



**INTERNATIONAL CIVIL AVIATION ORGANIZATION
EASTERN AND SOUTHERN AFRICAN OFFICE**

**WORKSHOP ON THE DEVELOPMENT OF
NATIONAL PERFORMANCE FRAMEWORK FOR AIR NAVIGATION SYSTEMS
(NAIROBI, 6-10 DECEMBER 2010)**

HANDS-ON EXERCISE: SOMALIA

1. Characteristics of the industry

Traffic in Somalia airspace has increasing by 5.7% in the last one year and it is expected to increase by 8% in the next 3 years, but there are challenges considering current situation in Somalia and the region as a whole has affected the traffic increase.

Efficiency challenges:

- Infighting and unstable political situation in Somalia
- Communications due to use of HF voice as primary mode of communications.
- Equipment (Not due to Finance, but more to security).
- Trained manpower in respective fields
- Short term planning due to the unstable situation in Somalia.
- Financial constrains due to limited to only one source, which is air navigation charges.
- The only Air Traffic service which can be accounted for is the traffic handled by Mogadishu Flight Information Centre (FIC) and at four airports namely Berbera, Boroma, Bosasso and Hargeisa.

2. The air navigation service provider

The air navigation services provider is an ICAO Project by the title Civil Aviation Caretaker Authority for Somalia (CACAS) operating from Nairobi, Kenya due to insecurity in Somalia.

Institutional Format.

- ICAO Project for Somalia was established in 1993 and later on renamed as CACAS in 1996 for the provision of Flight Information in Somalia FIR.
- Current established units are ATS, MET, AIS, CNS, AGA, Flight Safety, Administration and Finance.

Capital Structure

- From air Navigational Charges only
- Collected by IATA on behalf of CACAS.

Principal Share holders

- The state of Somalia

Management

- Managed by ICAO/UNDP

3. Major stakeholders/partners

CACAS (Civil Aviation Care taker Authority for Somalia), ICAO, IATA, other UN agencies, local air operators and Somalia Civil Aviation Authority.

Air space users

- UAE
- Ethiopia airlines
- Kenya airways
- KLM
- Air Mauritius
- El AL
- UNHAS
- AFR
- Condor
- Air Seychelles
- Air Reunion
- QTR
- ETD
- AXK
- Dallo
- Juba
- ESZ
- General Aviation

Potential funding sources

- Self financing through air navigation charges.

4. Problem definition

- Nil Navigational aids
- No surveillance systems
- HF Communication
- Limited utilisation of the airspace
- Inability to provide services from Somalia.

5. Performance based National Air Navigation Plan

The geographical scope of National ANP covers the territorial airspace and oceanic airspace extending from 40 Degrees East to 60 Degrees East.

Major traffic flow is NE/SW and NW/SE

The situation in Somalia does not give much hope for re-establishment of Civil Aviation industry leave alone conventional air navigation system. However, if and when stability and security were to be

achieved in Somalia civil aviation industry in the absence of conventional air navigation system would be developed from scratch a Seamless Global ATM System platform.

When security situation normalise in Somalia, our aim is:

- To enhance communication efficiency.
- Increase air space capacity, particularly en-route traffic to accommodate the expected traffic increase.
- Introduce ATC
- Establish terminal areas in Mogadishu, Kismayo, Hargeisa, Bosasa
- Introduce new ATS routes for better air space
- Upgrade the air space to class A

