ASBU B0-FICE and B0-ACAS implementation in the MID Region

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CNS SG/7 meeting
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Presentation Outline

- MID Air Navigation Strategy
- B0-FICE
- B0-ACAS
- B1-FICE and continue B0-ACAS
- Status of implementation
- Challenges
- CNS support other module Other modules
- Action by the meeting

MID AN Strategy (CNS SG)

Module Code	Module Title	Priority	Monitoring		Remarks
			Main	Supporting	
Performance Improvement Areas (PIA) 1: Airport Operations					
B0-APTA	Optimization of Approach Procedures including vertical guidance	1	PBN SG	ATM SG, AIM SG, CNS SG	
B0-SURF	Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)	1	ANSIG	CNS SG	Coordination with RGS WG
B0-ACDM	Improved Airport Operations through Airport-CDM	1	ANSIG	CNS SG, AIM SG, ATM SG	Coordination with RGS WG
Performance Improvement Areas (PIA) 2 **Globally Interoperable Systems and Data Through Globally Interoperable System Wide Information Management**					
B0-FICE	Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration	1	CNS SG	ATM SG	
Performance Improvement Areas (PIA) 3 **Optimum Capacity and Flexible Flights – Through Global Collaborative ATM**					
B0-ACAS	ACAS Improvements	1	CNS SG		
Performance Improvement Areas (PIA) 4 **Efficient Flight Path – Through Trajectory-based Operations**					
B0-TBO	Improved Safety and Efficiency through the initial application of Data Link En-Route	2	ATM SG	CNS SG	

Table 1. MID REGION ASBU BLOCK 0 MODULES PRIORITIZATION AND MONITORING

B0-FICE (Status MID Region)

B0 – FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration			
Elements	Applicability	Performance Indicators/Supporting Metrics	Targets
AMHS capability	All States	Indicator: % of States with AMHS capability Supporting metric: Number of States with AMHS capability	70% of States with AMHS capability by Dec. 2017
AMHS implementation /interconnection	All States	Indicator: % of States with AMHS implemented (interconnected with other States AMHS) Supporting metric: Number of States with AMHS implemented (interconnections with other States AMHS)	60% of States with AMHS interconnected by Dec. 2017
Implementation of AIDC/OLDI between adjacent ACCs	All ACCs	Indicator: % of FIRs within which all applicable ACCs have implemented at least one interface to use AIDC/OLDI with neighboring ACCs Supporting metric: Number of AIDC/OLDI interconnections implemented between adjacent ACCs	70% by Dec. 2017

Table 1. MID REGION ASBU PRIORITIZATION AND MONITORING// Block 1

Block Code (Thread)	Block 0		Block 1		Monitoring	Remarks (Supporting bodies)
	Module Title	Priority	Module Title	Priority		
Performance Improvement Areas (PIA) 1 **Airport Operations**						
APTA	Optimization of Approach Procedures including vertical guidance	1	Optimized Airport Accessibility	X	PBN SG	ATM SG, AIM SG, CNS SG
SURF	Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)	1	Enhanced Safety and Efficiency of Surface Operations- SURF, SURF IA and Enhanced Vision Systems (EVS)	X	ANSIG	CNS SG Coordination with RGS WG
ACDM	Improved Airport Operations through Airport-CDM	1	Optimized Airport Operations through Airport-CDM	X	ANSIG	CNS SG, AIM SG, ATM SG Coordination with RGS WG
RATS	-	-	Remotely Operated Aerodrome Control	X	ATM SG	CNS SG
Performance Improvement Areas (PIA) 2 **Globally Interoperable Systems and Data Through Globally Interoperable System Wide Information Management**						
FICE	Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration	1	Increased Interoperability, Efficiency and Capacity though FF-ICE, Step 1 application before Departure	X	CNS SG	AIM SG, MET SG, ATM SG
SWIM	-	-	Performance Improvement through the application of System-Wide Information Management (SWIM)	X	AIM SG	ATM SG, MET SG, CNS SG
Performance Improvement Areas (PIA) 3 **Optimum Capacity and Flexible Flights – Through Global Collaborative ATM**						
ACAS	ACAS Improvements	1	-	-	CNS SG	
Performance Improvement Areas (PIA) 4 **Efficient Flight Path – Through Trajectory-based Operations**						
TBO	Improved Safety and Efficiency through the initial application of Data Link En-Route	2	Improved Traffic Synchronization and Initial Trajectory-Based Operation	X	ATM SG	CNS SG
RPAS	-	-	Initial Integration of Remotely Piloted Aircraft (RPA) Systems into non-segregated airspace	X	ATM SG	

