeded by website unavailability. In case of unforeseen circumstances where access to the website is significantly interrupted, a notification of the disruption via NOTAM and provision of newly issued publications through another distribution channel is expected. [Availability]
- c) Electronic publication typically means that "distribution (EFF-42d)" and "reception (EFF-28d)" of the document occur on the same day. However, this is not always the case, due to reasons such as the technical issues described in b) above and time zone differences. Therefore, electronic distribution of AIRAC information earlier than 28 days before the effective date (or 56 days for major changes) is greatly appreciated. Distributing the publication online only 28 days in advance is not recommended by the DAT providers, even if it satisfies the minimum requirement under ICAO Annex 15. [Timeliness]

- d) The aeronautical information products in PDF format should be provided as unlocked files with copy and print functions enabled, embedded fonts and with graphics and text that are not incorporated as a picture or as a scan but as layers or vectors, for example. [Publication in PDF format]
- e) Once the aeronautical information product is provided online, its content should not be modified. Any errors subsequently detected in the publication should be addressed according to established corrective action procedures such as those described in ICAO Doc 8126 [ref.: 6.2.2.9 "Corrective action"], i.e. releasing a NOTAM or other document with the corrected information. [Integrity] [AIRAC rules]
- f) In the event that pages are missing in the PDF file uploaded to the website, these pages should be uploaded separately, with appropriate notification sent. If a new copy of the publication with the pages incorporated is uploaded to the website, a clear notification must be submitted, describing which pages have been added since the original release. AIRAC timelines should be taken into account if relevant to the content of the missing page(s). This prevents difficulties from arising when using the available electronic online State aeronautical information amendment service that occur in the absence of proper notification processes for updates/changes similar to those used for hard copies. [Validity] [Traceability]

## 3 Guidance for AIP distribution on the Internet

### 3.1 Planning considerations

When assessing AIP distribution on the Internet in order to ensure that the AIP is provided as an official/authoritative source of aeronautical information, the AISP should:

- analyse the AIP production process to ensure that all possible different formats are coherent, independent of the distribution means;
- have available the proper technical infrastructure to distribute the AIP on the Internet;
- define/analyse the process by which the AIP content is uploaded to the Internet to ensure that it maintains its integrity;
- define/analyse the publishing process to ensure that the content is available on the Internet at the proper point in time;
- conduct a safety analysis if the current systems or processes need to be adapted for AIP distribution on the Internet;
- ensure proper training of operational personnel.

The following guidelines provide a series of options for further implementing these processes as well as ways of mitigating the risks associated with certain identified threats. However, they are not meant to be all mandatory or substitute/replace any of the ICAO and EU regulatory provisions.

Each AISP will select the options best suited to its needs or define its own options. For example, some AISPs may consider using other existing platforms for distribution of their AIP on the Internet, such as the EASA-certified [EAD PAMS](#), which already includes in its processes all the requirements described above.

According to integrated management system best practices, it is recommended that distribution processes, available systems and relevant decisions are recorded in policies or procedures which are then re-assessed and reviewed regularly and in particular when new threats to Internet distribution are identified.

### 3.2 Guidelines and best practices

The following paragraphs contain guidance material for AIP distribution on the Internet.

In view of the current ICAO and European requirements and the needs of DAT providers, the AISP distributing official/authoritative AIPs on the Internet should consider adapting its processes in order to provide evidence of the following:

#### AIRAC rules

No changes will be made to the original document after it has been published. Changes to data between AIRAC dates can only be made by NOTAMs.

#### Assurance

The AISP assures that the AIP published on the Internet can be used as an authoritative source for their national AIP publication. Therefore, the AIP on the Internet should not have disclaimers stating that the content on the Internet can only be used for information purposes or that the AIP on the Internet is not warranted for integrity, accuracy and completeness and is not considered reliable.

End-users (e.g. DAT providers) downloading the AIP provided on State AIS websites sometimes experience limitations due to existing website disclaimers which prevent the operational use of the online publications. Examples of such disclaimers are listed below:

- *All content included here (including, but not limited to [...] aeronautical information, maps [...]) is for informational purposes only.*
- *For safety and security reasons, the data shall not be used for operational purposes. Only information in printed or electronic form, published by ..., can be considered as official.*
- *Website disclaimer text makes no promises for the original, current or future accuracy, completeness and functionality or usability of the PDF files.*

This affects the work of DAT providers as their access to publications is then limited to those distributed by physical means, and the timeliness of physical publications is reduced compared to the timeliness of information distributed electronically. For the reasons described in Chapter 2.2 above, the receipt of publications as soon as possible is very important to DAT providers.

In addition, the provision of aeronautical information on the Internet without ensuring its consistency with official data distributed by other means (in printed or electronic form) may compromise flight safety if disclaimers are overlooked.

From a regulatory perspective, there were no reasons identified for having disclaimers limiting the operational use of the information on the websites providing the aeronautical information products.

*Note: A copyright notification is acceptable as a disclaimer.*

## Authenticity

Authenticity in the context of these guidelines means evidence that the document/data is being published exclusively by the competent authority officially recognised by the State for aeronautical data provision.

