AFI SSR CODE MANAGEMENT PLAN (SSR CMP) - ASCAAR PROJECT REPORT

(Presented by ASCAAR PMT)

INTRODUCTION

The ASCAAR project is project number 3A under the Airspace and Aerodrome Operations Sub-Group (AAO SG). It was established to meet ICAO Strategic Objective(s) **A-** Aviation Safety **B –**Air Navigation Capacity and Efficiency

The project came into being at the request of Kenya through a working paper to APIRG/20 in 2015. The project was thus established in May 2017 by the AAO SG and expected to conclude by end of 2017.

Project Description

The AFI SSR Code Allocation and Assignment Review

Project Objective

- To update the AFI SSR Code Allocation plan and assignment standards in order to make codes available in all airspaces and improve usage to increase availability of each code.
- Streamline inter-FIR code allocation within blocks of airspaces.
- To improve efficiency of SSR code usage.

Project Scope

- Ensure all States/FIRs/Blocks of airspace are allocated SSR Codes.
- Ensure no multiple allocation of codes in States/FIRs/ Block of airspace.
- Ensure FIRs/Block of airspaces code allocation/sharing scheme.
- Address concerns related to interoperability of ATS/CNS systems.

Project Metrics

The number of SSR codes available to States/FIRs for allocation.

Project Goals

Ensure that adequate SSR codes are available for States/FIRs for allocation.

Project Strategy

- Collect data on current SSR code allocation.
- Analyze the data.
- Review the current code allocation scheme.

Project Justification

- Ensure no code allocation conflict.
- Ensure availability of SSR codes allocation and assignment.
- Ensure equitable distribution of allocated of SSR codes.

Related Projects

- Operational Requirements for CNS (OPREC).
- RVSM and Operational Safety in ATS (ROATS)

DISCUSSION

The AFI SSR Code Allocation and Assignment Review (ASCAAR) project team was supposed to complete the project in 6 months. Participation was online with occasional meetings in this case only 1 physical meeting was held in 2018. Most of the work was to be done online, however participation by team project members was a challenge as many would not get reliable connectivity or were engaged with other commitments at national level.

Project Working Group methodology

AFI SSR Code Allocation and Assignment Review (ASCAAR) Project Team Number A3 members used the following steps to get project outcome;

➢ Accessed current status (Single Participating Area- PA)

➢ Considered traffic flows and patterns

➢ Developed new Operating Region Code Assignment Method (ORCAM) with Multiple Participating Areas – PAs

➢ ICAO reminder to States

AFI / EUR /MID INTERFACE

a. Accessed current status (Single Participating Area- PA)

The following were noted;

➢ Most AFI States lacked adequate SSR codes for assignment to aircraft resulting to non-standard use of SSR codes.

➢ There was use of non-standard SSR codes resulting in safety concerns of some flights.

➢ Automation capability of SSR code management in AFI region was low.

b. Considered traffic flows and patterns

➢ AFI Traffic Forecasting Working Group is dormant

➢ There was need to collect traffic data in States using a standard format.

c. Developed new Operating Region Code Assignment Method (ORCAM) with Multiple Participating Areas – PAs

➢ Proposed AFI to implement Multiple PAs as opposed to current single PA ORCAM

➢ Consider 4 PAs with the view of increasing the number in future.

d. Considered traffic flows and patterns

➢ AFI Traffic Forecasting Working Group is was not active.

> ➢ There was need to collect traffic data in States using a standard format.

> ➢ Further studies needed to be conducted as more data regarding traffic patterns and volume, requirements in adjacent ICAO Regions became available.

Outcome of the Decision

Following the study, the Project proposed the AFI region to implement Multiple PAs as opposed to current single PA ORCAM and ICAO to take necessary measures to amend the SSR code allocation table in the AFI ANP Doc 7474.