B1-FICE (ASBU Doc)

Module N° B1-*FICE*: Increased Interoperability, Efficiency and Capacity though FF-ICE, STEP 1 application before Departure

Summary	To introduce FF-ICE, Step 1 providing ground-ground exchanges using common flight information exchange model (FIXM) and extensible markup language (XML) standard formats before departure.	
Main performance impact as per Doc 9883	KPA-02 – Capacity, KPA-04 – Efficiency, KPA-06 – Flexibility, KPA-07 – Global Interoperability, KPA-08 – Participation by the ATM community, KPA-10 – Safety.	
Operating environment/ Phases of flight	Planning phase for FF-ICE, Step 1	
Applicability considerations	Applicable between ATS units to facilitate exchange between ATM service provider (ASP), airspace user operations and airport operations.	
Global concept component(s) as per Doc 9854	DCB – demand capacity balancing CM – conflict management	
Global plan initiatives (GPI)	GPI-6: ATFM GPI-7: Dynamic and flexible route management GPI-16: Decision support systems	
Main dependencies	Successor of B*0-FICE* and B*0-DATM* Connection to B*1-DATM* and B*1-SWIM*	
Global readiness checklist		Status (ready or estimated date)
	Standards readiness	Est 2016
	Avionics availability	No requirement
	Ground systems availability	Est 2018
	Procedures available	Est 2018
	Operations approvals	Est 2018

Module B1-FICE (Summary)

- To introduce FF-ICE, Step 1 providing ground-ground exchanges using common flight information exchange model (FIXM) and extensible markup language (XML) standard formats before departure.

ASBU B1-FICE (objective of FF-ICE)

- This module implements FF-ICE, Step 1 before departure.

- The objective of FF-ICE, Step 1 is to establish the basis for transition towards a full FF-ICE deployment. This basis consists of the introduction of:

  a) a globally unique flight identifier (GUFI);
  b) a common data format, i.e. flight information eXchange model (FIXM) in the context of the overall transition to extensible markup language/geography markup language (XML/GML) for aeronautical and meteorological information; and
  c) basic roles, rules and procedures for submission and maintenance of FF-ICE information including provisions for the early sharing of trajectory information.

Intended Performance Operational Improvement	
Capacity	Reduced air traffic controller (ATC) workload and increased data integrity supporting reduced separations translating directly to cross sector or boundary capacity flow increases.
Efficiency	Better knowledge of aircraft capabilities allows trajectories closer to airspace user preferred trajectories and better planning.
Flexibility	The use of FF-ICE, Step 1 allows a quicker adaptation on route changes
Global Interoperability	The use of a new mechanism for FPL filing and information sharing will facilitate flight data sharing among the actors.
Participation by the ATM community	FF-ICE, Step 1 for ground-ground application will facilitate collaborative decision-making (CDM), the implementation or the systems interconnection for Information sharing, trajectory or slot negotiation before departure providing better use of capacity and better flight efficiency.
Safety	More accurate flight information
Cost Benefit Analysis	The new services have to be balanced by the cost of software change in the ATM service provider (ASP), airline operations center (AOC) and airport ground systems.

B0-ACAS (MID Region)

B0 – ACAS: ACAS Improvements			
Elements	Applicability	Performance Indicators/Supporting Metrics	Targets
Avionics	All States	Indicator: % of States requiring carriage of ACAS (TCAS v 7.1) for aircraft with a max certificated take-off mass greater than 5.7 tons Supporting metric: Number of States requiring carriage of ACAS (TCAS v 7.1) for aircraft with a max certificated take-off mass greater than 5.7 tons	80% by Dec. 2015 100% by Dec. 2016

NO ASBU B1 for ACAS

ASBU B0-ACAS (ASBU Document)

- This module implements several optional improvements to the airborne collision avoidance system in order to minimize "nuisance alerts" while maintaining existing levels of safety.