HTTPS with TLS v1.3, where confidentiality, integrity, authenticity and authorisation are provided in the transport protocol layer (or stronger mechanisms), should be used for AIP distribution on the Internet. Moreover, an up to date certificate should be installed on the website server avoiding users to receive security warnings when trying to access the website.

It is recommended to establish a process to keep informed about security patches and apply them as soon as they are released. In addition, regular updates of software used in the global website infrastructure must be performed at least every 6 months.

Only needed ports should be opened on the website server.

Deployment of proxy servers and firewalls must be planned in order to prevent direct access to the data store and control payload as well as authorised IP addresses.

Access to the public and the back-office parts should be separated with different URL and right access.

Back-office access allowing to update the website should only be authorised to identified IP addresses or through VPN and authenticated users.

Role-based access control must be implemented and users' access regularly checked regarding the moves among staff.

The authentication policy, when using a username/password pattern, must provide rules on password minimum requirements: length (at least 8 characters), mandatory use of combination of symbols and alphanumeric characters.



A 24/7 supervision process must be put in place and have mechanisms to detect, report with automatic alert raise and handle the following incidents:

- Denial-of-service attacks
- Intrusion
- Malicious or unauthorised software installation
- Reconnaissance (e.g. port scanning)
- Physical damage
- Information compromises
- Software failure (with security implications)

Once an incident has occurred, a report must be drawn up in order to avoid a future recurrence, including:

- Causes
- Impact
- Actions performed (step-by-step description)
- Consequences
- Mitigations
- Status

Vulnerability assessments must be performed at least once a year by an independent party.

Authenticity could be threatened by a non-legitimate change of published content (see also [\[Integrity\]](#)).

## Availability

Availability in the context of these guidelines means that access to aeronautical information products provided online should not be prevented by website unavailability.

Availability could be threatened by a planned or unplanned system outage caused by maintenance, hardware malfunctions, security attacks, etc.

In case of unexpected website unavailability, the significance of the outage to users and the urgency of restoring access to the website may vary at different points in the AIRAC cycle.

Disruptions during critical dates, such as scheduled publication dates or the 28-day period leading up to the effective date, are particularly significant. For instance, accessing a new publication closer to the EFF-28-day point is more urgent than at the EFF-42day point or when accessing publications from previous cycles.

The availability of the website hosting the AIP should be measured, and a KPI should be established within the AISP's integrated management system with an aim of 99.5% in a year, including maintenance operations.

A careful evaluation of expected demand should be performed in order to ensure that the appropriate hardware and sufficient bandwidth is available, taking into account more than probable peak requests on AIRAC publication dates (e.g. based on the number of AIP subscriptions).

A maintenance plan for the infrastructure must be available, together with a backup (contingency) policy, fault recovery plan (off-site storage for archive disaster recovery

purposes) and a supervision process. The AIS contingency plan should reflect actions to be performed (including communication to customers) when the AIP on the website is not available for an amount of time exceeding a defined period deemed acceptable by the AIS provider (e.g. >12 hours).

The infrastructure (hardware and software) must as a minimum be protected against:

- service attacks;
- service utilisation above maximum levels;
- non-authorized intrusion attempts.

The supervision process must be established in order to warn of unexpected unavailability, using the following metrics:

- Server usage (memory, CPU, disk, etc...)
- Service time
- Number of requests
- Time of last request
- Number of failed requests
- Number of successful requests
- Maximum response time
- Average response time
- Bandwidth average

The maintenance, patch and upgrade policies must take into account the AIRAC publication and effective date in order to maintain the highest availability on those dates.

If possible, a high-availability infrastructure should be considered (duplicated sites with load balancing and hot swapping) or cloud services.

## Integrity

Integrity in the context of these guidelines means evidence that the document/data/file is complete and was not modified after creation whether unintentionally or for malicious purposes. Integrity could be also threatened by degradation during network transmission.

A mechanism to alert AIP users of detected unauthorized published files must be defined. Once unauthorized content has been detected on the Internet, customers must be alerted, with actions listed to perform content validation.

A mechanism to perform a regular assessment of the authenticity of published AIP content must be defined, e.g. by means of CRC checks on the published files.

Additional integrity mechanisms should be considered: CRC values for published AIP files may be made available to users. CRCs of at least 32 bit must be used. SHA-2 or SHA-3

algorithms are recommended.

The public key infrastructure (PKI) may also be used to ensure file authenticity, e.g. X.509 PKI.

## Publication in PDF format

Aeronautical information products in PDF format should be provided as unlocked files, allowing users to copy/paste text and graphics.

AIP pages in PDF format must be prepared, stored and published in a way that enables printing of content. The graphics and text are not to be incorporated in the PDF file as a picture or scan but as layers or vectors, for example. All used fonts must be embedded.

## Timeliness

Despite the regulatory requirement that the recipients of AIRAC products must be reached at least 28 days before the effective date, DAT providers would appreciate earlier provision when possible, via direct electronic distribution.

AISP procedures must guarantee that AIP amendments are available to the next intended users 28 days before the effective date. However, with direct electronic distribution, the AISP could make the aeronautical information products available on the Internet (i.e. direct electronic distribution) earlier than 28 days before the effective date. The following analysis explains the potential savings when providing the aeronautical information product on the Internet.

