

Comment				Comment summary	Suggested resolution	Comment is an observation or is a suggestion*	Comment is substantive or is an objection**	EASA comment disposition	EASA response
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1	Airbus Helicopters	Global		Airbus Helicopters concurs with the comments and suggested resolution proposed by ASD.				Noted	
2	Airbus Helicopters	Title	1	Title re-wording	It is: “Certification of aircraft system with databases”  Could be: “Certification of aircraft systems installations with databases”	suggestion		Not accepted	The CM addresses also ETSO authorisations and not only installations
3	Airbus Helicopters	§1.1	3	The intention of EASA to fill the gap with FAA AC 20-153B is acknowledge but using a CM is not the appropriate mean.  Since 2016 Authorities and industry associations have jointly progress in the building a close relationship to establish common EU / USA acceptable means for SW, AEH, OPRs ... The work is to be continued with aeronautical data bases.	To propose this paper as discussion material with FAA to build a harmonized A (M) C 20-153.		substantive	Noted	It is to be noted that FAA and EASA have not the same regulatory framework in this specific area. While the AC 20-153B includes guidance for data providers, those are in the EASA regulation framework under ATM/ANS IR (EU) 2017/373 and excluded from a potential EASA AMC under index 20. The intention of this CM is to cover the aircraft certification aspects of the AC 20-153B, while the database generation is covered by Regulation (EU) 373/2017. We worked closely with FAA to achieve technical harmonisation of the principles but consider a joint effort as not appropriate in this specific domain.
4	Airbus Helicopters	§1.1	3	The CM cannot fill the gap with AC 20-153 because the objectives of both documents are different: <ul style="list-style-type: none"> <li>The AC is scoping “How to comply with RTCA DO-200B” and is scoping only aeronautical data bases,</li> <li>The CM is scoping “Certification of systems which use databases” including the ones out of ED-76/DO-200 scope,</li> </ul> The AC is clearly distinguishing the roles and the responsibilities of the different stakeholders of an aeronautical data chain. The CM is vague, with the use of the “applicant” which may designate a TC/STC holder or an ETSOA holder	To propose this paper as discussion material with FAA to build a harmonized A (M) C 20-153.		substantive	Noted	See comment #3. EASA has improved the clarity of the use of “applicant” by identifying in the revised CM which organisations are concerned in each case. See particularized use of the “applicant” in the published CM.

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5	<i>Airbus Helicopters</i>	§1	3	Sentence re-wording	It is: “...certification of systems which use databases”  Could be: “...certification of system installations which use databases”	Suggestion		Not accepted	See comment #2
6	<i>Airbus Helicopters</i>	§1.1	3	Sentence details added	It is: “...may have an impact on safety and should be considered...”  Could be: “...may have an impact on safety and security and should be considered...”	Suggestion		Partially accepted	The security of the data is addressed, in line with AC 20-153B, as applicable to data suppliers through EU 2017/373. A note has been added to indicate that corruption is in line with the definition of ED-76A/DO-200B, covering either intentional (e.g., malicious act) or unintentional (e.g., lost data element). Data security addressed in 3.2.3. Other security considerations for type certification are addressed through specific guidance (e.g. security special condition) but not specifically in this CM.

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7	Airbus Helicopters	§1.1	3	Sentence details added	It is: “...recognized means to show compliance with the certification requirements.”  Could be: “...recognized means to show compliance with the applicable certification requirements captured in the aeronautical product certification basis.”	Suggestion		Partially accepted	“...recognized means to show compliance with the certification requirements.”  Changed to: “...recognized means to show compliance with the applicable aircraft certification basis or ETSO.”
8	Airbus Helicopters	§1.2	3	Sentence re-wording	It is: “The function to approve may benefit from an ETSO Authorisation (or equivalent)”  Could be: “The functional implementation to be approved may benefit from an ETSO Authorisation (or equivalent)”	Suggestion		Partially accepted	Changed to: “The new or modified function to be approved may benefit from an ETSO Authorisation ...”

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9	Airbus Helicopters	§1.2	4	Sentence details added	It is: “Providers for Electronic Flight Bag (EFB) non-certified software applications with an associated database.”  Could be: “Providers for Electronic Flight Bag (EFB) non-certified software Type A (and B) applications with an associated database.”	Suggestion		Noted	Intent is agreed. However EASA does not recognize Type C applications under EFB scope
10	Airbus Helicopters	§3.1.1	7	Sentence re-wording	It is: “It is important to consider that activities associated to the required assurance level and to define the database and its contained data will be driven by the most demanding application.”  Could be: “It is important to consider those activities which are associated to the required assurance level. The assurance level of the Database and its contained data will be driven by the most demanding application.”	Suggestion		Partially accepted	Changed to: “It is important to consider those activities which are sizing the database requirements. The data process assurance level and other data quality requirements (e.g. data accuracy) will be driven by the most demanding application.”
11	Airbus Helicopters	§3.1.1	7	Sentence re-wording	It is: “...with the tightest requirements derived from malfunction or availability effects caused by...”  Could be: “...with the tightest requirements associated to malfunction or availability effects caused by...”	Suggestion		Accepted	Changed to: “...with the tightest requirements associated to malfunction or availability effects caused by...”
12	Airbus Helicopters	§3.2.4	10	Sentence re-wording	It is: “...the applicant should clearly define in the certification plan the approval process...”  Could be: “...the applicant should clearly define in the compliance plan or dedicated database CDI the approval process...”	Suggestion		Partially accepted	Changed to: “...the applicant should clearly define in the certification documentation the approval process...”

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13	Airbus Helicopters	§3.3.2	11	Sentence re-wording	It is: “...defining the perimeter of the changes under the operator responsibility...”  Could be: “...defining the area affected of the changes under the operator responsibility...”	Suggestion		Partially accepted	Changed to: “...defining the operator responsibility for those changes...”
14	Airbus Helicopters	§3.3.2	11	Sentence re-wording	It is: “...the database comply with its specifications and will be compatible with the certified system.”  Could be: “...the database comply with its specifications and will be compatible with the system installation to be approved.”	Suggestion		Partially accepted	Changed to: “...the database comply with its specifications and will be compatible with the associated system(s).”
15	Airbus Helicopters	§3.4.1.1	11	Globally it is not clear in this section who the applicant is? It is not supporting the clarification of the relation between ETSOA holder and TC/STC holder for an installation.  e.g. “The applicant remains ultimately responsible that DQRs are defined, including a change control process”.  It is not clear here who the applicant is. In case of an ETSOA the TC/STC applicant is not responsible of the DQRs established by the ETSOA holder.	To clarify the wording and the role according to applicant type and/or aeronautical databases type		substantive	Accepted	<i>Refer to comment #4. TC/STC versus ETSOA Applicant used to distinguish differences in responsibility</i>
16	Airbus Helicopters	§3.4.3	12	“It is also recommended that the applicant supports the Type 2 DAT certificate holder with periodic sampling checks on individual data sets (e.g., via simulation, test bench environment, etc.) to confirm continued compatibility.”  In case of databases which are not managed by the TC/STC holder but by ETSOA holder, this is the duty of the ETSOA holder.	To clarify the wording and the role according to applicant type and/or aeronautical databases type		Substantive	Accepted	This part is linked to part-DAT AMC1 DAT.TR.100 (a) (1) and the recommendation is also existing in the AC 20-153B.  Text has been amended and complemented to clarify.  See comments #37, #46, #61, #67

