



**SUMMARY OF RESPONSES (SOR)
DOCUMENT FOR THE**

***REGULATORY APPROACH FOR
AERONAUTICAL DATA INTEGRITY***

Formal Consultation 27 January – 27 March 2006

DOCUMENT CONTROL

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1. INTRODUCTION

1.1 GENERAL

The European Commission has delivered a Mandate to EUROCONTROL asking for assistance in the development of implementing rules on Aeronautical Data Integrity for the Single European Sky.

In accordance with the Initial Plan agreed by the Commission and the EUROCONTROL Agency, the first step of the development of the draft implementing rule on Aeronautical Data Integrity is the production of the Regulatory Approach.

The draft Regulatory Approach document for Aeronautical Data Integrity was circulated for comment between 27 January and 27 March 2006, using the mechanisms of the EUROCONTROL Notice of Proposed Rule-Making (ENPRM) process.

1.2 SCOPE OF CONSULTATION

The Consultation documentation consisted of the draft Regulatory Approach and a Response Sheet. In the Response Sheet, the addressees were asked to express their formal view on the draft text and to indicate their preferred options as recommended in the draft paper. Copies were sent directly to:

- Members of the Provisional Council;
- EC, ECAC, FAA, ICAO, JAA, NATO;
- International Organisations/Associations:
ACI, AEA, AECMA, ATCEUC, CANSO, EBAA, ECA, ERA, ETWF, IACA, IAOPA, IATA, IFALPA, IFATCA, IFATSEA
- Chairmen of following bodies:
 - CESC (copy Secretary of CESC);
 - CMIC (copy Head of MIL);
 - PRC (copy Head of PRU);
 - RC.
 - SRC (copy Head of SRU);

The documentation was also made available through existing working arrangements i.e. domain Teams and Steering Groups, and to members of the public via the ENPRM web site.

1.3 PURPOSE AND STRUCTURE OF DOCUMENT

The purpose of this Summary of Responses (SOR) document is to provide a consolidation of the main comments received as part of the formal consultation activity as well as to provide EUROCONTROL's response to those comments.

The responses section (Section 2) of the document is structured as follows:

- General Response – providing a general analysis of the comments received.
- Consolidated Comments and Responses – summarising the comments made and providing the associated responses.

2. OUTCOME OF FORMAL CONSULTATION

2.1 GENERAL RESPONSE

2.1.1 Review of Comments

The review of comments was carried out by members of the Implementing Rule Drafting Group (IRDG), which was established in accordance with arrangements described in the Initial Plan, as an Agency working group to address the end-to-end data integrity requirements, including the possible regulatory issues. The IRDG consists of Agency staff from the Regulatory Unit, AIM and NAV domains, supported by external subject matter experts.

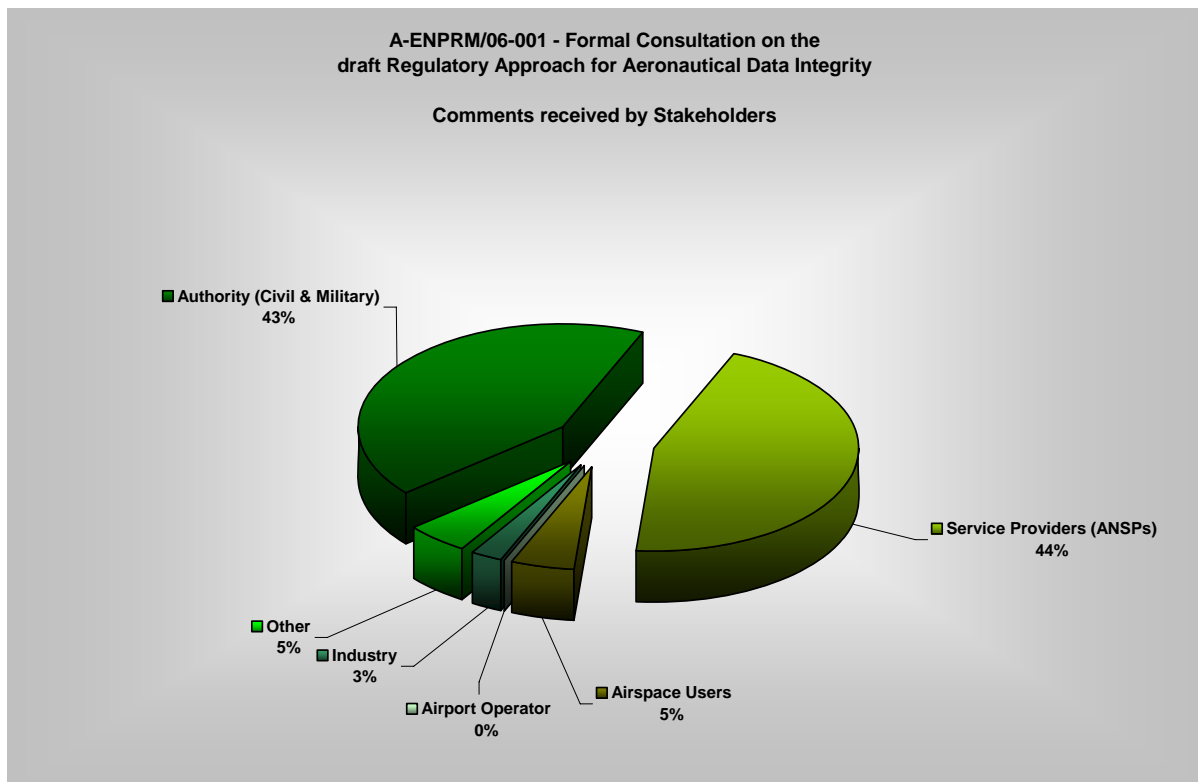
2.1.2 Overall Response

The overall response was unanimously in support of positive action to address the identified problems with aeronautical data quality. Some 40 responses were received, the majority of which supported a strong but responsive regulatory approach, mainly as described by alternative 2 as recommended in the draft Regulatory Approach. A number also supported alternative 1 as an ultimate goal, using alternative 2 as a step en-route. Thirteen stakeholders proposed other alternatives for a regulatory approach but the main issue arising from these proposals was the need for more analysis before a single approach could be chosen. The number of responses from each category of Stakeholder is shown in the table below:

**A-ENPRM/06-001 - Formal Consultation on the
Draft Regulatory Approach for Aeronautical Data Integrity
Comments received by Stakeholders**

	Agree with alternative 2	Prefer alternative 1	Prefer alternative 3	Propose another alternative	None of the above responses	Total by Stakeholder	%
Authority (Civil & Military)	9	3	0	5	0	17	42,5%
Service Providers (ANSPs)	12	0	0	6	0	18	45,0%
Airspace Users	1	0	0	0	1	2	5,0%
Airport Operator	0	0	0	0	0	0	0,0%
Industry	0	0	0	1	0	1	2,5%
Other	1	0	0	1	0	2	5,0%
Total Received Comments by Category	23	3	0	13	1	40	100%
Percentage (%)	57,5%	7,5%	0,0%	32,5%	2,5%	100%	

The distribution of the comments received from the different Stakeholders is shown in the chart below:



2.2 SPECIFIC RESPONSE

2.2.1 Introduction

This section summarises the main comments arising from the Consultation on the contents of the Regulatory Approach document and provides responses. Other comments, including those of a supportive nature, those correcting minor spelling or grammatical errors, those outside of the scope of the draft regulatory approach and/or those not requiring a response have not been included for the sake of brevity. However, all comments submitted are included in the table at Annex B.