6. Performance framework forms (PFFs)

Refer to the PFFs below

7. Risk Management

Refer to the PFFs below

PERFORMANCE FRAMEWORK FORMS FOR EFFICENCY

STRATEGIC OPERATIONAL IMPROVEMENT/ SOMALIA NATIONAL PERFORMANCE OBJECTIVE – 1				
ENHANCE CAPACITY AND EFFICIENCY OF MOGADISHU ENROUTE AIRSPACE				
Performance Benefits				
Safety	1. Maintain ICAO safety standards.			
Environment	1. CDO and CCO operations 2.introduce more ATS direct routes 3.improve gate to gate time.			
Capacity	1. Reorganization of the airspace structure			
Cost effectiveness	1. Fuel cost reduction through availability of more optimized routes/trajectories; and 2. Ability of aircraft to conduct flight more closely to preferred trajectories			
Performance Measurement				
Metrics	1. All routes are RNAV 10 and we are planning to conduct WGS 84 to implement RNP.			
	2. Number of aircraft entering a specified volume of airspace/hr			
	3. Pounds of fuel burn per operations			
<i>Strategy</i> Medium term (2010 - 2015)				
ATM Operational Concept Components	Projects/Tasks	Timeframe Start/End	Responsibility	Status (as of ...)
AOM, DCB, TS and CM	1. Formulate airspace concept and determine near term operational improvements	August 2011 – August 2012	ATM	Database to be prepared.
	2. Analyze the en-route ATS route structure and implement identifiable	February 2009 - December2011	ATM	In progress

	improvements such as RNAV routes			
	3. Reduce horizontal separation between aircraft through RNAV 5	June 2012	ATM/CNS	Procurement of equipment in progress
	4. Implement electronic flight strips	March 2012	ATM/CNS	Procurement of equipment in progress
	5. Align airspace classification to Class A above F195	June 2012	ATM/CNS	April 2013
	6. Implement flexible use of airspace, improve civil/Military coordination and determine conditional routes	September 2012	ATM	Planning
	7. Improve demand and capacity balancing through ATFM process	N/A	N/A	N/A
	8. Transition to new flight plan	1 June 2012 – 15 November 2012	AIM	Planning
	9. Implement AIDC	December 2011 - June 2012	CNS	Procurement of equipment in progress
	10. Migration to WGS-84	October 2011	CNS/AIM	Planning
	11. Implementation of AXIM	N/A		
	12. Implement eTOD for Area 1	Long term issue		
	13. Implementation of eAIP	April 2013	AIM	Planning
	14. Digital NOTAMs	March 2012	AIM/CNS	Planning
	15. Quality management systems for AIM	October 2013	AIM	Planning
	16. Improve data and voice communications	December 2011 - June 2012	CNS	Procurement of equipment in progress
	17. Implementation of GNSS	June 2012	CNS/ATM	Planning
	18. Enhance situational awareness	June 2011 – June 2012	ATM/CNS/AIM/MET/AGA	Planning
	19. Enhance preparation and availability and issuance of SIGMETs	February 2011	MET/CNS	Installation in progress
	20. Establish contingency measures to disseminate OPMET data via Internet in case of failure of AFTN and WAFS facilities	Established June 2010	MET/CNS	In use

Risk Management	Risk factors: Inability to access certain areas to install equipment and conduct WGS 84 survey, Implementing RNP without WGS 84, Lack of funds, Lack of personnel, Risk mitigation: Increase of air navigation charges, Recruit and train personnel.
Linkage to GPIs	GPI/5: performance-based navigation; GPI/7: dynamic and flexible ATS route management; GPI/8: collaborative airspace design and management; GPI/9: situational awareness; GPI/12: FMS-based arrival procedures; GPI/17 Data link applications; GPI/18 Aeronautical information; GPI/19 Meteorological systems; GPI/20 WGS-84; GPI/21 Navigation systems; and GPI/22 Communication infrastructure.