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17	Airbus Helicopters	§3.4.3	12	Sentence re-wording	It is: “The certification documentation should define...”  Could be: “The compliance documentation should define...”	suggestion		Accepted	“The compliance documentation should define...”
18	Airbus Helicopters	§3.4.4	12	<p>“When testing is proposed for certification purposes, the applicant should perform these activities with representative databases to show that the equipment functions as intended and ensures that the testing provides full coverage of all capabilities/options supported by the database.”</p> <p>Full coverage is not clear. It is to be reminded that an aeronautical database is not a PDI to be verified as per ED-12C/DO178C. Performing as such will not be possible for most of all the aeronautical data bases.</p> <p>There not currently such a request. What is the safety driver leading to this request?</p>	To clarify or remove		substantive	Accepted	Clarification added. Some aspects apply for databases under 3.2, where the applicant is relying on system tests to ensure the quality of the installed database.
19	DASSAULT	General	-	<p>Objective for EASA to issue a cert-memo on DB aspects is not understood, as specific EASA CRI is sufficient to address database certification aspect with no added values in term of safety gain.</p> <p>If the goal was to harmonise guidance’s on database, the FAA AC 20-153B has several topics not in line with the CM-AS-009 which could conduct to additional certification activities for Applicant/DAT supplier to obtain FAA validation:</p> <ul style="list-style-type: none"> <li>• <a href="#">DO-200B applicability</a></li> <li>• <a href="#">DO-178C /DO-330 applicability</a></li> <li>• <a href="#">Data Suppliers Requirements on Data Security</a></li> </ul>	Launch a harmonisation working group with FAA and Industry in view to issue common AMC/AC on databases.	NO	YES	Noted	See comment #3.

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				<ul style="list-style-type: none"> <li>• <u>DO-272D / DO-276C applicability</u></li> <li>• <u>Low complexity database</u></li> <li>• <u>LOA aspects</u></li> </ul>					
20	DASSAULT	3.1.1	7	<p><i>"The applicant is encouraged to provide a list and a description of all databases, and to propose, for EASA review and agreement, the criticality associated to the data according to section 3.1.2, categorization of all the databases, according to the two categories defined in 3.1.3, and the process to be followed for the cases covered under 3.2"</i></p> <p>→ The lists of Databases that require airworthiness approval, as part of the aircraft/engine certification will be issued system by system and be part of the certification plans. In addition, a dedicated certification document should be generated to list this information but review and agreement by EASA on the criticality will depend of EASA LOI and TC holder privileges.</p>	<p><i>"The applicant is encouraged to provide a list and a description of all databases, and to propose, for EASA review and agreement, the criticality associated to the data according to section 3.1.2, categorization of all the databases, according to the two categories defined in 3.1.3, and the process to be followed for the cases covered under 3.2"</i></p>	YES	NO	Accepted	<p>Changed to:</p> <p><i>"The applicant is encouraged to provide a list and a description of all databases, and to propose, for EASA review and agreement, the criticality associated to the data according to section 3.1.2, categorization of all the databases, according to the two categories defined in 3.1.3, and the process to be followed for the cases covered under 3.2"</i></p>
21	DASSAULT	3.3.2	11	<p><i>"EASA may establish specific criteria through a CRI, adapted to the specificities of each project, to address particular cases like the electronic checklist applications."</i></p> <p>→ This paragraph is confusing as Electronic Checklist could be with Airworthiness Approval (part of the TD)</p>	§ Paragraph 3.3.2 with no added values and confusing has to be removed.	NO	YES	Partially accepted	This CM contains generic criteria and does not cover all kind of specific cases. The paragraph is only indicating that in some instances additional criteria to be established through the CRI normal process. The ECL is here provided only as example. It is agreed that the electronic checklist database could be part of the Type Design and then this paragraph is not applicable. Clarification has been added.
22	DASSAULT	3.4.3	12	<p><i>"The certification documentation should define the system function and any dependencies on the data, in particular implemented mitigation means that the operational software does not use data from the databases if the data is corrupted or not compliant with specified formats or parameter ranges. These mitigation means</i></p>	§3.4.3 to be removed.	NO	YES	Partially accepted	<p>The section is not removed. However it is highlighted that the intention is not imposing new requirements regarding the addition of automatic detection mechanism, but only requiring to document them if implemented.</p> <p>To avoid confusion, after mitigation means it will be added (if applicable). Explicit reference to the section</p>

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				<p><i>should be documented, ice automatic mechanisms to ensure compatibility.”</i></p> <p>→ § 3.4 should define criteria to be considered when referenced in the previous sections but compatibility criteria is never addressed in §3.3.x and not referenced in the flow charts in Appendix A.</p> <p>In addition §3.4.3 is requiring additional certification documents and prescriptive requirements on the design (i.e. : automatic detection mechanisms)</p>					3.4.3 has been added in 3.3. and clarification that this is not to be considered for databases under 3.2.
23	DASSAULT	3.4.4	12	<p><i>“When testing is proposed for certification purposes, the applicant should perform these activities with representative databases to show that the equipment functions as intended and ensures that the testing provides full coverage of all capabilities/options supported by the database.”</i></p> <p>→ This is under the scope of the operational software the verification activities and/or functional tests at A/C level.</p> <p>The database may contain specific values that are de-activated (not usable in a specific hardware configuration), a full coverage of all the capabilities/options supported by the database could be not achievable.</p>	Aim of this paragraph to be clarified or to be removed.	NO	YES	Accepted	See comment #18

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24	Embraer S.A.	3.3.1`	10	Embraer believes that to define the database specification and associated Data Quality Requirements according with section 3.4.1 alone does not cover all TC/STC scope.	Embraer suggests including the activities outlined in the sections 3.4.3, 3.4.4 and 3.4.5 in order to treat at TC/STC scope. New text proposed: 3.3.1 [...] Define the database specification and associated Data Quality Requirements according to sections 3.4.1, 3.4.3, 3.4.4 and 3.4.5, by ensuring that the Type 2 DAT certificate holder is aware of every evolution, coming from the in service experience, continued airworthiness, or the certification of new applications using the data.	YES	NO	Partially accepted	Intent is agreed. Text changed considering also comment #31
25	Embraer S.A.	Appendix A, point 3	16	The “Appendix A - Step 1 (page 14)” presents the scope as TC/STC, however in the “Appendix A – point 3 – path “YES” (page 16)” seems that does not cover all TC/STC.	Embraer suggests including, in the Appendix A - point 3 (page 16), the activities outlined in the sections 3.4.3, 3.4.4 and 3.4.5 in order to treat at TC/STC scope. New text proposed: “Define DQRs (refer to 3.4.1, 3.4.3, 3.4.4 and 3.4.5)”	YES	NO	Accepted	As proposed

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26	AIRBUS	General		<p>Extract : <i>“The FAA has adopted an equivalent approach as provided in FAA AC 20-153B. However, compared to this Advisory Circular, regulation (EU) No 2017/373 does not address the specific guidance for holders of type design approvals (ETSOA, TC, STC) concerning aeronautical databases in the context of aircraft certification.</i></p> <p><i>This CM is filling the gap and going a step further, by addressing not only aeronautical, but as well other databases, which may benefit from related published standards and recognized means to show compliance with the certification requirements.”</i></p> <p>AIRBUS has experienced many difficulties to harmonize EASA and FAA certification basis about DB that could justify launching a harmonization task.</p>	An harmonization task should be launched to address all kind of databases and produce equivalent AC/AMC	Suggestion		Noted	See comment #3.
27	AIRBUS	1.2	3	<p><i>This guidance provides provisions to take credit for activities covered under ETSO authorisation as well as activities covered under Data Provider Certificate (or equivalent LOA).</i></p> <p>Clarify the equivalence between the Type 2 DAT and the LOA Type 2</p>	Airbus proposes to add a statement	Suggestion		Accepted	<p>This aspect is covered by bilateral agreements. For example the EASA FAA TIP is 6 (paragraphs 3.8.5. and 3.8.6) covers the equivalency between the EASA DAT Provider Certificate and the FAA LOA.</p> <p><i>“...as established in a bilateral agreement between the European Union and other Countries)”</i></p>