The section is broken into 2 main sub-sections: 'Key Issues' and 'Other Issues'. Whilst all comments are addressed and may influence the selected regulatory approach, the comments included under the first sub-section are those that were seen to represent the 'main' issues arising from the consultation. These comments may provide for a focus of discussion at the stakeholder's workshop on 3 May 2006.

2.2.2 Key Issues

2.2.2.1 Data Origination

Comment

There were strong requests for the inclusion of data origination activities and 'standards', including procedure design, in the scope of the mandate. It was felt that this was an essential element in the data chain and should be integrated in the draft implementing rule. Furthermore, it was felt that if regulation was to be applied in this area, there needed to be an unambiguous definition of the term "data originator". The procedure designer was considered

to play a key role in the data origination area and therefore could not be excluded from the development of such a standard. Moreover, there was a suggestion to include, in the definition, those data providers that receive data from other parties, e.g. airport operators.

Response

The common provisions under Section 4 of the Regulatory Approach and those included within Alternative 2 already propose regulatory coverage that would normally be applicable to all actors in the data chain, including data originators. Specific technical provisions for data originators also arise from the draft "Data Origination Document", which is currently in mature draft form and will soon be circulated for consultation.

The Regulatory Approach will be clarified to include procedure designers and other data originators, such as surveyors, within the scope of the implementing rule. It is, however, recognised that procedure design, in particular, remains a challenging issue and that further in-depth study and analysis will be necessary during the next development phase of the draft rule to identify what is realistically achievable in terms of regulatory coverage.

The need to define properly "data originator" is accepted and this will be considered during the rule drafting process and in conjunction with issues arising from the "certification" of AIS providers currently being discussed by the SES Committee. The rule will also address the need to define other actors and activities in the data chain.

2.2.2.2 Integrity Levels

Comment

A number of comments highlighted the importance of the issue of data integrity levels. There was a request for better guidance on how to interpret and implement the existing integrity levels and how to produce evidence that the required levels had been reached. Further clarity was sought on what was meant by "States would be required to ensure that integrity levels were assigned to items of data depending on their intended use (e.g. RNAV, VFR) and that these assignments were published." There was concern that States could not re-define ICAO integrity level requirements but only to which objects the requirements might be applied. It was also felt that the interpretation of the integrity levels should be discussed, defined and agreed, taking into account all the stakeholders involved and, as a consequence, common criteria should be developed at a generic level. Furthermore, the numerical level targets to demonstrate these levels should be revised as well as the assurance levels, standards and specifications that define the processes, practices and infrastructure to meet the numerical targets.

One stakeholder held the view that States should not establish data integrity levels as there should not be a new data integrity structure that ran parallel or counter to ICAO SARPs.

Response

ICAO SARPS are generic and lack the precision to match requirements with need. In consequence, States are required to provide data at levels of integrity (and consequent cost) that are inconsistent with the operational need.

As a general principle, whenever practicable and appropriate, it is intended to make use of existing ICAO standards and procedures and it is acknowledged that the confirmation and/or redefinition of integrity requirements is a significant task that should, ideally, be addressed globally. However, it must be recognised that changes to ICAO Annex 15 in this area could only be made as part of Amendment 35 at the earliest. This is not due for implementation until 2010. Therefore, when global standards prove unsuitable or inadequate for existing or

emerging concepts and procedures, as is suggested in this case, there is a requirement to develop certain standards/definitions at the European level until this is remedied.

The next phase of rule development will conduct more in-depth studies to determine the nature and need for more precise definitions/guidance to clarify how data integrity levels might be assigned based on intended use. This is likely to take account of State intentions vis a vis implementation of operations or procedures that require improved data quality (e.g. P-RNAV). Material could then be produced that would support States in the assignment process should it be considered appropriate to implement a process where States assigned integrity levels. This material would also indicate how the existing ICAO levels might be affected.

The issue of providing further clarity on how to interpret and implement integrity levels will also be re-examined during the next phase of development but this will hopefully be addressed, at least in part, by the above work.

2.2.2.3 Cost and Safety Assessments

Comment

Some stakeholders felt that alternative 2 (and indeed alternative 1) would require significant investment in time and resources and that the potentially substantial financial implications could not be ignored. Safety would also have to be maintained during the period of significant change. There was also a specific concern that the cost benefit analysis should be updated after the consideration of the inclusion of procedure design, data origination activities and third parties in the process.

One organisation felt strongly that *before* any option could be considered for regulatory action, a full Cost Benefit Analysis and Regulatory Impact Assessment would have to be satisfactorily demonstrated.

Response

A detailed Regulatory Impact Assessment will be conducted for the chosen Regulatory Approach alternative during the next phase of the implementing rule development. This will build on the Preliminary Impact Assessment that was set out in the Regulatory Approach document and it will take into account a detailed assessment of the implementation conditions, which will also be conducted during the next phase. The requirement for a phased implementation is accepted and further consultation will be conducted with Stakeholders on this issue.

In accordance with the SES Mandate, the detailed Regulatory Impact Assessment will also consider the impact of the chosen Regulatory Approach alternative on safety. Safety will be taken fully into account in the assessment of implementation conditions and in the development of a transition plan.

The detailed CBA can only be carried out successfully once the regulatory approach has been selected as only then can the scope and impact be investigated accurately. However, the process of rule development is designed to respond to emerging impact assessment data which can be fed back into the drafting process to affect the coverage and content of the draft rule.

2.2.2.4 Regulatory Approach Analysis

Comment

A number of stakeholders were concerned that insufficient information had been presented to support the understanding of the regulatory approach alternatives and the identification of a single regulatory approach. It was felt that draft provisions for the different options should be elaborated to support their assessment and that a number of technical issues, including the scope and limits of applicability, should be further investigated and better defined before a decision could be made.

Response

The detail of presentation of the alternatives and the preliminary impact assessment were consistent with the level required to support a Regulatory Approach discussion paper, which is generally based on readily available information. The development of information to the detail requested can only be started once a single approach has been chosen and when a full set of impact assessments can be carried out. This results in a draft rule, with justification material, which can be presented once again for formal consultation. The opportunity for further amendment, based on expert analysis and stakeholder consultation, exists throughout the next phases of the process.

2.2.2.5 Means of Compliance

Comment

It was felt that specific applications, such as AIXM and EAD, should not be mandated as part of a regulation, but should be published as means of compliance (Community Specifications). It was felt that the implementing rule should establish the performance requirement rather than prescribe mandatory use of certain tools or methods.

There was a specific request to include a reference to a Community Specification on the CRC algorithm published by EUROCONTROL as a recognised means of compliance, and to reference the future Community Specification on software validation, arising from the ICAO OCP working group for software validation.

It was suggested that a requirement for a “universal” data set to be based on an enhanced AIXM data set would need to be confirmed by all Stakeholders and in particular by ICAO, seconded by its Member States.

Response

Suitable Means of Compliance and Community Specifications will be considered in detail in the next development phase of the draft implementing rule when the articulation (balance) between regulatory provisions and specifications will be identified and explained. In principle, the aim will be to publish detailed technical requirements at the level of Community Specifications to the maximum extent possible rather than prescribe them in the rule itself. However, experience with interoperability mandates to date has shown that some flexibility has to be retained in the application of this principle.

With regard to inclusion of a reference to Community Specifications (e.g. for AIXM and CRC algorithm), this is not common practice. This is done only when specific reasons require it. In addition, it assumes that such specifications exist, which is not the case at this stage.

In respect of the output of the ICAO OCP Working Group, the subject matter of the group will be investigated and the work considered or developed as means of compliance if appropriate.