The introduction in ICAO PANS-AIM (and Commission Implementing Regulation (EU) 2017/373) of provisions for direct electronic distribution of the AIRAC AIP amendments and the growing trend towards discontinuing paper publication, have prompted the AISP in ECAC to consider reducing their timeline for the preparation of AIP amendments. The savings resulting from such a reduction became apparent with the elimination of postal delivery (14 days) and printing on physical media (approx. 9 days), which became redundant with direct electronic distribution (phases IV and V in Figure 1). The analysis demonstrated the feasibility of such a reduction in the timeline, including the relevant EAD submission schedule (on-demand AIRAC cycle – Figure 2).

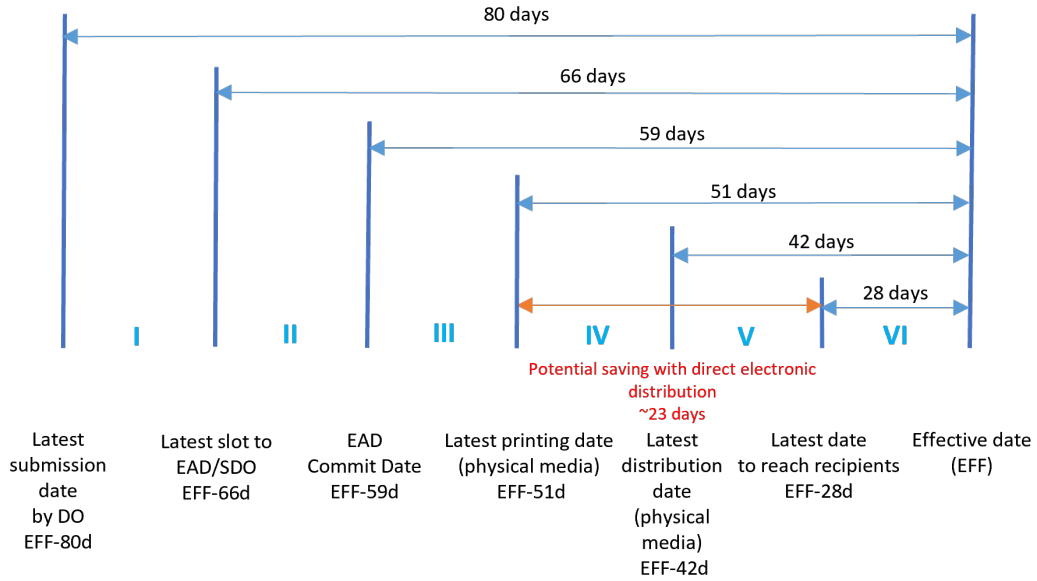


Figure 1 - Example of the AIS process timeline for the normal AIRAC cycle with potential savings

Despite the obvious benefits associated with a reduction in the number of days required for preparation of an AIP amendment, there remains flexibility as to the beneficiaries of such a reduction.

On the one hand, the main beneficiary of this reduction would be the data originator (DO), who would benefit from shorter lead times for the submission of changes for AIP amendments, i.e. the latest submission date by the DO could be shortened from EFF-80d to EFF-63d (Figure 2). The main argument for a reduction was that the current upstream AIS timeline for the preparation of AIP amendments was too rigid for the DO, requiring about three months lead time to submit the proposed changes.

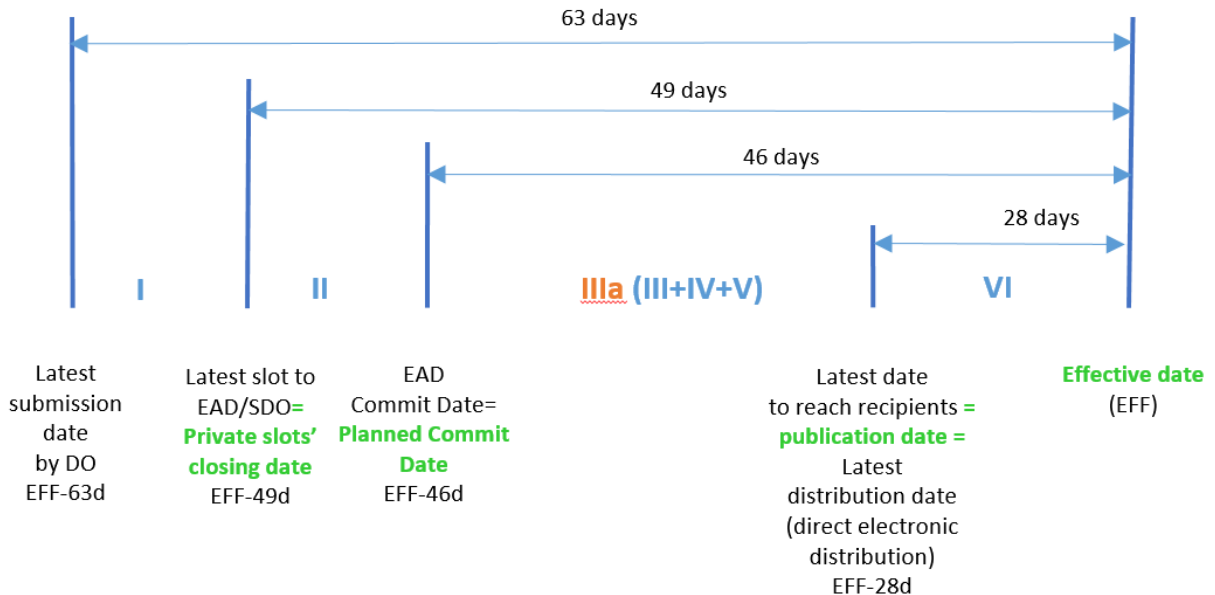


Figure 2 - Example of the desired timeline for AIS processes (direct electronic distribution) for the normal AIRAC cycle (beneficiary - data originator)