PERFORMANCE FRAMEWORK FORMS FOR EFFICENCY

STRATEGIC OPERATIONAL IMPROVEMENT/ SOMALIA NATIONAL PERFORMANCE OBJECTIVE – 2				
ENHANCE CAPACITY AND EFFICIENCY OF SOMALIA AERODROMES				
Performance Benefits				
Safety	1. Maintain ICAO safety standards.			
Environment	1. Reduced emissions through shorter runway occupancy time and taxi time			
Capacity	1. The existing facilities is being under utilised			
Cost effectiveness	1. Potential cost reduction through shorter ground movements			
Performance Measurement				
Metrics	1. Number of operations per hour			
	2. No Arrival/Departure delays at the moment.			
	3. Number of aircraft entering a specified volume of airspace/hr			
	4. Pounds of fuel burn per operations			
<i>Strategy</i> Medium term (2010 - 2015)				
ATM Operational Concept Components	Projects/Tasks	Timeframe Start/End	Responsibility	Status (as of ...)
AO, DCB, TS and CM	21. Formulate airspace concept and determine near term operational improvements	June 2013 – June 2015	CACAS/State	Planning
	22. Improve surface movement and guidance control systems through A-SMGCS	N/A		
	23. Maximize runway capacity in all weather operations	N/A		
	24. Improve demand and capacity balancing through ATFM process	N/A		
	25. Improve data and voice communications	N/A		
	26. Implementation of PBN	June 2013 – June	CACAS/State	Planning

		2015		
	27. Enhance situational awareness	January 2013 – June 2013	CACAS/State	Planning
	28. Migration to WGS-84	October 2011	CNS/AIM	Planning
	29. Implement eTOD for Area 3 (Area 4 not required)	June 2013 – June 2015	CACAS/State	Planning
	30. Implement automation of weather systems at aerodromes	N/A		
	31. Implement meteorological down links at MET and ATS units	June 2013 – June 2015	CACAS/State	Planning
	32. Implement MET uplinks from the automated weather systems , ATS and MET units	June 2013 – June 2015	CACAS/State	Planning
	33. Enhance Aerodrome forecast	April 2014	MET	Planning
	34. Trend forecast to cover the next 2 hours	April 2014	MET	Planning
	35. Wind shear and aerodrome weather warning	April 2014	MET	Planning
	36. Aerodrome ground lighting	June 2013 – June 2015	CACAS/State	Planning
	37. Rapid exit taxiways	April 2014	AGA	Planning
	38. To install signage	June 2013 – June 2015	CACAS/State	Planning
	39. Non-navigational visual aids such as PAPI	June 2013 – June 2015	CACAS/State	Planning
	40. Use of LEDs for runway lighting	N/A		
Supporting tools	<ol style="list-style-type: none"> 1. Technology evaluation and gap analysis 2. Safety case and safety analysis 3. Business case and cost benefit analysis 4. National workshops and seminars 			
ATM Community members	State, Airspace users, CACAS, ATM support industry, Regulatory authorities and ICAO			
ATM Community expectations	<ol style="list-style-type: none"> 1. Right of access to ATM resources and equity for all users 2. Cost effective air navigation services 3. Minimize environmental impact 4. Flexibility in adapting flight trajectories 5. Technical and operational interoperability and harmonization 6. Consistent and dependable levels of service 7. Safety is highest priority 			
Project Output	National performance plan for implementation of air navigation system elements that are operationally suitable, technically feasible and economically viable.			
Project Outcome	Enhanced capacity and efficiency of aerodrome operations.			
Risk Management	<p>Risk factors: Lack of funding; insufficient data, Inability to access certain areas to install equipment and conduct WGS 84 survey, Lack of personnel.</p> <p>Risk mitigation: Identification different funding sources; involvement of aircraft operators in the decision making; access to commercial databases, Increase of landing charges, Recruit and</p>			

	train personnel.
Linkage to GPIs	GPI/5: performance-based navigation; GPI/9: situational awareness; GPI/13: Aerodrome design and management; GPI/14: Runway operations; GPI/15: Matching IMC and VMC operating capacity; GPI/17: Data link applications; GPI/18: Aeronautical information; GPI/19: Meteorological systems; GPI/20: WGS-84; GPI/21: Navigation systems; and GPI/22: Communication infrastructure.