It is acknowledged that the AIXM is intended to become a global standard; however, its possible enhancement and specific application within the scope and timescales of this implementing rule are justified by the advantages provided at a European level (see Section 2.2.3.1). All proposed provisions developed by EUROCONTROL within the SES framework are subject to widespread European stakeholder consultation which extends beyond the scope of the EU membership.

Beyond Means of Compliance and in respect of development of 'enablers to the rule' and support to implementation overall, it is important to note that there is a significant amount of work being done within EUROCONTROL that will contribute to implementation support activities (e.g. CHAIN, EAD, AIXM, NAV etc). This will be further elaborated within the Final Report sent to the European Commission.

2.2.3 Other Issues

2.2.3.1 Global Context

Comment

There was a view that the SES mandate initiative may be contrary to the need for States to avoid standards and procedures other than those established for international use. It was suggested that EUROCONTROL may wish to consider following the guidelines for submitting a proposal for changes to ICAO SARPS.

Response

EUROCONTROL is well aware of the advantages of global agreement and the ICAO processes to achieve this, and fully supports the principle that the ICAO baseline should be respected, as far as is practicable. EUROCONTROL is also very aware of the difficulties and long timescales associated with achieving global consensus. It is important to understand that the SES mandate requested EUROCONTROL to develop a draft implementing rule that supplements and strengthens ICAO requirements. The need for a rule is already made, therefore, as the SES regulations are extant and contain requirements for aeronautical data integrity which shall be implemented. Such action will implement and complement the ICAO baseline and action is already underway to achieve parallel amendments (in some areas) to ICAO material.

2.2.3.2 Transition and Implementation Issues

Comment

There was concern that an appropriate transition period should be studied and included in the implementing rule. It was specifically noted that, if mandated, alternative 2 would certainly require a phased approach and must come with an appropriately realistic time-scale for implementation.

There were suggestions that alternative 1 might be selected as a long term goal, and that alternative 2 could provide a first phase of implementation. Should this be the case there was one view that that the experience of stakeholders be analysed before proceeding to alternative 1. Moreover, it was suggested that a quality body be mandated to evaluate the stakeholder experiences and to recommend necessary changes to the rule before proceeding.

Response

The important issue of transition period will be considered and taken into account during the next phase of the implementing rule development. In this phase, there is a specific requirement to analyse and describe the so-called implementation conditions which influence the phasing of the implementation. Whichever alternative is adopted, its implementation will be structured to achieve realistic timescales and will take proper account of Regulatory Impact Assessment outcomes and stakeholder feedback, notably on cost and safety.

Retaining alternative 1 as an ultimate goal is an ideal approach but it may be too early to consider as a part of this rule's regulatory coverage, which must address what is practicably achievable at this stage or at a stage that is reasonably possible to predict. Concentrating on an alternative 2 type approach in this rule will deliver significant improvement in data quality performance but it will also be important to identify the required next steps to achieve end-to-end data quality. This does not just include the need for a fully digital data chain but the need to encompass all actors in the chain, including origination and post-publication activities. Only by including the whole chain will data quality be achieved. The impact of such an extension is being considered. However, practical considerations identified today preclude a rapid implementation of such an extension and the safety enhancements achievable by this initial step are considered sufficient to warrant its adoption

The success of the implementing rule will be assessed as part of the ongoing implementation monitoring activities. EUROCONTROL is in an ideal position with its Stakeholders to keep the data quality requirements under review and can continue to cooperate with the European Commission and the Industry Consultation Body in the identification of possible future mandate action.

2.2.3.3 Use of Existing Materials

Comment

A number of stakeholders felt strongly that that the implementing rule should make maximum possible use of existing guidelines and materials developed by ICAO, EUROCONTROL and Member States.

A specific suggestion was made to take account of the Letter of Acceptance (LoA) principle as applied by EASA in the post-publication phases, regarding P-RNAV procedures. This, it was felt, may mitigate the need for regulatory action.

Response

As required by the SES mandate, all existing Standards, Specifications and relevant material will be taken into account in the development of the draft implementing rule and its supporting material

The specific LoA application mentioned concerns activities beyond the scope of this mandate although they were considered during early discussions with EASA. One of the identified issues with the LoA process was its lack of regulatory force. However, all means of achieving performance requirements will be kept under review, accepting the basic principle that a non-regulatory approach is always preferred to a mandatory approach where this will achieve the regulatory objectives.

2.2.3.4 Liability

Comment

It was suggested that principles should be included concerning liability of the different actors within the data chain as analysis shows that a number of open issues need to be addressed.

Recommendations on principles of liability to be applied could assist States in the harmonised application of these principles.

Response

The question as to whether the liability principles should be included within the scope of this mandate need to be discussed within the Agency and with the European Commission. This is an issue that is applicable within other mandates and other areas, and it is important to establish how and where it should be addressed.

2.2.3.5 OSED Process

Comment

Some Stakeholders felt that the analysis of the data chain constituents through the OSED process, as described in Appendix A of the Regulatory Approach document, gave unclear and confusing results, mixing various concepts. There was also a concern that the Data/Information Validation/Verification paragraph was incorrect. Systems should be validated to assure that they do not corrupt or otherwise invalidate the integrity of the data used, including textual elements.

Response

The requirements for data may well arise for different reasons, such as a new facility or international agreement (legal). However, the OSED will be refined to clarify specific points. With regard to the Data/Information Validation/Verification paragraph, text will be reviewed and amended as required. There was no intention NOT to validate such data.

2.2.3.6 Software Validation

Comment

It was felt that the possibility of validating software on the basis of circumstantial evidence, i.e. of output instead of software, should be provided. The validation of software applications used within the origination, processing and publication of aeronautical data may be impossible to achieve for existing applications. Extensive software validation is considered to be a very slow way forward. The process should follow specific rules focused on critical software items. Furthermore, a specific process for existing applications should be planned.

Response

Provided clear validation requirements are established it should be possible to validate existing tools, notably if tool design and source code are available as these may form part of a validation activity. It is appreciated, however, that should an existing tool fail validation its correction may be more difficult. That said, understanding where tools in use fail to meet the needs for integrity and hence understanding where mitigation is needed is of equal importance.

It is possible that ESARR 6 (Software in ATM systems) could provide some help in this area. Whilst ESARR 6 does not address the whole spectrum of the software used in ANS, being limited to ATM, it could provide a good starting point for the establishment of safety regulatory requirements for software validation or even certification.

2.2.3.7 EAD

Comment

There were mixed opinions about the role of EAD in the mandate. There was a view that the EAD should play a more prominent role at the centre of the data integrity process and be further enhanced to eventually cover the entire data chain (from originator to end user). Another view objected to any obligations related to systems such as EAD that do not substantially improve or resolve State's individual data integrity problems.

Response

The importance of the EAD as a contributor to aeronautical data integrity has been recognised, but it is considered to be more of an implementation issue that should support the eventual needs of the rule. As such, the role of the EAD in supporting the implementation of the regulatory requirements, along with other applications, will be further examined during the next phase of the process.

2.2.3.8 Textual Clarifications

Comment

There were a number of requests for textual clarifications and corrections to be made within the Regulatory Approach document. Concerning the References, a number of corrections were proposed, notably concerning the accuracy of the Annex 14 description and addition of certain key documents, including Annex 11. These are elaborated in the table at Annex B

There was a specific concern that the Regulatory Approach section (3.4) concerning CRCs was inconsistent as the stated benefits did not correspond to those of the CRC.

Response

Texts will be amended accordingly. Paragraph 3.4 will be re-phrased, including a need to correct the text to explain that the EAD automatically applies CRCs, as specified in ICAO Annex 15, for all static data, and ensures non repudiation.

