INTERNATIONAL CIVIL AVIATION ORGANIZATION

AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP
EIGHTEENTH MEETING (APIRG/18)
Kampala, Uganda (27 – 30 March 2012)

Agenda Item 3.7: Other Air Navigation matters

USER REQUIREMENTS FOR AIR TRAFFIC SERVICES AND IATA POLICIES

(Presented by IATA)

SUMMARY
This working paper defines user requirements for air traffic services between now and the 2020 timeframe, and provides IATA's positions on CNS technologies and applications widely available or under consideration, together with a planning checklist for the implementation of a new technology. It also suggests timelines for the commissioning of the newer technologies and the decommissioning of the older technologies. IATA recommends that AFI States, APIRG and implementation coordination groups (ICGs) incorporate these requirements when developing regional and national implementation strategies for CNS/ATM elements.
REFRENCE(S): ICAO Global Air Navigation Plan (Doc 9750) IATA User Requirements for ATS
Related ICAO Strategic Objective(s):

1. INTRODUCTION

1.1. As a contribution to ICAO recommended collaborative decision making (CDM), IATA has compiled User Requirements for Air Traffic Services to offer guidance to Air Navigation Service Providers (ANSPs), States, vendors and funding organizations on international airline infrastructure requirements for air traffic services between now and the 2020 timeframe.

1.2. These requirements are meant to serve as a planning tool, and represent the consolidated view of IATA's members, which comprise some 230 airlines – the world's leading passenger and cargo airlines among them - representing 93 percent of scheduled international air traffic.

1.3. Due account is taken of technologies widely available or under consideration to provide Communications, Navigation and Surveillance (CNS) for Air Traffic Management (ATM), and recommendations are based on the evaluation of operational benefits, e.g. schedule, safety, efficiency, cost, risk, and availability.

2. DISCUSSION

2.1.1. Position on CNS / ATM Infrastructure

2.1.2. In general, IATA's position on short to midterm CNS/ATM infrastructure improvements is to support the implementation of the following technologies where operationally feasible and supported by an agreed business case in consultation with airlines:

- Voice migrating to data link as the primary means of controller-pilot communication while continuing the provision of voice communication as a backup and for non-routine communications

- Performance Based Navigation (PBN), enabled by GNSS as the primary radio navigation aid for all phases of flight

- Surveillance based primarily on Automatic Dependent Surveillance Broadcast (ADS-B) and when required supplemented with Multilateration (MLAT) as the next generation replacement to radar.

2.1.3. The following table summarizes IATA's position on current CNS/ATM Infrastructure technologies and applications, while figures 1-3 offer suggested timelines for the commissioning the newer technologies and the decommissioning of the older technologies.

2.1.4.

Communications	Support where justified	Maintain during transition	Do NOT support or support in limited cases
AFTN		X	
AMHS	X		
VSAT	X		
AIDC	X		
VHF Voice 8.33 KHz Channel Spacing	X		
HF Voice	X		
SatCom	X		
IRIDIUM	X		
HFDL	X		
ACARS	X		
VDL Mode 2	X		
VDL Mode 3			X
VDL Mode 4			X
CPDLC	X		

Communications	Support where justified	Maintain during transition	Do NOT support or support in limited cases
ATN	TBD		

Navigation	Support where justified	Maintain during transition	Do NOT support or support in limited cases
PBN	X		
WGS-84	Essential		
DME	X		
ILS	X		
MLS			X
NDB			X
TACAN			X
VOR		X	
GNSS	X		
ABAS	X		
GBAS	X		
SBAS			X

Surveillance	Support where justified	Maintain during transition	Do NOT support or support in limited cases
PSR			X
SSR Mode A/C		X	
SSR Mode S	X		
PAR			X
ADS-B OUT	X		
ADS-B IN	X		
ADS-C	X		
TIS-B		X	
MLAT	X		

Candidate ADS-B Data Links	Support where justified	Maintain during transition	Do NOT support or support in limited cases
1090 ES	X		
VDL Mode 4			X
UAT			X

