



International Civil Aviation Organization

South American Office

Sixth Meeting of Air Navigation and Flight Safety Directors of the SAM Region (ANFS/6)

(Lima, Peru, 24 to 25 June, 2019)

ANFS/6 – WP/19

04/06/19

Agenda Item 5: Other Business

NEW PROJECT PROPOSAL UNDER THE AERODROME PROGRAMME FOR THE SAM REGION – IMPLEMENTATION OF A-CDM

(Presented by the Secretariat)

SUMMARY

Following the transition of GREPECAS to a more project based approach PIRG, and following analysis done by the Secretariat, this working paper presents to the Meeting a project proposal under the AGA Programme, to support the harmonized and scalable implementation of Airport Collaborative Decision Making (in support of the ATM Operational Concept) in the SAM Region. The initial documentation for the project, which includes an associate Business Case, were prepared using PRINCE2 methodology in order to facilitate its review by the Meeting.

Action: The Meeting is invited to review the Project proposal and give feedback on the convenience to present this Project for endorsement by States on the next PPRC meeting to be held at Mexico City on July 2019.

References:

- Doc 9750 - Global Air Navigation Plan (GANP), 6th Ed.
- CARSAM Regional e-Air Navigation Plan, Vol. II
- ICAO GANP Portal (<https://www4.icao.int/ganpportal/>)
- Report of the GREPECAS18 Meeting, April 2018
- GREPECAS18 Information Paper #14

Strategic Objective(s)

This working paper is related to Strategic Objective(s)

- Air Navigation Capacity and Efficiency
- Environmental Protection

1. Introduction

1.1. On the past GREPECAS/18 meeting, the Meeting decide that, in order to gain efficiencies, Projects F1 and F2 of the Aerodromes and Ground Aids (AGA) Programme of GREPECAS will merge into one single project F named “Aerodrome Safety and Certification Implementation Project”. After this decision, each Region only have one Project under the Aerodromes F Programme (Project F1).

1.2. The Volume II of CARSAM Air Navigation Plan indicates on section 2.13 that “When international aerodromes are reaching designed operational capacity, a better and more efficient utilization of existing runways, taxiways and aprons is required”. The Plan also addresses that “The airport

collaborative decision making (A-CDM) concept should be implemented to improve airport capacity as early as possible”.

1.3. Although there is an increasing interest by many States, ANSPs and Airport Operators on implementing Airport Collaborative Decision Making as a tool to unlock latent airport capacity, there is no common agreement in the Region on the process of implementation, including a common set of procedures, the means and formats for sharing of data, and terminologies to be used. This poses an increasing risk for un-harmonized environment, which may lead to increasing costs for integration and confusion among users and stakeholders.

2. Project on Airport Collaborative Decision Making (A-CDM)

2.1. In the SAM Region, it has been identified a lack of airport infrastructure capacity at some important gateways that had led 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.

2.2. To cope with this situation, many States and Airports operators had engage in Airport development projects, however, most of them 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 need to find ways to increase the efficient use of installed infrastructure in order to generate more capacity to accommodate demand.

2.3. A-CDM has globally being identified as a way to increase capacity in the airport by means of increasing situational 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. Also, there are several studies on the environmental benefits of a more efficient operations at a congested aerodrome.

2.4. Following the 2019 version of ICAO’s Global Air Navigation Plan’s Aviation (GANP) System Block Upgrades (ASBU) methodology and ICAO Document 9971 Part III, the Project proposes to increase airport capacity in congested aerodromes by establishing regional guidelines and a plan to implement B0-ACDM and subsequently selected elements of B1, B2 & B3 (as needed) on the SAM Region.

2.5. A copy of the initial Business Case is included in Appendix A of this WP.

3. Suggested action

3.1. The Meeting is invited to:

- a) take note of the information provided in this working paper;
- b) analyse the document on Appendix A;
- c) comment on the convenience or not of proposing this project to PPRC meeting for its endorsement and implementation in the SAM Region;
- d) Propose candidates to work with ICAO on the development of the Project.

APPENDIX A



INTERNATIONAL CIVIL AVIATION ORGANIZATION
SOUTH AMERICAN REGIONAL OFFICE

PROJECT DOCUMENTATION

BUSINESS CASE

Project: A-CDM in the SAM Region – B0/1 ACIS implementation

Release: ****DRAFT VERSION****

Date: 30 May 2019

PRINCE2

Author: ICAO SAM AGA RO

Owner: GREPECAS

Client: SAM States

Document Ref: CAP-AGA-17-002

Version No: 1.10

Business Case Date:

5 June 2019

1 Business Case History

1.1 Document Location

This document is only valid on the day it was printed.