2.2.3.9 Definitions

Comment

In addition to the request for better definition of 'Data Originator' commented on at 2.2.2.1 above, there was a request for examples to be given to provide a better understanding of the definitions of critical, essential and routine data. Furthermore, formats for data provision should be defined.

Response

Definitions will be re-examined and clearly identified in the text of the rule.

ANNEXES

ANNEX A

Annex A contains a list of those Stakeholders that provided comments on the formal consultation and that agreed to their names being published.

ANNEX B

Annex B provides a table containing all the comments provided by Stakeholders without associating them with those that provided them. The table cross-checks the comments with the associated sections of the SOR.

ANNEX A

LIST OF STAKEHOLDERS THAT PROVIDED COMMENTS TO THE FORMAL CONSULTATION

Country	Organisation
Austria (AT)	AUSTRO CONTROL
Belgium (BE)	Belgian Civil Aviation Authority
Belgium (BE)	Belgocontrol
Czech Republic (CZ)	Air Navigation Services of the Czech Republic
Czech Republic (CZ)	Ministry of Transport of the Czech Republic
Czech Republic (CZ)	MoD, Military Aviation Authority, Czech Republic
Denmark (DK)	Civil Aviation Administration Danemark
Denmark (DK)	NAVIAIR
Finland (FI)	Finavia
France (FR)	DGAC
France (FR)	DGAC-DSNA
France (FR)	DIRCAM
Germany (DE)	Bundesministerium der Verteidigung FÜ L III 4
Germany (DE)	DFS Deutsche Flugsicherung GmbH
Germany (DE)	Jeppesen
Germany (DE)	Ministry of Transport, Building and Housing - Bonn
Ireland (IE)	Irish Aviation Authority
Latvia (LV)	Latvijas Gaisa Satiksme (LGS)
n/a	Civil Air Navigation Services Organisation
n/a	EUROCONTROL Safety Regulation Unit
n/a	European Regions Airlines Association
n/a	International Air Transport Association
Netherlands (NL)	Air Traffic Control of the Netherlands
Netherlands (NL)	Ministry of Transport
Portugal (PT)	Air Navigation Services of Portugal
Portugal (PT)	Instituto Nacional de Aviação Civil
Romania (RO)	Romanian Civil Aviation Authority
Romania (RO)	ROMATSA
Serbia and Montenegro (CS)	Serbia and Montenegro Air Traffic Services Agency Ltd.
Slovenia (SI)	Slovenia Control Ltd.
Spain (ES)	Spanish Airports and Air Navigation
Sweden (SE)	Swedish Civil Aviation Authority
Switzerland (CH)	Federal Office for Civil Aviation
Switzerland (CH)	SKYGUIDE
Turkey (TR)	Turkish State Airports Authority
United Kingdom (GB)	British Business & General Aviation Association
United Kingdom (GB)	National Air Traffic Services Ltd
United Kingdom (GB)	United Kingdom Civil Aviation Authority

ANNEX B

TABLE OF RECEIVED COMMENTS

1. The following table details all the comments received as part of the Consultation and cross-refers each comment to an appropriate response within the SOR document. The consultation process does not allow for specific comments to be attributed to those that made them so the material has been amended to remove any indication of the source of the comment.
2. The table addresses comments on the draft Regulatory Approach for Aeronautical Data Integrity have been associated with relevant paragraph / article / recital numbers of the associated document.
3. The table headings are as follows:

A-ENPRM/06-001 ON THE DRAFT REGULATORY APPROACH FOR AERONAUTICAL DATA INTEGRITY				
§ No	Comment	Reason(s) for Comment	Proposed Change/Text	Ref § No SOR

- a) The first column cross-refers to the relevant paragraph (article / recital) number in the draft Regulatory Approach document for the Aeronautical Data Integrity
- b) The 'Comment' and 'Reason(s) for Comment' columns captures the comments from the 'Comment' and 'Reason(s) for Comment' fields from the Consultation Response Sheet
- c) The 'Proposed Change/Text' column captures the text from the 'Proposed Change/Text' field of the Consultation Response Sheet.
- d) The '**Reference § No SOR**' column cross-refers to the relevant section of the **Summary of Responses (SOR)** document.

A-ENPRM/06-001 ON THE DRAFT REGULATORY APPROACH FOR AERONAUTICAL DATA INTEGRITY						
Agree with Alternative 2	Prefer Alternative 1	Prefer Alternative 3	Propose another alternative	None of the above responses	Comments	Ref § No SOR
X					We support Alternative 2 due to the fact this alternative provides a more flexible approach within the context of critical aeronautical data handling and of the interoperability of the systems used for aeronautical data transfer.	2.1.2
X					We understand the need to address the data integrity issue and supports a cautious approach to Alternative 2. The requirements for the first option are too constraining, and while being the desired solution, would be impractical for the majority of States. The 3 rd alternative lacks prescription, and would only encourage the current status quo to continue, leading to little improvement in the quality of data. Alternative 2 will require significant investment in time and resources, and the not insignificant financial implications cannot be ignored. If mandated, this alternative will require a stepped approach and must come with an appropriately realistic time scale for implementation. The impact on participants within the current 'Data Chain' will be considerable and the infrastructure required to implement, maintain and regulate will take time to organise and put in place. Significant changes will need to be made, and it is vital that safety is maintained within current arrangements during the development and implementation stages for the new.	2.2.2.3
X					We fully understand the need to address the data integrity issue and supports a cautious approach to Alternative 2. The requirements for the first option are too constraining, and while being the desired solution, would be impractical for the majority of States and ANSP's. The 3 rd alternative lacks prescription, and is likely to encourage the current status quo to continue and thus little improvement in the quality of data. Alternative 2 will require significant investment in time and resources, and the significant financial implications cannot be ignored. If mandated, this alternative will require a stepped approach and must come with an appropriately realistic time scale for implementation in order to allow for realistic business planning. A rushed approach could result in lower standards being achieved and thus be very damaging for the overall programme and intent of the mandate. We agree with our CAA that the impact on participants within the current 'Data Chain' will be considerable and the infrastructure and resource required to implement, maintain and regulate will take time to organise and put in place. It is vital that standards of safety are maintained during the considerable change to the Data Chain process. Irrespective of the good intent of mandates or subsequent deadlines, we could not condone any programme or course of action that could compromise the very basis of an ANSP which is safety. Therefore, whilst supportive, we urge caution and realism in the structuring and application of the Mandate in all its aspects.	2.2.2.3
X					Alternative 2 seems most realistic. Alternative 1 will be very hard to achieve, and 3 will probably not move things forward within the specified timeframe.	2.1.2
X					I agree with option 2 because requires a progressive implementation of automation and provides greater flexibility for the stakeholders and will be a first step to achieve the option 1. Further more, in accordance with option 2, critical and essential data will be cover. To support the Aeronautical Data Integrity achievement, it was approved the CHAIN programme. However it will be very difficult to some Data Originators implement the appropriate activities, within the proposed target dates, for achievement of interoperability.	2.1.2; 2.2.3.2
	X				The strong, equally understandable approach which is attainable mainly through punctual regulation could be the most effective way to improve the quality and accuracy of data.	2.1.2

