**Agenda Item 2: Optimisation of SAM airspace**

# Air navigation implementation priorities focused on airspace optimisation for the period 2017-2019

(Presented by the Secretariat)

**SUMMARY**

This working paper presents a proposal of possible air navigation implementation priorities for the period 2017-2019. This proposal takes into account the status of implementation of the priorities specified in the Bogota Declaration for the end of 2016, as well as possible new air navigation priorities in response to regional and global requirements to meet air traffic growth.

**References**:

- Global Air Navigation Plan (Doc 9750, IV Edition)
- SAM Performance-based Air Navigation Implementation Plan (PBIP)
- Second Meeting of Air Navigation and Safety Directors of the SAM Region (Lima, Peru, 14 to 16 September 2015)

| | |
|---|---|
| ***ICAO Strategic Objectives:*** | *A - Safety*<br>*B – Air navigation capacity and efficiency*<br>*E – Environmental protection* |

## 1. Background

1.1 The Thirteenth Meeting of Civil Aviation Authorities (RAAC/13) approved Conclusion RAAC/13-8 - *Implementation of air navigation and safety priorities*, urging SAM States to implement air navigation and safety priorities in accordance with the regional goals defined in the Bogota Declaration for the period 2014-2016, and international organisations to support the priorities of the States.

1.2 In preparation of the next RAAC/14 meeting, the Second Meeting of Air Navigation and Safety Directors of the SAM Region was held in Lima, Peru, from 14 to 16 September 2015, in order to assess the progress in the implementation of goals established in the Bogota Declaration as well as to analyse possible implementation priorities for the 2017-2019 triennium.

## 2. Discussion

2.1 During the Second Meeting of Air Navigation and Safety Directors of the SAM Region it was noted that some air navigation implementation priorities expected to be accomplished by the end of 2016 will require an additional effort by States in order to meet the proposed goals in PBN. However, except for the implementation of CCO and CDO operational techniques, participating Air Navigation Directors understood that it was possible to achieve the proposed goals within the established timeframe.

2.2 Likewise, in order to start preparing implementation plans for the 2017-2019 triennium it was necessary to analyse what improvements to air navigation may be necessary to increase capacity, efficiency and safety of airspace in the SAM Region, establish the indicators and associated metrics and define the goals for such period.

2.3 In such sense, the meeting discussed a number of templates showing possible improvements in air navigation to be implemented, as well as a series of indicators and metrics to measure its progress within the framework of defined goals.

2.4 While analysing such templates, the Air Navigation Directors meeting understood it was necessary to examine some of them further by specialized experts in terms of implementation, goals and indicators, requesting that same were discussed during the SAM/IG/16 meeting. For further reference of experts, **Appendix A** shows a list of ATM proposals considered by the meeting on which different actions were established, as well as such applications that are indirectly related to PBN, focused on AIM and ATFM, which were approved.

**ATM Area**

2.5 Regarding ***ASBU B0 APTA*** - *Optimisation of approach procedures including vertical guidance (2017 2019*), which includes APV instrument approaches with Baro-VNAV (LNAV/VNAV or RNP-AR) in accordance with ICAO Assembly Resolution A37-11, the Second Meeting of Air Navigation Directors unanimously considered that same would be achieved by end of 2016 in 100%. In such sense, same should not be considered in the planning for the 2017-2019 triennium.

2.6 Concerning ***ASBU B0-CCO*** and ***B0-CDO*** - *Improve efficiency and flexibility in climb and descent profiles, applying continuous climb operations (CCO) and continuous descent operations (CDO) (2017-2019),* the meeting of Directors considered it was difficult to achieve the goal established for 2016. It should therefore be considered for the 2016-2019 triennium and its metrics, indicators and goals be revised and analysed at SAM/IG/16 meeting.

2.7 The meeting of Directors considered that proposals of ***ASBU B0 FRTO*** - *Improve operations through optimised route paths,* should be revised and analysed at SAM/IG/16 meeting. It was also requested to consider IATA proposal on some elements of this module, which were analysed by the meeting and are included as **Appendix B** to this working paper.

2.8 Proposals of modules ***B0-NOPS*** - *Improve traffic flows through the implementation of ATFM* and ***B0-DATM*** - *Service improvement through digital aeronautical information management,* contemplate implementations in ATFM and AIM areas. Although these proposals were approved in general by the meeting of Directors, same are included in Appendix A given that being related to PBN and its relationship with other modules or goals, amendments and considerations may be introduced as deemed relevant.

3. **Suggested action**

3.1 The Meeting is invited to:

a) take note of the information presented herein;
b) review the list of air navigation improvements which require of an expert analysis; and
c) analyse the indicators, metrics and goals proposed and introduce the amendments as deemed relevant.