On the other hand, there was a continuous effort from the DAT providers to make the AIS/AIM community aware of the constantly growing volume of AIP amendments worldwide, the limited period for processing and the request for earlier provision of available electronic AIP amendments.

A large number of AIS providers therefore consider that the downstream part of the data chain (e.g. DAT providers) should be the beneficiaries of this reduction and would prefer to maintain the latest submission date for DOs more or less in the same position (i.e. EFF-80d) and to submit the available electronic AIP amendments to DAT providers at an earlier stage than on EFF-28d (Figure 3).

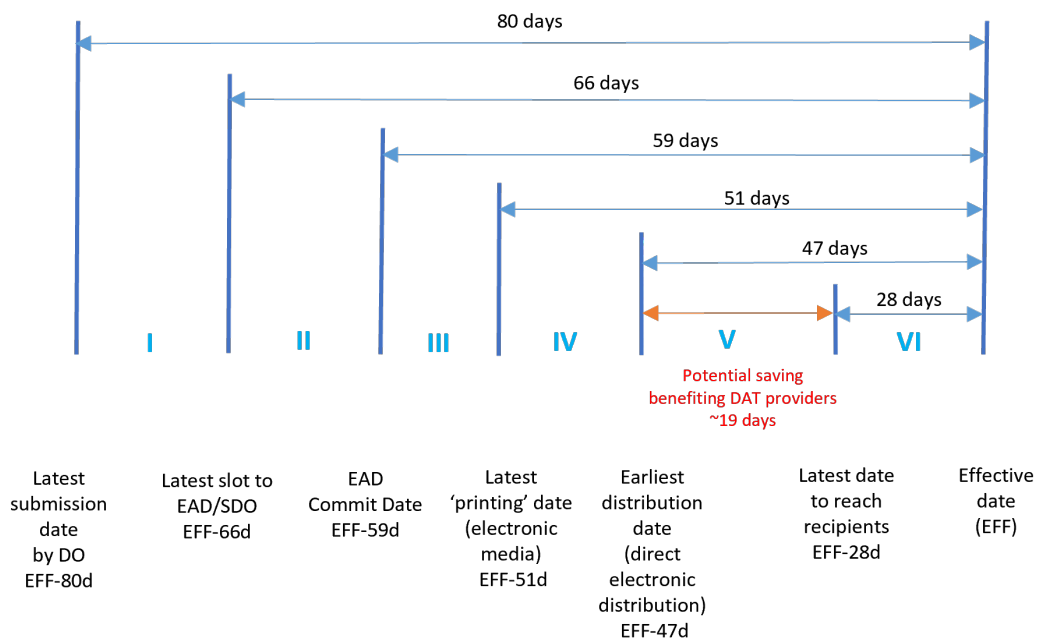


Figure 3 – Example of the timeline for AIS processes (direct electronic distribution) for the normal AIRAC cycle when beneficiary DAT provider

It is recommended that each AIS provider be aware of the potential reduction in the AIP amendment preparation schedule when using direct electronic distribution, resulting from the elimination of printing media and postal distribution. The resulting savings could be used either to shorten the lead time for the latest submission date for data originators (see Figure 4 Column 1) or by providing the available electronic AIP amendments earlier to the downstream users (e.g. DAT providers).

**PLANNED AIP AMENDMENT PUBLICATION DATES FOR YEAR 2024**

1. The following dates are planned for publication of AIRAC AIP Amendments and AIP Amendments in the year 2024.
2. In order to ensure the scheduled publishing and timely distribution of aeronautical information to users, the raw data/information must reach the AIS office by the dates shown in Column 1, at the latest.
3. Information reaching the AIS after the dates shown in Column 1 will be scheduled for publication in the next planned cycle.

AIRAC AIP AMENDMENT		
Latest date for raw data to reach AIS	Publication date	Effective date
1	2	3
02 NOV 2023	14 DEC 2023	25 JAN 2024
28 DEC 2023	08 FEB 2024	21 MAR 2024
22 FEB 2024	04 APR 2024	16 MAY 2024
18 APR 2024	30 MAY 2024	11 JUL 2024
13 JUN 2024	25 JUL 2024	05 SEP 2024
08 AUG 2024	19 SEP 2024	31 OCT 2024
05 SEP 2024	17 OCT 2024	28 NOV 2024

Figure 4 - Example of an AIC of one State with planned AIP amendment publication dates and the latest date at which the proposed amendments (raw data) should reach the AIS office

**Major changes**

In the event of major changes (see ICAO Doc8126 Part III 3.2.5), ICAO and EU requirements **recommend** that the information should reach recipients at least 56 days in advance of the effective date. By applying similar processes used in the normal AIRAC cycle (i.e. EFF-28d), the DO would have to submit their changes to the AISP ~91 days at the latest before the effective date, when being the beneficiary of the potential savings from the direct electronic distribution.

