European Air Traffic Management

AIS QA COMPENDIUM

A source book of quality improvement initiatives for Aeronautical Information Services

EUROCONTROL

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Abstract

This document has been produced by the Data Content Improvement project of the EUROCONTROL AIS AHEAD Programme. The material is presented in the form of a compendium of improvement initiatives, reflecting good AIS practice that can be taken up by AIS. .

This compendium of proposals does not address basic AIS processes that are to be found in other documentation such as ICAO Annex 15 and the AIS Manual (Doc 8126). What are addressed are activities that can be initiated that will lead to the improvements in the quality of AIS.

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INTRODUCTION

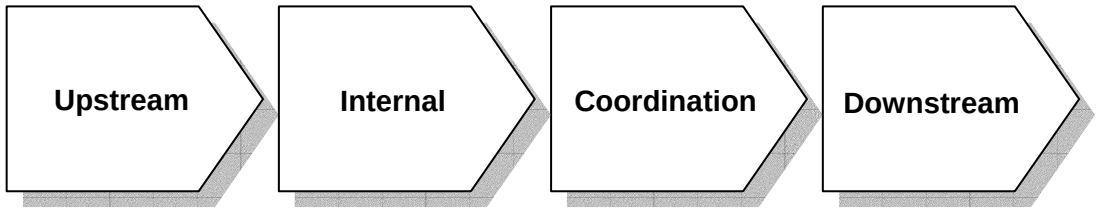
This document has been produced by the Data Content Improvement project of the EUROCONTROL AIS AHEAD Programme. It contains material which responds to a study commissioned under the AIS AHEAD Programme that was undertaken to identify the problems of AIS data content. The material was subsequently validated by Aeronautical Information Services in Europe at AIS Improvement Workshops and AIS QA Forums held in Luxembourg and Brussels between October 2002 and December 2003.

The material is presented in the form of a compendium of improvement initiatives, reflecting good AIS practice that can be taken up by AIS. Many of the proposals reflect what is already considered good practice and which has already been implemented in some States.

This compendium of proposals does not address basic AIS processes that are to be found in other documentation such as ICAO Annex 15 and the AIS Manual (Doc 8126). What are addressed are activities that can be initiated that will lead to the improvements in the quality of AIS.

Cultural barriers in some States may prevent the direct application of some of these improvements in AIS practice. However, the principles behind each proposal remain valid and they should be adapted to the local cultural environment.

The improvement proposals are categorised in 4 sections, reflecting different phases of the aeronautical information lifecycle. The sections are shown in the diagram below. The various sections are then subdivided by topic group where appropriate.



During the conduct of the AIS AHEAD Programme, one useful tool for focussing AIS improvements has been the AIS checklist, which was developed to reflect many aspects of good AIS practice and to provide a vehicle to act as the basis for discussion and debate. This checklist is shown on the following page and provides a good starting point for considering where improvements are needed in any AIS. The Compendium can then be used as a source book of initiatives that can be taken to address some of the problems that may have been identified as a result of running the checklist.

AIS CHECKLIST

This table contains some simple checks to improve the consistency and accuracy of AIS information. The checks have been identified following a survey of the problems in producing AIS in a number of Europe states. Do you do these things when producing your AIP ?

