Agenda Item 3: Implementation of air traffic flow management (ATFM) and improvement of procedures for coordination between agencies

A-CDM PROJECT FOR THE SAM REGION

(Presented by the Secretariat)

SUMMARY

This working paper presents information on a project to support the implementation of B0-ACDM (airport collaborative decision-making) at designated airports of the SAM Region with capacity problems, as a solution that will make airport processes more efficient in their interaction with ATFM, in support of the ATM concept.

References:

- Global air navigation plan - GANP
- SAM Performance-based air navigation implementation plan - PBIB
- Doc 9971 *Manual on collaborative air traffic flow management*

1. Introduction

1.1. In the South American Region, traffic growth at the main hubs and restrictions to the development of new airport infrastructure to meet such demand call for the implementation of new concepts, processes and technologies to maintain operability during peak hours, and to provide, with the existing infrastructure, the necessary conditions to accommodate traffic until such time that the required infrastructure can be provided.

1.2. Airport collaborative decision-making (A-CDM) is one of such improvements that increase predictability and situational awareness among the main actors in airport processes on the surface, especially during the aircraft turn-around phase, through an information exchange platform that translates into better aircraft flow management on the ground.

1.3. A-CDM is part of the Aviation System Block Upgrades (ASBU) contained in the Global air navigation plan (GANP) in the area of efficiency improvements, under “Airport Operations”. Recently, ICAO published a complete section on A-CDM in the new version of Doc 9971 “Manual on collaborative air traffic flow management”.

2. Discussion

2.1 There are several airports in the SAM Region that have infrastructure capacity issues that have led to higher costs, saturation, inefficiencies and loss of opportunities, which works against the long-term national and regional common desire to benefit from growing air connectivity.

2.2 Consequently, several airport operators expressed interest in implementing resource management and airport information exchange systems in an attempt to optimise their processes and be more efficient. However, such processes are sometimes conceptualised in an isolated manner, without taking into account all stakeholders, and are not coordinated with air navigation service providers and users (to identify opportunities for more interoperability between systems). In other words, they are not carried out under a common, collaborative scheme. The implementation of non-harmonised improvements entails the risk of low interoperability, higher interconnection costs, and loss of the opportunity to operate in an internationally harmonised environment, where crews can use similar processes at the various airports in which they operated.

2.3 A-CDM has been globally identified as a way of increasing airport capacity through better use of existing capacity. This is possible by virtue of enhanced situational awareness by all stakeholders as a result of a timely exchange of information leading to a better collaborative decision-making process, especially during the aircraft turn-around process.

2.4 Experience has shown that, in order to derive maximum benefit from integrating A-CDM efforts into the ATM network, the concept must be implemented in a consistent but scalable manner. In the Region, due to lack of experience on this matter, many States and airports are seeking advice to implement A-CDM. However, such efforts do not necessarily follow ICAO guidance as specified in Part III of Doc 9971, nor harmonised regional guidelines, thus increasing the risk of inconsistencies among States in the implementation of the solution.

3. Proposal

3.1. The Secretariat proposes to work together with the States, especially with those that have a more pressing need for airport improvements, through a SAM A-CDM implementation project. The States, in addition to providing feedback and support, will facilitate interaction with other local actors (aerodrome operators, airlines, ground service providers) for the implementation of the project based on a collaborative approach.

3.2. Following the Aviation system block upgrades (ASBU) methodology of the Global air navigation plan (GANP), and Part III of Doc 9971, the Project proposes to increase airport capacity in congested aerodromes by designing a plan to implement B0-ACDM and subsequently B1-ACDM in the SAM Region and establishing a base scenario of airport capacity restrictions. In this manner, States may identify their own implementation needs, collect best practices and guidance material, adjusting them to local/regional conditions, identifying those modules to be implemented by the Region or the States, defining implementation requirements or levels, with a view to establishing a roadmap and carrying out pilot projects at designated aerodromes.

3.3. The expected results will be a regional operational concept (ConOps) and an A-CDM implementation guide to be adopted by the Region, taking into account integration requirements and harmonisation with other improvements, such as ATFM.

3.4. It should be noted that, although ATFM is not a prerequisite for A-CDM, it is obvious that any form of ATFM will benefit from being connected to A-CDM.

3.5. Likewise, operations conducted at a CDM airport will be enriched with enhanced arrival information from the ATM network. Network operations will also benefit from more precise departure information from CDM airports.

3.6. The Appendix to this working paper contains a business case for the SAM A-CDM project (English only).

4. Suggested action

4.1. The Meeting is invited to:

a) take note of the information provided in this paper and its appendix;

b) give feedback to the Secretariat on possible ways to carry out the proposed project; and

c) agree on any other actions it may deem appropriate.

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APÉNDICE / APPENDIX

A-CDM in the SAM Region - Business Case

Project Name:	A-CDM in the SAM Region		
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Approvals

This document requires the following approvals. A signed copy should be placed in the project files.

Name	Signature	Title	Date of Issue	Version

Distribution

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Overview

Purpose

A Business Case is used to document the justification for the undertaking of a project, based on the estimated costs (of development, implementation and incremental ongoing operations and maintenance costs) against the anticipated benefits to be gained and offset by any associated risks.

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Executive Summary

SAM States are working together on a *"Agenda for sustained growth of air transport in South America" (SAM Plan)* in order to have a region that offers greater access of their population to the benefits of air transport, through a greater level of connectivity between the people of the South American region and with the rest of the world, thus promoting greater commercial, social and cultural exchange. Connectivity is one of the main axis of the Plan, and is highly related to the objective that the States wish to accomplish.

