International Civil Aviation Organization

Twenty Sixth Meeting of the Communications/ Navigation and Surveillance Sub-group (CNS SG/26) of APANPIRG

Video Teleconference, 5 – 9 September 2022

Agenda Item 9: Review and updates

9.2 Update on ICAO GANP Study Group related to CNS

UPDATE ON ICAO GANP STUDY GROUP RELATED TO CNS

(Presented by the Secretariat)

SUMMARY

This paper presents the updates on ICAO GANP Study Group and shares the Working Paper from ICAO Council which contained the suggested changes in detail to the GANP to be presented to the 41st ICAO Assembly Sessions for meeting review.

1. INTRODUCTION

1.1 The Doc 9750 - Global Air Navigation Plan (GANP) is the ICAO's highest air navigation strategic document and the plan to drive the evolution of the global air navigation system. The purpose of the GANP is to equitably accommodate all airspace users operations in a safe, secure and cost-effective manner while reducing the aviation environmental impact. To this end, the GANP provides a series of operational improvements to increase capacity, efficiency, predictability, and flexibility while ensuring interoperability of systems and harmonization of procedures.

1.2 The Communications/Navigation and Surveillance Sub-group (CNS SG) of APANPIRG has been working on ensuring continuous and coherent development of the CNS parts of the Asia/Pacific Regional Air Navigation Plan (APAC ANP) in a manner that is consistent with ICAO GANP, and facilitating the implementation of CNS systems and services identified in the Aviation System Block Upgrade (ASBU) priority modules.

1.3 This paper presents the updates on ICAO GANP Study Group and shares the Working Paper from ICAO Council which contains the suggested changes in detail to the GANP to be presented to the 41st ICAO Assembly Sessions for approval.

2 DISCUSSION

2.1 The Sixth Edition of the GANP, Doc 9750, adopted at the 40th Assembly through *Resolution A40-1: ICAO Global Planning for Safety and Air Navigation* in 2019, which explains

important details of the structure of several levels (global-regional-national) and the vision of the GANP on the "efficiency ambitions", the restructuring of the Aviation System Block Upgrade (ASBU) framework and the implementation of Basic Building Blocks (BBBs), emphasizing the level of compliance with the GANP.

2.2 The ICAO Assembly, at its 39th Session, agreed on the expansion of the GANP lifecycle through three-year minor and six-year major updates, as relevant, in order to provide for stability. While the sixth edition of the GANP, endorsed by the Assembly at its 40th Session, constituted a major update, a seventh edition, containing minor updates will be to the 41st Assembly for endorsement.

2.3 ICAO, following up on Recommendation 4.3/1 of the Thirteenth Air Navigation Conference (AN/Conf-13), established the GANP Study Group (GANP-SG) with a group of performance experts, approved by the Air Navigation Commission, in June 2019. The GANP-SG established two groups to develop its Work Plan, which includes the Performance Expert Group (GANP-PEG) and ASBU Panel Project Team (ASBU PPT).

2.4 The Performance Expert Group (GANP-PEG) has worked on the Safety Performance Framework and proposes to include an update of the Safety Performance Framework in the seventh edition of the GANP to ensure an integrated approach to performance management; provide a link between the GANP and the Global Aviation Safety Plan (GASP). The GANP-EPG formulates focus areas within the Safety KPA as well as Safety Objectives, to be included in the Seventh Edition of the GANP. It also recommends the inclusion of four key performance indicators (KPIs) for this KPA.

2.5 In relation to the ASBU Framework and BBBs, the ASBU Panel Project Team (ASBU PPT) has worked on the revision of these two frameworks introducing minor changes in some names of the modules and elements of the ASBUs, as well as modification of the BBBs, mainly for the area from AIS to AIM. Additionally, the ASBU PPT has done the work of mapping the BBBs to the Universal Safety Oversight Audit Programme (USOAP) protocol questions. This work is yielding important conclusions about the impact of implementing the BBBs on the critical elements of the USOAP Audit.

2.6 The Working Paper from ICAO Council which introduces the Seven Edition of GANP to be presented to the 41st ICAO Assembly Sessions for endorsement is provided in **Appendix A**. Details of the proposed updates can be found at its attachments and links contained. States/Administrations are invited to analyze this proposal and present their comments during the Assembly. Once the proposed changes are approved by the ICAO Assembly, the Secretariat will share the latest version with the meeting.

3. ACTION BY THE MEETING

3.1 The meeting is invited to

a) note the information contained in this paper;

b) discuss any relevant matter as appropriate.

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International Civil Aviation Organization

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WORKING PAPER

ASSEMBLY — 41ST SESSION

TECHNICAL COMMISSION

Agenda Item 30: Aviation Safety and Air Navigation Policy
30.2: Latest developments related to the Global Air Navigation Plan (GANP)

A COMPREHENSIVE STRATEGY FOR AIR NAVIGATION: ENDORSEMENT OF THE UPDATED GLOBAL AIR NAVIGATION PLAN

(Presented by the Council of ICAO)

EXECUTIVE SUMMARY

The ICAO Assembly, at its 39th Session, agreed on the expansion of the GANP lifecycle through three -year minor and six-year major updates, as relevant, in order to provide for stability. While the sixth edition of the GANP, endorsed at the 40th Session of the Assembly, constituted a major update, a seventh edition, containing minor updates, is proposed in this working paper for endorsement by the ICAO Assembly during its 41st Session. In particular, this proposal includes an update to the safety key performance area of GANP performance framework, as well as a maintenance process to keep it current. It highlights the importance of a robust air navigation system for achieving the expected levels of safety and resilience, and maps the essential services outlined in the Basic Building Block (BBB) framework to the Protocol Questions (PQs) of the Universal Safety Oversight Audit Programme (USOAP). Minor updates to the BBB and the Aviation System Block Upgrade (ASBU) frameworks are also proposed. It also highlights the proposed focus of the eighth edition of the GANP based on the challenges faced by the aviation community to achieve its vision.