Similarly, when DAT providers are attributed the potential savings from the direct electronic distribution, the DO would maintain the latest submission date (i.e. EFF-108d) and the available electronic AIP amendments would reach DAT providers at an earlier stage (Figure 5).

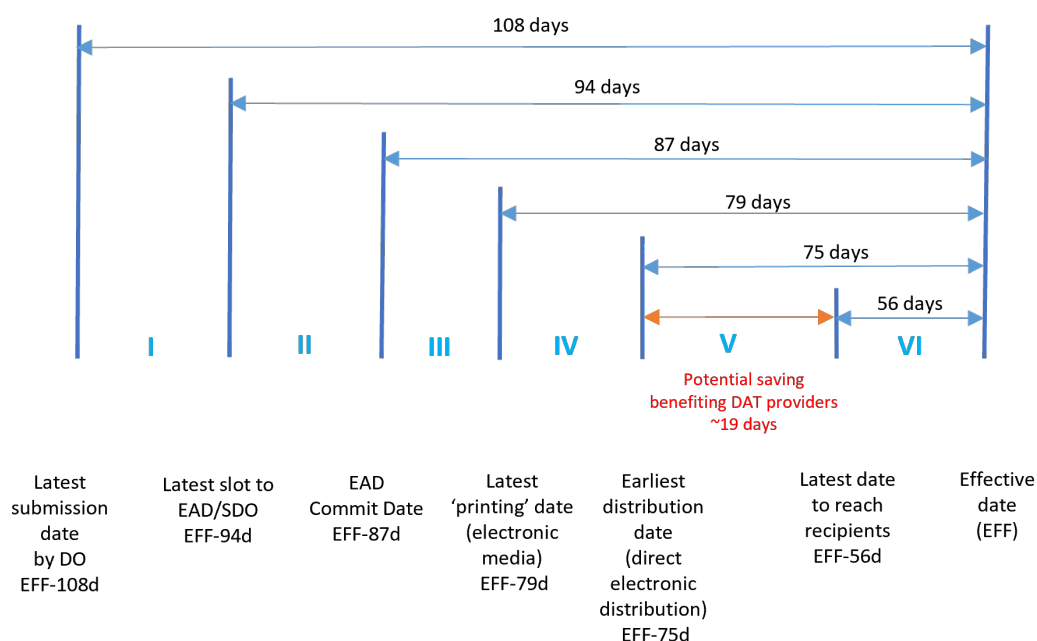


Figure 5 - Example of the timeline for AIS processes (direct electronic distribution) for the AIRAC cycle with major changes when beneficiary DAT provider

EU Regulation 2017/373 [AIS.TR.505 (b)] requires that “special arrangements” are made whenever major changes are planned and where advance notice is desirable and practicable. In relation to planned major changes, ICAO and the EU require the publication of an AIC [AIS.TR.320(b)(1)] for promulgation of the forecasts of important changes in the air navigation procedures, services and facilities.

In addition, such “special arrangements” could include:

- increased AIS support to handle a higher-than-normal volume of clarification requests from users when the change is published;
- If possible, scheduling the publication of updates that are not related to the major change for a different AIRAC cycle and different amendment than the one in which the major change is planned. This would allow users to focus on the major change, without distraction from other changes.

## Traceability

Traceability in the context of these guidelines means evidence that certain content was available on the Internet at a certain point in time and can be tracked back to the publishing entity.

The integrated management system in place at the AISP must maintain records that enable traceability checks on the AIP content published on the Internet, e.g. CRC control sheets, content management system logs, etc. This enables the AISP to demonstrate that certain content was on the Internet at a certain moment in time.

An offline back-up copy of the AIP content on the Internet must be archived for legal recording purposes.

## Validity

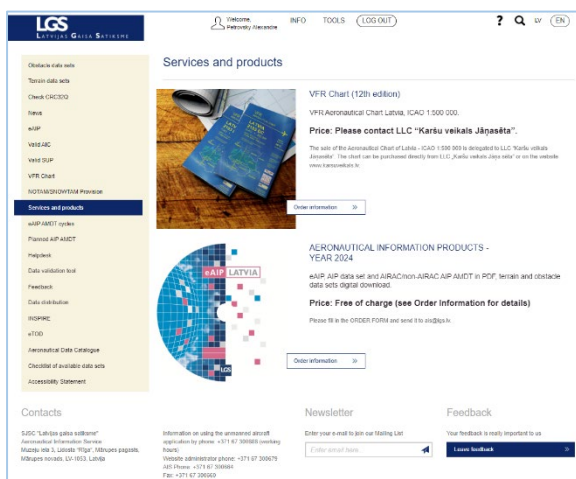
Validity in the context of these guidelines means evidence of the period for which the content is valid, evidence of the date when the document was published and when it is effective. If several AIP amendments are simultaneously made available on the Internet by an AISP, the validity period of each amendment must be clear to users.