Other Data Link Services	Support where justified	Maintain during transition	Do NOT support or support in limited cases
D-ATIS	X		
AWOS	X		
PDC	X		

2.2.   Transition Roadmap

2.2.1. Infrastructure should have timelines for commissioning and decommissioning. An approximate transition roadmap through the 2020 timeframe is depicted in figures 1 through 3 and table 1.
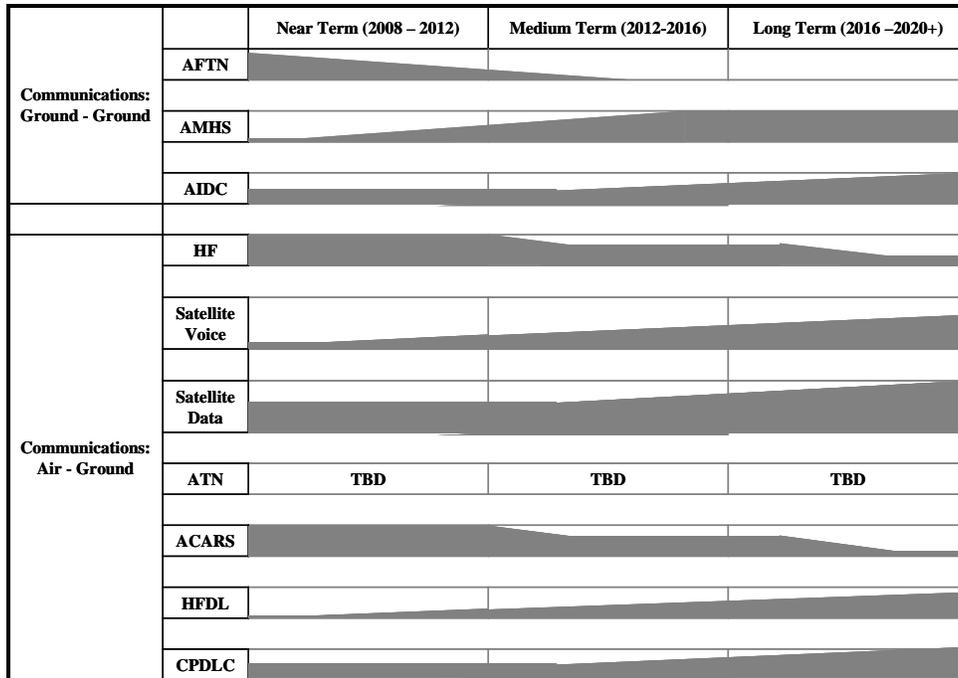
		Near Term (2008 – 2012)	Medium Term (2012-2016)	Long Term (2016 –2020+)
Communications: Ground - Ground	AFTN			
	AMHS			
	AIDC			
Communications: Air - Ground	HF			
	Satellite Voice			
	Satellite Data			
	ATN	TBD	TBD	TBD
	ACARS			
	HFDL			
	CPDLC			

Figure 1. Communications Roadmap (present – 2020)

