GANP STUDY GROUP (GANP-SG)

ASBU PANEL PROJECT TEAM (ASBU PPT)

Hybrid, 29 January to 2 February 2024

GANP ASBU Framework Campaign Report 14th Air Navigation Conference

(Presented by the Chair)

1. INTRODUCTION

1.1 The future of the global air navigation system needs to be planned, in order to achieve an interoperable system, for all users during all phases of flight that meets agreed levels of safety, provides for optimum economic operations, is environmentally sustainable and meets national security requirements. To that end, the aviation community has come together to define a Global Air Navigation Plan (GANP).

1.2 The GANP, defines the way to achieve this global vision while, at the same time, serves as an instrument for all aviation stakeholders to define collaboratively air navigation implementation strategies based on specific operational requirements to advance the capabilities of their air navigation system ensuring interoperability of systems and harmonization of procedures.

1.3 The global air navigation system involves complex interactions between many stakeholders with different operational requirements and expectations, and national air navigation systems with different maturity levels and availability of resources. In addition, the global vision cannot be achieved directly, but by intermediate steps that need to be established. Therefore, in order to address these challenges, the GANP comprises a multilayer structure (see Figure 1), as follows:

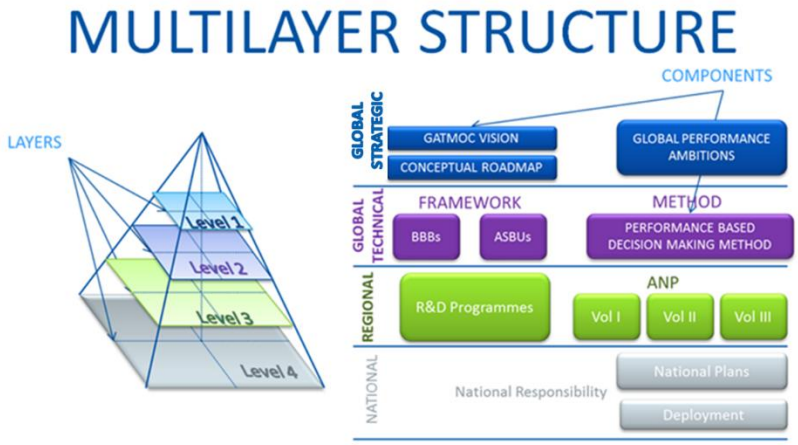


Figure 1 GANP Multilayer structure

- The Global Strategic Level is the front door for all stakeholders to ICAO. It is a document written in executive language and endorsed at the highest political level. It contains, among others, performance ambitions in the 11 key performance areas based on global traffic forecast, traffic flows, challenges and traffic characteristics and a conceptual roadmap to achieve the global vision.

- The Global Technical Level is the core of the GANP. Its key component is a performance based decision-making method to define air navigation implementation strategies within a global framework of specific operational improvements. The global framework is maintained in an information warehouse, from which reports can be derived and consists of the basic services to be provided for international civil aviation plus other specific upgrades of these services.

- The Regional Level comprises ICAO Regional Air Navigation Plans (Vol I, II and III) and other Research and Development Programmes.

- The National Level is the level where States are responsible for the development of national air navigation plans following the performance based decision-making method and its deployment.

2. GANP WORKING ARRANGEMENTS

2.1 The Thirteenth Air Navigation Conference (AN-Conf/13) agreed with the format and direction of the draft Sixth Edition of the GANP and requested ICAO to consider the establishment of a study group comprised of Member States from all regions and industry to undertake work on future editions of the GANP (AN-Conf/13 Recommendation 1.1/1 refers). The establishment of the GANP-SG was approved by the Air Navigation Commission on 12 June 2019 with the following objectives:

a) serve as a coordination point for all GANP development activities by subsuming pre-existing teams working on the GANP;

b) ensure stability and coherence within the multilayer structure of the GANP;

c) update, as necessary, the strategy embedded in the GANP in order to, based on major identified challenges, continue to provide high-level direction for a performance-driven evolution of the air navigation system;

d) update the technical content of the GANP embedded in the Aviation system block upgrade (ASBU) framework, taking into account evolving technologies and requirements as needed, following the defined maintenance process, in order to support technical managers through a safe and cost-effective modernization of the air navigation system;

e) update the performance framework through development of performance objectives and key performance indicators to support and verify the benefits achieved from the deployment of operational improvements;

f) pursue the alignment of global, regional and national air navigation planning;

g) consider air navigation planning matters within a broader aviation planning framework; and

h) strengthen the relationship with the Global Aviation Safety Plan (GASP) and Global Aviation Security Plan (GASeP).

2.2 Recognizing the need for ICAO to expedite the work on performance related to the GANP, AN-Conf/13 also recommended ICAO to consider establishing a group of performance experts under the new GANP Study Group (AN-Conf/13 Recommendation 4.3/1 refers).

2.3 Based on the above, the first meeting of the GANP-SG agreed to work under the structure presented in Figure 2.

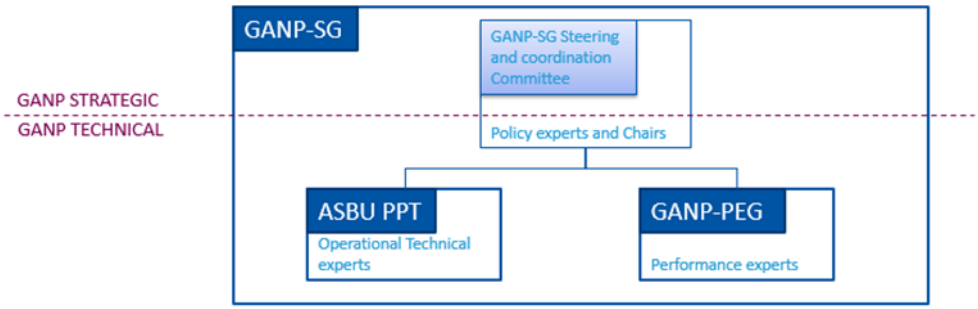


Figure 2 GANP Working Structure

3. THE ASBU PANEL PROJECT TEAM (ASBU PPT)

3.1 The ASBU-PPT reports to the GANP Study Group (GANP-SG).

3.2 The ASBU-PPT develops consolidated ASBU framework update proposals by processing change requests. The processing includes verification of the received information (completeness and accuracy), representativeness of the request (submitted by a Stakeholder group and/or ICAO working arrangement), analysis of the request (feasibility, alignment with strategic level, impact), preparation and support of consultation (if needed) and development of ASBU change specifications.

3.3 The ASBU-PPT maintains alignment with the GANP Strategic Level. If an ASBU framework change proposal implies a change to the strategic level, the ASBU-PPT shall seek approval (from the GANP-SG) to this change before implementing it in the ASBU framework.

3.4 The ASBU-PPT reviews and maintains overall consistency and completeness of the ASBU framework and develop change proposals for improvements.

3.5 The ASBU-PPT maintains awareness on the practical use of the ASBU framework and if necessary develop guidance and propose improvements to the portal to facilitate its use.

3.6 The ASBU-PPT develops recommendations and guidance for packaging ASBU elements to provide maximum value to Stakeholders.

3.7 The ASBU-PPT improves and maintains the link between the ASBU framework and the GANP Performance Framework as maintained and guided by the GANP-PEG.

3.8 On a periodic basis, the ASBU-PPT reviews the ASBU maintenance process and when necessary proposes improvements.

4. GANP TIMELINES AND EVENTS

4.1 The 39th session of the ICAO Assembly agreed to expand the GANP lifecycle through three-year minor and six-year major updates as relevant. In addition, in order to maximize the input from the aviation community, the GANP is updated following ICAO's global air navigation events schedule. According to this schedule there would be a High Level Safety Conference, with an air navigation stream, before a minor update of the GANP and a High Level Air Navigation Conference before a major update of the GANP. The High Level Conferences would take place between two ICAO Assembly sessions (see Figure 3).

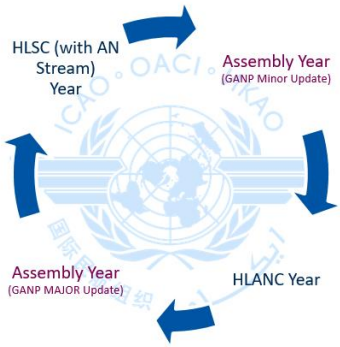
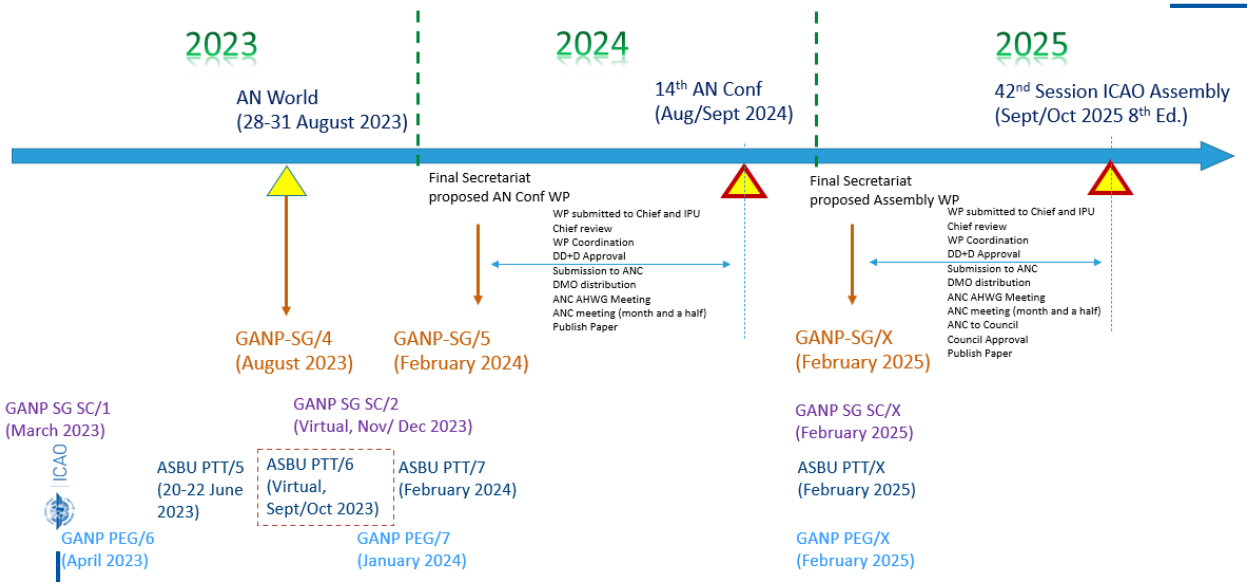


Figure 3 ICAO Air Navigation Global Events schedule

Based on these timelines, the GANP-SG meets face to face every year except in Assembly years around October or June depending if the peer review is for an Assembly or a Conference (see



4.2 Figure 4 and Figure 5). These meetings would serve as peer review mechanism towards the next editions of the GANP.

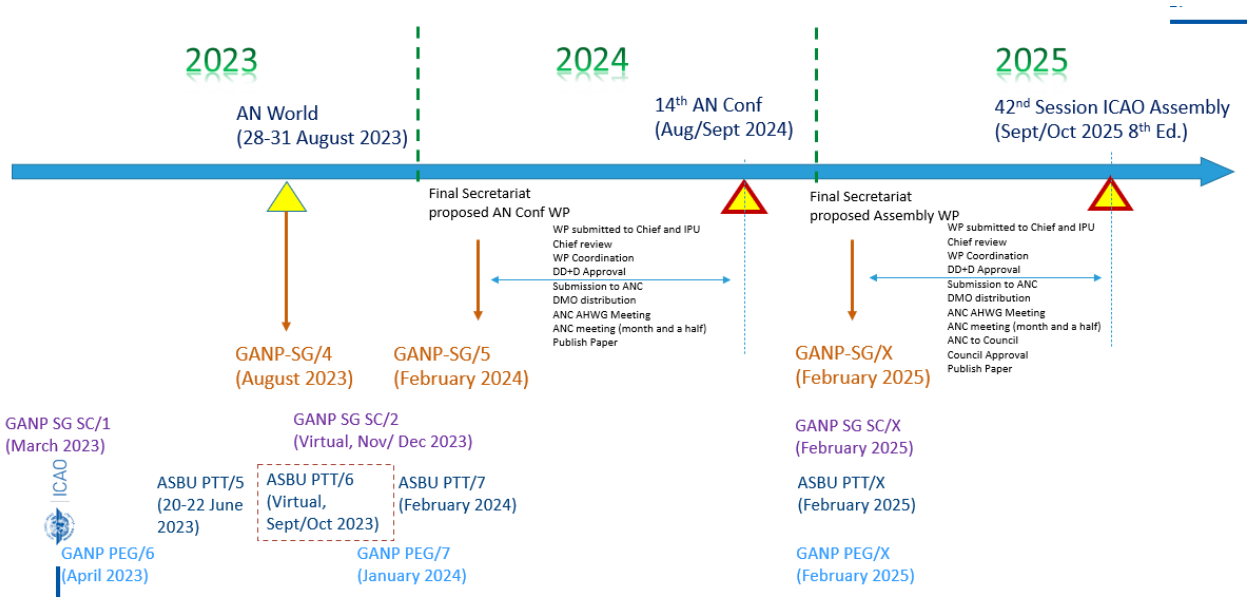


Figure 4 Next proposed peer review

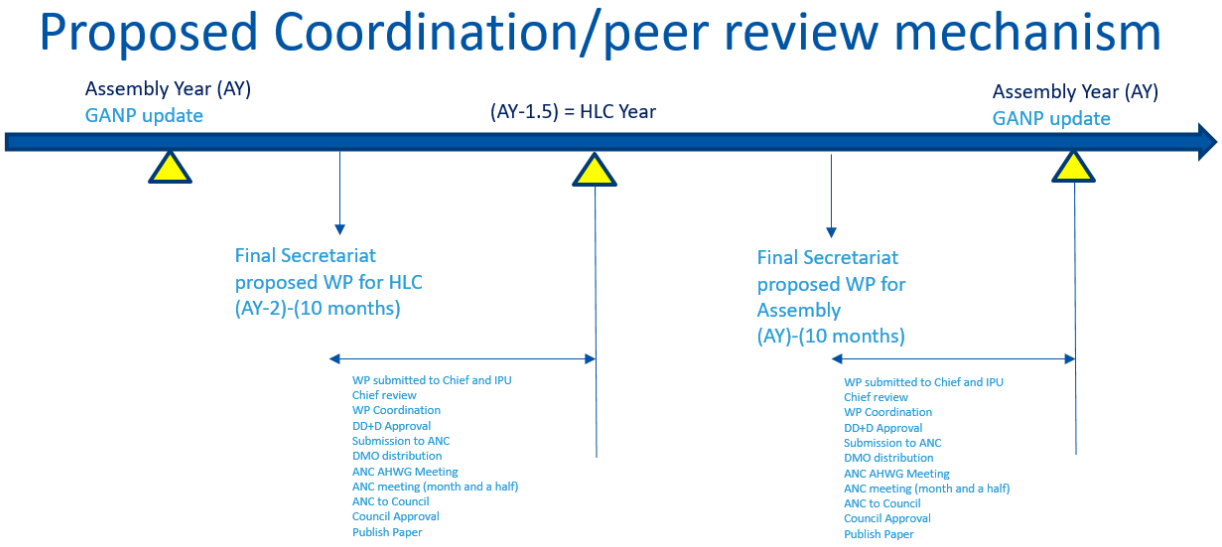


Figure 5 Proposed generic peer review mechanism

4.3 The ASBU PPT schedules its meetings and plan its deliverables and future work based on the GANP-SG coordination/peer review mechanism.

4.4 The main goal of the ASBU PPT is to review the ASBUs framework to make it more comprehensive, coherent and useful for implementation. In addition, this review should incorporate the most recent developments regarding the evolution of the air navigation system.

5. ASBU FRAMEWORK MAINTENANCE PROCESS

5.1 The 39th session of the ICAO Assembly agreed on the expansion of the GANP lifecycle through three-year minor and six-year major updates, as relevant, to provide for stability. The seventh edition of the GANP, endorsed at the 41st session of the ICAO Assembly, constituted a minor update of the GANP, therefore, the eighth edition of the GANP, to be endorsed by the 42nd session of the ICAO Assembly should be a major update.

5.2 The 40th session of the ICAO Assembly approved the ASBU Framework Maintenance Process available in **Appendix A**. As part of this process the ASBU Framework would be updated in three-year cycles (synchronized with Assembly years) and the next update and subject of this report was a major update.

6. MAJOR UPDATE

6.1 The scope of the major update is to:

- Update of ASBU Framework content from a factual perspective e.g. processing of delays, change in descriptions; numbering of ASBU elements; maturity level;
- Review of consistency, completeness and understanding;

- Reflect the themes for the eighth edition of the GANP;
- Reflect the approach for new entrants in the strategy;
- Address the use of artificial intelligence;
- Provide a mapping to the strategic level; and
- Define new elements in future blocks.

7. CAMPAIGN APPROACH

7.1 The update was organized through a campaign with the ASBU PPT as working arrangement. The campaign was chaired by Ms. Amornrat Jirattigalachote, Aeronautical Radio of Thailand Ltd. Ms. Olga de Frutos, Technical Officer of the Air Navigation Bureau (ANB) from ICAO Headquarters, Montreal, served as Secretary of the meeting.

7.2 The campaign followed a series of steps:

7.3 **First step** of the campaign was to review/renew the PPT Membership. The PPT consisted of subject matter experts. For each ASBU Thread a Thread Leader (TL), who was also member of the ICAO working arrangement responsible for the development of ICAO provisions/material corresponding to the Thread, was nominated. A list of the Thread leaders is provided in **Appendix B**.

7.4 **Second step** was to review and update the scope of the campaign. This was reflected in the Summary of Discussions of the different teleconferences and meetings.

7.5 **Third step** was to launch the development of Change Requests (CRs) which started with informing the Working Arrangements of the update campaign through the TLs.

7.6 **Fourth step** was to develop the CRs and respond to any issue/question that may come up. A series of 2 ASBU PPT teleconferences took place to review progress and to ensure that suitable CRs were received. **Fifth Step** was the PPT review of the CRs. This took place during 2 ASBU PPT sessions (Initial assessment, June 2023, and Final assessment, February 2023) and resulted in an updated set of agreed CRs.

7.7 **Sixth Step** was the final step and consisted of the final review of CRs reflected in the campaign report (this report) which also includes the timeline for another campaign towards the 42nd session of the ICAO Assembly. The Campaign report is a record of the campaign and its main outcomes were presented to the Fifth meeting of the GANP Study Group for endorsement.

8. CHANGE REQUEST SUBMITTED

8.1 The deadline for submission of change requests was the first week of June 2023.

8.2 The analysis of whether the change requests met the minimum criteria to be accepted was performed by the chair and the Secretary on 13 June 2023. All change requests were accepted.

8.3 The ASBU Framework Change Request are available in **Appendix C** and a summary by thread is provided hereafter:

THREAD	STATUS
ACAS	CLOSED, CR SUBMITTED
ACDM	CLOSED, CR SUBMITTED
APTA	CLOSED, CR SUBMITTED
CSEP	CLOSED, CR SUBMITTED
FRTO	CLOSED, CR SUBMITTED
GADS	CLOSED, CR SUBMITTED
NOPS	CLOSED, CR SUBMITTED
OPFL	CLOSED, NO CHANGE REQUEST SUBMITTED
DATS	CLOSED, CR SUBMITTED
RSEQ	CLOSED, CR SUBMITTED
SNET	CLOSED, CR SUBMITTED
SURF	CLOSED, CR SUBMITTED
TBO	CLOSED, NO CHANGE REQUEST SUBMITTED
WAKE	CLOSED, CR SUBMITTED
AMET	CLOSED, CR SUBMITTED
DAIM	CLOSED, CR SUBMITTED
FICE	CLOSED, CR SUBMITTED
SWIM	CLOSED, CR SUBMITTED
ASUR	CLOSED, CR SUBMITTED
COMI	CLOSED, CR SUBMITTED
COMS	CLOSED, NO CHANGE REQUIRED
NAVS	CLOSED, NO CHANGE REQUEST SUBMITTED

8.4 The ASBU Framework update followed an approach to automation and artificial intelligence outline available in **Appendix D**.

9. INITIAL ASSESSMENT

9.1 The initial assessment of the change requests by the ASBU PPT took place from 20 to 23 June 2023 at ICAO HQ, Montreal.

9.2 ASBU Framework Change Requests

9.2.1 A Change Request ID was assigned to each Change Request submitted as follows:

- Initial Assessment Existing ASBU Elements/Threads Change Requests: <<IA-E-THREAD-CR/#>>
- Initial Assessment New ASBU Elements/Threads Change Requests: <<IA-N-THREAD/ELEMENT-CR/#>>

9.2.2 The ASBU PPT reviewed the Change Requests submitted and provided the following comments to the different change requests:

CHANGE REQUEST ID		COMMENTS
EXISTING ASBU THREADS AND ELEMENTS		
1	IA-E-ACDM-CR/1	Change the maturity level of ACDM-B2/1 from "Standardization" to "Ready for implementation". Include number of the Manual in the operational procedures enabler. Change the maturity level of ACDM-B2/2 from "Standardization" to "Ready for implementation". Reference to the same Manual as in ACDM-B2/1 should be done in the operational procedures enabler. Change the maturity level of ACDM-B2/3 from "Validation" to "Ready for implementation". Remove the FIXM enabler since the dependency on FICE is benefit driven. Move ACDM-B3/1 to Block 4 since it is linked to global SWIM. A dependency need should be added to FICE-B2/6 Publication Service. Review the content to de-couple regional vs. network functions. Add new elements in future Blocks to reflect the use of AI/ML linked to TAM, APOC, etc. AI/ML could be included in the enablers of the new elements. Add new elements in future Blocks to reflect the need of new services to support the integration of new entrants.
2	IA-E-AMET-CR/1	Definition of MET requirements for LLO airspace, HAO airspace and "Collaborative airspace" should be included in the current elements.
3	IA-E-AMET-CR/2	Definition of MET requirements for LLO airspace, HAO airspace and "Collaborative airspace" should be included in the current elements.
4	IA-E-AMET-CR/3	Definition of MET requirements for LLO airspace, HAO airspace and "Collaborative airspace" should be included in the current elements.
5	IA-E-AMET-CR/4	Definition of MET requirements for LLO airspace, HAO airspace and "Collaborative airspace" should be included in the current elements.
6	IA-E-AMET-CR/5	Definition of MET requirements for LLO airspace, HAO airspace and "Collaborative airspace" should be included in the current elements.
7	IA-E-AMET-CR/6	Definition of MET requirements for LLO airspace, HAO airspace and "Collaborative airspace" should be included in the current elements.
8	IA-E-AMET-CR/7	Definition of MET requirements for LLO airspace, HAO airspace and "Collaborative airspace" should be included in the current elements.
9	IA-E-AMET-CR/8	Definition of MET requirements for LLO airspace, HAO airspace and "Collaborative airspace" should be included in the current elements.
10	IA-E-AMET-CR/9	Definition of MET requirements for LLO airspace, HAO airspace and

		"Collaborative airspace" should be included in the current elements.
11	IA-E-AMET-CR/10	Definition of MET requirements for LLO airspace, HAO airspace and "Collaborative airspace" should be included in the current elements.
12	IA-E-AMET-CR/11	Definition of MET requirements for LLO airspace, HAO airspace and "Collaborative airspace" should be included in the current elements.
13	IA-E-AMET-CR/12	The Meteorological information service in SWIM in Block 4 would become AMET-B4/3. Definition of MET requirements for LLO airspace, HAO airspace and "Collaborative airspace" should be included in the current elements.
14	IA-E-AMET-CR/13	Definition of MET requirements for LLO airspace, HAO airspace and "Collaborative airspace" should be included in the current elements.
15	IA-E-AMET-CR/14	Definition of MET requirements for LLO airspace, HAO airspace and "Collaborative airspace" should be included in the current elements.
16	IA-E-AMET-CR/15	Definition of MET requirements for LLO airspace, HAO airspace and "Collaborative airspace" should be included in the current elements.
17	IA-E-AMET-CR/16	Definition of MET requirements for LLO airspace, HAO airspace and "Collaborative airspace" should be included in the current elements.
18	IA-E-APTA-CR/1	
19	IA-E-COMS-CR/1	
20	IA-E-COMS-CR/2	
21	IA-E-COMS-CR/3	In addition to the proposed changes in the submitted change request, change the maturity level of COMS-B2/1 from "Validation" to "Ready for implementation" and drop the D-TAXI messages. Change the maturity level of COMS-B2/2 and COMS-B2/3 from "Validation" to "Ready for implementation"
22	IA-E-COMS-CR/4	Change the maturity level of COMS-B3/1 and COMS-B3/2 from "Concept" to "Validation", and update the edition of the Manual in the training enabler to Edition 2. Review the enablers of COMS-B3/1 and COMS-B3/2 to reference Doc 9869 Edition 3 to be published in 2028. Further review COMI-B3/1 and COMI-B3/2 with the CP-OPDLWG. Define sunset dates for the relevant COMS elements. Add three new elements in Block 3 as follows: "Performance-based Communication Service Requirements for LLO", "Performance-based Communication Service Requirements for Cooperative Airspace" and "Performance-based Communication Service Requirements for HAO".

23	IA-E-FICE-CR/1	Change the maturity level of FICE-B2/1 and FICE-B2/2 to "Ready for implementation" Change the version of FIXM from version 4.2 to version 4.3 in all FICE services related to Release 1 and the availability date to 2023.
24	IA-E-FICE-CR/2	
25	IA-E-FICE-CR/3	
26	IA-E-FICE-CR/4	
27	IA-E-FICE-CR/5	
28	IA-E-FICE-CR/6	Move FICE-B2/7 to Block 4 and ensure the right use of terminology (i.e. LLO airspace, HAO airspace). This differs from the proposal in the initial change request submitted.
29	IA-E-FICE-CR/7	Move FICE-B2/8 to Block 4 and ensure the right use of terminology (i.e. LLO airspace, HAO airspace). This differs from the proposal in the initial change request submitted.
30	IA-E-FICE-CR/8	Move FICE-B2/9 to Block 4 and identify the maturity level as "Validation". This differs from the proposal in the initial change request submitted. Add an element to Block 4 to reflect the provision of FICE information to support operations in cooperative airspace. Review FICE-B3/1 to see if it is needed to be connected to the aircraft to support trajectory synchronization and if so, move it to Block 4. Move FICE-B4/1 and FICE-B4/2 to Block 5 and review to see if they can support LLO and HAO.
31	IA-E-FRTO-CR/1	In addition to the proposed changes in the submitted change request, review, and update the hyperlinks of the enablers as necessary. Replace ICAO Circular 330 by ICAO Doc 10088.
32	IA-E-FRTO-CR/2	
33	IA-E-FRTO-CR/3	
34	IA-E-FRTO-CR/4	
35	IA-E-FRTO-CR/5	Change the maturity level of FRTO-B1/1 from "Standardization" to "Ready for implementation". Clarify "differentiation between different traffic type airspaces" in the description.
36	IA-E-FRTO-CR/6	
37	IA-E-FRTO-CR/7	Remove the first sentence regarding RNP from the description of FRTO-B1/2
38	IA-E-FRTO-CR/8	
39	IA-E-FRTO-CR/9	
40	IA-E-FRTO-CR/10	
41	IA-E-FRTO-CR/11	
42	IA-E-FRTO-CR/12	Change the maturity level of FRTO-B1/3, FRTO-B1/4, FRTO-B1/5 and FRTO-B1/6 from "Standardization" to "Ready for implementation"
43	IA-E-FRTO-CR/13	

44	IA-E-FRTO-CR/14	
45	IA-E-FRTO-CR/15	
46	IA-E-FRTO-CR/16	Remove FRTO-B1/7 as it should be part of NOPS-B1/10 and the maturity level should be “Ready for implementation”.
47	IA-E-FRTO-CR/17	
48	IA-E-FRTO-CR/18	Review the timeframe for FRTO-B2/1, FRTO-B2/2 and FRTO-B2/4. Change the maturity level of FRTO-B2/3 from “Validation” to “Ready for implementation. Consider adding an element regarding airspace structure/FRTO in TBO environment in Block 4. Consider adding an element regarding airspace utilization to support high airspace operation in Block 4 or Block 5.
49	IA-E-NOPS-CR/1	Change the maturity level of NOPS-B1/2, NOPS-B1/3, NOPS-B1/4, NOPS-B1/5, NOPS-B1/6, NOPS-B1/7, NOPS-B1/8, NOPS-B1/9, and NOPS-B1/10 from “Standardization” to “Ready for implementation”.
50	IA-E-NOPS-CR/2	Change the maturity level of NOPS-B1/2, NOPS-B1/3, NOPS-B1/4, NOPS-B1/5, NOPS-B1/6, NOPS-B1/7, NOPS-B1/8, NOPS-B1/9, and NOPS-B1/10 from “Standardization” to “Ready for implementation”.
51	IA-E-NOPS-CR/3	Change the maturity level of NOPS-B1/2, NOPS-B1/3, NOPS-B1/4, NOPS-B1/5, NOPS-B1/6, NOPS-B1/7, NOPS-B1/8, NOPS-B1/9, and NOPS-B1/10 from “Standardization” to “Ready for implementation”.
52	IA-E-NOPS-CR/4	Change the maturity level of NOPS-B1/2, NOPS-B1/3, NOPS-B1/4, NOPS-B1/5, NOPS-B1/6, NOPS-B1/7, NOPS-B1/8, NOPS-B1/9, and NOPS-B1/10 from “Standardization” to “Ready for implementation”.
53	IA-E-NOPS-CR/5	Change the maturity level of NOPS-B1/2, NOPS-B1/3, NOPS-B1/4, NOPS-B1/5, NOPS-B1/6, NOPS-B1/7, NOPS-B1/8, NOPS-B1/9, and NOPS-B1/10 from “Standardization” to “Ready for implementation”.
54	IA-E-NOPS-CR/6	Change the maturity level of NOPS-B1/2, NOPS-B1/3, NOPS-B1/4, NOPS-B1/5, NOPS-B1/6, NOPS-B1/7, NOPS-B1/8, NOPS-B1/9, and NOPS-B1/10 from “Standardization” to “Ready for implementation”.
55	IA-E-NOPS-CR/7	Change the maturity level of NOPS-B1/2, NOPS-B1/3, NOPS-B1/4, NOPS-B1/5, NOPS-B1/6, NOPS-B1/7, NOPS-B1/8, NOPS-B1/9, and NOPS-B1/10 from “Standardization” to “Ready for implementation”.
56	IA-E-NOPS-CR/8	Change the maturity level of NOPS-B1/2, NOPS-B1/3, NOPS-B1/4, NOPS-B1/5, NOPS-B1/6, NOPS-B1/7, NOPS-B1/8, NOPS-B1/9, and NOPS-B1/10 from “Standardization” to “Ready for implementation”. Review the reference to ICAO Doc 9971 and remove it from NOPS-B1/9 and NOPS-B2/1. Add a dependency of NOPS-B2/3 to SWIM. Change the maturity level of NOPS-B2/1, NOPS-B2/2, NOPS-B2/3, NOPS-B2/4, NOPS-B2/5, and NOPS-B2/6 from “Validation” to “Ready for implementation” since this would be the status by 2025,

		when the eighth edition of the GANP would be published.
57	IA-E-NOPS-CR/9	The AAM SG to review NOPS-B2/7 including the enablers, considering the proposed changed in the submitted change request.
58	IA-E-NOPS-CR/10	
59	IA-E-NOPS-CR/11	
60	IA-E-NOPS-CR/12	
61	IA-E-NOPS-CR/13	
62	IA-E-NOPS-CR/14	
63	IA-E-NOPS-CR/15	Review NOPS-B2/8 according with the submitted change request. Consider renaming the element to “Network operations to support higher airspace” instead of “Higher airspace network operations” as proposed in the submitted change request. Review also the enablers as the element would be moved to Block 3. Add a new element similar to NOPS-B2/8 in Block 3 for “cooperative airspace”.
64	IA-E-NOPS-CR/16	
65	IA-E-NOPS-CR/17	
66	IA-E-NOPS-CR/18	Add a new element similar to NOPS-B2/8 in Block 3 for “cooperative airspace”.
67	IA-E-NOPS-CR/19	
68	IA-E-NOPS-CR/20	
69	IA-E-NOPS-CR/21	
70	IA-E-NOPS-CR/22	Move NOPS-B3/1, NOPS-B3/2 and NOPS-B3/3 to Block 5 as the maturity level would still be “Concept” by 2025.
71	IA-E-NOPS-CR/23	Consider adding the use of AI/ML to NOPS-B2/1 and review, if added, whether it should be part of NOPS-B3/1 instead.
72	IA-E-NOPS-CR/24	
73	IA-E-NOPS-CR/25	
74	IA-E-NOPS-CR/26	
75	IA-E-NOPS-CR/27	
76	IA-E-NOPS-CR/28	
77	IA-E-SURF-CR/1	In addition to the proposed changes in the submitted change request, airport should be replaced by aerodrome in alignment with ICAO terminology. Identify the enablers of all elements within Block 0 to 4.
78	IA-E-SURF-CR/2	
79	IA-E-SURF-CR/3	
80	IA-E-SURF-CR/4	Change the maturity level of SURF-B1/1, SURF-B1/3, SURF-B1/4, SURF-B2/2 and SURF-B2/3 from “Standardization” to “Ready for implementation”.
81	IA-E-SURF-CR/5	Check if SURF-B1/2 is “Ready for implementation”. If not, consider

		moving this element to the later Block.
82	IA-E-SURF-CR/6	Change the maturity level of SURF-B1/1, SURF-B1/3, SURF-B1/4, SURF-B2/2 and SURF-B2/3 from “Standardization” to “Ready for implementation”.
83	IA-E-SURF-CR/7	Change the maturity level of SURF-B1/1, SURF-B1/3, SURF-B1/4, SURF-B2/2 and SURF-B2/3 from “Standardization” to “Ready for implementation”.
84	IA-E-SURF-CR/8	Move SURF-B1/5 to Block 4 and change maturity level from “Standardization”" to “Concept”. Review the text of the element.
85	IA-E-SURF-CR/9	Change the maturity level of SURF-B2/1 from “Validation” to “Ready for implementation”. Review the text of the element.
86	IA-E-SURF-CR/10	Change the maturity level of SURF-B1/1, SURF-B1/3, SURF-B1/4, SURF-B2/2 and SURF-B2/3 from “Standardization” to “Ready for implementation”.
87	IA-E-SURF-CR/11	Change the maturity level of SURF-B1/1, SURF-B1/3, SURF-B1/4, SURF-B2/2 and SURF-B2/3 from “Standardization” to “Ready for implementation”. Reflect the use of AI/ML in a new element in Block 3. Add a new element in Block 3 to support the operations within cooperative airspace related to AAM.
88	IA-E-WAKE-CR/1	In addition to the proposed changes in the submitted change request, a new element should be added to Block 3 to cover the new entrants. Change the maturity level of WAKE-B2/1 from “Standardization” to “Ready for implementation”. Change the maturity level of WAKE-B2/2 from “Concept” to “Ready for implementation” and add reference to EUROCONTROL documentation. Include the use of AI/ML in the description.
89	IA-E-WAKE-CR/2	Review the enablers years of WAKE-B3/1
90	IA-E-WAKE-CR/3	
91	IA-E-WAKE-CR/4	Review dependencies and enablers of WAKE-B3/2
92	IA-E-WAKE-CR/5	There is no change request needed for WAKE-B3/3 as proposed in the submitted change request since all enablers years are already 2030
93	IA-E-WAKE-CR/6	
94	IA-E-WAKE-CR/7	
95	IA-E-WAKE-CR/8	Change the maturity level of WAKE-B3/6 from “Concept” to “Validation”
96	IA-E-WAKE-CR/9	
97	IA-E-WAKE-CR/10	Complete the description of WAKE-B4/1 including enablers. Move WAKE-B4/2 to Block 5.

NEW ASBU ELEMENTS		
98	IA-N-COMI-CR/1	New job card
99	IA-N-FRTO-CR/1	New element
SECRETARIAT CHANGE REQUESTS		

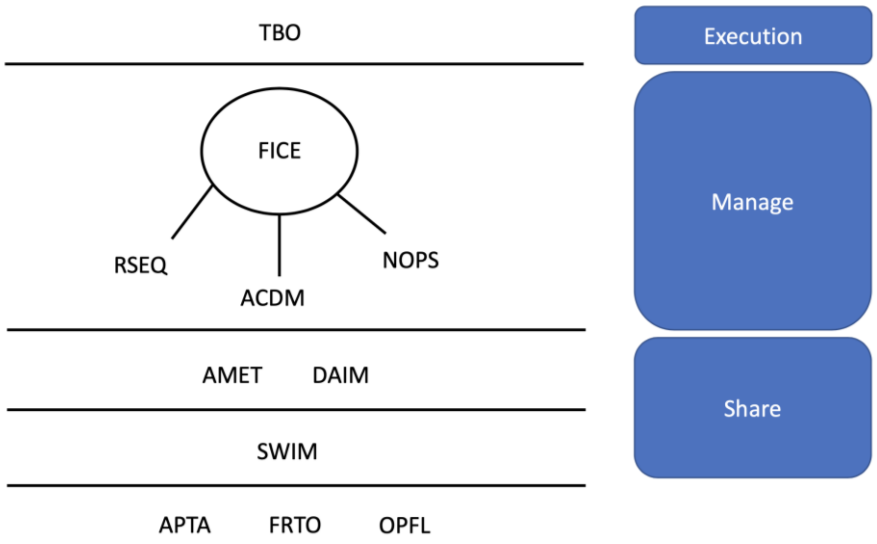
9.2.3 Since this is a review for a major edition of the GANP, the ASBU PPT also reviewed the threads where no CR was submitted during this initial assessment. The following comments were provided:

9.2.3.1 Digital Aerodrome Air Traffic Services (**DATS**):

- Change the level of maturity of DATS-B1/1 from “Standardization” to “Ready for implementation”.
- Define new elements that consider increasing level of complexity for DATS in terms of aerodrome layout for instance.
- Controlling traffic of two aerodromes from one location is a different operational improvement than controlling traffic of one aerodrome from one control tower. Simultaneous control of two aerodromes should thus be addressed in two elements in Block 3 for multi-Runway, sequential operation. Assess the feasibility of having new elements on the control of traffic of two aerodromes from one location.
- Differentiation should also be made between the provision of AFIS and ATC using visual awareness systems.
- DATS is currently very focused on aerodromes; however, it can also be applied to CTRs and other airspace.
- Add an element for the provision of DATS for vertiports.
- Reflect all of these considerations by defining two elements in Block 1 (differentiate between ATC vs. AFIS provision), two in Block 2 (adding aerodrome complexity), one in Block 3 (vetiport) and, if possible, another one in Block 3 (simultaneous traffic control of two aerodromes from one location).

9.2.3.2 Trajectory-based Operations (**TBO**):

- To review the TBO tree as follows:



Description: SWIM thread and all above need to be done to achieve TBO, the threads below SWIM are optional for TBO.

- The meeting also agreed that a description of the tree as well as how the tree should be used must be included in the GANP Portal.
- Update of the elements to reflect the different levels of TBO capabilities (Levels 1 to 4 as discussed in ATMRPP) and also address these capabilities in each Block.

9.2.3.3 Global Aeronautical Distress and Safety System (**GADS**):

- Change the maturity level of GADS- B2/3 from “Standardization” to “Ready for implementation”.

9.2.3.4 Digital Aeronautical Information Management (**DAIM**):

- Check the maturity status of DAIM-B1/1.
- Review the version of the AIXM enabler for Block 2 elements.
- Move DAIM-B2/3 to Block 4 as by 2025 it would still have a maturity level “Concept”.
- Move DAIM-B2/4 to Block 3 as by 2025 it would have a maturity level “Standardization”.
- Review DAIM-B2/5 to add the use AI/ML for more efficient NOTAM-like information exchange mechanism or define a new element in Block 3 or 4.
- Consider adding NOTAM to DAIM-B2/1.

- Add a new element to Block 4 for the provision of aeronautical information to support operations in cooperative airspace.

9.2.3.5 System Wide Information Management (**SWIM**):

- Change the maturity level of SWIM-B2/1, SWIM-B2/2 and SWIM-B2/3 to "Ready for implementation".
- Move SWIM-B2/4 and SWIM-B2/5 to Block 3.
- Move SWIM-B3/1 to Block 4 based on the assumption that the connected aircraft concept would be realized by Block 4.

9.2.3.6 Runway Sequencing (**RSEQ**):

- Reflect Point Merge, RSEQ-B0/3, in the concept of operations
- Remove the text related to surface management in the Block 1 concept of operations
- Fix the element numbering
- Swop RSEQ-B4/1 and RSEQ-B4/2 for consistency purposes within other Blocks
- Change the maturity level of RSEQ-B2/1 from "Validation" to "Ready for implementation".
- Review the maturity level of RSEQ-B3/2.
- Add a dependency in RSEQ-B3/3 to WAKE, FICE, and AMET. Define the enablers. Change the maturity level from "Concept" to "Validation". Review the description to consider the use of AI/ML.
- Move RSEQ-B3/4 to Block 4
- Review the timeframes for RSEQ-B4/1 and RSEQ-B4/2
- Add new elements to Block 4 that include the use of AI/ML.
- Add a new element to Block 3 or 4 for "Integrated departures and arrivals to vertiports".

9.2.3.7 Optimum Flight Levels in Oceanic and Remote Airspace (**OPFL**):

- Identify the enablers of all elements within Block 0 to 4.
- Review the maturity level of OPFL-B1/1.
- Move OPFL-B3/3 to Block 2 and change the maturity level from "Validation" to "Ready for implementation".
- Add a new element to Block 4 to reflect the need for new separation for High Airspace Operations

9.2.3.8 Cooperative Separation (**CSEP**):

- Change the maturity level of CSEP-B1/3 and CSEP-B1/4 from “Standardization” to “Ready for implementation”.
- A table is missing in the description of CSEP-B1/3.
- Review the enablers years of CSEP-B2/1 (the JC in SASP is tabled for 2028).
- Move CSEP-B2/2 and CSEP-B2/3 to Block 3 and change the name to reflect LLO and HAO. The content of the elements need to be reviewed and updated.
- Move CSEP-B3/1 to Block 4 and identify enablers.
- Enablers should be identified in all elements within Blocks 1 to 4.
- The content of CSEP-B4/1 should be expanded to cover that automation does the validation.

9.2.3.9 Airborne Collision Avoidance System (**ACAS**):

- Change the maturity level of ACAS-B1/1 from “Ready for implementation” to “Mandatory implementation”.
- Change the maturity level of ACAS-B2/1 and ACAS-B2/2 from “Standardization” and “Validation”, respectively, to “Ready for implementation”.
- Add a new element in Block 3 to address operations in a Cooperative Airspace.

9.2.3.10 Ground-based Safety Nets (**SNET**):

- Add new elements in the future blocks for LLO, HAO and Cooperative Airspace.
- Add new elements that consider the use of more automation.

9.2.3.11 Improved Arrival and Departure Operations (**APTA**):

- Move APTA-B1/1 and APTA-B1/2 to Block 2 since the enablers would not be ready till 2024.
- Change the maturity level of APTA-B1/4 and APTA-B1/5 from “Standardization” to “Ready for implementation”.
- Review the operational procedures enabler date of APTA-B2/1; the amendment of PANS-OPS was in 2021.
- Remove flight inspection and/or validation from the operational procedure enabler in APTA-B2/2.
- Update the maturity level of APTA-B2/3 from “Standardization” to “Ready for implementation”, review its enablers years, and check the possible use of AI/ML.
- Review the description and check the enablers years of APTA-B2/4.

- Review the maturity level and the enablers years of APTA-B3/1 and APTA-B3/2.

- Add an element in Block 3 to address the approach landing procedures to vertiports.

9.2.3.12 Communication infrastructure (**COMI**):

- Based on the submitted change request, add a new element "Transmission and Reception of VHF Signals between Satellite and Aircraft Technology", define its enablers years and the maturity level as well as allocate it to the appropriate Block.

- Change the maturity level of COMI-B1/1 from "Standardization" to "Ready for implementation"

- Update the years of the enablers of COMI-B1/3 (2024) and move it to Block 2.

- Move COMI-B2/1 to Block 3 and review the enablers years accordingly.

- Update COMI-B2/2 by upgrading the technology to the use of 5G and move to Block 3.

- Change the maturity level of COMI-B2/3 from "Validation" to "Ready for implementation".

- Change the maturity level of COMI-B3/1 from "Concept" to "Validation".

- Move COMI-B3/2 to Block 4.

- Identify the enablers of COMI-B3/3.

- Move COMI-B3/4 to Block 4 and review the enablers years accordingly.

- Define sunset dates for the relevant COMI elements.

- Add three new elements in Block 3 as follows: "Performance-based Link Requirements for LLO", "Performance-based Link Requirements for Cooperative Airspace" and "Performance-based Link requirements for HAO".

9.2.3.13 Navigation Systems (**NAVS**):

- Review the enablers years, the maturity level, and the support of CAT III operations of NAVS-B1/1

- Review the enabler years and the maturity level of NAVS-B2/1, NAVS-B2/2 and NAVS-B2/3.

- Define sunset dates for the relevant NAVS elements

- Add three new elements in Block 3 as follows: "Performance-based Navigation Requirements for LLO", "Performance-based Navigation Requirements for

Cooperative Airspace" and "Performance-based Navigation Requirements for HAO".

9.2.3.14 Surveillance systems (**ASUR**):

- Review the enablers years and the maturity level of ASUR-B2/1
- Replace ASUR-B2/2 and ASUR-B3/1 by three new elements in Block 3 as follows: "Performance-based Surveillance Requirements for LLO", "Performance-based Surveillance Requirements for Cooperative Airspace" and "Performance-based Surveillance Requirements for HAO".
- Review and update the description of ASUR-B4/1, e.g. to include WAM.
- Define sunset dates for the relevant ASUR elements.

10. FINAL ASSESSMENT

10.1 The final assessment of the change requests by the ASBU PPT took place from 29 January to 2 February 2024. The ASBU PPT addressed the comments provided during the initial assessment of the Change Requests and updated the change requests. Some change requests resulted in consequential change requests.

10.1.1 A Change Request ID was assigned to each updated Change Request as follows:

- Final Assessment Existing ASBU Elements/Threads Change Requests: <<FA-E-THREAD-CR/#>>
- Final Assessment New ASBU Elements/Threads Change Requests: <<FA-N-THREAD/ELEMENT-CR/#>>

10.1.2 All the change requests, as modified by the meeting, are presented in **Appendix E**. The resolution of the change request submitted is summarized in the table hereafter.