The source of the document will be found at this location – [\[AGA Projects\Project CAP-AGA-17-002_ACDM\]](#)

1.2 Revision History

Date of this revision:

Date of next revision:

Revision date	Previous revision date	Summary of Changes	Changes marked
30/05/19		First issue	

1.3 Approvals

This document requires the following approvals.

Signed approval forms should be filed appropriately in the project filing system.

Name	Signature	Title	Date of Issue	Version
PPRC				

1.4 Distribution

This document has been distributed to:

Name	Title	Date of Issue	Version
Project Board			
RCC meeting			
Project Team			

2 Table of Contents

1	Business Case History	1
1.1	Document Location	1
1.2	Revision History	1
1.3	Approvals	1
1.4	Distribution	1
2	Table of Contents	2
3	Executive Summary	3
4	Reasons	4
5	Business Options.....	4
6	Expected Benefits.....	5
7	Expected Dis-benefits.....	6
8	Timescale	6
9	Costs	7
10	Investment Appraisal	7
11	Major Risks	7

3 Executive Summary

Based on the ***Declaration to promote Connectivity through the Development and Sustainability of Air Transport in the Pan-American Region - Vision 2020-2035 (IWAF/4)***, endorsed by Pan-American States in Fortaleza, Brazil in September 2018, the sustainable development of aviation in the Region depends on the availability of capacity and efficiency of its operations, through coordinated actions, in alignment with the GANP. Airports are an important link in the process to ensure the needed capacity and efficiency for aircraft operations to occur.

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 the 2019 version of ICAO's Global Air Navigation Plan's Aviation (GANP) 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 selected elements of B1, B2 & B3 (as needed) on the SAM Region.

According to 2019 GANP, ACDM-B0 consists of only one element, ACDM-B0/1 Airport CDM Information Sharing or ACIS. The main purpose of this element is to generate common situational awareness, which will foster improved decision making within aerodromes, by sharing relevant surface operations data among the local stakeholders involved in aerodrome operations.

It consists in the definition of common specific milestones for several flight events taking place during surface operations. The stakeholders involved have to make decisions based on accurate operational data, achieve the agreed milestones.

The Project proposes to support States on the implementation of ACIS on selected aerodromes by enabling tailored operational procedures, share experiences, best practices and lessons learned on the implementation of ACIS procedures/tools, training and the definition of phraseology for the implementation of ACIS according to ICAO Doc 4444 and Doc 9971.

The selected aerodromes will be based on complexity (hub or O/D, environmental conditions, limitations, etc.) and traffic. According to ICAO iStars, the top 5 airports by departures in the SAM Region are:

Rank	State	City	Airport Name	Airport code	2018 Departures	2018 Pax Traffic
1	Brazil	Sao Paulo	Guarulhos Intl.	SBGR	135307	38M
2	Colombia	Bogota	El Dorado Intl	SKBO	135018	30.9M
3	Peru	Lima-Callao	Jorge Chavez Intl	SPIM	91697	20.6M
4	Chile	Santiago	Arturo Merino Benitez Intl	SCEL	76773	21.4M
5	Panama	Panama City	Tocumen Intl	MPTO	69600	15.6M

Business Case Date:

5 June 2019

The implementation of ACIS will serve as an enabler to future implementation of subsequent B1, B2 & B3 A-CDM elements.

4 Reasons

In the SAM Region there is a lack of airport infrastructure capacity that had led 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.

A-CDM 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, with consultation with stakeholders including airlines.

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.

Also, the Project plans to deliver a framework in order to sort some of the common barriers of implementation, such as the sharing of what is considered “sensitive” data by some stakeholders.

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

5 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. Do the minimum: Continue delivering seminars on A-CDM

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. Do something: A-CDM implementation project

This is the recommended option. By carrying out an A-CDM B0/1 implementation project, the Region has the opportunity to identify the need and implement A-CDM B0/1 on a scalable, consistent and harmonized way, so that main hubs ensure to have an ACIS that serve as building block for A-CDM total implementation.

Experience from other Regions has determined the lack of harmonization and lack of consultation as one of the main challenges in A-CDM implementation.

6 Expected Benefits

- **Main Outputs:**
 - States to endorse the need to implement element B0/1 of A-CDM on selected aerodromes.
 - Guidance material to establish the common rules and criteria for information exchange and implementation of selected elements.
 - Direct assistance to initiate pilot projects in selected aerodromes, with the support of States, international organizations and experts on the matter.
- **Main Outcomes:**
 - Improved communications due to harmonized application of ACIS (airport collaborative information sharing) platform
 - Increased predictability
 - Improve On time performance
 - ASBU implementation (as per ICAO GANP)
 - Harmonized and interoperable exchange of information between ATFM and A-CDM
 - Better IRROPS (irregular operations) recovery capacity
- **Main Benefits:**
 - Optimise the use of airport infrastructure (unlock latent capacity).
 - Reduce congestion (on apron & taxiways)
 - Better integration of airports to the ATM network planning
 - A-CDM as an enabler of ATFM
 - Reduced workload due to better processes
 - Reduced delays
 - Fuel and CO2 savings due to lower taxi times
 - Better passenger level of service
 - Increased punctuality
 - Reduce ground movement costs

7 Expected Dis-benefits

- Changes by aerodrome operators and/or ANSPs in order to align with regional agreed vocabulary to ensure interoperability
- Costs on interfaces between systems
- Costs or investment on software or software modifications by Aerodrome operators
- Changes in current processes
- Increased workload to implement process

8 Timescale

The implementation of the Project will be defined by stages and work packages.