	DATA ORIGINATION	Yes ✓
1	Have you identified a complete list of authorised originators of AIS information (static and dynamic) ? *(It is possible that several organisations may feel they have the responsibility to supply information to the AIS organisation. Receiving the same information from several sources can cause confusion and errors. There should be one designated originator for each type of information)*	☐
2	Have you arranged with your data originators the format in which you would prefer to receive the data ? *(To ensure consistency in the data received, use of templates or pro-formas could be used. For examples the format of co-ordinates in latitude and longitude should be expressed in a consistent way)*	☐
3	Are the originators aware of the importance of supplying information in accordance with AIRAC procedures ? *(It may be that some information could be obtained in better alignment with the AIRAC if the originators were aware of the dates and the consequent of late provision of information)*	☐
4	Do your data originators attend training courses in the provision of aeronautical information ? *(Some originators are unaware of the AIS provision chain and the importance of their role)*	☐
5	Do you host a forum to meet the data originators regularly (at least once a year) ? *(Do you meet the data originators to discuss issues they have had over the last year and possible future activities in the year ahead?)*	☐
	COMPILING THE IAIP	**Yes ✓**
6	Have you defined a quality management system for producing your AIS ? *(ECAC states are required to implement procedures in accordance with ISO 9000:2000 by the end of 2003.)*	☐
7	Do you regularly review (at least once a year) the entire IAIP document set to ensure that it is consistent and accurate ? *(The IAIP document set is updated at regular intervals and those sections that are being modified are checked carefully however a complete review of the entire IAIP once a year could identify inconsistencies)*	☐
8	Do you check the consistency between the same data that occurs in different parts of the AIP ? *(Some information occurs in several places in the IAIP – it is important to check that every occurrence of that information is correct)*	☐
9	Do you routinely co-ordinate with neighbouring States prior to publishing Aeronautical information ? *(For example, the IAIP contains definitions of routes which terminate at state boundaries and these should be aligned with those in neighbouring states)*	☐
10	Do you routinely co-ordinate with military organisations prior to issuing AIS ? *(There is some military information that may be of interest to civil users and vice versa)*	☐
11	Do you proof read or peer review the amended parts of the AIP before publishing them ? *(Typographical and other simple mistakes can easy be detected by an independent reviewer and be removed prior to publication saving time and effort later)*	☐
12	Do you apply the OPADD for compiling NOTAMS ? *(ICAO Annex 15 and ICAO Doc. 8126 describe how NOTAMS containing AIS dynamic data should be completed. This may not be sufficient to achieve consistent and concise NOTAMS. The EUROCONTROL Operating Procedures for AIS Dynamic Data (OPADD) complements the ICAO documents.)*	☐
	PUBLISHING THE IAIP	**Yes ✓**
13	Do you check that your users receive AIP amendments in accordance with the AIRAC ? (*Providing the AIS products to your distributor should not be the end of the process – when the users receive the AIS products is important. Distribution could take a long time and must be taken into account)*	☐
14	Do you have a process for handling users queries on the IAIP ? *(Despite your best endeavours errors will get into IAIP amendments. You should have a process to receive their queries and act on them quickly)*	☐
15	Do you have regular meetings (at least once a year) with national users to see whether they are satisfied with your AIS ? *(There should be a regular opportunity to meet the users of your AIS to gauge their satisfaction. This is a requirement of ISO 9000:2000)*	☐

DESIGNATION OF DATA ORIGINATORS

1. Recognition and declaration of Data Originators

Many organisations originate or produce the data used by AIS. The number and diversity of such originating organisations can lead to high levels of inconsistent or badly formatted data arriving at the AIS office for processing. By limiting the number of authorised originators of information, and by providing a list showing which organisations or users are allowed to originate and disseminate new aeronautical information of specific types, the number of sources can be reduced and controlled. This can assist the AIS office in monitoring the standard of received data so as to ensure that a defined level of quality is maintained. The list of recognised authors can be distributed in a separate document or defined, for example, in a set of National Regulations. The list of recognised official originators should be transparent and readily available, perhaps through an AIS web page. When an unauthorised organisation or entity wishes to submit data, they can look up who is the most appropriate authorised originator and submit the information to them for filtering and forwarding to the AIS. This is particularly relevant at airports.

2. Each (Sub-) Section of the AIP should have a designated originator.

By defining for each sub-section of the AIP a list of data originators, if a user of the IAIP wishes to modify its contents for whatever reason, they know whom to contact directly. This will ensure consistency within a given section of the AIP, whilst allowing the defined data originator to compile several requests for modification from individual users into one combined modification request for processing by the AIS office. This has the benefit of knowing who is presenting the data to the AIS, whilst reducing the number of change requests for the same section of the AIP.