A-ENPRM/06-001 ON THE DRAFT REGULATORY APPROACH FOR AERONAUTICAL DATA INTEGRITY						
Agree with Alternative 2	Prefer Alternative 1	Prefer Alternative 3	Propose another alternative	None of the above responses	Comments	Ref § No SOR
			X		Options 1 (Alternative 1) and 2 (Alternative 2) offer regulatory coverage that significantly strengthen the existing ICAO requirements and notably to achieve a more operationally appropriate set of integrity level assignments; in addition they both take clear action to reduce manual interaction and make obvious progress towards interoperability. Option 3 (Alternative 3) allows for 'manual' approach to continue and enhances existing ICAO requirements notably through the general and special provisions included above but to a lesser degree than Options 1 and 2. The option seeks to support interoperability only by the mandate of a standardised data set and allows a variety of existing formats to continue to be used. Progression towards electronic data would rely on the need to introduce automation on an individual basis. Option 1 and 2 imply high costs for stakeholders while Option 3 implies low cost and a large flexibility. Having said this, we would be in favour of creating a phased implementation by creating an "Option 3 enhanced" or "Option 2 less strong" that potentially would create the environment to advance the investments into technology and automation, followed by Option 2 and Option 1 as the last phase of the whole implementation. This phased approach will facilitate the progression of automation together with regulation and will balance the costs the stakeholder will have to allocate for this. In the case the consultation results will not be in favour of a phased implementation, we will support Option 2 (Alternative 2) as recommended in the Draft Regulatory Approach.	2.1.2
X					In the short to medium term we consider alternative 2 to be the only feasible option. Note: The use of AIP data in ATC/FDPS systems will still have to go through a certain degree of manual intervention in the foreseeable future.	2.1.2
				X	Before any Option is considered for regulatory action, as is detailed in the Executive Summary, a full Cost Benefit Analysis and Regulatory Impact Assessment will have to be satisfactorily demonstrated. Paragraph 2 of the Executive summary does not however make reference of the Letter of Acceptance principle, proposed by Industry and accepted by EASA, regarding P-RNAV procedures; such practical applications may mitigate the need for future regulatory action.	2.2.2.3; 2.2.3.3
	X				Alternative 1 is preferred. The data are used for 'safety critical' procedures such as approach and landing. Strong regulation is therefore important for all parts of the data chain in conformity with WGS-84 Manual of ICAO.	2.1.2
X					Option 2 is the best balance between dealing with the safety issues and the costs needed. It is the best overview of what need to be done and by whom. It is a progressive approach. It allows a rather quick first reduction of safety issues and their possible bad impact on aviation safety. It is not too complex to handle it. It puts enough pressure on performance improvement and increase in overall safety.	2.1.2
X					Most realistic approach.	2.1.2
			X		A decision with regards to the preferred alternatives can only be taken once the open items listed in the attached comments sheets have been resolved. In order to support alternative 2, it has to be ensured that all means of compliance are published in the Official Journal of the European Union on the day of publication of the interoperability regulation itself. Technical details should be published as means of compliance and not be incorporated in the Interoperability Regulation itself. Adequate periods of transition have to be included in the Interoperability Regulation.	2.2.2.4; 2.2.2.5; 2.2.3.2

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Agree with Alternative 2	Prefer Alternative 1	Prefer Alternative 3	Propose another alternative	None of the above responses	Comments	Ref § No SOR
	X				<p>An "extended/improved" Alternative 1 (A1) is the only feasible option to achieving interoperability and improving the quality of aeronautical information/data. By "extended/improved" A1 we mean that this option should also mention requirements concerning the use of (industry) standards for processing of aeronautical data, beside the use of standardised models for data storage and data exchange (AICM/AIXM). This shall facilitate the implementation at a widespread scale of standardised automated processes as well as it will assure improved control over the data and timely data exchange of aeronautical information (AI) between all actors involved, from data originators to data users. It will also facilitate the electronic data exchange between Aeronautical Information Services of different States (at least at the european level).</p> <p>Also, the Alternative 1 should take carefull consideration of the new role the AIS shall play in the future context set by SES Programme. We expect that the A1 will extend the responsibilities of an AIS by transforming it to an aeronautical data management center and it will set the scene for the implementation of SWIM (System Wide Information Management).</p>	2.1.2
X					By regulating data origination and prescribing a progressive automation and interoperability, this option will allow us, as Regulator and Supervisory Authority, as well as other national stakeholders, a greater flexibility in its application, besides having a more moderate initial impact and foreseeable less associated costs.	2.2.2.1
X					The need, based on safety considerations, for ensuring the integrity of aeronautical data from origination to end use has been long recognised.	2.1.2

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Agree with Alternative 2	Prefer Alternative 1	Prefer Alternative 3	Propose another alternative	None of the above responses	Comments	Ref § No SOR
			X		<p>We fully understand the need to address the data integrity issue.</p> <p>We propose another alternative in recognition of the work carried out by the Eurocontrol drafting group. Whilst supportive, we urge caution and realism in the structuring and application of the mandate and all its aspects. The following points are the basis for the alternative:</p> <p>a. If standards are to be imposed on all data originators, there needs to be an unambiguous definition of the term "data originator". The procedure designer who is one of the key data originators in the data chain cannot be excluded from the development of such a standard. Therefore we ask for an improved definition of the term "data originator" and for the inclusion of procedure design as this is an integral part of the data origination process;</p> <p>b. Include those data providers that receive data from other parties e.g. airport operators. This includes the issue of liability;</p> <p>c. Maximum possible use of existing guidelines and materials developed by Eurocontrol and member States like Integrity of aeronautical information, principles, data and quality management, data exchange, data publication, abbreviations and definitions, aeronautical data origination, navigation data integrity assurance...</p> <p>d. Technical details (such as AIXM, CRC) should be published as means of compliance (community specifications) and not be incorporated in the IR. The same approach shall be applied to Software validation.</p> <p>e. Update the cost benefit analysis after having reflected above mentioned elements (a and b);</p> <p>f. The cost for establishing the highest integrity requirements cannot be justified in cases where the data is only published for specific types of operations (e.g. VFR);</p> <p>g. <u>Appropriate transition period should be studied and include in the Implementing Rule.</u></p>	2.2.2.1; 2.2.2.3; 2.2.2.5; 2.2.3.2; 2.2.3.3; 2.2.4.3
X					We agree with Alternative 2. Our opinion is that this alternative provides necessary interoperability, reduces manual work to acceptable extent and enables adjusting to future requirements (up-grade with alternative 1).	2.1.2
			X		<p>We provide and use AIS services based on data acquired and/ or originated and disseminated by its own organization. We also depend on data delivered by data originators for which it is not responsible.</p> <p>The end users of AIS information sometimes use the information directly and sometimes use the information to produce other information.</p> <p>We are not the organization that can guarantee the required integrity of the data chain both upstream and downstream of its own activities.</p> <p>A stepped approach in collaboration with originators, users, and the regulator should be considered starting with the development of alternative 3 subsequently working up to alternative 2 and 1.</p> <p>The AIS section has recently implemented the eAIP based on Eurocontrol specifications, is preparing for migration to EAD and participates in a pilot project to develop Service Letter Agreements with data originators as a contribution to Eurocontrol's CHAIN project.</p>	2.1.2; 2.2.3.2