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28	AIRBUS	3.2.1	9	<p>1<sup>st</sup> bullet of section 3.2.1 says :  <i>“the database specification and associated data quality and processing assurance level, as defined by the ETSO A holder, are appropriate without changes;”</i></p> <p>This statement is interpreted as a TC/STC applicant DQR not systematically required, provided that the DQR of the ETSO A holder has been accepted and demonstrated, by the TC/STC applicant, as commensurate with the intended use of the database and compliant with the applicable certification requirements.</p> <p>This principle should be extended to other types of databases (see similar comment about section 3.4.1.1).</p>	No change. Comment for harmonization purpose with other sections.	suggestion		Noted	The DQRs (if defined by the ETSO A holder) have to be analysed in cases such as new functions using the data, specific limitations coming from integration of the equipment into the product, resulting from experience in service or incidents that may be addressed through database content. However it is agreed that this analysis does not result necessarily in all instances in a change of the database specification or revision of the DQRs.
29	AIRBUS	3.2.3	9	<p>1<sup>st</sup> bullet of section 3.2.1 text says:  <i>“The update to a database with a failure effect other than NSE will be a change to the approved TC/STC. Revisions of the databases should follow the same approval process.”</i></p> <p>COMMENT : Today, some databases are updated by amendments and not systematically by a change to TC.</p>	<p>Airbus proposed text:  <i>“The update to a database with a failure effect other than NSE should follow the applicant change process (including major or minor changes or amendments). Revisions of the databases should follow the same approval process.”</i></p>		substantive	Partially accepted	<p>Part-21 subparts B, D, E and O are relevant in the context of this CM.</p> <p>The intention of the CM text is to indicate that the update to a database with a failure effect other than NSE should follow a design approval process, normally under the same method of compliance (case 1 to 4) from initial certification.</p> <p>Paragraph has been changed:</p> <p>The update to a database with a failure effect other than NSE will be a change to the approved design (TC/STC/ETSOA). Revisions of the databases under 3.2 should follow an airworthiness approval process.</p>

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30	AIRBUS	3.2.3	9	<p>2<sup>nd</sup> bullet section 3.2.3 text says:  <i>“The applicant should submit to the EASA the compliance documentation (refer to ED-76/DO-200, section 2.2).”</i></p> <p>COMMENT : The text does not describe when the compliance documentation should be submitted to EASA. Thus, this requirement is considered as too prescriptive if systematic. It should be applicable only in the frame of:            - a new TC            - or when introducing a new system or a new function, using a database, addressed by a major change to the TC.            A more generic wording could address the need for suitable evidences without a systematic submission to EASA.</p>	<p>Airbus proposes to replace the present text here below:  <i>“The applicant should submit to the EASA the compliance documentation (refer to ED-76/DO-200, section 2.2). As part of this compliance documentation, the following must be addressed:”</i></p> <p>BY :  <i>“The applicant should ensure that the following items are clearly established for the database intended usage and clearly documented as part of the compliance documentation (refer to ED-76/DO-200, section 2.2) : “</i></p>		substantive	Accepted	<p>Intent is agreed.            As proposed but simplified.  <i>“The applicant should ensure that the following items are clearly established for the database intended usage and clearly documented as part of the compliance documentation (refer to ED-76/DO-200, section 2.2) : “</i></p>
31	AIRBUS	3.3.1	10	<p>2<sup>nd</sup> bullet section 3.3.1 text says :  <i>“When this Type 2 DAT provider certificate, or equivalent, is already available the responsibility of the applicant is limited to:</i></p> <ul style="list-style-type: none"> <li><i>Define the database specification and associated Data Quality Requirements according to section 3.4.1, by ensuring that the Type 2 DAT certificate holder is aware of every evolution, coming from the in service experience, continued airworthiness, or the certification of new applications using the data.”</i></li> </ul> <p>COMMENT : The definition of the DQR by the applicant should not be systematic if the applicant is the Design Approval Applicant/Holder and if the DQR of the DAT Type 2 provider has been accepted and demonstrated by the applicant as commensurate with the intended use of the database and compliant with the applicable certification requirements.</p>	<p>Airbus new proposed text (replace the present first bullet by 2 new bullets as follows):  <i>“When this Type 2 DAT provider certificate, or equivalent, is already available, the applicant should:</i></p> <ul style="list-style-type: none"> <li><i>Provide evidence that a database specification and associated Data Quality Requirements according to section 3.4.1 are specified and are appropriate to meet the intended functions for standardized use and operations ,</i></li> <li><i>Ensure that the Type 2 DAT certificate holder is aware of every need for evolution, coming from the in service experience, continued airworthiness, or the certification of new applications using the data.”</i></li> </ul>		substantive	Partially accepted	<p>Intent is agreed.            See also comment #24.</p> <p>Text is changed to:</p> <ul style="list-style-type: none"> <li>Ensure that the database specification and associated Data Quality Requirements are defined in accordance to the activities outlined in sections 3.4.1, 3.4.3, 3.4.4 and 3.4.5, and ensuring that the Type 2 DAT certificate holder is aware of every need for evolution, coming from the in service experience, continued airworthiness, or the certification of new applications using the data.</li> </ul> <p>And added:            All equipment using the data need to be listed within the Type 2 DAT provider certificate Field 5 (refer to Part-DAT AMC1 DAT.OR.105 (a) (2)).</p>

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32	AIRBUS	3.4.1	11	<p>Section 3.4.1 text says:  <i>“The applicant should produce a detailed database specifications document, which would be approved as part of the product type design, [...]”</i></p> <p>COMMENT : The definition of the DQR by the applicant should not be systematic if the applicant is the Design Approval Applicant/Holder and if the DQR of the equipment design approval holder or the DAT Type 2 provider has been accepted and demonstrated by the applicant as commensurate with the intended use of the database and compliant with the applicable certification requirements.</p>	<p>Airbus new proposed text :</p> <p><i>“The applicant should ensure availability of a detailed database specifications document, which would be approved as part of the product type design, [...]”</i></p>		substantive	Accepted	<p>As proposed:  <i>“The applicant should ensure availability of a detailed database specifications document, which [...]”</i></p>
33	AIRBUS	3.4.1.1	11	<p>1<sup>st</sup> bullet section 3.4.1.1 text says :  <i>“Ultimately, DQRs are to be agreed and coordinated with the equipment design approval holder or with the DAT Type 2 provider, to determine the compatibility of these DQRs with the intended use.”</i></p> <p>COMMENT : The definition of the DQR by the applicant should not be systematic if the applicant is the Design Approval Applicant/Holder and if the DQR of the equipment design approval holder or the DAT Type 2 provider has been accepted and demonstrated by the applicant as commensurate with the intended use of the database and compliant with the applicable certification requirements.</p>	<p>Add the new proposed sentence (just after the one identified in the comment summary) :</p> <p><i>“If the applicant is the TC/STC applicant/holder, the applicant DQR may be not required if the DQR of the equipment design approval holder or the DAT Type 2 provider has been accepted and demonstrated by the applicant as commensurate with the intended use of the database and compliant with the applicable certification requirements.”</i></p>		substantive	Partially accepted	<p>While the proposed paragraph is not disagreed, the original quoted paragraph does not imply that the definition of the DQRs is uniquely and systematically produced by the TC/STC applicant. However the paragraph has been edited to avoid the misunderstanding:  <i>“Ultimately, DQRs should be agreed and coordinated between the Involved parties (refer to Part-DAT DAT.OR.105 (a) (1) if there is a DAT Type 2 provider), to determine the compatibility of these DQRs with the intended use.”</i></p>
34	AIRBUS	3.4.1.1	11	<p>2<sup>nd</sup> bullet section 3.4.1.1 text says :  <i>“If available, a Type 2 DAT provider certification or ETSOA may provide sufficient evidence that the DQRs are specified,”</i></p> <p>COMMENT : Other evidences should be possible to demonstrate that the DQR has been specified</p>	<p>Airbus new proposed text :</p> <p><i>“If available, a Type 2 DAT provider certification or ETSOA or equivalent (e.g. FAA LOA type 2 or other method of compliance already accepted by EASA) may provide sufficient evidence that the DQR is specified,”</i></p>		substantive	Partially accepted	<p>Comment is agreed.            Equivalent to a Type 2 DAT provider certification or ETSOA is now clarified in the section 1.2  <i>“equivalent as per bilateral ...”</i></p>