3. Check the authenticity of received data.

As an AIS provider you can limit the reception of data to that from authorised users. You can also easily monitor the quality of the incoming data from each data source. You may use defined quality standards that the authorised user can be required to use to present the data consistently, either from themselves or from a third party.

MANAGEMENT OF PROPOSALS FOR PUBLICATION

4. Hold consultation workshops to derive standard input formats.

By consulting the various data originators who supply your organisation, for example in a consultation workshop/seminar, it may be possible to agree a set of standards for the input format of the data they supply. For example, several organisations may represent the same information in different formats e.g. the date/time groups, and it would improve the situation if a local standard format were consistently used.

5. Set Standards and procedures for submitting proposals to AIS

By defining a protocol for data distribution for originators, your organisation may reduce the risk of data being received in a non-standard format or by non-standard means of reception. The documents used to define the data origination can easily be distributed as part of the IAIP package to ensure that all data originators are aware of the procedures to follow.

6. Provide tools to assist in data preparation

By providing simple tools or applications for formatting and dispatch of data for use by the originators you can ensure or at least encourage originators will provide information in the format you require. This will reduce the effort required for the processing of data in AIS. These tools need not be complex applications, but simple forms designed to ensure the inclusion of key data items (completeness) and the correct formatting of particular data items. These tools might include, for example, standard input forms and Internet submission procedures.

UPSTREAM

7. Use a 'Cover Note' to track data origination sources

Request (or insist) that all data supplied to your organisation comes with a standard AIS cover note which contains key meta-data items that can be defined by yourselves, such as originators name, telephone number, e-mail address, fax number and a brief synopsis of the data request for change. Any questions regarding the request for change can then easily be traced back easily to the data originator.

8. Track that originators supply data in an agreed format

Once an agreed format is defined for data transmission from originators to your organisation, you should ensure that the originators continue to supply all data in that format. This should reduce the need for unnecessary duplication of effort in verifying that information received in the wrong format is actually correct. This can be set up as a KPI and will lead to continuous improvement.

9. Use Service Level Agreements (SLA) to control supply

Service Level Agreements can be used to ensure that data is received on time and inn agreed formats in exchange for a commitment to amend the AIP and issue the appropriate revisions. The SLA can be used as a form of "internal contract".

UPSTREAM

10. Send back a copy of received data to originators to confirm or verify correct/complete reception of data

Data can often be incorrectly transcribed from one source to another. The 'Chinese Whispers' effect can lead to data being included in the IAIP that the originator did not intend. If the originator of the data is sent back a copy of the data received by the AIS, they have the chance to correct any transcription errors that have occurred in passing the data to the AIS.

11. Require data originators to sign off changes.

An extension of the previous idea is for the AIS office to send a copy of how the data modification would look like in the IAIP. This could then be sent to the originator for verification. The originator can then check that the data has been interpreted correctly and sign a release form to ensure that the data intended for entry is correctly formatted for distribution via the IAIP.

12. Digitise the information earlier in the chain

By using digital media for the origination and transmission of data, the chance of errors occurring in the relaying of information are reduced, while allowing greater automation in the processing of the data received. Creating input as, for example, a Word or Excel file, and transmitting by email would reduce errors.

AIRAC AWARENESS

13. Explain the consequences of late reception of information

Few data originators are aware of the consequences of late delivery of data for inclusion in the AIP. Not only are problems created for the AIS authority that is responsible for collating and processing the information, but the problem of missing or late data can have serious consequences on the day to day operations of aircraft within a State's airspace. The consequences of late delivery of data should therefore be stressed to data originators to ensure they know the consequences of late delivery of information.

14. Publish and disseminate to originators a timetable for when information should be submitted to AIS (AIRAC Calendar)

Provide your data originators with a simple calendar that indicates the cut-off dates for reception of data for inclusion in the next AIRAC cycle. This should give originators advance warning in preparing their data and hopefully would ensure that they deliver the information to you on a timely basis. The presentation of the schedule could be via a simple AIRAC calendar (as produced by Eurocontrol) or by means of inserting dates into users electronic desktop calendars e.g. use the Calendar that is provided in MS Outlook. Alternatively, create a data originators email group and send out reminders of deadline dates each cycle. Use of an intranet page for this purpose could also be effective.