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Agree with Alternative 2	Prefer Alternative 1	Prefer Alternative 3	Propose another alternative	None of the above responses	Comments	Ref § No SOR
			X		<p>With the information available, it is not yet possible to concur with the proposed regulatory approach, or with one of the options. It is necessary to differ the regulatory approach until further elements about the way to demonstrate that integrity levels are developed, through the definition of assurance levels for aeronautical data (as stated in paragraphs 3.3 and 7.3.4). In addition, it is necessary to gather detailed cost impact information so that the selection of options is made on the basis of technical and financial considerations.</p> <p><i>Note 1 : notwithstanding the aforementioned comments, we do support the principle of a regulatory approach on aeronautical data integrity. Assuming standardized methods and/or processes to demonstrate conformity with numerical integrity targets are developed (which could be an outcome from the CHAIN programme), and that cost impact information are given, we would support a progressive implementation of automation and achievement of interoperability such as described in option 2</i></p> <p><i>Note 2 : the attached comments sheets are based on the material provided for the consultation. These comments are made to improve the material for a subsequent regulatory approach as requested above.</i></p>	2.2.2.3; 2.2.2.4
			X		In the full support of addressing the data integrity issue via the Implementing Rule (IR) we request to study another alternative based on the requirements and comments described on the below attached comments sheets.	2.2.2.4
			X		<p>We applaud EUROCONTROL's intent to improve the integrity and quality of aeronautical data at a European level and share EUROCONTROL's strong interest in ensuring and continually enhancing the quality of the data that is being used in commercial, military, business and general aviation operations around the world. In this quest, our organization diligently supports and aligns itself with the Standards and Recommended Practices (SARPs) developed by the International Civil Aviation Organization (ICAO) and published in the Annexes to the Chicago Convention. The development of SARPs follows a rigorous protocol to ensure the safe, efficient and orderly growth of international civil aviation. This objective is met by adherence to the four "C's" of aviation: cooperation, consensus, compliance and commitment (Retrieved from www.icao.int, Making an ICAO Standard).</p> <p>ICAO Annex 15 has been quoted on numerous occasions in the Draft Regulatory Approach (DRA) document. In Chapter 1, Introduction, Annex 15 states:</p> <p>The object of the aeronautical information service is to ensure the flow of information/data necessary for the safety, regularity and efficiency of international air navigation. The role and importance of aeronautical information/data changed significantly with the implementation of area navigation (RNAV), required navigation performance (RNP) and airborne computer based navigation systems. Corrupt or erroneous aeronautical information/data can potentially affect the safety of air navigation.</p> <p>To satisfy the uniformity and consistency in the provision of aeronautical information/data that is required for the operational use by computer-based navigation systems, States shall, as far as practicable, avoid standards and procedures other than those established for international use.</p> <p>It is recognized that Supplementary Procedures may be required in certain cases in order to meet particular requirements of the ICAO Regions.</p>	2.2.3.1; 2.2.3.3

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Agree with Alternative 2	Prefer Alternative 1	Prefer Alternative 3	Propose another alternative	None of the above responses	Comments	Ref § No SOR
			Continue from previous		<p>Upon careful review of the DRA document, it appears that the proposal put forth is contrary to the recommendation that “States shall, as far as practicable, avoid standards and procedures other than those established for international use”. It is our experience that regional or individual State deviations from ICAO SARPs, if not based on truly unique requirements, are detrimental to the efficient and orderly operation of the international air transportation system. It is our opinion that no sufficient justification was given for unique requirements regarding Aeronautical Data Integrity that would justify a Regional Supplementary Procedure for Europe based on a regulation issued by the European Commission. Therefore, we believe that none of the proposed three options are valid as a regulatory approach at the European level. If the intent of the authors was to address deficiencies in currently prescribed levels of Aeronautical Data Integrity affecting the international aviation community, they may want to consider following the guidelines for submitting a proposal for ICAO Standards and Recommended Practices.</p> <p>It is important to note that there are similarities in EUROCONTROL’s reasoning with the Global Air Traffic Management (ATM) Operational Concept, as spelled out in ICAO Doc.9854. This document presents the vision of an integrated, harmonized and globally interoperable ATM system. One of its six guiding principles is “Information” and the sharing of timely, relevant, accurate, accredited and quality-assured information among all stakeholders in the aeronautical data chain in order to conduct their business and operations in a safe and efficient manner. As stated, the management, utilization and transmission of data and information are vital to the proper functioning within the information-rich environment of a seamless and interoperable global ATM. It would appear that EUROCONTROL’s desire for harmonization and interoperability of aeronautical data could be achieved, not just at a European level but across all borders world-wide, through an alignment with the ICAO vision using the processes established for revising and enhancing ICAO Standards and Recommended Practices.</p> <p>It is of utmost importance that this kind of activity, with its vast strategic and regulatory implications, be developed by and in cooperation with all major Stakeholders of the international aviation community and with due consideration given to the needs of the airspace users. Issues such as data standards and integrity levels, their correlation to their intended use and acceptable levels of safety, their worldwide applicability, regulatory impact assessments, cost-benefit analysis, etc., should be developed under a global and harmonized view taking into consideration ICAO Annex 15, ED-76/77, DO 200/201 and baseline regulatory documents as might be appropriate such as AC-90 and TGL 10. Accepted administrative standards and rigor should be applied to this activity, such as those followed by JAA/EASA or the FAA in a Notice of Proposed Rulemaking. Only this method will lead to an all-inclusive and diligent buy-in and implementation by aviation authorities, air navigation service providers, data suppliers, airspace users and others stakeholders on a worldwide basis.</p> <p>We look forward to a diligent and continued effort by the international aviation community, under the auspices of ICAO, to address the issues justly raised in this paper. Our organization is well prepared and willing to contribute to this process in a constructive and professional way.</p>	Continue from previous

A-ENPRM/06-001 ON THE DRAFT REGULATORY APPROACH FOR AERONAUTICAL DATA INTEGRITY						
Agree with Alternative 2	Prefer Alternative 1	Prefer Alternative 3	Propose another alternative	None of the above responses	Comments	Ref § No SOR
X					Option two gives the best balance between the three options and does not require over prescription and as such is out preferred option.	2.1.2
			X		<p>We consider the data integrity issue is critical and has to be addressed and regulated and appreciates very much and is grateful for the excellent work carried out during the elaboration of the Draft Regulatory Approach for the Aeronautical Data Integrity Mandate.</p> <p>We agree with the general principles stated in the Option 2 as a first step towards an incremental approach to finally implement Option 1, but considers that, in order to strengthen the general support for the choice of option recommended in the document (option 2), some of the open actions from the draft document should be solved prior to the selection of a preferred option and prior to the publication of the implementing rule, at least the following:</p> <p>a) The interpretation of the integrity levels should be discussed, defined and agreed taking into account all the stakeholders involved and, as a consequence, a common criteria should be developed at a generic level.</p> <p>b) In order to comply with the common agreed integrity levels in a), the numerical level targets to demonstrate these levels should be revised as well as the assurance levels, standards and specifications which define the processes, practices and infrastructure to meet the numerical targets should be defined.</p> <p>c) The elaboration of a detailed study to confirm that the common agreed integrity levels in a) could be achieved using manual interaction is a key issue to be solved, because, in case manual interaction proves that the achievement is not possible, all the options should be redefined as significant automation would be required and, consequently, there would be a significant impact on the options, their assessment and their related costs.</p> <p>d) The Cost Benefit Analysis (CBA) and the impact assessment should be updated with more details after the results of the above a) b) and c) issues for the scope of the ADI Mandate including data origination activities.</p>	2.1.2; 2.2.2.2; 2.2.2.3; 2.2.2.4; 2.2.3.2