CHANGE REQUEST ID		RESOLUTION
EXISTING ASBU ELEMENTS AND THREADS (as modified by the ASBU PPT, in Appendix F)		
1	FA-E-ACAS-CR/1	Accepted
2	FA-E-ACAS-CR/2	Accepted
3	FA-E-ACAS-CR/3	Accepted
4	FA-E-ACAS-CR/4	Accepted
5	FA-E-ACAS-CR/5	Accepted
6	FA-E-ACAS-CR/6	Accepted
7	FA-E-ACAS-CR/7	Accepted
8	FA-E-ACAS-CR/8	Accepted
9	FA-E-ASUR-CR/1	Accepted
10	FA-E-ASUR-CR/2	Accepted
11	FA-E-ASUR-CR/3	Accepted
12	FA-E-ASUR-CR/4	Accepted

13	FA-E-ASUR-CR/5	Accepted
14	FA-E-ASUR-CR/6	Accepted
15	FA-E-ASUR-CR/7	Accepted
16	FA-E-ASUR-CR/8	Accepted
17	FA-E-ASUR-CR/9	Accepted
18	FA-E-ASUR-CR/11	Accepted
19	FA-E-ACDM-CR/12	Accepted
20	FA-E-ACDM-CR/2	Accepted
21	FA-E-ACDM-CR/3	Accepted
22	FA-E-ACDM-CR/4	Accepted
23	FA-E-ACDM-CR/5	Accepted
24	FA-E-ACDM-CR/6	Accepted
25	FA-E-AMET-CR/1	Accepted
26	FA-E-AMET-CR/2	Accepted
27	FA-E-AMET-CR/3	Accepted
28	FA-E-AMET-CR/4	Accepted
29	FA-E-AMET-CR/5	Accepted
30	FA-E-AMET-CR/6	Accepted
31	FA-E-AMET-CR/7	Accepted
32	FA-E-AMET-CR/8	Accepted
33	FA-E-AMET-CR/9	Accepted
34	FA-E-AMET-CR/10	Accepted
35	FA-E-AMET-CR/11	Accepted
36	FA-E-AMET-CR/12	Accepted
37	FA-E-AMET-CR/13	Accepted
38	FA-E-AMET-CR/14	Accepted
39	FA-E-AMET-CR/15	Accepted
40	FA-E-AMET-CR/16	Accepted
41	FA-F-APTA-CR/1	Accepted
42	FA-F-APTA-CR/2	Accepted
43	FA-F-APTA-CR/3	Accepted
44	FA-F-APTA-CR/4	Accepted
45	FA-F-APTA-CR/5	Accepted
46	FA-F-APTA-CR/6	Accepted
47	FA-F-APTA-CR/7	Accepted
48	FA-F-APTA-CR/8	Accepted
49	FA-F-APTA-CR/9	Accepted
50	FA-F-APTA-CR/10	Accepted
51	FA-F-APTA-CR/11	Accepted
52	FA-F-APTA-CR/12	Accepted
53	FA-F-APTA-CR/13	Accepted
54	FA-F-APTA-CR/14	Accepted
55	FA-F-APTA-CR/15	Accepted
56	FA-F-APTA-CR/16	Accepted
57	FA-F-APTA-CR/17	Accepted
58	FA-F-APTA-CR/18	Accepted
59	FA-F-APTA-CR/19	Accepted
60	FA-F-APTA-CR/20	Accepted
61	FA-F-APTA-CR/21	Accepted

62	FA-F-APTA-CR/22	Accepted
63	FA-F-APTA-CR/23	Accepted
64	FA-F-APTA-CR/24	Accepted
65	FA-F-APTA-CR/25	Accepted
66	FA-F-APTA-CR/26	Accepted
67	FA-E-COMI-CR/1	Accepted
68	FA-E-COMI-CR/2	Accepted
69	FA-E-COMI-CR/3	Accepted
70	FA-E-COMI-CR/4	Accepted
71	FA-E-COMI-CR/5	Accepted
72	FA-E-COMI-CR/6	Accepted
73	FA-E-COMI-CR/7	Accepted
74	FA-E-COMI-CR/8	Accepted
75	FA-E-COMI-CR/9	Accepted
76	FA-E-COMI-CR/10	Accepted
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78	FA-E-COMI-CR/12	Accepted
79	FA-E-COMS-CR/1	Accepted
80	FA-E-COMS-CR/2	Accepted
81	FA-E-COMS-CR/3	Accepted
82	FA-E-COMS-CR/4	Accepted
83	FA-E-COMS-CR/5	Accepted
84	FA-E-COMS-CR/6	Accepted
85	FA-E-COMS-CR/7	Accepted
86	FA-E-COMS-CR/8	Accepted
87	FA-E-CSEP-CR/1	Accepted
88	FA-E-CSEP-CR/2	Accepted
89	FA-E-CSEP-CR/3	Accepted
90	FA-E-CSEP-CR/4	Accepted
91	FA-E-CSEP-CR/5	Accepted
92	FA-E-CSEP-CR/6	Accepted
93	FA-E-CSEP-CR/7	Accepted
94	FA-E-CSEP-CR/8	Accepted
95	FA-E-CSEP-CR/9	Accepted
96	FA-E-CSEP-CR/10	Accepted
97	FA-E-CSEP-CR/11	Accepted
98	FA-E-DAIM-CR/1	Accepted
99	FA-E-DAIM-CR/2	Accepted
100	FA-E-DAIM-CR/3	Accepted
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106	FA-E-DAIM-CR/9	Accepted
107	FA-E-DAIM-CR/10	Accepted
108	FA-E-DAIM-CR/11	Accepted
109	FA-E-DAIM-CR/12	Accepted
110	FA-E-DAIM-CR/13	Accepted

111	FA-E-DAIM-CR/14	Accepted
112	FA-E-DAIM-CR/15	Accepted
113	FA-E-DAIM-CR/16	Accepted
114	FA-E-DAIM-CR/17	Accepted
115	FA-E-DAIM-CR/18	Accepted
116	FA-E-DAIM-CR/19	Accepted
117	FA-E-DATS-CR/1	Accepted
118	FA-E-DATS-CR/2	Accepted
119	FA-E-DATS-CR/3	Accepted
120	FA-E-DATS-CR/4	Accepted
121	FA-E-DATS-CR/5	Accepted
122	FA-E-DATS-CR/6	Accepted
123	FA-E-FICE-CR/1	Accepted
124	FA-E-FICE-CR/2	Accepted
125	FA-E-FICE-CR/3	Accepted
126	FA-E-FICE-CR/4	Accepted
127	FA-E-FICE-CR/5	Accepted
128	FA-E-FICE-CR/6	Accepted
129	FA-E-FICE-CR/7	Accepted
130	FA-E-FICE-CR/8	Accepted
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225	FA-E-NOPS-CR/45	Accepted
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248	FA-E-NOPS-CR/67	Accepted
249	FA-E-NOPS-CR/68	Accepted
250	FA-E-NOPS-CR/69	Accepted
251	FA-E-NOPS-CR/70	Accepted
252	FA-E-NOPS-CR/71	Accepted
253	FA-E-NOPS-CR/72	Accepted
254	FA-E-NOPS-CR/73	Accepted
255	FA-E-NOPS-CR/74	Accepted
256	FA-E-NOPS-CR/75	Accepted
257	FA-E-NOPS-CR/76	Accepted
258	FA-E-NOPS-CR/77	Accepted
259	FA-E-NOPS-CR/78	Accepted
260	FA-E-NOPS-CR/79	Accepted

261	FA-E-NOPS-CR/80	Accepted
262	FA-E-NOPS-CR/81	Accepted
263	FA-E-NOPS-CR/82	Accepted
264	FA-E-NOPS-CR/83	Accepted
265	FA-E-NOPS-CR/84	Accepted
266	FA-E-NOPS-CR/85	Accepted
267	FA-E-NOPS-CR/86	Accepted
268	FA-E-NOPS-CR/87	Accepted
269	FA-E-NOPS-CR/88	Accepted
270	FA-E-NOPS-CR/89	Accepted
271	FA-E-NOPS-CR/90	Accepted
272	FA-E-NOPS-CR/91	Accepted
273	FA-E-NOPS-CR/92	Accepted
274	FA-E-NOPS-CR/93	Accepted
275	FA-E-NOPS-CR/94	Accepted
276	FA-E-NOPS-CR/95	Accepted
277	FA-E-NOPS-CR/96	Accepted
278	FA-E-NOPS-CR/97	Accepted
279	FA-E-NOPS-CR/98	Accepted
280	FA-E-NOPS-CR/99	Accepted
281	FA-E-NOPS-CR/100	Accepted
282	FA-E-NOPS-CR/101	Accepted
283	FA-E-NOPS-CR/102	Accepted
284	FA-E-NOPS-CR/103	Accepted
285	FA-E-NOPS-CR/104	Accepted
286	FA-E-NOPS-CR/105	Accepted
287	FA-E-NOPS-CR/106	Accepted
288	FA-E-NOPS-CR/107	Accepted
289	FA-E-NOPS-CR/108	Accepted
290	FA-E-NOPS-CR/109	Accepted
291	FA-E-NOPS-CR/110	Accepted
292	FA-E-NOPS-CR/111	Accepted
293	FA-E-NOPS-CR/112	Accepted
294	FA-E-NOPS-CR/113	Accepted
295	FA-E-NOPS-CR/114	Accepted
296	FA-E-NOPS-CR/115	Accepted
297	FA-E-NOPS-CR/116	Accepted
298	FA-E-NOPS-CR/117	Accepted
299	FA-E-NOPS-CR/118	Accepted
300	FA-E-RSEQ-CR/1	Accepted
301	FA-E-RSEQ-CR/2	Accepted
302	FA-E-RSEQ-CR/3	Accepted
303	FA-E-RSEQ-CR/4	Accepted
304	FA-E-RSEQ-CR/5	Accepted
305	FA-E-RSEQ-CR/6	Accepted
306	FA-E-RSEQ-CR/7	Accepted
307	FA-E-RSEQ-CR/8	Accepted
308	FA-E-RSEQ-CR/9	Accepted
309	FA-E-RSEQ-CR/10	Accepted

310	FA-E-RSEQ-CR/11	Accepted
311	FA-E-RSEQ-CR/12	Accepted
312	FA-E-SURF-CR/1	Accepted
313	FA-E-SURF-CR/2	Accepted
314	FA-E-SURF-CR/3	Accepted
315	FA-E-SURF-CR/4	Accepted
316	FA-E-SURF-CR/5	Accepted
317	FA-E-SURF-CR/6	Accepted
318	FA-E-SURF-CR/7	Accepted
319	FA-E-SURF-CR/8	Accepted
320	FA-E-SURF-CR/9	Accepted
321	FA-E-SURF-CR/10	Accepted
322	FA-E-SURF-CR/11	Accepted
323	FA-E-SURF-CR/12	Accepted
324	FA-E-SURF-CR/13	Accepted
325	FA-E-SURF-CR/14	Accepted
326	FA-E-SURF-CR/15	Accepted
327	FA-E-SURF-CR/16	Accepted
328	FA-E-SURF-CR/17	Accepted
329	FA-E-SURF-CR/18	Accepted
330	FA-E-SURF-CR/19	Accepted
331	FA-E-SWIM-CR/1	Accepted
332	FA-E-SWIM-CR/2	Accepted
333	FA-E-SWIM-CR/3	Accepted
334	FA-E-SWIM-CR/4	Accepted
335	FA-E-SWIM-CR/5	Accepted
336	FA-E-SWIM-CR/6	Accepted
337	FA-E-SWIM-CR/7	Accepted
338	FA-E-SWIM-CR/8	Accepted
339	FA-E-SWIM-CR/9	Accepted
340	FA-E-SWIM-CR/10	Accepted
341	FA-E-SWIM-CR/11	Accepted
342	FA-E-SWIM-CR/12	Accepted
343	FA-E-SWIM-CR/13	Accepted
344	FA-E-SWIM-CR/14	Accepted
345	FA-E-SWIM-CR/15	Accepted
346	FA-E-SWIM-CR/16	Accepted
347	FA-E-SWIM-CR/17	Accepted
348	FA-E-SWIM-CR/18	Accepted
349	FA-E-SWIM-CR/19	Accepted
350	FA-E-SWIM-CR/20	Accepted
351	FA-E-SWIM-CR/21	Accepted
352	FA-E-SWIM-CR/22	Accepted
353	FA-E-SWIM-CR/23	Accepted
354	FA-E-SWIM-CR/24	Accepted
355	FA-E-SWIM-CR/25	Accepted
356	FA-E-SWIM-CR/26	Accepted
357	FA-E-SWIM-CR/27	Accepted
358	FA-E-WAKE-CR/1	Accepted

259	FA-E-WAKE-CR/2	Accepted
360	FA-E-WAKE-CR/3	Accepted
361	FA-E-WAKE-CR/4	Accepted
362	FA-E-WAKE-CR/5	Accepted
363	FA-E-WAKE-CR/6	Accepted
364	FA-E-WAKE-CR/7	Accepted
365	FA-E-WAKE-CR/8	Accepted
366	FA-E-WAKE-CR/9	Accepted
367	FA-E-WAKE-CR/10	Accepted
368	FA-E-WAKE-CR/11	Accepted
369	FA-E-WAKE-CR/12	Accepted
370	FA-E-WAKE-CR/13	Accepted
NEW ASBU ELEMENTS (as modified by the ASBU PPT, in Appendix F)		
371	FA-N-ASUR-CR/1	Accepted.
372	FA-N-ASUR-CR/2	Accepted.
373	FA-N-ASUR-CR/3	Accepted.
374	FA-N-ACDM-CR/1	Accepted.
375	FA-N-ACDM-CR/2	Accepted.
376	FA-N-APTA-CR/1	Accepted.
377	FA-N-APTA-CR/2	Accepted.
378	FA-N-APTA-CR/3	Accepted.
379	FA-N-COMI-CR/1	Accepted.
380	FA-N-DATS-CR/1	Accepted.
381	FA-N-DATS-CR/2	Accepted.
382	FA-N-NOPS-CR/1	Accepted.
383	FA-N-SNET-CR/1	Accepted.
384	FA-N-SURF-CR/1	Accepted.
385	FA-N-SURF-CR/2	Accepted.
386	FA-N-WAKE-CR/1	Accepted.
387	FA-N-WAKE-CR/2	Accepted.
388	FA-N-WAKE-CR/3	Accepted.
SECRETARIAT CHANGE REQUESTS (as modified by the ASBU PPT, in Appendix F)		

11. CAMPAIGN RESULTS

The major update of the ASBU Framework resulted in:

- 99 change requests (97 to existing ASBU threads and elements and 2 for new ASBU elements) submitted and accepted for initial assessment

After reviewed by the ASBU PPT, these change requests resulted in:

- 388 change requests (370 to existing ASBU threads and elements and 18 for new ASBU elements) for final assessment

Of these 388 change requests:

- 388 change requests were accepted and agreed to be implemented; and
- 0 change requests were rejected.

12. A MID MILESTONE FOR THE EIGHTH EDITION OF THE GANP

The 14th Air Navigation Conference is the mid-milestone for the update of the ASBU framework for the eighth edition of the GANP, which is qualified as a "major" update following the GANP update lifecycle agreed by the ICAO Assembly at its 39th session. This implies that the eighth edition will include also structural improvements as compared to a "minor" update which is limited to "corrections". This mi-update of the ASBU framework addressed the following themes:

Development of the link between the GANP Strategic Level and the ASBU Framework. The GANP Strategic Level includes the Conceptual Roadmap which describes, at an executive level, the evolution of the ATM through time. The objective of the campaign for the eighth edition is to link the conceptual roadmap to Threads/Elements in the ASBU Framework. A proposed approach to address this mapping is presented to the Conference under agenda item 3.3. This approach proposes to move the evolution of the concepts of operations of the threads to the strategic level, to review them in line with the conceptual roadmap steps and to provide a mapping of the ASBU elements to these reviewed concepts of operations. The final text for the evolution of the concepts of operations within the ASBU threads, as well as the mapping will be presented to the 42nd session of the ICAO Assembly.

Integrate innovation opportunities in the ASBU Framework. A new proposed approach to the new entrants as well as some principles for the use of artificial intelligence will be discussed during the conference under agenda item 3.3. This mid-update of the ASBU framework reflects the proposed approach to new entrants through the inclusion of new ASBU elements. It also includes new ASBU elements that use Artificial Intelligence.

Update of information and evolution of the system. This mid-update campaign include updates/corrections of information through Change Requests as well as new elements for future Block to reflect the evolution of the system.

The work on the ASBU framework for the eighth edition of the GANP should continue and will be addressed through another campaign. This campaign will focus on:

Improvement of performance perspective. The main objective of elements in the ASBU Framework is to deliver performance benefits. Implementation decisions are often taken based on the expected performance improvements. The objective for eighth edition is to improve the performance assessments of the elements by reviewing/updating the assessment criteria and, where, possible, refer to evidence for a performance assessment (e.g. validation results).

13. CONCLUSIONS AND RECOMMENDATIONS

13.1 The ASBU PPT has completed the first formal update campaign. 388 Change Requests have been processed and agreed for implementation.

13.2 The Changes represent updates/corrections of information and have been endorsed by the relevant ICAO working arrangements.

13.3 The GANP PPT verified the Change Requests from a consistency and completeness perspective.

13.4 The GANP Study Group is invited to:

a) Endorse the changes to the ASBU Framework for the 14th Air Navigation Conference as attached in **Appendix E**.

b) Note the work that should continue for the eighth edition of the GANP.

Appendix A

ASBU Framework Maintenance Process

V01

Introduction

The objective of this guidance is to further detail the maintenance process for the ASBU framework of the GANP. It specifies the objectives, actors, and steps (including timelines, inputs and outputs) of the process.

It should be noted that the maintenance process will be reviewed by the GANP Study Group, once it is established, and is subject to continuous improvement based on lessons learned. An initial version of the maintenance process is expected to be available by October 2019.

The target audience for this guidance are the members of the aviation community[1] using the GANP and potentially wishing to propose a change to the ASBU framework. The term 'members of the aviation community' is used to refer to members representing coordinated and agreed aviation stakeholder views. The maintenance process will not be used to respond to opinions/views of individuals.

This guidance assumes that the target audience is familiar with the structure and terms used in the GANP.

Objectives and overview

The objective of the change management process is to keep the content of the ASBU framework of the GANP up to date and ensure transparency by tracking the definition, evaluation, approval and implementation of any amendment to it.

A proposal for change to the ASBU framework can be submitted to ganp@icao.int by any member of the aviation community by filling a predefined template with the proposed changes in track change format from the original text, together with the rationale for that change. Supporting documentation should also be submitted if applicable.

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[1] *Aviation community*. All stakeholders involved in the provision of or requiring the use of air navigation resources. It includes:

- ICAO and other aviation standards making organizations;
- States in the role of regulators, airspace sovereigns and sometimes air navigation service providers;
- the aerodrome community;
- air navigation service providers, in charge of providing flight information service, air traffic management and air traffic flow management;
- information service providers;
- airspace users;
- State aviation;
- aircraft and equipment manufacturers;
- research and development organizations; and
- international organizations including professional staff organizations.

The ICAO Secretariat, with the support of the ASBU PPT[2] and/or other expert groups, will conduct an initial evaluation of the proposal to prepare it for further consideration.

If the proposal relates to ICAO Standards and Recommended Practices (SARPs) or Procedures for Air Navigation Services (PANS), the Secretariat will bring to the attention of the Air Navigation Commission (ANC) which will review and approve, modify or reject the proposal in accordance with the established process. If not related to SARPs or PANS, the ICAO Secretariat will review and accept, modify or reject the proposal with the help the ASBU PPT and/or other expert groups.

If the proposal is approved with or without modifications based on the steps mentioned above, the ICAO Secretariat will include it in the ASBU framework. If the proposal is rejected, the ICAO Secretariat will notify the originator and provide the rationale for refusal.

The update of the ASBU framework will be executed in campaigns. The duration of a campaign is 6 months[3]. Only proposals for change submitted prior to a campaign will be processed. Proposals for change received during a given campaign will be processed in the next Campaign. Campaign and proposals for change cut-off dates will be published on the GANP portal.

Maintenance process of the ASBU framework step-by-step

Issue a Change Request

All proposals for change to the ASBU framework must be issued through a formal Change Request (CR) using the attached CR template. The template can be used for proposing changes to existing content (attachment A) and/or proposing a new element (attachment B) or a new thread (attachment C). To the best ability of the originator, also consequential Changes must be submitted using the CR template. The justification should specify if the CR relates to a consequential change.

The template consists of the following fields which are further explained below:

- Contact details
    - Name (point of contact): the full name of the person who can be contacted on this CR and who has been nominated by the relevant aviation community to liaise on the CR.
    - Organization: the name of the organisation for which the point of contact is working
    - Position: the position of the point of contact within the organisation
    - Email
    - Telephone
    - Aviation Community: the relevant member of the aviation community submitting the CR. Only abbreviations in attachment D of the attached CR template should be used.
    - CR coordination: a description of the level of coordination of the CR within the aviation community.
    - Date of submission: the date the CR is sent to ganp@icao.int
    - Version nbr: the version number of the CR. This may be relevant in case there will be multiple iterations.

- Attachment A: CR existing content Information
    - Reference: fill in the content item using the list of reference options in attachment D to the CR template for which the CR applies. Examples:

[2] A multidisciplinary team composed of independent professionals from relevant ICAO groups of experts.
[3] This period may be adjusted based on experiences.

        - <FRTO/Block 2> : CR applies to concept of operations for FRTO Block 2
        - <CSEP-B2/3/DA>: CR applies to Deployment Applicability of CSEP-B2/3 element
    - CR: the actual Change Request presented as current content with revision marks specifying the change. When submitting a change request, please strikethrough text proposed to be removed and shade text proposed to be included. Examples (using examples above):
        - FRTO/Block 2: The ~~most important~~ operational improvement is related to the large scale cross border Free Route Airspace (FRA) as the continuation of FRTO B1 and with new text.
        - CSEP-B2/3/DA:
            - Operational conditions: new text
            - Main intended benefits:
                - Type: new text
                - Operational description: new text
                - Benefitting stakeholder(s): new text added
    - Justification: explain as briefly as possible the reason(s) for the proposed change. Supporting material could be provided if believed useful.

- Attachment B: CR for proposing a new element
    - Justification: Provide full justification for proposed element consistent with the principles of the GANP. Please note that no proposals can be made to the structure of the GANP in order to provide stability and common understanding.
    - Provide proposed content for all items for the proposed new element.

- Attachment C: CR for proposing a new thread
    - Justification: Provide full justification for proposed thread consistent with the principles of the GANP. Please note that no proposals can be made to the structure of the GANP in order to provide stability and common understanding.
    - Provide proposed content for all items for the proposed new thread, including the content for all its elements.

A completed CR should be submitted using ganp@icao.int email address.

Acceptance and registration of CR

The CR will be accepted when:

- All relevant information has been provided and is clear/understandable
- Evidence is provided that the CR is from a member of the aviation community
- The CR is within the scope of the Change Management process (e.g. no structured change to the framework's structure)

In case of questions/doubts the point of contact will be contacted for clarification. This may result in withdrawal of the CR or an update of CR. In the latter case this should be reflected by a new date of submission and new version number.

CR Register

Accepted CRs will be registered in the CR register and be processed during the campaign.

The CR register includes all accepted CRs with their status, assignment and resolution.

The **CR status** options are:

- Accepted: The CR has been accepted i.e. meets the criteria listed above
- Initial assessment: The CR is in the initial assessment phase
- Details assessment: The CR is in the detailed assessment phase
- Resolution: The CR is in the resolution phase
- Resolved: The CR has been resolved – changes have been implemented

The **CR assignment** indicates who is currently responsible for the CR analysis/processing. Options are:

- ICAO secretariat
- Panel Project Team
- Thread Leader
- ICAO Panel xyz

The **CR resolution** specifies all accepted changes to the ASBU framework as a result of the CR. The resolutions of all the processed CRs during a campaign will be implemented to produce the next version of the ASBU framework.

Initial assessment

The objective of the Initial Assessment (IA) is to:

- Analyze the impact of the CR on other global plans.
- Analyze the impact of the CR on other parts in the ASBU framework.
- Analyze whether the CR relates to performance
- Analyze the impact of the CR on other GANP Layers e.g. on Regional Plans.
- Analyze whether the CR will imply changes to existing SARPs or need for new SARPs.
- Analyze the impact of the CR on other CR's processed during the campaign.

The IA will be performed by the ICAO secretariat supported by the ASBU PPT/ Thread Leader. The output of the IA is an IA report detailing:

- The impacts of the CRs in the various domains (see above)
- IA decision based on the findings. The CRs can be accepted for detailed assessment or rejected or amended (which results in an updated CR)
- Detailed Assessment Plan: this plan details how the retained CR's will be processed, by who and when. Also dependencies between CR's will be highlighted.
- IA request analysis from performance experts: if the CR relates to performance it will be passed for feedback to performance experts.

The IA report will be reviewed by the ASBU PPT. Following the IA phase the CR register will be updated.

Detailed assessment

The objective of the Detailed Assessment (DA) is to:

- Obtain a position from the relevant panels on CRs having an impact on SARPs.
- Detail the changes to the ASBU framework resulting from the CRs
- If the CR relates to performance, gather feedback from the performance experts on the CRs
- Conduct consistency checks

The DA will be performed by the ICAO secretariat supported by the ASBU PPT/Thread Leader. The output of the DA is a DA report including:

- Final status of CRs
- Specifications of changes to ASBU framework with justifications
- Follow-up actions (if any)
- Process feedback

The DA report will be reviewed by the ASBU PPT. Following the DA phase the CR register will be updated and the changes specified in the DA report implemented in the ASBU framework.

Change implementation

In this phase the changes specified in the DA report will be included in the GANP Portal and verified (quality checks). This will be done by the ICAO secretariat.

Process evaluation and update

Based on the findings documented in the DA report, the Secretariat with support of the ASBU PPT may discuss and agree possible changes to the Change Management process and ways of working.

Roles and responsibilities

The responsibility for the maintenance process relies with the ICAO secretariat who is supported by the following actors:

ASBU Panel Project Team (PPT)

- Consist of:
  - Independent experts nominated by States or Recognised International Organisations
  - Thread Leader (TL); nominated independent expert (see above) *and* interface with the Panel/Working Arrangement related to the ASBU thread
  - ICAO Secretariat GANP leader
  - ICAO secretariat experts; Panel secretaries (on demand)
- Main tasks:
  - Assessment of CRs as explained in this document
  - Development of change specifications for the ASBU framework
  - Development of guidance on the ASBU framework
  - Review of the maintenance process
  - Review of consistency and completeness of the ASBU framework
  - Review of alignment with the GANP Global Strategic Level
  - Review of consistency with the other strategic plans (GASP and GASeP)
- ASBU PPT Secretary (ICAO secretariat)
  - Maintains CR register

  - Liaison with CR originator
  - Update ASBU framework as specified in the DA report
- ASBU PPT Chair (elected PPT member)
  - Preparation and facilitation of meetings and maintenance process
  - Facilitation of discussions

Thread Leader (ASBU PPT member)

- Responsible for Thread content
- Responsible for alignment with other parts of the ASBU framework and if needed raising issues for resolution
- Responsible for liaison with the ICAO Panel/Working Arrangement related to the thread (thread leader is expected to express the views of the Panel/Working Arrangement)
- Responsible for specifying changes to thread derived from CRs

GANP Change Request Template
V01

- This template shall be used to propose changes to the GANP ASBU Framework
- Only complete Change Requests will be processed
- Change Requests can only be issued by members of the Aviation Community
- Change Requests shall be coordinated in advance with relevant aviation community members
- For proposed changes to existing threads and elements use Attachment A
- For proposed new elements use Attachment B
- For proposed new threads use Attachment C
- Contact <GANP maintenance PoC> for assistance
- Email completed template to ganp@icao.int

Contact details

Name (point of contact)	
Organization	
Position	
Email	
Telephone	
Aviation Community *	
CR coordination**	
Date of submission	

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)
**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	
CR Status	
Assigned TL	

Attachment A
Change request to existing Threads/Elements

Change Request Information

Reference*	**CR (current text with revision marks)**	**Justification**

*see attachment D for reference options

Attachment B
Change Request for New Element

Justification:

<Insert template for new element>

Attachment C
Change Proposal for New Thread

Justification:

<Insert template for new thread>

Attachment D

List of aviation community options:

CAA	Civil Aviation Authority
ANSP	Air Navigation Service Provider
AIA	Accident Investigation Authority
SAR	Search And Rescue Authority
AO	Aircraft Operator
AM	Aircraft Manufacturer
APO	Airport Operator
ANF	ATM Network Function
MSP	Met Information Service Provider
IO	International Organization

List of reference options

<Thread>/Block<nbr>	Reference to concept of operations by block eg AMET/Block 4
<element>/MP	Main Purpose of element
<element>/NC	New Capability of element
<element>/DC	Description of element
<element>/ML	Maturity Level of element
<element>/HF	Human Factor Consideration of element
<element>/PL	Planning Layers of element
<element>/OP	Operations of element
<element>/DR	Dependencies and Relations of element
<element>/EN	Enablers of element
<element>/DA	Deployment applicability of element
<element>PI	Performance Impact of element

Appendix B

ASBU PPT membership

OPERATIONAL THREADS		
ASBU THREAD ID	**NAME**	**LEADER**
ACAS	Airborne Collision Avoidance System	Christian Aveneau
ACDM	Airport Collaborative Decision Making	Frederic Rooseleer and Thomas Romig
APTA	Improve Arrival and Departure Operations	Kelly McIlwaine
CSEP	Cooperative Separation	Alex Rodriguez
FRTO	Improved Operations through Enhanced En-route Trajectories	Tihomir Todorov
GADS	Global Aeronautical Distress and Safety System (GADSS)	Marouan China
NOPS	Network Operations	Ivan Pendatchanski
OPFL	Improved Access to Optimum Flight Levels in Oceanic and Remote Airspace	Harry Daly
DATS	Digital Aerodrome Air Traffic Services	Katariina Syvays
RSEQ	Improved Traffic Flow through Runway Sequencing	Piyawut Tantimekabut (Toon)
SNET	Ground-based Safety Nets	Eduardo Garcia and Brenden Hedblom
SURF	Surface Operations	Thomas Romig
TBO	Trajectory-based Operations	Steve Bradford
WAKE	Wake Turbulence Separation	Frederic Rooseleer

INFORMATION THREADS		
ASBU THREAD ID	**NAME**	**LEADER**
AMET	Meteorological Information	Rosalind Lapsley and Tim Hailes
DAIM	Digital Aeronautical Information Management	Louise Alberts
FICE	Flight and Flow Information for a Collaborative Environment (FF-ICE)	Steve Bradford

INFORMATION THREADS		
ASBU THREAD ID	**NAME**	**LEADER**
SWIM	System Wide Information Management	Jean Francois Grout

TECHNOLOGY THREADS		
ASBU THREAD ID	**NAME**	**LEADER**
ASUR	Surveillance Systems	Stuart McKay.
COMI	Communication Infrastructure	Brent Phillips
COMS	ATS Communication Service	Anthony Stevens
NAVS	Navigation Systems	Benoit Roturier

Appendix C

ASBU Framework Change Requests submitted and accepted

CHANGE REQUEST TO ASBU THREAD ACDM

- This template shall be used to propose changes to the GANP ASBU Framework
- Only complete Change Requests will be processed
- Change Requests can only be issued by members of the Aviation Community
- Change Requests shall be coordinated in advance with relevant aviation community members
- For proposed changes to existing threads and elements use Attachment A
- For proposed new elements use Attachment B
- For proposed new threads use Attachment C
- Contact <GANP maintenance PoC> for assistance
- Email completed template to ganp@icao.int

Contact details

Name (point of contact)	**Frédéric Rooseleer**
Organization	**EUROCONTROL**
Position	**ADOP Advisor – Airport Expert**
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Telephone	**+32 2 729 46 62**
Aviation Community *	**ANF**
CR coordination**	**ADOP/TAM-TF**
Date of submission	**19 June 2023**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**19 June 2023**
CR Status	Accepted
Assigned TL	Frédéric Rooseleer / Thomas Romig

Change request to existing Threads/Elements

Change Request Information

ID Number	**Reference***	**CR (current text with revision marks)**	**Justification**
IA-E-ACDM-CR/1	ACDM-B3/1 Full integration of ACDM and TAM in TBO	Main Purpose To use the integration of ACDM in the overall synchronization of regional ATM networks (Managers), or through a network of network (Managers), to contribute to end-to-end stable, consistent and robust trajectory-based operations providing the adequate level of performance. Description All stakeholders are fully connected. All tactical decisions are fully synchronized and operations are fully trajectory-based. Aerodrome operations are considering the en-route to en-route view with the turnaround process, agree on, and subsequently manage the flights on the surface, to deliver expected surface event times with known impacts to the ATM system, and to ensure that the agreed trajectory is consistent with the Airport Operations Plan. ACDM is contributing to the coordination of the network by ~~based,~~ efficiently converging ~~coordination process as a subcomponent~~ information to the benefit of the overall ATM network synchronization process. Regional network management functions are effectively sharing information to support the flow of traffic and use of capacity.	Clarification reflecting the expected evolution of regional and global ATFM, and the roles of regional network managers, who will interconnect.

CHANGE REQUESTS FOR THE ASBU THREAD AMET

- This template shall be used to propose changes to the GANP ASBU Framework
- Only complete Change Requests will be processed
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- Change Requests shall be coordinated in advance with relevant aviation community members
- For proposed changes to existing threads and elements use Attachment A
- For proposed new elements use Attachment B
- For proposed new threads use Attachment C
- Contact <GANP maintenance PoC> for assistance
- Email completed template to ganp@icao.int

Contact details

Name (point of contact)	**Rosalind Lapsley**
Organization	**EUROCONTROL**
Position	**Meteorological Expert**
Email	**Rosalind.lapsley@eurocontrol.int**
Telephone	**+32 2 729 36 17**
Aviation Community *	**MET**
CR coordination**	**Representing METP**
Date of submission	**19 June 2023**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**19 June 2023**
CR Status	Accepted
Assigned TL	Rosalind Lapsley

Change request to existing Threads/Elements

Change Request Information

ID Number	Reference*	CR (current text with revision marks)	Justification
IA-E-AMET-CR/1	AMET-B4/1 (MP)	Continued advancement of integrated high resolution meteorological observation information in support of enhanced operational ground and air decision-making processes, for all flight phases and corresponding air traffic control operations, supporting trajectory-based operations and gate-to-gate seamless operations.	Providing new content.
IA-E-AMET-CR/2	AMET-B4/1 (NC)	Further development of observation services for terminal areas and enroute using the aircraft as a sensor. Higher spatial and temporal resolution of meteorological observations. Observations to support tactical routing decisions under environmental considerations i.e., contrail or noise avoidance, if required.	Providing new content.
IA-E-AMET-CR/3	AMET-B4/1 (D)	This module builds on the meteorological information services defined in AMET-B3. Further development of the full MET-ATM integration will ensure that high resolution meteorological observation information is included in the logic of a decision process and the impact of the meteorological conditions on the operations are automatically derived, understood and taken into account. Increased situational awareness to support tactical in-flight avoidance of hazardous meteorological conditions. Greater utilisation of aircraft reporting of weather, both routine measurements and those of hazard	Providing new content.

		encounters will aid in the situational awareness of other airspace users, and serve to improve the accuracy of the forecasts through better verification processes. Applicable to air traffic flow planning, enroute operations, terminal operations (arrival/departure) and surface. Aircraft equipage is assumed in the areas of ADS-B IN/CDTI, aircraft based meteorological observations, and meteorological information display capabilities, such as EFBs.	
IA-E-AMET-CR/4	AMET-B4/1 (ML)	Concept.	Providing new content.
IA-E-AMET-CR/5	AMET-B4/1 (HF)	1. Does it imply a change in task by a user or affected others? No 2. Does it imply processing of new information by the user? Yes 3. Does it imply the use of new equipment? No 4. Does it imply a change to levels of automation? Yes	Providing new content.
IA-E-AMET-CR/6	AMET-B4/2 (MP)	Continued advancement of integrated high resolution meteorological forecast and warning information in support of enhanced operational ground and air decision-making processes, for all flight phases and corresponding air traffic control operations, allowing gate-to-gate seamless operations.	Providing new content.
IA-E-AMET-CR/7	AMET-B4/2 (NC)	Further enhance the spatial and temporal resolution of meteorological forecasts and warnings in line with the available technology. This is expected to include greater use of probabilistic analysis, not just of the forecast information, but its operational impact, based on greater integration of data sources from other domains. A continuation of further development towards a fully integrated meteorological forecast	Providing new content.

		service fit for the purpose of all flight phases and ATC operations, in support of gate-to-gate seamless operations.	
IA-E-AMET-CR/8	AMET-B4/2 (D)	This module builds on the meteorological forecast and warning services defined in AMET-B3. Continuing the MET-ATM integration will ensure that meteorological information is included in the logic of a decision process for each flight phase and the impact of the meteorological conditions on the operations are automatically derived, understood and taken into account. The probabilistic element of the forecasts and warnings further helps decision makers apply their own operational constraints (i.e. business rules) to determine the risk to their operations. Greater use of the probability of occurrence of meteorological phenomena and the level of confidence/uncertainty of the forecast will enable better risk management. Additionally, the integration of weather and operational forecasts into better impact analysis will enhance the gate-to-gate efficiency and serve to minimise environmental impact.	Providing new content.
IA-E-AMET-CR/9	AMET-B4/2 (ML)	Concept	Providing new content.
IA-E-AMET-CR/10	AMET-B4/2 (HF)	1. Does it imply a change in task by a user or affected others? No 2. Does it imply processing of new information by the user? Yes 3. Does it imply the use of new equipment? No 4. Does it imply a change to levels of automation? Yes	Providing new content.
IA-E-AMET-CR/11	AMET-B4/3	Remove element.	This element could be deleted in block 4 – the necessary work to improve climate and historical weather information is expected to have already

			been completed in B3/3.
IA-E-AMET-CR/12	AMET-B4/4 (MP)	Integrated meteorological information service in the SWIM environment in support of enhanced operational ground and air decision-making processes, for all flight phases and corresponding air traffic control operations.	
IA-E-AMET-CR/13	AMET-B4/4 (NC)	Fully deployed roll-out of a data-centric meteorological information service, integrated into the System Wide Information Management (SWIM) environment. Ongoing enhancement of ICAO Meteorological Information Exchange Model (IWXXM) with further schemas and formats for meteorological information exchange. User-defined products automatically derived from meteorological information in ICAO Meteorological Information Exchange Model (IWXXM) form. Extensive use of secure web services, in particular business-to-business services that allows full integration of meteorological information.	
IA-E-AMET-CR/14	AMET-B4/4 (D)	Standards for global exchange of the MET information within the SWIM environment will be mature and SWIM will be the only standard for the exchange of aeronautical MET information. Full integration of meteorological information into the System Wide Information Management (SWIM) environment will be achieved. Use of MET-SWIM services will support flexible airspace management, airborne re-routing, improved situational awareness, collaborative decision-making, including in terminal areas and at airports, dynamically optimized flight trajectory planning, ATM impact conversion and ATM decision support, hazard avoidance. Meteorological information exchange with the aircraft to	

		improve operational awareness and decision-making using air/ground data connectivity and aircraft on-board systems will be implemented. MET-SWIM information services will support request/reply and/or publish/subscribe access mechanisms and will provide quality & timely information to users in a range of formats to best enable their optimal decision making.	
IA-E-AMET-CR/15	AMET-B4/4 (ML)	Concept	
IA-E-AMET-CR/16	AMET-B4/4 (HF)	1. Does it imply a change in task by a user or affected others? Yes 2. Does it imply processing of new information by the user? Yes 3. Does it imply the use of new equipment? Yes 4. Does it imply a change to levels of automation? Yes	

CHANGE REQUESTS FOR THE ASBU THREAD APTA

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- Contact <GANP maintenance PoC> for assistance
- Email completed template to ganp@icao.int

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Aviation Community *	**CAA**
CR coordination**	**SASP's appointed panel focal point for GANP interface matters**
Date of submission	**12 June 2023**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**12 June 2023**
CR Status	Accepted
Assigned TL	Kelly Mcllwaine

Change request to existing Threads/Elements

Change Request Information

ID Number	Reference*	CR (current text with revision marks)	Justification
IA-E-APTA-CR/1	APTA-B2/2	Introduction of Approach Procedures with Vertical Guidance (APVs) to parallel runways to permit parallel operations without ground-based infrastructure. Remove element.	The Separation and Airspace Safety Panel (SASP) has discussed 2D approach operations for the Manual on Simultaneous Operations or Parallel or Near-Parallel Instrument Runways (SOIR) (Doc 9643) in the context of an earlier discussion in November 2013, where there was discussion on the need for vertical guidance. Subsequent SASP meetings had elaborated the desire for a defined vertical path to support parallel approach operations to reduced pilot workload and limit human factors issues. Following a careful and in-depth review of current and future systems and operational scenarios, the SASP has agreed that due to the significant shift in technology and operational techniques and developments in PBN capabilities, further action in this area and in the GANP ASBU Thread is becoming increasingly nugatory and will be outdated in the medium term and in Block 2 timeframes. No further action should be taken by SASP and ICAO into looking at lateral guidance alone to support parallel runway approaches (Mode 1 & 2), consequently, SASP has directed that the UK Panel Member coordinate with the GANP PPT planners to remove this work stream and element from the current and future editions of the GANP. It is anticipated that a new element will be formulated by SASP as its work on PBN and approaches to parallel runways are progressed and mature.

CHANGE REQUESTS FOR THE ASBU THREAD COMS

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Contact details

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Aviation Community *	**CAA**
CR coordination**	**OPDLWG**
Date of submission	**15 June 2023**

*CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**15 June 2023**
CR Status	Accepted
Assigned TL	Anthony Stevens

Change request to existing Threads/Elements

Change Request Information

ID Number	**Reference***	**CR (current text with revision marks)**	**Justification**
IA-E-COMS-CR/1	COMS B1/1 (B)	Element to be moved to Block 2.	PBCS Manual Edition 3 listed as an enabler. This edition of the manual is yet to published but will meet the Block 2 requirement to be available by end 2025.
IA-E-COMS-CR/2	COMS B1/3 (B)	Element to be moved to Block 2.	Satellite Voice Operations Manual (SVOM) Edition 1 listed as an enabler. This manual is yet to be published but will meet the Block 2 requirement to be available by end 2025.
IA-E-COMS-CR/3	COMS B1/3 (EN)	Enablers include PBCS Manual Edition 4 and Satellite Voice Operations Manual Edition 2. Amend to read PBCS Manual Edition 3 and SVOM Edition 1.	PBCS Manual Edition 3 and SVOM Edition 1 yet to be published but will meet the Block 2 requirement to be available by end 2025.
IA-E-COMS-CR/4	COMS B2/3 (EN)	As above for B2/2.	As above for B2/2.

CHANGE REQUESTS FOR THE ASBU THREAD FICE

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- Email completed template to ganp@icao.int

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Aviation Community *	**ANSP**
CR coordination**	**FICE thread team and ATMRPP (FICE lead org)**
Date of submission	**13 June 2023**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**13 June 2023**
CR Status	Accepted
Assigned TL	Steve Bradford

Change request to existing Threads/Elements

Change Request Information

Reference*	**Reference***	**CR (current text with revision marks)**	**Justification**
IA-E-FICE-CR/1	<FICE-B2/2/EN>	Filing Service: Procedures for provisions and use of FF-ICE filing services, training requirements and national framework should be change to 2024.	Alignment with the applicability date.
IA-E-FICE-CR/2	<FICE-B2/3/EN>	Trial Service: Procedures for provisions and use of FF-ICE trial services and national framework should be change to 2024.	Alignment with the applicability date.
IA-E-FICE-CR/3	<FICE-B2/4/EN>	Flight Data Request Service: Procedures for provisions and use of FF-ICE flight data request services and national framework should be change to 2024.	Alignment with the applicability date.
IA-E-FICE-CR/4	<FICE-B2/5/EN>	Notification Service: national framework should be change to 2024.	Alignment with the applicability date.
IA-E-FICE-CR/5	<FICE-B2/6/EN>	Publication Service: Procedures for provisions and use of FF-ICE publication services, training requirements and national framework should be change to 2024.	Alignment with the applicability date.
IA-E-FICE-CR/6	<FICE-B2/7/B>	Should be moved to Block 3.	Maturity of the capability
IA-E-FICE-CR/7	<FICE-B2/8/B>	Should be moved to Block 3.	Maturity of the capability
IA-E-FICE-CR/8	<FICE-B2/9/B>	Should be moved to Block 3.	Maturity of the capability

CHANGE REQUESTS FOR THE ASBU THREAD FRTO

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- Email completed template to ganp@icao.int

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Aviation Community *	**ANF**
CR coordination**	**First draft**
Date of submission	**08.06.2023**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**08.06.2023**
CR Status	Accepted
Assigned TL	Tihomir Todorov

Change request to existing Threads/Elements

Change Request Information

Reference*	**Reference***	**CR (current text with revision marks)**	**Justification**
IA-E-FRTO-CR/1	*FRTO-B0/1/MP*	Direct routings are established with the aim of providing airspace users with additional flight planning route options on a larger scale across FIRs such that overall planned leg distances are reduced in comparison with the fixed ATS route network.	Adaptation to ICAO terminology.
IA-E-FRTO-CR/2	*FRTO-B0/3/MP*	A collection of ATS routes that have been pre-validated and coordinated with impacted air ~~route~~ traffic control ~~centers~~ centres and airspace users.	Adaptation to ICAO terminology. Editorial changes.
IA-E-FRTO-CR/3	*FRTO-B0/3/NC*	There are three main options for the flexible routings: • Preferred Routes. • Playbook Routes. • Coded Departure Routes ~~(CDR)~~.	Avoid using ICAO abbreviation for other purposes. Editorial changes.
IA-E-FRTO-CR/4	*FRTO-B0/3/DC*	… ~~CDRs~~ Coded Departure Routes are a combination of coded air traffic routings and refined coordination procedures, designed to reduce the amount of information that needs to be exchanged between ATC and flight crews.	Avoid using ICAO abbreviation (Doc 8400 PANS-ABC) for other purposes.
IA-E-FRTO-CR/5	*FRTO-B1/1/NC*	FRA is a specified ~~volume of~~ airspace within which users may freely plan a route between a defined entry point and a defined exit point, with the possibility to route via intermediate (published or unpublished) ~~way~~ significant points, without reference to the ATS route network, subject to airspace availability. Within this airspace, flights remain subject to air traffic control. FRA enables airspace users to fly as close as possible to what they consider the optimal trajectory	Adaptation with FRA definition and to ICAO terminology

		without the constraints of a fixed ATS route network structure.	
IA-E-FRTO-CR/6	*FRTO-B1/1/DC*	The following procedures and process might need to be considered: • FRA airspace volume (lateral and vertical) and applicable time (not necessary H24~~-7/7~~); • FRA entry and exit points, arrival ~~transition~~ connecting points and departure ~~transition~~ connecting points, and intermediate points; • … The upgrades of ATM systems for flight data processing and controller working pos~~t~~ition, if required, are related to:	Adaptation with FRA Concept terminology. Editorial change.
IA-E-FRTO-CR/7	*FRTO-B1/2/*	*~~Required Navigation~~ Performance Based Navigation (~~RNP~~PBN) routes*	Adaptation to ICAO terminology.
IA-E-FRTO-CR/8	*FRTO-B1/2/MP*	PBN~~/RNP~~ routes should be deployed within en-route airspace where Free Route Airspace (FRA) is not planned or if FRA is deployed the PBN~~/RNP~~ routes should ensure the connectivity between FRA and TMAs. The objective is to provide consistent navigation using the most appropriate PBN~~/RNP~~ type, infrastructure and navigation applications.	Adaptation to ICAO terminology.
IA-E-FRTO-CR/9	*FRTO-B1/2/DC*	With the introduction of a PBN~~/RNP~~ navigation specification, the advantages gained from RNAV will be further enhanced by on-board performance monitoring and alerting and the execution of more predictable aircraft ~~behavior~~ behaviour. The adequate navigation infrastructure is required. GNSS or	Editorial change.