Reallocation Process

The reallocation process entailed the establishment of multiple Participating Areas (PAs). Four (04) PAs were proposed taking into account the geographical location of the FIRs and traffic routing patterns for AFI; PAs – East, South, Central and West was agreed upon.
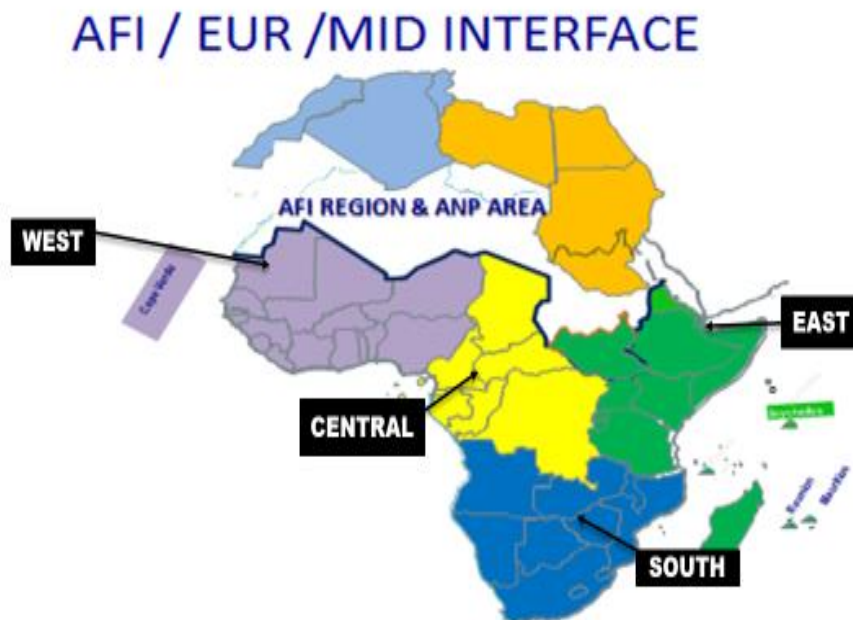

To maximize use of codes, new codes were allocated to all the FIRs taking into account the FIRs that host more than one State and those States having more than one FIR. To maximize code

allocations, FIRs with relatively short distance to be covered by aircraft were allocated a portion of one whole series of codes. Codes were assigned to every FIR to take care of Transit, International and Domestic use. However, Transit Codes were not worked on.

Transit Codes	Assigned for use across the entire AFI Region
International Codes	Assigned for use within a Participating Area (PA)
Domestic Codes	Assigned for use only within an FIR