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§ No	Comment	Reason(s) for Comment	Proposed Change/Text	Ref § No SOR
General Response	<p>Although choosing option 2, we believe that a fully digital data chain according to option 1 should be the long-term goal for all items for which digital data is used for operations. Option 2 should be a first step towards a more rigorous rule as proposed in option 1.</p> <p>We recommend that after the implementation of option 2 and before moving towards an implementation of option 1, the experiences of the stakeholders should be analyzed and the implementing rules be revised and improved accordingly.</p>	States will have different requirements which can not all be covered by the proposed implementing rule. Many requirements will only be fully understood after implementation. A process should be in place to adapt the implementing rule in line with the developing needs of the stakeholders.	<p>We suggest a two step strategy: option 1 be declared as the long-term goal and option 2 be implemented as a first phase.</p> <p>We further suggest that a body (quality circle) shall be mandated to evaluate the experiences of the various stakeholders implementing option 2. This body should recommend necessary changes to the implementation rule before the final implementation of option 1.</p>	2.2.3.2
General comment	Identify limits and applicability of proposed option 2.	Better definition of limits and applicability leads to better understanding and will speed up implementation in the future.		2.2.2.4
General request	If standards are to be imposed on all data originators, there needs to be an unambiguous definition of the term "data originator". We consider the procedure designer playing the key role in the data origination and therefore the procedure designer cannot be excluded from the development of such a standard.	Procedure design should be considered as an integral part of the data origination process.		2.2.2.1
General request	Include those data providers that receive data from other parties e.g. airport operators. This includes the issue of liability.	There are several other parties involved in the data chain dealing with the data integrity issue. All of them should be included in the IR.		2.2.2.1
General request	IR shall insist on maximum possible use of existing guidelines and materials developed by Eurocontrol and member States like Integrity of aeronautical information, principles, data and quality management, data exchange, data publication, abbreviations and definitions, aeronautical data origination, navigation data integrity assurance...	It shall be assured that all existing guidelines and materials are used at the maximal possible extent.		2.2.3.3
General request	Technical details (such as AIXM, CRC) should be published as means of compliance (community specifications) and not be incorporated in the IR. The same approach shall be applied to Software validation.	The IR shall sets up only means of compliance instead of prescribing mandatory use of certain tools or methods valid at the time the IR is being written.		2.2.2.5

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§ No	Comment	Reason(s) for Comment	Proposed Change/Text	Ref § No SOR
General request	Appropriate transition period should be studied and included in the IR.	Based on the outcomes of the new alternative (created considering requirements described on above attached comments sheets) appropriate transition period should be studied and included in the IR.		2.2.3.2
Executive Summary – 3rd para	Procedure design: Agree on the complexity of the problem. However, is considered to be a vital link in the data integrity process. Procedure design should therefore be integrated in			2.2.2.1
References	Number 6: Annex 14 is Aerodromes and not Aeronautical Telecommunications, which is Annex 10 (Which annex is meant?)	Error	Change text accordingly	2.2.3.8
References	Some corrections have to be made	See next box.	Replace "Annex 14" by "Annex 10" Complete list with addition of "Annex 14 Aerodromes" Complete list with addition of "Decision 93/465/EEC" Complete list with "ED 109 Guidelines for CNS/ATM Systems Software Integrity Assurance"	2.2.3.8
2.2.2	Add flight procedure design explicitly in data chain definition even when it was initially not part of the scope of the mandate.	It is an essential element in the data chain and cannot be taken out of the discussions		2.2.2.1
2.2.2. & Appendix A	The analysis of the data chain constituents through the OSED process described in Appendix A gives unclear and confusing results, mixing various concepts. For instance, "data requirements" include very different instances such as "new facility" and "legal". This approach should be clarified.	The current text (and Appendix A) is misleading and confusing.	Refine the OSED process or simplify the analysis of the environment by just mentioning key actors in the data chain.	2.2.3.5
2.2.3	It is mentioned that : "The first prerequisite is to ensure that quality data is correctly stipulated and originated, with originators being obliged to comply with appropriate standards and that their activities are regulated by State Authorities (approved/certified). This is particularly important because the quality of data cannot easily be improved post origination." Applicability of this statement is unclear : - The term "data originator" must be thoroughly defined and described - What are the planned ways to bind originators to comply with appropriate standards? - Which are the "appropriate standards"? - If the statement is accepted, then why exclude the procedure design process (a key data originating one) in the rest of the material (in paragraph 3.7)?	The inclusion of data origination in the mandate should be clearly stated. Either it is included (for all data originating processes, including procedure design) and reference is made to applicable standards, or it is not at this stage		2.2.2.1

A-ENPRM/06-001 ON THE DRAFT REGULATORY APPROACH FOR AERONAUTICAL DATA INTEGRITY				
§ No	Comment	Reason(s) for Comment	Proposed Change/Text	Ref § No SOR
3.2	States should not establish data integrity levels based on the intended application and the operational environment. Global interoperability demands a consistent global designation and States should comply with Annex 15 and ED-77/DO-201. There should be a global effort to effectively implement the standards already specified or if those documents are considered to be deficient they should be modified. There should not be a new data integrity structure that runs parallel or counter to ICAO SARPs.			2.2.2.2
3.2	Give examples for a better understanding of definition for critical, essential & routine data.	Better definitions lead to better understanding and will speed up implementation in future.		2.2.3.9
3.2	Explain how probability can be demonstrated, what evidence is needed, which method is to be used.	No guidance exists already for standardized approach to get probability demonstrated. It could be a missing link or a showstopper for future implementation in the field. Some further development is needed.		2.2.2.2
3.2 & 3.3	Data Integrity Levels: Guidance is sought for the interpretation and implementation of the required integrity levels (e.g. 10-8, 10-5, ...etc), including how to produce evidence that the required integrity levels have been reached.			2.2.2.2
3.4	Paragraph saying: "CRC and digital signatures can only be used if all actors use them. For example, the European AIS Database (EAD) deploys them only when providers use them. Major benefits include: enabling automatic checking, reducing the distribution path, cross border checking (for inconsistencies), providing an infrastructure for error reporting and reduced number of master copies." Is inconsistent.	Inconsistent paragraph. Benefits do not correspond to CRC.	CRC and digital signatures can only be used if all actors use them. For example, the European AIS Database (EAD) deploys them only when providers use them. (exclude the second part of the paragraph)	2.2.3.8
3.4 & 4.4	Include a reference to a community specification referring to the CRC algorithm published by EUROCONTROL as a recognised means of compliance	The provision of CRC protection of digital data (cf. chapter 4.4, bullet 9) should take into account the CRC algorithm published by EUROCONTROL as a recognised means of compliance.	The use of the CRC algorithm published by EUROCONTROL is recognised as a means of compliance. A corresponding community specification is to be developed.	2.2.2.5
3.5	Define formats for data provision (check exchange capacities and needs of end users).	Better definitions lead to better understanding and will speed up implementation in future.		2.2.3.9
3.6	Specific applications such as AIXM and EAD should not be mandated as part of a regulation. Rather, the regulation should describe the capability required to achieve the stated goal. The implication that there is a requirement for a "universal" data set to be based on an enhanced AIXM data set would need to be confirmed by all Stakeholders and in particular by ICAO, seconded by its Member States.			2.2.2.5