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35	AIRBUS	3.4.2	12	<p>Section 3.4.2 refers the Aircraft Flight Manual only.</p> <p>Even if the AFM is fully relevant, some flexibility should be introduced in this section (as already proposed in existing CRI) in order that AFM should be one means but not the only means to contain appropriate limitations about databases.</p>	<p>Airbus new proposed title for section 3.4.2 : “Aircraft Flight Manual or other EASA approved document”</p> <p>Change the first sentence of section 3.4.2 as follows: “The AFM(S) or other EASA approved document should contain all appropriate limitations or restrictions [...]”</p>	suggestion		Accepted	As proposed.
36	AIRBUS	3.4.3	12	<p>1<sup>st</sup> bullet of section 3.4.3 text says : “implemented mitigation means to ensure that the operational software does not use data from databases if the data is corrupted”</p> <p>COMMENT : This requirement is not practicable, notably when the data used by the operational software is corrupted due to a corruption of the source data or due to a corruption during the database generation process. These kinds of corruptions cannot be controlled by the applicant in charge of designing the operational software. On one hand, AIP source data are supposed not questionable; on the other hand, verification activities and assurance process for private source data and for the database generation process (as per ED-75/DO-200) are supposed to give an acceptable level of integrity of the data used by the operational software.</p>	<p>Airbus proposes to remove the term “corrupted” in the following sentence as follows :</p> <p>“The certification documentation should define the system function and any dependencies on the data, in particular implemented mitigation means to ensure that the operational software does not use data from databases if the data is <del>corrupted</del> <del>is</del> not compliant with specified formats or parameter ranges.”</p>		objection	Partially accepted	<p>The mitigation means will not to cover all errors in the data but, for example, a CRC check can prevent the data use if corrupted/alterd while in the aircraft storage media and after an initial successful load.</p> <p>For corruption (e.g. CRC) is added to clarify.</p>

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37	AIRBUS	3.4.3	12	<p>Last paragraph of section 3.4.3 recommends periodic sampling checks.</p> <p>This recommendation is too solution prescriptive and not justified as long as the database generation process and the DQR are unchanged. Criteria for sampling checks should be added.</p>	<p>Airbus new proposed text :  <i>“It is also recommended that the applicant supports the Type 2 DAT certificate holder with sampling checks on individual data sets (e.g., via simulation, test bench environment, etc.) if a DQR or the database generation process has been changed in order to confirm continued compatibility.”</i></p>		objection	Partially accepted	<p>This part is linked to part-DAT AMC1 DAT.TR.100 (a) (1) and the recommendation is also existing in the AC 20-153B.</p> <p>While the conditions proposed (DQR or database generation process changed) are acceptable, we consider that the criteria cannot be exhaustively determined and it is left open to a case by case based on the experience of the industry.</p> <p>The term “periodic” has been removed. However, the purpose of these sampling checks should be to detect issues before release to service, assess potential improvement of the functioning of the equipment/application, adapt DQRs where necessary, etc. Also the ED-76A contains guidance on sampling on C.2.3.3</p> <p>Text has been amended and complemented to clarify.</p> <p>See comments #16, #46, #61, #67</p>
38	AIRBUS	3.4.4		<p><i>Equipment or applications using a database have to be shown to function properly when the loaded database is compliant with the defined DQRs. When testing is proposed for certification purposes, the applicant should perform these activities with representative databases to show that the equipment functions as intended and ensures that the testing provides <b>full coverage</b> of all the capabilities/options supported by the database.</i></p> <p>The notion of full coverage is unclear: the combination of testing can be so huge that makes the full coverage objective unreachable</p>	Section to be reworded to clarify the intent		substantive	Accepted	See comment No. #18.

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39	AIRBUS	3.4.5	12	<p>The text requires identification and publication of minimum scheduled maintenance tasks for compliance with CS XX.1529/CS 23.2625.</p> <p>Minimum scheduled maintenance tasks should be not systematic and should be outcomes of the safety assessment process carried out by the applicant.</p>	<p>Airbus new proposed text (“if” added before “required” as follows):</p> <p><i>“Minimum scheduled maintenance tasks, if required, for securing the continued airworthiness of the system [...]”</i></p>		substantive	Accepted	“Minimum scheduled maintenance tasks, if required, for securing the continued airworthiness of the system [...]”.
40	THALES AVS	General	-	<p>Considering the introduction of regulation (EU) 373/2017 for data providers approval and the associated update of regulation (EU) 965/2012 for air operators, we understand that it was necessary to update interpretative material for database consideration in the airworthiness domain. For this purpose, EASA took the option to create a new dedicated certification memo that is supposed to be called in future CRI applicable to applicants for new type design or changes. This option is not in line with the target shared with FAA and INDUSTRY to reduce IP &amp; CRI by replacing them with A (M) C. So THALES AVS strongly recommend to develop a common A (M) C with FAA even if we know that some differences will remain (e.g. FAA LOA versus EASA DAT regulation).</p>	<p>Create a harmonized A (M) C with FAA rather than an EASA certification memo.</p>	NO	YES	Noted	<p>See comment No. #3.</p> <p>The main aspect of the CM is to clarify the expectations from an EASA side. In case the applicant is following the guidance on a voluntary basis, and provides the information as proposed in the certification plan, we see no need to issue a CRI on this topic.</p>
41	THALES AVS	Missing	-	<p>A glossary of terms (aeronautical data, aeronautical database, database, configuration file) would be appreciable.</p>		YES	NO	Accepted	Glossary of terms added