Action: The Assembly is invited to:

a) endorse the seventh edition of the *Global Air Navigation Plan* (GANP, Doc 9750), available in an interactive format via the GANP Portal;
b) request Member States, planning and implementation regional groups (PIRGs) and all members of the aviation community to continue improving the air navigation system in line with the GANP so that it adapts to global, regional and local opportunities and challenges in a timely and orderly manner; and
c) adopt the proposed revision to Assembly Resolution A40-1, as presented in Appendix B to this paper, in so far as it refers to the GANP.

Strategic Objectives:	This working paper relates to the Safety and Air Navigation Capacity and Efficiency Strategic Objectives.
Financial implications:	The ICAO activities referred to in this paper are expected to be undertaken within the resources available in the 2023-2025 Regular Programme Budget and/or from extra budgetary contributions as guided by the ICAO Business Plan 2023-2025.

References:	Doc 10160, *High-Level Conference on COVID-19 (Montréal, 12 to 22 October 2021). Report* Doc 10140, *Assembly Resolutions in Force (as of 4 October 2019)* Doc 10118, *Global Aviation Security Plan* Doc 10115, *Thirteenth Air Navigation Conference. Montréal, 9 – 19 October 2018. Report* Doc 10004, *Global Aviation Safety Plan* Doc 9883, *Manual on Global Performance of the Air Navigation System* Doc 9854, *Global Air Traffic Management Operational Concept* Doc 9750, *Global Air Navigation Plan, 6th Edition* Appendix C to the GSG-GIPEG/2-SD, *Development of a proposed update to the Safety Performance Framework in the GANP* (icao.int)

1. INTRODUCTION

1.1 The ICAO Assembly, at its 39th Session, agreed on the expansion of the GANP lifecycle through three-year minor and six-year major updates, as relevant, in order to provide for stability. While the sixth edition of the GANP, endorsed by the Assembly at its 40th Session, constituted a major update, a seventh edition, containing minor updates, is hereby proposed for endorsement.

1.2 The ICAO Assembly, at its 40th Session, endorsed the sixth edition of the Global Air Navigation Plan[1] (GANP, Doc 9750) through Resolution A40-1: ICAO global planning for safety and air navigation. This edition recognizes that a performance-driven, service-oriented and technologically advanced global air navigation system is critical to achieve the sustainability of the aviation sector worldwide. Furthermore, it recognizes safety as one of the fundamental principles of aviation performance, together with environment, security and economic sustainability.

1.3 In addition to these fundamental aviation principles, there are several performance requirements, in areas such as capacity and efficiency, that the air navigation system must meet to fulfil the expectations of the aviation community and society-at-large. The crisis caused by the COVID-19 pandemic in 2020 highlighted the importance of resilience of the aviation system, not only as a performance requirement but also as a fundamental principle, in terms of economic sustainability as well as safety management, to ensure that safety risks are effectively addressed. While it is anticipated that the reduced economic resources in the coming years due to the pandemic may affect the modernization of the air navigation system and jeopardize performance monitoring, neither safety nor resilience expectations can be achieved without a robust air navigation system. Two key aspects are needed to achieve such a system: the provision of essential air navigation services; and the oversight of these services.

1.4 The seventh edition of the GANP focuses on the global technical level and is the result of the accomplishments made by the GANP Study Group (GANP-SG) and its working groups, the Aviation System Block Upgrades Panel Project Team (ASBU PPT) and the GANP Performance Expert Group (GANP-PEG), since the 40th Session of the ICAO Assembly.

[1] Available at the GANP Portal at https://www4.icao.int/ganpportal/

2. SEVENTH EDITION OF THE GANP

Update of the GANP performance framework – Safety

2.1 The sixth edition of the GANP contains the GANP performance framework, which includes at the Global Strategic Level a series of performance ambitions within the eleven key performance areas (KPAs)[2] outlined in the Global Air Traffic Management Operational Concept (Doc 9854). At the Global Technical Level, the framework details focus areas, performance objectives and key performance indicators (KPIs) within the KPAs of capacity, efficiency and predictability.

2.2 In order to expedite the work on performance, Recommendation 4.3/1, *Improving the performance of the air navigation system,* of the Thirteenth Air Navigation Conference (AN-Conf/13), called upon ICAO to consider establishing a group of performance experts under the GANP-SG. ICAO, therefore, formed the GANP Performance Expert Group (GANP-PEG), formerly known as the Global ICAO Performance Expert Group (GIPEG), to maintain and evolve the performance framework of the GANP, focusing on its effective application by all members of the aviation community at the regional and national levels. One of the tasks of the GANP-PEG is to expand the performance framework of the GANP to cover the eleven KPAs and, in particular, to contribute to the coherency and consistency related to performance management aspects shared by the GANP, the *Global Aviation Safety Plan* (GASP, Doc 10004) and the *Global Aviation Security Plan* (GASeP) (Doc 10118).