		DME ground infrastructure needs to be optimised to support PBN~~/RNP~~ operations and main reversionary capability in case of GNSS outages. PBN~~/RNP~~ requires a full digital chain, to critical data quality levels, for aeronautical data provided to the airborne systems. …	
IA-E-FRTO-CR/10	*FRTO-B1/2/NC*	… The new capability refers to the ~~I~~implementation of PBN~~/RNP~~ routes within en-route airspace	
IA-E-FRTO-CR/11	*FRTO-B1/3/MP*	FUA and airspace management (ASM) need to be enhanced with collaborative airspace data sharing between all ATM actors, negotiation procedures, system support and real time ASM data integration.	Editorial change.
IA-E-FRTO-CR/12	*FRTO-B1/5/DC*	CDT provides real-time assistance to the en-route controllers (both planning and ~~tactical~~ executive) in conflict detection and resolution. It is based on new approaches that enhance and refine the existing tools yielding more efficient and usable services. …	Adaptation to ICAO (Doc 9426 ATS Planning Manual and Doc 10056 Manual on Air Traffic Controller Competency-based Training and Assessment) terminology.
IA-E-FRTO-CR/13	*FRTO-B1/6/MP*	This element is applicable only to en-route sectors that are currently staffed by two ATCOs (planning and ~~tactical~~ executive). The multi-sector planning (MSP) function defines a new organization of controller team(s) and new operating procedures to enable the planning controller to provide support to several ~~tactical~~ executive controllers operating in different adjacent sectors. …	Adaptation to ICAO (Doc 9426 ATS Planning Manual and Doc 10056 Manual on Air Traffic Controller Competency-based Training and Assessment) terminology.
IA-E-FRTO-CR/14	*FRTO-B1/6/NC*	New tools and operating procedures are needed for the planning controller to provide support to several ~~tactical~~ executive controllers operating in	Adaptation to ICAO (Doc 9426 ATS Planning Manual and Doc 10056 Manual on Air Traffic Controller Competency-

		different sectors. The Multi Sector Planning (MSP) controller ensures suitable coordination agreements between sectors and assists in managing the workload of the ~~tactical~~ executive controllers.	based Training and Assessment) terminology.
IA-E-FRTO-CR/15	*FRTO-B1/6/DC*	The ATM system functions are enhanced to allow a single planner role to be associated to multiple sector ~~tactical~~ executive roles and the planner and ~~tactical~~ executive roles to be combined on a controller work position. The multi-sector planner needs to have ~~an~~ access to flight data, system tracks, trajectory, warnings and tools for the airspace of several ATC sectors allocated to him.	Adaptation to ICAO (Doc 9426 ATS Planning Manual and Doc 10056 Manual on Air Traffic Controller Competency-based Training and Assessment) terminology. Editorial change.
IA-E-FRTO-CR/16	*FRTO-B1/7/NC*	… From these options, ATFM will choose the one that the operator is expected to fly. Operators have the capability to receive and process these notifications.	Editorial change.
IA-E-FRTO-CR/17	*FRTO-B2/3/NC*	FRA is a specified airspace within which users may freely plan a route between a defined entry point and a defined exit point, with the possibility to route via intermediate (published or unpublished) ~~way~~ significant points, without reference to the ATS route network, subject to airspace availability. Within this airspace, flights remain subject to air traffic control. In large scale operations the concept is applied across a large-scale geographical area typically changing from State implementation to regional implementation.	Adaptation with FRA Concept terminology. Editorial change.
IA-E-FRTO-CR/18	*FRTO-B2/3/DC*	The initial implementation of FRA comes with certain limitations e.g. FL, dimensions, timing, functions and tools, ~~Lat/Long~~ LAT/LONG use as a significant point etc. Large-scale operations of FRA will ensure that these limitations are solved and no longer required	Adaptation to ICAO abbreviation (Doc 8400 PANS-ABC). Editorial changes.

		leading to seamless operations in a large volume of airspace crossing State borders.	

CHANGE REQUESTS FOR THE ASBU THREAD NOPS

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- Email completed template to ganp@icao.int

Contact details

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Aviation Community *	**ANF**
CR coordination**	**First draft**
Date of submission	**05.06.2023**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**05.06.2023**
CR Status	Accepted
Assigned TL	Ivan Pendachanski

Change request to existing Threads/Elements

Change Request Information

Change ID	**Reference***	**CR (current text with revision marks)**	**Justification**
IA-E-NOPS-CR/1	NOPS-B1/1//ML	Change maturity level from standardisation to Ready for deployment)	This ASBU elements was fully validated in 2020.
IA-E-NOPS-CR/2	NOPS-B1/2//ML	Change maturity level from standardisation to Ready for deployment)	This ASBU elements was fully validated in 2020.
IA-E-NOPS-CR/3	NOPS-B1/3//ML	Change maturity level from standardisation to Ready for deployment)	This ASBU elements was fully validated in 2020.
IA-E-NOPS-CR/4	NOPS-B1/4//ML	Change maturity level from standardisation to Ready for deployment)	This ASBU elements was fully validated in 2020.
IA-E-NOPS-CR/5	NOPS-B1/5//ML	Change maturity level from standardisation to Ready for deployment)	This ASBU elements was fully validated in 2020.
IA-E-NOPS-CR/6	NOPS-B1/7//ML	Change maturity level from standardisation to Ready for deployment)	This ASBU elements was fully validated in 2020.
IA-E-NOPS-CR/7	NOPS-B1/8//ML	Change maturity level from standardisation to Ready for deployment)	This ASBU elements was fully validated in 2020.
IA-E-NOPS-CR/8	NOPS-B2/6//ML	Change maturity level from validation to standardisation	This ASBU elements was fully validated in 2023.
IA-E-NOPS-CR/9	NOPS-B2/7//MP	Integrate the UTM operation into ATFM and flight planning	Missing text
IA-E-NOPS-CR/10	NOPS-B2/7/NC	The ATFM and ATM network flight planning system tools and procedures are adapted to support UTM operations	Missing text
IA-E-NOPS-CR/11	NOPS-B2/7/DC	The integration of UTM operation within the Network operations planning is required from flight/flow perspective. It will require modification of existing ATFM tolls and process as: • Flight planning for UTM traffic; • Constraints management • reserved airspace management • improvements of demand capacity balancing components for UTM operations.	Missing text
IA-E-NOPS-CR/12	NOPS-B2/7//ML	Validation	Missing text

IA-E-NOPS-CR/13	NOPS-B2/7//OP	Departure, en-route Arrival	Missing text
IA-E-NOPS-CR/14	NOPS-B2/7//EN	Change the year for all enablers to 2027	2025 is not feasible
IA-E-NOPS-CR/15	NOPS-B2/8//title	Change title of this element to "Higher airspace network Operation"	The terminology has been changed, the agreed terminology is higher airspace instead of high upper airspace
IA-E-NOPS-CR/16	NOPS-B2/8//MP	Integrate the higher airspace operation into ATFM and flight planning	Missing text
IA-E-NOPS-CR/17	NOPS-B2/8/NC	The ATFM and ATM network flight planning system tools and procedures are adapted to support higher airspace operations.	Missing text
IA-E-NOPS-CR/18	NOPS-B2/8/DC	The integration of higher airspace within the Network operations planning is required from flight/flow perspective. It will require modification of existing ATFM tolls and process as: • Flight planning for vehicle planned to operate within the higher airspace; • Constraints management • Management of airspace crossing.	Missing text
IA-E-NOPS-CR/19	NOPS-B2/8//ML	Validation	Missing text
IA-E-NOPS-CR/20	NOPS-B2/8//OP	Departure, en-route Arrival	Missing text
IA-E-NOPS-CR/21	NOPS-B2/8//EN	Change the year for all enablers to 2027	2025 is not feasible
IA-E-NOPS-CR/22	NOPS-B3/1/ML	Concept	Missing text
IA-E-NOPS-CR/23	NOPS-B3/1/EN	It is very difficult to define the enablers for NOPS-B3/1 as the components exist only at conceptual level and the definition of required enablers has not yet started.	
IA-E-NOPS-CR/24	NOPS-B3/2/DC	High level of automation (using AI and ML) will enable the reconciliation of multiple flight and flow centric measures and scenarios with minimum adverse impact on performance. It will allow synchronisation of trajectories during the complete	Text amended to indicate utilisation of advance technics, like ML and AI.

		life cycle of flight, including the execution phase. The Network Operations Planning will cover the global/interregional coordination process in all phases including execution phase and post-ops analysis focusing on performance impact.	
IA-E-NOPS-CR/25	NOPS-B3/2/ML	Concept	Missing text
IA-E-NOPS-CR/26	NOPS-B3/2/EN	It is very difficult to define the enablers for NOPS-B3/2 as the components exist only at conceptual level and the definition of required enablers has not yet started.	
IA-E-NOPS-CR/27	NOPS-B3/3/DC	A holistic airspace/architecture including design and management/institutional structures envisaged will utilise advance technics of ML/AI to protect a “flight” along its path. Specific operational characteristics/type of operations for each actor/user will be accommodated. Different taxonomy/procedures management functions will be in place. Required infrastructure and its performance will be relevant to the need including regional centralised systems, contingency and emergency cases. Dynamic management of moving areas will be in place (e.g. management of areas that are potentially unsafe due to weather phenomena that can evolve in 4D) and Variable Profile Areas will be integrated in DAC.	Text amended to indicate utilisation of advance technics, like ML and AI.
IA-E-NOPS-CR/28	NOPS-B3/3/ML	Concept	Missing text

CHANGE REQUESTS FOR THE ASBU THREAD SURF

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CR coordination**	**ADOP**
Date of submission	**19 June 2023**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**19 June 2023**
CR Status	Accepted
Assigned TL	Thomas Romig

Change request to existing Threads/Elements

Change Request Information

Change ID	**Reference***	**CR (current text with revision marks)**	**Justification**
IA-E-SURF-CR/1	SURF-B0/1	New Capabilities The guiding and routing service is delivered using visual aids and signals on the aerodrome ~~platform~~. Information is managed by the controller to provide pilots and vehicle drivers all necessary information to taxi and drive ~~and~~ with the aim of avoiding incursions on the runway.	Clarification of terms and purpose
IA-E-SURF-CR/2	SURF-B0/2	New Capabilities The surveillance service of A-SMGCS provides airport traffic situational awareness through the positioning, identification and tracking of suitably equipped aircraft and vehicles ~~suitably equipped~~ on the aerodrome ~~surface~~. Information is presented on the controller and airport operator display independent of visibility conditions and ~~controller~~ line of sight. Description [last bullet point] to detect and indicate the position of potential ~~intruders~~ unauthorised vehicles or aircraft penetrating a runway or generating a conflict.	Wording improvements for clarity
IA-E-SURF-CR/3	SURF-B0/3	New Capabilities The ATCO will be provided with a short term conflicting alerting tool (A-SMGCS initial alerting service) that monitors movements on or near the runway and detects conflicts between an aircraft and another vehicle as well as runway incursion by unauthorised vehicles or aircraft ~~intruders~~. Appropriate alerts will be visualized on the ATCO display.	The term intruder is generally used in AVSEC, not in safety.
IA-E-SURF-CR/4	SURF-B1/1	Main Purpose To improve ~~surface~~ ground operations with the aim to reduce taxi time and fuel burn, potential mistakes.	Clarify and improve wording

		New Capabilities Advanced features including "Follow~~s~~ the Greens" (FTG) and Variable Message Panels are used to optimize routing during taxi operations. The lighting system is used to direct the aircraft, making the guidance safer, as errors are minimized. Lighting system for other vehicles than aircraft ~~is~~ are connected to the SMGCS in order to optimize ground circulation and prevent collision. Description Advanced features ~~including~~ such as FTG and Variable Message Panels are used to optimize routing during taxi operations. The lighting system is used to direct the aircraft, making the guidance safer, as errors are minimized. Lighting system for other vehicles than aircraft ~~is~~ are connected to the SMGCS in order to optimize ground circulation and prevent collision. DEPLOYMENT APPLICABILITY Operational Conditions On complex airports, the integration of aircraft and vehicle movements ~~the platform~~ with all other activities across the aerodrome, such as maintenance or construction works, ~~is introducing~~ may introduce numerous changes and an increased level of complexity ~~in managing maintenance or construction together with ensuring~~ with potential negative impacts on the levels of safety and efficiency of operations. The introduction of dynamic aids ~~is~~ can highly improve~~ing~~ the	

		accuracy of ~~the~~ navigation on the ~~surface~~ aerodrome and as such safety and efficiency.	
IA-E-SURF-CR/5	SURF-B1/2	Title Comprehensive pilot situational awareness on the ~~airport surface~~ aerodrome Main Purpose To improve the safety of ground operations based on increasing pilot's situational awareness, ~~and safety~~ especially at taxiway and runway intersections, as well as for aircraft landing and taking off. Description The pilot can visualize surrounding traffic on a single ~~to be presented on traffic computer and~~ display. Different technologies enable this capability, such as ~~among which~~ ADS-B OUT/ADS-B IN. In order to maximize the benefits, it is ~~suitable~~ necessary that all aircraft be equipped in a homogeneous manner or interoperability amongst systems be achieved. However, a transition period can be observed ~~and~~ as a partial equipage will result in the display of only the appropriately equipped aircraft.	Wording improvements and added the notion of interoperability
IA-E-SURF-CR/6	SURF-B1/3	Description The A-SMGCS Alerting service for controllers is complemented with the detection of conflicting ATC Clearances (CATC) given by the controller (e.g. Line-up versus Land on same runway) and with the detection of non-~~conformance~~ to procedures or instructions (e.g. route deviation~~). An electronic clearance input means is used by the controller to make the clearances known to the system.~~ Clearances are inputted to the system electronically by the controller. Surveillance data and routing information are also used by the	Wording improvements and integration of AI

		system, potentially leveraging AI, ~~logic~~ to generate alerts to the controller.	
IA-E-SURF-CR/7	SURF-B1/4	New Capabilities The A-SMGCS routing service calculates individual routes for aircraft ~~mobiles~~ for representation to the controller in order to support the runway sequencing strategy. Description The A-SMGCS routing service calculates individual routes for aircraft ~~mobiles~~ based on known airport parameters and constraints or following an interaction by the controller. The controller is presented with planned or cleared routes and has means to modify these routes or to create new route if necessary. Information is updated in real time in order to improve predictability of surface operations. DEPLOYMENT APPLICABILITY Operational Conditions On complex airports, the integration of aircraft and vehicle movements ~~the platform~~ with all other activities across the aerodrome, such as maintenance or construction works, ~~is introducing~~ may introduce numerous changes and an increased level of complexity ~~in managing maintenance or construction together with ensuring~~ with potential negative impacts on the levels of safety and efficiency of operations. Appropriate and potentially tailored routing services can highly improve safety and efficiency of airport surface management. When fully integrated ~~consistent~~ with ACDM and ~~R~~runway sequencing strategies, it clearly contributes to the performance of the airport and	Clarification of terms

		surrounding airspace management.	
IA-E-SURF-CR/8	SURF-B1/5	New Capabilities The addition of cockpit enhanced vision capabilities will improve flight crew awareness of own aircraft ~~ship~~ position~~,~~ and reduce navigation errors during periods of reduced visibility. In addition, improved situational awareness of aircraft position by the flight crew during taxi operations ~~will allow for more confidence by the flight crew in the conduct of the taxi operation~~ during periods of reduced visibility will help ~~and~~ ensure accurate application of received clearances. DEPLOYMENT APPLICABILITY Operational Conditions On complex airports, the capacity of the airport may decrease ~~a lot~~ in LVC due to increased spacing required for ground ~~surface~~ operations. The introduction of enhanced vision systems on board aircraft able to recognize lights~~ings~~ and ground indications can highly improve accuracy of ~~the~~ navigation on the ground ~~surface~~ and as such safety and efficiency ~~and limit negative impact~~.	Terminology and readability improvements
IA-E-SURF-CR/9	SURF-B2/1	Main Purpose To improve the guidance of pilots and vehicle drivers on the aerodrome surface. Depending on ~~from~~ the level of equipage of aircraft~~s~~ and vehicles, the operational objective may be achieved either through ~~by~~ airport ground equipment or ~~through~~ on-board capabilities. Description The A-SMGCS guidance service ~~is~~ use~~sing~~ the routing service in conjunction with ATCO inputs to allow the automated switching of Taxiway Centreline Lights (TCL) and/or stop bars. The guidance	Wording improvements addition of AI

		service improves the movement of aircraft or vehicles ~~mobiles~~ on the movement area and reduces the workload of controllers. AI can be leveraged to optimize routings based on current conditions and availabilities of routes. DEPLOYMENT APPLICABILITY Operational Conditions On complex airports, with very demanding traffic, the accuracy of ~~the~~ ground trajectory management ~~is~~ conditions~~ing~~ the overall performance and efficiency of the ~~surface movements~~ ground operations ~~management of the platform together with ensuring safety and efficiency of operations~~. Appropriate and potentially tailored routing services can highly improve safety and efficiency of airport surface management. When fully integrated ~~consistent~~ with ACDM and ~~R~~runway sequencing strategies, it clearly contributes to the performance of the airport and surrounding airspace management.	
IA-E-SURF-CR/10	SURF-B2/2	Main Purpose Expansion of situation awareness to vehicle~~'s~~ drivers by the provision of own position and surrounding traffic's position on a display in the vehicle. ~~Considered v~~Vehicles included can be operations vehicles small UAS used for airport specific functions. The vehicle driver is informed about potential and actual risk of collision with aircraft and infringement of restricted or closed areas.	
IA-E-SURF-CR/11	SURF-B2/3	Description This enhancement represents a key on-board feature to significantly decrease the risk of conflict with any vehicle or aircraft ~~mobile~~ on or near the runway, improving	Improved terminology and readibility

		safety on the manoeuvring area ~~airport surface~~. Aircraft data is broadcasted with the appropriate ~~proper~~ level of performance and quality in order to provide timely and accurate ~~adequate~~ alerts to the pilots.	

CHANGE REQUESTS FOR THE ASBU THREAD WAKE

- This template shall be used to propose changes to the GANP ASBU Framework
- Only complete Change Requests will be processed
- Change Requests can only be issued by members of the Aviation Community
- Change Requests shall be coordinated in advance with relevant aviation community members
- For proposed changes to existing threads and elements use Attachment A
- For proposed new elements use Attachment B
- For proposed new threads use Attachment C
- Contact <GANP maintenance PoC> for assistance
- Email completed template to ganp@icao.int

Contact details

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Aviation Community *	**ANF**
CR coordination**	**WTSWG**
Date of submission	**19 June 2023**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**19 June 2023**
CR Status	Accepted
Assigned TL	Frédéric Rooseleer

Change request to existing Threads/Elements

Change Request Information

Change ID	**Reference***	**CR (current text with revision marks)**	**Justification**
IA-E-WAKE-CR/1	WAKE-B2/2 Dependent parallel approaches based on WWTG	Remove reference to 'pair-wise in the Human Factor consideration	Reference to 'pair-wise' may be confusing with B3/3
IA-E-WAKE-CR/2	WAKE-B3/1 Dependent parallel approaches based on WTC or WTG	Add applicability to WTC (WT categories) and WTG (WT Groups) in the tile	Refer more explicitly to the applicability to the WT categories (WTC) or WT groups (WTG)
IA-E-WAKE-CR/3	WAKE-B3/1 Dependent parallel approaches based on WTG	Applicability date ~~2028~~ 2030	Provisions and supporting guidance documentation to be developed and available
IA-E-WAKE-CR/4	WAKE-B3/2 Reduced time-based wake minima for departure from intermediate part of the runway, using closely spaced runway entries	Adjustment of topic, based on the maturity of the wake turbulence minima enhancement	Align with WTSWG Job Card and updated work programme, with goal to develop optimized provisions for the case of intersection departure from closely spaced runway entries
IA-E-WAKE-CR/5	WAKE-B3/3 Wake turbulence separation minima based on leader/follower static pairs-wise	Applicability date – ~~2028~~ 2030	Provisions and supporting guidance documentation to be developed and available
IA-E-WAKE-CR/6	WAKE-B3/4 Enhanced dependent parallel ~~approaches~~ operations	To be updated Update description: replace 'approach' by operations (to include the case of ARR/DEP separation)	Align with WTSWG updated work programme and work ongoing by US FAA
IA-E-WAKE-CR/7	WAKE-B3/5 Enhanced independent segregated parallel operations	To be removed	No provisions further expected to be developed, due to lack of mature elements
IA-E-WAKE-CR/8	WAKE-B3/6 Time based wake separation minima for arrival based on leader/follower static pair-wise	WAKE-B3/~~7~~5	Consequential change due to the WAKE-CR/6, CR/7,
IA-E-WAKE-CR/9	WAKE-B3/7 Time based dependent parallel approaches	To be removed	No provisions further expected to be developed, due to lack of mature elements

IA-E-WAKE-CR/10	WAKE-B3/8 Time based independent segregated parallel operations	To be removed	No provisions further expected to be developed, due to lack of mature elements

Appendix D

AN APPROACH TO ARTIFICIAL INTELLIGENCE/MACHINE LEARNING

Role of automation
The future of air traffic management (ATM) systems will rely increasingly on automation to safely manage the growing diversity, density, and environmental considerations, resulting in higher complexity.

The primary driver for advancing ATM automation is to optimise total system performance. Adopting cross-border digitization, automation, and AI/ML technologies should enhance system performance and align with social expectations and business needs. Automation serves as a means to effectively support nominal, off-nominal, and contingency operations, improving resilience and adaptability across various scenarios

Levels of Automation

1. Manual or Human-Controlled Automation:

Description: At this foundational level, systems primarily rely on human control, with automation serving as a support tool. Automation simplifies tasks, reduces human workload, and enhances efficiency but does not make autonomous decisions. Humans retain responsibility for decision-making and monitoring.

- In this level, automation systems do not operate autonomously. Human operators maintain full control, and automation's role is to assist and streamline processes.
- Automation serves to reduce human workload and simplify tasks by humans.

2. Assisted or Supervised Automation:

Description: In this intermediate level, automation systems become more sophisticated and can operate autonomously under human supervision. Humans set parameters, provide guidance, and intervene when necessary. The focus is on augmenting human capabilities and enhancing safety.

- This level combines human supervision with automation that has the capacity to operate independently within defined boundaries. Humans set the rules and intervene when necessary. The primary goal is to enhance human capabilities, ensuring a collaborative approach to decision-making.
- Human intervention is required when the system encounters situations that are beyond its predefined rules or when it seeks guidance.
- The primary objective is to enhance human capabilities by allowing automation to handle routine or predefined tasks independently.
- This level is characterized by a collaborative approach where both humans and automation play active roles.

3. Autonomous Automation Leading to Artificial Intelligence (AI):

Description: At this advanced level, automation systems exhibit a high degree of autonomy and may evolve into artificial intelligence. They can make decisions independently based on data and predefined rules. While humans set overarching goals and constraints, the system manages most tasks and adapts to various scenarios.

- In this level, automation systems demonstrate a high degree of self-sufficiency. They are capable of making decisions without human intervention, with the ability to adapt to changing conditions. Humans define high-level objectives and constraints, which may be variable depending on conditions, allowing the system to manage operations within these bounds.

- Humans at this level are responsible for setting overarching goals and constraints but don't need to oversee every detail of the system's operations.
- The system can manage most tasks and adapt to various scenarios without constant human intervention. Automation should effectively support nominal, off-nominal, and contingency operations

Types of Automation

Type A: Reversible and Strategic Automation

Description: Type A decisions encompass those that are strategic in nature, and primarily affect efficiency, capacity, and sustainability without direct safety implications.

- These decisions have a focus on improving efficiency and operational aspects while remaining reversible. They can be adjusted or undone without compromising safety, allowing organizations to adapt and enhance their processes.

Type B. Irreversible and Safety-Critical Automation

Description: Type B decisions are characterized by their tactical nature, and direct impact on operational safety and other performance metrics.

- These decisions are of paramount importance for operational safety and performance, making them irreversible and safety-critical. They involve immediate considerations for safety, performance, and overall operational integrity.

These descriptions aim to provide a framework for the progression of automation in various domains and help establish guidelines for the safe and effective deployment of autonomous systems leading to AI.

Examples: Levels of Automation vs. Types of Automation

	Type A: Reversible and Strategic Automation	**Type B. Irreversible and Safety-Critical Automation**
Manual or Human-Controlled Automation	**Manual Data Entry and Flight Plan Processing:** In this scenario, human flight planners or air traffic controllers manually enter flight plan information into the system and process it according to established procedures and regulations. Automation tools assist by validating the entered data, checking for errors or inconsistencies, and performing basic calculations such as estimated arrival times and fuel requirements.	**Manual Conflict Detection and Resolution**: In this approach, air traffic controllers manually detect and resolve conflicts between aircraft using visual observation and traditional procedural methods.
Assisted or Supervised Automation	**Automated Flight Plan Validation Tool**: This tool automatically validates flight plans submitted by pilots against predefined rules and regulations, such as airspace restrictions, route feasibility, and aircraft performance limitations. The automation identifies discrepancies or errors in the flight plans and flags them for review by air traffic controllers or flight planners	**Automated Conflict Resolution System** : In this system, air traffic controllers set parameters and rules for resolving conflicts between aircraft. The automation continuously monitors the airspace and identifies potential conflicts based on predefined rules and algorithms. When a conflict is detected, the system suggests resolution strategies to the air traffic controller, who can then intervene and make the final decision.
Autonomous Automation Leading to Artificial Intelligence (AI)	**Optimal Sectorisation**: In the Dynamic Airspace Management domain, ML/AI techniques can introduce a significant improvement. The basic idea is to train a machine with traffic data and sector configuration and let it learn how to re-shape sectors boundaries in order to better accommodate the traffic.	**Unmanned Traffic Management:** UAVs with high levels of automation and advanced features will require AI to drive the development of new UTM/U-space services and address the ATM integration challenge. AI will support ATM actors and increase safety from flight planning to operations by providing new solutions for conflict detection, traffic advisory and resolution, and cybersecurity. The change in both UTM and ATM will entail increased levels of automation and applying AI/machine learning at the strategic, pre-tactical and tactical aspects to enable the transition from airspace-based to trajectory-based operations.

Approach to artificial intelligence, machine learning and autonomy (particularly for level 3 - type B automation)

Artificial intelligence (AI), machine learning (ML), and autonomy are transforming the aviation industry by enhancing safety, efficiency, and decision-making processes. To define an approach to AI/ML/autonomy in aviation, we can draw on existing references and frameworks. Here's an approach based on established principles:

Safety First - Compliance with Regulatory Standards:
Reference: International Civil Aviation Organization (ICAO)

Approach: Prioritize safety by adhering to ICAO's regulatory standards and guidelines. Ensure that AI/ML systems comply with aviation safety protocols, airworthiness requirements, and certification processes.

Data-Driven Decision-Making:
References: Federal Aviation Administration (FAA) Data Modernization Initiative. NATS and McLaren Deloitte Initiative.

Approach: Leverage AI/ML to collect, process, and analyse vast amounts of aviation data. Implement data-driven decision-making systems to enhance real-time monitoring, predictive maintenance, and overall operational efficiency.

Human-AI Collaboration:
Reference: EUROCONTROL's White Paper on AI in ATM

Approach: Promote the collaborative use of AI/ML with human operators. AI should assist, augment, and support decision-making processes rather than replace humans entirely. Focus on human-AI synergy and training programs to enhance AI-human collaboration.

Autonomous Systems and UTM:
Reference: NASA's Unmanned Aircraft Systems Traffic Management (UTM)

Approach: Develop autonomous systems for unmanned aircraft operations while maintaining safe integration with manned aviation. Implement UTM concepts to manage the increasing complexity of autonomous air traffic. Extensive experimentation using testbeds based on eVTOLs / UASs is essential to provide valuable information on automation levels, complexity, and implications.

Continuous Learning and Adaptation:
Reference: European Union Aviation Safety Agency (EASA) AI and Automation in Aviation

Approach: Implement self-learning AI/ML algorithms that continuously adapt and improve their performance. Use reinforcement learning and feedback loops to refine autonomous systems and adapt to changing aviation conditions.

Cybersecurity and Resilience:
Reference: International Air Transport Association (IATA) Cybersecurity Best Practices

Approach: Prioritize cybersecurity in AI/ML systems. Implement robust cybersecurity measures to protect aviation systems from cyber threats, ensuring the resilience of autonomous operations.

Explainability, Ethics and Transparency:
Reference: IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems

Approach: Develop AI/ML systems with a focus on explainability, ethics and transparency. Ensure that AI decision-making processes are explainable, unbiased, and aligned with ethical principles.

Collaborative Research and Development:
Reference: SESAR Joint Undertaking

Approach: Engage in collaborative research and development initiatives with industry stakeholders, regulatory bodies, and academia. Work together to develop and test AI/ML solutions for aviation challenges.

Visibility, Performance Metrics and Validation:
Approach: Define performance metrics and evaluation criteria to assess the effectiveness of AI/ML applications in aviation. Monitor and measure the impact on safety, efficiency, and environmental sustainability.

Global Harmonization:
Reference: ICAO's Global Air Navigation Plan

Approach: Advocate for global harmonization of AI/ML standards, regulations, and best practices to ensure interoperability and consistent safety standards in the aviation industry.

This approach aim to provide a comprehensive strategy for the responsible integration of AI, ML, and autonomy in aviation, fostering innovation while prioritizing safety and collaboration

Appendix E

Change Requests as modified by the meeting

CHANGE REQUEST TO ASBU THREAD ACAS

Contact details

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Aviation Community *	**ANSP**
CR coordination**	**Factual change (no need for coordination)**
Date of submission	**24 January 2024**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)
**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	24 January 2024
CR Status	Accepted/ Initial assessment
Assigned TL	Christian Aveneau

Change request to existing Threads/Elements

Change Request Information

CR ID	Reference*	CR (current text with revision marks)	Justification	Resolution
FA-E-ACAS-CR/1	ACAS/B1/1/ML	~~Ready for~~ Mandatory implementation	The ACAS II requirement integrating TCAS v7.1 safety improvement is applicable for all ACAS units after 1 January 2017.	Rejected
FA-E-ACAS-CR/2	ACAS/B2/1/MP	To provide airborne collision avoidance as a last resort safety net for pilots (improving functionality provided in BBB and ~~Block 0~~ Block 1).	This change has been missed when changing Block 0 to Block 1.	Accepted
FA-E-ACAS-CR/3	ACAS/B2/1/ML	~~Standardization~~ Ready for implementation	Provisions for ACAS II systems integrating ACAS Xa/Xo improvements have been published and are applicable.	Accepted.
FA-E-ACAS-CR/4	ACAS/B2/1/EN	Avionics standards for ACAS Xa/Xo. References: ~~EUROCAE/RTCA ED-256/DO-385~~ EUROCAE ED-256 or RTCA DO-385	Cosmetic change to have the same format as in the corresponding enabler in ACAS/B1/1	Accepted
FA-E-ACAS-CR/5	ACAS/B2/2/DC	Resolution advisories include both horizontal (turn left or right) and/or vertical guidance (climb, descend, remain level, do not descend/climb) as appropriate to avoid collisions. The dimension, strength and timing of resolution advisories take into account RPAS performance limitations.	Improvement of the description.	Accepted
FA-E-ACAS-CR/6	ACAS/B2/2/ML	~~Validation~~ Standardization	SARPS are not yet effective.	Accepted
FA-E-ACAS-CR/7	ACAS/B2/2/EN	<Regulatory provisions Year>~~2022~~ 2026	Provisions for ACAS III integrating ACAS Xu capabilities have been	Accepted

			delivered in Q3 2023 so applicability date has shifted.	
FA-E-ACAS-CR/8	ACAS/B2/2/EN	Avionics standards for ACAS Xu. References: ~~EUROCAE/RTCA ED-yyy/DO xxx~~ EUROCAE ED 275 or RTCA DO-386	ACAS Xu MOPS have been published.	Accepted

CHANGE REQUEST TO ASBU THREAD ASUR

Contact details

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Aviation Community *	**CAA**
CR coordination**	**PTT**
Date of submission	**15 February 2024**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)
**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	15 February 2024
CR Status	Accepted/ Initial assessment
Assigned TL	Stuart McKay

Change request to existing Threads/Elements

Change Request Information

CR ID	Reference*	CR (current text with revision marks)	Justification	Resolution
FA-E-ASUR-CR/1	ASUR-B2/2	~~New community based surveillance system for airborne aircraft (low and higher airspace)~~	As agreed at the GANP-SG/ASBU PPT/5	Accepted
FA-E-ASUR-CR/2	ASUR-B2/2/MP	~~To support the provision of separation services by operators for aircraft operating at very low altitudes (<500 ft) and higher airspace.~~	As agreed at the GANP-SG/ASBU PPT/5	Accepted
FA-E-ASUR-CR/3	ASUR-B2/2/NC	~~A community based network solution for surveillance at a lower lifecycle cost is provided using operator reported positions into that network to support conflict detection and resolution. It substitutes shared information for visual recognition of other aircraft.~~	As agreed at the GANP-SG/ASBU PPT/5	Accepted.
FA-E-ASUR-CR/4	ASUR-B2/2/DC	~~Within this timeframe, vehicle identities/positions/velocities may be shared using an aviation network. Information is provided to the ANSP on aircraft location to detect airspace infringement (low altitudes) and support operator to operator (even if provided by third party acting on the operators behalf) conflict management. It extends to higher airspace to support new entrants.~~	As agreed at the GANP-SG/ASBU PPT/5	Accepted
FA-E-ASUR-CR/5	ASUR-B2/2ML	~~Concept~~	As agreed at the GANP-SG/ASBU PPT/5	Accepted
FA-E-ASUR-CR/6	ASUR-B3/1	~~New non-cooperative surveillance system for airborne aircraft (medium altitudes)~~	As agreed at the GANP-SG/ASBU PPT/5	Accepted
FA-E-ASUR-CR/7	ASUR-B3/1/MP	~~To provide non-cooperative and independent surveillance system at a lower cost.~~	As agreed at the GANP-SG/ASBU PPT/5	Accepted
FA-E-ASUR-CR/8	ASUR-B3/1/NC	~~Non-cooperative surveillance is provided at a lower lifecycle cost using multiple,~~	As agreed at the GANP-SG/ASBU PPT/5	Accepted

		~~networked receivers to detect aircraft-reflected RF signals originated from continuously transmitting non-aviation transmitters such as digital TV stations, FM radio stations, or cellphone towers.~~		
FA-E-ASUR-CR/9	ASUR-B3/1/DC	~~Information is provided to the ANSP on aircraft location to detect airspace infringement or to safely manage aircraft with surveillance equipment failure. A performance-based surveillance framework allows ANSPs to determine the most effective means of obtaining needed surveillance information. Within this timeframe, all aircraft identities/positions/velocities can be provided/shared by operators using an aviation network. Operators not receiving safety-of-life services can be surveilled using non-aviation spectrum~~		Accepted.
FA-E-ASUR-CR/10	ASUR-B3/1/ML	~~Concept~~	As agreed at the GANP-SG/ASBU PPT/5	Accepted.
FA-E-ASUR-CR/11	ASUR-B4/1/DC	This evolution will address Trajectory Based Operations (TBO) needs for surveillance information discovered in Block 2. A performance-based surveillance framework allows ANSPs to determine the most effective means of obtaining needed surveillance information. Cooperative surveillance is expected to be the principal means of surveillance and is typically provided by ADS-B and MLAT systems, including Wide Area Multilateration (MLAT); rotating radars will be replaced at end-of-life where appropriate. Within this timeframe, all aircraft identities/positions/velocities can be provided/shared by	As agreed at the GANP-SG/ASBU PPT/5	Accepted.

		operators using ~~internet~~ standardised data transmission systems. Operators not receiving safety-of-life services can be surveilled using non-aviation spectrum.		

Change Request for New Element

Justification: Add 3 new elements (identified as X,Y,Z) to the ASUR Block 3, as agreed with PTT.

Change Request Information

Reference*	**New Text**
ASUR-B3/<X>	Performance-based Surveillance Requirements for Low Level Operations (LLO)
ASUR-B3/<X>/MP	To support the provision of separation services by operators for Low Level aircraft operations.
ASUR-B3/<X>/NC	A community based performance requirements specification for surveillance at a lower lifecycle cost is provided using operator reported, or measured, positions into that network to support conflict detection and resolution. It substitutes shared information for visual recognition of other aircraft.
ASUR-B3/<X>/DC	Within this timeframe, vehicle identities/positions/velocities may be shared using an aviation network. Information is provided to the ANSP on aircraft location to detect airspace infringement (low altitudes) and support operator to operator (even if provided by third party acting on the operators behalf) conflict management. The solution should consider the performance requirements for reported positions, non-cooperative solutions where required (including multi static PSR), dependant cooperative solutions, and independent co-operative solutions, and new technologies.
ASUR-B3/<X>/ML	Concept
ASUR-B3/<Y>	Performance-based Surveillance Requirements for Cooperative Airspace
ASUR-B3/<Y>/MP	To support the provision of separation services by operators for Cooperative Airspace operations.
ASUR-B3/<Y>/NC	A community based performance requirements specification for surveillance at a lower lifecycle cost is provided using aircraft reported, or measured, position into that network to support conflict detection and resolution within a cooperative airpace.
ASUR-B3/<Y>/DC	Within this timeframe, vehicle identities/positions/velocities/aircraft derived data, may be shared using an aviation network. The performance requirement for the information to be provided to the ANSP on aircraft location to support a separation service, support an efficient airspace design, detect airspace infringement, and support operator to operator conflict management.
ASUR-B3/<Y>/ML	Concept
ASUR-B3/<Z>	Performance-based Surveillance Requirements for High Altitude Operations (HAO)
ASUR-B3/<Z>/MP	To support the provision of separation services by operators for High

	Altitude operations.
ASUR-B3/<Z>/NC	A community based performance requirements specification for surveillance at a sustainable lifecycle cost is provided using reported positions into that network to support conflict detection and resolution for High Altitude Operations.
ASUR-B3/<Z>/DC	Within this timeframe, vehicle identities/positions/velocities/Aircraft Derived Data may be shared using an aviation network. Information is provided to the ANSP on aircraft location to detect support operator to operator conflict management. Consideration shall be given to space based and ground-based technologies due to the operating altitudes of these vehicles
ASUR-B3/<Z>/ML	Concept

CHANGE REQUEST TO ASBU THREAD ACDM

Contact details

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Aviation Community *	**ATM Network Function (ANF)**
CR coordination**	**ADOP/ TAM-TF**
Date of submission	**16 February 2024**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)
**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	16/02/2024
CR Status	Accepted/ Initial assessment
Assigned TL	Frédéric Rooseleer/ Thomas Romig

Change request to existing Threads/Elements

Change Request Information

CR ID	Reference*	CR (current text with revision marks)	Justification	Resolution
FA-E-ACDM-CR/1	ACDM-B2/1 AOP	Change the maturity level of from "Standardization" to "Ready for implementation".	This element is already implemented in some States.	Accepted
FA-E-ACDM-CR/2	ACDM-B2/2 APOC	Change the maturity level from "Standardization" to "Ready for implementation".	This element is already implemented in some States.	Accepted
FA-E-ACDM-CR/3	ACDM-B2/3 TAM	1/ Change the maturity level from "Validation" to "Ready for implementation". 2/ Remove the FIXM enabler since the dependency on FICE is benefit driven.	This element is already implemented in some States.	Accepted.
FA-E-ACDM-CR/4	ACDM-~~B3/1~~ B4/1 Full integration of ACDM and TAM in TBO	1/ Move ACDM-B3/1 to Block 4 (i.e. ACDM-B4/1) since it is linked to global SWIM. 2/ A dependency need should be added to FICE-B2/6 Publication Service. 3/ Review the content (see proposal below) to de-couple regional vs. network functions: Main Purpose To use the integration of ACDM in the overall synchronization of regional ATM networks (Managers), or through a network of network (Managers), to contribute to end-to-end stable, consistent and robust trajectory-based operations providing the adequate level of performance. Description All stakeholders are fully connected. All tactical decisions are fully synchronized and operations are fully trajectory-based. Aerodrome operations are	Clarification reflecting the expected evolution of regional and global ATFM and the roles of regional network managers, who will interconnect.	Accepted

		considering the en-route to en-route view with the turnaround process, agree on, and subsequently manage the flights on the surface, to deliver expected surface event times with known impacts to the ATM system, and to ensure that the agreed trajectory is consistent with the Airport Operations Plan. ACDM is contributing to the coordination of the network by ~~based,~~ efficiently converging ~~coordination process as a subcomponent~~ information to the benefit of the overall ATM network synchronization process. Regional network management functions are effectively sharing information to support the flow of traffic and use of capacity.		
FA-E-ACDM-CR/5	ACDM-B3/2 Advanced TAM (NEW)	(See Annex 1 for new element description)	New added element.	Accepted
FA-E-ACDM-CR/6	ACDM-B4/2 Extension of Advanced TAM to integrate new entrants (NEW)	(See Annex 2 for new element description)	New added element.	Accepted

Change Request for New Element

Justification: Reflecting the evolution of ACDM in future blocks.

Change Request Information

PART 3	**ACDM-B3/2**	**Advanced TAM**
	Main purpose	Advanced TAM extends the scope of TAM, through the introduction of Environmental and Economic KPI management and through the extension of the collaborative management processes to the pre-tactical and strategic phases. Additionally, cost-effective solutions relating to enhanced traffic predictability are proposed for regional and small airports. Introducing new techniques based on Artificial Intelligence and Machine

		Learning (AI/ML) where possible, advanced TAM will bring performance benefits to all connected airports and the network covering improved predictability and punctuality, more efficient use of ground & airspace capacity, leading to an improved end-to-end passenger experience as well as optimized environmental and economic performance for aerodromes.
	New capabilities	More proactive environmental and economic performance management is proposed with the aim of integrating these considerations into the overall "curb-to-gate" airport operations management process (i.e. inclusion of environmental parameters into the Airport Operations Plan and monitoring of economic performance). In parallel, the timeframe within Advanced TAM will extend to strategic (from months in advance until D-7) and pre-tactical (D-7; D-1) to ensure a smooth transition towards the tactical phase with reduced adjustments. Also, new techniques based on AI/ML are introduced to enhance predictions of key parameters such as aircraft taxi-times under varying conditions and in the area of turnaround process monitoring.
	Description	To perform an efficient environmental and economic KPI performance management, environmental parameters are included into the Airport Operations Plan and economic performance is monitored to permit: - During the planning phase (performance steering), the definition of metrics and targets covering environmental performance which are agreed and their performance is monitored, - During the execution phase, an accurate monitoring of environmental performance included in the overall airport performance dashboard, alerts relating to the degree of compliance to the environmental targets identified during the planning phase with the use of "what-if" capabilities to assess how certain measures may affect environmental performance, - An increased focus during the post-operations analysis phase on environmental performance including an enhanced understanding of the reasons behind any deviations - A clear definition of economic performance metrics and KPIs that can be monitored and tracked with the intention of identifying the post operation overall benefit of the operational and environmental measures applied. The focus on the strategic and pre-tactical phases relies on the fact that airport plan in these phases may face a large number of assumptions and approximations. Therefore, identifying, consolidating and validating information in the AOP in these phases is based on airport stakeholders and network requirements, including both information and predictions.