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42	THALES AVS	1.2	3	<p><i>“Applicants in the scope of this CM, as per Part 21, are: Avionics manufacturers applying for, or holding, an ETSO authorisation for an equipment with an associated database. They should consider this CM in supporting the installer (TC or STC holder/applicant). Unless otherwise mentioned, any of these organisations is referred to as the “applicant” in following sections of this CM.”</i></p> <p>The CM does not affect directly ETSO holder: the guidelines are for TC/STC holders considering ETSO installation with an associated Database. On contrary the FAA AC20-153B includes section §9.2 dedicated to TSO applicants.</p>	Applicant' should be limited to TC and STC holders: ETSO holder must be removed from the applicant list.	NO	YES	Not accepted	Ultimately the ETSO holder needs to support the TC and STC holders by providing the information necessary for the installation approval. The use of “applicant” in the CM has been particularized to distinguish specifically who is responsible for what.
43	THALES AVS	3.2.3	9	<p><i>“This approval method may not be effective for databases needing frequent update (e.g., more frequent than one update per year).”</i></p> <p>This statement is not relevant for §3.2.3 only but for all other cases described in §3.2</p>	Remove the statement or move it in introduction of §3.2	NO	YES	Accepted	Text moved to §3.2
44	THALES AVS	3.3.1	10	<p><i>“Define the database specification and associated Data Quality Requirements according to section 3.4.1, by ensuring that the Type 2 DAT certificate holder is aware of every evolution, coming from the in service experience, continued airworthiness, or the certification of new applications using the data.”</i></p> <p>An aircraft manufacturer, avionics manufacturer or system integrator can define DQR. The DQR is not always defined at TC/STC level, it happens that TC/STC applicant takes DQR coming from avionic manufacturer as is (even if no ETSOA).</p>	Include this case (either in §3.3.1 or 3.4.1), as already done in §3.4.1.1 for DQRs under ETSO	NO	YES	Partially accepted	The DQRs must be defined at TC/STC level. This does not preclude that DQRs defined by the equipment (with or without ETSOA) manufacturer are used.  Text changed to clarify the responsibilities.

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45	THALES AVS	3.4.2	12	<p><i>“The AFM(S) should contain all appropriate limitations or restrictions concerning the use of the equipment and applications or associated aeronautical databases. For aeronautical data,...”</i></p> <p>Restrictions in AFM are not limited to aeronautical data: AFM could contain disclaimer concerning ECL, whereas ECL are not aeronautical data</p>	Remove 'aeronautical'	NO	YES	Accepted	Aeronautical removed
46	THALES AVS	3.4.3	12	<p><i>“It is also recommended that the applicant supports the Type 2 DAT certificate holder with periodic sampling checks on individual data sets (e.g., via simulation, test bench environment, etc.) to confirm continued compatibility.”</i></p> <p>Compatibility check is under the responsibility of the Type 2 DAT provider, thus this recommendation for the applicant (TC/STC holder) is not relevant</p>	Sentence to be removed	NO	YES	Partially accepted	See comments #16, #37, #61, #67 The sentence is not removed, however clarification has been added.

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47	ASD	General		<p><i>The FAA has adopted an equivalent approach as provided in FAA AC 20-153B. However, compared to this Advisory Circular, regulation (EU) No 2017/373 does not address the specific guidance for holders of type design approvals (ETSOA, TC, STC) concerning aeronautical databases in the context of aircraft certification.</i></p> <p><i>This CM is filling the gap and going a step further, by addressing not only aeronautical, but as well other databases, which may benefit from related published standards and recognized means to show compliance with the certification requirements.</i></p> <p>There are many differences between the AC 20-153B and this CM. There is guidance in the AC 20-153B that are not in this CM</p> <ul style="list-style-type: none"> <li>- DO200B applicability</li> <li>- LOA Type 1&amp;2 definition and criteria for approval and continued airworthiness</li> <li>- Tool qualification aspects (DO330)</li> <li>- Data security aspects</li> <li>- reference to RTCA/DO-201A, RTCA/DO-272D, or RTCA/DO-276C in DQRs identification</li> </ul> <p>There is guidance in this CM that are not in AC 20-153B:</p> <ul style="list-style-type: none"> <li>- Notions of DB with/without airworthiness approval (already in CRI F-36)</li> <li>- Notion of Type 2 DAT provider certificate</li> <li>- Guidance on DB other than aeronautical DB</li> </ul>	An harmonization task should be launched to address all kind of databases and produce equivalent AC/AMC	Suggestion		Noted	See comment No. #3.

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48	Brad Miller	Sec 1.2	2, 3	The concept of data with No Safety Effect (NSE) being out of scope is not introduced until the last paragraph of Sec 3.1.2, pgs. 7,8.	Because Sec 1.2, pgs. 3,4 has additional scoping explanation, it is suggested that an additional bullet be added to the 3 <sup>rd</sup> paragraph to the effect of:  “Applicants not in the scope of this CM are: When a Data supplier determines through safety analysis that a database contains only routine data (i.e. any discrepancy or error has No Safety Effect (NSE) on the operational use of the data), compliance with the criteria in this CM is not required. However, it is recommended to provide guidelines for operators on the use of NSE databases.”			Accepted	Also a glossary of terms has been added with explanation of routine data
49	Brad Miller	Sec 1.1	3	Notwithstanding the applicability of the regulation (EU) No 2017/373, I’m not sure this applies to EASA. However, I do think it is important to introduce the concept that a data supplier certificate/LOA is a preferred way to process recurrent database change management. We mention this as a distinct advantage since it alleviates the need for constant change impact analysis and system verification.	Communicate advantages with use of a data supplier certificate/LOA in ETSO projects especially dues to advantages, if needed. Like I said, I don’t know if this would be helpful or not.			Accepted	Sentence in 1.1: Particularly, the Type 2 addresses acceptable means of ensuring ..., and it is the recommended means to manage an aeronautical database rather than requiring ETSOA and/or TC/STC change approval at each database update.  Emphasized again in 3.2.

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50	Brad Miller	Sec 3.4.1.1	11, 12	Don't really like how tailored data is mixed into an example of data not received from an authoritative source. We still hold that tailored data is aeronautical data originated only by an operator / end-user that it is under their sole responsibility and for their exclusive use only. The accountability for this data, and its subsequent update, remains solely with the operator / end-user and thus verification, validation, and corruption detection requirements are applicable to the data originator and <u>not the data supplier</u> . We also hold that there are currently no established data requirements for tailored data and that it is supremely important that data Suppliers must ensure tailored data is not distributed to entities other than the operator / end-user requesting the data.	To us the example would be more appropriate to mention that the first aeronautical data chain participant who accepts the data coming from a non-authoritative source is required to validate the data. However, for tailored data this responsibility remains with the operator / end-user since they originate this data for their sole use.  We just feel this needs to be better defined, strengthened, and properly scoped for tailored data, since it is out of scope.			Accepted	Sentence in section 3.4.1.1: "Where the new functionality foresees the use of data which is not from authoritative source (i.e. data not published by ICAO member State, organizations not formally recognized by State authority, tailored data), either the first data provider that accepts the data coming from a non-authoritative source is validating the data, or for tailored data this responsibility remains with the operator/end-user. This latter should be reflected in the AFM, as appropriate, refer to 3.4.2.
51	Brad Miller	Sec 3 .3.1	10	Opening paragraph states: "For aeronautical databases containing other than Assurance Level 3 or routine data (NSE), the Type 2 DAT provider certificate, or equivalent, will be mandatory when Article 6 of Regulation (EU) No 2017/373 becomes applicable i.e. from 1 January 2019." What is a "...Type 2 DAT provider certificate, or equivalent?" Assume this may mean an FAA LOA as recognized by the BASA TIP.	Expand upon what is meant by a "...Type 2 DAT provider certificate, or equivalent..."  We assume an FAA LOA is one means of equivalence, but should there be examples?			Accepted	See comment No. 27
52	Garmin	1.2	4	Editorial comment: The last sentence says "This CM is intended to be harmonised with the AC 20-153B guidance, although that AC covers as well detailed guidance for FAA LOA applicants, not covered by this CM.	Change the paragraph to read: ; "This CM is intended to be harmonised with the AC 20-153B guidance, however the AC also provides detailed guidance for FAA LOA applicants, not covered by this CM.	Yes	No	Accepted	Text moved to 1.1 and changed:  This CM is equivalent with the AC 20-153B guidance in the area affecting the same applicants and scope.
53	Garmin	3.2.1	9	The 4 <sup>th</sup> paragraph of this section (2 <sup>nd</sup> bulleted paragraph), 2 <sup>nd</sup> sentence, reads awkwardly. Particularly, the phrase "may need that the content of a database is appropriate..." is difficult to understand.	Suggest that the 2 <sup>nd</sup> sentence be partially rewritten as:  "For example, the applicant may need the content of a database to be appropriate for the performance of the aircraft, or impose..."	Yes	No	Accepted	As suggested