2.3 ICAO called for safety experts to collaborate with the GANP-PEG and update, following the *Manual on Global Performance of the Air Navigation System* (Doc 9883), the safety performance framework for inclusion in the seventh edition of the GANP to: ensure an integrated approach to performance management; provide a link between the GANP and the GASP; and offer a coordinated approach to safety performance measurement, as requested by the High-Level Conference on COVID-19 (HLCC-2021). The proposed safety performance framework identifies a common high-level safety performance ambition as well as focus areas, performance objectives and key performance indicators (KPIs) that cover all aspects of the aviation system, allowing the GANP to consider safety in an integrated way within its other 10 KPAs. At the same time, it provides a shared safety related terminology for the GANP and the GASP, promoting consistency across the two global plans.

2.4 A summary of the proposed update to the safety KPA of the GANP performance framework, including a new performance ambition as well as new focus areas, performance objectives and KPIs, is presented in Appendix A to this working paper. Further details can be found at: https://www4.icao.int/ganpportal/GIPEGSafetyPerformanceFrameworkAnalysis.

2.5 To keep the GANP performance framework current and improve transparency, a maintenance process for the GANP performance framework is proposed in line with the maintenance process approved for the ASBU framework (see paragraph 2.13). The proposed GANP performance framework maintenance process is available in the GANP Portal (click **here**).

The Basic Building Blocks (BBBs) and the Universal Safety Oversight Audit Programme (USOAP)

2.6 The sixth edition of the GANP includes the BBB framework, which outlines the foundation of any robust air navigation system by identifying the essential services to be provided for international civil aviation in accordance to ICAO Standards. These essential services are defined in the areas of aerodromes, air traffic management, search and rescue, meteorology and aeronautical information, and

[2] The eleven KPAs of the GANP: safety, security, environment, cost-effectiveness, capacity, efficiency, flexibility, predictability, access and equity, participation by the ATM community and global interoperability.

implemented according to the Regional Air Navigation Plans. In addition to essential services, the BBB framework identifies the end users of these services as well as the assets (communications, navigation, and surveillance (CNS) infrastructure) that are necessary to provide them.

2.7 In 1999, ICAO launched the Universal Safety Oversight Audit Programme (USOAP), in response to widespread concerns about the effectiveness of aviation safety oversight around the world. USOAP audits focus on a State's capability to provide safety oversight by assessing whether the State has effectively and consistently implemented the critical elements (CEs) of a safety oversight system. This enables the State to ensure the implementation of ICAO's safety-related Standards and Recommended Practices (SARPs) and associated procedures and guidance material.

2.8 To provide the link between these two fundamental aspects of any robust air navigation system, the provision of essential services for international civil aviation and the capability to oversee them by the State, ICAO has mapped the essential services outlined in the BBB framework to the Protocol Questions (PQs) of the USOAP. The result of this mapping demonstrates that the BBBs relate primarily to critical elements six "CE-6 Licensing, certification, authorization and/or approval obligations" and seven "CE-7 Surveillance obligations" as detailed at this web portal https://www4.icao.int/ganpportal/bbbsusoapmapping. This mapping facilitates the analysis of the impact that the provision of essential air navigation services and the capability to oversee them, have on safety performance. The provision of essential air navigation services by an ANSP is measured through the deficiencies against the Regional Air Navigation Plans, whilst the capability of States to oversee said provision is measured through Effective Implementation (EI). The outcome of both aspects on safety performance can be measured through the KPIs proposed in Appendix A to this paper.

The Aviation System Block Upgrade (ASBU) framework and the Basic Building Block (BBB) framework

2.9 During its 40th Session, the ICAO Assembly approved the ASBU framework maintenance process available in the GANP Portal (click **here**). According to this process, the framework is to be updated on a three -year cycle and the present update is considered minor.

2.10 Following the maintenance process, the ASBU framework has been updated through a campaign whose scope was to update the content of ASBU framework from a factual perspective, e.g. process delays, change descriptions; review consistency, completeness and understanding; and prepare the scope/plan for the next (major) update. The report of the campaign, including its result, is available in the GANP Portal (click **here**). The review of the ASBU framework also resulted in an update to the BBB framework included in the report.

3. OUTLOOK FOR THE EIGHTH EDITION OF THE GANP

3.1 The Global Strategic Level of the GANP recognizes digital information management and full connectivity through the internet of aviation as key steps towards a total performance management system.[3] In a fully connected digital air navigation system, cyber threats, which are constantly evolving through the analysis of online behaviours and trends, pose a risk to the safety of flight operations that must be addressed. In addition to safety, environment and security are fundamental aviation principles recognized by the GANP.

3.2 The COVID-19 crisis has proven to be a challenge for the safety and resilience of the aviation system. Furthermore, the economic impact of the COVID-19 pandemic on the aviation industry

[3]See Global Air Navigation Plan Strategy (EN) - THE CONCEPTUAL ROADMAP | Rise (icao.int)

had forced the re-evaluation of priorities at regional and national levels that may risk the achievement of the GANP vision.