**APPENDIX A**

**AIR NAVIGATION IMPLEMENTATION PLAN PERIOD 2017- 2019**

**APPROVED TEMPLATES IN THE ATFM AREA**

| ***B0 - NOPS: Improve traffic flows through the implementation of ATFM 2017-2019*** | | | | |
|---|---|---|---|---|
| **ELEMENTS** | **SCOPE** | **INDICATORS/ METRICS** | **GOALS: % / Date** | **STATUS** |
| 8- Implementation of regional ATFM | All States | Indicator: % of ACC FMUs/FMPs interconnected in a network<br><br>Metrics: Number of ACC FMUs/FMPs interconnected in a network. | 50% by 2017<br>100% by 2018 | XX %<br><br>(Nr. of FMPs/FMUs) |

**APPROVED TEMPLATES IN THE AIM AREA**

| ***B0 - DATM: Service improvement through digital aeronautical information management 2017-2019*** | | | | |
|---|---|---|---|---|
| **ELEMENTS** | **SCOPE** | **INDICATORS/ METRICS** | **GOALS: % / Date** | **STATUS** |
| 1- AIXM | All States | Indicator: % of States that have implemented AIXM on an AIS database.<br><br>Metrics: Number of States that have implemented AIXM on an AIS database. | 2016 **trials** (4 States: ARG, BRA, PAN, URU)<br><br>28% by 2017<br>49% by 2018<br>100% by 2019 | XX%<br>(Nr. of States) |
| 2- Electronic AIP | All States | Indicator: % of States that have implemented an IAID to manage the production of the electronic AIP (eAIP).<br><br>Metrics: Number of States that have implemented an IAID to manage the production of the electronic AIP (eAIP). | 28% by 2017<br>56% by 2018<br>100% by 2019 | XX%<br>(Nr. of States) |

| *B0 - DATM: Service improvement through digital aeronautical information management 2017-2019* | | | | |
|---|---|---|---|---|
| **ELEMENTS** | **SCOPE** | **INDICATORS/ METRICS** | **GOALS: % / Date** | **STATUS** |
| 3- Electronic terrain and obstacle data (e-TOD) | All States | Indicator: % of States that have implemented the Terrain data set.<br><br>Metrics: Number of States that have implemented the Terrain data set.<br><br>Indicator: % of States that have implemented the Obstacle data set.<br><br>Metrics: Number of States that have implemented the Obstacle data set.<br><br>Indicator: % of States that have implemented the data set for Terrain and Obstacles that penetrate the terrain and obstacle data collection surface.<br><br>Metrics: Number of States that have implemented the data set for Terrain and Obstacles that penetrate the terrain and obstacle data collection Surface. | **Area 1**:<br>Terrain:<br>100% by 2016<br><br>Obstacles:<br>28% by 2016<br>49% by 2017<br>100% by 2018<br><br>**Area 2b, 2c and 2d**<br><br>Terrain:<br>100% by 2017<br><br>Obstacles:<br>100% by 2017 | **Area 1**:<br>Terrain:<br>XX%<br>(Nr. of States)<br><br>Obstacles:<br>XX%<br>(Nr. of States)<br><br>**Area 2b, 2c and 2d**<br>Terrain:<br>XX%<br>(Nr. of States)<br><br>Obstacles:<br>XX%<br>(Nr. of States) |

| ***B0 - DATM: Service improvement through digital aeronautical information management 2017-2019*** | | | | |
|---|---|---|---|---|
| **ELEMENTS** | **SCOPE** | **INDICATORS/ METRICS** | **GOALS: % / Date** | **STATUS** |
| 4- Digital NOTAM | All States | Indicator: % of States that have included the digital NOTAM in their National AIS-to-AIM Transition Plan.<br><br>Metrics: Number of States that have included the digital NOTAM in their National AIS-to-AIM Transition Plan. | 28% by 2017<br>56% by 2018<br>100% by 2019 | XX%<br>(Nr. of States) |
| 5- Integrated aeronautical information databases (IAID) | All States | Indicator: % of States that have developed integrated aeronautical information databases (IAID).<br><br>Metrics: Number of States that have developed integrated aeronautical information databases (IAID). | 28% by 2017<br>56% by 2018<br>100% by 2019 | XX%<br>(Nr. of States) |