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54	Garmin	3.2.1	9	Editorial comment: Section 3.2.1 1st Paragraph after second bullet. Suggest wording change.	Suggested wording change to read as: “In the first bullet case, if the equipment or application ETSO A holder has followed the database approval guidance provided in case 2, 3 or 4 below, then the compliance finding for these aspects of the installation would be covered by the ETSO Authorisation and it is not under the direct responsibility of the installer.”	Yes	No	Accepted	As suggested
55	Garmin	3.2.4	10	Section 3.2.4 second sentence provides the definition of a low complexity database using two criteria, one being the amount of data. “...the amount of data is really limited...”. The amount of data in a database that results in a low complexity database is difficult to quantify and is not needed to define a low complexity database when considering the requirements provided in the second paragraph of this section.  If the full content of the database cannot be validated and verified through traditional processes (equipment testing, etc.), the database is complex regardless of the reason the database cannot be fully tested. This would include testing being impractical as a result of the amount of database content.	Revise Section 3.2.4 first and second paragraph to read: “The applicant can use an alternate method to ED-76/DO-200 or ED-12/DO-178 if the database could be demonstrated as a “low complexity” database. Low complexity means that the structure of the database is simple.  For a low complexity database, the applicant should demonstrate in particular that each of the elements or records of the database can be validated and verified through “traditional” process (i.e. basic equipment testing as per section 3.4.4, manual verification of every data record...). Full database content should be validated and verified by the applicant.”	No	Yes	Accepted	As suggested for first paragraph.  The second paragraph text changed: “For a low complexity database, the applicant should demonstrate in particular that each of the elements or records of the database can be validated and fully covered through basic equipment verification (e.g. as per section 3.4.4). Full database content should be validated and verified by the applicant.”

56	Garmin	3.3.1	10	<p>The 4<sup>th</sup> paragraph of this section (1<sup>st</sup> bulleted paragraph) is worded in a way that may be interpreted by some to mean that TC/STC applicants are responsible for formulating/setting database specification and associated quality requirements of a database that is produced under a Type 2 LOA/DAT certificate.</p> <p>Database “specifications” are generally understood to be content- and format-defining documents. For databases that are not produced by the TC/STC holder, which is the case when a Type 2 LOA/DAT certificate holder is involved in the data chain, the ETSO A holder is generally responsible for developing the content and format of the database, not the TC/STC holder.</p> <p>Similarly, TC/STC holders are generally not involved in setting DQRs for equipment they do not design. This, again, is left to the ETSO A holder, who is generally the Type 2 LOA/DAT certificate holder.</p> <p>Consequently, the drafted wording of “Define the database specification and associated Data Quality Requirements according to...” should be changed to indicate that it is not the applicant (TC/STC holder) that is performing such “definition.” Such a change would also be congruent with the wording in FAA AC 20-153B, Section 13.1.1, which notes that, similar to TC/STC holders, end-users typically do not have the means to set data quality requirements (other than some aspects of completeness and timeliness) and have to, instead, rely on Type 2 providers to do so.</p> <p>Note also that the use of the term “evolution” is unclear and difficult to interpret. Garmin’s suggestion for this sentence has replaced it with a phrase believed to mean what it was intended to convey.</p>	<p>Suggest that the first sentence of this paragraph be rewritten as:</p> <p>“Identify the database specification and associated Data Quality Requirements, which may have been developed by the Type 2 DAT provider, according to section 3.4.1, and ensure that the Type 2 DAT certificate holder is aware of any additional requirements identified based on in-service experience, continued airworthiness, or the certification of new applications using the data.”</p>	No	Yes	Partially accepted	<p>With changes from comments #24, #31, #44. Added reference to the arrangement according to Regulation (EU) 2017/373 DAT.OR.105 ensuring that the DQRs are compatible with the intended use of the certified aircraft application/equipment.</p> <p>Text changed: “Ensure that the database specification and associated Data Quality Requirements are defined in accordance to the activities outlined in sections 3.4.1, 3.4.3, 3.4.4 and 3.4.5, by ensuring that the Type 2 DAT certificate holder is aware of any additional requirement identified based on the installation peculiarities, the in-service experience, continued airworthiness, or the certification of new applications using the data.”</p> <p>See comment #31</p>
57	Garmin	3.3.1	10	<p>The 7<sup>th</sup> paragraph, 1<sup>st</sup> sentence, explains that TC/STC holders may have additional data quality requirements that need to be passed to the equipment developer/Type 2</p>	<p>Suggest revising the 7th paragraph as:</p> <p>“For example, the STC/TC applicant may impose requirements to ensure there is no</p>	No	Yes	Partially accepted	<p>The term “operational considerations” may be misleading. The CM intention is to cover the kind of operations at aircraft certificate. Examples could be: 1. the aircraft is not certified RNP AR, 2. the aircraft has not</p>