3.3 In order to ensure continuous progress in the evolution of the air navigation system, it is proposed that a fresh approach is developed to achieve the vision and performance ambitions outlined in the GANP. Therefore, it is proposed that the next edition of the GANP focuses on resilience and environment, and includes the following structural improvements:

a) the development of the link between the global strategic and technical levels;

b) the integration of innovation opportunities to embrace emerging technologies and accommodate new entrants;

c) the improvement of the performance dimension to ensure the optimum allocation of resources;

d) the development of evolution scenarios to provide opportunities for so-called leapfrogging, modernizing rapidly through the adoption of modern systems without going through intermediary steps; and

e) continue to ensure that the GANP is aligned with other ICAO Global Plans.

4. ASSEMBLY RESOLUTION

4.1 In accordance with Assembly Resolution A40-1, the GASP and the GANP support the Strategic Objectives of the Organization. The partial draft resolution presented in Appendix B to this paper focuses on the GANP, thus superseding A40-1: *ICAO Global planning for safety and air navigation*.

4.2 When reviewing the resolution in the appendix, and for the purposes of this paper, please refer only to the preamble and Appendix B, dealing specifically with GANP.

5. CONCLUSION

5.1 A performance-driven, service-oriented and technologically advanced global air navigation system is critical to achieve the sustainability of the aviation sector worldwide. Recognizing safety as one of the fundamental principles of aviation performance as well as the increasing importance of resilience in a hyperconnected aviation ecosystem, the seventh edition of the GANP presents an updated safety performance framework and maintenance process, reinforces the importance of having a robust foundation of the air navigation system and presents a minor update of the BBB and ASBU frameworks.

5.2 Also, based on the challenges faced by the aviation community to achieve the GANP vision, it is proposed that the eight edition of the GANP develops a fresh approach focusing on resilience and environment, while working towards the digitalization of a fully connected air navigation system.

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APPENDIX A

PROPOSED UPDATE OF THE GANP PERFORMANCE FRAMEWORK

Note. — Please note that only the bolded text with a grey highlight are proposed to be included in the seventh edition of the GANP.

1. The proposed update to the Global Air Navigation Plan (GANP) performance framework focuses on safety, one of the eleven Key Performance Areas (KPAs) of the GANP. The sixth edition of the GANP includes a safety performance ambition and safety performance objectives related to the operational improvements defined in the Aviation System Block Upgrade (ASBU) framework.

2. The main goal of this update to the safety performance framework in the GANP is to contribute to the coherency and consistency related to performance management aspects shared by the GANP, the Global Aviation Safety Plan (Doc 10004) and the Commercial Aviation Safety Team (CAST)/ International Civil Aviation Organization (ICAO) Common Taxonomy Team (CICTT)[1].

3. Safety performance ambition

3.1 Performance ambitions are outlined in the Global Strategic Level of the GANP. They are qualitative statements providing global priorities on the performance evolution of the global air navigation system. They should not be seen as a target to continuously monitor and report performance against, but rather as a catalyst for change.

3.2 Both the safety performance ambition and the aspirational safety goal, in the GANP and the GASP, respectively, seek the improvement of safety performance. However, the current safety ambition in the GANP[2] *"Zero ANS-related accidents and a significant 50 per cent reduction of –ANS-related- serious incidents"* shows a difference in scope from the aspirational goal defined by the GASP *"Achieve and maintain zero fatalities in commercial operations by 2030 and beyond"*. In particular: while the performance ambition covers all types of operations, the aspirational goal focuses on commercial operations; while the ambition focuses on air navigation service (ANS)-related causes, the aspirational goal covers all causes and contributing factors to occurrences; and while the ambition covers zero accidents and a reduction in incidents, including the amount of damage and its secondary impact, the aspirational goal focuses on zero fatalities.

3.3 In order to ensure a common direction in safety performance, it is important to harmonize the scope of the safety performance ambition in the GANP to address the combined scope of the GANP and the GASP. Therefore, the safety performance ambition in the sixth edition of the GANP is proposed to be updated as follows:

"Achieve continual safety performance improvement in aviation in each ICAO region"

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[1] Historically, in accident and incident investigations, safety occurrences are categorized in a different way namely using the CICTT occurrence categories Welcome (intlaviationstandards.org).

[2] While the highest safety expectation was referred to as safety performance ambition in the GANP, in the GASP it was called aspirational safety goal.

4. Safety focus areas

4.1 Focus areas are outlined in the global technical level of the GANP. They identify and delineate the broad areas in which there are intentions to establish a performance policy via the definition of performance objectives. There is a need for a minimum number of focus and sub-focus areas to attach the performance objectives within the sixth edition of the GANP and the goals in the GASP as well as to cover the areas in which safety data is collected and reported related to the CICTT.

4.2 The sixth edition of the GANP did not define safety focus areas. Therefore, in order to avoid overlapping of performance policies, the following focus and sub-focus areas within the safety KPA are proposed to be included in the seventh edition of the GANP:

KPA: Safety

Operational safety outcomes

- **Flight operations safety**
  - **Safety of traditional operations**
  - **Safety of new entrants**
    - **Safety of remotely piloted aircraft systems (RPAS) operations**
    - **Safety of very low level operations (typically operating below 500ft AGL)**
    - **Safety of higher airspace operations**
    - **Safety of advanced and urban air mobility**
- **Aerodrome operations safety**
- **Air navigation service provision safety**
- **Aircraft maintenance safety**
- **Design and manufacturing safety**

Organizational safety processes

- **State safety programme (including safety oversight)**
- **Safety management system**
- **Safety collaboration**

Provision of infrastructure and aviation services

- **Basic Building Blocks**
- **Operational safety improvements**

Note.— The scope within the operational focus areas is limited to aviation safety. For example, while each time an aircraft design flaw is identified during operations would count as an aviation

safety occurrence under design and manufacturing safety, an occupational health and safety event at the manufacturing premises of an aircraft is outside the scope of the design and manufacturing focus area and would not count as an aviation safety occurrence. Processes that impact the aviation safety outcomes should be found under organizational safety.