**TEMPLATES TO BE ANALYSED IN THE ATM AREA**

| ***B0 - CCO and B0 - CDO: Improve efficiency and flexibility in climb and descent profiles applying continuous climb operations (CCO) and continuous descent operations (CDO) 2017-2019*** | | | | |
|---|---|---|---|---|
| **ELEMENTS** | **SCOPE** | **INDICATORS/ METRICS** | **GOALS: % / Date** | **STATUS** |
| 2- PBN SIDs and PBN STARs<br><br>SIDs/STARs in international airports considered in 2014: 1680 | All States | Indicator: % of international airports with SID or STAR PBN.<br><br>Support metrics: Number of international airports that have implemented SID or STAR PBN.<br><br>(**Note**: This refers to international airports listed in table AOP-1 of the CAR/SAM ANP). | 80% by 2017<br>100% by 2018 | 64 % of international airports with PBN SIDs or STARs implemented<br><br>(Nr. of airports) |
| 3- Design of TMAs applying PBN.<br><br>2015 baseline: 34 TMAs selected | All States | Indicator: % of TMAs selected for implementation of the PBN airspace concept that serve international airports.<br><br>Support metrics: Number of TMAs selected for implementation of the PBN airspace concept that serve international airports.<br><br>(**Note:** this refers to international airports listed in Table AOP-1 of the CAR/SAM ANP). | 70% by 2016<br>80 % by 2017<br>100% by 2018 | 18% TMAs with PBN design<br><br>(Nr. of TMAs) |
| 4- Applications of CCO and CDO techniques to departures and arrivals<br><br>Considered in 2013:<br>99 international airports<br>**Note:** The number of international airports considered will be updated in 2016. | All States | Indicator: % of airports with arrivals and departures applying CCO and CDO.<br><br>Support metrics: Number of international airports with arrivals and departures applying CCO and CDO.<br><br>(**Note:** this refers to international airports listed in Tabl AOP-1 of the CAR/SAM ANP). | 40 % CCO/CDO by 2018<br><br>50% CCO/CDO by 2019 | 4,52% of international airports with CCO/CDO implemented.<br><br>(Nr. of airports |

| ***B0 - CCO and B0 - CDO: Improve efficiency and flexibility in climb and descent profiles applying continuous climb operations (CCO) and continuous descent operations (CDO) 2017-2019*** | | | | |
|---|---|---|---|---|
| **ELEMENTS** | **SCOPE** | **INDICATORS/ METRICS** | **GOALS: % / Date** | **STATUS** |
| 5- PBN routes<br>**Note:** Analyse implementation of RNP-4 routes (Oceanic areas) and RNP-2 routes (Continental areas).<br>Routes considered in 2015:<br>165 routes of upper airspace. | All States | Indicator: % of PBN routes implemented in the upper airspace of the Region.<br><br>Support metrics: Number of routes implemented in the upper airspace of the Region. | 80 % by 2017<br>100% by 2018 | 60%<br>PBN routes<br><br>(Corresponds to 99 PBN routes in the upper airspace) |
| 6- Application of the conventional longitudinal separation from 80 to 40 NM | All States | Indicator: % of States applying longitudinal separation of 40 NM at FIR boundaries.<br><br>Support metrics: Number of States applying a longitudinal separation of 40 NM at FIR boundaries. | 50% by 2017<br>100% by 2018 | XX%<br><br>(Nr. of States) |
| 7- Application of the conventional longitudinal separation from 40 to 20 NM | All States | Indicator: % of States applying a longitudinal separation of 20 NM qat FIR boundaries.<br><br>Support metrics: Number of States that apply a longitudinal separation of 20 NM at FIR boundaries. | 50% by 2019 | XX %<br><br>(Nr. of States) |

**APPENDIX B**

**PROPOSAL OF IATA**

| ***B0 – APTA: Optimisation of approach procedures including vertical guidance 2017-2019*** | | | | |
|---|---|---|---|---|
| **ELEMENTS** | **SCOPE** | **INDICATORS/ METRICS** | **GOALS: % / Date** | **STATUS** |
| 6 - Optimisation of conventional longitudinal separation from 80 to 40 NM | All States | Indicator: % of States applying a longitudinal separation of 40 NM.<br><br>Support metrics: Number of States applying a longitudinal separation of 40 NM and number of SAM States. | 50% by 2016<br>100% by 2017 | XX<br>(Nr. of States) |
| 7 - Optimisation of the conventional longitudinal separation from 40 to 20 NM | All States | Indicator: % of States applying a longitudinal separation of 20 NM.<br><br>Support metrics: Number of States applying a longitudinal separation of 20 NM and number of SAM States. | 50% by 2017<br>100% by 2018 | XX<br>(Nr. of States) |
| 8 – Optimisation of the longitudinal separation from 20 to 10 NM using ATS surveillance systems | All States | Indicator: % of States applying a longitudinal separation of 10 NM.<br><br>Support metrics: Number of States applying a longitudinal separation of 10 NM and number of SAM States with adequate ATS surveillance coverage in FIR boundaries with neighbors States. | 50% by 2018<br>100% by 2019 | XX<br>(Nr. of States) |