PERFORMANCE FRAMEWORK FORMS FOR EFFICENCY

STRATEGIC OPERATIONAL IMPROVEMENT/ SOMALIA NATIONAL PERFORMANCE OBJECTIVE – 1				
ENHANCE CAPACITY AND EFFICIENCY OF MOGADISHU TERMINAL AREAS				
Performance Benefits				
Safety	1. Maintain ICAO safety standards.			
Environment	1. CDO and CCO operations 2. Improve gate to gate time. 3. STARs and SIDs			
Capacity	1. Reorganization of the airspace structure			
Cost effectiveness	1. Fuel cost reduction through availability of more optimized STARs and SIDs/trajectories; and. 2. Ability of aircraft to conduct flight more closely to preferred trajectories.			
Performance Measurement				
Metrics	1. We are planning to conduct WGS 84 to implement RNP.			
	2. Number of aircraft entering a specified volume of airspace/hr			
	3. Pounds of fuel burn per operations			
<i>Strategy</i> Medium term (2010 - 2015)				
ATM Operational Concept Components	Projects/Tasks	Timeframe Start/End	Responsibility	Status (as of ...)
AOM, DCB, TS and CM	1. Formulate airspace concept and determine near term operational improvements	June 2013 – June 2015	CACAS/State	Planning
	2. Analyze the STARs and SIDs.	February 2009 - December 2011	ATM	In progress
	3. Reduce landing rates.	June 2012	ATM/CNS	Procurement of equipment in progress
	4. Implement electronic flight strips	March 2012	ATM/CNS	Procurement of equipment in progress
	5. Align airspace classification to Class A	June 2012	ATM/CNS	April 2013
	6. Implement flexible use of airspace, improve	September 2012	ATM	Planning

	civil/Military coordination and determine conditional routes.			
	7. Improve demand and capacity balancing through ATFM process	N/A	N/A	N/A
	8. Transition to new flight plan	1 June 2012 – 15 November 2012	AIM	Planning
	9. Implement AIDC	June 2013 – June 2015	CACAS/State	Planning
	10. Migration to WGS-84	October 2011	CNS/AIM	Planning
	11. Implementation of AXIM			
	12. Implement eTOD for Area 1	June 2013 – June 2015	CACAS/State	Planning
	13. Implementation of eAIP	April 2013	AIM	Planning
	14. Digital NOTAMs	Sept 2013	AIM/CNS	Planning
	15. Quality management systems for AIM	October 2013	AIM	Planning
	16. Installation of data and voice communications systems	June 2013 – June 2015	CACAS/State	Planning
	17. Implementation of GNSS	June 2012	CNS/ATM	Planning
	18. Enhance situational awareness	June 2011 – June 2012	ATM/CNS/AIM/MET/AGA	Planning
	19. Implement automation of weather systems at aerodromes	June 2013	MET/CNS	Planning
	20. Establish contingency measures to disseminate METARs and TAFs data.	June 2013	MET/CNS	Planning
	21. Implement MET uplinks from the automated weather systems , ATS and MET units	June 2013 – June 2015	CACAS/State	Planning
	22. Enhance Aerodrome forecast	April 2014	MET	Planning
	23. Wind shear and aerodrome weather warning	April 2014	MET	Planning
Risk Management	Risk factors: Inability to access certain areas to install equipment and conduct WGS 84 survey, Implementing RNP without WGS 84, Lack of funds, Lack of personnel, Risk mitigation: Increase of air navigation charges, Recruit and train personnel.			
Linkage to GPs	GPI/5: performance-based navigation; GPI/7: dynamic and flexible ATS route management; GPI/8: collaborative airspace design and management; GPI/9: situational awareness; GPI/12: FMS-based arrival procedures; GPI/17 Data link applications; GPI/18 Aeronautical information; GPI/19 Meteorological systems; GPI/20 WGS-84; GPI/21 Navigation systems; and GPI/22 Communication infrastructure.			