5. Safety performance objectives

5.1 Performance policy is defined through a set of specific, measurable, achievable, relevant and timely (SMART) objectives.

5.2 The performance objective for the safety KPA in the sixth edition of the GANP is to maintain or improve safety. Aligned with this performance objective, the following generic sub-objectives are defined within the proposed safety focus and sub-focus areas:

Note.— Sub-objectives in bold with grey highlights are new and are proposed to be included in the seventh edition.

- **Maintain or improve operational safety outcomes**
    - **Maintain or improve safety of flight operations**
        - **Maintain or improve safety of traditional operations**
        - **Maintain or improve safety of new entrants**
            - **Maintain or improve safety of remotely piloted aircraft systems (RPAS) operations**
            - Maintain or improve safety of very low-level operations
            - Maintain or improve safety of higher airspace operations
            - **Maintain or improve safety of advanced and urban air mobility**
    - **Maintain or improve safety of aerodrome operations**
    - **Maintain or improve safety of the air navigation service provision**
    - **Maintain or improve safety in aircraft maintenance**
    - **Maintain or improve safety in design and manufacturing**

- **Maintain or improve organizational safety processes**
    - **Strengthen State safety oversight capabilities**
    - **Increase the implementation of States' safety programmes**
    - **Improve safety management systems implementation**
    - **Increase safety enhancement initiatives**
    - **Improve safety collaboration at global, regional and national levels**

- **Maintain or improve the provision of infrastructure and aviation services**
    - **Enhance the implementation of the Basic Building Blocks**
    - **Optimize the implementation of operational safety improvements within the ASBU framework**

5.3 These performance objectives and sub-objectives allow for the mapping of the goals outlined in the GASP as follows:

a) Goal 1 of the GASP "*Achieve a continuous reduction of operational safety risks*" was mapped to the safety performance sub-objective "Maintain or improve safety of traditional flight operations" since the scope of Goal 1 was not limited to the set of five High Risk Categories (HRC) but covered all risk categories (the HRC are a subset of the full set of risk categories);

b) Goal 2 of the GASP *"Strengthen States' safety oversight capabilities"* was mapped to the sub-objective "Strengthen State safety oversight capabilities";

c) Goal 3 of the GASP *"Implement effective State safety programmes"* was mapped to the sub-objective "Increase the implementation of States' safety programmes";

d) Goal 4 of the GASP *"Increase collaboration at the regional level"* was mapped to two sub-objectives "Increase safety enhancement initiatives" and "Improve safety collaboration at global, regional and national levels";

e) Goal 5 of the GASP *"Expand the use of industry programmes and safety information sharing networks by service providers"* was mapped to two sub-objectives: "Improve safety management systems implementation" of the industry and "Improve safety collaboration at global, regional and national levels"; and

f) Goal 6 of the GASP *"Ensure the appropriate infrastructure is available to support safe operations"* was mapped to the sub-objectives: "Strengthen States' safety oversight capabilities", as well as "Enhance the implementation of the Basic Building Blocks" and "Optimize the implementation of operational safety improvements within the ASBU framework" under the sub-objective "Maintain or improve the provision of infrastructure and aviation services".

5.4 In addition, in order to address the CICTT occurrence categories as well as to integrate the safety performance sub-objectives of the GANP sixth edition and the expected safety outcomes from the implementation of certain operational improvements in the ASBU framework, the following performance sub-objective tree is proposed under "Maintain or improve safety of traditional operations":

Note.— Sub-objectives in bold with grey highlights are new and are proposed to be included in the seventh edition of the GANP; New sub-objectives from the mapping of the two approaches are marked with (*); those marked with (**) have safety contributions from ASBU Elements.

- **Maintain or improve safety of traditional operations**
    - **Maintain or improve safety on the ramp (aircraft not moving)**

- Maintain or improve safety during surface movement (**)
  - **Reduce the risk of taxiway and apron aircraft/aircraft collisions**
    - Improve collision avoidance during taxi operations (safety net) (**)
  - **Reduce the risk of other collisions while using taxiways and aprons**
    - **Avoid collisions with ground vehicles and mobile equipment on taxiways and aprons (*)**
    - **Avoid collisions with animals or humans on taxiways and aprons (*)**
    - **Avoid collisions with obstacles and buildings (*)**
    - **Avoid encounters with FOD and/or patches of poor taxiway or apron condition (*)**
  - **Reduce the risk of non-collision related occurrences associated with incorrect or unsafe usage of taxiways and aprons**
    - Avoid incorrect taxiing (cases of non-conformance with clearance) (**)
    - Avoid flights attempting to land/take-off on/from taxiways
    - Improve early detection of conflicting ATC Clearances (CATC) related to taxi operations (**)
- Maintain or improve safety on the runway (**)
  - **Reduce the risk of runway aircraft/aircraft collisions**
    - Improve runway collision avoidance (safety net) (**)
  - **Reduce the risk of other collisions while using the runway**
    - Improve runway collision avoidance (safety net) (**)
    - **Avoid bird strike while on the runway (*)**
    - **Avoid collisions with animals or humans on the runway (*)**
    - **Avoid encounters with FOD and/or patches of poor RWY condition (*)**
    - **Avoid wake vortex encounters on the runway (*)**
  - **Reduce the risk of non-collision related occurrences associated with incorrect or unsafe usage of runways**
    - Reduce number of runway incursions