		Near Term (2008 – 2012)	Medium Term (2012-2016)	Long Term (2016 –2020+)
Navigation: Ground-Based Aids	DME			TBD
	ILS			
	MLS			
	NDB			
	VOR			
Navigation:	PBN			
Navigation:	WGS-84	ICAO STANDARD (Should be Implemented and Updated)		
Navigation: Satellite / GNSS	GNSS			
	ABAS			
	GBAS			
	SBAS			
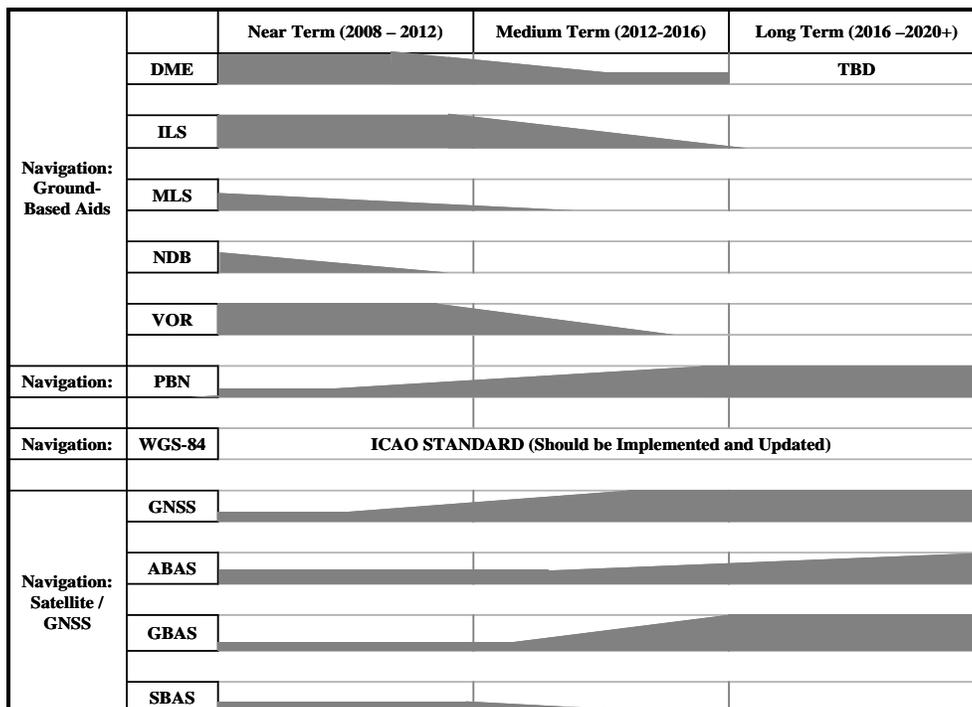
Figure 2. Navigation Roadmap (present – 2020).

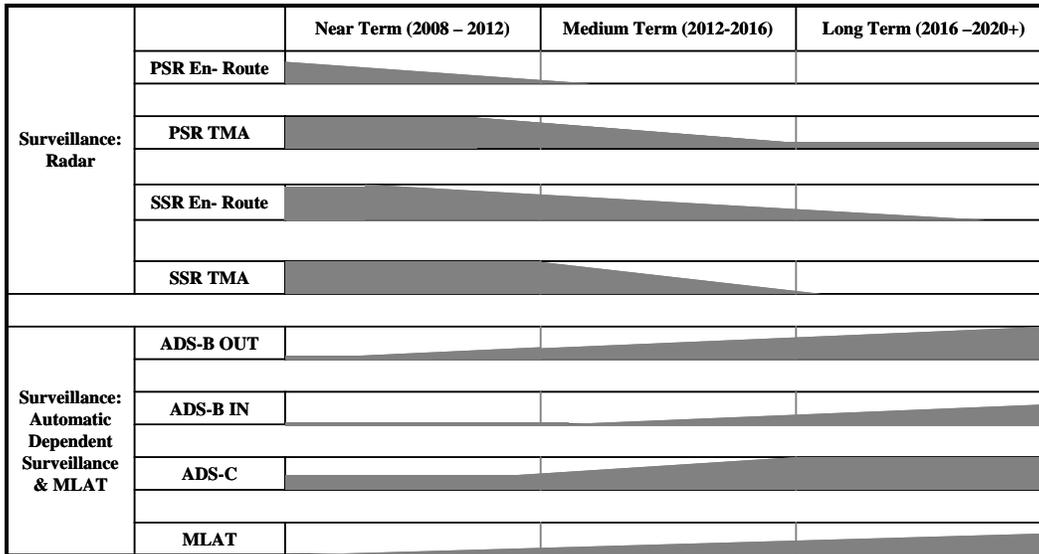|		Near Term (2008 – 2012)	Medium Term (2012-2016)	Long Term (2016 –2020+)
Surveillance: Radar	PSR En- Route			
	PSR TMA			
	SSR En- Route			
	SSR TMA			
Surveillance: Automatic Dependent Surveillance & MLAT	ADS-B OUT			
	ADS-B IN			
	ADS-C			
	MLAT			

Figure 3. Surveillance Roadmap (Present – 2020)