15. Distribution of the FAQ on AIRAC

The EUROCONTROL guidelines and presentations on AIRAC distribution and the frequently asked questions on AIRAC could be easily distributed to data originators to ensure that common misconceptions and errors can be reduced. These could be translated locally to ensure better understanding. The level of English language understanding in AIS is high, but it is not necessarily so in some technical departments who may be data originators.

16. Explain that non-AIRAC information does not need a lead time

Data originators should also be made aware of what type of information requires is an AIRAC amendment, and that which does not. A proportion of time is spent each cycle filtering out information received that should not have been proposed for inclusion in an AIRAC amendment. If originators are aware of what requires an AIRAC amendment, and what type of information does not, then this time could be reduced. By the same token, information that should be controlled under AIRAC and which is often submitted and allowed through as an ordinary amendment can be correctly designated.

17. Determine and publicise actual deadline dates so as to guarantee timely reception of information.

The AIS office often knows the deadline date for inclusion of information within an AIRAC amendment. Instead of defining and publicising the generic rule for cut off lead time as two or three weeks, they should endeavour to define an exact date by which originators can aim to get their data delivered to the AIS office. Publish these dates. Email the originator community as each cut off date approaches.

18. Include military organisations in AIRAC awareness

Military organisations, because of the nature of their operations, are often susceptible to late reception of data for inclusion in their AIPs and occasionally fail to provide data on a timely basis to the relevant authority for inclusion in the civilian IAIP. Therefore, all military organisations within a State should also be made aware of the AIRAC schedule for publication and they should also make their own data originators aware of deadlines.

19. Use reply postcards to check amendments arrive on time

To test that the IAIP elements you are distributing are arriving at the users address on time, why not include a pre-paid postcard in some of them that can be filled in by the recipient with the date that the package was received at the user's address. In this way you can determine the effectiveness of the delivery service/system you employ as well as determining the lead-time necessary for distribution of data to ensure that it reaches your customers on time. This could be a local supplementary activity in conjunction with the Postal Performance Project (P3).

DATA ORIGINATOR / DATA USER FORUMS

20. Use local newsletter/magazine

Publicity regarding the role and function of the AIS office in local or internal newsletters of the ATS provider, Airport or Airline newsletters can serve to promote greater awareness of the AIS roles and responsibilities. The publicity can serve to increase awareness of problems faced by AIS as well as providing valuable contact details for further information.

21. Have one-to-one discussion with originators

For major providers of data for inclusion within the IAIP, regular one-to-one discussions of issues surrounding the transfer and processing of data can be beneficial to solve problems that may arise. When undertaken at an early stage this can improve general communications between the two parties to the mutual benefit of all concerned. This could be seen as part of the process of setting up a Service Level Agreement with major data supplier departments

22. Organise workshops (2 or 3 per year)

Education of data originators on data presentation and distribution for all IAIP products should be an ongoing concern of all States. The training of key data originators and core processing staff in handling of AIP data within a State could easily be arranged in a common workshop where key data processing issues and problems could be raised and discussed in a workshop environment.

INTERNAL PROCESS

NOTAM COMPILATION PROCEDURES

23. Issue guidance material to show how best to compose a NOTAM

Some originators of NOTAM are unaware of the procedures for completion and distribution of relevant data. A defined set of guidelines should be created to ensure that the correct data are contained within a NOTAM.

24. Make good practice NOTAM examples available

A series of example NOTAMs should be created to give guidance on their structure and format. These examples should ensure good practice in the creation of NOTAMs.

25. Use FAQ for Q Code usage

The Q code on a NOTAM is often misrepresented or misused. A simple guide to Q code usage could be distributed to ensure that it is used correctly. The consequences of incorrect usage, which can impact the operation of aircraft within the States airspace, can be explained.