			<p>provider if data characteristics must be adjusted to conform to system or aircraft-level design.</p> <p>The 1<sup>st</sup> sentence ends by citing “operational considerations” as a reason for imposing additional DQRs. The problem with this term is that “operational considerations” could be interpreted broadly to include issues that TC/STC holders and equipment developers/Type 2 providers have no reasonable visibility into. For example, crew training or aircraft qualification of a particular serial number at the operator level are downstream activities that take place after the aircraft-level certification activities described in this memo. TC/STC holders and equipment developers cannot be reasonably expected to design systems that account for all possible variations of operational approval and protect against departure from them by way of system or database design.</p> <p>The 2<sup>nd</sup> sentence, then, cites what appears to be an example of such a requirement, and the example is problematic in the context of what was previously mentioned in this comment. There are several issues with the sentence:</p> <ol style="list-style-type: none"> <li>1) It is unclear what is meant by the term "Procedures." Is this referring to instrument flight procedures, such as SIDs, STARs, and approaches? Is it referring to crew procedures which support a capability or functionality of the system/aircraft? We are assuming the former interpretation, but the 3rd sentence, through its use of the phrase "should have the functions inhibited" implies the latter.</li> <li>2) Assuming that "Procedures" refers to instrument flight procedures, there could be equipment required for certain instrument procedures that is outside the realm of the navigation equipment which would presumably enforce this feature suppression. For example, radar</li> </ol>	<p>confusing information presented to flight crews due to the cockpit arrangement (e.g. legacy cockpits with limited display capabilities). An EASA DAT Type 2 certificate of the database provider may be a suitable means to ensure that the database conforms to the specification, provided that the DAT certification covers the suitable specification document (DQRs)."</p>				<p>demonstrated RF capability, (exhaustive list would be very extensive).</p> <p>The commenter seems to assume that the “inhibition of functions” is achieved through crew procedures. To the extent possible this must be avoided. When inhibited (for example through pin programming), the procedures in the database are not visible/selectable to the pilot. Alternatively, the procedures can be removed from the database.</p> <p>For clarity, procedures will read “instrument flight procedures (IFP)”.</p> <p>There are two potential scenarios, following the example provided by Garmin:</p> <ol style="list-style-type: none"> <li>a. The radar altimeter or autopilot is not present on a specific aircraft. IFPs that require those equipment should not be in the database.</li> <li>b. The radar altimeter or autopilot is present but not operational. No obligation to the TC/STC holder, the operator/crew procedures should prevent the use of the procedures.</li> </ol> <p>It is accepted that functional suppression/inhibition in the case b. above is not reasonable. However others are to be analysed during certification on a case by case basis.</p> <p>Sentence will be rewritten: For example, the STC/TC applicant may impose requirements to ensure there is no confusing information presented to flight crews due to the cockpit arrangement (e.g. legacy cockpits with limited display capabilities) or kind of operations the aircraft is not certified to. Instrument flight procedures that are not supported should not be accessible to the flight crew. When not inhibited by other means (e.g., strapping, software, etc.), those procedures are removed from the navigation database. For example, if the aircraft has not been certified to conduct RNP AR operations, RNP AR IFPs are removed from the database.</p>
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				<p>altimeter and/or autopilot installations may or may not be present on a specific aircraft. Such equipment may be required in order to fly certain instrument procedures, but only the operator or crew would have that visibility and therefore must have operational procedures and/or crew training that prevents the use of such instrument procedures, even though their data and/or charts may still be accessible within some installed equipment.</p> <p>Ultimately, the conclusion is that the level of functional suppression/inhibition implied by the 2<sup>nd</sup> and 3<sup>rd</sup> sentences is not always reasonable and should not be considered a requirement on the equipment developer and/or TC/STC holder.</p>					
58	Garmin	3.3.1	11	The Note (last sentence of the section), as drafted, implies that after 1.1.2019, non-EASA equivalent approvals, such as a US LOA, are no longer acceptable. It should be clarified that they are acceptable in an additional sentence.	Add the following sentence to the note: “After 1.1.2019, an FAA Letter of Acceptance is still an accepted alternative to a DAT provider certificate.”	No	Yes	Withdrawn	Text removed:  Note: Until 1.1.2019 an EASA Letter of Acceptance is an accepted alternate to a DAT provider certificate.  Added clarification on equivalent to the DAT provider certificate (current bilateral covers the FAA LOA)
59	Garmin	3.3.2	11	The 1 <sup>st</sup> paragraph, 1 <sup>st</sup> sentence, of this section reads awkwardly. Specifically, the phrase “is not containing” is not grammatically correct.	Change the 1 <sup>st</sup> sentence to read: “This CM does not contain specific criteria...”	Yes	No	Withdrawn	The sentence has been edited as result of other comments

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60	Garmin	3.4.1.1	11	The 4 <sup>th</sup> paragraph, 1 <sup>st</sup> sentence, should only apply to TC/STC applicants for databases that are being covered under airworthiness approval. Section 3.4.1, as drafted, is not explicitly limited to only cases where the database is covered under airworthiness approval. If it is meant to address only these cases, the content in the 4 <sup>th</sup> paragraph is OK. If it is meant to include cases where databases are not covered under airworthiness approval, adjustments are necessary because TC/STC holders generally do not define DQRs and are not involved in their change control processes.	<p>Suggest one of the two following options:</p> <ol style="list-style-type: none"> <li>1) Insert a new 1st sentence at the beginning of the 1st paragraph of section 3.4.1 stating:            "The guidance in this section applies only to cases where a database is subject to airworthiness approval."</li> <li>2) Revise the wording of the 1st sentence of the 4th paragraph so that it reads:            "The applicant remains ultimately responsible that DQRs are defined, including a change control process, for databases covered under airworthiness approval."</li> </ol>	No	Yes	Partially accepted	<p>Clarification has been added depending on the applicant, ETSO or TC/STC, and considering whether the database is or not airworthiness approved.</p> <p>The 3.4.1 is applicable both to databases with or without airworthiness approval. It is agreed that the compliance with 3.4.1 can be evidenced through a DAT certificate Type 2.</p> <p>Refer also to comments #33 &amp; #44</p>

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61	Garmin	3.4.3	12	<p>The 4<sup>th</sup> paragraph recommends that a TC/STC holder periodically sample databases that are produced by a Type 2 provider to ensure they remain compatible with their supported equipment/function.</p> <p>A Type 2 provider is already required to ensure compatibility between the databases it produces and all avionics system identified on its LOA/certificate. Requiring TC/STC holders to be involved would prove to be an extra burden on TC/STC holders and Type 2 providers in the following ways:</p> <ol style="list-style-type: none"> <li>1) TC/STC holders may need to set up special bench equipment solely for the purposes of these compatibility tests</li> <li>2) TC/STC holders were not the designers or producers of these databases and are unlikely to be able to detect compatibility issues that are not obvious and would not have already been detected during the database production process</li> <li>3) Type 2 providers may need to establish extra processes to support the TC/STC holder test activities</li> </ol> <p>Due to the foreseen minimal or non-existent value added by these activities, it is suggested that this recommendation be removed.</p>	<p>Given the reasons stated in the summary, as well as the coordination between the TC/STC holder and the Type 2 provider at the time of certification (described in the 3<sup>rd</sup> paragraph), suggest striking the 4<sup>th</sup> paragraph in its entirety.</p>	No	Yes	Accepted with changes	<p>See comments #16, #37, #46, #67</p> <p>As per AMC1 DAT.TR.100(a)(1) Regulation (EU) 2017/373, the Type 2 DAT provider should ensure that the database works as intended with the application, by performing sampling checks on individual data sets (e.g. in a simulation/test bench environment).</p> <p>It is agreed that this is not a direct requirement to the TC/STC/ETSOA holder, but may be part of the Type 2 DAT provider formal interfaces with the equipment design approval holder.</p> <p>The text in the CM is changed to:</p> <p>The applicant may support the Type 2 DAT certificate holder in performing sampling checks (e.g., via simulation, test bench environment, etc.) to confirm continued compatibility (refer to part-DAT AMC1 DAT.TR.100 (a) (1)). The purpose of the sampling checks should be to detect issues before release to service, assess potential improvement of the functioning of the equipment/application, adapt DQRs where necessary, etc. Section C.2.3.3 of ED-76A contains guidance on sampling.</p>

	Garmin	3.4.5	12-13	<p>It is unclear whether the requirements communicated in this section apply only to databases covered under airworthiness approval, or all databases.</p> <p>If only airworthiness-approved databases are applicable, Garmin’s only comment is to ask that that be made clear.</p> <p>If databases not covered under airworthiness approval are also applicable, Garmin finds the requirement that database update instructions be included in ICAs to be overreaching and not universally necessary.</p> <p>In the United States, 14 CFR 43.3(k) allows pilots to make updates of databases in installed avionics under specific conditions. Most GA avionics developed over the past 25 years can support the conditions specified by 43.3(k) (e.g., initiated from the flight deck, performed without disassembling the avionics unit, and performed without use of tools and/or special equipment). In such situations, the existing ICAs make no mention of database updates because there is no need for anyone other than the pilot to perform the database update. Since there are already 10s of 1000s of GA aircraft that do not have an ICA that mentions anything about database updates, it is impractical to expect that an ICA will be created for the sole purpose of reviewing the release statement, particularly for pilots operating under Part 91 (i.e., not operating under a certificate).</p> <p>Consequently, it seems unnecessary to mandate that ICAs, as opposed to other documentation that is more readily accessible to pilots/operators (e.g. operator’s manuals, pilot’s guides, etc.) address instructions for updating databases that are not covered under airworthiness approval.</p>	<p>Change the 1<sup>st</sup> sentence of the section to read: “TC/STC applicants/holders should also define instructions for continued airworthiness relevant to databases covered under airworthiness approval, especially addressing their validity when it is limited to a period of time (e.g. magnetic variation table).”</p> <p>Change the beginning of the final sentence of the section to read: “For databases covered under airworthiness approval that have the capability of being loaded...”</p> <p>Add a sentence to the end of the final paragraph that reads: “For databases not covered under airworthiness approval, installation/update instructions may be documented in operator’s manuals as determined to be appropriate by the applicable system’s designer.”</p>	No	Yes	Accepted	<p>The comment is accepted.</p> <p>For databases covered under airworthiness approval the proposed text is in 3.4.5 For databases not covered under airworthiness approval, the proposed text is in 3.4.3</p>
63	GAMA	3.1.2	7	<p>The safety analysis is performed on applications that utilizes databases. The Design assurance level is determined by</p>	<p>Recommend removal of paragraph 1 of section 3.1.2</p>	NO	YES	Not accepted	<p>If we assume this approach, data used in an application with assurance level A or B will be automatically critical data, requiring DPAL 1. This DPAL 1 will not be required if the failure condition criticality associated to data error</p>