FIGURE D-1

AREAS OF ROUTING AR-1 TO AR-6

2-4 May 2018   ASCAAR PT Meeting
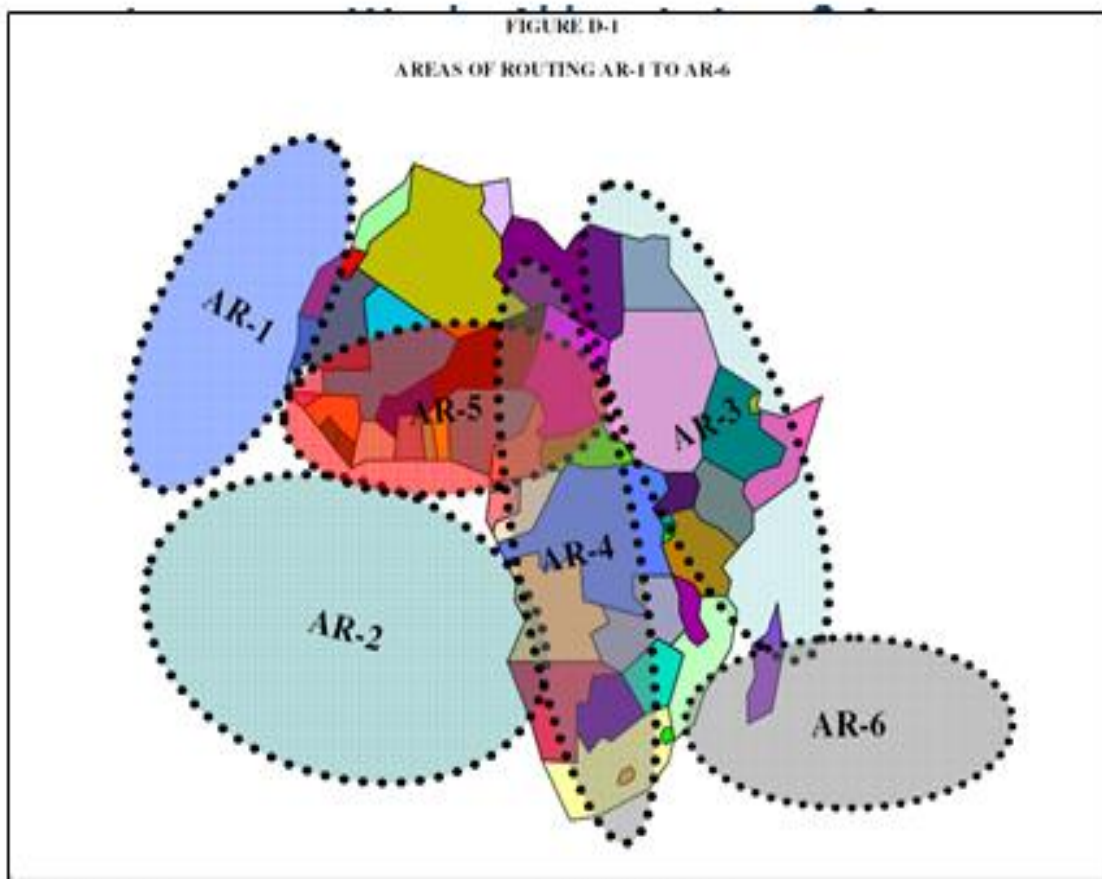
To facilitate forward planning for review of code allocation through the multiple PA structure, there was need to further study traffic patterns, volume and requirements in adjacent ICAO Regions. It was expected that the results would be presented at APIRG/22 for adoption so as to facilitate implementation by 2022. This would enable the AFI FIRs keep in pace with the anticipated increase of traffic volumes.

Allocation of international codes in the AFI region was based on four participating area which includes the following flight information centres/area control centres (FICs/ACCs):

PARTICIPATING AREAS

PA – EAST		PA – SOUTH	
1- Djibouti	8- Tanzania	1- Mozambique	8- South Africa C/Town
2-Eritrea	9- Rwanda	2- Malawi	9- J'burg
3- Ethiopia	10- Burundi	3- Zambia	10- Swaziland
4- South Sudan	11- Seychelles	4- Angola	11- Lesotho
5- Uganda	12- Madagascar	5- Namibia	
6- Kenya	13- Mauritius	6- Botswana	
7- Somalia		7- Zimbabwe	