## 4 Best practices

This section provides two examples of the provision of official aeronautical information on the Internet by the European AISPs and the best practices considered relevant by the DAT providers.

### LGS – AIP Latvia



On this AIS website ([ais.lgs.lv](http://ais.lgs.lv)), there is a special “Data distribution” section containing published information (eAIP, AIP AMDT and digital data sets), offering the possibility to download and check the integrity of downloaded files on the end user’s PC.

In order to use the data distribution tool, AIS clients have to subscribe and – by reporting to the AIS office – specify which published aeronautical information products and information they would like to have access to.

The following technologies are used on the website to enforce security and ensure integrity:

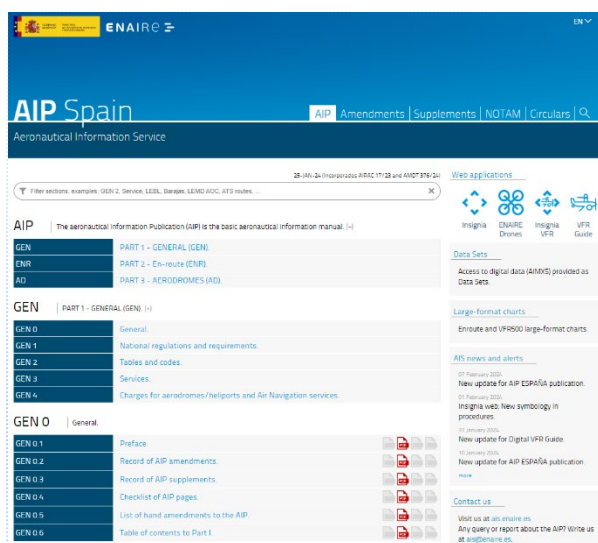
The website is available via the HTTPS (secure) protocol and is signed by a security certificate, thus ensuring:

- that the website’s users can check whether they are connected to the genuine AIS of the Latvian web server and that the connection is private, and
- that all data exchanges between the website and the end user go through the virtual tunnel that uses cryptography and ensures the integrity of the exchanged information.
- The website also has an extra level in its authentication system. To login to the website’s protected area, users need to provide a username, password and one special key code from a key code table sent to such users during registration.
- LGS has established an MD5 hash check procedure for the publicly available eAIP package, and the web server runs a hash sum check on a regular basis and sends a report to administrators. This procedure ensures the integrity of the eAIP files while they are stored on a server.
- Also, the website has an enforced integrity handling system. LGS has a JavaScript code running under the website’s file upload and download forms. That JavaScript code is able to create the file’s CRC checksum on the end user’s computer prior to uploading the file from the user’s computer to the web server. After the upload is finished, the JavaScript code checks the CRC values of the user’s file and the new file uploaded to the server.

### ENAIRES – AIP Spain

The Spanish AIP is provided by ENAIRES on its website, as a ZIP download.

The information contained in the AIP on ENAIRES’s website ([aip.enaires.es](http://aip.enaires.es)) is considered authentic and official. In different sections and the downloaded AIP, cyclic redundancy check SHA256 codes are available to verify the integrity of the files.



When the AIP links to certain information available on [Insignia](#), this is also considered authentic and official data.

Some AIP data is also published as data sets available for download on the AIP website. All data in the data sets is also available in the PDF or HTML part of the AIP. There are some limitations to the use of data sets, while more experience is gained with regard to use.

AIXM 5 files are generated from the same database as the rest of the AIP. However, due to the novelty of the format (first appearance on AIRAC 06/22), precautions must be taken when using data obtained from such files until further experience is gained.

In case of inconsistency with data published in PDF or HTML format in the AIP, data published in PDF or HTML format prevails over data published in AIXM format.

## Common elements

While there may be significant differences from one AISP to another and in relation to individual organisation structures, based on the above listed best practice examples, a series of common elements have been identified as generally necessary for the provision of an official AIP on the Internet:

- Official domain with the name of the AISP
- Internet bandwidth
- Web server (shared, dedicated, cloud, etc.) (initial deployment + maintenance)
- Publication system, e.g. a web content management system (WCMS) (initial deployment + maintenance) with public and back-office separated accesses
- SSL/TLS certificate renewed when needed
- Role based access
- Anti DDOS protection
- Supervision
- Security monitoring
- AISP staff training in the publication system
- Regular security audit
- PDF certificate, if applicable.

# ANNEX A – ICAO and EU requirements relevant to the provision of the AIP on the Internet

ICAO Annex 15 - Aeronautical Information Services		Regulation (EU) 373/2017 Annex VI – Part-AIS		Differences
text in blue indicate text not transposed or different from EAR 2017/373 Red = important difference		Black = Transposed Purple = additional to ICAO or different from ICAO Red = important difference		
Para No.	Text of Standard, Recommendation, Note	Reference No.	Text of Provision, AMC, GM	
<b>5 Aeronautical information products and services   5.1 General</b>		AIS.OR.300	<b>Aeronautical information products</b> When providing aeronautical data and aeronautical information in multiple formats, <b>an AIS provider</b> shall ensure that processes are implemented for data and information consistency between those formats.	
5.1.2	When aeronautical data and aeronautical information are provided in multiple formats, processes shall be implemented to ensure data and information consistency between formats.			