- Avoid incorrect entries of aircraft or vehicles onto the runway protected area (without or contrary to ATC clearance or due to incorrect ATC clearance) (**)
- Avoid incorrect presence of vacating aircraft or vehicles onto the runway protected area (**)
- Avoid incorrect runway crossings by aircraft or vehicles (without or contrary to ATC clearance or due to incorrect ATC clearance) (**)
- Avoid incorrect spacing between successive arriving or arriving and departing or departing and arriving or successive departing aircraft
- Avoid landings without ATC clearance
- Avoid landings on wrong runway at right airport
- Avoid landings at wrong airport
- Avoid take-offs without ATC clearance

▪ Improve early detection of conflicting ATC Clearances (CATC) related to runway usage (**)

▪ Avoid runway excursions

- **Maintain or improve safety in the air**
  - **Reduce the risk of mid-air collisions (aircraft/aircraft)**
    - ▪ Improve mid-air collision avoidance (safety net) (**)
    - ▪ Improve separation provision (at a planning horizon > 2 minutes) (**)
    - ▪ Improve early detection of conflicting ATC Clearances (CATC) (en-route / departure / approach) (**)
  - **Reduce the risk of other collisions while airborne**
    - ▪ **Avoid bird strike while airborne (*)**
    - ▪ Avoid vertical & lateral navigation errors during flight (cases of non-conformance with clearance) (**)
    - ▪ Avoid unauthorized penetration of segregated airspace (**)
    - ▪ Avoid controlled flight into terrain (CFIT) and obstacle collision risk (**)
  - Reduce the risk of non-collision related occurrences
    - ▪ Avoid hazardous weather (including turbulence)
    - ▪ Avoid volcanic ash

- Avoid en-route wake vortex encounters (**)
- Avoid exposure to hazardous space weather
- **Avoid exposure to laser light (*)**
- **Avoid being shot down (*)**
- **Avoid flight into conditions which are in itself non-hazardous, but beyond the capabilities of aircraft or crew (*)**

- **Maintain or improve safety on-board**

Note.— The GANP performance framework is a living framework to be updated through a proposed Maintenance process (see paragraph 2.5 of the working paper). Performance indicators can be mapped at any level of the performance objectives and sub-objectives tree, however, they should be mapped at the lowest level possible.

6. Safety key performance indicators (KPIs)

6.1 Some objectives require precisely defined numerical performance indicators, which serve to establish quantitative measures that, collectively, will indicate progress towards achieving an objective. In order to facilitate this task, the sixth edition of the GANP contains, in its global technical level, a list of 19 KPIs[3] within the KPAs of capacity, efficiency and predictability. These KPIs are associated to the generic performance objectives in the GANP and can be tailored to regional and national instantiated performance objectives.

6.2 The following safety KPIs are proposed to be included in the seventh edition of the GANP:

KPI ID	**KPI20**
KPI Name	**Number of aircraft accidents**
Definition	'Accident' is defined in ICAO Annex 13, Chapter 1-Definitions ADREP: Accident Data Report
Measurement Units	Number of accidents / year
Operations measured	Aircraft accidents during all flight phases that occurred in a year within the State/Region of occurrence.
Variants	Variant 1 (GASP): Aircraft MTOW > 2 250 kg 1.1 National accident occurrence level 1.2 Regional accident occurrence level Variant 2: All aircraft 2.1 National accident occurrence level 2.2 Regional accident occurrence level
Object(s) characterized	The KPI is typically computed for individual State, or Region (selection/grouping based on geography)
Utility of the KPI	High-level measurement of safety performance of the aviation system as a whole.
Parameters	None
Data requirement	For each reported occurrence: Date of occurrence Occurrence Category State of occurrence

[3] The list and details of the KPIs are available at https://www4.icao.int/ganpportal/ASBU/KPI.

KPI ID	KPI20
Data feed providers	ICAO ADREP database iSTARS Application "ADREP et al."
Formula/ algorithm	Count accidents if: a) The local date of occurrence is in between 01 January and 31 December of the year in question; b) It is of the type that is notifiable to ICAO; c) The circumstances of the accidents match the definition of Annex 13 definition of 'Accident'; and d) If variant 1, the aircraft involved in the accident is of maximum take-off mass of over 2 250 kg.
References and examples of use	ADREP: Accident Data Report https://www.eurocontrol.int/archive_download/all/node/12148 https://www.eurocontrol.int/archive_download/all/node/9360#page45 https://www.easa.europa.eu/sites/default/files/dfu/easa_asr_2020.pdf https://www.gcaa.gov.ae/_layouts/download.aspx?SourceUrl=/EN/epublication/EPublications/Civil%20Aviation%20Regulations%20(CARs)/CAR%20X%20-%20SAFETY%20MANAGEMENT%20SYSTEM%20(SMS)%20REGULATIONS/CAR-SMS%20-%20SAFETY%20MANAGEMENT%20SYSTEM%20-%20ISSUE%2006%20(corrected).pdf