PARTICIPATING AREAS

PA – CENTRAL		PA – WEST	
1- Chad	8- D R Congo	1- SAL	9- Sierra Leone
2- Cameroon		2- Mauritania	10- Liberia (Roberts)
3- Central Africa Republic		3- Mali	11- Cote D'Ivore
4- Malabo		4- Niger	12- Bukina Faso
5- Equitorial Guinea		5- Senegal	13- Ghana
6- Gabon		6- Gambia	14- Togo
7- Congo Brazza		7- Guinea Bissau	15- Benin
		8- Guinea	16- Nigeria
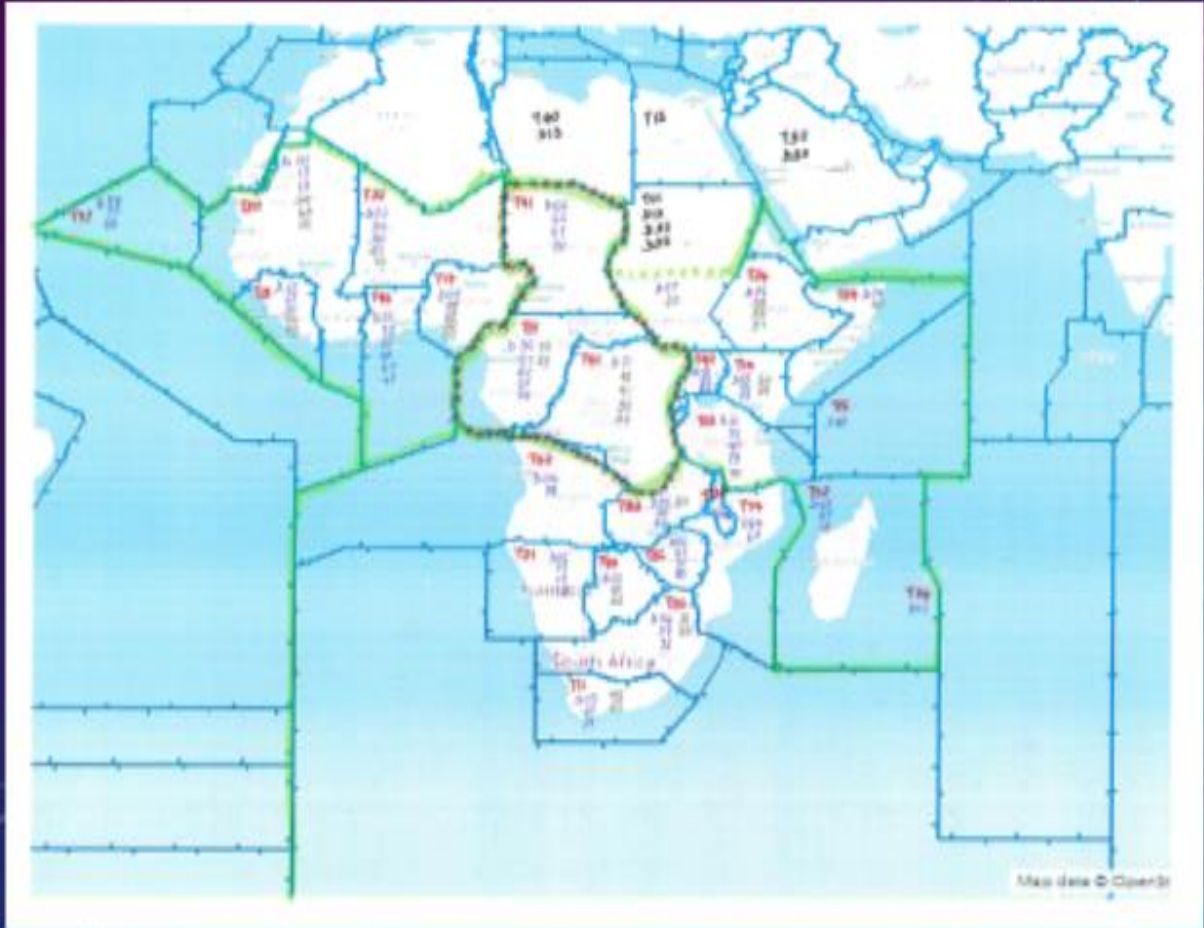
The results of the outcome is reflected in the map below:

International codes assignment:

International codes are allocated to specific ACCs for assignment to international transit flights. Aircraft will retain the assigned code beyond national boundaries but not normally beyond the PA and AFI region.

Domestic codes assignment:

Domestic codes are allocated for use by flights which, throughout their flight, remain within the boundaries of the agreed area of use of such codes (normally within one FIR). Domestic codes used for terminal purposes (TMA/APP and GCA) or used within specified portions of the airspace (sectors) will be ensured protection in these functions. Adjacent States may use such codes for their domestic purposes provided a buffer equal to one sector or a distance of 60 NM, whichever is larger between the closest edges of the two areas of use exists.