Due to the fact that infrastructure bottlenecks at airports will not be solved on the short term, it's important to operate as efficient as possible with the current facilities. The efficiency of the Air Transport System in the SAM Region depends highly on traffic predictability.

Following Global Air Navigation Plan's Aviation System Block Upgrades (ASBU) methodology, the Project proposes to increase airport capacity in congested aerodromes by establishing a plan to implement B0-ACDM and subsequently B1-ACDM on the SAM Region by setting a baseline scenario on airport capacity constraints for States to identify their own needs to implement, gather best practices and guidance material, adjust them to local/regional conditions, identifying which modules the Region/States will most likely implement, define requirements or levels for implementation in order to establish a roadmap, and following pilot projects in designated aerodromes.

The expected results will be a Concept of Operations and implementation guidance on A-CDM for the region to adopt, considering all the expertise and lessons learned from models such as the European A-CDM, but adjusted to regional reality. By allowing a consistent and harmonised implementation, this will ultimately ensure the harmonious transition within the region and from one region to another.

Reasons

In the SAM Region there is a lack of airport infrastructure capacity that had lead to increased costs, saturation, delays, inefficiencies, and loss of opportunity due to the lack of space to operate, thus acting against the common long-term national and regional interest of realizing the benefits of growing air connectivity.

As airport development projects are very large in scope and have a long time horizon from planning to completion (along with high costs and space requirements), in the meantime States and Airport Operators may need to find ways to increase the efficient use of installed infrastructure in order to generate more capacity to accommodate demand. ACDM has globally being identified as a way to increase capacity in the airport by means of increasing situation awareness to all the involved stakeholders thru sharing of information that lead to better collaborative decision making process, especially during the turnaround process in the airport.

Experience has shown that to get the full benefit from the integration of A-CDM efforts to the network, there is a need to implement the concept in a consistent but scalable way. In the region, due to lack of expertise in the matter, many States and Airports are looking after consultancy services to implement A-CDM, however, those efforts are not following any agreed regional harmonised guidelines, increasing the risk for inconsistencies between States on the implementation of the solution, affecting users negatively.

This solution is aligned with SAM Plan's Connectivity axis, and with ICAO's Capacity and Efficiency Strategic Objective.

Business Options

1. Do nothing

States will still implement air navigation related solutions (such as ATFM) that will put more pressure to the network nodes (aerodromes). Surface operations, especially the turnaround process in the airport, will continue to be handled by operational stakeholders that rely on separate systems not sharing all relevant information, so not performing as efficient as they could. There will be no effective linkage between airborne and ground status segments, deviations from the planned traffic situation will not be transmitted to interested parties.

2. Continue delivering seminar/workshops on ACDM

Currently, the RO has been delivering workshops and increasing awareness on the ACDM matter, having great assistance and results in the workshop; however, in order to support States on a harmonized implementation, there is a need to follow up on the measures taken by airports and States to begin collaboration mechanisms. Currently, as no Regional guideline or roadmap hasn't been define, there is a high risk of independent implementation efforts at States that may affect the region's integration and connectivity.

3. Project on ACDM

This is the recommended option. By carrying out an ACDM implementation project, the Region has the opportunity to identify the need and implement ACDM on a scalable, consistent and harmonized way. Experience from other Regions has determined the lack of harmonization as one of the main challenges in ACDM implementation.

Expected Benefits

- Enhanced used of existing infrastructure of gate and stands (unlock latent capacity)
- Reduced workload
- Enhanced predictability
- Harmonized, consistent implementation of ACDM concept in the SAM region, in line with GANP, the SAM Plan Connectivity Axis and other regions
- Benefits to the network (information sharing to network and other networks).
- Safety due to increased awareness
- IRROPS faster recovery
- Fuel savings

Expected Dis-benefits

- Systems (software) integration costs (at some locations).
- Change in current procedures.

Timescale

The project is expected to last 18 months, considering activities to gather information, adjust to regional conditions, and validate with stakeholders the conditions/requirements for consistent implementation. Implementation at designated airports and pilot programs make take longer (based on other regions experience). Shortest ACDM program in an airport may take about 12 months on its first phase, depending on the local situation.

Costs

Initial costs are to be determined by the project, but most likely to fall in the consultancy services (by a specialized company with experience in A-CDM implementation, or expert missions) and document preparation. A meeting or event to review and approve the project may also drive costs regarding the event organization, fellowships and other costs.

After the initial phase, the project will then pass to operational phase, in which the progress of implementation may be followed up by current regional means (such as SAM-IG meetings, GREPECAS, etc.). At this phase, a new project may be needed to follow operational phase. Independent Consultancy services at this phase may be needed to review the process of the project development and recommend adjustments as needed.

Major Risks

- Lack of interest
  Mitigation: demonstrate business case to potential sponsor showing benefits that the project may deliver, along with detailed costs.
- Lack of funding
  Mitigation: due to the high benefits of this improvement and the interest of many airports in the region to implement, look to ensure funding from ICAO HQ, ICAO Regional Project or third party interested to support the project
- Lack of expertise to develop the project
  Mitigation: ensure funding to hire the right specialists to develop the material needed for the project. Engage with recognized organization or thru ICAO to get the right people for the task.
- States may not participate on the project
  Mitigation: include the project as part of already accepted mechanisms by States (such as GREPECAS Projects). Inclusion on e-ANP Vol. III as part of GANP implementation
- Lack of competent staff in airport operations (AOP) in the State to follow the project
  Mitigation: generate competencies thru training/awareness on the implementation/operation phase
- Low involvement of other Stakeholders (airport operator, airlines, ATC).
  Mitigation: foster collaboration with partners (ACI, IATA, CANSO) to ensure stakeholder point of view.