Dependencies and relations	Type of dependencies		ASBU element	
	Evolution	Relation	ID	Title
	X		ACDM-B2/3	TAM
		X	AMET-B2/1	Meteorological observations information
		X	AMET-B2/2	Meteorological forecast and warning information
		X	FICE-B2/4	Flight Data Request Service
		X	SWIM-B2/1	Information service provision
		X	SWIM-B2/2	Information service consumption
		X	SWIM-B2/4	Air/Ground SWIM for non-safety critical

				information	
		X	SWIM-B2/5	Global SWIM processes	

Operations	Flight phases					Turn-around
	Taxi-out	Departure	En-route	Arrival	Taxi-in	
	X	X		X	X	X

Planning layers	ATM planning	Strategical	Pre- tactical	Tactical		Post operations
				Pre ops	During ops	
		X	X	X	X	X

PART 4

Enablers			
Category	**Type**	**Description/Examples**	**Stakeholder(s)**
Regulatory Provisions	Certification, Operational Approval		
Operational Procedures	Operations	Advanced TAM airside operational procedures Procedures for data sharing and management supporting the introduction of Environmental and Economic KPI management and through the extension of the collaborative management processes to the pre-tactical and strategic phases, as well as enhanced traffic predictability for regional and small airports References: Updated Manual on advanced TAM	Airport Operator, ANSP, ATM Network Function, Aircraft Operator, Ground Handling Agent (2031)
	Operations	Operational procedures and management supporting the introduction of Environmental and Economic KPI management and through the extension of the collaborative management processes to the pre-tactical and strategic phases, , as well as enhanced traffic predictability for regional and small airports References: Updated Manual on advanced TAM	Airport Operator Aircraft Operator (2031)
Airborne System capability			
Ground system infrastructure	C, N, S,		
	Advanced TAM information sharing system	Implementation of information exchange services supporting the introduction of Environmental and Economic KPI management and through the extension of the collaborative management processes to the pre-tactical and strategic phases, as well as enhanced traffic predictability for regional and	Airport operator ANSP ATM network function Aircraft operator Ground handling

			small airports.	agent (2031)
		Advanced TAM monitoring and decision support systems	Implementation of real-time monitoring and decision support systems within an operational facility supporting the introduction of Environmental and Economic KPI management and through the extension of the collaborative management processes to the pre-tactical and strategic phases, , as well as enhanced traffic predictability for regional and small airports	Airport operator ANSP ATM network function Aircraft operator Ground handling agent (2031)
		Advanced TAM landside systems	Landside Management systems supporting the introduction of Environmental and Economic KPI management and through the extension of the collaborative management processes to the pre-tactical and strategic phases, as well as enhanced traffic predictability for regional and small airports	Airport operator ANSP ATM network function Aircraft operator Ground handling agent (2031)
	Training	Training requirements for advanced TAM Training and competency monitoring in the use of procedures, responsibilities		Airport operator ANSP ATM network function Aircraft operator Ground handling agent (2031)
	Other			

N	Deployment applicability				
	Operational conditions	Advanced TAM will bring performance benefits to all connected airports and the network covering improved predictability and punctuality, more efficient use of ground & airspace capacity, leading to an improved end-to-end passenger experience as well as optimized environmental and economic performance for aerodromes.			
	Main intended benefits				
	Type	Operational description			Benefitting stakeholder(s)
	Direct benefits	Efficiency of Operations			Airport operator; ANSP ; Aircraft operator
	Indirect benefits	Increased safety			Airport operator; ANSP ; Aircraft operator
Note. —	Intended performance impact on specific KPAs and KPIs				
	KPA	Focus Areas	KPI	KPI impact	Most specific performance objective(s) supported

	Capacity	Capacity, throughput & utilization	KPI 06: En-route airspace capacity		
			KPI 09: Airport peak arrival capacity	X	
			KPI 10: Airport peak arrival throughput	X	
			KPI 11: Airport arrival capacity utilization	X	
		Capacity shortfall & associated delay	KPI 07 : En-route ATFM delay		
			KPI 12: Airport/terminal ATFM delay	X	
	Efficiency	Additional flight time & distance	KPI 02: Taxi-out additional time	X	
			KPI 04: Filed flight plan en-route extension		
			KPI 05: Actual en-route extension		
			KPI 08 : Additional time in terminal airspace		
			KPI 13: Taxi-in additional time	X	
		Vertical flight efficiency	KPI 17: Level-off during climb*		
			KPI 18: Level capping during cruise*		
			KPI 19: Level-off during descent*		
		Additional fuel burn	KPI 16: Additional Fuel burn	X	
	Predictability	Punctuality	KPI 01: Departure Punctuality	X	
			KPI 14: Arrival punctuality	X	
			KPI 03: ATFM slot adherence		
		Variability	KPI 15: Flight time variability		
	Other objectives from the catalogue that do not contribute to the KPIs above				

PART 3	**ACDM-B4/2**	**Extension of Advanced TAM to integrate new entrants**
	Main purpose	This concept merges the Advanced TAM concept with the seamless integration of the operating models of new entrants, managing the flow of traffic across the airport system regardless of the aircraft type. This will bring performance benefits to all airport users through improved punctuality and predictability of traffic flows as well as optimized use of ground & airspace capacity, leading to higher network efficiency and overall improved performance for the aerodrome and its users.
	New capabilities	A more proactive, seamless and integrated management of traffic flows across the airport system allowing for higher performing airport operations management processes and better use of system capacity. These capabilities are extended to include collaborative Demand Capacity Balancing (DCB) process across the airport ecosystem and among airports and a network management unit, if available, allowing for optimised management of capacity and improved integration of the different traffic types using the airport system. The use of Artificial Intelligence / Machine Learning (AI/ML) techniques is further extended to improve predictability of operational loads and provide inputs to rebalance the

* Indicators not in the GANP 2016 and propose for the GANP 2019

		flows across the airport system when necessary.
	Description	The full and seamless integration of the operating models of all airport users, regardless of aircraft type, allows for an optimized use of available system capacity, improving overall performance through a reduction in the system's complexity. Automated exchange of data on traffic loads and movements across the airport system supported by "what-if" scenario planning fwill increase the operational resilience and reduce the time for recovery from significant deviations to the plan.

		Type of dependencies		ASBU element	
	Dependencies and relations	Evolution	Relation	ID	Title
		X		ACDM-B3/2	Advanced TAM
			X	AMET-B2/1	Meteorological observations information
			X	AMET-B2/2	Meteorological forecast and warning information
			X	FICE-B2/4	Flight Data Request Service
			X	SWIM-B2/1	Information service provision
			X	SWIM-B2/2	Information service consumption
			X	SWIM-B2/4	Air/Ground SWIM for non-safety critical information
			X	SWIM-B2/5	Global SWIM processes

		Flight phases					Turn-around
	Operations	Taxi-out	Departure	En-route	Arrival	Taxi-in	
		X	X		X	X	X

		ATM planning	Strategical	Pre- tactical	Tactical		Post operations
	Planning layers				Pre ops	During ops	
			X	X	X	X	X

	Enablers			
	Category	**Type**	**Description/Examples**	**Stakeholder(s)**
PART 4	Regulatory Provisions	Certification, Operational Approval		
	Operational Procedures			
	Airborne System capability			
	Ground system infrastructure	C, N, S,		
		Advanced TAM information	Implementation of information services to supporting seamless integration of the operating models of new entrants, managing	Airport operator ANSP

		sharing system	the flow of traffic across the airport system regardless of the aircraft type.	ATM network function Aircraft operator Ground handling agent (2037)
		Advanced TAM monitoring and decision support systems	Implementation of real-time monitoring and decision support systems within an operational facility supporting seamless integration of the operating models of new entrants, managing the flow of traffic across the airport system regardless of the aircraft type.	Airport operator ANSP ATM network function Aircraft operator Ground handling agent (2037)
		Advanced TAM landside systems	Landside Management systems supporting seamless integration of the operating models of new entrants, managing the flow of traffic across the airport system regardless of the aircraft type.	Airport operator ANSP ATM network function Aircraft operator Ground handling agent (2037)
	Training	Training requirements for advanced TAM Training and competency monitoring in the use of procedures, responsibilities		Airport operator ANSP ATM network function Aircraft operator Ground handling agent (2037)
	Other			

	Deployment applicability		
	Operational conditions	Advanced TAM that integrates the operating models of new entrants will manage flow of traffic across the airport system regardless of the aircraft type. This will bring performance benefits to all airport users through improved punctuality and predictability of traffic flows as well as optimized use of ground & airspace capacity, leading to higher network efficiency and overall improved performance for the aerodrome and its users.	
N	Main intended benefits		
	Type	Operational description	Benefitting stakeholder(s)
	Direct benefits	Efficiency of Operations	Airport operator; ANSP ; Aircraft operator
	Indirect benefits	Increased safety	Airport operator; ANSP ; Aircraft operator

Note. — PART 6

Intended performance impact on specific KPAs and KPIs				
KPA	Focus Areas	KPI	KPI impact	Most specific performance objective(s) supported
Capacity	Capacity, throughput & utilization	KPI 06: En-route airspace capacity		
		KPI 09: Airport peak arrival capacity	X	
		KPI 10: Airport peak arrival throughput	X	
		KPI 11: Airport arrival capacity utilization	X	
	Capacity shortfall & associated delay	KPI 07 : En-route ATFM delay		
		KPI 12: Airport/terminal ATFM delay		
Efficiency	Additional flight time & distance	KPI 02: Taxi-out additional time	X	
		KPI 04: Filed flight plan en-route extension		
		KPI 05: Actual en-route extension		
		KPI 08 : Additional time in terminal airspace		
		KPI 13: Taxi-in additional time	X	
	Vertical flight efficiency	KPI 17: Level-off during climb*		
		KPI 18: Level capping during cruise*		
		KPI 19: Level-off during descent*		
	Additional fuel burn	KPI 16: Additional Fuel burn	X	
Predictability	Punctuality	KPI 01: Departure Punctuality	X	
		KPI 14: Arrival punctuality	X	
		KPI 03: ATFM slot adherence	X	
	Variability	KPI 15: Flight time variability		
Other objectives from the catalogue that do not contribute to the KPIs above				

* Indicators not in the GANP 2016 and propose for the GANP 2019

CHANGE REQUESTS FOR THE ASBU THREAD AMET

- This template shall be used to propose changes to the GANP ASBU Framework
- Only complete Change Requests will be processed
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- For proposed changes to existing threads and elements use Attachment A
- For proposed new elements use Attachment B
- For proposed new threads use Attachment C
- Contact <GANP maintenance PoC> for assistance
- Email completed template to ganp@icao.int

Contact details

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Aviation Community *	**MET**
CR coordination**	**Representing METP**
Date of submission	**19 June 2023**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**19 June 2023**
CR Status	Accepted
Assigned TL	Rosalind Lapsley

Change request to existing Threads/Elements

Change Request Information

ID Number	Reference*	CR (current text with revision marks)	Justification	Remarks
FA-E-AMET-CR/1	AMET-B4/1 (MP)	Continued advancement of integrated high resolution meteorological observation information in support of enhanced operational ground and air decision-making processes, for all flight phases and corresponding air traffic control operations, supporting trajectory-based operations and gate-to-gate seamless operations.	Providing new content.	Accepted
FA-E-AMET-CR/2	AMET-B4/1 (NC)	Further development of observation services for terminal areas and enroute using the aircraft as a sensor. Higher spatial and temporal resolution of meteorological observations. Observations to support tactical routing decisions under environmental considerations i.e., contrail or noise avoidance, if required.	Providing new content.	Accepted
FA-E-AMET-CR/3	AMET-B4/1 (D)	This module builds on the meteorological information services defined in AMET-B3. Further development of the full MET-ATM integration will ensure that high resolution meteorological observation information is included in the logic of a decision process and the impact of the meteorological conditions on the operations are automatically derived, understood and taken into account. Increased situational awareness to support tactical	Providing new content.	Accepted

		in-flight avoidance of hazardous meteorological conditions. Greater utilisation of aircraft reporting of weather, both routine measurements and those of hazard encounters will aid in the situational awareness of other airspace users, and serve to improve the accuracy of the forecasts through better verification processes. Applicable to air traffic flow planning, enroute operations, terminal operations (arrival/departure) and surface. Aircraft equipage is assumed in the areas of ADS-B IN/CDTI, aircraft based meteorological observations, and meteorological information display capabilities, such as EFBs.		
FA-E-AMET-CR/4	AMET-B4/1 (ML)	Concept.	Providing new content.	Accepted
FA-E-AMET-CR/5	AMET-B4/1 (HF)	1. Does it imply a change in task by a user or affected others? No 2. Does it imply processing of new information by the user? Yes 3. Does it imply the use of new equipment? No 4. Does it imply a change to levels of automation? Yes	Providing new content.	Accepted
FA-E-AMET-CR/6	AMET-B4/2 (MP)	Continued advancement of integrated high resolution meteorological forecast and warning information in support of enhanced operational ground and air decision-making processes,	Providing new content.	Accepted

		for all flight phases and corresponding air traffic control operations, allowing gate-to-gate seamless operations.		
FA-E-AMET-CR/7	AMET-B4/2 (NC)	Further enhance the spatial and temporal resolution of meteorological forecasts and warnings in line with the available technology. This is expected to include greater use of probabilistic analysis, not just of the forecast information, but its operational impact, based on greater integration of data sources from other domains. A continuation of further development towards a fully integrated meteorological forecast service fit for the purpose of all flight phases and ATC operations, in support of gate-to-gate seamless operations.	Providing new content.	Accepted
FA-E-AMET-CR/8	AMET-B4/2 (D)	This module builds on the meteorological forecast and warning services defined in AMET-B3. Continuing the MET-ATM integration will ensure that meteorological information is included in the logic of a decision process for each flight phase and the impact of the meteorological conditions on the operations are automatically derived, understood and taken into account. The probabilistic element of the forecasts and warnings further helps decision makers apply their own operational constraints (i.e. business rules) to determine the risk to their operations. Greater use of the probability of occurrence of meteorological phenomena and the level of confidence/uncertainty of the forecast will enable better risk	Providing new content.	Accepted

		management. Additionally, the integration of weather and operational forecasts into better impact analysis will enhance the gate-to-gate efficiency and serve to minimise environmental impact.		
FA-E-AMET-CR/9	AMET-B4/2 (ML)	Concept	Providing new content.	Accepted
FA-E-AMET-CR/10	AMET-B4/2 (HF)	1. Does it imply a change in task by a user or affected others? No 2. Does it imply processing of new information by the user? Yes 3. Does it imply the use of new equipment? No 4. Does it imply a change to levels of automation? Yes	Providing new content.	Accepted
FA-E-AMET-CR/11	AMET-B4/3	Remove element.	This element could be deleted in block 4 – the necessary work to improve climate and historical weather information is expected to have already been completed in B3/3.	Accepted
FA-E-AMET-CR/12	AMET-B4/4 (MP)	Integrated meteorological information service in the SWIM environment in support of enhanced operational ground and air decision-making processes, for all flight phases and corresponding air traffic control operations.		Accepted
FA-E-AMET-CR/13	AMET-B4/4 (NC)	Fully deployed roll-out of a data-centric meteorological information service, integrated into the System Wide Information Management (SWIM) environment. Ongoing enhancement of ICAO Meteorological Information Exchange Model (IWXXM)		Accepted

		with further schemas and formats for meteorological information exchange. User-defined products automatically derived from meteorological information in ICAO Meteorological Information Exchange Model (IWXXM) form. Extensive use of secure web services, in particular business-to-business services that allows full integration of meteorological information.		
FA-E-AMET-CR/14	AMET-B4/4 (D)	Standards for global exchange of the MET information within the SWIM environment will be mature and SWIM will be the only standard for the exchange of aeronautical MET information. Full integration of meteorological information into the System Wide Information Management (SWIM) environment will be achieved. Use of MET-SWIM services will support flexible airspace management, airborne re-routing, improved situational awareness, collaborative decision-making, including in terminal areas and at airports, dynamically optimized flight trajectory planning, ATM impact conversion and ATM decision support, hazard avoidance. Meteorological information exchange with the aircraft to improve operational awareness and decision-making using air/ground data connectivity and aircraft on-board systems will be implemented. MET-SWIM information		Accepted

		services will support request/reply and/or publish/subscribe access mechanisms and will provide quality & timely information to users in a range of formats to best enable their optimal decision making.		
FA-E-AMET-CR/15	AMET-B4/4 (ML)	Concept		Accepted
FA-E-AMET-CR/16	AMET-B4/4 (HF)	1. Does it imply a change in task by a user or affected others? Yes 2. Does it imply processing of new information by the user? Yes 3. Does it imply the use of new equipment? Yes 4. Does it imply a change to levels of automation? Yes		Accepted

CHANGE REQUESTS TO THE ASBU THREAD OPFL AND APTA

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- Email completed template to ganp@icao.int

Contact details

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Aviation Community *	**ANSP**
CR coordination**	**IFPP and SASP members & advisors; AAM Technical Officer**
Date of submission	**Initial version on 31 October 2023; final version on 21 February 2024**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**21 February 2024**
CR Status	Accepted
Assigned TL	Kelly McIlwaine

Change request to existing Threads/Elements

Change Request Information

ID Number	Reference*	CR (current text with revision marks)	Justification	Remarks
FA-F-APTA-CR/1	APTA B2/2	Remove element	See initial assessment.	Accepted.
FA-F-APTA-CR/2	APTA-B1/1 (B)	APTA ~~B1/1~~ B2/x	Move APTA-B1/1 to Block 2 since the enablers would not be ready until 2024.	Accepted.
FA-F-APTA-CR/3	APTA-B1/1 (DEP)	Change Dependency for FRTO B1/2: Relation-operational need APTA ~~B1/1~~ B2/x - PBN Approaches (with advanced capabilities)		Accepted.
FA-F-APTA-CR/4	APTA-B1/1 (E)	Operational procedures Design PBN approach (with advanced capabilities) procedures design and use These instrument flight procedures should be designed and used as specified in Doc 8168 (PANS-OPS Vol II and I) and Doc 9905 (Required Navigation Perf... read more ANSP ~~2019~~ 2024 Operational procedures Design PBN approach (with advanced capabilities) validation, approval, and publication A flight inspection and/or validation of the procedures might be required before publication. The publication of the procedures should follow Annex 4... read more ANSP CAA ~~2019~~ 2024 Operational procedures Operations SOPs for PBN approaches (with advanced capabilities)		Accepted.

		Procedures for the crew to follow to fly a PBN approach. Defined in the Ops Manual Reference: Doc 9613 (PBN Manual) Aircraft operator ~~2019~~ 2024 Operational procedures Operations Contingency procedures for PBN approaches (with advanced capabilities) Procedures for the crew to follow in case of abnormal events. Defined in the Ops Manual Reference: Doc 9613 (PBN Manual) Aircraft operator ~~2019~~ 2024 Airborne system capability Navigation Aircraft capability for PBN approach (with advanced capabilities) Aircraft eligible for RNP AR APCH Navigation specification, Advanced-RNP navigation specification as required. Defined in Doc 9613 (PBN Manual) and l... read more Aircraft manufacturer Aircraft operator ~~2019~~ 2024 Operational Authorization - Operational Authorization for PBN approaches (with advanced capabilities) Operations based on RNP AR APCH require a specific approval. Advanced-RNP requires an operational authorization Reference: Doc 9997 (PBN Ops Approval... read more CAA Aircraft operator ~~2019~~ 2024		

		Training - Training requirements for PBN Approaches (with advanced capabilities) Training for ATCOs, procedure designers, airspace planners and crew to fly PBN Approaches (with advanced capabilities). References: Doc 9613 (PBN ... read more ANSP Aircraft operator ~~2019~~ 2024		
FA-F-APTA-CR/5	APTA-B1/2 (B)	APTA ~~B1/2~~ B2/x	Move APTA-B1/2 to Block 2 since the enablers would not be ready until 2024.	Accepted.
FA-F-APTA-CR/6	APTA-B1/2 (DEP)	Change dependencies for WAKE B2/1; WAKE B2/2; WAKE B3/1; WAKE B3/2; WAKE B3/3; WAKE B3/4; WAKE B3/5; WAKE B3/7; WAKE B3/8: Relation-operational option APTA ~~B1/2~~ B2/x - PBN SID and STAR procedures (with advanced capabilities)		Accepted.
FA-F-APTA-CR/7	APTA-B1/2 (E)	Operational procedures Design PBN SID and STAR Procedures (with advanced capabilities) procedure design and use These procedures should be designed and used as specified in Doc 8168 (PANS-OPS Vol II and I) or equivalent. ANSP ~~2019~~ 2024 Operational procedures Design PBN SID and STAR Procedures (with advanced capabilities) validation, approval, and publication A flight inspection and/or validation of the procedures might be required before		Accepted.

		publication. The publication of the procedures should follow Annex 4... read more ANSP CAA ~~2019~~ 2024 Operational procedures Operations SOPs for PBN SID/STAR (with advanced capabilities) Procedures for the crew to follow to fly a PBN SID/STAR. Defined in the Ops Manual Reference: Doc 9613 (PBN Manual) Aircraft operator ~~2019~~ 2024 Operational procedures Operations Contingencies for PBN SID/STAR (with advanced capabilities) Procedures for the crew to follow in case of abnormal events. Defined in the Ops Manual. Reference: Doc 9613 (PBN Manual) Aircraft operator ~~2019~~ 2024 Airborne system capability - Aircraft capability for PBN SID/STAR (with advanced capabilities) Aircraft eligible for applicable Navigation specification as defined in Doc 9613 (PBN Manual) and listed in the Aircraft Flight Manual. Aircraft manufacturer Aircraft operator ~~2019~~ 2024 Operational Authorization - Operational Authorization for PBN SID/STAR (with advanced capabilities) Aircraft operator flying a PBN SID/STAR should have		

		an operational authorization related to the specified performance of the procedure, as described i... read more CAA Aircraft operator ~~2019~~ 2024 Ground system infrastructure Navigation NAVAIDS to support the applicable navigation specification used for SID/STAR (with advanced capabilities) Depending on the navigation specification used, suitable ground based navigational aids will be required. Reference: Doc 9613 (PBN Manual) ANSP ~~2019~~ 2024 Training - Training requirements for PBN SID/STAR (with advanced capabilities) Training for ATCOs, procedures designers and crew to fly PBN SID/STAR (with advanced capabilities). References: Doc 9613 (PBN Manual); Addition... read more ANSP Aircraft operator ~~2019~~ 2024		
FA-F-APTA-CR/8	APTA-B1/4 (B)	APTA ~~B1/4~~ B2/x	Change the maturity level of APTA-B1/4 and APTA-B1/5 from "Standardization" to "Ready for implementation". Move to Block 2; ready for implementation in 2022.	Accepted.
FA-F-APTA-CR/9	APTA-B1/4 (ML)	Maturity Level: ~~Standardization~~ Ready		Accepted.

		for implementation		
FA-F-APTA-CR/10	APTA-B1/4 (D)	Change dependencies for RSEQ B1/1; RSEQ B2/1; RSEQ B3/2: Relation-operational benefit APTA ~~B1/4~~ B2/x - CDO (Advanced)		Accepted.
FA-F-APTA-CR/11	APTA-B1/4 (E)	Operational procedures Design Development of CDO (advanced) procedures These procedures should be designed and used as specified in Doc 8168 (PANS-OPS Vol II and I) or equivalent, with reference to Doc 9931 (CDO Manual) ANSP Aircraft operator ~~2019~~ 2022 Operational procedures Design CDO (advanced) procedures validation, approval and publication A flight inspection and/or validation of the procedures might be required before publication. The publication of the procedures should follow Annex 4... read more ANSP CAA ~~2019~~ 2022 Operational procedures Operations SOPs for CDO (advanced) operations Procedures for the crew to follow to facilitate the flying of a CDO. OPS Manual defines SOPs Aircraft operator ~~2019~~ 2022 Operational procedures - Contingencies for CDO (advanced) Procedures for the crew to follow in case of abnormal events. Reference: Ops		Accepted.

		Manual defines SOPs Aircraft operator ~~2019~~ 2022 Airborne system capability Aircraft system Aircraft Capability for CDO (advanced) Eligibility for the applicable PBN navigation specification with vertical navigation (VNAV) capability Reference: Doc 9613 (PBN Manual) Aircraft manufacturer Aircraft operator ~~2019~~ 2022 Ground system infrastructure Navigation NAVAIDS to support the applicable navigation specification used for CDO (advanced) Depending on the navigation specification used, suitable ground based navigational aids will be required. Reference Doc 9613 (PBN Manual). ANSP ~~2019~~ 2022 Training - Training requirements for CDOs (advanced) Crew trained to fly CDOs (advanced) CDO (advanced) training for Air traffic controllers CDO (advanced) training for procedure designers. Referen... read more ANSP Aircraft operator ~~2019~~ 2022		
FA-F-APTA-CR/12	APTA-B1/5 (B)	APTA-~~B1/5~~ B2/x	Change the maturity level of APTA-B1/4 and APTA-B1/5 from "Standardization" to	Accepted.

			"Ready for implementation". Move to Block 2; ready for implementation in 2022	
FA-F-APTA-CR/13	APTA-B1/5 (ML)	Maturity Level: ~~Standardization~~ Ready for implementation		Accepted.
FA-F-APTA-CR/14	APTA-B1/5 (E)	Operational procedures Design Development of CCO (advanced) procedures These procedures should be designed and used as specified in Doc 8168 (PANS-OPS Vol II and I) or equivalent, with reference to Doc 9993 (CCO Manual) ANSP Aircraft operator ~~2019~~ 2022 Operational procedures Design CCO (advanced) procedures validation, approval and publication A flight inspection and/or validation of the procedures might be required before publication. The publication of the procedures should follow Annex 4... read more ANSP CAA ~~2019~~ 2022 Operational procedures Operations SOPs for CCO (advanced) operations Procedures for the crew to follow to facilitate the flying of a CCO. OPS Manual defines SOPs Aircraft operator ~~2019~~ 2022 Operational procedures Operations Contingencies for CCO (advanced)		Accepted.

		Procedures for the crew to follow in case of abnormal events. Reference: Ops Manual defines SOPs Aircraft operator ~~2019~~ 2022 Airborne system capability Aircraft system Aircraft Capability for CCO (advanced) Eligibility for the applicable PBN navigation specification with vertical navigation (VNAV) capability Reference: Doc 9613 (PBN Manual) Aircraft manufacturer Aircraft operator ~~2019~~ 2022 Ground system infrastructure Navigation NAVAIDS to support the applicable navigation specification used for CCO (advanced) Depending on the navigation specification used, suitable ground based navigational aids will be required. See Doc 9613 (PBN Manual) for details. ANSP ~~2019~~ 2022 Training - Training requirements for CCOs (advanced) Crew trained to fly CCOs (advanced). Training to support the CCO concept. ATC trained to provides CCOs (advanced). Training to support the CCO conce... read more ANSP Aircraft operator ~~2019~~ 2022		
FA-F-APTA-	APTA-B2/1 (ML)	Maturity Level: Validation Ready for Implementation	Review the operational	Accepted.

CR/15			procedures enabler date of APTA-B2/1; the amendment of PANS-OPS was in 2021 (suggested by: Ian Knowles) Annex 10 amendment for multi-constellation GNSS was just published, applicability date November 2024. (KM)	
FA-F-APTA-CR/16	APTA-B2/1 (E)	ENABLERS Operational procedures Design GBAS CAT II/III precision approach procedure design and use These procedures should be designed and used as specified in Doc 8168 (PANS-OPS Vol II) or equivalent. ANSP 2025 2021 Ground system infrastructure Navigation Ground based system for GBAS CAT II/III precision approach procedures GBAS Ground Station Ref Annex 10 Vol I Airport operator ANSP 2025 2024		Accepted.
FA-F-APTA-CR/17	APTA-B2/1 (ML)	Maturity Level: Standardization Ready for implementation	Update the maturity level of APTA-B2/3 from "Standardization" to "Ready for implementation", review the enablers' years, and check the possible use of AI/ML (suggested at: ASBU PPT/5). Amendments to PANS-OPS and PANS-AIM on steep	Accepted.

			PinS LPV are applicable November 2024. (KM)	
FA-F-APTA-CR/18	APTA-B2/1 (E)	Training - Training requirements for Helicopter PBN Point in Space (PinS) Crew trained to fly Helicopter PBN Point in Space (PinS) procedures. Ref.: As defined in Doc 8168 (PANS OPS Vol I) Helicopter PBN Point in Space (P... read more ANSP Aircraft operator ~~2013~~ 2014 Operational procedures Design Procedures design for PBN Helicopter Steep Approach Operations These procedures should be designed and used as specified in Doc 8168 (PANS-OPS Vol II and I) or equivalent. ANSP ~~2022~~ 2024 Operational procedures Design Validation, approval and publication of procedures for PBN Helicopter Steep Approach Operations A flight inspection and/or validation of the procedures might be required before publication. The publication of the procedures should follow Annex 4... read more ANSP CAA ~~2019~~ 2024 Operational procedures Operations SOPs for PBN Helicopter Steep Approach Operations Procedures for the crew to follow to fly a PBN		Accepted.

		Helicopter Steep Approach. Defined in the Ops Manual Aircraft operator ~~2019~~ 2024 Operational procedures Operations Contingencies for PBN Helicopter Steep Approach Operations Procedures for the crew to follow in case of abnormal events. Defined in the Ops Manual Aircraft operator ~~2019~~ 2024 Airborne system capability - Aircraft capability for PBN Helicopter Steep Approach Operations Eligibility for the applicable PBN navigation specification (if required) and vertical path capability, as defined in Doc 9613 (PBN Manual) and listed... read more Aircraft manufacturer Aircraft operator ~~2019~~ 2024		
FA-F-APTA-CR/19	APTA-B2/4 (B)	APTA-~~B2/4~~ B3/x		Accepted.
FA-F-APTA-CR/20	APTA-B2/4 (E)	Regulatory provisions National regulatory framework Operational credits Provisions for operational credits to enable lower minima based on advanced aircraft capabilities. Reference: Annex 6 Part I CAA 2013 Operational procedures Operations SOPs for Performance-based Aerodrome Operating Minima (Advanced aircraft with		Accepted.

		SVGS) Procedures for the crew to operate to minima determined by the combination of aircraft equipage and ground infrastructure. Defined in the Ops Manual. Reference: Doc 9365 (AWO Manual) read less Aircraft operator 2024 Operational procedures Operations Contingency procedures for Performance-based Aerodrome Operating Minima (Advanced aircraft with SVGS) Procedures for the crew to follow in case of abnormal events. Defined in the Ops Manual Aircraft operator 2024 Operational procedures Operations ATC procedures for Performance-based Aerodrome Operating Minima (Advanced aircraft with SVGS) Procedures for ATC to use in order to facilitate the use of performance-based minima at aerodromes. Low visibility operating plan for aerodrome ATC ANSP 2024 Operational procedures Operations Aerodrome procedures for Performance-based Aerodrome Operating Minima (Advanced aircraft with SVGS) Procedures for ground operations by aircraft with advanced capabilities		

		Airport operator ~~2024~~ 2028 Airborne system capability Aircraft system Advanced aircraft capability with SVGS SBAS and GBAS as required SVGS and HUD installation Reference: Doc 9365 (AWO Manual) Aircraft manufacturer Aircraft operator 2024 Ground system infrastructure Navigation NAVAIDS to support the intended operation with SVGS Pre threshold terrain information for advanced aircraft operations SBAS/GBAS ground stations (as required) Airport operator ANSP 2024 Training - Training requirements for Performance-based aerodrome operating minima (Advanced Aircraft with SVGS) Crew trained to fly using Performance-based Aerodrome Operating Minima (Advanced aircraft with SVGS) Training on the use of advanced aircraft equipment such as SVGS Reference: Doc 9365 (AWO Manual) ATC trained to understand implications of Performance-based Aerodrome Operating Minima (Advanced aircraft with SVGS) Training for ATC on the application of operational credits for advanced aircraft and the effect on determining minima used by crews. read less		

		ANSP Aircraft operator 2024		
FA-F-APTA-CR/21	APTA-B3/1 (ML)	Maturity Level: ~~Validation~~ Standardization	Review the maturity level and the enablers years of APTA-B3/1 and APTA-B3/2 (suggested by: ASBU PPT/5). PANS-ATM and PANS-OPS do not have any amendment proposed for 2026 related to parallel approaches without vertical guidance. Recommend pushing enablers to 2028 and changing the maturity level to "Standardization" (KM)	Accepted.
FA-F-APTA-CR/22	APTA-B3/1 (D)	Relation-operational benefit APTA ~~B1/1~~ B2/x - PBN Approaches (with advanced capabilities)		Accepted.
FA-F-APTA-CR/23	APTA-B3/1 (E)	Operational Authorization - Operational Authorization for PBN specification Aircraft operator flying a PBN procedure should have an operational authorization related to the specified performance of the procedure, as described in Doc 9997 (PBN Ops Approval Manual). read less CAA Aircraft operator ~~2022~~ 2015 Regulatory provisions National regulatory framework National framework amendment for parallel approaches without vertical guidance National regulation amendment for parallel approaches without vertical		Accepted.

		guidance. References: DOC. 4444 – Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM) read less CAA ~~2026~~ 2028 Operational procedures Design PBN procedures design and use for parallel approaches without vertical guidance. These operational procedures should be designed and used as specified in Doc 8168 (PANS-OPS Vol II and I) or equivalent. ANSP ~~2026~~ 2028 Operational procedures Design PBN procedure validation, approval and publication for parallel approaches without vertical guidance. A flight inspection and/or validation of the procedures might be required before publication. The publication of the procedures should follow Annex ... read more ANSP CAA ~~2026~~ 2028 Operational procedures Design PBN procedure validation, approval and publication for parallel approaches without vertical guidance A flight inspection and/or validation of the procedures might be required before publication. The publication of the procedures should follow Annex ... read more ANSP CAA ~~2026~~ 2028 Operational procedures		

		Operations SOPs for parallel approaches without vertical guidance. Procedures for the crew to follow to fly a PBN approach. Defined in the Ops Manual. Reference: Doc 9613 (PBN Manual) Aircraft operator ~~2026~~ 2028 Operational procedures Operations Contingency procedures for parallel approaches without vertical guidance Procedures for the crew to follow in case of abnormal events. Defined in the Ops Manual. Reference: Doc 9613 (PBN Manual) Aircraft operator ~~2026~~ 2028 Operational procedures Separation Application of separation for parallel approaches without vertical guidance Procedures for separation. Reference: PANS-ATM ANSP ~~2026~~ 2028 Airborne system capability Navigation PBN Approaches (with basic capabilities) PBN Approaches (with basic capabilities) Aircraft manufacturer Aircraft operator 2021 Space system infrastructure - Training requirements for parallel approaches without vertical guidance. Crew trained to fly the procedure. References: As defined in Doc 9613 (PBN		

		Manual). For Air traffic controllers. References: PANS-ATM. ANSP Aircraft operator ~~2026~~ 2028		
FA-F-APTA-CR/24	APTA-B3/2 (ML)	Maturity Level: ~~Validation~~ Standardization	Review the maturity level and the enablers years of APTA-B3/1 and APTA-B3/2 (suggested by: ASBU PPT). Recommend changing the maturity level to "Standardization". PANS-ATM and PANS-OPS do not have any amendment proposed for 2026 related to independent parallel approaches in non-complex environments. Recommend pushing enablers to 2028. (KM)	Accepted.
FA-F-APTA-CR/25	APTA-B3/2 (D)	Relation-operational benefit APTA ~~B1/5~~ B2/x - CCO (Advanced)		Accepted.
FA-F-APTA-CR/26	APTA-B3/2 (E)	Regulatory provisions National regulatory framework National framework amendment for parallel approaches without vertical guidance National regulation amendment for parallel approaches without vertical guidance. References: DOC. 4444 – Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM) read less CAA ~~2026~~ 2028 Operational procedures		Accepted.

		Design PBN procedures design and use for parallel approaches without vertical guidance. These operational procedures should be designed and used as specified in Doc 8168 (PANS-OPS Vol II and I) or equivalent. ANSP ~~2026~~ 2028 Operational procedures Design PBN procedure validation, approval and publication for parallel approaches without vertical guidance. A flight inspection and/or validation of the procedures might be required before publication. The publication of the procedures should follow Annex ... read more ANSP CAA ~~2026~~ 2028 Operational procedures Design PBN procedure validation, approval and publication for parallel approaches without vertical guidance A flight inspection and/or validation of the procedures might be required before publication. The publication of the procedures should follow Annex ... read more ANSP CAA ~~2026~~ 2028 Operational procedures Operations SOPs for parallel approaches without vertical guidance. Procedures for the crew to follow to fly a PBN approach. Defined in the Ops Manual. Reference: Doc 9613 (PBN Manual) Aircraft operator		

		~~2026~~ 2028 Operational procedures Operations Contingency procedures for parallel approaches without vertical guidance Procedures for the crew to follow in case of abnormal events. Defined in the Ops Manual. Reference: Doc 9613 (PBN Manual) Aircraft operator ~~2026~~ 2028 Operational procedures Separation Application of separation for parallel approaches without vertical guidance Procedures for separation. Reference: PANS-ATM ANSP ~~2026~~ 2028 Airborne system capability Navigation PBN Approaches (with basic capabilities) PBN Approaches (with basic capabilities) Aircraft manufacturer Aircraft operator 2021 Space system infrastructure - Training requirements for parallel approaches without vertical guidance. Crew trained to fly the procedure. References: As defined in Doc 9613 (PBN Manual). For Air traffic controllers. References: PANS-ATM. ANSP Aircraft operator ~~2026~~ 2028		

Attachment B
Change Request for New Element

Justification: Suggested for inclusion by the ASBU PPT/5 in June 2023 for Block 3. Consultation with the IFPP and AAM TF determined that there are no enablers or dependencies being planned for a 2031 implementation readiness. Consultation with the Technical Officer for AAM suggested the following updated text for the new element and verified that Block 3 could be achieved but may need to be pushed further back if enablers and dependencies are not in place.

PART 3	**APTA-B3/3**	**Approach procedures to vertiports for crewed VTOL aircraft**							
	Main purpose	Enable VTOL to start or terminate from designated vertiports and vertistops in urban areas and complex airspace environments, or others.							
	New capabilities	Facilitating arrivals to landing locations which would not otherwise support such operations.							
	Description	Basic VTOL operations that include arrival procedures (STARs) within complex terminal airspace; supporting piloted VTOL aircraft, for landing at vertiports and vertistops where heliports are not feasible.							
	Dependencies and relations	Type of dependencies		ASBU Element					
		Evolution	Relation	ID	Title				
			Technology-need	ACAS B2/1	New collision avoidance system				
			Information need	AMET B2/1	Meteorological observations information				
			Information need	AMET B2/2	Meteorological forecast and warning information				
			Information need	DAIM B2/1	Dissemination of aeronautical information in a SWIM environment				
			Information need	SWIM B3/1	Air/Ground SWIM for safety critical information				
			Operational need	ASUR B2/2	New community-based surveillance system for airborne aircraft (low and higher airspace)				
	Human Factors	1. Yes 2. Yes 3. No 4. Yes							
	Operations	Flight phases					Operations		
		Taxi-out	Departure	En-route	Arrival	Taxi-in			
			x		x				
	Planning layers	ATM planning	Strategical	Pre- tactical	Tactical		Post operations		
					Pre ops	During ops			
		x	x			x			
R	**Enablers**								

	Category	Type	Description/Examples	Stakeholder(s)	Year
	Regulatory Provisions	Provision of service	Provisions for publication and operational use of the procedures	ANSP, CAA, Service providers	2028
	Operational Procedures	For procedure design and use	Procedure design and aircraft operations criteria as specified in PANS-OPS or equivalent. Flight inspection	ANSP	2028
		For Operational Approval	Flight validation. Ops Manual defines SOPs, contingencies, Training	Aircraft Operator, CAA	2031
	Airborne System capabilities	Navigation	As defined in the PBN navigation specification	Aircraft operator	2031
	Ground system infrastructure	Land Use	Specifications and criteria for determining location and impact on surrounding communities and operations.	ANSP, CAA, Vertiport / Aerodrome operator	2026
	Training		Procedure designers, Airspace planners, Pilots, Air traffic services	ANSP, Aircraft operator	2031
	Other	Technical specifications	The design of vertiports and vertistops to accommodate various types and sizes of VTOL aircraft.	CAA, Aircraft operator, Vertiport / Aerodrome operator	2031

PART 5	**APTA-B3/3**	**Approach procedures to vertiports for crewed VTOL aircraft**			
	Deployment applicability				
	Operational conditions	Includes urban and complex airspace environments, or other environments where a need is identified.			
	Main intended benefits				
	Type	**Operational description**			**Benefitting stakeholder(s)**
	Direct benefits	Improve access to urban areas through improved navigation systems, surveillance systems and information exchange models.			Airspace user, ANSP
		Cost savings and safety enhancements			Airspace user, ANSP
	Indirect benefits	Airspace capacity enhancement through design flexibility and removal of existing operational restrictions			ANSP
		Enhanced VTOL operations availability and continuity			Airspace user, ANSP
		Environmental improvements			ALL
PART 6	**Intended performance impact on specific KPAs and KPIs**				
	KPA	**Focus Areas**	**KPI**	**KPI impact**	**Most specific performance objective(s) supported**

PART 3

APTA-B4/1	**Approach procedures to vertiports for uncrewed VTOL aircraft**							
Main purpose	Enable VTOL to start or terminate from designated vertiports and vertistops in urban areas and complex airspace environments, or others where a need is identified.							
New capabilities	Facilitating arrivals to landing locations which would not otherwise support such operations.							
Description	Advanced VTOL operations that include arrival procedures, that support uncrewed VTOL aircraft, for landing at vertiports and vertistops.							
Dependencies and relations	Type of dependencies		ASBU Element					
	Evolution	Relation	ID	Title				
		Technology need	ACAS B2/2	New collision avoidance capability as part of an overall detect and avoid system for RPAS				
		Information need	AMET B3/4	Meteorological information service in SWIM				
		Information need	DAIM B2/4	Aeronautical information requirements tailored to UTM				
		Operational need	NOPS B2/7	UTM Network operations				
Human Factors	1. Yes 2. Yes 3. Yes 4. Yes							
Operations	Flight phases						Operations	
	Taxi-out	Departure	En-route	Arrival	Taxi-in			
		x		x				
Planning layers	ATM planning	Strategical	Pre- tactical	Tactical			Post operations	
				Pre ops	During ops			
	x	x			x			

PART 4	Enablers				
	Category	**Type**	**Description/Examples**	**Stakeholder(s)**	**Year**
	Regulatory Provisions	Provision of service	Provisions for publication and operational use of the procedures	ANSP, CAA, Service providers	2037
	Operational Procedures	For procedure design and use	Advanced Procedure design and aircraft operations criteria as specified in PANS-OPS or equivalent. Flight inspection	ANSP	2037
		For Operational Approval	Flight validation. Ops Manual defines SOPs, contingencies, Training	Aircraft Operator, CAA	2037
	Airborne System capabilities	Navigation	As defined in the PBN navigation specification	Aircraft operator	2037
	Ground system infrastructure	Land Use	Specifications and criteria for determining location and impact on surrounding communities and operations.	ANSP, CAA, Vertiport / Aerodrome operator	2037
	Training		Procedure designers, Airspace planners, Pilots, Air traffic controllers	ANSP, Aircraft operator	2037
	Other	Technical specifications	The advanced design of vertiports and vertistops to accommodate various types and sizes of VTOL aircraft.	CAA, Aircraft operator, Vertiport / Aerodrome operator	2037

PART 5	APTA-B4/1	Approach procedures to vertiports for uncrewed VTOL aircraft	
	Deployment applicability		
	Operational conditions	Urban and complex airspace environments, or other environments, based on identified needs.	
	Main intended benefits		
	Type	**Operational description**	**Benefitting stakeholder(s)**
	Direct benefits	Improve access to urban areas through advanced navigation systems, surveillance systems and information exchange models.	Airspace user, ANSP
		Cost savings, safety enhancements	Airspace user, ANSP
	Indirect benefits	Airspace capacity improvements using advanced surveillance technology, information provision and airspace design.	ANSP
		Advanced VTOL operations availability and continuity	Airspace user, ANSP
		Environmental improvements	ALL

PART 6	Intended performance impact on specific KPAs and KPIs				
	KPA	**Focus Areas**	**KPI**	**KPI impac**	**Most specific performance objective(s)**

				t	supported

PART 3	**APTA-B4/2**	**Performance-based operating minima – RPAS with SVGS**				
	Main purpose	Use of advanced technology on RPAS for lower than standard minima on existing procedures. This builds on the Block 3 element for Advanced Aircraft with Synthetic Vision Guidance Systems (SVGS).				
	New capabilities	Facilitating arrivals to landing locations which would not otherwise support such operations.				
	Description	This element builds on the operations for piloted aircraft using SVGS. The use of guidance systems based on synthetic vision provides situational awareness for pilots of RPAS in BVLOS operations.				
	Dependencies and relations	Type of dependencies		ASBU Element		
		Evolution	Relation	ID	Title	
		Evolution		APTA ~~B2/4~~	Performance based aerodrome operating minima – Advanced aircraft with SVGS	

				B3/x				
	Human Factors	1. Yes 2. Yes 3. Yes 4. Yes						
	Operations	Flight phases					Operations	
		Taxi-out	Departure	En-route	Arrival	Taxi-in		
			x		x			
	Planning layers	ATM planning	Strategical	Pre- tactical	Tactical		Post operations	
					Pre ops	During ops		
		x	x			x		

PART 4	**Enablers**				
	Category	**Type**	**Description/Examples**	**Stakeholder(s)**	**Year**
	Regulatory Provisions	Provision of service	Provisions for operational use of enhanced vision systems by RPAS pilots.	CAA	2037
	Operational Procedures	Operations	SOPs for Performance-based Aerodrome Operating Minima (RPAS with SVGS)	RPAS operator	2037
		Operations	Contingency procedures for Performance-based Aerodrome Operating Minima (RPAS with SVGS)	RPAS operator	2037
		Operations	ATC procedures for Performance-based Aerodrome Operating Minima (RPAS with SVGS)	ANSP	2037
		Operations	Aerodrome procedures for Performance-based Aerodrome Operating Minima (RPAS with SVGS)	Aerodrome / vertiport operator	2037
	Airborne System capabilities	Aircraft system	RPAS capability with SVGS	RPAS operator / manufacturer	2037
	Ground system infrastructure	Navigation	NAVAIDS to support the intended operation with SVGS	ANSP, Vertiport / Aerodrome operator	2037
	Training		Training requirements for Performance-based aerodrome operating minima (RPAS with SVGS)	ANSP, RPAS operator	2037

PART 5	**APTA-B4/2**	**Performance-based operating minima – RPAS with SVGS**
	Deployment applicability	
	Operational	

	conditions				
	Main intended benefits				
	Type	**Operational description**			**Benefitting stakeholder(s)**
	Direct benefits				
	Indirect benefits				
PART 6	**Intended performance impact on specific KPAs and KPIs**				
	KPA	**Focus Areas**	**KPI**	**KPI impact**	**Most specific performance objective(s) supported**

Attachment D

List of aviation community options:

CAA	Civil Aviation Authority
ANSP	Air Navigation Service Provider
AIA	Accident Investigation Authority
SAR	Search And Rescue Authority
AO	Aircraft Operator
AM	Aircraft Manufacturer
APO	Airport Operator
ANF	ATM Network Function
MSP	Met Information Service Provider

List of reference options

<Thread>/Block<nbr>	Reference to concept of operations by block eg AMET/Block 4
<element>/MP	Main Purpose of element
<element>/NC	New Capability of element
<element>/DC	Description of element
<element>/ML	Maturity Level of element
<element>/HF	Human Factor Consideration of element
<element>/PL	Planning Layers of element
<element>/OP	Operations of element
<element>/DR	Dependencies and Relations of element
<element>/EN	Enablers of element
<element>/DA	Deployment applicability of element
<element>PI	Performance Impact of element

CHANGE REQUESTS FOR THE ASBU THREAD COMI

- This template shall be used to propose changes to the GANP ASBU Framework
- Only complete Change Requests will be processed
- Change Requests can only be issued by members of the Aviation Community
- Change Requests shall be coordinated in advance with relevant aviation community members
- For proposed changes to existing threads and elements use Attachment A
- For proposed new elements use Attachment B
- For proposed new threads use Attachment C
- Contact <GANP maintenance PoC> for assistance
- Email completed template to ganp@icao.int

Contact details

Name (point of contact)	**Brent Phillips**
Organization	**Federal Aviation Administration (FAA)**
Position	**Senior Systems Engineer**
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Telephone	**+12022672745**
Aviation Community *	**ANSP**
CR coordination**	
Date of submission	**26 January 2024**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**26/1/2024**
CR Status	Accepted
Assigned TL	Brent Phillips

Change request to existing Threads/Elements

Change Request Information

CR ID	Reference*	CR (current text with revision marks)	Justification	Remarks
FA-E-COMI-CR/1	COMI-B1/1 ML	~~Standardization~~ Ready for Implementation		Accepted
FA-E-COMI-CR/2	COMI-B1/3	~~COMI-B1/3~~ SATCOM Class B Voice and Data COM-B2/X	INMARSAT SBB-S using OSI is being used/or will be used Domestically in EUROPE now. However, this is referring to Class B based on IPS and that is just finishing up Standardization and likely won't be available until Block 2.	Accepted
FA-E-COMI-CR/3	COM-B1/4	Aeronautical Mobile Airport Communication System (AeroMACS) Ground-Ground	AeroMACS B1/4 appears to only addresses it as supporting fixed assests. The AeroMACS standards (MOPS and MASPS) are in place now to support mobility and the System could be implemented to do so. It just has not been. .Recommend that AeroMACS B1/4 description be changed to include mobility.	Accepted
FA-E-COMI-CR/4	COMI-B2/1	~~COMI-B2/1~~ Air-Ground ATN/IPS COMI-B3/X	VDL Mode 2 will be the first user of IPS (Unless there are further delays, in which SATCOM Class B will bed offered). The expected dates for implementation in Aircraft of VDL-Mode 2 using IPS is approx.. 2027/2028 with ataComm infrastructure in place to support these A/C in 2029/2030.	Accepted

FA-E-COMI-CR/5	COM-B2/2	~~COM-B2/2~~ Aeronautical Mobile Airport Communication System (AeroMACS) ~~aircraft~~ 5G COM-B3/X	AeroMACS B1/4 appears to only addresses it as supporting fixed assests. The AeroMACS standards (MOPS and MASPS) are in place now to support mobility and the System could be implemented to do so. It just has not been. .Recommend that AeroMACS B1/4 description be changed to include mobility. Then AeroMACS B2/2 should be retitled to AeroMACS 5G. China has started the process of updating the AeroMACS Standards to 5G to support fix and mobile applications. If they are able to accelerate the process it will still take approx.. 4-5 years before they 5G systems are available for operation which would make it 2028-2029. This may be the tail end of Block 2 or the start of Block 3.	Accepted
FA-E-COMI-CR/6	COMI-B2/3 ML	~~Validation~~ to Ready for implementation *Links meeting requirements for non-safety critical communication*		Accepted
FA-E-COMI-CR/7	COMI-B3/1 ML	~~Concept~~ validation	Connectionless is being advanced it Europe sooner than the FAA. I would ask them how far they are along.	Accepted
FA-E-COMI-CR/8	COMI -B3/2	~~COMI-B3/2~~ SATCOM Class A voice and data COMI-B4/X	Brent- "Just like Application/Message Set 3 has not been	Accepted

			defined, is it better to include it in ASBU Block 3 for visibility, or do we just assume that Class A SATCOM will be subsumed by COMI 3/4 Commercial Links supporting Safety Services?" **NO**	
FA-E-COMI-CR/9	COMI -B3/3 EN	COMI -B3/3 L-band Digital Aeronautical Communication System (LDACS) No enablers	No enablers need EUROCONTROL support. ALSO is this a candidate to move to block 4	Accepted
FA-E-COMI-CR/10	COMI – B3/4	COMI – B3/4 ~~Links meeting~~ Performance routing ~~requirements~~ for safety critical Communication COMI – B4/X	**Need to fill in hyperconnectivity and enablers**	Accepted
FA-E-COMI-CR/11	COMI - all	Define sunset dates for the relevant COMI elements	The only elements we may sunset are HFDL and even that may not happen. All the Safety Systems identified in the Block upgrades will remain on the Connected as well as the Hyperconnected aircraft of the future.	Accepted
FA-E-COMI-CR/12	COMI-	Add three new elements in Block 3 as follows: "Performance-based Link Requirements for LLO", "Performance-based Link Requirements for Cooperative Airspace" and "Performance-based Link requirements for HAO".	CR-10 will need to address in purpose	Accepted

Attachment B
Change Request for New Element

Justification: Existing aeronautical air-ground communications have the potential to benefit from recent and emerging advances in satellite and general communications technologies, as industry and research institutions have begun to study ways to improve and enhance air-ground communications.
Introduction of a satellite based VHF existing elements for VHF technologies that includes enhancement of existing VHF technology. This may include the Satellite communication technology to relay VHF communication over satellite (space-based aeronautical VHF)
Expected benefits of these new Satellite based VHF aeronautical communication technologies include improvements in communication capability and performance in oceanic and remote airspace.
These technologies may also increase communication performance and available bandwidth (or channel capacity) for aircraft, airlines and ATM operations. These future VHF technologies will be designed to complement existing terrestrial VHF voice/datalink services and should be fully interoperable with existing VHF infrastructures and avionics.