The work packages will be develop after initiation stage, but preliminary work packages include:

- Survey and gap analysis of current A-CDM efforts
- Proposal on a Regional airport capacity assessment methodology (based on EUR).
- SAM Regional guidance on A-CDM
- SAM Regional Implementation Plan
- Pilot-projects

The project is expected to last 36 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 A-CDM program in an airport may take about 12 months on its first phase, depending on the local situation.

Stage	Activity	Proposed dates
Stage 1	Start up and Initiation Stage States to endorse project Working group/Project Team appointed PID, Plan preparation	2019-20
Stage 2	Agreed TORs Regional Guidance material (GM) preparation & validation Proposal on a regional airport capacity assessment methodology GM approval by Project Team Draft regional policy for States endorsement	2020-21
Stage 3	States to endorse regional policy for implementation Regional ANP amendment and approved	2022
Stage 4	States/Airports to propose Pilot Projects for implementation Pilot Projects approved MoU for Pilot project deployment	2021-22

Business Case Date:

5 June 2019

Stage 5	Pilot Project Deployments <ul style="list-style-type: none"> - Project preparation - Working group/Local ACDM Project Team appointed - Inventory & Gap analysis (by Project Team) - Creation of Airport CDM Platform - ACIS implementation 	2022-onwards
Stage 6	Reporting & follow up	2022-onwards

9 Costs

For Stages 1 to 3:

- Travel costs to Lima for Project Team meeting (State specialists) – 3 to 5 day working meeting
- Consultancy services
- Document preparation (translation)

For Stages 4 & 5:

- Mission to State/Airport (as needed) to support project preparation
- Creation of Airport CDM Platform (depending on size/available resources at airport)

10 Investment Appraisal

The project is proposed to be funded by States resources from Project RLA06/901 and contributions from States or International Organizations (expertise).

As most of ICAO based projects, State and industry subject matter experts support on a pro-bono scheme reducing costs to the ones related to missions and document preparation. Project management and administrative costs are to be covered by current known mechanisms of GREPECAS projects. By working on regional guidance and projects, cost-benefit analysis are expected to deliver positive results compared with individual efforts by States and with consultants. Products will serve to support States to be more prepared to request for services from third parties.

11 Major Risks

ID	Description	Probability	Impact	Pxl*	Mitigation	Status
1	Lack of interest	1	3	3	<i>Demonstrate business case to potential sponsor showing benefits that the project may deliver, along with detailed costs</i>	Identified
2	Lack of funding	2	3	6	<i>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</i>	Identified

A-CDM Implementation in the SAM Region – B0/1

Business Case Date:

5 June 2019

ID	Description	Probability	Impact	Pxl*	Mitigation	Status
					<i>Regional Project or third party interested to support the project</i>	
3	Lack of expertise to develop the project	2	2	4	<i>Ensure funding to get 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. Engagement with EUROCONTROL</i>	Identified
4	States may not participate on the project	1	3	3	<i>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</i>	Identified
5	Lack of competent staff in airport operations (AOP) in the State to follow the project	3	2	6	<i>Generate competencies thru training/awareness on the implementation/operation phase</i>	Identified
6	Low involvement and consultation of other Stakeholders (airport operator, airlines, ATC).	1	3	3	<i>Foster collaboration with partners (ACI, IATA, CANSO) to ensure stakeholder point of view.</i>	Identified
7	Culture change	2	2	4	<i>Continuous collaboration and decision making based on data with new accuracy requirements, or on data that was just not available before, means working in a new environment that requires some adapting.</i>	identified
8	Sharing of sensitive data	3	3	9	<i>identifying the measures that will be taken to protect data from both commercial and security aspects, for example by ensuring that sensitive information is not accessible to competing aircraft operators, but only to other partners such as ATC or Airport.</i>	Identified

Risk log notes:

Probability/severity scored: 1 (low) 2 (medium) 3 (high)

Specific actions must be identified where Pxl (=Probability x Impact) > 3

Status: Identified / Accepted / Transferred / Avoided or Exploited / Reduced or Enhanced / Shared / Contingency Plan invoked