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				the assessment of the application itself, adding the additional failure condition for the database is not needed as the application drives the Integrity Classification of the Data needed to meet its Design assurance level.					(e.g. corrupted, not accurate, or missing data) in the database is only major or less critical.
64	GAMA	3.4.1	11	<p><b>Database Specification</b> The term “database specification” is not well defined within the context of the certification memorandum. CM-AS-009 § 3.4.1 states that the applicant should produce a detailed database specification. Outside the context of CM-AS-009, the term “database specification” often refers to the detailed database design (e.g., a database schema, format, etc.) or in some cases it refers to the source data specification that would be provided to a Type 1 source provider. In both of these cases, the database specification is developed from the DQRs. However, the certification memorandum seems to indicate that the DQRs would be created from the data specification.</p>	<p>To reduce confusion on what is meant by data specification, GAMA recommends changing paragraph 1 of section 3.4.1 to the following: The applicant should produce a detailed database specifications document that describes, from an operational standpoint, the data types and data quality needed to support the intended function., which This database specification would be approved as part of the product type design and would contribute to the demonstration of compliance with Certification Specifications (CS XX.1301, XX.1309, CS 23.2500, CS 23.2505 and CS 23.2510) for the relevant systems.</p>	NO	YES	Partially accepted	<p>The suggested “from an operational standpoint” may be also misinterpreted.</p> <p>A note has been added: The term specification has been used in a very general way. It covers not only aeronautical data, but any other kind of data. The DQRs as listed in ED-76/DO-200() may be not always suitable for all data. The specification is expected to document data types and data quality and any other aspect which is necessary, such as data dependencies (e.g. valid range of a particular data type through maximum and/or minimum values)</p> <p>The term database specification is used here as generic and applicable to any kind of data. The aeronautical data DQRs and associated standards (refer to 3.4.1.1) may be not suitable for some databases. This database specification is to document all aspects necessary to ensure the quality of the data.</p> <p>Note that FAA AC 20-153B also uses database specification: Configuration control processes must include traceability between the DQRs and a database specification (e.g., a database definition document describing content, format, structure, and having a unique identification).</p>
65	GAMA	3.4.1.1	11	<p>Paragraph 1, states that the way the data is processed should be characterized by the DQRs. This is inconsistent with ED-76/DO-200, which does not required documentation of the data process in the DQRs (see ED-76A/DO-200B § 2.3.5).</p>	<p>it is processed”. For example: The quality of the data and the way it is processed should be characterised by Data Quality Requirements (DQR), refer to ED-76/DO-200 section 2.3.</p>	NO	YES	Not accepted	<p>Similar text is in ED-76A/DO-200B section 1.5.1: “The quality of aeronautical data and the way that it is processed are characterised by: 1. Accuracy ...”</p> <p>It is not this CM intention to introduce any other aspect which is not in ED-76/DO-200 in this regards.</p>

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66	GAMA	3.4.3	12	The first sentence of CM-AS-009 § 3.4.3, para. 3, is confusing and difficult to unpack who needs to provide what and what needs to be provided. For example, is the sentence referring to something the Type 2 DAT holder needs to do, or is it something that the TC/STC/ETSOA holder needs to do. Also, it is not clear if the compatibility list is just a list of part/model numbers, or does the list also need to include identification of data (e.g., test cases and results) demonstrating that the DQRs are consistent with the intended function. In addition, it is not clear if the list described in section 3.4.3 is different than the list described in section 3.1.1.	GAMA recommends changing CM-AS-009 § 3.4.3, para. 3, as follows: In the case of data covered by Type 2 DAT provider, the applicant should include in the certification documentation, a list of database IDs, systems for which compatibility with intended use is ensured. An additional list from the Type 2 DAT provider should include enough information to uniquely identify the compatible configurations, including part/model numbers (hardware, software). The certification documentation should also include data and demonstrating (e.g., using system verification tests, sampling checks, etc.) that the DQRs are consistent with the intended function of the associated equipment (see 3.4.1).	NO	YES	Accepted	The list in 3.1.1 is referring to the databases (it could be only one) associated either <ul style="list-style-type: none"> <li>to an equipment for ETSOA applicant, or</li> <li>to TC/STC or its modifications for the other applicants</li> </ul> The list in 3.4.3 is referring to identify for each database all applications using its data (e.g. a terrain database can be used both for SVS and GPWS). It could be only one. The text has been changed in line with the suggested resolution. Example has been added to further clarify.

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67	GAMA	3.4.2	12	<p>The last paragraph of CM-AS-009 § 3.4.3 recommends that the applicant (TC/STC/ETSOA) perform periodic sampling of data provided by Type 2 DAT certificate holder. This appears to be a new requirement being leveraged on the TC/STC/ETSOA holder to periodically reaffirm compatibility of already approved product or equipment. The product or equipment approval process should establish the DQRs and compatibility. As long as the DQRs have not changed then additional compatibility checks between the Type 2 DAT certificate holder and the TC/STC/ETSOA holder should not be necessary. Honeywell recommends deleting para. 4 of CM-AS- 009 § 3.4.3. If that is not acceptable, then Honeywell recommends changing para. 4 as follows:</p>	<p>GAMA recommends deleting para. 4 of CM-AS-009 § 3.4.3. If that is not acceptable, then we recommend changing para. 4 as follows:</p> <p>It is also recommended that t The applicant may need to support supports the Type 2 DAT certificate holder with periodic sampling checks on individual data sets (e.g., via simulation, test bench environment, etc.) to confirm continued compatibility when there is change to the DQRs.</p>	NO	YES	Partially accepted	<p>Regulation (EU) 2017/373 DAT.TR.100 (a) (1) requires the Type 2 DAT provider to establish DQRs and determine the compatibility of these DQRs with the intended use. As per associated AMC, this can be achieved by performing sampling checks on individual data sets (e.g. in a simulation/test bench environment). Also in AC 20-153B, FAA recommends to perform periodic sampling checks on individual data to confirm continued compatibility.</p> <p>The EASA Certification Memorandum is recalling this recommendation particularly when the equipment design approval holder (e.g. TSO/TC/STC) is a different organisation than the Type 2 DAT provider.</p> <p>Both in the Part DAT and the CM, this is presented respectively as an AMC and a recommendation. Therefore this is not intended to be a new mandatory requirement (as perceived by the commenters), but ultimately associated to the Type 2 DAT provider processes.</p> <p>Clarification has been added also considering comments #16, #37, #46, #61</p>

\* Please complete this column using the word “yes” or “no”

\*\* Please complete this column using the word “yes” or “no”