COMI 4/x Technology	Transmission and Reception of VHF signals between Satellite and aircraft
Main Purpose	To provide communications coverage in locations where ground stations siting is not possible or not currently provided.
New Capabilities	SB VHF provides direct controller-pilot communications capability in airspace where it is not cost-effective or feasible to place ground communications infrastructure
Description	VHF provides ability for pilot and controllers to have direct air-ground voice and data communications. VHF signals from aircraft are transmitted/received from/on one or more orbiting satellites, and this information is passed through a data network to a Service Delivery Point at an Air Traffic Service facility (or facilities).
Maturity Level	Standardization / Validation
Human Factor Considerations	1. Does it imply a change in task by a user or affected others? Yes 2. Does it imply processing of new information by the user? Yes 3. Does it imply the use of new equipment? No for pilots. For controllers depends on the system design 4. Does it imply a change to levels of automation? No for voice. Maybe Yes for data
PLANNING LAYERS? During Tactical	OPERATIONS? enroute
DEPENDENCIES AND RELATIONS? Type of Dependencies	There are currently no dependencies.
Evolution	VHF (evolution of VHF voice and data link)
~~Evolution~~	~~VHF~~
Relational-operational need	

Enablers Category	Enabler Type	Enabler Name	Description / References	Stakeholders	Year
Ground system	Technical systems	HMI that supports	Human Machine Interface (HMI) of the Air Traffic	ANSP	TBD

infrastructure		controller awareness	Controller Working Position (ATCO CWP) Reference: TBD		
Airborne system capability	Communications	Selection of aircraft VHF antenna	Reference: TBD	Aircraft manufacturer Aircraft operator	TBD
Satellite system infrastructure	Communications	VHF radios on orbiting satellites	VHF radios on orbiting satellites receive/transmit information from/to aircraft. Reference: ICAO Annex 10 Volume III TBD RTCA/EUROCAE TBD	SSP/ ANSP	TBD
Ground system infrastructure	Communications	Service Delivery Point(s) for satellite VHF	Service Delivery Point(s) receive and transmit information between satellite and ATS units Reference: TBD	ANSP	TBD
Training	-	Training requirements SB VHF	If this capability is used to apply new separation minima per PANS-ATM, controller training is required. Depending on the ANSP implementation, some controller training on new symbology may be required. If phraseology is changed by an ANSP, then controller and pilot training on the new phraseology is required. If new ANSP equipment is installed, then training for maintenance personnel may be required (see ICAO Doc 8071).	ANSP	TBD

CHANGE REQUESTS FOR THE ASBU THREAD COMS

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- For proposed new threads use Attachment C
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- Email completed template to ganp@icao.int

Contact details

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Aviation Community *	**CAA**
CR coordination**	**OPDLWG**
Date of submission	**24 January 2024**

*CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**24 January 2024**
CR Status	Accepted
Assigned TL	Anthony Stevens

Change request to existing Threads/Elements

Change Request Information

ID Number	Reference*	CR (current text with revision marks)	Justification
FA-E-COMS-CR/1	COMS B1/1 (B)	Changes to element text including enablers removing reference to specific airspace types, RCP 130 and PBCS in the title.	PBCS Manual Edition 3 listed as an enabler. This edition of the manual is yet to published but will meet the Block 2 requirement to be available by end 2025. Reference to PBCS Manual changed. No current requirement for RCP 130.
FA-E-COMS-CR/2	COMS B1/2 (B)	Changes to element text including enablers to reflect the changes made in B1/1	As above
FA-E-COMS-CR/3	COMS B1/3 (B)	Element to be deleted and relevant content moved to Block 2/3.	Satellite Voice Operations Manual (SVOM) Edition 1 listed as an enabler. This manual is yet to be published but will meet the Block 2 requirement to be available by end 2025.
FA-E-COMS-CR/4	COMS B2/1 (EN)	Removal of PBCS from title to be replaced with reference to Baseline 2. Changes to content to remove unnecessary text and change to maturity level. References to PBCS Manual and SVOM editions changed.	PBCS Manual Edition 3 and SVOM Edition 1 yet to be published but will meet the Block 2 requirement to be available by 2025.
FA-E-COMS-CR/5	COMS B2/2 (EN)	Changes to element text, maturity level and enablers to reflect changes to B2/1. .	PBCS Manual Edition 3 and SVOM Edition 1 yet to be published but will meet the Block 2 requirement to be available by end 2025.
FA-E-COMS-CR/6	COMS B2/3 (EN)	Content changed to incorporate relevant parts of the current B1/3 and changes to enablers.	As above for B2/2.
FA-E-COMS-CR/7	COMS B3/1	Removal of reference to A-RNP and move to Block 4	Maturity level still ‘Concept’ and enablers will not be available until circa 2035.
FA-E-COMS-CR/8	COMS B3/2	As for B3/1 above. As for B3/1 above.	As for B3/1 above. As for B3/1 above.

CHANGE REQUESTS TO THE ASBU THREAD CSEP

Contact details

Name (point of contact)	
Organization	
Position	
Email	
Telephone	
Aviation Community *	
CR coordination**	
Date of submission	

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)
**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**7-OCT-2021**
CR Status	Accepter
Assigned TL	Jean-Marc Loscos

Change request to existing Threads/Elements

Change Request Information

CR ID	Reference*	CR (current text with revision marks)	Justification	Remarks
FA-E-CSEP-CR/1	CSEP-B1/3/ML	~~Standardization~~ Ready for Implementation	Standards exist to allow for reduced longitudinal Separation Minima.	Accepted
FA-E-CSEP-CR/2	CSEP-B1/3/DC	~~(Table to be inserted)~~	Suggest removal text. Coordination will take place with appropriate Panel POC to determine if a table is necessary.	Accepted
FA-E-CSEP-CR/3	CSEP-B1/4/ML	~~Standardization~~ Ready for Implementation	Standards exist to allow for reduced longitudinal Separation Minima.	Accepted
FA-E-CSEP-CR/4	CSEP-B3/1/DA	~~CSEP-B3/1~~ CSEP-B4/2	Although hooks are in place in new DATACOM Minimum Operating Performance Standards, the expected timeline for deployment of such equipment falls within Block 4.	Accepted
FA-E-CSEP-CR/5	CSEP-B3/1/EN	~~There are currently no enablers.~~ Recommend adding the following enablers: Enabler 1: Category – Operational Procedures Enabler Type – Operations Enabler Name – Procedures for the use of IM for Complex Geometries Description: PANS ATM/PANS-OPS Interval Management Procedure for Complex Geometries (To be developed) Stakeholders – ANSP & Aircraft Operator Year – 2032	Although the expectation is that many of the enablers for Interval Management will include complex geometries, there may be updates needed based on what is learned from the implementation of CSEP-B2/1.	Accepted

		Enabler 2: Category – Training Enabler Type – Enabler Name – Training Requirements for IM for Complex Geometries Description: Air Traffic Controllers, Pilots Stakeholders – ANSP & Aircraft Operator Year – 2032 Enabler 3: Category – Ground System Infrastructure Enabler Type – ATC systems Enabler Name – ATC Tool for IM for complex geometries Description: Ground tools/capabilities that assist the air traffic controller in issuing ATC clearances to merge and space aircraft safely and efficiently by allowing ATC to use IM clearances for complex geometries Stakeholders – ANSP & Aircraft Operator Year – 2032		
FA-E-CSEP-CR/6	CSEP-B2/2/DA	~~CSEP-B2/2~~ CSEP-B3/4	Moving to reflect expected timeline.	Accepted
FA-E-CSEP-CR/7	CSEP-B2/2	~~Cooperative separation at low altitudes~~ Lowest Airspace Operations (LLO)	Renaming to be in line with the three types of airspace as discussed in fifth proposal to he GANP.	Accepted
FA-E-CSEP-CR/8	CSEP-B2/3/DA	~~CSEP-B2/3~~ CSEP-B3/5	Moving to reflect expected timeline.	Accepted
FA-E-CSEP-CR/9	CSEP-B2/3	~~Cooperative separation at low altitudes~~ Higher Airspace Operations (HAO)	Renaming to be in line with the three types of airspace as discussed in GANP SG.	Accepted
FA-E-	CSEP-B2/1DA	~~CSEP-B2/1~~ CSEP-B3/3	Moving to reflect	Accepted

CSEP-CR/10			expected timeline.	
FA-E-CSEP-CR/11	CSEP-B2/1/EN	Airborne System Capability: Surveillance Year: ~~2014~~ 2027 Navigation Year: ~~2014~~ 2028 Training Year: ~~2019~~ 2025	Surveillance: DO-317B are currently being actively worked on and expected within the next 3 years. Navigation: Manufacturers are working on additional aircraft integration. Hooks have been put in place to tie in DATACOM functionality which step towards further aircraft integration. Training: training material has been developed but is currently being assessed and may be adapted.	Accepted

CHANGE REQUESTS TO THE ASBU THREAD DAIM

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Contact details

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Aviation Community *	**CAA**
CR coordination**	**ICAO IMP AIM Working Group**
Date of submission	**25/01/2024**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment A for options/abbreviations)
**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	25/01/2024
CR Status	Accepted/Initial assessment
Assigned TL	Louise Alberts

Change request to existing Threads/Elements

Change Request Information

CR ID	Reference*	CR (current text with revision marks)	Justification	Remarks
FA-E-DAIM-CR/1	DAIM/B1-1/ML	Maturity level: ~~Standardization~~ Ready for implementation	States should have commenced implementing processes to deliver quality assured aeronautical data and information.	Accepted
FA-E-DAIM-CR/2	DAIM/B1-2/EN7	Enabler category: Information exchange model Enabler name: Aeronautical Information Exchange Model (AIXM) v 5.1 or higher	States should be made aware that later version of AIXM will be enablers and that previous versions of AIXM (i.e. 4.5) will be unsupported and phased out in Block 2.	Accepted
FA-E-DAIM-CR/3	DAIM/B1-4/EN	Enabler category: Information exchange model Enabler name: Aeronautical Information Exchange Model (AIXM) v 5.1 or higher	States should be made aware that later version of AIXM will be enablers and that previous versions of AIXM (i.e. 4.5) will be unsupported and phased out in Block 2.	Accepted
FA-E-DAIM-CR/4	DAIM/B1-5/EN	Enabler category: Information exchange model Enabler name: Aeronautical Information Exchange Model (AIXM) v 5.1 or higher	States should be made aware that later version of AIXM will be enablers and that previous versions of AIXM (i.e. 4.5) will be unsupported and phased out in Block 2.	Accepted
FA-E-DAIM-CR/5	DAIM/B1-6/EN	Enabler category: Information exchange model Enabler name: Aeronautical Information Exchange Model (AIXM) v 5.1 or higher	States should be made aware that later version of AIXM will be enablers and that	Accepted

			previous versions of AIXM (i.e. 4.5) will be unsupported and phased out in Block 2.	
FA-E-DAIM-CR/6	DAIM/ B1-7/EN	Enabler category: Information exchange model Enabler name: Aeronautical Information Exchange Model (AIXM) v 5.1 or higher	States should be made aware that later version of AIXM will be enablers and that previous versions of AIXM (i.e. 4.5) will be unsupported and phased out in Block 2.	Accepted
FA-E-DAIM-CR/7	DAIM/ B2-1/EN	Enabler category: Information exchange model Enabler name: Aeronautical Information Exchange Model (AIXM) v 5.1 or higher	States should be made aware that later version of AIXM will be enablers and that previous versions of AIXM (i.e. 4.5) will be unsupported and phased out in Block 2.	Accepted
FA-E-DAIM-CR/8	DAIM/ B2-3/EN	Enabler category: Information exchange model Enabler name: Aeronautical Information Exchange Model (AIXM) v 5.1 or higher	States should be made aware that later version of AIXM will be enablers and that previous versions of AIXM (i.e. 4.5) will be unsupported and phased out in Block 2.	Accepted
FA-E-DAIM-CR/9	DAIM/ B2-4/EN	Enabler category: Information exchange model Enabler name: Aeronautical Information Exchange Model (AIXM) v 5.1 or higher	States should be made aware that later version of AIXM will be enablers and that previous versions of AIXM (i.e. 4.5) will be unsupported and phased out in Block 2.	Accepted
FA-E-DAIM-	DAIM/ B2-	Enabler category: Information exchange model Enabler name:	Ongoing transition to the	Accepted

CR/10	1/EN	Aeronautical Information Exchange Model (AIXM) v 5.~~x~~2 or higher	latest version of AIXM should be encouraged as part of the compliance obligations for a State, noting that v4.5 will be phased out.	
FA-E-DAIM-CR/11	DAIM/ B2-2/EN	Enabler category: Information exchange model Enabler name: Aeronautical Information Exchange Model (AIXM) v 5.~~x~~2 or higher	Ongoing transition to the latest version of AIXM should be encouraged as part of the compliance obligations for a State, noting that v4.5 will be phased out.	Accepted
FA-E-DAIM-CR/12	DAIM/ B2-3/EN	Enabler category: Information exchange model Enabler name: Aeronautical Information Exchange Model (AIXM) v 5.~~x~~2 or higher	Ongoing transition to the latest version of AIXM should be encouraged as part of the compliance obligations for a State, noting that v4.5 will be phased out.	Accepted
FA-E-DAIM-CR/13	DAIM/ B2-4/EN	Enabler category: Information exchange model Enabler name: Aeronautical Information Exchange Model (AIXM) v 5.~~x~~2 or higher	Ongoing transition to the latest version of AIXM should be encouraged as part of the compliance obligations for a State, noting that v4.5 will be phased out.	Accepted
FA-E-DAIM-CR/14	DAIM/ B2-3	Move entire element to Block 4	The maturity of these operations requires this element to be moved to Block 4.	Accepted
FA-E-DAIM-CR/15	DAIM/ B2-4/MP	Main Purpose: To provide low altitude airspace management information in a ~~UAS~~ Unmanned Aircraft Systems (UAS) Traffic Management (UTM)	The term UAS is not spelled out, different States use different	Accepted

		service that is complementary to standard AIS.	names for UAS operations/lower airspace operations.	
FA-E-DAIM-CR/16	DAIM/ B2-4	Name: Aeronautical information requirements tailored to ~~UTM~~ lower airspace operations	To include future requirements it is needed to allow this unit to include lower airspace operations.	Accepted
FA-E-DAIM-CR/17	DAIM/ B2-4/ML	Maturity level: ~~Validation~~ Standardization	States should have started to focus on the defining provisions that are necessary to be ready for implementation next.	Accepted
FA-E-DAIM-CR/18	DAIM/ B2-4	Move entire element to Block 3	The maturity of these operations requires this element to be moved to Block 3	Accepted
FA-E-DAIM-CR/19	DAIM/ B2-5	Move entire element to Block 3	The maturity of these operations requires this element to be moved to Block 3. It is noted that the NOTAM replacement concept will consider AI/ML and any consequential changes to the ASBU	Accepted

CHANGE REQUESTS TO THE ASBU THREAD DATS

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Contact details

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Aviation Community *	**IO**
CR coordination**	**Within the Digital Aerodrome ATS Working Group of the Air Traffic Management Operations Panel**
Date of submission	**20 February 2024**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**20 February 2024**
CR Status	Accepted
Assigned TL	Katariina Syväys

Change request to existing Threads/Elements

Change Request Information

CR ID	Reference*	CR (current text with revision marks)	Justification	Remarks
FA-E-RATS-CR/1	<DATS B1/1> MP	To provide ATS at aerodromes not from a traditional on-site ~~tower~~ building, but remotely from either a local or a ~~distant~~ different location. The service provided may be an aerodrome control service or an aerodrome flight information service (AFIS) as appropriate.	Terminology should align to ICAO. AFIS is not necessarily provided from a "tower".	Accepted.
FA-E-RATS-CR/2	<DATS B1/1> NC	Provision of ~~an aerodrome~~ ATS at an aerodrome ~~from a remote location~~ using ~~digital video or~~ a visual surveillance ~~technologies, or non-surveillance procedures~~ system.	Terminology should align to ICAO. There is no defined service called "aerodrome ATS". "Visual surveillance system" is defined in PANS-ATM. DATS could be used at an on-aerodrome ATS unit, as well.	Accepted.
FA-E-RATS-CR/3	<DATS B1/1> DC	This element represents the provision of Aerodrome Control or Aerodrome Flight Information Services (AFIS) at aerodromes, including from other than an on-site facility~~. This could be achieved~~ by utilizing ~~either video~~ a visual surveillance system, ~~digital surveillance,~~ and procedural processes~~, or a combination thereof, which is~~ commensurate with the complexities and traffic demands at the aerodrome(s). DATS technology can augment line-of-sight views at an on-site facility and/or enable service provision from a different location. A ~~Remote Tower~~	Terminology should align to ICAO. DATS requires the use of a visual surveillance system. DATS could be used at an on-aerodrome ATS unit, as well.	Accepted.

		~~Centre (RTC)~~ DATS centre ~~will~~ could be remotely connected to one or more aerodromes and consist of one or more ~~Controller W~~working ~~P~~positions ~~(CWP)~~, dependent on the requirements of the connected aerodrome(s).		
FA-E-RATS-CR/4	<DATS B1/1> HF	1. Does it imply a change in task by a user or affected others? Yes 2. Does it imply processing of new information by the user? Yes 3. Does it imply the use of new equipment? Yes 4. Does it imply a change to levels of automation? ~~Yes~~ No	The manner of viewing the area of responsibility is the change. This does not necessarily affect the "level" of automation required to provide the services, although automating certain functions would likely occur consequential to setting up a new unit in a new location (using the opportunity to make other improvements at the same time)	Accepted.
FA-E-RATS-CR/5	<DATS B1/1> DA Operational conditions	Provide ATS for an aerodrome which due to its location has limited support living facilities for staff and results in increased overall operational costs to build and maintain a conventional on-site tower. Provide a contingency ~~ATC Tower F~~facility ~~from a remote tower~~ in the event the regular on-site ~~tower~~ facility is unavailable. A DATS facility may be sited at a location which is ideally located to provide better living conditions for operational staff. Providing a remote facility may enable substantial cost savings in	Terminology should align to ICAO. AFIS is not necessarily provided from a "tower".	Accepted.

		construction. The deployment may enable provision of ATS at aerodromes where it would otherwise be uneconomical or unsustainable. DATS could be used in conjunction with other technologies, such as ATS surveillance, to provide various levels of situational awareness of the aerodrome traffic. Cost-effectively augment line-of-sight views from a conventional ATS facility located at an aerodrome. ~~Provide an ATC Tower Facility from a remote tower located on the aerodrome or within close proximity to the aerodrome as the main facility which may enable a more cost effective and efficient service compared to that of a conventional tower facility.~~		
FA-E-RATS-CR/6	<DATS B1/1> DA Main intended benefits	Direct Benefits: Facility construction, equipage and maintenance cost benefits. Possibility to reduce ~~Minimise~~ costs ~~to Aerodromes~~ for provision of ATS ~~Services~~ at a low traffic density aerodromes. Staffing benefits. Benefitting Stakeholders: ANSP CAA, APO, ANSP and/or aerodrome users who pay the costs Direct Benefits: Safety and ~~S~~service ~~I~~improvement through use of ~~digital cameras and~~ visual surveillance systems to provide an improved level of surveillance as compared	Terminology should align to ICAO. AFIS is not necessarily provided from a "tower". It is not necessarily "the aerodrome" who pays for the ATS facilities at an aerodrome.	Accepted.

		to a conventional ~~tower~~ facility with basically only direct out of the window surveillance and possible limitations to viewing all relevant parts of an aerodrome or its associated ~~circuit~~ manoeuvring area ~~or~~ and airspace. Some visual surveillance systems can mitigate degraded visibility due to weather and/or darkness. Benefitting Stakeholders: ANSP Aerodrome users Direct Benefits: Possibility to reduce ~~Minimise~~ costs ~~to Aerodromes~~ for provision of ATS ~~Services~~ at low traffic density aerodromes. Reduced ATS and Maintenance staff requirements. Benefitting Stakeholders: ANSP CAA, APO, ANSP and/or aerodrome users who pay the costs Direct Benefits: Enabling options to ~~combine~~ provide ATS for multiple aerodromes ~~ATS~~ from one ATS facility. Benefitting Stakeholders: ANSP Direct Benefits: Enabling ATS provision at new locations which were previously uneconomical or unsustainable. Benefitting Stakeholders: Airspace user Direct Benefits: Improve situational awareness of ATCO and AFISO. Benefitting Stakeholders: ANSP Direct Benefits: Enabling ATS provision at new locations which were		

		previously uneconomical or unsustainable. Benefitting Stakeholders: Airspace user Indirect Benefits: Staffing and Human Resources benefits through options for ATS Facility being located in easily assessable areas with better access to facilities such as schools, shops and hospitals. Benefitting Stakeholders: ANSP ATCOs AFISOs		

Attachment B
Change Request for New Element - 1 of 2

Justification: Plans are on-going in at least two regions (including Sweden, Norway, Canada and Brazil) to implement "multiple-mode" AFIS using DATS technology. It seems likely that implementation will be mature enough to support others using the technology, training and procedures in a similar fashion within the Block 3 timeframe.

Proposed DATS-3/1

PART 3	DATS-B3/1	AFIS for multiple aerodromes
	Main purpose	For an Aerodrome Flight Information Services Officer (AFISO) to provide Aerodrome Flight Information Services (AFIS) to multiple aerodromes.
	New capabilities	Advanced procedures, DATS and other technology enable the AFISO to maintain situational awareness of more than one aerodrome and all related operational and meteorological conditions so as to safely provide AFIS to traffic operating on the manoeuvring areas of, and in the vicinity of, those aerodromes.
	Description	The AFISO may use DATS to provide a visual presentation of the area of responsibility at a single aerodrome, or of more than one aerodrome. This capability enhances the efficiency of the AFIS provision, thereby safely enabling a "multiple mode of operation", commensurate with the complexity and level of traffic at the aerodromes concerned. The Aerodrome Operations Plans (AOP) of such aerodromes should take account of the possibility that an AFISO may need to prioritize between aerodromes when providing services. The availability of ATS surveillance and/or surface movement ATS surveillance could further enhance the safety and efficiency of the AFIS provided. Meteorological reports for the aerodromes could be provided using automated weather observation equipment and/or on-site personnel to augment the observations of the AFISOs using the visual surveillance system(s), or meteorological reports for the aerodromes could be provided through on-site means (i.e. automated equipment and/or on-site personnel).

		Maturity Level: Validation **Human Factor Considerations:** **1. Does it imply a change in task by a user or affected others?** Yes **2. Does it imply processing of new information by the user?** Yes **3. Does it imply the use of new equipment?** Yes **4. Does it imply a change to levels of automation?** No

		Type of dependencies		ASBU element	
		Evolution	Relation	ID	Title
	Dependencies and relations	DATS-B1/1	Technology Benefit	ASUR-B0/1	Automatic Dependent Surveillance - Broadcast (ADS-B)
			Technology Benefit	ASUR-B0/2	Multilateration cooperative surveillance systems (MLAT)
			Operational Benefit	SURF-B0/1	Basic ATCO tools to manage traffic during ground operations
			Operation	ACDM B2/1	Airport Operations Plan
			Operation	B2/2	Airport Operations Centre

		Flight phases					Turn-around
	Operations	Taxi-out	Departure	En-route	Arrival	Taxi-in	
		✓	✓		✓	✓	

					Tactical		
	Planning layers	ATM planning	Strategical	Pre- tactical	Pre ops	During ops	Post operations
				✓	✓	✓	

	Enablers			
PART 4	**Category**	**Type**	**Description/Examples**	**Stakeholder(s)**
	Regulatory Provisions	Certification, Operational Approval	Approval of visual surveillance system(s) for the purpose	CAA - 2026
	Operational	Regular	Procedures for prioritizing tasks between	CAA, ANSP,

	Procedures	operations	aerodromes and for increasing or decreasing the number of aerodromes served by a single AFISO	Aerodrome Operator - 2026
		Regular operations	DATS centre supervisor procedures/duties	ANSP - 2026
	Airborne System capability			
	Ground system infrastructure		DATS centre with working positions enabling adequate access to meteorological information, aeronautical information, operational status of aerodrome and runway conditions, situation display(s) for the visual surveillance system(s), communications systems, and (if available) situation displays for ATS surveillance and/or surface movement ATS surveillance systems	ANSP - 2024
			On-site equipment and sensors to provide the information required by the AFISO	Aerodrome Operator - 2024
	Training	Training for the provision of AFIS to multiple aerodromes		CAA, ANSP - 2026
	Other			

Proposed DATS-B3/1 applicability, benefit and performance analysis

PART 5	**DATS-B3/1**	**AFIS for multiple aerodromes**	
	Deployment applicability		
	Operational conditions	Provide AFIS for aerodromes which, due to traffic levels and/or locations, might otherwise not be feasible candidates for full-time and/or on-site AFISOs. The ability to provide timely extra support if required due to the availability of other staff at the DATS centre. The ability to provide timely business resumption in the case of a technical failure due to the availability of other working positions at the DATS centre. The ability to provide timely contingency services in the case of a technical failure at an on-aerodrome AFIS unit.	
	Main intended benefits		
	Type	**Operational description**	**Benefitting stakeholder(s)**
	Direct benefits	Enabling options for AFIS units to be established at cost effective, accessible locations.	AFISOs, ANSPs
		Availability of support from other personnel at the DATS centre to assist with unexpected workload and emergency situations	AFISOs, Aerodrome Users
		Enabling options for AFIS to be established and/or maintained for aerodromes which are cost-prohibitive due to location and/or low traffic levels	ANSPs, Aerodrome users
		Increased technical resilience and enabling timely business	ANSPs, Aerodrome users

		resumption in the case that a technical failure affecting the provision of services for an aerodrome due to availability of other working positions and staff.	
	Indirect benefits	Social and professional benefit of working with a larger group of colleagues, rather than alone or in a limited group, in a conventional on-site facility. The possibility to advance professionally to take on more challenging and complex AFISO tasks. Less boredom and low engagement due to low traffic levels and complexity, due to the ability to balance workload and complexity by varying the number of aerodromes served by a single AFISO.	AFISOs

	Intended performance impact on specific KPAs and KPIs				
	KPA	**Focus Areas**	**KPI**	**KPI impact**	**Most specific performance objective(s) supported**
PART 6	Capacity	Capacity, throughput & utilization	KPI 06: En-route airspace capacity		
			KPI 09: Airport peak arrival capacity		
			KPI 10: Airport peak arrival throughput		
			KPI 11: Airport arrival capacity utilization		
		Capacity shortfall & associated delay	KPI 07 : En-route ATFM delay		
			KPI 12: Airport/terminal ATFM delay		
	Efficiency	Additional flight time & distance	KPI 02: Taxi-out additional time		
			KPI 04: Filed flight plan en-route extension		
			KPI 05: Actual en-route extension		
			KPI 08 : Additional time in terminal airspace		
			KPI 13: Taxi-in additional time		
		Vertical flight efficiency	KPI 17: Level-off during climb*		
			KPI 18: Level capping during cruise*		
			KPI 19: Level-off during descent*		

* Indicators not in the GANP 2016 and propose for the GANP 2019

		Additional fuel burn	KPI 16: Additional Fuel burn		
	Predictability	Punctuality	KPI 01: Departure Punctuality		
			KPI 14: Arrival punctuality		
			KPI 03: ATFM slot adherence		
		Variability	KPI 15: Flight time variability		
	Other objectives from the catalogue that do not contribute to the KPIs above				

Change Request for New Element - 2 of 2

Justification: Plans are on-going in at least two regions (including Sweden, Norway, Canada and Brazil) to implement "multiple-mode" aerodrome control using DATS technology. It seems feasible that implementation will be mature enough to support others using the technology, training and procedures in a similar fashion within the Block 4 timeframe.

Proposed DATS-4/1

PART 3	DATS-B4/1	Aerodrome control for multiple aerodromes			
	Main purpose	For an aerodrome controller to provide aerodrome control to multiple aerodromes.			
	New capabilities	Advanced procedures, DATS and other technology enable the aerodrome controller to maintain situational awareness of more than one aerodrome and all related operational and meteorological conditions so as to safely provide aerodrome control services to traffic operating on the manoeuvring areas of, and in the vicinity of, those aerodromes.			
	Description	The aerodrome controller may use DATS to provide a visual presentation of the area of responsibility at a single aerodrome, or of more than one aerodrome. This capability enhances the efficiency of the aerodrome control service provided, thereby safely enabling a "multiple mode of operation", commensurate with the complexity and level of traffic at the aerodromes concerned. The Aerodrome Operations Plans (AOP) of such aerodromes should take account of the possibility that an aerodrome controller may need to prioritize between aerodromes when providing services. The availability of ATS surveillance and/or surface movement ATS surveillance could further enhance the safety and efficiency of the services provided. **Maturity Level:** Concept **Human Factor Considerations:** **1. Does it imply a change in task by a user or affected others?** Yes **2. Does it imply processing of new information by the user?** Yes **3. Does it imply the use of new equipment?** Yes **4. Does it imply a change to levels of automation?** No			
	Dependencies and relations	Type of dependencies		ASBU element	
		Evolution	Relation	ID	Title
		DATS-B1/1	Technolo	ASUR-	Automatic Dependent Surveillance - Broadcast (ADS-B)

			gy Benefit Technology Benefit Operational Benefit Operation Operation	B0/1 ASUR-B0/2 SURF-B0/1 ACDM B2/1 B2/2	 Multilateration cooperative surveillance systems (MLAT) Basic ATCO tools to manage traffic during ground operations Airport Operations Plan Airport Operations Centre

Operations	Flight phases					Turn-around
	Taxi-out	Departure	En-route	Arrival	Taxi-in	
	✓	✓		✓	✓	

Planning layers	ATM planning	Strategical	Pre- tactical	Tactical		Post operations
				Pre ops	During ops	
			✓	✓	✓	

PART 4

Enablers

Category	Type	Description/Examples	Stakeholder(s)
Regulatory Provisions	Certification, Operational Approval	Approval of visual surveillance system(s) for the purpose	CAA - 2031
Operational Procedures	Regular operations	Procedures for prioritizing tasks between aerodromes and for increasing or decreasing the number of aerodromes served by a single aerodrome controller	CAA, ANSP, Aerodrome Operator - 2032
	Regular operations	DATS centre supervisor procedures/duties	ANSP - 2026
Airborne System capability			
Ground system infrastructure		DATS centre with working positions enabling adequate access to meteorological information, aeronautical information, operational status of aerodrome and runway conditions, situation display(s) for the visual surveillance system(s), communications systems, and (if available) situation displays for ATS surveillance and/or	ANSP - 2024

			surface movement ATS surveillance systems	
			On-site equipment and sensors to provide the information required by the ATCO	Aerodrome Operator - 2024
	Training	Training for the provision of ~~AFIS~~ ATC to multiple aerodromes		CAA, ANSP - 20~~2630~~
	Other	Training, Licencing and Rating requirements for Aerodrome Controllers to provide services to more than one aerodrome		CAA, Licencing Authority - 2032

Proposed DATS-4/1 applicability, benefit and performance analysis

PART 5	**DATS-B4/1**	**AFIS for multiple aerodromes**		
	Deployment applicability			
	Operational conditions	Provide aerodrome control services for aerodromes which, due to traffic levels and/or locations, might otherwise not be feasible candidates for full-time and/or on-site control tower. The ability to provide timely extra support if required due to the availability of other staff at the DATS centre. The ability to provide timely business resumption in the case of a technical failure due to the availability of other working positions at the DATS centre. The ability to provide timely contingency services in the case of a technical failure at an on-aerodrome control tower.		
	Main intended benefits			
	Type	**Operational description**		**Benefitting stakeholder(s)**
	Direct benefits	Enabling options for control towers to be established at cost effective, accessible locations.		ATCOs, ANSPs
		Availability of support from other personnel at the DATS centre to assist with unexpected workload and emergency situations		ATCOs, Aerodrome Users
		Enabling options for aerodrome control services to be established and/or maintained for aerodromes which are cost-prohibitive due to location and/or low traffic levels		ANSPs, Aerodrome users
		Increased technical resilience and enabling timely business resumption in the case that a technical failure affecting the provision of services for an aerodrome due to availability of other working positions and staff.		ANSPs, Aerodrome users
	Indirect benefits	Social and professional benefit of working with a larger group of colleagues, rather than alone or in a limited group, in a conventional on-site aerodrome control tower. The possibility to advance professionally to take on more challenging and complex aerodrome control tasks. Less boredom and low engagement due to low traffic levels and complexity, due to the ability to balance workload and complexity by varying the number of aerodromes served by a single ATCO.		ATCOs
PART 6	**Intended performance impact on specific KPAs and KPIs**			
	KPA	**Focus Areas**	**KPI**	**KPI impact**	**Most specific performance objective(s) supported**

	Capacity	Capacity, throughput & utilization	KPI 06: En-route airspace capacity		
			KPI 09: Airport peak arrival capacity		
			KPI 10: Airport peak arrival throughput		
			KPI 11: Airport arrival capacity utilization		
		Capacity shortfall & associated delay	KPI 07 : En-route ATFM delay		
			KPI 12: Airport/terminal ATFM delay		
	Efficiency	Additional flight time & distance	KPI 02: Taxi-out additional time		
			KPI 04: Filed flight plan en-route extension		
			KPI 05: Actual en-route extension		
			KPI 08 : Additional time in terminal airspace		
			KPI 13: Taxi-in additional time		
		Vertical flight efficiency	KPI 17: Level-off during climb*		
			KPI 18: Level capping during cruise*		
			KPI 19: Level-off during descent*		
		Additional fuel burn	KPI 16: Additional Fuel burn		
	Predictability	Punctuality	KPI 01: Departure Punctuality		
			KPI 14: Arrival punctuality		
			KPI 03: ATFM slot adherence		
		Variability	KPI 15: Flight time variability		
	Other objectives from the catalogue that do not contribute to the KPIs above				

* Indicators not in the GANP 2016 and propose for the GANP 2019

CHANGE REQUESTS TO THE ASBU THREAD FICE

- This template shall be used to propose changes to the GANP ASBU Framework
- Only complete Change Requests will be processed
- Change Requests can only be issued by members of the Aviation Community
- Change Requests shall be coordinated in advance with relevant aviation community members
- For proposed changes to existing threads and elements use Attachment A
- For proposed new elements use Attachment B
- For proposed new threads use Attachment C
- Contact <GANP maintenance PoC> for assistance
- Email completed template to ganp@icao.int

Contact details

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Aviation Community *	**ANSP**
CR coordination**	**ATMRPP Chair and Secretary**
Date of submission	**20 January 2024**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**20 January 2024**
CR Status	Accepted
Assigned TL	Steve Bradford

Change request to existing Threads/Elements

Change Request Information

CR ID	Reference*	CR (current text with revision marks)	Justification	Remarks
FA-E-FICE-CR/1	FICE-2/1 /EN	(FIXM) Version 4.~~2.~~3.0 20~~20~~23	New version	Accepted
FA-E-FICE-CR/2	FICE-2/2 /EN	(FIXM) Version 4.~~2.~~3.0 20~~20~~23	New version	Accepted
FA-E-FICE-CR/3	FICE-2/3 /EN	(FIXM) Version 4.~~2.~~3.0 20~~20~~23	New version	Accepted
FA-E-FICE-CR/4	FICE-2/4 /EN	(FIXM) Version 4.~~2.~~3.0 20~~20~~23	New version	Accepted
FA-E-FICE-CR/5	FICE-2/5 /EN	(FIXM) Version 4.~~2.~~3.0 20~~20~~23	New version	Accepted
FA-E-FICE-CR/6	FICE-2/6 /EN	(FIXM) Version 4.~~2.~~3.0 20~~20~~23	New version	Accepted
FA-E-FICE-CR/7	FICE-2/1 /ML	~~Validation~~ Ready for implementation	Update maturity level (ASBU PPT/5)	Accepted
FA-E-FICE-CR/8	FICE-2/2 /ML	~~Validation~~ Ready for implementation	Update maturity level (ASBU PPT/5)	Accepted
FA-E-FICE-CR/9	FICE -2/7	~~FICE2/7~~ FICE3/2	Renumber due to delay. Only moved to block 3 due to the intense effort on low and middle altitudes.	Accepted
FA-E-FICE-CR/10	FICE-3/2	~~FICE-B2/7 Flight information management service for higher airspace operations~~ FICE-FICE-B3/X Flight information management service for new entrants in designated airspace	The addition of a third category of new entrants implies the unique solutions. ATMRPP prefers one element that can be supported by FF-ICE provisions.	Accepted
FA-E-FICE-CR/11	FICE-3/2 /MP	~~FICE-B2/7~~: ~~Higher~~: Designated airspace operations will have a different multi-national flavour worldwide. The FF-ICE capabilities support a strategic collaborative flight planning environment that will support the common	Making it consistent with single element	Accepted

		elements of the individual flavours.		
FA-E-FICE-CR/12	FICE-3/2 DC	~~FICE-B2/7~~: A ~~joint multi-national~~ capability to support operations ~~at these altitudes~~ in the designated (higher , middle altitude, lower) airspace provides for strategic separation based on shared intent. ~~Vehicles at these altitudes~~ Aircraft exhibit the widest range of operational conditions. They share in common the ability to provide ~~long-term~~ precise intent which allows for flight planning that support strategic conflict management. This ability to share ~~long term~~ strategic intent ~~as well as the lower number of participants~~ allows this operational capability to be a shared responsibility ~~as opposed to a centralized command and control state or regional based function.~~		Accepted
FA-E-FICE-CR/13	FICE-3/2 /EN	**No change to enablers at this point**	Generic enablers	Accepted
FA-E-FICE-CR/14	FICE-2/8	~~FICE-B2/8~~ delete	Per previous discussion	Accepted
FA-E-FICE-CR/15	FICE-2/9	~~FICE-B2/9~~ FICE-B3/3: Flight information management support for inflight re-planning	Renumber due to delay. ATMRPP wishes to only move ti block 3 as they advance FF-ICE R2	Accepted
FA-E-FICE-CR/16	FICE-3/3 EN	All enablers dated 2025 20~~25XX~~	Secretary advising on new dates	Accepted
FA-E-FICE-CR/17	FICE-3/3 MP	To enable ~~aircraft operators~~ airspace users and ATM service providers to coordinate ~~the reoptimization of flights~~ inflight replanning based upon changing circumstances. Trajectory changes are limited to those occurring ~~beyond~~ within an operationally appropriate trajectory segments ~~horizon.~~	Update to be consistent with FF-ICE nomenclature.	Accepted

		Service providers (ATFM functions) provide full constraint evaluation on proposed changes.		
FA-E-FICE-CR/18	FICE-3/3 /NC	~~Operator constraints that the ATM service provider can consider when re-planning.~~	Not consistent with draft FF-ICE R2	Accepted
FA-E-FICE-CR/19	FICE –3/1/NC	FICE-B3/1: ~~Support for flight specific, dynamic constraint and separation application considering operator constraints, preferences and capabilities~~	This capability is a stretch for block 3. Removed and added to updated FICE-4/1With this deletion ATMRPP feels the rest of FICE-3/1 may be ready for block 3	Accepted.
FA-E-FICE-CR/20	FICE-4/1 //MP	FICE-B4/1: In this step, each actor will be seen as a system node, source of and user of information. Flight information service support end-to-end global flight management in planning and replanning that are supported by restriction definitions which are more accurate in time and position. Replanning of the trajectory will be minimized due to the increased use of AI/ML processing capability to establish the improved restriction definition and forecast.	The next step capabiltiy	Accepted.
FA-E-FICE-CR/21	FICE-4/1/ NC	FICE-B4/1: Support for flight-specific, dynamic constraint and separation application considering operator constraints, preferences and capabilities.	Moved from FICE3/1	Accepted.
FA-E-FICE-CR/22	FICE– 4/2	FICE– ~~4/2~~ 5/1	Moved for redefinition	Accepted.
FA-E-FICE-CR/23	FICE – 5/1 /MP		Need to coordinate if this is when all flight and flow is harmonised across all entrants existing and new	Accepted.

CHANGE REQUESTS FOR THE ASBU THREAD FRTO

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Contact details

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Aviation Community *	**ANF**
CR coordination**	**Coordinated during PPT/6**
Date of submission	**31 JAN 2024**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**31 JAN 2024**
CR Status	Accepted
Assigned TL	Tihomir Todorov

Change request to existing Threads/Elements

Change Request Information

Reference*	Reference*	CR (current text with revision marks)	Justification	Remarks
FA-E-FRTO-CR/1	FRTO-B0/1/MP	… fixed ATS route network.	Adaptation to ICAO SARPs terms.	Accepted.
fA-E-FRTO-CR/2	FRTO-B0/1/EN	Description / References: Operational procedures Design and use of operational procedures for direct routes. Reference: ~~EUROCONTROL European Route Network Improvement Plan (ERNIP) – Part 1: European Airspace Design Methodology – Guidelines - Edition December 2018 (https://www.eurocontrol.int/publications/european-route-network-improvement-plan-ernip-part-1-european-airspace-design)~~ **EUROCONTROL European Route Network Improvement Plan (ERNIP) - Part 1** Airspace Design Methodology Guidelines - General Principles and Technical Specifications for Airspace Design Ground system infrastructure - ATM systems **Chapter 1** ATC systems to be upgraded for DCT clearances, notification and co-ordination data exchanges and management of relevant airspace data. **Chapter 2** Reference: ~~EUROCONTROL specification for the on-line Data exchanges (OLDI) https://eurocontrol.int/sites/default/files/publication/files/EUROCONTROL%20Specification%20OLDI%204.3.pdf~~ EUROCONTROL Guidelines for On-Line Data Interchange (OLDI) Ground system infrastructure - CFSP systems/ATM system AO-CFSPS systems to be upgraded to enable flight planning of DCTs. Reference: ~~EUROCONTROL NM Flight Planning Requirements document December 2018 https://www.eurocontrol.int/publications/nm-flight-planning-requirements-guidelines~~ **EUROCONTROL NM Flight Planning Requirements - Guidelines**	Change in EUROCONTROL web organisation and naming convention.	Accepted.
FA-	FRTO-	Description / References:	Adaptation	Accepted.