5.2 Aeronautical information in a standardized presentation				
5.2.1.1	The AIP, AIP Amendment, AIP Supplement and AIC shall be provided on paper and/or as an electronic document.	AIS.TR.305 (a)	<b>Aeronautical information publication (AIP)</b> (a) The AIP, AIP amendments and AIP supplements shall be provided as an 'electronic AIP' (eAIP). The eAIP shall allow for displaying on computer screen and printing on paper. In addition, the AIP, AIP amendments and AIP supplements may also be provided on paper. ...	The EU text starts from a different point of view. AIC is included in different provision
		AIS.TR.320 (a)	<b>Aeronautical information circular (AIC)</b> (a) The AIC shall be provided as an electronic document. ...	
5.2.1.2	<b>Recommendation.</b> — <i>The AIP, AIP Amendment, AIP Supplement and AIC when provided as an electronic document (eAIP) should allow for both displaying on electronic devices and printing on paper.</i>	AMC1 AIS.TR.320 (a)	<b>AIC</b> <b>ELECTRONIC FORM</b> When AICs are provided as part of the 'electronic AIP', they should comply with the EUROCONTROL 'Specification for the Electronic Aeronautical Information Publication (eAIP)' (edition 2.1, dated 6 October 2015).	

EUROCONTROL Guidelines for Aeronautical Information Publication (AIP) distribution on the Internet

<b>5.4 Distribution services   5.4.1 General</b>		AIS.OR.400 (b)	<b>Distribution services</b> An AIS provider shall: .... (b) make available the AIP, AIP amendments, AIP supplements, NOTAM and AIC by the most expeditious means; ....	
5.4.1.2	AIP, AIP Amendments, AIP Supplements and AIC shall be made available by the most expeditious means.			
5.4.1.3	<b>Recommendation.</b> — <i>Global communication networks such as the Internet should, whenever practicable, be employed for the provision of aeronautical information products.</i>	GM1 AIS.OR.400(a)	... (d) Global communication networks and web services may be employed for the provision of aeronautical information products. ...	The EU text is replacing the ICAO example of the Internet with the use of web services.

<b>6.2 Aeronautical information regulation and control (AIRAC)</b>		AIS.OR.505	<b>Aeronautical information regulation and control (AIRAC)</b> ... (2) the information provided under the AIRAC system is distributed/made available so as to reach recipients at least 28 days in advance of the AIRAC effective date; and ....	
6.2.3	Information provided under the AIRAC system shall be made available by the aeronautical information service (AIS) so as to reach recipients at least 28 days in advance of the effective date.			
	<i>Note.</i> — <i>AIRAC information is distributed by the AIS unit at least 42 days in advance of the AIRAC effective dates with the objective of reaching recipients at least 28 days in advance of the effective date.</i>	AMC1 AIS.OR.505(2)	<b>Distribution</b> AIRAC information, distributed as a physical medium, should be sent at least 42 days in advance of the AIRAC effective dates with the objective of reaching recipients at least 28 days in advance of the effective date.	The EU text emphasizes that only information on 'physical medium' should be 'sent' at least 42 days in advance
6.2.7	<b>Recommendation.</b> — <i>Whenever major changes are planned and where advance notice is desirable and practicable, information should be made available by the AIS so as to reach recipients at least 56 days in advance of the effective date....</i>	AIS.TR.505 (b)	<b>AIRAC</b> ... (b) Special arrangements shall be made whenever major changes are planned and where advance notice is desirable and practicable. ...	EU requirement is additional to ICAO
		AMC1 AIS.TR.505 (b)	<b>AIRAC   MAJOR CHANGES</b> Whenever major changes are planned and where advance notice is desirable and possible, information should be distributed and/or made available by the AIS provider, whenever practicable, so as to reach recipients at least 56 days in advance of the AIRAC effective date. ...	

EUROCONTROL Guidelines for Aeronautical Information Publication (AIP) distribution on the Internet