KPI ID	KPI21
KPI Name	**Number of runway incursions**
Definition	Number of occurrences at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and take-off of aircraft. (CICTT Taxonomy definition)
Measurement Units	Number of runway incursions / year
Operations measured	The actual number of runway incursions at an aerodrome
Variants	None
Object(s) characterized	The KPI is computed for individual aerodrome
Utility of the KPI	This KPI gives an indication of the incorrect or unsafe usage of the runways and of the safety performance improvement on the runway.
Parameters	None
Data requirement	For each reported occurrence: Date of occurrence Airport of occurrence
Data feed providers	Airports and airlines
Formula/ algorithm	Count number of runway incursions: a) the local date of occurrence in between 01 January and 31 December of the year in question; and b) the circumstances of the occurrence match the definition of CICTF 'RI'; or the occurrence category has been determined to be runway incursion – vehicle, aircraft or person (RI-VAP).
References and examples of use	https://www.mot.gov.sg/docs/default-source/default-document-library/runway-incursion-by-vehicle-in-seletar-airport-7-apr-2018-final-reportcecc69af7fde4718ad39b5127822a05f.pdf https://www.eurocontrol.int/archive_download/all/node/12148 https://www.eurocontrol.int/archive_download/all/node/9360#page45 https://www.gcaa.gov.ae/_layouts/download.aspx?SourceUrl=/EN/epublication/EPublications/Civil%20Aviation%20Regulations%20(CARs)/CAR%20X%20-%20SAFETY%20MANAGEMENT%20SYSTEM%20(SMS)%20REGULATIONS/CAR-SMS%20-%20SAFETY%20MANAGEMENT%20SYSTEM%20-%20ISSUE%2006%20(corrected).pdf

KPI ID	KPI22
KPI Name	**Number of runway excursions**
Definition	Number of veer offs or overruns of the runway surface.
Measurement Units	Number of runway excursions / year
Operations measured	• Only applicable during either the takeoff or landing phase. • The excursion may be intentional or unintentional. For example, the deliberate veer off to avoid a collision, brought about by a Runway Incursion. In this case, code both categories. • Use RE in all cases where the aircraft left the runway/helipad/helideck regardless of whether the excursion was the consequence of another event.
Variants	None
Object(s) characterized	The KPI is computed for individual aerodrome
Utility of the KPI	This KPI gives an indication of the incorrect or unsafe usage of the runways and of the safety performance improvement on the runway.
Parameters	None
Data requirement	For each reported occurrence: Date of occurrence Airport of occurrence
Data feed providers	Airports and airlines
Formula/ algorithm	Count number of runway excursions: a) the local date of occurrence in between 01 January and 31 December of the year in question; b) the circumstances of the occurrence match the definition of CICTT 'RE'; and c) the Occurrence Category has been determined to be runway excursion (RE).
References and examples of use	https://www.mot.gov.sg/docs/default-source/default-document-library/t-50-runway-excursion-in-changi-airport-6-feb-18-final-report.pdf https://www.eurocontrol.int/archive_download/all/node/12148 https://www.eurocontrol.int/archive_download/all/node/9360#page45 https://www.easa.europa.eu/sites/default/files/dfu/easa_asr_2020.pdf https://www.gcaa.gov.ae/_layouts/download.aspx?SourceUrl=/EN/epublication/EPublications/Civil%20Aviation%20Regulations%20(CARs)/CAR%20X%20-%20SAFETY%20MANAGEMENT%20SYSTEM%20(SMS)%20REGULATIONS/CAR-SMS%20-%20SAFETY%20MANAGEMENT%20SYSTEM%20-%20ISSUE%2006%20(corrected).pdf

KPI ID	KPI23
KPI Name	**Number of airprox/TCAS alert/loss of separation/near midair collisions/midair collisions (MAC)**
Definition	Number of airproxes, TCAS alerts, loss of separation as well as near collisions or collisions between aircraft in flight.
Measurement Units	Number of airprox/TCAS alert/loss of separation/near midair collisions/midair collisions (MAC) / year
Operations measured	• Includes all collisions between aircraft while both aircraft are airborne. • Both air traffic control and cockpit crew separation-related occurrences are included. • Genuine TCAS alerts are included here.
Variants	Variant 1: Number of airproxes Variant 2: TCAS alerts Variant 3: loss of separation Variant 4: near midair collisions Variant 5: midair collisions (MAC)
Object(s) characterized	The KPI is computed for volumes of airspace as designated by the State.
Utility of the KPI	This KPI gives an indication of safety performance improvement in the air.
Parameters	None
Data requirement	For each reported occurrence: Date of occurrence

KPI ID	KPI23
	FIR of occurrence
Data feed providers	ANSPs and airlines
Formula/ algorithm	Count number of airproxes, TCAS alerts, loss of separation as well as near collisions or collisions between aircraft in flight: a) the local date of occurrence in between 01 January and 31 December of the year in question; b) the circumstances of the occurrence match the definition of CICTT 'MAC'; and c) the Occurrence Category has been determined to be airprox/TCAS alert/loss of separation/near midair collisions/midair collisions (MAC).
References and examples of use	https://www.eurocontrol.int/archive_download/all/node/9360#page45 https://www.easa.europa.eu/sites/default/files/dfu/easa_asr_2020.pdf https://www.gcaa.gov.ae/_layouts/download.aspx?SourceUrl=/EN/epublication/EPublications/Civil%20Aviation%20Regulations%20(CARs)/CAR%20X%20-%20SAFETY%20MANAGEMENT%20SYSTEM%20(SMS)%20REGULATIONS/CAR-SMS%20-%20SAFETY%20MANAGEMENT%20SYSTEM%20-%20ISSUE%2006%20(corrected).pdf