E-FRTO-CR/3	B0/2/EN	Regulatory provisions Follow regulations for regulatory approval. Reference: ~~ICAO Circular 330 Civil/Military Coordination~~ **Doc 10088** Manual on Civil-Military Cooperation in Air Traffic Management European Union Commission Regulation (EC) No 2150/2005 of 23 December 2005 laying down common rules for the flexible use of airspace. ~~https://www.eurocontrol.int/articles/flexible-use-airspace-fua-mandate~~ Operational procedures Design and use of operational procedures. Reference: ~~EUROCONTROL European Route Network Improvement Plan (ERNIP) – Part 1: European Airspace Design Methodology – Guidelines – Edition December 2018 https://www.eurocontrol.int/publications/european-route-network-improvement-plan-ernip-part-1-european-airspace-design EUROCONTROL European Route Network Improvement Plan (ERNIP) - Part 3: Airspace Management Handbook – Edition December 2018 https://www.eurocontrol.int/sites/default/files/publication/files/ernip-part-3-asm-handbook-edition-5-v5-5.pdf~~ **EUROCONTROL European Route Network Improvement Plan (ERNIP) - Part 1** Airspace Design Methodology Guidelines - General Principles and Technical Specifications for Airspace Design **EUROCONTROL European Route Network Improvement Plan (ERNIP) - Part 3** Procedures for Airspace Management - Airspace Management Handbook for the Application of the Concept of the Flexible Use of Airspace Ground system infrastructure - ATM systems - Tools and System to support FUA Tools to be implemented and existing systems upgraded to conduct FUA operations. Reference: ~~European Route Network Improvement Plan (ERNIP) – Part 3: Airspace Management Handbook – Annex 12 Edition December 2018 (https://www.eurocontrol.int/sites/default/files/publication/files/ernip-part-3-asm-handbook-edition-5-v5-5.pdf) EUROCONTROL Local And sub-Regional Airspace Management support system (https://www.eurocontrol.int/services/local-and-sub-regional-airspace-management-support-system-lara)~~	to ICAO Doc naming.	

		EUROCONTROL European Route Network Improvement Plan (ERNIP) - Part 3 Procedures for Airspace Management - Airspace Management Handbook for the Application of the Concept of the Flexible Use of Airspace Chapter 3 EUROCONTROL Local and sub-regional airspace management support system <u>Ground system infrastructure - ATM systems - ATFM system for FUA</u> Upgrade ATFM/flight planning systems to support FUA. Reference: ~~EUROCONTROL NM Flight Planning Requirements document December 2018 (https://www.eurocontrol.int/publications/nm-flight-planning-requirements-guidelines)~~ **EUROCONTROL NM Flight Planning Requirements - Guidelines**		
FA-E-FRTO-CR/4	FRTO-B0/3/NC	Coded Departure Routes ~~(CDR)~~ ~~CDRs~~ Coded Departure Routes are a …	Doc 8400 PANS-ABC: CDR means Conditional Route.	Accepted.
FA-E-FRTO-CR/5	FRTO-B0/3/EN	Description / References: <u>Ground system infrastructure - ATM systems</u> …, and ~~CDR~~ Coded Departure routes.	Doc 8400 PANS-ABC: CDR means Conditional Route.	Accepted.
FA-E-FRTO-CR/6	FRTO-B0/4/EN	Description / References: <u>Ground system infrastructure - ATM systems</u> ATC systems to be upgraded to ensure conformance monitoring of flights and conflict detection for ATC planning purposes. Reference: ~~EUROCONTROL Monitoring Aids (MONA) specification 3 March 2017. This document provides system requirements for Monitoring Aids (MONA).https://www.eurocontrol.int/standards?page= Reference: EUROCONTROL Medium-Term Conflict Detection (MTCD) specification 3 March 2017.This document provides system requirements for Medium-Term Conflict Detection (MTCD). https://www.eurocontrol.int/standards?page=4~~ ~~EUROCONTROL Trajectory Prediction Specification Edition 2.0 March 2017 (https://www.eurocontrol.int/publications/trajectory-prediction-specification)~~ EUROCONTROL Specification for Monitoring aids (MONA), EUROCONTROL Specification for Medium-Term Conflict Detection (MTCD), EUROCONTROL Specification for Trajectory	Change in EUROCONTROL web organisation and naming convention.	Accepted.

		Prediction.		
FA-E-FRTO-CR/7	FRTO-B1/1/NC	… via intermediate (published or unpublished) ~~waypoints~~ significant points, … … of a fixed ATS route network structure.	Changes in European FRA Concept definitions (reference ERNIP Part 1, Chapter 10).	Accepted.
FA-E-FRTO-CR/8	FRTO-B1/1/DC	… (not necessary H24~~-7/7~~); … FRA arrival ~~transition~~ connecting point and departure ~~transition~~ connecting point, ... of ~~free routes~~ FRA operation	Adaptation to Doc 8400 PANS-ABC where decoding of H24 is - continuous day and night service. 7/7 re-clarification is not required. Inappropriate reference to European FRA Concept definition (reference ERNIP Part 1, Chapter 10). Changes in European FRA Concept definition (reference ERNIP Part 1, Chapter 10).	Accepted.
FA-E-FRTO-CR/9	FRTO-B1/1/ML	~~Standardization~~ Ready for implementation	PPT/5 Proposal	Accepted.
FA-E-FRT	FRTO-B1/1/EN	Description / References: <u>Operational procedures</u>	Change in EUROCONTROL web	Accepted.

O-CR/10		Design and use of operational procedures. Reference: ~~EUROCONTROL European Route Network Improvement Plan (ERNIP) – Part 1: European Airspace Design Methodology - Guidelines - Edition December 2018 https://www.eurocontrol.int/publications/european-route-network-improvement-plan-ernip-part-1-european-airspace-design~~ **EUROCONTROL European Route Network Improvement Plan (ERNIP) - Part 1** Airspace Design Methodology Guidelines - General Principles and Technical Specifications for Airspace Design <u>Ground system infrastructure - ATM systems</u> **Chapter 4** AATM system upgrades for MTCD and MONA functions. ATC systems to be upgraded to ensure conformance monitoring of flights and conflict detection for ATC planning purposes. **Chapter 5** Reference: ~~EUROCONTROL Monitoring Aids (MONA) specification 3 March 2017. This document provides system requirements for Monitoring Aids (MONA).https://www.eurocontrol.int/standards?page= Reference: EUROCONTROL Medium-Term Conflict Detection (MTCD) specification 3 March 2017.This document provides system requirements for Medium-Term Conflict Detection (MTCD). https://www.eurocontrol.int/standards?page=4 EUROCONTROL Trajectory Prediction Specification Edition 2.0 March 2017 https://www.eurocontrol.int/publications/trajectory-prediction-specification~~ Chapter 6 EUROCONTROL Specification for Monitoring aids (MONA), EUROCONTROL Specification for Medium-Term Conflict Detection (MTCD), EUROCONTROL Specification for Trajectory Prediction. <u>Ground system infrastructure - CFSP systems</u> AO-CFSPS systems to be upgraded to enable flight planning of FRA operations. Reference: ~~EUROCONTROL NM Flight Planning Requirements document December 2018 https://www.eurocontrol.int/publications/nm-flight-planning-requirements-guidelines~~ **EUROCONTROL NM Flight Planning Requirements - Guidelines** <u>Training</u> ATCO Training: FRA Training Provide training to staff prior to implementation ~~Reference: EUROCONTROL European Free Route Airspace~~	organisation and naming convention.	

		~~Developments 2016 https://www.eurocontrol.int/sites/default/files/publication/files/free-route-airspace-brochure-20161216.pdf~~ AO and ATM Network Function Training: FRA Training Provide training to staff prior to implementation ~~Reference: EUROCONTROL European Free Route Airspace Developments 2016 https://www.eurocontrol.int/sites/default/files/publication/files/free-route-airspace-brochure-20161216.pdf~~		
FA-E-FRTO-CR/11	FRTO-B1/2/Title	~~Required Navigation Performance (RNP)~~ Performance Based Navigation (PBN) routes	Adaptation to ICAO SARPs terms and enlarging the element scope.	Accepted.
FA-E-FRTO-CR/12	FRTO-B1/2/MP	~~RNP routes should be deployed within en-route airspace where Free Route Airspace (FRA) is not planned or if FRA is deployed the RNP routes should ensure the connectivity between FRA and TMAs.~~ The use of PBN (Area Navigation (RNAV) or Required Navigation Performance (RNP)) routes aims to increase the efficiency of en-route airspace, including within Free Route Airspace (FRA). Where FRA is deployed PBN routes also ensure the connectivity with TMAs, where required. The objective is to provide consistent navigation using the most appropriate PBN type, infrastructure and navigation applications.	Adaptation to ICAO SARPs terms and enlarging the element scope.	Accepted.
FA-E-FRTO-CR/13	FRTO-B1/2/NC	~~Performance-based navigation (~~PBN~~)~~ specifications allow aircraft to fly a specific path between two 3D-defined points in space. The new capability refers to the implementation of ~~PBN/~~RNP routes within en-route airspace, where appropriate.	Adaptation to ICAO SARPs terms and enlarging the element scope.	Accepted.
FA-E-FRTO-CR/14	FRTO-B1/2/DC	With the introduction of a RNP navigation specification, the advantages gained from RNAV navigation specification will be further enhanced by on-board performance monitoring and alerting and the execution of more predictable aircraft behaviour. Design of optimized routes which may include closely spaced parallel routes, Fixed Radius Transition (FRT) and Tactical Parallel Offset (TPO) functionality in en-route, supported by	Adaptation to ICAO SARPs terms and enlarging the element scope.	Accepted.

		infrastructure and system improvements to support PBN routes. The adequate navigation infrastructure is required. GNSS or DME ground infrastructure needs to be optimised to support RNP operations and main reversionary capability in case of GNSS outages. PBN requires a full digital chain, to critical data quality levels, for aeronautical data provided to the airborne systems. The system improvements for controller support tools which might be required are covered by other FRTO elements (MTCD, monitoring aids) or other threads (Safety Nets).		
FA-E-FRTO-CR/15	FRTO-B1/2/ML	~~Standardization~~ Ready for implementation	PPT/6 Proposal	Accepted.
FA-E-FRTO-CR/16	FRTO-B1/2 Dependency to other Elements	FRTO-B1/7, NOSP-B1/5, NOSP-B1/6, NOSP-B2/6, DAIM-B2/2 Change the title of element FRTO-B1/2	PPT/6 Proposal	Accepted.
FA-E-FRTO-CR/17	FRTO-B1/3/ML	~~Standardization~~ Ready for implementation	PPT/5 Proposal	Accepted.
FA-E-FRTO-CR/18	FRTO-B1/3/EN	Description / References: <u>Regulatory provisions</u> Follow regulations for regulatory approval. Reference: ~~ICAO Circular 330 Civil/Military Coordination~~ **Doc 10088** Manual on Civil-Military Cooperation in Air Traffic Management European Union Commission Regulation (EC) No 2150/2005 of 23 December 2005 laying down common rules for the flexible use of airspace. ~~https://www.eurocontrol.int/articles/flexible-use-airspace-fua-mandate~~ <u>Operational Procedures</u> Design and use of operational procedures. Reference: ~~EUROCONTROL – Centralised Advanced Flexible Use of Airspace Support Service Concept of Operations (CONOPS) Edition 2.1 October 2014 EUROCONTROL European Route Network Improvement Plan (ERNIP) – Part 3: Airspace Management Handbook – Edition~~	PPT/5 Proposal. Change in EUROCONTROL web organisation and naming convention.	Accepted.

		~~December 2018 https://www.eurocontrol.int/sites/default/files/publication/files/ernip-part-3-asm-handbook-edition-5-v5-5.pdf ICAO Guidance for Civil/Military Cooperation Reference: 10088 ICAO Doc Civil Military co-operation~~ **EUROCONTROL European Route Network Improvement Plan (ERNIP) - Part 3** Procedures for Airspace Management - Airspace Management Handbook for the Application of the Concept of the Flexible Use of Airspace, **Doc 10088** Manual on Civil-Military Cooperation in Air Traffic Management <u>Ground system infrastructure - ATM systems</u> Upgrade systems for partners to exchange real time data. Reference: ~~EUROCONTROL European Route Network Improvement Plan (ERNIP) – Part 3: Airspace Management Handbook – Annex 12 Edition December 2018 https://www.eurocontrol.int/sites/default/files/publication/files/ernip-part-3-asm-handbook-edition-5-v5-5.pdf~~ **EUROCONTROL European Route Network Improvement Plan (ERNIP) - Part 3** Procedures for Airspace Management - Airspace Management Handbook for the Application of the Concept of the Flexible Use of Airspace <u>Ground system infrastructure - ATC systems</u> Upgrade systems to handle real time data in ATM systems and AU flight planning systems. Reference: ~~EUROCONTROL European Route Network Improvement Plan (ERNIP) – Part 3: Airspace Management Handbook – Annex 12 Edition December 2018 https://www.eurocontrol.int/sites/default/files/publication/files/ernip-part-3-asm-handbook-edition-5-v5-5.pdf EUROCONTROL Local And sub-Regional Airspace Management support system https://www.eurocontrol.int/services/local-and-sub-regional-airspace-management-support-system-lara~~ **EUROCONTROL European Route Network Improvement Plan (ERNIP) - Part 3** Procedures for Airspace Management - Airspace Management Handbook for the Application of the Concept of the Flexible Use of Airspace, **EUROCONTROL Local and sub-regional airspace management support system**. <u>Ground system infrastructure - CFSP systems</u>		

		Upgrade systems to handle real time data in AU flight planning systems. Reference: ~~EUROCONTROL European Route Network Improvement Plan (ERNIP) – Part 3: Airspace Management Handbook – Annex 12 Edition December 2018 https://www.eurocontrol.int/sites/default/files/publication/files/ernip-part-3-asm-handbook-edition-5-v5-5.pdf~~ **EUROCONTROL European Route Network Improvement Plan (ERNIP) - Part 3** Procedures for Airspace Management - Airspace Management Handbook for the Application of the Concept of the Flexible Use of Airspace		
FA-E-FRTO-CR/19	FRTO-B1/4/ML	~~Standardization~~ Ready for implementation	PPT/5 Proposal	Accepted.
FA-E-FRTO-CR/20	FRTO-B1/5/ML	~~Standardization~~ Ready for implementation	PPT/5 Proposal	Accepted.
FA-E-FRTO-CR/21	FRTO-B1/5/EN	Description / References: Ground system infrastructure - ATM systems **Chapter 7** Upgrade ATC systems to provide enhanced monitoring capabilities as well as detection of planned/tactical conflicts. **Chapter 8** Reference: ~~EUROCONTROL Monitoring Aids (MONA) specification 3 March 2017. This document provides system requirements for Monitoring Aids (MONA).https://www.eurocontrol.int/standards?page= Reference: EUROCONTROL Medium-Term Conflict Detection (MTCD) specification 3 March 2017.This document provides system requirements for Medium-Term Conflict Detection (MTCD). https://www.eurocontrol.int/standards?page=4 EUROCONTROL Trajectory Prediction Specification Edition 2.0 March 2017 https://www.eurocontrol.int/publications/trajectory-prediction-specification~~ EUROCONTROL Specification for Monitoring aids (MONA), EUROCONTROL Specification for Medium-Term Conflict Detection (MTCD). EUROCONTROL Specification for Trajectory Prediction.	Change in EUROCONTROL web organisation and naming convention.	Accepted.
FA-E-	FRTO-B1/6/MP	… two ATCOs (planning and ~~tactical~~ executive).	Adaptation to Doc 9426	Accepted.

FRTO-CR/22		… to several ~~tactical~~ executive controllers …	ATM Planning Manual referring to "executive controller"	
FA-E-FRTO-CR/23	FRTO-B1/6/NC	… to several ~~tactical~~ executive controllers … … of the ~~tactical~~ executive controllers.	Adaptation to Doc 9426 ATM Planning Manual referring to "executive controller"	Accepted.
FA-E-FRTO-CR/24	FRTO-B1/6/DC	… to multiple sector ~~tactical~~ executive roles and the planner and ~~tactical~~ executive roles …	Adaptation to Doc 9426 ATM Planning Manual referring to "executive controller"	Accepted.
FA-E-FRTO-CR/25	FRTO-B1/6/ML	~~Standardization~~ Ready for implementation	PPT/5 Proposal	Accepted.
FA-E-FRTO-CR/26	FRTO-B1/6/EN	Description / References: <u>Ground system infrastructure - ATC systems</u> Upgrade ATC systems with the capabilities to support the planning controller taking the responsibility of more than one sector. The tactical responsibilities are distributed to several tactical controllers. Reference: ~~EUROCONTROL Medium-Term Conflict Detection (MTCD) specification 3 March 2017.This document provides system requirements for Medium-Term Conflict Detection (MTCD).~~ ~~https://www.eurocontrol.int/standards?page=4~~ ~~EUROCONTROL Trajectory Prediction Specification Edition 2.0 March 2017~~ ~~https://www.eurocontrol.int/publications/trajectory-prediction-specification~~ **EUROCONTROL Specification for Medium-Term Conflict Detection (MTCD), EUROCONTROL Specification for Trajectory Prediction.**	Change in EUROCONTROL web organisation and naming convention.	Accepted.
FA-E-FRTO-	FRTO-B1/7	Remove it from FRTO Thread and move it as part of NOSP Thread element NOPS-B1/10 Collaborative Trajectory Options Program (CTOP).	PPT/5 Proposal	Accepted.

CR/27				
FA-E-FRTO-CR/28	FRTO-B1/7/ML	~~Standardization~~ Ready for implementation	PPT/5 Proposal	Accepted.
FA-E-FRTO-CR/29	FRTO-B2/3/NC	… via intermediate (published or unpublished) ~~waypoints~~ significant points, …	Changes in European FRA Concept definitions (reference ERNIP Part 1, Chapter 10).	Accepted.
FA-E-FRTO-CR/30	FRTO-B2/3/ML	~~Standardization~~ Ready for implementation	PPT/5 Proposal	Accepted.
FA-E-FRTO-CR/31	FRTO-B2/3/EN	Description / References: Operational procedures Design and use of operational procedures. Reference: ~~EUROCONTROL European Route Network Improvement Plan (ERNIP) - Part 1: European Airspace Design Methodology - Guidelines - Edition 5 December 2018 https://www.eurocontrol.int/publications/european-route-network-improvement-plan-ernip-part-1-european-airspace-design~~ **EUROCONTROL European Route Network Improvement Plan (ERNIP) - Part 1** Airspace Design Methodology Guidelines - General Principles and Technical Specifications for Airspace Design Ground system infrastructure - ATM systems **Chapter 9** ATM system upgraded for cross-border FRA clearances, notification and co-ordination data exchanges relevant for cross-border FRA and management of relevant cross-border FRA airspace data. **Chapter 10** Reference: ~~EUROCONTROL Monitoring Aids (MONA) specification 3 March 2017. This document provides system requirements for Monitoring Aids (MONA).https://www.eurocontrol.int/standards?page= Reference: EUROCONTROL Medium-Term Conflict Detection (MTCD) specification 3 March~~	Change in EUROCONTROL web organisation and naming convention.	Accepted.

		~~2017.This document provides system requirements for Medium-Term Conflict Detection (MTCD). https://www.eurocontrol.int/standards?page=4~~ ~~EUROCONTROL Trajectory Prediction Specification Edition 2.0 March 2017 https://www.eurocontrol.int/publications/trajectory-prediction-specification EUROCONTROL specification for the on-line Data exchanges (OLDI) https://eurocontrol.int/sites/default/files/publication/files/EUROCONTROL%20Specification%20OLDI%204.3.pdf~~ Chapter 11 EUROCONTROL Specification for Monitoring aids (MONA), EUROCONTROL Specification for Medium-Term Conflict Detection (MTCD), EUROCONTROL Specification for Trajectory Prediction, EUROCONTROL Guidelines for On-Line Data Interchange (OLDI). <u>Ground system infrastructure - CFSP systems</u> Upgrade of AOs flight planning systems. Reference: ~~EUROCONTROL NM Flight Planning Requirements document 10 December 2018 https://www.eurocontrol.int/publications/nm-flight-planning-requirements-guidelines~~ Chapter 12 EUROCONTROL NM Flight Planning Requirements - Guidelines **Chapter 13** <u>Ground system infrastructure - ATM systems</u> Upgrade ATFM/flight planning systems to support cross-border FRA. Reference: ~~EUROCONTROL NM Flight Planning Requirements document December 2018 https://www.eurocontrol.int/publications/nm-flight-planning-requirements-guidelines~~ EUROCONTROL NM Flight Planning Requirements - Guidelines		
FA-E-FRTO-CR/32	FRTO-B2/4/DR	<u>Relation-information need - ASBU Element</u> SWIM-B2/1 Information service provision SWIM-B2/2 Information service consumption	PPT/6 Proposal	Accepted.

CHANGE REQUESTS TO THE ASBU THREAD GADS

- This template shall be used to propose changes to the GANP ASBU Framework
- Only complete Change Requests will be processed
- Change Requests can only be issued by members of the Aviation Community
- Change Requests shall be coordinated in advance with relevant aviation community members
- For proposed changes to existing threads and elements use Attachment A
- For proposed new elements use Attachment B
- For proposed new threads use Attachment C
- Contact <GANP maintenance PoC> for assistance
- Email completed template to ganp@icao.int

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Aviation Community *	**ANF**
CR coordination**	**Agreed outcome of ASBU PPT/5**
Date of submission	**26 January 2024**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**26 January 2024**
CR Status	Accepted
Assigned TL	Marouan Chida

Change request to existing Threads/Elements

Change Request Information

CR ID	Reference*	CR (current text with revision marks)	Justification	Remarks
FA-E-GADS-CR/1	GADS-B2/3/ML	Maturity level: ~~Standardization~~ Ready for Implementation	Agreed outcome of ASBU PPT/5 to change the "Maturity level" from "Standardization" to "Ready for Implementation"	Accepted

CHANGE REQUESTS FOR THE ASBU THREAD NOPS

- This template shall be used to propose changes to the GANP ASBU Framework
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- Email completed template to ganp@icao.int

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Aviation Community *	**ANF**
CR coordination**	**ATMOPSP/ATFM-WG**
Date of submission	**20 Feb 2024**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**20 Feb 2024**
CR Status	Accepted
Assigned TL	Ivan Pendachanski

Change request to existing Threads/Elements

Change Request Information

Change ID	**Reference***	**CR (current text with revision marks)**	**Justification**	**Remarks**
FA-E-NOPS-CR/1	NOPS/Block0	~~The~~ Air Traffic Flow Management (ATFM) function is used to manage the flow of traffic in a way that minimizes delay and optimises the use of the entire airspace and available capacity. The management of airspace starts to be integrated with the management of the traffic flows. Some main processes are automated, however substantial procedural support is still required to balance demand with available capacity. ~~Collaborative ATFM can manage traffic flows by:~~ ~~• smoothing flows and managing rates of sector entry; re-route traffic to avoid flow constraint areas;~~ ~~• level capping;~~ ~~• collaborative airspace management;~~ ~~ATFM slot management including departure information planning; adjust flow measures by use of enhanced collaborative flight planning and enhanced tactical flow management.~~	Align terminology with ICAO Doc 9971. Remove references to elements moved to B1: - NOPS-B0/2 – Collaborative Network Flight Updates (NOPS-B1/11) - NOPS-B0/3 – Network Operations Planning Basic Features (NOPS-B1/12) - NOPS-B0/4 – Initial Airport/ATFM Slots & A-CDM Network Interface (NOPS-B1/13) NOPS-B0/5 – Dynamic ATFM Slot Allocation (NOPS-B1/14)	Accepted
FA-E-NOPS-CR/2	NOPS-B0/1 / NC	Collaborative airspace planning process is ~~extended by harmonizing the ASM/ATFM rules and procedures for the establishment, allocation and use of airspace structures in response to ATFM requirements~~ implemented based on the Airspace Management (ASM) concept, and airspace use information is distributed to the	The focus of this element should be on ensuring that the ATFM function is aware of the Airspace Use Plan (AUP) and how it impacts airspace capacity. It should not	Accepted

		ATFM function to ensure it is taken into account when determining airspace capacity for ATFM purpose.	stipulate that an ASM process need to be based on ATFM requirements. Suggest amending the capability description accordingly.	
FA-E-NOPS-CR/3	NOPS-B0/1 / EN-01 - Procedure for Dynamic Cooperative Management of the Airspace	Description: Develop the ASM/ATFM procedures related to dynamic co-operative management of the airspace (improved ASM/ATFM process via e.g. Airspace Use Plan/Updated airspace Use Plan). Reference: ~~ICAO Doc 9971 Manual on Collaborative ATFM~~ ICAO Circular 330 – Civil/Military Cooperation in ATM, later superseded by ICAO Doc 10088 -Manual on Civil/Military Cooperation in ATM. Availability: ~~2013~~ 2011	Element referred to Doc 9971. Doc 9971, 3rd edition does not directly mention ADP update procedure consequent to AUP/UUP updates. Some content existed in ICAO Circular 330 – Civil/Military Cooperation in ATM (2011), which was later superseded by Manual on Civil-Military Cooperation in ATM (Doc 10088, 1st edition (2021)), which also mentioned link between ASM/ATFM process.	Accepted
FA-E-NOPS-CR/4	NOPS-B0/1 / EN-02 - Procedures for improved notification process	Description: Improved ASM/ATFM notification process. Reference~~s~~: ~~ICAO Doc 9971 Manual on Collaborative ATFM~~ ICAO Circular 330 – Civil/Military Cooperation in ATM, later superseded by ICAO Doc 10088 -Manual on Civil/Military Cooperation in ATM. Availability: ~~2013~~ 2011	Element referred to Doc 9971, which currently does not have expected content. Some content existed in ICAO Circular 330 – Civil/Military Cooperation in	Accepted

			ATM (2011), which was later superseded by Manual on Civil-Military Cooperation in ATM (Doc 10088, 1st edition (2021))	
FA-E-NOPS-CR/5	NOPS-B0/1 / EN-03 - Procedures for released of reserved airspace	Name: "Procedures for release~~d~~ of reserved airspace" Description: Develop the ASM/ATFM procedures to identify and release previously reserved airspace. References: ~~Doc 9971 Manual on Collaborative ATFM~~ ICAO Circular 330 – Civil/Military Cooperation in ATM, later superseded by ICAO Doc 10088 - Manual on Civil/Military Cooperation in ATM. Availability: ~~2013~~ 2011	Element referred to Doc 9971, which currently does not have expected content. Some content existed in ICAO Circular 330 – Civil/Military Cooperation in ATM (2011), which was later superseded by Manual on Civil-Military Cooperation in ATM (Doc 10088, 1st edition (2021))	Accepted
FA-E-NOPS-CR/6	NOPS-B0/1 / EN-04 - Procedures for promulgation and notification of receipt	Remove enabler	Enabler suggested promulgation and notification of receipt of ASM data, which appears to be local procedure, and is not contained in reference document.	Accepted
FA-E-NOPS-CR/7	NOPS-B0/1 / EN-05 - Distribution of planned airspace usage information	Description: ~~Enhance~~ ASM ~~&~~ ~~ATFM~~ system to distribute planned airspace usage information	It is ASM system function to <u>distribute</u> planned airspace usage information, not ATFM system function. In addition, distribution of planned airspace usage information should be considered "basic"	Accepted

			ASM system function.	
FA-E-NOPS-CR/8	NOPS-B0/1 / EN-10 - Reception of planned and actual airspace status	Description: Enhance to ASM/ATF~~C~~M tools to receive 2013 information on planned and actual airspace status and support decision-making based on this information	Align "ATFCM" terminology into "ATFM" in accordance with ICAO Doc 9971	Accepted
FA-E-NOPS-CR/9	NOPS-B0/2 / MP	Improve ATFM situation awareness in order to facilitate ~~re-routings and coordinated application of the ATFM measures~~ the application of ATFM measures for demand-capacity balancing	The main purpose as is written highlights the "re-routing" measure, when flight updates are useful for all types of ATFM measures.	Accepted
FA-E-NOPS-CR/10	NOPS-B0/2 / NC	~~Seamless exchange and processing of correlated position information, flight activation status and up-to-date flight plan information for airborne flights. Such data are required within the Area of Responsibility (AOR) of the ATFM unit, but also within the Area of Interest (AOI) of the ATFM unit for all flights entering the ATFM area.~~ Exchange and processing of up-to-date flight plans, movement messages, and updated aircraft positions with the ATFM automation to ensure accurate traffic demand monitoring and prediction in the ATFM process.	Terms used in this capability, such as "correlated position information" and "flight activation" is regional and appears to focus on the interface between local ATM automation and network/regional ATFM function. It should be amended to focus on establishing connection between flight plan and movement message processing system, ATM automation, and ATFM system.	Accepted
FA-E-NOPS-CR/11	NOPS-B0/2 / EN-01 - Network Planning procedures	Name: ATFM ~~Network~~ Planning procedures Description: Develop the ATFM procedures to incorporate flight status information received from multiple sources into the ATFM~~Network~~ Planning. – ICAO Doc 9971 Manual on Collaborative ATFM • Availability: ~~2013~~ 2014	Align terminology with ICAO Manual on Collaborative ATFM (Doc 9971). First edition of Doc 9971 with ATFM content was published in 2014.	Accepted

			Element needs to move to B1 (another Change Request ID)	
FA-E-NOPS-CR/12	NOPS-B0/2 / EN-02 - Procedures for updated flight plan information	Description: ~~Develop the ATFM/ATC procedures for provision of updated flight plan information.~~ Develop procedure for ATS units to forward flight plan information to ATFM function. - ICAO Doc 9971 Manual on Collaborative ATFM Availability: ~~2013~~ 2014	Align content with ICAO Manual on Collaborative ATFM (Doc 9971), where ATS units are expected to make Flight Plan & ATS messages available to the ATFM function. First edition of Doc 9971 with ATFM content was published in 2014. Element needs to move to B1 (another Change Request ID)	Accepted
FA-E-NOPS-CR/13	NOPS-B0/2 / EN-03 - Correlated Position Reports	Name: ~~Correlated Position Reports~~ Surveillance Information for Airborne Flights Description: ~~Upgrade of ATFM/ATC system related to the provision and reception of correlated position reports for airborne flights.~~ Upgrade ATFM system to receive and process surveillance information for airborne flights	Align content with ICAO Manual on Collaborative ATFM (Doc 9971), while removing reference to "Correlated Position Report," which is a regional term referring to surveillance information of airborne flights	Accepted
FA-E-NOPS-CR/14	NOPS-B0/2 / EN-04 - ATFM message exchanges	Name: ATFM information message exchanges Description: Enhancement of ATFM~~/ATC~~ system ~~related to~~ in relation to the ~~provision~~ origination and processing of ATFM information messages.	Genericized "ATFM message" into "ATFM information exchange." Removed reference to ATC system. No "ATFM message" existed outside Europe in B0 timeframe. ICAO Annex 11 /	Accepted

			PANS-ATM changes mentioning "ATFM messages" planned in 2026 (B2).	
FA-E-NOPS-CR/15	NOPS-B0/2 / EN-05 – Flight activation messages	Remove enabler	Flight activation message is an equivalent of Departure Message (DEP), which has been globally mandated before ASBU.	Accepted
FA-E-NOPS-CR/16	NOPS-B0/2 / EN-06 – Updated flight plan info	Description: Upgrade ATFM~~/ATC~~ system for handling of flight plan info for airborne flights.	The element is focused on ATFM system capability. ATC automation system should already be capable of handling of flight plan information for airborne flight pre-ASBU.	Accepted
FA-E-NOPS-CR/17	NOPS-B0/2	Renumber to NOPS-B1/11	Enabler 01, 02 availability date of 2014 falls in Block 1	Accepted
FA-E-NOPS-CR/18	NOPS-B0/3 / DC	• ~~Network Operation Planning~~ ATFM Planning is based on enhanced participation in a dynamically updated collaborative planning process. This requires the sharing of the latest flight status and intentions; airport and airspace component, associated ~~demand and capacity balancing~~ ATFM measures in a frequently updated ~~plan~~ ATFM Daily Plan (ADP) which is aimed to be realised as target by all actors. The elements and formats of the plan need to be established and harmonized, taking into	Align terminology with ICAO Doc 9971.	Accepted

		account the requirements of the users of these plans. It will be possible for them to access and extract data for selected areas to support their operation and, if required, to create their specific operations plan.		
FA-E-NOPS-CR/19	NOPS-B0/3 / EN-01 – Tactical change procedures	Availability: ~~2013~~ 2014	ICAO Doc 9971 was published in 2014, Block 1 timeframe.	Accepted
FA-E-NOPS-CR/20	NOPS-B0/3 / EN-02 - Capacity balancing procedures	Availability: ~~2013~~ 2014	ICAO Doc 9971 was published in 2014, Block 1 timeframe.	Accepted
FA-E-NOPS-CR/21	NOPS-B0/3 / EN-03 - Coordination procedures	Description: Develop the ~~ATFM~~ procedures for coordinating refined ATFM Daily Plan ~~plans~~ among ~~between ANSP~~ ATFM function, ATS units, Airspace Users and Airport Operators.	Align terminology with ICAO Doc 9971, while splitting ANSP parts into ATFM function and ATS units, which may not be operated by the same ANSP	Accepted
FA-E-NOPS-CR/22	NOPS-B0/3 / EN-04 - Coordination procedures	Remove element	Remove due to prescriptive nature of the element	Accepted
FA-E-NOPS-CR/23	NOPS-B0/3 / EN-05 - Predefined scenario management	Availability: ~~2013~~ 2014	ICAO Doc 9971 was published in 2014, Block 1 timeframe.	Accepted
FA-E-NOPS-CR/24	NOPS-B0/3 / EN-06 - Dynamic sectorization procedures	Name: ~~Dynamic~~ sectorization procedures Description: ~~Develop the ATFM procedures for initiating dynamic sectorization responses in collaboration with the ANSPs.~~ Procedure for ATFM function to provide information for ATS units to amend airspace sectorization to cater to expected traffic. Reference~~s~~: ICAO Doc 9971 Manual on Collaborative ATFM	Renamed to remove “dynamic” as “dynamic” sectorization expected in later block. Rephrased description to be more generic, while keeping reference to Doc 9971.	Accepted

		Availability: ~~2013~~ 2014	Due to availability of first edition of ICAO Doc 9971 with ATFM content in 2014, element need to move to Block 1	
FA-E-NOPS-CR/25	NOPS-B0/3 / EN-07 - Exchange of ATFM related data	Remove element	Remove due to overly generic description	Accepted
FA-E-NOPS-CR/26	NOPS-B0/3	Renumber to NOPS-B1/12	Enabler 01, 02, 05 availability date of 2014 falls in Block 1	Accepted
FA-E-NOPS-CR/27	NOPS-B0/4 / EN-01 - Airport slot procedure	Availability: ~~2013~~ 2014	ICAO Doc 9971 mentioned utilization of airport slots as part of traffic demand prediction. First edition of ICAO Doc 9971 with ATFM content (2nd edition) was published in 2014 (B1).	Accepted
FA-E-NOPS-CR/28	NOPS-B0/4 / EN-02 – ATFM A-CDM Procedure	Availability: ~~2013~~ 2018	ICAO Doc 9971 mentioned utilization of airport slots as part of traffic demand prediction. However, the first edition of Doc 9971 mentioning Airport CDM procedure (3rd edition) was not published until 2018 (B1).	Accepted
FA-E-	NOPS-B0/4 /	Remove enabler	Airport slot	Accepted

NOPS-CR/29	EN-03 – Airport Slot Monitoring Tool		monitoring is already part of airport slot coordinators' job description as described in IATA Worldwide Airport Slot Guidance (WASG)	
FA-E-NOPS-CR/30	NOPS-B0/4 / EN-05 - Flight data for airborne flights	Description: ~~Enhance the ATFM system for provision of real time flight data for airborne flights.~~ Enhance the ~~ATC and~~ airport systems for reception and processing of real time flight data for airborne flights	The original text described situation in Europe, where ATFM function (EUROCONTROL NM) collected surveillance information of airborne flights from ATS units. However, this arrangement may not exist elsewhere. Real time flight data for airborne flights may be sourced from ATS units or other sources.	Accepted.
FA-E-NOPS-CR/31	NOPS-B0/4	Renumber to NOPS-B1/13	Enabler 01 and 02 availability dates of 2014 and 2018 fall in Block 1	Accepted.
FA-E-NOPS-CR/32	NOPS-B0/5 / MP	Provision of dynamic departure ATFM slot allocation including Calculated Take-off Time (CTOT) for ~~regulated~~ flights impacted by an ATFM measure to avoid ATFM congestions.	Align terminology with ICAO Doc 9971	Accepted.
FA-E-NOPS-CR/33	NOPS-B0/5 / NC	~~ATM network~~ ATFM function to provide the departure ATFM slots, including CTOT for ~~regulated~~ flights affected by an ATFM measure to all concerned operational stakeholders. ANSPs/ Airport/ AU to be capable to receive and process CTOT and update Estimated Take-off Time	Align terminology with ICAO Doc 9971	Accepted.

		(EOBT) in accordance with the agreed operational procedures.		
FA-E-NOPS-CR/34	NOPS-B0/5 / DC	The CTOT is defined as a time at which the aircraft shall take-off. CTOT is sent to AU / ATS when a flight ~~becomes regulated~~ is affected by an ATFM measure ~~(e.g. new flight entering the system, new period of regulation in the system, change of runway in use)~~ at a system parameter time before the last received EOBT. AU/ATS/Airport need to adhere with the CTOT. The calculation of take-off times takes into account the off-block times and an average taxiing time for the runway in use at the airfield concerned.	Align terminology with ICAO Doc 9971	Accepted.
FA-E-NOPS-CR/35	NOPS-B0/5 / EN-01 – Slot revision procedure	Availability : ~~2000~~ 2014	Enabler refers to procedure in ICAO Doc 9971. Availability of first edition of ICAO Doc 9971 with ATFM content was in 2014, element need to move to Block 1	Accepted.
FA-E-NOPS-CR/36	NOPS-B0/5	Renumber to NOPS-B1/14	Enabler 01 availability date of 2014 falls in Block 1	Accepted.
FA-E-NOPS-CR/37	NOPS/Block1	More ATFM processes are automated, however substantial procedural support is still required to balance demand with available capacity. Collaborative ATFM can manage traffic flows by: • smoothing flows and manage flights entering sectors in accordance with available capacity; re-route traffic to avoid constrainted airspace; • level capping; • collaborative airspace management; ATFM slot management including	Align terminology with ICAO Doc 9971. Include reference to elements moved from Block 0, based on relevant Block 0 Thread ConOps content: - NOPS-B0/2 – Collaborative Network Flight	Accepted.

		departure information planning; adjust flow measures by use of enhanced collaborative flight planning and enhanced tactical flow management. ATFM function evolved towards supporting extended arrival sequencing. ~~Many AFTM processes are automated, while some elements are still managed procedurally.This module introduces enhanced processes to manage flows or groups of flights in order to improve overall fluidity. It refines ATFM techniques, integrates the management of airspace and traffic flows through a holistic network operational planning dynamic/rolling process in order to achieve greater efficiency and enhance network performance. It also increases the collaboration among stakeholders in real time so as to better know the Airspace Users preferences, to inform on system capabilities and ATC capacity and further enhance Collaborative Decision Making (CDM) to address specific issues/circumstances, including Airspace Users flight prioritisation input as regards ATFM measures.~~ ~~Airports operations planning starts to be integrated in the network operations planning. ATFM includes the following main features:~~ • ~~management of occupancy counts and application of ATFM measures; management of arrival/ overfly times (TTA/TTOs);~~ • ~~enhanced Network Operation Planning;~~ • ~~enhanced ATFM slot management;~~ • ~~integration of network planning and airport planning; dynamic/rolling airspace management process; management of dynamic~~	Updates (NOPS-B1/11) - NOPS-B0/3 – Network Operations Planning Basic Features (NOPS-B1/12) - NOPS-B0/4 – Initial Airport/ATFM Slots & A-CDM Network Interface (NOPS-B1/13) - NOPS-B0/5 – Dynamic ATFM Slot Allocation (NOPS-B1/14) Remove reference to elements that are moved to B2: - NOPS-B1/7 – Enhanced ATFM Slot Swapping (NOPS-B2/10) Remove reference to elements that are moved to B3: - NOPS-B1/1 – Short-Term ATFM Measures (NOPS-B3/4) - NOPS-B1/2 – Enhanced Network Operations Planning (NOPS-B3/5) - NOPS-B1/3	

		~~airspace configurations;~~ ~~• complexity management;~~ ~~ATFM contribution to the extended Arrival Management.~~	– Enhanced integration of Airport operations planning in Network operations planning (NOPS-B3/6) - NOPS-B1/4 – Dynamic Traffic Complexity Management (NOPS-B3/7) - NOPS-B1/5 – Full Integration of ASM with ATFM (NOPS-B3/8) NOPS-B1/6 – Initial Dynamic Airspace Configuration (NOPS-B3/9)	
FA-E-NOPS-CR/38	NOPS-B1/1 / DC	The rigid application of ATFM measures based on standard capacity thresholds as the pre- dominant tactical capacity measure needs to be replaced by a close working relationship between ANSP, AU and ATM Network function, which monitors both the real demand and the effective capacity of sectors having taken into account the complexity of expected traffic situation. In order to close the gap between ATC and ATFM, new tools and local operational procedures need to be developed. The aim is to improve the efficiency of the system using flow management techniques close to the real time operations with direct impact on tactical capacity management and tactical action on traffic. The target of the Short Term ATFM Measures is to replace en-route measures for situations where the capacity is nominal. These measures	Description as is written does not give clarity on what "STAM" looks like, unlike e.g. a Ground Delay Program (aka "Dynamic ATFM slot allocation") which is clear in terms of what the measure is (i.e., CTOT assigned for AU compliance). With STAM implemented, what does that look like for an AU, an ATC unit, and what does an ATFM Unit need to do? Is STAM referring to using ATFM	Accepted.

		are capable of reducing the traffic complexity for ATC with minimum constraints for the airspace users. STAM tools and procedures are based on accurate short-term occupancy counts. The tactical capacity management procedures can be supported by the ATFM Tools (system based STAM with the hot-spot detections in the network view, the "what-if" function and capabilities of promulgation and implementation of STAM measures, including CDM). This will require the introduction of: • Pre-tactical and Tactical Demand Capacity Balancing (DCB) evaluation tools; DCB tool based on occupancy counts; • Enhanced monitoring techniques; • DCB Coordination tools; • DCB What-if function; • DCB Network impact assessment; ATFM procedures to enable application of flow management closer to real time (while enabling less predictable ATFM measures (e.g. MDI, MINIT, MINIT) when advance-notice requirement of more preferrable ATFM measures (e.g. GDP) cannot be achieved)	measures such as MDI, MIT, MINIT for a short period, or is it something else? Description of element amended to initially enable application of less predictable ATFM measures (e.g. MDI, MIT, MINIT) when advance-notice requirement of more predictable ATFM measures (e.g. GDP) cannot be achieved. STAM was mentioned in ICAO Doc 9971 (3rd edition, 2018) as part of future evolution of ATFM measures (research & development). STAM is expected to be further elaborated in future editions of ICAO Doc 9971. Next edition planned in 2026 (B3).	
FA-E-NOPS-CR/39	NOPS-B1/1 / EN-03 – STAM Procedures	Description: Develop the ATFM procedures to enable application of ~~flow management techniques on traffic streams closer to real-time.~~ Less predictable ATFM measures (e.g. MDI, MIT, MINIT) when advance-notice requirement of more preferrable ATFM measures (e.g. GDP) cannot be achieved. Reference~~s~~: ICAO Doc 9971 Manual on Collaborative ATFM	ICAO Doc 9971 (Current 3rd edition, 2018) only mentioned STAM as "Research & Development." Further information on STAM may be made available in future edition of	Accepted.

			ICAO Doc 9971. Next edition planned in 2026 (B3). Re-worded to include application of less predictable ATFM measures (e.g. MDI, MIT, MINIT) when advance-notice requirement of more predictable ATFM measures (e.g. GDP) cannot be achieved.	
FA-E-NOPS-CR/40	NOPS-B1/1	Renumber ot NOPS-B3/4	Element moves to B3 due to Enabler 03 availability date being in B3 timeframe	Accepted.
FA-E-NOPS-CR/41	NOPS-B1/2 / DC	The ~~Network~~ ATFM Operations Planning process will be enhanced to continuously provide up-to-date situational information on all components of the network. Furthermore, it will provide access to initial network performance objectives and support to network performance assessment in post-operations. The required technological platform will use the state-of-the-art technologies for creation of a virtual operations room for the physically distributed network operations, in support of collaborative ~~Network~~ ATFM Operations Planning. These interfaces will support the ~~network~~ ATFM collaborative dynamic/rolling processes from strategic to real-time operations, including capabilities for online performance monitoring integrated and feeding back into the collaborative ~~network~~ ATFM planning. The information and dialogue tools shall be accessed via different	Align terminology with Doc 9971. Last sentence: "A common interface to all stakeholders needs to be developed..." This is somewhat contrasting with the 2nd paragraph which states "...creation of a virtual operations room for the physically distributed network operations...", which can be interpreted as akin to the Distributed Multi-Nodal ATFM Network Concept employed in APAC. In this concept, a	Accepted.

		interfaces. Access to information is done in a secure way, tailored according to stakeholders needs and subject to access control rules, so that only those who have an operational need to access particular information are able to do so. A common ~~interface~~ information exchange framework (standards, protocols, procedures) among ~~to~~ all stakeholders needs to be developed to enable the collaborative decision-making processes used to build and execute the ~~Network~~ ATFM Operations Planning. The following new features will be introduced: • Enhanced Network Operations Planning interfaces (B2B/SWIM based); • Initial steps related to the Network Operations Planning extended functions (crisis management and network disruption); • Tools for on-line performance monitoring; • Tools for network impact assessments.	"common interface" is not really necessary; rather a "common information exchange framework" to ensure information flows in a harmonized way throughout the network and across all stakeholders is more important. Stakeholders can develop any interface they like, as long as information exchange standards, protocol, and procedure governing the use of the information is agreed in among the network members. Consider changing the sentence to recognize the importance of a "common information exchange framework" (standards, protocols, procedures), rather than an "interface" that is the same for all members.	
FA-E-NOPS-CR/42	NOPS-B1/2 / EN-01 - Enhanced NOP dissemination procedure	Availability: ~~2019~~ 2014	Doc 9971 mentioned updates of ATFM Daily Plans should be sent to stakeholders involved since 2nd edition (2014 - first edition with	Accepted.