2.3.   Pending Implementation

2.3.1. Mitigating effect of strategic lateral offset procedures (SLOP) cannot be overemphasized. APIRG17/43 Conclusion: IMPLEMENTATION OF STRATEGIC LATERAL OFFSETS (SLOP) IN THE AFI REGION calls for AFI States implement SLOP within their areas of responsibility, by AIRAC effective date 30th November 2010, in line with provisions in PANS-ATM Doc 4444 Chapter 16 and the following guidance:

a)   SLOP will be applied in those oceanic FIRs where fixed routes are established;

b)   SLOP will be applied in all areas of the continental AFI Region except in those areas where ATC separation is provided by surveillance, unless approved by the State; and

c)   SLOP will be applied in oceanic random routing areas (AORRA and IORRA) with effect from the target date of AIRAC date of 2 June 2011

IATA has engaged with stakeholders to follow up on SLOP implementation in the region, however there is no clear record (aeronautical information) of implementation status.

2.3.2. APIRG 17/96 Conclusion calls for ICAO to takes necessary action to initiate a project for the completion of implementation of WGS-84 within AFI States having difficulties to complete WGS-84 implementation.

WGS-84 is essential for PBN implementation and AFI Regional Plan is calling for 30% of PBN procedure implementation by 2010.

2.3.3. Taking into consideration physical limitations due to natural obstacles or difficulties in accessing preferred facility locations (such as forests, deserts, and oceanic area), IATA calls for AFI States to implement ADS-C/CPDLC as recommended in the AFI Air Navigation Plan.

To ensure continuity, IATA calls for CPDLC implementation in Ndjamena and Accra FIRs after successful trials as well for implementation strategy of CPDLC in Kano, Kinshasa and Luanda FIRs. Beira FIR should also be considered due to decoration of mobile communications.

2.3.4. Although IATA globally supports implementation of Automatic Dependent Surveillance Broadcast (ADS-B), survey on Survey of Avionics/equipment on board for IATA members indicates low percentage of ADS-B equipage – Appendix A. Therefore implementation needs to be feasible and supported by an agreed business case in consultation with airlines.

3. CONCLUSION

3.1. The meeting is invited to:

a) Note the user requirements for air traffic services between now and the 2020 timeframe as per **Appendix B;**

b) Note IATA's positions on CNS technologies and applications, planning checklist and suggested timelines for the commissioning of the newer technologies and the decommissioning of the older technologies; and

c) Request AFI States, Air Navigation Service Providers, Regional Planning/Implementation bodies and Implementation Coordination Groups (ICGs) to take due account of user requirements for air traffic services when developing regional and national implementation strategies for CNS/ATM system elements, in line with ICAO recommended collaborative decision making (CDM).

d) Request ICAO RO's to conduct follow up on SLOP implementation in the region;

e) Request states to complete implementation of WGS-84 within AFI;

f) Request states to implement CPDLC in Ndjamena and Accra FIRs after successful trials as well to develop implementation strategy of CPDLC in Kano, Kinshasa, Luanda and Beira FIRs.

-END-

Appendix A

Avionic Survey Results

Degree of equippage (y-axis, 0% to 100%)

Capability (x-axis)

Legend:
- ☐ Not Availble
- ☐ Planned
- ☐ Available

Capabilities (left to right):
GBAS, LPV SBAS, Enhanced Vision Systems EVS, Head-Up Display HUD, FANS 1A HFDL, FABS 1A VDL M2, Electronic Flight Bag, FMS WPR, ATN VDL Mode 2, FANS 1A SatCom, RNP AR Approach, Fixed Radius Transition - FRT, FANS 1A ACARS, APV Baro VNAV, ARINC 623, Required Time of Arrival - RTA, RNP Approach LNAV, Fixed Radius Turn, RF, ADS-b Out, MMR, GNSS, ACARS, RNAV1 / PRNAV, RNAV 10, ADS C, DME DME Update, INS IRS, Autothrust, 8.33kHz VHF, Autopilot Flight Director VNAV, RNAV 5, Mode S, EFIS, Autopilot Flight Director LNAV, FMS