ICAO Doc 10066 (PANS-AIM) - Aeronautical Information Management		Regulation (EU) 373/2017 Annex VI – Part-AIS		Differences
text in blue indicate text not transposed or different from EAR 2017/373		Black = Transposed Purple = additional to ICAO or different from ICAO Red = important difference		
Red = important difference				
<b>5.2.4 Electronic AIP (eAIP)</b>		AMC1 AIS.TR.305 (a)	<b>ELECTRONIC FORM</b> The eAIP, eAIP amendments and eAIP supplements should be provided according to the EUROCONTROL 'Specification for the Electronic Aeronautical Information Publication (eAIP)' (edition 2.1, dated 6 October 2015).	EU requirement additional to ICAO. New edition available: EUROCONTROL 'Specification for the Electronic Aeronautical Information Publication (eAIP)' (edition 3, dated 30 November 2021)
5.2.4.3	When provided, the eAIP should be available on a physical distribution medium (CD, DVD, etc.) and/or online on the Internet.  <i>Note.— Guidance material on the use of the Internet is contained in Guidelines on the Use of the Public Internet for Aeronautical Applications (Doc 9855).</i>	AMC2 AIS.TR.305 (a)	<b>ELECTRONIC AIP</b> When provided, the eAIP should be available on a physical distribution medium (CD, DVD, etc.) and/or online on the internet.	ICAO note is not transposed in EU
5.2.2 Aeronautical Information Circulars (AIC)				
5.2.2.1	An AIC shall be provided whenever it is desirable to promulgate: a) forecasts of important changes in the air navigation procedures, services and facilities provided; ...	AIS.TR.320 (b)	<b>Aeronautical information circular (AIC)</b> ... (b) The AIC shall be provided whenever it is desirable to promulgate: (1) forecasts of important changes in the air navigation procedures, services and facilities; ...	
<b>5.4 Distribution services   5.4.1 General</b>				
5.4.1.1	Distribution to the next intended user will differ in the delivery method applied which may either be: a) <i>Physical distribution.</i> The means by which aeronautical data and aeronautical information distribution is achieved through the delivery of a physical package (e.g. postal services); or b) <i>Direct electronic distribution.</i> The means by which aeronautical data and aeronautical information distribution is achieved automatically through the use of a direct electronic connection between the AIS and the next intended user.	GM1 AIS.OR.400(a)	<b>Distribution services   Delivery method</b> (a) The distribution of available aeronautical information products to the intended users differs in the delivery method applied which may either be: (1) physical distribution — the means by which aeronautical data and aeronautical information distribution is achieved through the delivery of a physical package, such as postal services; or	

EUROCONTROL Guidelines for Aeronautical Information Publication (AIP) distribution on the Internet

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5.4.1.2	Different delivery methods and data media may require different procedures to ensure the required data quality.		<p>(2) direct electronic distribution — the means by which aeronautical data and aeronautical information distribution is achieved automatically through the use of a direct electronic connection between the AIS provider and the intended user.</p> <p>(b) Different delivery methods and data media may require different procedures to ensure the required data quality.</p> <p>...</p> <p>(e) <a href="#">Guidance to assist the AIS providers in developing and adapting their systems for the distribution of the State AIP on the internet as an official and authoritative source of information may be found in the EUROCONTROL 'Guidelines for Aeronautical Information Publication (AIP) distribution on the Internet' (edition 1.0, dated October 2017).</a></p>	
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## ANNEX B – States in the EUR/NAT region with the AIP on the Internet<sup>1</sup>

State	Available eAIP
Albania	Y <sup>2</sup>
Algeria	pdf
Armenia	Y
Austria	pdf
Azerbaijan	-
Belarus	Y
Belgium	Y
Bosnia and Herzegovina	Y
Bulgaria	Y
Croatia	Y
Cyprus	Y
Czech Republic	pdf
Denmark	pdf
Estonia	Y
Finland	Y
France	Y
Georgia	Y
Germany	pdf
Greece	pdf
Hungary	Y
Iceland	Y
Ireland	pdf
Israel	Y
Italy	Y
Kazakhstan	Y
Kyrgyzstan	Y
Latvia	Y

State	Available eAIP
Lithuania	Y
Luxembourg	Y
Malta	pdf
Moldova	Y
Montenegro	Y
Morocco	Y
Netherlands	Y
North Macedonia	Y
Norway	Y
Poland	Y
Portugal	Y
Romania	pdf
Russian Federation	pdf
Serbia	Y
Slovakia	Y
Slovenia	Y
Spain	pdf
Sweden	pdf
Switzerland	Y
Tajikistan	pdf
Tunisia	pdf
Türkiye	pdf
Turkmenistan	pdf
Ukraine	Y
United Kingdom	Y
Uzbekistan	pdf

<sup>1</sup> The latest known links to AIP on the Internet are provided at <https://www.eurocontrol.int/articles/ais-online>

<sup>2</sup> 'Y' indicates provision of AIP following eAIP specification and 'pdf' provision in pdf format only

## ANNEX C – Document Update Procedures

It is necessary to periodically check these EUROCONTROL Guidelines for consistency with referenced material, notably ICAO SARPS and relevant Regulations. The Guidelines may also evolve following feedback from field experience.

The main objectives of a regular review are:

- a) to improve the quality of the Guidelines (e.g. clarity, testability, etc.);
- b) to verify that the level of detail published is adequate;
- c) to make all stakeholders aware of the latest developments.

The update process for the guidelines is expected to be initiated by Stakeholders, who may provide change proposals either through existing working arrangements (e.g. established working groups) or by sending a formal Change Request (CR) to the generic email address: [standardisation@eurocontrol.int](mailto:standardisation@eurocontrol.int).

The CR needs to provide, at a minimum, the following elements:

- Originator information (name, organisation, contact details);
- Guideline title, number and edition date;
- Page, chapter, section (subsection) where the issue appears;
- Description of the issue and reason for change;
- Specific change proposal text (incl. potential alternatives, if any).

Main steps towards a revised version:

- EUROCONTROL will assess each CR in coordination with content owners to establish the urgency and impact (major, minor or editorial);
- A resolution proposal will be prepared and, if needed, discussed with the originator;
- Agreed changes will be integrated into a revised “Proposed Issue” version, which includes a summary of changes in the document record;
- The “Proposed Issue” will be consulted using appropriate working arrangements.

Note: Identified errors which may cause potential problems when implementing, may be corrected directly via a separate “Corrigendum”.





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