			ATFM content)	
FA-E-NOPS-CR/43	NOPS-B1/2 / EN-02 - Enhanced NOP notification procedure	Remove enabler	Doc 9971 does not mention specific methodology to access/update ATFM Daily Plans. The enabler appears to be very prescriptive. It is unclear whether objective of the element can still be achieved without the enabler.	Accepted.
FA-E-NOPS-CR/44	NOPS-B1/2 / EN-03 - Critical event procedure	Description: Develop the ATFM procedures for handling of a critical event. Reference: ICAO Doc 9971 – Manual on Collaborative ATFM Availability: ~~2019~~ 2014	ATFM operations handle critical events as "normal operations" Enabler availability date changed to align with Doc 9971 2nd edition publication in 2014	Accepted.
FA-E-NOPS-CR/45	NOPS-B1/2 / EN-04 - Airspace availability procedure	Availability: ~~2019~~ 2014	Doc 9971 mentioned updates of ATFM Daily Plans should be sent to stakeholders involved since 2nd edition (2014 - first edition with ATFM content)	Accepted.
FA-E-NOPS-CR/46	NOPS-B1/2 / EN-05 - B2B/SWIM services procedure	Description: Real-time technical support procedures for ~~B2B(2019)/~~SWIM~~(2020)~~ services. References: ICAO Doc 9971 Manual on Collaborative ATFM Availability: ~~2019~~ 2026	Remove B2B as it is considered regional implementation of SWIM services. SWIM services mentioned does not have associated ASBU element until Block 2 (SWIM-B2/1)	Accepted.

			Linking the enabler to SWIM services would push the enabler availability into B2 timeframe Meanwhile, Doc 9971 in its current edition (3rd edition, 2018) does not have mentioned procedure. Requiring Doc 9971 implies reference to next edition of Doc 9971 with earliest planned publication date of 2026 (B3 timeframe).	
FA-E-NOPS-CR/47	NOPS-B1/2 / EN-06 - Enhanced NOP platform	Remove enabler	The enabler text is too vague for any reader to understand action required.	Accepted.
FA-E-NOPS-CR/48	NOPS-B1/2 / EN-07 - Enhanced NOP interfaces	~~B2B (2019)/~~ SWIM ~~(2020)~~ -Network system interfaces with concerned stakeholders.	Removed regional term "B2B." More explanation on "SWIM Network system interfaces" required. Otherwise, the text may imply reliance on SWIM-B2/1 element, pushing the element to B2.	Accepted.
FA-E-NOPS-CR/49	NOPS-B1/2	Renumber to NOPS-B3/5	Element moves to B3 due to Enabler 05 and 07 availability date being in B2 timeframe	Accepted.
FA-E-NOPS-CR/50	NOPS-B1/3 / EN-01 – AOP/NOP Procedure	Availability: ~~2019~~ 2026	Enabler references Doc 9971. Current edition of Doc 9971 (3rd edition, 2018) does not	Accepted.

			have any mention of AOP/NOP procedure. Next edition planned in 2026 (B3).	
FA-E-NOPS-CR/51	NOPS-B1/3	Renumber to NOPS-B3/6	Element moves to B3 due to Enabler 01 availability date being in B3 timeframe	Accepted.
FA-E-NOPS-CR/52	NOPS-B1/4 / EN-01 – Complexity management procedure	Availability: ~~2019~~ 2026	Enabler references Doc 9971. Current edition of Doc 9971 (3rd edition, 2018) does not have any mention of complexity management procedure. Next edition planned in 2026 (B3).	Accepted.
FA-E-NOPS-CR/53	NOPS-B1/4 / DC	The rigid application of ATFM measures based on standard capacity thresholds as the pre-dominant tactical capacity measure needs to be replaced by a close working relationship between ANSPs and ATM Network function, which would monitor both the real demand and the effective capacity of sectors having taken into account the complexity of expected traffic situation. The local traffic complexity assessment continuously monitors sector demand and evaluate traffic complexity (by applying predefined complexity metrics) according to a predetermined qualitative scale. It provides support in the determination of solutions in order to plan airspace, sectors and staff to handle the predicted traffic. The local complexity assessment would benefit by receiving processing and integrating the ATM Network function information in order to supplement the local traffic counts with the relevant flight plan	Potential Machine Learning support for traffic complexity assessment.	Accepted.

		data. This will improve the quality of the planned trajectory and further enhance the traffic complexity management. Machine Learning may be deployed to further support traffic complexity assessment.		
FA-E-NOPS-CR/54	NOPS-B1/4 / EN-01 - Complexity management procedure	Availability: ~~2019~~ 2026	Current edition of Doc 9971 (3rd edition, 2018) does not mention complexity management procedure. Next edition planned in 2026 Availability moves to 2026 (B3).	Accepted.
FA-E-NOPS-CR/55	NOPS-B1/4	Renumber to NOPS-B3/7	Element moves to B3 due to Enabler 01 availability date being in B3 timeframe	Accepted.
FA-E-NOPS-CR/56	NOPS-B1/5 / EN-01 – Rolling ASM/ATFM procedure	Availability: ~~2019~~ 2026	While continuous/rolling AUP was mentioned as an enabler of Advanced FUA concept in Doc 10088 (1st edition, 2021), there is no mention of Rolling ASM/ATFM procedure in current edition of Doc 9971 (3rd edition, 2018). Next edition planned in 2026 (B3).	Accepted.
FA-E-NOPS-CR/57	NOPS-B1/5 / EN-02 – ASM data sharing procedure	Availability: ~~2019~~ 2018	Doc 9971 (3rd edition, 2018) mentioned usage of airspace / route availability for ATFM service	Accepted.

			purposes	
FA-E-NOPS-CR/58	NOPS-B1/5 / EN-03 – ASM real-time exchange procedure	Availability: ~~2019~~ 2026	While Doc 9971 (3rd edition, 2018) mentioned of usage of airspace / route availability for ATMF service purposes, it did not go as far as specifying "ASM real-time exchange procedure Next edition planned in 2026 (B3).	Accepted.
FA-E-NOPS-CR/59	NOPS-B1/5 / EN-04 – Advanced FUA procedure	Description: Develop the to advanced FUA procedure. References: ~~ICAO Doc 9971 Manual on Collaborative ATFM~~ ICAO Doc 10088 – Manual on Civil/Military Cooperation in ATM Availability: ~~2019~~ 2021	Current edition of Doc 9971 (3rd edition, 2018) does not mention "Advanced FUA procedure." Doc 10088 (1st edition, 2021) contains Advanced FUA procedure as an example. Availability moves to 2021 (B2).	Accepted.
FA-E-NOPS-CR/60	NOPS-B1/5	Renumber to NOPS-B3/8	Element moves to B3 due to Enabler 01, 03 availability date being in B3 timeframe	Accepted.
FA-E-NOPS-CR/61	NOPS-B1/6 / DC	This element addresses the following ASM/ATFM improvements: • Airspace solutions • Pre-defined airspace configurations • ANSPs/ ATM Network function data exchanges pertinent to pre-defined airspace configurations The ASM solutions process is aimed at delivering ASM options/solutions that can help reducing or even alleviate the ATFM measures and address capacity issues identified in any particular area as well as to improve flight efficiency assessing	Not only would this require automation support, ATC licensing will also need to be taken into account. If a State's licensing scheme is still based on static sector (e.g. an ATCO is certified for Sector 1,2,3 only), the licensing scheme may need to be reviewed to	Accepted.

		impact on capacity and ensuring the synchronised availability of optimized airspace structures based on traffic demand and dynamic sectors management. The Airspace configurations are pre-defined and coordinated airspace structures and ATC dynamic sectorisation, to meet the ATFM and airspace needs in terms of capacity and/or flight efficiency. The implementation of pre-defined airspace configuration exchange covers the improvements of ATFM systems, to allow exchange of predefined airspace configurations information. The decisions required for dynamic sectorisation could benefit from real time exchanges with ATM Network function for ATFM planning, synchronisation of traffic flows and demand/capacity balancing. The notification of Airspace Configurations will be based on automatic flows of information between the different stakeholders supported by the ATM Network function. The airspace configurations and flexible sector configurations are already used when the flows and constraints can be predicted well in advance (e.g. weekend routes or seasonal flows of traffic). A more efficient and dynamic process involving the ATM Network function, ATC would require new functionalities and procedures and well defined collaborative decision making processes at pre- tactical level. The ANSPs systems needs to support the dynamic sectorisation by dynamic resizing and change of sector shapes and volumes based on pre-defined airspace configurations. In addition, impact on ATC licensing will need to be considered for States where licensing scheme is still based on static sector volumes.	enable staffing ATCOs on dynamically defined/activated sectors. That should perhaps be recognized in the description.	
FA-E-NOPS-CR/62	NOPS-B1/6 / EN-01 – Airspace	Description: Develop the ASM/ATFM procedures for airspace solution as a part of ATFM solution	Current edition of Doc 9971 (3rd edition, 2018) did	Accepted.

	solution procedure	to address demand-capacity balance. References: ICAO Doc 9971 Manual on Collaborative ATFM	not mention "airspace solution," but mentioned ATFM solution where airspace sectorizations may be amended to match capacity to traffic demand	
FA-E-NOPS-CR/63	NOPS-B1/6 / EN-02 - Constrain management procedure	Availability: ~~2019~~ 2026	ATFM part of Doc 9971 has not mentioned dynamic sectorization & configuration management. Next edition planned is 2026 (B3).	Accepted.
FA-E-NOPS-CR/64	NOPS-B1/6	Renumber to NOPS-B3/9	Element moves to B3 due to Enabler 02 availability date being in B3 timeframe	Accepted.
FA-E-NOPS-CR/65	NOPS-B1/7 / DR-03	Dependency Type: ~~Relation-operational benefit~~ Relation-operational need ASBU Element: SWIM-B2/1 – Information Service Provision	As per element description, enhanced ATFM slot swapping "increases flexibility for Airspace Users; and provides a wider range of possibilities, by facilitating the identification of possible swaps for an ATFM Measure impacted flight (through B2B/SWIM-based Network Operations Planning interfaces)" The element needs to refer to ASBU element SWIM-B2/1 as operational	Accepted.

			need in order to assist identification of possible slot swaps via SWIM interfaces. This moves the element to B2 timeframe.	
FA-E-NOPS-CR/66	NOPS-B1/7 / EN-01 – Slot swapping procedure	Availability: ~~2019~~ 2018	Doc 9971 (3rd edition, 2018) mentioned slot swapping as mitigation of impact of ATFM measures.	Accepted.
FA-E-NOPS-CR/67	NOPS-B1/7 / EN-02 – ATFM slot swapping module	Description: Enhance the ATFM systems with ATFM slot swapping capabilities ~~supporting as well the Airport Slot Monitoring in real time~~	Airport Slot Monitoring does not relate to ATFM slot swapping and is part of airport slot coordinator job description.	Accepted.
FA-E-NOPS-CR/68	NOPS-B1/7 / ML	~~Standardization~~ Ready of Implementation	Element ready for implementation by 2025.	Accepted.
FA-E-NOPS-CR/69	NOPS-B1/7	Renumber to NOPS-B2/10	Element moves to B2 due to need dependency on SWIM-B2/1 element	Accepted.
FA-E-NOPS-CR/70	NOPS-B1/8 / Name	Name: Extended Arrival Management supported by the ~~ATM Network~~ ATFM function	The term “ATM Network function” in the element should be changed to "ATFM function", which will make it easier to understand that its AMAN (XMAN) / ATFM Integration. AMAN/ATFM integration should be possible on both "local-level" ATFM ops and "regional-level" ATFM ops. There should not be exclusively	Accepted.

			possible in regions where an ATM Network function exists.	
FA-E-NOPS-CR/71	NOPS-B1/8 / NC	Extended Arrival Management information is taken on board by the ~~Network ATM~~ ATFM function to improve the quality of the ATFM service	The term "ATM Network function" in the element should be changed to "ATFM function", which will make it easier to understand that its AMAN (XMAN) / ATFM Integration. AMAN/ATFM integration should be possible on both "local-level" ATFM ops and "regional-level" ATFM ops. There should not be exclusively possible in regions where an ATM Network function exists.	Accepted.
FA-E-NOPS-CR/72	NOPS-B1/8 / DC	The ~~ATM Network~~ ATFM function involvement in extended Arrival Management process is addressed by this element. It does include the following elements: • Enhancements of ATFM Planned Trajectory about the accuracy/predictability of estimates to meet the extended arrival management operational requirements • Provision of ATFM Planned Trajectory to ANSPs; • Reception and processing of ANSPs extended Arrival Management info by ~~ATM Network~~ ATFM function; • ATFM assessment tool for extended Arrival Management. Bilateral agreements need be established between the sectors involved that can be in different ATC units and also in different countries, including the ~~ATM~~	The term "ATM Network function" in the element should be changed to "ATFM function", which will make it easier to understand that its AMAN (XMAN) / ATFM Integration. AMAN/ATFM integration should be possible on both "local-level" ATFM ops and "regional-level" ATFM ops. There should not be exclusively possible in regions where an ATM Network function exists.	Accepted.

		~~Network~~ ATFM function for the notification purposes. The ATFM procedures need to be revised for the management of the extended Arrival Management information.		
FA-E-NOPS-CR/73	NOPS-B1/8 / EN-01 – Extended AMAN LoA	Description: Define the data exchanges and operational procedures with ANSP. References: ~~ICAO Doc 9971 Manual on Collaborative ATFM~~ SESAR Deployment Programme	Alternate reference provided in place of ICAO Doc 9971	Accepted.
FA-E-NOPS-CR/74	NOPS-B1/8 / EN-02 – ATFM procedure for Extended AMAN	Develop the ATFM procedures for management of extended Arrival Management information. References: ~~ICAO Doc 9971 Manual on Collaborative ATFM~~ SESAR Deployment Programme	Alternate reference provide in place of ICAO Doc 9971	Accepted.
FA-E-NOPS-CR/75	NOPS-B1/8 / ML	~~Standardization ——~~Ready for Implementation	Element ready for implementation by 2025	Accepted.
FA-E-NOPS-CR/76	NOPS-B1/9 / Name	~~Target Times~~ Calculated Time Over (CTO) for ATFM purposes	Align terminology with ICAO Doc 9971, which refers to "target time" as "Calculated Time Over (CTO)"	Accepted.
FA-E-NOPS-CR/77	NOPS-B1/9 / NC	Calculation and provision of ~~Target Times~~ Calculated Time Over (CTO) by the ~~ATM Network~~ ATFM function in addition to CTOT~~, for the most penalised measure~~.	Align terminology with ICAO Doc 9971, which refers to "target time" as "Calculated Time Over (CTO)" Methodology for resolution of multiple ATFM measures is not yet globally harmonized. The mention of "the most penalized [ATFM] measure" may confuse readers.	Accepted.
FA-E-NOPS-CR/78	NOPS-B1/9 / DC	In order to improve the flight predictability at the entry of the congested area, a ~~target~~ calculated time of entry at the congested ~~area (most penalised measure)~~ will be provided by ~~ATM Network~~ ATFM function. At this stage, the target	Align terminology with ICAO Doc 9971, which refers to "target time" as "Calculated Time Over (CTO)"	Accepted.

		times will be applied for ATFM purpose only, including an initial level of arrival sequencing in case of an arrival ATFM measure. The ~~ATM Network~~ ATFM function will provide the ~~Target Time (TT)~~ Calculated Time Over (CTO) at the ~~most penalising~~ ATFM measure reference point in addition to Calculated Take-Off Time (CTOT) to all concerned users. ~~TT~~ CTO will be distributed by data exchanges with the concerned Stakeholders. Stakeholders using ~~TTs~~ CTOs should be able to receive, extract and present the ~~target times~~ CTOs delivered by ~~ATM Network~~ ATFM function. ANSPs have access to the relevant information on flights that are subject to a ~~Target Time~~ CTO to manage these flights as required in accordance with local procedures that need to be developed. The Flight Operating centres should provide ~~Target Times~~ CTO to pilots ~~prior to departure~~; pilots should endeavour to adhere to the ~~Target Times~~ CTO to the extent possible.	Methodology for resolution of multiple ATFM measures is not yet globally harmonized. The mention of "the most penalized [ATFM] measure" may confuse readers. Delivering CTO may not necessarily happen before departure; it could be delivered while the aircraft is already airborne, e.g. in the case of a long-range flight / Long Range ATFM (LR-ATFM) operations.	
FA-E-NOPS-CR/79	NOPS-B1/9 / EN-01 - Target Time Procedure	Availability: ~~2019~~ 2026	ATFM part of current Doc 9971 (3rd edition, 2018) mentioned CTO as research & development. Next edition planned is 2026 (B3)	Accepted.
FA-E-NOPS-CR/80	NOPS-B1/9	Renumber to NOPS-B3/9	Element moves to B3 due to Enabler 01 availability date being in B3 timeframe	Accepted.
FA-E-NOPS-CR/81	NOPS-B1/10 / MP	Collaborative Trajectory Options Programs are ~~Traffic Management Initiatives (TMI)~~ ATFM measures that allow ATFM function to choose the best possible balance between ATFM delay and rerouting by using airspace user provided Trajectory Option Sets (TOS) to mitigate the operational impact of weather or	Align terminology with ICAO Doc 9971	Accepted.

		traffic demand airspace constraints.		
FA-E-NOPS-CR/82	NOPS-B1/10 / NC	ATFM function has the capability to receive and process Trajectory Option Sets (TOS) provided by airspace users. These are ranked trajectories that represent the operator's preference for the trade-off between receiving ATFM delay and routing around airspace constraints. When there is an airspace constraint, ATFM function has the flexibility to use the trajectory options provided by all participating operators to optimize the choice between accepting a subset of the flights to use the available airspace capacity, applying ATFM delay to others, and rerouting the remaining traffic around the constraint. Finally, ATFM function has the capability to electronically notify the participating airspace users of the chosen trajectory that they are expected to fly.	Editorial to clarify "ATFM function" rather than "ATFM"	Accepted.
FA-E-NOPS-CR/83	NOPS-B1/10 / DC	CTOP works as follows: 1. ATFM function creates an airspace boundary and establishes flow control on any air traffic that crosses that boundary. 2. Airspace Users based on the notice of the airspace constraint develop and submit in advance of the issuance of the program, a set of desired reroute options (called a Trajectory Options Set or TOS) that is the operator's preference for routing around the constraint. 3. CTOP uses the preferred options to automatically assign delays or reroutes to flights in orderto dynamically manage the demand as conditions change.	Editorial to clarify "ATFM function" rather than "ATFM"	Accepted.
FA-E-NOPS-CR/84	NOPS-B1/10 / EN-03 - Tools and system to support CTOP	Description: Tools and systems in place at ANSP to support CTOP operations. - Reference: ~~https://cdm.fly.faa.gov/?page_id=983~~ [CTOP Awareness Items for Flight Operators]	Convert link to document name (ASBU PPT/6)	Accepted.
FA-E-NOPS-	NOPS-B1/10 / EN-04 –	Description: Tools and systems in place at AOs to support CTOP	Convert link to document name	Accepted.

CR/85	CFSP to support CTOP	operations. - Reference: ~~https://cdm.fly.faa.gov/?page_id=983~~ [CTOP Awareness Items for Flight Operators]	(ASBU PPT/6)	
FA-E-NOPS-CR/86	NOPS-B1/10 / ML	~~Standardization~~ Ready for Implementation	Element ready for implementation by 2025	Accepted.
FA-E-NOPS-CR/87	NOPS/Block2	Further automation in ATFM processes. Increasing real-time collaboration among stakeholders helped improve knowledge of the Airspace Users preferences, to inform on system capabilities and ATC capacity and further enhance Collaborative Decision Making (CDM) to address specific issues/circumstances, including Airspace Users flight prioritisation input as regards ATFM measures. The Collaborative ATFM Operations Planning will be further enhanced through reconciliation of multiple constraints resolution strategies to identify the best ATFM solution, enhanced what-if functionality and capability to monitor ATFM performance. ~~ATFM evolves to support Trajectory Based Operations (TBO). There will be an improved Trajectory Forecast based on the qualification and quantification of uncertainties, probabilistic approaches, and enriched en-route and airport information sharing.~~ ~~Enhanced Demand and Capacity Balancing (DCB) provides capabilities which create a paradigm shift with all stakeholders expressing dynamically and precisely their needs which have to be accommodated within an agreed performance framework.~~ ~~The Collaborative Network Operations Planning will be further enhanced.~~ ~~Initial steps towards Airspace Users' driven priorities and the extended~~	Align terminology with ICAO Doc 9971 Include reference to elements moved from Block 1: - NOPS-B1/7 – Enhanced ATFM Slot Swapping (NOPS-B2/10) Remove reference to elements moved to Block 3 & Block 4: - NOPS-B2/1 – Optimized ATM Network Services in the initial TBO context (NOPS-B3/11) - NOPS-B2/2 – Enhanced Dynamic Airspace Configuration (NOPS-B3/12) - NOPS-B2/4 – Multi ATFM Slot Swapping and Airspace User Priorities (NOPS-B3/13) - NOPS-B2/5 – Further	Accepted.

		~~airports integration with the ATM Network Planning are envisaged. Within this timeframe a considerable amount of traffic in high upper and lower airspace is flying. Due to the characteristics of this traffic, the principles of block 4 network operations are exhibited at higher airspace and within the UTM airspace.~~	Airport integration within Network Operations Planning (NOPS-B3/14) - NOPS-B2/6 – ATFM adapted for Cross-Border Free Route Airspace (NOPS-B3/15) - NOPS-B2/7 – UTM Network Operations (NOPS-B4/1) NOPS-B2/8 – Higher Upper Airspace Network Operations (NOPS-B4/2)	
FA-E-NOPS-CR/88	NOPS-B2/1 / DC	Computation and sharing of more accurate and consistent end to end 4D trajectories will constitute the basis for forecasting traffic complexity for the relevant look-ahead time horizons, improved ATFM scenario management and the provision of an enhanced common network view as a key enabler to optimise collaborative network management. Interactions between trajectory management and for instance, ATFM / STAM processes and Dynamic Airspace Configuration will be further enhanced. Tools and systems are required for improved network prediction and performances such as: • Tools that provide functionality for simulating, evaluating the balance between demand and capacity taking into account the data from different stakeholders; • ATFM scenario management; • Assessment of performance of	Target Time is mentioned again here, though it is hard to interpret whether it is meant in the context of ATFM (i.e. similarly to a CTO) or in the context of AMAN/XMAN, having already been integrated with ATFM (in which TTO/TTA would be the right use of the term). This may need clarification on the intention before deciding how to change it.	Accepted.

		network operations with stakeholders able to evaluate the impact of their intentions and decisions on capacity and other performance indicators; • Automated tool supporting ATFM/ATC planning environment to manage traffic complexity in order to alleviate traffic complexity, density and traffic flow problems by planning individual trajectories using advanced planning tools; • The management of Hotspot resolution and more frequent STAM Measures in the planning and execution phase is supported by advanced capabilities (preparation, implementation, monitoring). The ~~Target Time~~ Calculated Time Over (CTO) Management: to manage the hotspot resolution, DCB actors can constrain the Time of Entry of flights into the hotspot with ~~TTO~~ CTO (~~Target~~ Calculated Time Over the congested en-route point) and TTA (target Time of Arrival at congested Airport) in order to smooth the traffic.		
FA-E-NOPS-CR/89	NOPS-B2/1 / EN-01 - Scenario management procedure	Availability: ~~2022~~ 2026	Enabler refers to ICAO Doc 9971. However, current edition of Doc 9971 (3rd edition, 2018) does not include a Scenario Management procedure. Next edition planned in 2026 (B3).	Accepted.
FA-E-NOPS-CR/90	NOPS-B2/1 / EN-02 - Network Performance Assessment procedure	Availability: ~~2022~~ 2026	Enabler refers to ICAO Doc 9971. However, current edition of Doc 9971 (3rd edition, 2018) does not mention performance assessments in	Accepted.

			Post-Ops Analysis, but not to the extent of "network performance assessment" Next edition planned in 2026 (B3).	
FA-E-NOPS-CR/91	NOPS-B2/1 / EN-03 - Hotspot resolution procedure	Availability: ~~2022~~ 2026	Enabler refers to ICAO Doc 9971. However, current edition of Doc 9971 (3rd edition, 2018) does not mention any hotspot resolution procedure. Next edition planned in 2026 (B3).	Accepted.
FA-E-NOPS-CR/92	NOPS-B2/1 / EN-04 - Target Time reconciliation procedure	Availability: ~~2022~~ 2026	Enabler refers to ICAO Doc 9971. However, current edition of Doc 9971 (3rd edition, 2018) does not mention any CTO (Target Time) resolution procedure. Next edition planned in 2026 (B3).	Accepted.
FA-E-NOPS-CR/93	NOPS-B2/1	Renumber to NOPS-B3/10	Enablers 01, 02, 03 timing falls in Block 3 timeframe.	Accepted.
FA-E-NOPS-CR/94	NOPS-B2/2 / DC	New concepts, systems and procedures will allow full dynamicity of airspace volumes management and sector configurations. Dynamic Airspace Configuration ~~DACs~~ integration in ATFM will provide additional means regarding the collaborative optimisation of traffic flows (strategic, pre-tactical, tactical) making best use of available scarce resources. Airspace volumes that satisfy specific operational	Spell out DACs to ensure readability of the description	Accepted.

		requirements are progressively introduced to facilitate the ATM network optimization and minimize the impact on the expected traffic flows.		
FA-E-NOPS-CR/95	NOPS-B2/2 / EN-01 - DAC procedure	Availability: ~~2022~~ 2026	Enabler refers to ICAO Doc 9971. However, current edition of Doc 9971 (3rd edition, 2018) does not mention any DAC procedure. Next edition planned in 2026 (B3).	Accepted.
FA-E-NOPS-CR/96	NOPS-B2/2 / EN-02 – Airspace volume procedure	Availability: ~~2022~~ 2026	Enabler refers to ICAO Doc 9971. However, current edition of Doc 9971 (3rd edition, 2018) does not mention any airspace volume procedure. Next edition planned in 2026 (B3).	Accepted.
FA-E-NOPS-CR/97	NOPS-B2/2	Renumber to NOPS-B3/11	Enablers 01, 02 timing falls in Block 3 timeframe.	Accepted.
FA-E-NOPS-CR/98	NOPS-B2/3 / EN-01 – Collaborative NOP procedure	Name: Collaborative ~~NOP~~ ATFM planning procedure Availability: ~~2022~~ 2018	Align terminology with ICAO Doc 9971. Doc 9971 (3rd edition, 2018) mentioned that ATFM Daily Plan (ADP) is amended taking into account of any event likely to affect it. However, it does not prescribe specific collaboration procedure. In addition, such collaboration	Accepted.

			procedure may be overly prescriptive on a global scale. Align availability timing with current edition of ICAO Doc 9971.	
FA-E-NOPS-CR/99	NOPS-B2/4 / EN-01 – Multi-swap procedure	Availability: ~~2022~~ 2026	Enabler refers to ICAO Doc 9971. However, current edition of Doc 9971 (3rd edition, 2018) does not include any multi-swap procedure. Slot swapping was mentioned as actions to mitigate impact of ATFM measures. Next edition planned in 2026 (B3).	Accepted.
FA-E-NOPS-CR/100	NOPS-B2/4	Renumber to NOPS-B3/12	Enabler 01 timing falls in Block 3 timeframe.	Accepted.
FA-E-NOPS-CR/101	NOPS-B2/5 / DC	The integration of additional AOP data within the ~~Network~~ ATFM operations planning provides an enhanced dynamic/rolling picture of the network situation to be used by all operational stakeholders to prepare their plans and their inputs to the network CDM processes. The data exchanges are based on the subset of SWIM services that are most widely available to all stakeholders, communicating with local airport A-CDM systems to exchange relevant operational information. The concept aims to improve integration of departure planning data from ~~medium/small size~~ airports ~~when~~ serving a complex airspace with dense traffic through improved availability of aircraft pre- departure information to the ATM Network function by specific TWR tools	Why is this statement focused on small/medium airports, when the idea mentioned in the "New Capabilities" is about "expanding" the scope of airport information that is fed into the ATFM function? The expansion of airport information scope to be integrated into the ATFM decision-making can also apply to large airports with existing A-CDM process, no?	Accepted.

		providing accurate electronic pre-departure information.	Adjust description to expand scope of NOPS-B2/5 from just focusing on medium/small airports serving complex airspace with dense traffic.	
FA-E-NOPS-CR/102	NOPS-B2/5 / EN-01 – Enhanced NOP/AOP procedure	Description: Develop the ATFM/Airport procedures for additional Airport Operations Plan (AOP) components/Network Operation Planning integration. References: ICAO Doc 9971 Manual on Collaborative ATFM Availability: ~~2022~~ 2026	Enabler refers to ICAO Doc 9971. However, current edition of Doc 9971 (3rd edition, 2018) does not have any mention of AOP. Potential additional reference from ADOP required. Next edition planned in 2026 (B3).	Accepted.
FA-E-NOPS-CR/103	NOPS-B2/5	Renumber to NOPS-B3/13	Enabler 01 timing falls in Block 3 timeframe.	Accepted.
FA-E-NOPS-CR/104	NOPS-B2/6 / EN-01 - Cross-border FRA procedure	Availability: ~~2022~~ 2026	Enabler refers to ICAO Doc 9971. However, current edition of Doc 9971 (3rd edition, 2018) does not have any mention of cross-border Free-Route Airspace (FRA). Next edition planned in 2026 (B3).	Accepted.
FA-E-NOPS-CR/105	NOPS-B2/6	Renumber to NOPS-B3/14	Enabler 01 timing falls in Block 3 timeframe.	Accepted.
FA-E-NOPS-CR/106	NOPS-B2/7 / ML	Concept	No UTM network operations procedure exist. By B2 timeframe, it is expected that the UTM continued to be in	Accepted.

			concept.	
FA-E-NOPS-CR/107	NOPS-B2/7	Renumber to NOPS-B4/1	Elements in concept stage in B2 is more likely to be available for implementation in B4 at the earliest.	Accepted.
FA-E-NOPS-CR/108	NOPS-B2/8 / ML	Concept	No higher upper airspace network operations procedure exist. By B2 timeframe (AN-Conf/14), definition of higher upper airspace would still be under discussion.	Accepted.
FA-E-NOPS-CR/109	NOPS-B2/8	Renumber to NOPS-B4/2	Elements in concept stage in B2 is more likely to be available for implementation in B4 at the earliest.	Accepted.
FA-E-NOPS-CR/110	NOPS/Block3	ATFM evolves to support Trajectory Based Operations (TBO). There will be an improved Trajectory Forecast based on the qualification and quantification of uncertainties, probabilistic approaches, and enriched en-route and airport information sharing. This module introduces enhanced processes to manage flows or groups of flights in order to improve overall fluidity. It refines ATFM techniques, integrates the management of airspace and traffic flows through a holistic network operational planning dynamic/rolling process in order to achieve greater efficiency and enhance network performance. Enhanced Demand and Capacity Balancing (DCB) provides capabilities which create a paradigm shift with all stakeholders expressing dynamically and precisely their needs which have to be accommodated within an agreed performance framework. The Collaborative Network	Align terminology with ICAO Doc 9971 Include reference to elements moved from Block 1: - NOPS-B1/1 – Short-Term ATFM Measure (NOPS-B3/4) - NOPS-B1/2 – Enhanced Network Operations Planning (NOPS-B3/5) - NOPS-B1/3 – Enhanced Integration of Airport Operations Planning with Network Operations Planning (NOPS-B3/6)	Accepted.

		Operations Planning will be further enhanced. Initial steps towards Airspace Users' driven priorities and the extended airports integration with the ATM Network Planning are envisaged. ~~ATFM further supports trajectory based operations (TBO) based on the use of the more precise information provided by the different nodes of the air navigation system (aircraft becomes a node of information). All vehicles participate in intent sharing and airspace intent network is in place).~~ ~~Collaborative Network Operations becomes cooperation in network operations. This means providing optimal flow planning for pre-flight and active flight trajectories that will be impacted by another network operational region supported by common procedures and exchanges~~.	- NOPS-B1/4 – Dynamic Traffic Complexity Management (NOPS-B3/7) - NOPS-B1/5 – Full Integration of ASM with ATFM (NOPS-B3/8) - NOPS-B1/6 – Initial Dynamic Airspace Configurations (NOPS-B3/9) - NOPS-B1/9 – Target Times for ATFM Purposes (NOPS-B3/10) Include reference to elements moved from Block 2: - NOPS-B2/1 – Optimized ATM Network Services in the initial TBO context (NOPS-B3/11) - NOPS-B2/2 – Enhanced Dynamic Airspace Configuration (NOPS-B3/12) - NOPS-B2/4 – Multi ATFM Slot Swapping and Airspace User	

			Priorities (NOPS-B3/13) - NOPS-B2/5 – Further Airport integration within Network Operations Planning (NOPS-B3/14) - NOPS-B2/6 – ATFM adapted for Cross-Border Free Route Airspace (NOPS-B3/15) Include reference to new element: - NOPS-B3/16 – Dynamic allocation of en-route ATS Remove reference to elements moved to Block 4: NOPS-B3/x –	
FA-E-NOPS-CR/111	NOPS-B3/1 / ML	Concept	No procedure exist in Block 3 timeframe	Accepted.
FA-E-NOPS-CR/112	NOPS-B3/1	Renumber to NOPS-B4/3	Conceptual element by 2025 moved to Block 4	Accepted.
FA-E-NOPS-CR/113	NOPS-B3/2 / ML	Concept	No procedure exist in Block 3 timeframe	Accepted.
FA-E-NOPS-CR/114	NOPS-B3/2	Renumber to NOPS-B4/4	Conceptual element by 2025 moved to Block 4	Accepted.
FA-E-NOPS-CR/115	NOPS-B3/3 / ML	Concept	No procedure exist in Block 3 timeframe	Accepted.
FA-E-NOPS-CR/116	NOPS-B3/3	Renumber to NOPS-B4/5	Conceptual element by 2025 moved to Block 4	Accepted.
FA-E-	NOPS/Block4	ATFM further supports trajectory	Align terminology	Accepted.

NOPS-CR/117		based operations (TBO) based on the use of the more precise information provided by the different nodes of the air navigation system (aircraft becomes a node of information). All vehicles participate in intent sharing and airspace intent network is in place). Collaborative Network Operations becomes cooperation in network operations. This means providing optimal flow planning for pre-flight and active flight trajectories that will be impacted by another network operational region supported by common procedures and exchanges. Within this timeframe a considerable amount of traffic in high upper and lower airspace is flying. Due to the characteristics of this traffic, the principles of block 4 network operations are exhibited at higher airspace and within the UTM airspace. ~~ATFM shifts from trajectory management to airspace constraints management. The availability of more timely accurate information allows for a shift on the provision of DCB, capacity accommodates demand and not vice versa therefore airspace users plan and execute their own business and mission trajectories based on real time management of the constraints by the ANSPs.~~	with ICAO Doc 9971 Include reference from elements moved from Block 2: - NOPS-B2/7 – UTM Network Operations (NOPS-B4/1) - NOPS-B2/8 – Higher upper airspace network operations (NOPS-B4/2) Include reference from elements moved from Block 3: - NOPS-B3/1 – ATM Network Services in Full TBO Context (NOPS-B4/3) - NOPS-B3/2 – Cooperative Network Operations (NOPS-B4/4) - NOPS-B3/3 – Innovative Airspace Structure (NOPS-B4/5)	
FA-E-NOPS-CR/118	NOPS/Block5	ATFM shifts from trajectory management to airspace constraints management. The availability of more timely accurate information allows for a shift on the provision of DCB, capacity accommodates demand and not vice versa therefore airspace users plan and execute their own business and mission	Migrated text from Block 4 (7th edition).	Accepted.

		trajectories based on real time management of the constraints by the ANSPs.		

Attachment B
Change Request for New Element

TEMPLATE TABLE 2: Element description

PART 3	NOPS-B4/x	Dynamic allocation of en-route ATS			
	Main purpose	Improve demand and capacity balancing for area control service by dynamically re-assigning the responsibility for area control (and related) services within volumes of controlled airspace from over-capicity ACCs to under-capacity ACCs.			
	New capabilities	New systems and information capabilities will allow high-reliability area control service demand forescasts. New systems and procedures will enable the nceccessary communications capabilities, ATS surveillance data and/or data link connections to be active for whichever ACC is providing services in the airspace concerned. The areas of responsibility of two or more ACCs will be dynamically reconfigured to account for the best balance between area control service demand an capacity.			
	Description	New concepts, systems and procedures will allow full dynamic management of the areas of responsibility of two or more ACCs, expanding the benefits of dynamic sector configuration beyond a single ACC. ATFM integration will provide additional means for the collaborative optimization of traffic flows (at the strategic and pre-tactical levels) to make the best use of available area control resources. **Maturity Level:** Concept **Human Factor Considerations:** **1. Does it imply a change in task by a user or affected others?** Yes **2. Does it imply processing of new information by the user?** Yes **3. Does it imply the use of new equipment?** Yes **4. Does it imply a change to levels of automation?** Yes			
	Dependencies and relations	Type of dependencies		ASBU element	
		Evolution	Relation	ID	Title
		NOPS-B3/3	Operational - need Technology - need Information - need	NOPS-B3/2	Cooperative Network Operations Planning
				NOPS-B2/2	Enhanced dynamic airspace configurarion
				SWIM-B2/1	Information service provision
				SWIM-B2/2	Information service consumption
				DAIM-B2/1	Dissmeintation of eronatuical information in a SWIM environment
				DAIM-B2/2	Daily airspace management information to support flight and flow
				AMET-	Meteorological information service in SWIM

				B2/4			
	Operations	Flight phases					Turn-around
		Taxi-out	Departure	En-route	Arrival	Taxi-in	
			✓	✓	✓		
	Planning layers	ATM planning	Strategical	Pre- tactical	Tactical		Post operations
					Pre ops	During ops	
		✓	✓	✓			

	Enablers			
	Category	**Type**	**Description/Examples**	**Stakeholder(s)**
PART 4	Regulatory Provisions	Licencing	Air traffic controller licencing framework accounts for airspace-centric, rather than ATC facility-centric, qualification	CAA, ANSP, ATCOs, ICAO
		Responsibility and Liability	Responsibility and related liability for the provision of information and other services in the airspaces concerned when service delegation occurs	State, CAA, ANSP, ICAO
	Operational Procedures	Coordination	Procedures to delegate the responsibility to provide service in an airspace volume from one ACC to another and to ensure that any airspace volume is under the responsibility of a single ACC at a time	State, CAA, ANSP, ATCOs, Airspace Users
		Communications	Procedures that are airspace-centric, rather than ATC unit-centric	CAA, ATCOs, Flight crews, ICAO
		Coordination	Procedures that are airspace-centric, rather than ATC unit-centric, including for flight data and system outages and maintenance	ANSPs, ATCOs, RCCs, ATSEPs, Aircraft Operators, ATFM units
		Coordination	Procedures to ensure adequate system monitoring and updates of system status, irrespective of which ACC currently requires information and/or may be affected by changes	ANSPs, ATSEPs, ATCOs, Airspace Users, ATFM Units
	Airborne System capability			
	Ground system infrastructure	C, N, S,	System capability to provide C,N,S data to different ATC units	ATSEPs
		AIS data exchange	Systems and procedures to ensure that all required data is provided to all potential ATC users	
		Flight data exchange	Systems and procedures to ensure that all required data is provided to all potential ATC users	
	Training	Air traffic controller recency and recurrent training to account for wider variety of airspace configurations.		
	Other			

TEMPLATE TABLE 3: Element applicability, benefit and performance analysis

PART 5	**FICE-B0/1**	**Automated basic Inter facility message exchange**
	Deployment applicability	
	Operational conditions	Where ACCs in the same ATFM network regularly have differing levels of capacity (i.e. some ACCs have additional capacity when others are at or over their capacity), the demand can be dynamically shifted to the ACC(s) with enough capacity to safely manage it. The ACCs involved need to have similar enough procedures, technology, capabilities, knowledge requirements, services, etc. to enable relatively seamless "swapping" of responsibilities. The concept is that

		which ACC was providing servcies would be transparent to the tactical airspace user - i.e. - the user would be communicating with "airspace" rather than a specific ATC unit.
	Main intended benefits	
	Type	**Operational description** / **Benefitting stakeholder(s)**
	Direct benefits	Increased resilience and business resumption capability in the event of a disruption affecting an ACC and more flexibility to reduce the negative traffic impacts due to planned maintenance and system upgrades — ANSPs, Airspace users, aircraft operators
		Fewer delays due to capacity constraints affection only one or some of a network of ACCs — Airspace users, aircraft operators
		More uniform workload levels can help to maintain closer to ideal "alertness" thereby reducing negative safety impact of workloads that are too high or too low — ATCOs, Airspace Users
	Indirect benefits	More scope for professional advancement and more variety in the work — ATCOs

PART 6	**Intended performance impact on specific KPAs and KPIs**				
	KPA	**Focus Areas**	**KPI**	**KPI impact**	**Most specific performance objective(s) supported**
	Capacity	Capacity, throughput & utilization	KPI 06: En-route airspace capacity		
			KPI 09: Airport peak arrival capacity		
			KPI 10: Airport peak arrival throughput		
			KPI 11: Airport arrival capacity utilization		
		Capacity shortfall & associated delay	KPI 07 : En-route ATFM delay		
			KPI 12: Airport/terminal ATFM delay		
	Efficiency	Additional flight time & distance	KPI 02: Taxi-out additional time		
			KPI 04: Filed flight plan en-route extension		
			KPI 05: Actual en-route extension		
			KPI 08 : Additional time in terminal airspace		
			KPI 13: Taxi-in additional time		
		Vertical flight efficiency	KPI 17: Level-off during climb*		
			KPI 18: Level capping during cruise*		
			KPI 19: Level-off during descent*		
		Additional fuel burn	KPI 16: Additional Fuel burn		
	Predictability	Punctuality	KPI 01: Departure Punctuality		
			KPI 14: Arrival punctuality		
			KPI 03: ATFM slot adherence		

* Indicators not in the GANP 2016 and propose for the GANP 2019

		Variability	KPI 15: Flight time variability		
	Other objectives from the catalogue that do not contribute to the KPIs above				

CHANGE REQUESTS FOR THE ASBU THREAD RSEQ

- This template shall be used to propose changes to the GANP ASBU Framework
- Only complete Change Requests will be processed
- Change Requests can only be issued by members of the Aviation Community
- Change Requests shall be coordinated in advance with relevant aviation community members
- For proposed changes to existing threads and elements use Attachment A
- For proposed new elements use Attachment B
- For proposed new threads use Attachment C
- Contact <GANP maintenance PoC> for assistance
- Email completed template to ganp@icao.int

Contact details

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Aviation Community *	**ANSP**
CR coordination**	**ATMOPSP / RSEQ Thread Leader**
Date of submission	**20 Feb 2024**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**20 Feb 2024**
CR Status	Accepted
Assigned TL	Piyawut Tantimekabut

Change request to existing Threads/Elements

Change Request Information

CR ID	Reference*	CR (current text with revision marks)	Justification	Remarks
FA-E-RSEQ-CR/1	RSEQ/Block0	Arriving flights are "metered" and sequenced by arrival ATC based on inbound traffic predication information, optimizing runway utilization. Also departures are sequenced allowing improved start/push- back clearances, reducing the taxi time and ground holding, delivering more efficient departure sequences and reduce surface congestion. Where applicable, Point Merge is deployed to enhance merging of traffic flows.	Reference to RSEQ-B0/3 (Point Merge) added.	Accepted
FA-E-RSEQ-CR/2	RSEQ/Block1	Sequencing of arrivals into major airports are further streamlined by implementation of ~~extension of~~ extended arrival metering~~ and integration of surface management with departure sequencing to improve runway management~~.	Reference to integration of surface management with departure sequencing removed due to absence of related element in Block 1.	Accepted
FA-E-RSEQ-CR/3	RSEQ/Block2	Integrated arrival management and departure management ~~to~~ enables dynamic scheduling and runway configuration to better accommodate arrival/departure patterns and integrate arrival and departure management. ~~In addition, integrated arrival management and departure management expands scope from single airport operations to take into account multiple airports within the same terminal~~	Reference to *integrated arrival management and departure management for multiple airports* removed due to corresponding element being moved to current RSEQ-B3/2 (arrival management in terminal airspace with multiple airports) and RSEQ-B3/5 (departure management in terminal airspace with multiple airports)	Accepted

		~~airspace.~~		
FA-E-RSEQ-CR/4	RSEQ/Block3	Integrated arrival management and departure management expands scope from single airport operations to take into account multiple airports within the same terminal airspace. ~~Extended metering within an integrated AMAN, SMAN and DMAN environment to enable dynamic scheduling and support network operations based on full FF-ICE which includes multi-ANSP. Flight information exchange system and operational agreements. Transition operations, including approach and departure to and from runways is supported by automation that runs time based separation to the threshold with display characteristics to support the operations. By this timeframe, full time-based management across merge points, departure and arrival airports is in place.~~	Reflect content of RSEQ-B3/2 (arrival management in terminal airspace with multiple airports) and RSEQ-B3/5 (departure management in terminal airspace with multiple airports) Removed content can potentially be useful for in Block 4 timeframe.	Accepted
FA-E-RSEQ-CR/5	RSEQ/Block4	Extended metering within an integrated AMAN and DMAN environment to enable dynamic real-time runway scheduling and support network operations based on FF-ICE/Release 2. Aircraft operators fleet management within runway sequencing further enables taking into account aircraft operators' fleet preferences. ~~The increase in the use of~~	Reflect content of RSEQ-B4/2 (extended arrival management supporting overlapping operations into multiple airports), RSEQ-B4/3 (increased runway utilization by improved real-time scheduling) and RSEQ-B4/4 (improved operator	Accepted

		~~accurate time and position constraints allows a shift from traffic synchronization managed by the ANSP setting target times to fulfilling the business and mission trajectory target time at the runway.~~	fleet management in runway sequencing). Original content moved to Block 5 as placeholder.	
FA-E-RSEQ-CR/6	RSEQ/Block 5	The increase in the use of accurate time and position constraints allows a shift from traffic synchronization managed by the ANSP setting target times to fulfilling the business and mission trajectory target time at the runway.	Moved from Block 4 content as placeholder.	Accepted
FA-E-RSEQ-CR/7	RSEQ-B1/1 / ML	~~Standardization~~ Ready for implementation	Update maturity level	Accepted
FA-E-RSEQ-CR/8	RSEQ-B2/1 / ML	~~Validation~~ Ready for implementation	Update maturity level (ASBU PPT/5)	Accepted
FA-E-RSEQ-CR/9	RSEQ-B3/2 / ML	~~Validation~~ Standardization	Implemented in the USA as of 2024. Full implementation benefit in Europe expected in 2026.	Accepted
FA-E-RSEQ-CR/10	RSEQ-B3/3	Renumber to RSEQ-B4/3	Validation activity in the USA with Block 4 implementation target. Full implementation benefit in Europe expected in 2027 (Block 3). Element moves to B4 due to two-region rule.	Accepted
FA-E-RSEQ-CR/11	RSEQ-B3/4	Renumber to RSEQ-B4/4	Concept status in the USA. No activity in Europe. Element moves back to B4 (ASBU PPT/5)	Accepted
FA-E-RSEQ-CR/12	RSEQ-B4/1	Renumber to RSEQ-B3/5	Implemented in the USA as of 2024 (Block 2). Full implementation benefit in Europe in 2028 (Block 3)	Accepted

			Element moves to B3 due to two-region rule.	