26. Use standard text for a NOTAM

For NOTAM that are repeated and distributed regularly, example text for a NOTAM could be used to ensure that the meaning of the NOTAM is unambiguous and that all the relevant details contained. A library (hard copy or soft copy) of 'draft' NOTAM text could be distributed widely to data originators in the State to ensure maximum utilisation of the guidance material

INTERNAL PROCESS

QUALITY

27. Cross check checklist pages with the rest of the AIP

A simple check can be done on the AIP to ensure that the dates and page numbers that are included in the AIP correspond to the page checklist that is supplied with the AIP document. This gives a very quick indication if inconsistencies have occurred.

28. Systematically review sections of the AIP that do not change on a frequent basis

Certain sections of the AIP do not change frequently. These sections may contain inconsistencies and should therefore be reviewed occasionally e.g. every 6 months. This may show up errors that might otherwise go unnoticed or unreported

29. Review AIP sections with the data originator

From time to time, consult with the data originators to ensure that the data they are providing is being correctly presented for their requirements. This not only gives greater responsibility to the data originator to ensure they supply the data correctly in the first instance, but they will also gain more 'ownership' and feel more closely associated with the publication process and will be more open in assisting with data processing and formatting issues. The data originators are also able to provide an independent viewpoint from which to assess the quality of the AIP product.

30. Train staff on the inter-connection of data items

Often in the AIP data is repeated in several sections. For example, a radio frequency may be repeated in several sections of text, in tables, and on several charts. It is important that processing staff are made aware that a single modification to one data item may have repercussions on several sections of the same AIP. Not only is data repeated, and all instance need to change when an update occurs, but there are also a range of derivate (calculated) data elements which might also be affected. (E.g. changes in coordinates of a waypoint will also change some distance declared in the AIP.)

INTERNAL PROCESS

31. Set up a card system indicating where in the AIP individual data items are listed

One solution to having multiple references of a single data item is to have a card system (either manual or electronic) that indexes where a particular data item occurs within the AIP. In this way, whenever the data item is modified, a simple check can be made using the card system to find all other instances of the same data item.

32. Introduce a 'Changes' Folder

When an amendment is proposed for a given section of the AIP, the amendment may not be issued immediately (sometimes you wait until several changes are required on the same page). Under these circumstances, the change should be held in a 'changes' folder, with subfolders for each section or set of pages in the AIP. When several changes have been accumulated for that section/page, the section can be updated in a single process, thereby saving time and money.

33. Set up internal review procedures

It is all too apparent that modifications to textual sections of the AIP documentation are not always formally reviewed prior to publication. Internal review procedures for verification of amended sections of documentation should be defined and adhered to, so as to ensure an accurate product is distributed to the users. Such a process should be incorporated into the QMS.

34. Get a colleague to proof read your amendments

A simple solution to ensuring accuracy in delivered products is to simply get a colleague to read what you have written. This can ensure that data content is correct, but also that what you intended in the textual description can be correctly understood by a third party and is unambiguous in its definition.

CO-ORDINATION WITH OTHER STATES

35. Check to see if major modifications will occur in neighbouring States by using the "National AIRAC Publication Review".

EUROCONTROL publishes a National AIRAC Publication Review which details which States are planning major changes to their AIP publications in the next few cycles. By looking at this you should be able to see if any neighbouring states are planning major changes to their AIP. These may have an impact on your own AIP. Early warning of possible changes can help the planning of modification of your own data and products. Why not get in touch with your neighbouring State(s), if they haven't contacted you already, and ask if their changes will impact on your AIP?

36. Request A Copy of the "Letter of Agreement (LoA)" When Cross Border Agreements Change

When Air Traffic Control units in neighbouring States modify the local Letter of Agreement between themselves, all relevant points, coordinates and identifiers are included in the document that is signed by both ATC units. Why not ask for a copy of this LoA, and ask to be informed of updates or modifications. The agreements can contain useful information and contact details that could assist in cross boundary co-ordination for information in the AIP?