Monitoring of the plan

While full implementation of the Code Management Plan (CMP) would inevitably be achieved gradually, it is expected that progressive development of ground facilities will allow in future an increasing number of ATS providers to adhere to the provisions foreseen in the plan. Provisions regarding the progressive implementation of the SSR CMP and its monitoring should be agreed by the AFI region (need for a monitoring mechanism i.e annual report on SSR codes usage and traffic movements to facilitate assessment and review).

FIRs expecting to introduce SSR facilities in the future are required to advise the ICAO ESAF or WACAF Regional Offices as applicable, on their intended use of codes at least six twelve (12) months in advance, in order to permit timely accomplishment of any necessary coordination.

Timelines

The project targeted the Roll out date for June 2019 but later this was changed by APIRG 22 to November 2020 for the entire AFI. It was expected that the November 2020 roll out would be in both manual and automation mode, and by 2022 full automation.

ICAO ESAF/WACAF was to assist the project team provide awareness to the states by conducting two workshops for ATM and CNS operations officers before June 2019 to enable better understanding of the multiple Participating Areas (PAs) SSR code allocation concept and the related effects in terms of programing ATM systems.

ATM providers were to upgrade equipment and or activate functions in accordance with the technology improvement plan and interoperability criteria developed by the IIM/SG; it was operationally desirable that all SSR systems would by 2020 have reasonable levels of automation enabling basic functionalities for assignment of codes and inter-FIR coordination. These included:

-transfer codes

-recognize codes

-detect conflicts and suggest resolutions to controllers etc.

ICAO AFI regional office (s) were expected to coordinate with the European Region to ascertain codes allocated to Tripoli, Algiers and Tunis in order to avoid any code duplication without a buffer area. FIRs/ACCs shall internally allocate SSR codes to units within a given FIR and to enhance safety, all FIRs shall strictly adhere to the codes allocated when assigning SSR codes to aircraft.

IMPLEMENTATION OF THE PROJECT

Following APIRG Decisions 22/03, 22/06 and 22/21, a project management team was established to review the AFI SSR code allocation plan. ICAO hosted the ASCAAR workshops involving the PMT and the state appointed Focal Points who coordinated the process to implementation of the project within the various Participating Areas (PAs).

In order to proceed to the completion of the implementation and ensure safety was not compromised the project team recommended a trial period of 60 days from 7th October 2021 followed by full implementation on 2nd December 2021.

To enhance the project implementation process, the AFI airspace was divided into four Performance Area (PA), each PA had coordinators identified by the project team to champion activities within the respective PAs through coordination meetings as follows:

a) West – Ghana
b) Central – ASECNA and D R Congo
c) South – South Africa
d) East – Kenya

The Challenges faced

The implementation faced a number of challenges as listed below:
a) COVID 19 pandemic
b) Missed timelines
c) Lack of awareness by some stakeholders.
d) Lack of surveillance facilities by some States.
e) Slow response from States and lack of feedback.
f) Lack of participation in the ASCAAR Activities.
g) Use of Manual systems.

h) Inadequate data to make informed decisions.

Status

Despite the many challenges the project reached conclusion with the completion of the Trial period on 2 December 2022. The PMT continued to monitor the implementation for additional six months. A few negative reports, mainly on the conflicting codes across borders, were received however they were quickly resolved by the PAs concerned.

The AFI Air Navigation Plan was successfully amended through the Proposal for Amendment (PfA) Serial No. ESAF II 2009 –ATM adopted and information circulated through State Letter Ref. ES AN 4/4 0283 dated 20 June 2022.

Way Forward

States are urged to continue investigation of missing Flight Plans, Network Issues, Coordination Challenges, etc. and their impact on new SSR CMP. In addition, States are encouraged to liaise with Traffic forecast groups in order to compile traffic data for further review of the CMP and code allotment in future. And, States to continue with internal monitoring of Code usage to ensure they have enough Codes. States to update the Letters of Agreement (LOAs) if they have not done so.

Recommendation

The ASCAAR PMT recommends that the Project be considered successfully implemented.

REFERENCE(S):
AFI ANP, Doc 7474
APIRG Reports