CHANGE REQUESTS TO THE ASBU THREAD SNET

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- Email completed template to ganp@icao.int

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Aviation Community *	**ANSP**
CR coordination**	
Date of submission	**15 February 2024**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**15 February 2024**
CR Status	Accepted
Assigned TL	Jean-François Grout

Attachment B

Change Request for New Element

Justification:	Need to new elements in the future blocks for LLO, HAO and medium level airspace
Element ID:	SNET-B4
Element name:	Ground Safety Net for Higher airspace operations (HAO)
Main purpose:	The establishment of a Ground Safety Net for Higher Airspace Operations (HAO) will serve to mitigate safety risks associated with HAO by providing a comprehensive system of support and oversight from ground-based facilities. This safety net will encompass various components, including enhanced CNS (Communication, Navigation, Surveillance) services tailored to HAO requirements, space weather monitoring and forecasting capabilities, and updated operational roles and responsibilities for air traffic management. Additionally, it will aim to ensure interoperability with lower airspace operations, accommodate military and space traffic. Overall, the Ground Safety Net for HAO will play a crucial role in facilitating the safe integration and progression of HAO within the aviation ecosystem while maintaining or improving current safety standards.
New capabilities:	New capabilities will include advanced Communication, Navigation, and Surveillance (CNS) services specifically tailored to HAO requirements, as well as robust space weather monitoring and forecasting capabilities to mitigate risks associated with high-altitude operations. Additionally, the safety net will facilitate seamless interoperability with lower airspace operations and accommodate the unique needs of military and space traffic. Furthermore, it will establish dedicated separation rules and operational responsibilities.
Description:	The Ground Safety Net for HAO will play a crucial role in enabling seamless coordination between air traffic control (ATC) authorities and HAO operators. This coordination will ensure that all flights transitioning through lower airspace to reach higher altitudes do so safely and efficiently. The net will incorporate advanced data exchange protocols and real-time monitoring systems to facilitate proactive decision-making and mitigate potential conflicts or hazards. Additionally, it will include provisions for contingency planning and emergency response to address any unforeseen events or disruptions in HAO operations. Moreover, the concept of the Ground Safety Net for HAO will evolve in tandem with advancements in technology and regulatory frameworks. As HAO becomes increasingly integrated into global airspace systems, the safety net will

continually adapt to meet evolving safety standards and operational requirements. This adaptive approach will ensure the highest levels of safety and reliability in HAO operations. Through continuous innovation and refinement, the Ground Safety Net for HAO will serve as a cornerstone of the future airspace infrastructure, facilitating the safe and efficient expansion of aviation into higher altitudes.

Maturity level: Concept

Human Factor Considerations:

1. Does it imply a change in task by a user or affected others? Yes
2. Does it imply processing of new information by the user? Yes
3. Does it imply the use of new equipment? Yes
4. Does it imply a change to levels of automation? Yes

Planning Layers: ATM planning, Strategical, Pre-tactical, Tactical-Pre ops, Tactical-During ops, Post operations

Operations: HAO

Dependencies and relations:

Type of Dependencies	**ASBU Element**

Enablers:

Enabler Category	**Enabler Type**	**Enabler Name**	**Description / References**	**Stakeholders**	**Year**

CHANGE REQUESTS FOR THE ASBU THREAD SURF

- This template shall be used to propose changes to the GANP ASBU Framework
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- For proposed changes to existing threads and elements use Attachment A
- For proposed new elements use Attachment B
- For proposed new threads use Attachment C
- Contact <GANP maintenance PoC> for assistance
- Email completed template to ganp@icao.int

Contact details

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Aviation Community *	**APO**
CR coordination**	**ADOP**
Date of submission	**24 January 2024**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**24 January 2024**
CR Status	Accepted
Assigned TL	Thomas Romig

Change request to existing Threads/Elements

Change Request Information

Change ID	**Reference***	**CR (current text with revision marks)**	**Justification**	**Remarks**
FA-E-SURF-CR/1	SURF-B0/1	New Capabilities The guiding and routing service is delivered using visual aids and signals on the aerodrome ~~platform~~. Information is managed by the controller to provide pilots and vehicle drivers all necessary information to taxi and drive ~~and~~ with the aim of avoiding incursions on the runway.	Clarification of terms and purpose	Accepted.
FA-E-SURF-CR/2	SURF-B0/2	New Capabilities The surveillance service of A-SMGCS provides airport traffic situational awareness through the positioning, identification and tracking of suitably equipped aircraft and vehicles ~~suitably equipped~~ on the aerodrome ~~surface~~. Information is presented on the controller and airport operator display independent of visibility conditions and ~~controller~~ line of sight. Description [last bullet point] to detect and indicate the position of potential ~~intruders~~ unauthorised vehicles or aircraft penetrating a runway or generating a conflict.	Wording improvements for clarity	Accepted.
FA-E-SURF-CR/3	SURF-B0/3	New Capabilities The ATCO will be provided with a short term conflicting alerting tool (A-SMGCS initial alerting service) that monitors movements on or near the runway and detects conflicts between an	The term intruder is generally used in AVSEC, not in safety.	Accepted.

		aircraft and another vehicle as well as runway incursion by unauthorised vehicles or aircraft ~~intruders~~. Appropriate alerts will be visualized on the ATCO display.		
FA-E-SURF-CR/4	SURF-B1/1	Main Purpose To improve ~~surface~~ ground operations with the aim to reduce taxi time and fuel burn, potential mistakes. New Capabilities Advanced features including "Follow~~s~~ the Greens" (FTG) and Variable Message Panels are used to optimize routing during taxi operations. The lighting system is used to direct the aircraft, making the guidance safer, as errors are minimized. Lighting system for other vehicles than aircraft ~~is~~ are connected to the SMGCS in order to optimize ground circulation and prevent collision. Description Advanced features ~~including~~ such as FTG and Variable Message Panels are used to optimize routing during taxi operations. The lighting system is used to direct the aircraft, making the guidance safer, as errors are minimized. Lighting system for other vehicles than aircraft ~~is~~ are connected to the SMGCS in order to optimize ground circulation and prevent collision.	Clarify and improve wording	Accepted.

		DEPLOYMENT APPLICABILITY Operational Conditions On complex airports, the integration of aircraft and vehicle movements ~~the platform~~ with all other activities across the aerodrome, such as maintenance or construction works, ~~is introducing~~ may introduce numerous changes and an increased level of complexity ~~in managing maintenance or construction together with ensuring~~ with potential negative impacts on the levels of safety and efficiency of operations. The introduction of dynamic aids ~~is~~ can highly improv~~ing~~e the accuracy of ~~the~~ navigation on the ~~surface~~ aerodrome and as such safety and efficiency.		
FA-E-SURF-CR/5	SURF-B1/2	Title Comprehensive pilot situational awareness on the ~~airport surface~~ aerodrome Main Purpose To improve the safety of ground operations based on increasing pilot's situational awareness~~, and safety~~ especially at taxiway and runway intersections, as well as for aircraft landing and taking off. Description The pilot can visualize surrounding traffic on a single ~~to be presented on traffic computer and~~ display. Different technologies enable this capability, such as ~~among which~~ ADS-B OUT/ADS-B IN. In order to maximize	Wording improvements and added the notion of interoperability	Accepted.

		the benefits, it is ~~suitable~~ necessary that all aircraft be equipped in a homogeneous manner or interoperability amongst systems be achieved. However, a transition period can be observed ~~and~~ as a partial equipage will result in the display of only the appropriately equipped aircraft.		
FA-E-SURF-CR/6	SURF-B1/3	Description The A-SMGCS Alerting service for controllers is complemented with the detection of conflicting ATC Clearances (CATC) given by the controller (e.g. Line-up versus Land on same runway) and with the detection of non-~~conformance~~ to procedures or instructions (e.g. route deviation~~). An electronic clearance input means is used by the controller to make the clearances known to the system.~~ Clearances are inputted to the system electronically by the controller. Surveillance data and routing information are also used by the system, potentially leveraging AI, ~~logic~~ to generate alerts to the controller.	Wording improvements and integration of AI	Accepted.
FA-E-SURF-CR/7	SURF-B1/4	New Capabilities The A-SMGCS routing service calculates individual routes for aircraft ~~mobiles~~ for representation to the controller in order to support the runway sequencing strategy. Description The A-SMGCS routing service calculates	Clarification of terms	Accepted.

		individual routes for aircraft ~~mobiles~~ based on known airport parameters and constraints or following an interaction by the controller. The controller is presented with planned or cleared routes and has means to modify these routes or to create new route if necessary. Information is updated in real time in order to improve predictability of surface operations. DEPLOYMENT APPLICABILITY Operational Conditions On complex airports, the integration of aircraft and vehicle movements ~~the platform~~ with all other activities across the aerodrome, such as maintenance or construction works, ~~is introducing~~ may introduce numerous changes and an increased level of complexity ~~in managing maintenance or construction together with ensuring~~ with potential negative impacts on the levels of safety and efficiency of operations. Appropriate and potentially tailored routing services can highly improve safety and efficiency of airport surface management. When fully integrated ~~consistent~~ with ACDM and ~~R~~runway sequencing strategies, it clearly contributes to the performance of the airport and surrounding airspace management.		
FA-E-SURF-CR/8	SURF-B1/5	New Capabilities The addition of cockpit enhanced vision capabilities	Terminology and readability improvements	Accepted.

		will improve flight crew awareness of own aircraft ~~ship~~ position~~,~~ and reduce navigation errors during periods of reduced visibility. In addition, improved situational awareness of aircraft position by the flight crew during taxi operations ~~will allow for more confidence by the flight crew in the conduct of the taxi operation~~ during periods of reduced visibility will help ~~and~~ ensure accurate application of received clearances. DEPLOYMENT APPLICABILITY Operational Conditions On complex airports, the capacity of the airport may decrease ~~a lot~~ in LVC due to increased spacing required for ground ~~surface~~ operations. The introduction of enhanced vision systems on board aircraft able to recognize lights~~ings~~ and ground indications can highly improve accuracy of ~~the~~ navigation on the ground ~~surface~~ and as such safety and efficiency ~~and limit negative impact~~.		
FA-E-SURF-CR/9	SURF-B2/1	Main Purpose To improve the guidance of pilots and vehicle drivers on the aerodrome surface. Depending on ~~from~~ the level of equipage of aircraft~~s~~ and vehicles, the operational objective may be achieved either through ~~by~~ airport ground equipment or ~~through~~ on-board capabilities.	Wording improvements addition of AI	Accepted.

		Description The A-SMGCS guidance service ~~is~~ use~~sing~~ the routing service in conjunction with ATCO inputs to allow the automated switching of Taxiway Centreline Lights (TCL) and/or stop bars. The guidance service improves the movement of aircraft or vehicles ~~mobiles~~ on the movement area and reduces the workload of controllers. AI can be leveraged to optimize routings based on current conditions and availabilities of routes. DEPLOYMENT APPLICABILITY Operational Conditions On complex airports, with very demanding traffic, the accuracy of ~~the~~ ground trajectory management ~~is~~ condition~~sing~~ the overall performance and efficiency of the ~~surface movements~~ ground operations ~~management of the platform together with ensuring safety and efficiency of operations~~. Appropriate and potentially tailored routing services can highly improve safety and efficiency of airport surface management. When fully integrated ~~consistent~~ with ACDM and ~~R~~runway sequencing strategies, it clearly contributes to the performance of the airport and surrounding airspace management.		
FA-E-SURF-CR/10	SURF-B2/2	Main Purpose Expansion of situation awareness to vehicle~~'s~~		Accepted.

		drivers by the provision of own position and surrounding traffic's position on a display in the vehicle. ~~Considered~~ ~~v~~Vehicles included can be operations vehicles small UAS used for airport specific functions. The vehicle driver is informed about potential and actual risk of collision with aircraft and infringement of restricted or closed areas.		
FA-E-SURF-CR/11	SURF-B2/3	Description This enhancement represents a key on-board feature to significantly decrease the risk of conflict with any vehicle or aircraft ~~mobile~~ on or near the runway, improving safety on the manoeuvring area ~~airport surface~~. Aircraft data is broadcasted with the appropriate ~~proper~~ level of performance and quality in order to provide timely and accurate ~~adequate~~ alerts to the pilots.	Improved terminology and readibility	Accepted.
FA-E-SURF-CR/12	SURF-B1/1	Maturity level: Change from "Standardization" to "Ready for Implementation"	Standardization activities have been completed	Accepted.
FA-E-SURF-CR/13	SURF-B1/2	Maturity level: Change from "Standardization" to "Ready for Implementation"	Standardization activities have been completed	Accepted.
FA-E-SURF-CR/14	SURF-B1/3	Maturity level: Change from "Standardization" to "Ready for Implementation"	Standardization activities have been completed	Accepted.
FA-E-SURF-CR/15	SURF-B1/4	Maturity level: Change from "Standardization" to "Ready for Implementation"	Standardization activities have been completed	Accepted.
FA-E-SURF-CR/16	SURF-B1/5	Move entire Block 1/5 to create a new Block 4/1 Change from "Standardization" to "Concept"	Technology and operational concept still being developed and not ready for standardization	Accepted.
FA-E-	SURF-B2/2	Maturity level: Change	Standardization	Accepted.

SURF-CR/17		from “Standardization” to “Ready for Implementation”	activities have been completed	
FA-E-SURF-CR/18	SURF-B2/3	Maturity level: Change from “Standardization” to “Ready for Implementation”	Standardization activities have been completed	Accepted.
FA-E-SURF-CR/19	SURF-B3/1	Change numbering of existing SURF-B3/1 to SURF-B3/2	Change needed to accommodate the new proposed B3/1	Accepted.

Attachment A: New SURF-B3/1 Block
Block Title
Optimized surface guidance for pilots and vehicle drivers
Main Purpose
Leverage AI and available data analysed through ML to improve the performance, efficiency and optimization of guidance provided to pilots and vehicle drivers on the aerodromes. Depending on the level of equipage of aircraft and vehicles, the operational objective may be achieved through airport ground equipment or on-board capabilities acting together.
Description
The A-SMGCS guidance service provides optimized routing service in conjunction with ATCO inputs to allow for the automated switching of Taxiway Centreline Lights (TCL) and/or stop bars. Predictive routing optimisation is provided using AI and ML, allowing for traffic to use the most efficient routes bringing operational, environmental and economic benefits. Predictive and automated guidance service improves the overall movement and flow of aircraft or vehicles on the movement area, reduces the workload of controllers and increases safety levels.
Maturity level
Concept
DEPLOYMENT APPLICABILITY
Operational Conditions
On complex aerodromes, with varying mix of traffic, and demanding operations, the performance of ground traffic flow management conditions the overall performance and efficiency of the ground operations. Appropriate and tailored ground operations management services leveraging data and AI can highly improve safety and efficiency of airport ground traffic flow management and the overall system performance. When fully integrated with ACDM or TAM capabilities, as well as runway sequencing strategies, it clearly contributes to the performance of the airport and surrounding airspace management.
Attachment B: New SURF-B3/3 Block
Block Title
Automated surface guidance for aircraft, integrating new entrants
Main Purpose
Provide seamless guidance and integrated surface flow management for all traffic types using the aerodrome infrastructure. Leverage AI and available data analysed through ML to provide automated guidance and routing information to aircraft and to improve the performance, efficiency and optimization of guidance. Leveraging the advanced equipment onboard the aircraft, and where applicable vehicles, the operational objective is to reduce the voice communication means to a minimum and achieve a high degree of automation in ground movement guidance. This may be achieved through airport ground equipment or on-board capabilities acting together.
Description
The A-SMGCS guidance service, in conjunction with ATCO inputs where necessary, provides automated and optimized routing service to aircraft and allows for the automated switching of

Taxiway Centreline Lights (TCL) and/or stop bars as applicable. Routing optimisation is provided using AI and ML, allowing for traffic to use the most efficient routes bringing operational, environmental and economic benefits while ensuring full integration of all traffic types using the aerodrome ground surfaces.

Automated guidance services integrates seamlessly with the operating models of new entrants using the aerodrome infrastructure and improves the overall movement and flow of aircraft, and where applicable vehicles, on the movement area. It reduces the workload of controllers and voice communication while increasing the level of safety and efficiency.

Maturity level

Concept

DEPLOYMENT APPLICABILITY

Operational Conditions

On complex aerodromes with demanding operations, where a varying mix of traffic including new entrants leveraging automated or semi-automated operating models. Automated ground operations management services leveraging data and AI can highly improve safety and efficiency of airport ground traffic flow management and the overall system performance. When fully integrated with ACDM or TAM capabilities, as well as runway sequencing strategies, it clearly contributes to the performance of the airport and efficiency of the surrounding airspace management

CHANGE REQUESTS TO THE ASBU THREAD SWIM

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Contact details

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Aviation Community *	**International Organisation**
CR coordination**	**ICAO IMP**
Date of submission	**19 December 2023**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)

**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**19 December 2023**
CR Status	Accepted
Assigned TL	Jean-François Grout

Change request to existing Threads/Elements

Change Request Information

CR ID	Reference*	CR (current text with revision marks)	Justification	Remarks
FA-E-SWIM-CR/1	SWIM B2/1 EN	Change 2023 date by 2024 for all enablers with a 2023 date	Provisions will be delivered to ICAO in 2021 for publication in 2024	Accepted
FA-E-SWIM-CR/2	SWIM B2/1 EN Automated systems with logon and authentication mechanisms	Replace reference to Manual on system wide information management (SWIM) Implementation by Manual on information security	Information regarding information security moved to a different manual	Accepted
FA-E-SWIM-CR/3	SWIM B2/2 EN	Change 2023 date by 2024 for all enablers with a 2023 date	Provisions were delivered to ICAO in 2021 for publication in 2024	Accepted
FA-E-SWIM-CR/4	SWIM B2/3	Modify the title to reflect PANS-IM and say: SWIM service registry	Alignment with PANS-IM	Accepted
FA-E-SWIM-CR/5	SWIM B2/3 MP, NC, DC, EN	Replace registry by SWIM service registry	Alignment with PANS-IM	Accepted
FA-E-SWIM-CR/6	SWIM B2/3 EN	Change 2023 date by 2024 for all enablers with a 2023 date	Provisions were delivered to ICAO in 2021 for publication in 2024	Accepted
FA-E-SWIM-CR/7	SWIM B2/4	Move to Block 3 and thus change to SWIM B3/1	Align with new IMP work programme schedule	Accepted
FA-E-SWIM-CR/8	SWIM B2/4 NC	Air/Ground (A/G) SWIM leverages inflight internet connectivity (e.g., broadband, cellular network, or satellite data link) capabilities, along with the air navigation service provider's ground SWIM infrastructure, and COTS technology (e.g., Electronic Flight Bag) to enable information exchange with the aircraft	Reflect latest development	Accepted

FA-E-SWIM-CR/9	SWIM B2/4 DC	The CA concept enables stakeholders to use both aviation-specific and commercial mechanisms in concert to meet their A/G information exchange needs. As permitted and standardized by international regulations, new data communications pathways may be used in concert with existing capabilities to provide the aviation community flexibility in meeting the full breadth of data communications needs to/from the aircraft. The data communication system, on-board systems such as the EFB, and Flight Management System (FMS) can form a smart network, dynamically routing data traffic via the most appropriate pathway available. Example of non-safety critical exchange includes the exchange of data and trajectories via a data communications system connecting the flight crew, ATM, and FOC in the TBO concept. This data communications capability allows for the exchange of information and provides a means of negotiation between the ATM and the flight deck. Through the EFB, the flight crew receives weather or constraint information and initiates trajectory negotiations with ATM. Similarly, the flight deck communicates with the FOC, receiving optimized flight plans and environmental information, resulting in an operational benefit. The addition of	Proposed new text to replace the existing description and better align with the connected aircraft concept developed by the ATMRPP	Accepted

		commercial pathways provides a supplemental solution to support real-time capabilities and updates to the ATCO. Information regarding the current state—such as aircraft position, future intent, guidance modes and settings, and performance limits—will be able to be sent to both ATM and the FOC. The key performance attributes relevant for CA can be tailored to the individual application needs (e.g., confidentiality, integrity, availability, continuity, and transaction time). This considers and recognizes the performance requirements for information exchanges will vary across applications.		
FA-E-SWIM-CR/10	SWIM B2/4 HF	1. Does it imply a change in task by a user or affected others? No 2. Does it imply processing of new information by the user? Yes 3. Does it imply the use of new equipment? No 4. Does it imply a change to levels of automation? No	New proposal	Accepted
FA-E-SWIM-CR/11	SWIM B2/4 EN	Change 2023 date by 2024 for all enablers with a 2023 date	Provisions were delivered to ICAO in 2021 for publication in 2024	Accepted
FA-E-SWIM-CR/12	SWIM B2/4 EN	Change 2025 date by 2026 for all enablers with a 2025 date	Provisions expected to be delivered to ICAO in 2024 for publication in 2026	Accepted
FA-E-	SWIM B2/5	Move to Block 3 and thus		Accepted

SWIM-CR/13		change to SWIM B3/2		
FA-E-SWIM-CR/14	SWIM B2/5	Title to be changed to say: "SWIM implementation framework"	Change the title to better reflect the work undertaken	Accepted
FA-E-SWIM-CR/15	SWIM B2/5 MP	Replace the words " within a global interoperability framework" by "through an implementation framework"	To align with the work undertaken by the IMP and the SWIM implementation manual	Accepted
FA-E-SWIM-CR/16	SWIM B2/5 NC	Modify the first sentence to read: " SWIM governance comprises a set of standards, policies and processes to provide means to protect proprietary data and information and support quality of service aspects and trust."	To better align with the work the IMP is currently undertaking	Accepted
FA-E-SWIM-CR/17	SWIM B2/5 NC	Modify the second sentence to read: "Within a global implementation framework, registries …"	To align with the work undertaken by the IMP and the SWIM implementation manual	Accepted
FA-E-SWIM-CR/18	SWIM B2/5 DC	Replace in the second paragraph fourth line the words " a global framework" by "an implementation framework	To align with the work undertaken by the IMP and the SWIM implementation manual	Accepted
FA-E-SWIM-CR/19	SWIM B2/5 DC	Add the following sentence before the last sentence of paragraph 2: "This element describes how information service providers and information consumers concerns about data and information protection can be addressed in their contractual agreements."	To better align with the work the IMP is currently undertaking	Accepted
FA-E-SWIM-CR/20	SWIM B2/5 HF	Change the response to question 4. Does it imply a change to levels of automation? to Yes	Interconnection of registries will require some automation changes	Accepted
SWIM-	SWIM B2/5 EN	Recommend adding the	Additional enabler	Accepted

CR/21		following enabler: Enabler Category: Operational procedure Enabler Type: Information exchange Enabler Name: Complement to service overview Description: Update or additional field(s) to address data and information protection. Stakeholders: ATM SWIM service provider and consumer Year: 2026	to specifically address data and information protection	
SWIM-CR/22	SWIM B2/5 EN	Modify description of the Regulatory provision enabler (new text in red) to say: "Standards, policy and procedures needed for SWIM governance in particular for data and information protection.	The data and information protection part needs to be highlighted	Accepted
SWIM-CR/23	SWIM B3/1	Move to Block 4 and thus change to SWIM B4/1		Accepted
SWIM-CR/24	SWIM B3/1 DC	New text in red: Continue to utilize connections and technology indicated in the CA concept for non safety critical information, the A/G SWIM will be extended to enable the exchange of safety critical information. Example of safety critical information can include command and control, and Air Traffic Controller instruction to the aircraft.	Change of text to better reflect the connected aircraft concept	Accepted
SWIM-CR/25	SWIM B3/1 HF	1. Does it imply a change in task by a user or affected others? Yes 2. Does it imply processing of new information by the user? Yes 3. Does it imply the use of new equipment? Yes	The human factor part is added following initial IMP analysis	Accepted

		4. Does it imply a change to levels of automation? Yes		
SWIM-CR/26	SWIM B3/1 EN	Recommend adding additional enabler to B3/1: Enabler Category: Air/Ground system infrastructure Enabler Type: Information Exchange Enabler Name: Air/Ground communication between ANSP and AU to exchange safety critical information. Description: A/G SWIM communications between ANSP and airspace user to utilizing performance-based A/G communications links e.g. smart routing for safety critical applications and operations Stakeholder: ANSP, AU Year: 2031		Accepted
SWIM-CR/27	SWIM B3/1 DR	COMI B3/4 Links meeting requirements for safety critical communication		Accepted

CHANGE REQUESTS TO THE ASBU THREAD WAKE

Contact details

Name (point of contact)	**Frédéric Rooseleer**
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Aviation Community *	**ANF**
CR coordination**	**WTSWG**
Date of submission	**16 February 2024**

*****CAA, ANSP, AIA, SAR, AO, AM, APO etc (see attachment D for options/abbreviations)
**describe the level of coordination with relevant aviation community members

To be filled in by GANP Maintenance Team

CR reception date	**16 February 2024**
CR Status	Accepted/Initial assessment
Assigned TL	Frédéric Rooseleer

Change request to existing Threads/Elements

Change Request Information

ID Number	Reference*	CR (current text with revision marks)	Justification	Remarks
FA-E-WAKE-CR/1	WAKE B2/1	1/ Change the maturity level of WAKE-B2/1 from "Standardization" to "Ready for implementation" 2/ Enablers : - Operational procedures - Ground system infrastructure Adding References: DOC. 4444 – Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM) amended with distance-based separation (under ATS surveillance service) based 7 aircraft Wake Turbulence Groups (WTG)	The element is already implemented in some States	Accepted
FA-E-WAKE-CR/2	WAKE-B2/2 Time based wake separation minima for arrival based on leader/follower static pair-wise	1/ Remove reference to pair-wise in the Human Factor consideration 2/ Change the maturity level from "Concept" to "Ready for implementation" 3/ add reference to EUROCONTROL documentation: EUROCONTROL Guidelines on Time-Based Separation (TBS) for Final Approach (2021) https://www.eurocontrol.int/publication/eurocontrol-guidelines-time-based-separation-tbs-final-approach 4/ Include the possible use of AI/ML in the description: Also, new techniques based on AI/ML are introduced to enhance the prediction of the aircraft	Reference to 'pair-wise' may be confusing with B3/3	Accepted

		'time-to-fly' / speed profile on final approach across wind conditions (necessary for the calculation of the TBS visualization indicator), in order to optimize the margins, being added as part of the indicators calculation for safely coping with the operational and meteorological variability. The AI/ML-based prediction also facilitates the periodic review to ensure continued validity.		
FA-E-WAKE-CR/3	WAKE-B3/1 Dependent parallel approaches based on WTC or WTG	1/ Add applicability to WTC (WT categories) and WTG (WT Groups) in the tile 2/ Change applicability date – ~~2028~~-2030 3/ Change Regulatory provisions and operational procedures implementation dates from 2028 to 2030.	Refer more explicitly to the applicability to the WT categories (WTC) or WT groups (WTG) Provisions and supporting guidance documentation to be developed and available	Accepted
FA-E-WAKE-CR/4	WAKE-B3/2 Independent segregated parallel operations	Element to be removed	No provisions further expected to be developed, due to lack of mature elements	Accepted
FA-E-WAKE-CR/5	WAKE-B3/4 Enhanced dependent parallel ~~approaches~~ operations	Updated description: replace 'approach' by operations (to include the case of ARR/DEP separation)	Align with WTSWG updated work programme and work ongoing by US FAA	Accepted
FA-E-WAKE-CR/6	WAKE-B3/5 Enhanced independent segregated parallel operations	Element to be removed	No provisions further expected to be developed, due to lack of mature elements	Accepted
FA-E-WAKE-CR/7	WAKE-B3/6 Time based wake separation minima for arrival based on leader/follower	Change the maturity level from "Concept" to "Validation".		Accepted

	static pair-wise			
FA-E-WAKE-CR/8	WAKE-B3/7 Time based dependent parallel approaches	Element to be removed	No provisions further expected to be developed, due to lack of mature elements	Accepted
FA-E-WAKE-CR/9	WAKE-B3/8 Time based independent segregated parallel operations	Element to be removed	No provisions further expected to be developed, due to lack of mature elements	Accepted
FA-E-WAKE-CR/10	WAKE-B3/9 Reduced time-based wake minima for departure from intermediate part of the runway, using closely spaced runway entries	New element See Annex 1 for full description	Align with WTSWG Job Card and updated work programme, with goal to develop optimized provisions for the case of intersection departure from closely spaced runway entries	Accepted
FA-E-WAKE-CR/11	B4/1 En-route Wake Encounter Ground based Prediction	See Annex 2 for updated element description, including AL/ML (e.g. traffic trajectory prediction)		Accepted
FA-E-WAKE-CR/12	~~B4/2~~ B5/1 En-Route Wake Encounter on-board flight management/ mitigation	Former B4/2 element to be moved to Block 5 as WAKE-B5/1 due to necessary maturity advancement	Element maturity advancement is no longer compatible to Block 4 timeframe	Accepted
FA-E-WAKE-CR/13	B5/1 En-Route Wake Encounter on-board flight management/ mitigation	1/ See annex 3 for updated element description 2/ maturity to be set to ‘Concept’		Accepted

ANNEX 1 – NEW ELEMENT WAKE-B3/9

TEMPLATE TABLE 1: Thread overview

PART 1	THREAD ID	Thread title	
	CONCEPT OF OPERATIONS OF THE THREAD BY BLOCK		
	BBB		
	Block 0	Baseline Wake turbulence separation minima applied to IFR flights is provided based PANS ATM DOC.4444 three aircraft wake turbulence categories (heavy, medium and light). The wake turbulence separation does not apply to VFR flights neither to IFR flights executing visual approach when the aircraft has reported having the preceding aircraft in sight although the ATC unit concerned will issue a caution of possible wake turbulence when appropriate.	
	Block 1		
	Block 2	Block ~~1~~2 Wake turbulence separation applied to IFR flights is provided based on 7 groupings of aircraft wake turbulence. Wake turbulence separation applied to IFR flights is provided based on a time based leader/follower wake separations delivered through a decision support tool ~~In airports with parallel runways with runway centre lines spaced less than 760m (2500 ft) apart, under certain wind conditions, wake turbulence separation can be reduced on dependent parallel approaches or wake turbulence independent departures. Independent segregated parallel operations can be undertaken.~~	
	Bllock 3	Block ~~2~~3 Wake turbulence separation applied to IFR flights is provided based on leader/follower static pair-wise wake separations delivered either through a tailored 7 (or more) groups of aircraft or a decision support tool referring to an aircraft pairwise separation matrix . In airports with parallel runways with runway centre lines spaced less than 760m (2500 ft.) apart, ~~under WAKE Wake Turbulence Separation Operational Technology monitored wind conditions~~, wake turbulence separation can be reduced on dependent parallel approaches. Time-based pair-wise minima are reduced on departure, also when ~~wake turbulence are reduced~~ taking-off from an intermediate part of the runway, with closely spaced runway entries. ~~Independent segregated parallel operations can be realised, based on static pair-wise wake separations.~~	
	Block 4	Block ~~3~~4 Wake turbulence separation applied to IFR flights is provided based on a time based leader/follower time based pair-wise wake separations delivered through a decision support tool ~~referring to an aircraft pairwise separation matrix. In airports with parallel runways with runway centre lines spaced less than 760m (2500 ft.) apart~~, under monitored wind conditions. ~~wake turbulence separation can be further reduced on dependent parallel approaches or wake turbulence independent departures using time based separation minima. Wake separation minima on independent segregated parallel runway operations can be further reduced, based on pair-wise time based wake separations~~. En-route wake encounter risk is reduced based on ground-based and/or airborne predictions.	
PART 2	**Block**	**Element ID**	**Title**

TEMPLATE TABLE 2: Element description

PART 3

WAKE-B3/9	**Reduced time-based wake minima for departure from intermediate part of the runway, using closely spaced runway entries**
Main purpose	To improve runway throughput for departure traffic from closely spaced runway entries, by reducing the additional wake separation applicable in case of take-off from an intermediate part of the runway.
New capabilities	Optimised time-based wake turbulence separation minima on departure, for aircraft taking-off from an intermediate part of the runway
Description	For succeeding aircraft taking off from an intermediate part of the same runway or an intermediate part of closely spaced parallel runway, an additional minute is applicable when applying the wake turbulence separation minima, independent of the distance between the runway entries. For closely spaced runway entries, this can be shown to be rather over-conservative, resulting in possible safe reduction, based on a wake turbulence risk assessment, of the additional wake turbulence separation, allowing increase efficiency and fuel / emissions saving in case of departure holding.

Dependencies and relations

Type of dependencies		ASBU element	
Evolution	Relation	ID	Title
X		WAKE-B2/1	Wake turbulence separation minima based on 7 aircraft groups
	Relation-information need	AMET-B1/2	Meteorological forecast and warning information
	Relation-information need	AMET-B1/3	Climatological and historical meteorological information
	Relation-information need	ASUR-B0/1	Automatic Dependent Surveillance – Broadcast (ADS-B)

Operations

Flight phases					Turn-around
Taxi-out	Departure	En-route	Arrival	Taxi-in	
	X				

Planning layers

ATM planning	Strategical	Pre- tactical	Tactical		Post operations
			Pre ops	During ops	
				x	

Part 4

Enablers

Category	Type	Description/Examples	Stakeholder(s)
Regulatory Provisions	Certification, Operational Approval	National framework amendment for departure separation References: DOC. 4444 – Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM) to be amended with reduced wake minima applicable on departure from intersection take-off using closely spaced runway entries	CAA (2030)
Operational		ATC Procedure to separate departure traffic	ANSP, CAA (2030)

	Procedures		for intersection take-off from closely spaced runway entries, using reduced minima	
	Airborne System capability			
	Ground system infrastructure	C, N, S,	ATC system adaptation to display reduced wake minima for for intersection take-off from closely spaced runway entries	ANSP (2030)
			Surveillance capabilities for separation in departures	ANSP (2013)
	Training	Awareness requirements Flight Crew and Tower Air Traffic Controller awareness of separation applicable for intersection take-off		
	Other			

TEMPLATE TABLE 3: Element applicability, benefit and performance analysis

PART 5	WAKE-B3/9	Reduced time-based wake minima for departure from intermediate part of the runway, using closely spaced runway entries			
	Deployment applicability				
	Operational conditions	***Closely spaced runway entries, subject to an additional minute for time-based wake turbulence separation on departure***			
	Main intended benefits				
	Type	**Operational description**			**Benefitting stakeholder(s)**
	Direct benefits	Airport Capacity / Departure Throughput			Airport Operator, ANSP, Operators
		Efficiency / Reduced emissions during taxi-out phase			Operators, State, Public
	Indirect benefits	Operational Predictablity / Flexiblity			Airport Operator, ANSP, Operators
PART 6	**Intended performance impact on specific KPAs and KPIs**				
	KPA	**Focus Areas**	**KPI**	**KPI impact**	**Most specific performance objective(s) supported**
	Capacity	Capacity, throughput & utilization	KPI 06: En-route airspace capacity		
			KPI 09: Airport peak arrival capacity	X	Departure capacity
			KPI 10: Airport peak arrival throughput	X	
			KPI 11: Airport arrival capacity utilization	X	
		Capacity shortfall & associated delay	KPI 07 : En-route ATFM delay		
			KPI 12: Airport/terminal	X	

			ATFM delay		
	Efficiency	Additional flight time & distance	KPI 02: Taxi-out additional time	X	
			KPI 04: Filed flight plan en-route extension		
			KPI 05: Actual en-route extension		
			KPI 08 : Additional time in terminal airspace		
			KPI 13: Taxi-in additional time		
		Vertical flight efficiency	KPI 17: Level-off during climb*		
			KPI 18: Level capping during cruise*		
			KPI 19: Level-off during descent*		
		Additional fuel burn	KPI 16: Additional Fuel burn	X	
	Predictability	Punctuality	KPI 01: Departure Punctuality	X	
			KPI 14: Arrival punctuality		
			KPI 03: ATFM slot adherence		
		Variability	KPI 15: Flight time variability		
	Other objectives from the catalogue that do not contribute to the KPIs above				

* Indicators not in the GANP 2016 and propose for the GANP 2019

ANNEX 2 – UPDATED ELEMENT WAKE-B4/1

TEMPLATE TABLE 1: Thread overview

PART 1	THREAD ID	Thread title	
	CONCEPT OF OPERATIONS OF THE THREAD BY BLOCK		
	BBB		
	Block 0		
	Block 1		
PART 2	**Block**	**Element ID**	**Title**

TEMPLATE TABLE 2: Element description

PART 3	**WAKE-B4/1**	**En-route Wake Encounter Ground based Prediction**			
	Main purpose	Air safety can be improved thanks to ground-based wake alerting predictor for en-route phase. Flight Crews will be tactically warned about short-term risk of moderate to severe wake vortex encounter, in order to anticipate and prepare for managing possible wake turbulence upset.			
	New capabilities	• Traffic proximity prediction based on en-route Surveillance information • Upper airspace accurate wind charactisation (direction, speed, altitude) service • Wake prediction module • Alerting relay from ground system / ATC(O) to Airborne Cockpit (Flight Crew)			
	Description	Air safety is improved thanks to ground-based wake risk predictor to tactically warn the En-Route Air Traffic Controllers when there is a significant probability of a wake encounter, such that they can then warn the flight crew. The prediction is based on calculated traffic proximity crossing and exposure risk to generated wake turbulence, with its evolution, decay and transport, based on upper wind information and use of wake vortex evolution and impact model. AI/ML techniques can be used to enhanced the trajectory prediction, the upper wind evolution prediction and the wake evolution prediction. The alerting can be relayed to the Flight Crew, either verbally by the Area Air Traffic Controller, using specific ATC phraseology, from the alert automatically calculated and displayed on his/her Air Surveillance information system, or automatically uploaded from the ATC system to the cockpit, e.g via datalink / communication upload capabilities.			
	Dependencies and relations	Type of dependencies		ASBU element	
		Evolutio	Relation	ID	Title

		n			
			Technology need	ASUR-B0/1	Automatic Dependent Surveillance – Broadcast (ADS-B)
			Technology need	SNET-B0/1	Short Term Conflict Alert (STCA)
			Technology need	AMET-B1/1	Meteorological observations information
			Technology need	AMET-B1/2	Meteorological forecast and warning information
			Technology need	COMS-B3/1	Extended CPDLC (B2 incl. Adv-IM and dynamic RNP) for dense and complex airspace

Operations	Flight phases					Turn-around
	Taxi-out	Departure	En-route	Arrival	Taxi-in	
			X			

Planning layers	ATM planning	Strategical	Pre- tactical	Tactical		Post operations
				Pre ops	During ops	
					x	

PART 4				
	Enablers			
	Category	**Type**	**Description/Examples**	**Stakeholder(s)**
	Regulatory Provisions	Certification, Operational Approval	National framework amendment for Procedures for air traffic controllers and Flight Crew reaction to short term conflict alerts. References: Doc 4444 - Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM), Doc 8168 - Procedures for Air Operations – Air Traffic Management (PANS-OPS)	CAA (2037)
	Operational Procedures		Flight Crew and ATC Procedure to manage short-term en-route wake turbulence conflict alert, including phraseology References: ICAO Doc 4444 (PANS-ATM), ICAO Doc 8168 (PANS-OPS)	ANSP, CAA (2037)
	Airborne System capability			
	Ground system infrastructure	C, N, S,		
		Display for short term conflict alerts	Capability to indicate alerts on the radar screen of the controller working positions.	ANSP, Ground system supplier (2037)
	Training	Awareness requirements Flight Crew and En-route Air Traffic Controller awareness of conflict alerting information and procedure		ANSP (2037), Aircraft Operators
	Other			

TEMPLATE TABLE 3: Element applicability, benefit and performance analysis

PART 5	**FICE-B0/1**	**Automated basic Inter facility message exchange**			
	Deployment applicability				
	Operational conditions	***Upper airspace with traffic trajectories and density leading to risk of moderate to severe wake turbulence encounters***			
	Main intended benefits				
	Type	**Operational description**			**Benefitting stakeholder(s)**
	Direct benefits	Safety enhancement			Airspace Users
	Indirect benefits	En-route airspace capacity			
PART 6	**Intended performance impact on specific KPAs and KPIs**				
	KPA	**Focus Areas**	**KPI**	**KPI impact**	**Most specific performance objective(s) supported**
	Capacity	Capacity, throughput & utilization	KPI 06: En-route airspace capacity	x	
			KPI 09: Airport peak arrival capacity		
			KPI 10: Airport peak arrival throughput		
			KPI 11: Airport arrival capacity utilization		
		Capacity shortfall & associated delay	KPI 07 : En-route ATFM delay		
			KPI 12: Airport/terminal ATFM delay		
	Efficiency	Additional flight time & distance	KPI 02: Taxi-out additional time		
			KPI 04: Filed flight plan en-route extension		
			KPI 05: Actual en-route extension		
			KPI 08 : Additional time in terminal airspace		
			KPI 13: Taxi-in additional time		
		Vertical flight efficiency	KPI 17: Level-off during climb*		
			KPI 18: Level capping during cruise*		

* Indicators not in the GANP 2016 and propose for the GANP 2019

			KPI 19: Level-off during descent*		
		Additional fuel burn	KPI 16: Additional Fuel burn		
	Predictability	Punctuality	KPI 01: Departure Punctuality		
			KPI 14: Arrival punctuality		
			KPI 03: ATFM slot adherence		
		Variability	KPI 15: Flight time variability		
	Other objectives from the catalogue that do not contribute to the KPIs above				Safety (KPI 20 Number of aircraft accident)

ANNEX 3 – UPDATED ELEMENT WAKE-B5/1

TEMPLATE TABLE 1: Thread overview

PART 1	THREAD ID	Thread title	
	CONCEPT OF OPERATIONS OF THE THREAD BY BLOCK		
	BBB		
	Block 0		
	Block 1		
PART 2	**Block**	**Element ID**	**Title**

TEMPLATE TABLE 2: Element description

PART 3	**WAKE-B5/1**	**En-route Wake Encounter on-board flight management/mitigation**						
	Main purpose	The aim here is to reduce the Wake Turbulence Risk through on-board Wake Risk Monitoring .						
	New capabilities	The main capability for supporting this aim is an on-board detection of wake turbulences encounters.						
	Description	One of the key limitations in wake concept deployment is the need for more advanced Wake Risk Monitoring. Regulation authorities endorsing new concepts usually request efficient wake risk monitoring to guarantee quick identification of any deviation compared to the submitted safety case.						
	Dependencies and relations	Type of dependencies		ASBU element				
		Evolution	Relation	ID	Title			
			operational need	ASUR-B0/1	Automatic Dependent Surveillance – Broadcast (ADS-B)			
			technology need	ASUR-B2/1	Evolution of ADS-B and Mode S			
	Operations	Flight phases					Turn-around	
		Taxi-out	Departure	En-route	Arrival	Taxi-in		
				x				
	Planning layers	ATM planning	Strategical	Pre- tactical	Tactical		Post operations	
					Pre ops	During ops		
						x		

PART 4	Enablers			
	Category	**Type**	**Description/Examples**	**Stakeholder(s)**
	Regulatory Provisions	Certification, Operational Approval	National framework amendment for Procedures for air traffic controllers and Flight Crew reaction to short term conflict alerts. References: Doc 4444 - Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM), Doc 8168 - Procedures for Air Operations – Air Traffic Management (PANS-OPS)	CAA
	Operational Procedures		Flight Crew and ATC Procedure to manage short-term en-route wake turbulence conflict alert, including phraseology References: ICAO Doc 4444 (PANS-ATM), ICAO Doc 8168 (PANS-OPS)	ANSP, CAA, Aircraft Operatorgs
	Airborne System capability	Prediction and display for short term conflict alerts	Capability to predict and display alerts on the cockpit navigational display.	Aircraft Manufacturer
	Ground system infrastructure	C, N, S,		
	Training	Awareness requirements Flight Crew and Air Traffic Controller awareness of separation applicable for intersection take-off		ANSP, Aircraft Operators
	Other			

TEMPLATE TABLE 3: Element applicability, benefit and performance analysis

PART 5	FICE-B0/1	Automated basic Inter facility message exchange	
	Deployment applicability		
	Operational conditions		
	Main intended benefits		
	Type	**Operational description**	**Benefitting stakeholder(s)**
	Direct benefits	Improve situational awareness of the flight crew	Airspace User
		Safety	Airspace User
	Indirect benefits	En-route capacity	Airspace User

PART 6	Intended performance impact on specific KPAs and KPIs				
	KPA	**Focus Areas**	**KPI**	**KPI impact**	**Most specific performance objective(s) supported**

	Capacity	Capacity, throughput & utilization	KPI 06: En-route airspace capacity		
			KPI 09: Airport peak arrival capacity		
			KPI 10: Airport peak arrival throughput		
			KPI 11: Airport arrival capacity utilization		
		Capacity shortfall & associated delay	KPI 07 : En-route ATFM delay		
			KPI 12: Airport/terminal ATFM delay		
	Efficiency	Additional flight time & distance	KPI 02: Taxi-out additional time		
			KPI 04: Filed flight plan en-route extension		
			KPI 05: Actual en-route extension		
			KPI 08 : Additional time in terminal airspace		
			KPI 13: Taxi-in additional time		
		Vertical flight efficiency	KPI 17: Level-off during climb*		
			KPI 18: Level capping during cruise*		
			KPI 19: Level-off during descent*		
		Additional fuel burn	KPI 16: Additional Fuel burn		
	Predictability	Punctuality	KPI 01: Departure Punctuality		
			KPI 14: Arrival punctuality		
			KPI 03: ATFM slot adherence		
		Variability	KPI 15: Flight time variability		
	Other objectives from the catalogue that do not contribute to the KPIs above				Safety (KPI20 Number of aircraft accident)

— END —

* Indicators not in the GANP 2016 and propose for the GANP 2019