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APPENDIX B
DRAFT RESOLUTION FOR ADOPTION BY THE 41ST SESSION OF THE ASSEMBLY

A41-xx: ICAO global planning for safety and air navigation

Whereas ICAO strives to achieve the goal of a safe and orderly development of civil aviation through cooperation among Member States and other stakeholders;

Whereas to realize this goal, the Organization has established Strategic Objectives, including objectives for safety and for capacity and efficiency;

Recognizing the importance of global frameworks to support the Strategic Objectives of ICAO;

Recognizing the importance of effective implementation of regional and national plans and initiatives based on the global frameworks;

Recognizing that further progress in improving the global safety, capacity and efficiency of civil aviation is best achieved through a cooperative, collaborative and coordinated approach in partnership with all stakeholders under the leadership of ICAO; and

Noting the approval by the Council of the ~~third~~ 2023-2025 edition of the Global Aviation Safety Plan (GASP) and of the ~~sixth~~ seventh edition of the Global Air Navigation Plan (GANP);

The Assembly:

1. *Endorses* the ~~third~~ 2023-2025 edition of the Global Aviation Safety Plan (GASP) and the ~~sixth~~ seventh edition of the Global Air Navigation Plan (GANP) as the global strategic directions for safety and air navigation, respectively;

2. *Resolves* that ICAO shall implement and keep current the GASP and the GANP to support the relevant Strategic Objectives of the Organization, while ensuring necessary stability;

3. *Resolves* that these global plans shall be implemented and kept current in close cooperation and coordination with all concerned stakeholders;

4. *Resolves* that these global plans shall provide the frameworks in which regional, subregional and national plans will be developed and implemented, thus ensuring consistency, harmonization and coordination of efforts aimed at improving international civil aviation safety, capacity and efficiency;

5. *Urges* Member States to develop sustainable solutions to fully exercise their safety oversight and air navigation responsibilities which can be achieved by sharing resources, utilizing internal and/or external resources, such as regional and subregional organizations and the expertise of other States;

6. *Urges* Member States to demonstrate the political will necessary for taking remedial actions to address safety and air navigation deficiencies, including those identified by Universal Safety Oversight Audit Programme (USOAP), through the GASP, the GANP and the ICAO regional planning process;

7. *Urges* Member States, the industry and financing institutions to provide the needed support for the coordinated implementation of the GASP and GANP, avoiding duplication of efforts;

8. *Calls upon* States and invites other stakeholders to cooperate in the development and implementation of regional, subregional and national plans based on the frameworks of the GASP and GANP;

9. *Instructs* the Secretary General to promote, make available and effectively communicate the GASP and the GANP; and

10. *Declares* that this resolution supersedes Resolution ~~A39-12~~ A40-1 on ICAO global planning for safety and air navigation.

APPENDIX A

Global Aviation Safety Plan (GASP)

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APPENDIX B

Global Air Navigation Plan (GANP)

Whereas the enhancement of the safety, capacity and efficiency of aviation operations is a key element of the ICAO Strategic Objectives;

Having adopted Resolution ~~A40-4~~ A41-xx, a consolidated statement of continuing ICAO policies and associated practices related specifically to air navigation;

Recognizing the importance of GANP as an operational strategy and part of the basket of measures to achieve ICAO's global aspirational goals on CO_2 emissions; and

Recognizing that many States and regions are developing new air navigation plans for their own air navigation modernization;

The Assembly:

1. *Instructs* the Council to use the guidance in the Global Air Navigation Plan (GANP) to develop and prioritize the technical work programme of ICAO in the field of air navigation;

2. *Urges* the Council to provide States with a standardization roadmap, as announced in the GANP, as a basis for the work programme of ICAO;

3. *Calls upon* States, planning and implementation regional groups (PIRGs), and the aviation industry to utilize the guidance provided in the GANP for planning and implementation activities which establish priorities, targets and indicators consistent with globally-harmonized objectives, taking into account operational needs;

4. *Calls upon* States to take into consideration the GANP guidelines for the implementation of operational improvements as part of their national strategy to reduce the environmental impact, including CO_2 emissions, from international aviation;

5. *Calls upon* States, PIRGs, and the aviation industry to provide timely information to ICAO, and to each other, regarding the implementation status of the GANP, including the lessons learned from the implementation of its provisions;

6. *Invites* PIRGs to use ICAO standardized tools or adequate regional tools to monitor and, in collaboration with ICAO, analyse the implementation status of air navigation systems;

7. *Instructs* the Council to publish the results of the analysis on the regional performance dashboards ~~and in an annual global air navigation report~~ including, as a minimum, the key implementation priorities and accrued environmental benefits associated with the implementation of the operational improvements outlined in the ASBU framework;

8. *Urge*s States that are developing new air navigation plans, for their own air navigation modernization, to coordinate with ICAO and align their plans so as to ensure global compatibility and harmonization; and

9. *Instructs* the Council to continue developing the GANP, keeping it current with evolving technology and operational requirements.

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