- The traffic alert and collision avoidance system (TCAS) version 7.1 introduces significant safety and operational benefits for ACAS operations

- ACAS II Standards and Recommended Practices (SARPs) are aligned with RTCA/EUROCAE MOPS.

- The SARPs and the MOPS have been upgraded in 2009/2010 to resolve safety issues and to improve operational performance. The RTCA DO185B and EUROCAE ED143 include these improvements also known as TCAS, v7.1.

Continue ASBU B0-ACAS (ASBU Document)

- TCAS, v7.1 introduces new features namely the monitoring of own aircraft’s vertical rate during a resolution advisory (RA) and a change of the RA annunciation from “Adjust Vertical Speed, Adjust” to “Level Off, Level Off”.
- It was confirmed that the new version of the CAS logic would definitely bring significant safety benefits, though only if the majority of aircraft in any given airspace are properly equipped.
- ICAO agreed to mandate the improved ACAS (TCAS, v7.1) for new installations as of 1/1/2014 and for all installations no later than 1/1/2017

Challenges and mitigation

B0-FICE

- Interoperable of the various systems
- Signature of LOA
- Training Technical and Operations
- Lack of Testing
- Communication

- MID Doc 007
- Detailed plan
- Focal points

B0-ACAS

- Regulations update
- Upgrade of avionics
- Follow-up
- Reporting

- Use sample regulation
- follow-up with users

Support other B0 modules MID Doc002

- B0-APTA - GNSS
- B0-SURF – Surveillance Coop, Alerting
- B0-ACDM - interconnect ground system
- B0-TBO (Priority 2)

ASBU B1 support

- ICAO SWIM Workshop which was held in Bangkok, Thailand, 16-18 May 2016 are available at: http://www.icao.int/APAC/Meetings/Pages/2016-SWIM.aspx
- Workshop on ASBU Block 1 Modules implementation October 2017

Action by the meeting

The meeting is invited to open the discussions on what have been presented in order to:

a. highlight the best practices and lessons learned

b. identify the challenges impending B0-FICE & B0-ACAS implementation

c. agree on measures to overcome the identified challenges

d. review and update the status of implementation and in the MID Region

e. address FICE ASBU B1 and ACAS B0 fleet equipage

f. update the AIDC/OLDI Implementation focal points

g. States to provide the MID Office with their B0-FICE implementation plans

h. review MID Region Guidance for the implementation of AIDC/OLDI

Thank You


North American Central American and Caribbean (NACC) Office MexicoCity
South American (SAM) Office Lima
ICAO Headquarters Montreal
Western and Central African (WACAF) Office Dakar
European and North Atlantic (EUR/NAT) Office Paris
Middle East (MID) Office Cairo
Eastern and Southern African (ESAF) Office Nairobi
Asia and Pacific (APAC) Office Bangkok

TABLE B0-FICE

EXPLANATION OF THE TABLE

Column

1 Name of the State

2, 3, 4 Status of AMHS Capability and Interconnection and AIDC/OLDI Capability, where:
- Y – Fully Implemented
- N – Not Implemented

5 Status of AIDC/OLDI Implementation, where:
- Y – If AIDC/OLDI is implemented at least with one neighbouring ACC
- N – Not Implemented

6 Action plan — short description of the State's Action Plan with regard to the implementation of B0-FICE.

7 Remarks

State	AMHS Capability	AMHS Interconnection	AIDC/OLDI Capability	AIDC/OLDI Implementation	Action Plan	Remarks
1	*2*	*3*	*4*	*5*	*6*	*7*
Bahrain	Y	N	Y	N	Sep 2015 for AMHS Int.	
Egypt	Y	Y	Y	Y		
Iran	N	N	Y	N		Contract signed for AMHS
Iraq	N	N	N	N		
Jordan	Y	Y	Y	N		
Kuwait	Y	N	Y	N	Dec 2015 for AMHS Int.	
Lebanon	Y	N	Y	Y		
Libya	Y	N	Y	N		
Oman	Y	Y	Y	N		
Qatar	Y	Y	Y	Y		local implementation for OLDI
Saudi Arabia	Y	Y	Y	Y		local implementation for AIDC
Sudan	Y	Y	Y	N		AMHS Int. Feb 2015
Syria	N	N	N	N		
UAE	Y	Y	Y	Y	Q2-2016	Local implementation for OLDI
Yemen	N	N	N	N	Dec 2015 for AMHS	Contract signed for AMHS
Total Percentage	**73%**	**47%**	**80%**	**33%**		