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§ No	Comment	Reason(s) for Comment	Proposed Change/Text	Ref § No SOR
3.6 & 4.4	Include a reference to a community specification referring to AIXM as a recognised means of compliance.	The provision of a standardised data set to be used (cf. chapter 4.4, bullet 9) should refer to AIXM as a means of compliance not as a standard requirement.	AIXM is recognised as a means of compliance. A corresponding community specification is to be developed.	2.2.2.5
3.7	Define better "data originator".	Better definitions lead to better understanding and will speed up implementation in future.		2.2.2.1
3.7 & 4.4	Add definition of the term "data originator" and delete the line of argument referring to the exclusion of procedure design from this regulation. Cover the issue of liability. Refer to existing guidelines and material developed by EUROCONTROL such as the Data Integrity Guidance Material developed by CHAIN, including the "Data Origination" Document and the results of the NADIA-Study provided by the EUROCONTROL NAV-Domain.	If standards are to be imposed on <u>all</u> data originators there needs to be an unambiguous definition of the term "data origination". The procedure designer who is one of the key data originators in the data chain <u>cannot</u> be excluded from the development of such a standard. Otherwise chapter 3.7 is a contradiction to the provision of chapter 4.4, bullet 3. For the same reason, the relationship between data providers, e.g. airport operators, who receive data from other parties, e.g. surveyors, should also be covered.	Data origination addresses the functions performed by <ul style="list-style-type: none"> • Requesting Authorities (CAAs, ANSPs, ATSPs, aerodrome/airport authorities and, possibly, equipment suppliers (such as those developing terrain awareness warning systems – TAWS) that require surveys of, and survey information for aeronautical facilities (Nav aids, aerodromes, obstacles, etc.) • Originating Authorities (organisations responsible for creating facilities related to other ATM facilities. These organisations may perform procedure or airspace design, airspace planning etc. and create facilities such as ATS routes or instrument flight procedures.) • Surveyors • and any other third party organisations supplying aeronautical data to such authorities. (based on extracts from the EUROCONTROL CHAIN-Document "Integrity of Aeronautical Information: Principles - Data and Quality Management" DAP/NET/CHAIN/0028, edition 0.7, February 2006)	2.2.2.1; 2.2.3.3; 2.2.3.4
3.10	There is a current working group of ICAO developing a validation manual for procedure design. It should be referenced	Avoid duplication of efforts	Reference the procedure design validation manual under development so that it can be used in the process	2.2.2.5

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§ No	Comment	Reason(s) for Comment	Proposed Change/Text	Ref § No SOR
3.10 & 4.4	<p>Include a reference to a community specification based on the output of the ICAO OCP Working Group for software validation in procedure design.</p> <p>Add the option of validation on the basis of circumstantial evidence, i.e. of output instead of software.</p>	<p>The validation of software applications against published specifications (cf. chapter 4.4, bullet 7) can only be performed if such specifications are developed.</p> <p>ICAO has established a working group dealing with the development validation criteria for PANS-OPS software. To avoid duplication of efforts, the output of this working group should be considered.</p> <p>Extensive software validation is considered to be a very slow way forward. The process of software design should follow specific rules with a focus on critical software items. Validation on the basis of circumstantial evidence, i.e. of output instead of software, should be considered as an alternative (a means by which it is shown that a tool is appropriate for the process (qualification).</p>	<p>A community specification is to be developed taking into account the output of the ICAO OCP Working Group for software validation in procedure design.</p> <p>Validation of software can also be obtained on the basis of circumstantial evidence, i.e. of output instead of software.</p> <p>In order to ensure that a tool is appropriate for a process (qualification), it shall be subject to both a validation process (for compliance with applicable criteria) and an assessment of compliance with user requirements (concerning available functions, human machine interface, and documentation).</p>	2.2.2.5; 2.2.3.6
3.12.2	<p>EAD: It is felt that EAD should play a more prominent role in the centre of the data integrity process and be further enhanced to eventually cover the entire data chain (from originator to end user).</p>			2.2.3.7
4.4	<p>The validation of software applications used within the origination, processing and publication of aeronautical data may be impossible to achieve for existing applications.</p>	<p>A specific process for existing applications should be planned</p>	<p>A specific process for existing applications should be planned</p>	2.2.3.6
4.4	<p>There should be requirements on the use of standard interfaces and data models (e.g. AIXM) but no obligations to regulate or enforce the use of specific solutions, software or database systems such as EAD. Emphasis should be on interoperability and not centralisation of systems. We strongly object to any obligations related to systems such as EAD which do not substantially improve or resolve State's individual data integrity problems.</p> <p>Based on the experience and additional national requirements that many States have, we propose that the aeronautical information infrastructure in Europe should be a harmonized network of different systems working together and not be based on a centralized database.</p>	<p>All actors should have free choice of technology they want to apply, but it is accepted that the technology used should undergo certification (similar to an aircraft). Emphasis of the implementing rule should be on the interoperability and not on centralisation.</p>	<p>Comment to be taken into account when drafting the implementing rule.</p>	2.2.2.5; 2.2.3.7

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§ No	Comment	Reason(s) for Comment	Proposed Change/Text	Ref § No SOR
4.4	Principles should be expressed in the special provisions on the liability in the data chain as analysis shows that a number of open issues need to be addressed.	Recommendations on principles of liability to be applied which can possibly be accepted by a majority of States would assist to eliminate uncertainty and allow to work towards a harmonised application of these principles.	The following requirements to be added to paragraph 4.4: • Recommended principles of liability for the different actors in the data chain as support to States for application in their national law.	2.2.3.4
4.4	The draft implementing rule should incorporate existing guidelines and material that has been developed by Eurocontrol and the member countries.	Make use of the different guidelines in the community (established by Eurocontrol and member countries) about surveying and data processing.	The draft implementing rule should incorporate guidelines and material that is approved by the States (including associated States) and aligned with ICAO to ensure international compatibility.	2.2.3.3
4.5	The information on the different options leave too much room for interpretation. The provisions of the different options should be formulated more precisely.	The impact and the consequences of the different options for the regulatory approach cannot be fully assessed on the basis of the presented document.	Draft provisions for the different options of the implementing rule should be elaborated.	2.2.2.4
4.5	The information on the different options leave too much room for interpretation. The provisions of the different options should be formulated more precisely.	The impact and the consequences of the different options for the regulatory approach cannot be fully assessed on the basis of the presented document.	Draft provisions for the different options of the implementing rule should be elaborated. We gained some experience elaborating a national AIM Policy and a data regulation taking into account currently existing material on the international level (annex 15, SES, etc.). The AIM Policy is in the consultation process and will be followed by the data regulation (currently draft status). Based on this experience we would be willing to provide input in the drafting of these provisions.	2.2.2.4
4.5.1.2	It is not clear what is meant with: "States would be required to ensure that integrity levels were assigned to items of data depending on their intended use (e.g. RNAV, VFR) and that these assignments were published." States cannot redefine the quality and integrity requirements defined in the ICAO Annexes, but States may decide to which objects these requirements are to be applied (e.g. high quality, integrity for aerodromes with envisaged PRNAV operations but not necessarily the same standards for aerodromes with pure VFR operations).	Considering the economical impact, the costs for establishing highest integrity requirements cannot be justified in cases where the data is only published on paper products (Charts and Manuals) but never digitally transferred to systems used for operations (e.g. pure VFR aerodromes).	There should be guidelines on the application of the data integrity requirements for different items.	2.2.2.2

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§ No	Comment	Reason(s) for Comment	Proposed Change/Text	Ref § No SOR
8.1	Add Annex 11 to the list of applicable ICAO Annexes	Annex 11 Appendix 5 include tables for data integrity	Add Annex 11 to the list of applicable ICAO Annexes	2.2.3.8
Annex A-A6.	Data/Information Validation/Verification paragraph is incorrect. Systems which extract data and combine it such that it becomes part of a complete data set for use should be validated and verified to ensure that they do corrupt or otherwise invalidate the integrity of the data use, including textual elements.	Systems should be validated to assure that they do not corrupt or otherwise invalidate the integrity of the data used, including textual elements.	Data/Information Validation/Verification. Systems which extract data and combine it such that it becomes part of a complete data set for use should be validated and verified to ensure that they do not corrupt or otherwise invalidated the integrity of the data used, including textual	2.2.3.8
Annex C	Update the cost benefit analysis after having reflected above mentioned elements mainly considering the inclusion of procedure design and third parties in the process			2.2.2.3