COORDINATION

CIVIL-MILITARY LIAISON

37. Hold regular meetings with Military counterparts to discuss future changes (Every 3 Months or even more frequently)

Major changes to the State's airspace should be communicated frequently (e.g. every 3 months) between the civilian and military parties within that State. This gives ample time for both parties to plan modifications to their respective AIP publications.

38. Define Procedures to Interact with Each Other

On occasions the civil AIS office does not know how to contact the corresponding Military organisation for the State and vice versa. Simple procedures can be laid down to ensure that communication between the two units is undertaken more efficiently.

39. Fax amendments across to discuss changes

When major changes to an AIP of a country (either civil or military) are to be made, the changes to the relevant sections can be faxed across to the counterpart in either the military or civil organisation. They can then discuss the changes and the implications that these changes will have on their respective AIP publications.

CUSTOMER MANAGEMENT AND QUERY HANDLING

40. Internet Reporting of Problems

Users should be actively encouraged to report any problems they identify with your AIP product. The method of reporting these problems should also be easy and quick for the user. A simple solution is to provide an e-mail address to which any problems can be sent for you to take action on. Another method of Internet reporting of problems is to monitor the AGORA web site that endeavours to clarify problems.

41. Problem Sheet Included in Distributed Packages

For more detailed explanation of problems, a simple problem reporting sheet can be included in with the AIP product. Any problems the user discovers can be logged and sent back to the appropriate authority either by post or by fax or email.

42. Encourage user feedback on document content

The users of the AIP should be actively encouraged to report any problems that they encounter with the AIP product they use. The reporting process could be by e-mail, fax or it could be telephone based. The end user of the data is often in a position to inform you if the data that you are supplying is correct or not. You could provide incentives for reporting, either for individual errors or for systematic reviews. Such incentives might include free products (e.g. VFR guides, eAIP subscriptions, free tickets to the AIS open day), particularly if you have developed AIS merchandise (e.g. calendars, diaries, paperweights, pens posters etc).

43. Problems Logged on Spreadsheet

Any problems reported by users should be logged on a spreadsheet with relevant details about the problem. In this way a track of reported problems can be kept so that users who ring up to see if the problem has been rectified can easily be advised of the status. When the problem has been fixed they can also be informed directly. A simple spreadsheet also allows processors of the AIP product to see if any amendments to sections currently under review need additional editing to rectify an identified solution. Note: Such a mechanism is of recording customer "complaints" is in fact a requirement of ISO 9001.

44. Ensure the published telephone numbers are correct and are manned by people who understand the contents of the amendment

Users often need to communicate with the producers of the AIP documentation. For this to be effective, a list of contact details for relevant people should be included in the AIP. The AIS office should endeavour to use personnel who know the AIP and are able to answer the user's queries to the best of their ability and to the satisfaction of the user.

45. Ask product users for feedback (customer satisfaction)

User satisfaction with your AIP should be of a concern to you. A simple questionnaire to users could determine how well users perceive it. This questionnaire could be included in distributed AIP products or it could be mailed directly to individuals who register their interest in completing such information. Determination of customer satisfaction is an ISO requirement.

DOWNSTREAM

46. Ask Users for Suggestions

The users of your AIP publication may have several good suggestions on modifications to format, content or possibly distribution. These suggestions could provide a valuable source of improvements that will not only benefit the user but also save the AIS office valuable time and effort on processing information. So why not request suggestions by questionnaire?

47. Use EUROCONTROL Guidelines on Surveys

EUROCONTROL has provided guidelines for the construction and processing of surveys and questionnaires. These guidelines are freely available and are easy to implement to ensure you get a maximum return from the questionnaires you send to your users.

48. 'AIS Awareness Day'

If the creation and organisation of workshops for all of a State's data originators and processors is outside the scope of an individual AIS, or the scale of the problem is such that workshops are not warranted, AIS Open Days or Awareness Days can be arranged on a yearly basis where the AIS office can present the problems encountered to the wider community. These Awareness Days can also enable the data originators to provide feedback on the IAIP and could provide constructive suggestions for improvements. This 'customer' focus, both upstream and downstream, also meets in part the requirements of ISO 9001.

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