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Module N° B0-*FICE*: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration

Summary	To improve coordination between air traffic service units (ATSUs) by using ATS interfacility data communication (AIDC) defined by the ICAO *Manual of Air Traffic Services Data Link Applications* (Doc 9694). The transfer of communication in a data link environment improves the efficiency of this process particularly for oceanic ATSUs.	
Main performance impact as per Doc 9883	KPA-02 – Capacity, KPA-04 – Efficiency**,** KPA-07 – Global Interoperability, KPA-10 – Safety.	
Operating environment/ Phases of flight	All flight phases and all type of ATS units.	
Applicability considerations	Applicable to at least two area control centres (ACCs) dealing with en-route and/or terminal control area (TMA) airspace. A greater number of consecutive participating ACCs will increase the benefits.	
Global concept component(s) as per Doc 9854	CM – conflict management	
Global plan initiatives (GPI)	GPI-16: Decision support systems	
Main dependencies	Linkage with B*0-TBO*	
Global readiness checklist		Status (ready now or estimated date)
	Standards readiness	√
	Avionics availability	No requirement
	Ground systems availability	√
	Procedures available	√
	Operations approvals	√

1. Narrative

1.1 General

1.1.1 Flights which are being provided with air traffic services are transferred from one air traffic services (ATS) unit to the next in a manner designed to ensure safety. In order to accomplish this objective, it is a standard procedure that the passage of each flight across the boundary of the areas of responsibility of the two units is co-ordinated between them beforehand and that the control of the flight is transferred when it is at, or adjacent to, the said boundary.

1.1.2 Where it is carried out by telephone, the passing of data on individual flights as part of the coordination process is a major support task at ATS units, particularly at area control centres (ACCs). The operational use of connections between flight data processing systems (FDPSs) at ACCs replacing phone coordination (on-line data interchange (OLDI)) is already proven in Europe.

1.1.3 This is now fully integrated into the ATS interfacility data communications (AIDC) messages in the *Procedures for Air Navigation Services — Air Traffic Management,* (PANS-ATM, Doc 4444) which describes the types of messages and their contents to be used for operational communications between ATS unit computer systems. This type of data transfer (AIDC) will be the basis for migration of data communications to the aeronautical telecommunication network (ATN).

1.1.4 The AIDC module is aimed at improving the flow of traffic by allowing neighbouring air traffic services units to exchange flight data automatically in the form of coordination and transfer messages.

1.1.5 With the greater accuracy of messages based on the updated trajectory information contained in the system and where possible updated by surveillance data, controllers have more reliable information on the conditions at which aircraft will enter in their airspace of jurisdiction with a reduction of the workload associated to flight coordination and transfer. The increased accuracy and data integrity permits the safe application of reduced separations.

1.1.6 Combined with air-ground data link applications, AIDC also allows the transfer of aircraft logon information and the timely initiation of establishing controller-pilot data link communications (CPDLC) by the next air traffic control (ATC) unit with the aircraft.

1.1.7 These improvements outlined above translate directly into a combination of performance improvements.

1.1.8 Information exchanges between flight data processing systems are established between air traffic services units for the purpose of notification, coordination and transfer of flights and for the purpose of civil/military coordination. These information exchanges rely upon appropriate and harmonized communication protocols to secure their interoperability.

1.1.9 Information exchanges apply to:

a) communication systems supporting the coordination procedures between air traffic services units using a peer-to-peer communication mechanism and providing services to general air traffic; and

b) communication systems supporting the coordination procedures between air traffic services units and controlling military units, using a peer-to-peer communication mechanism.

1.2 **Baseline**

1.2.1 The baseline for this module is the traditional coordination by phone, and procedural and/or radar distance/time separations.

1.3 **Change brought by the module**

1.3.1 The module makes available a set of messages to describe consistent transfer conditions via electronic means across ATS units' boundaries. It consists of the implementation of the set of AIDC messages in the flight data processing systems (FDPS) of the different ATS units involved and the establishment of a Letter of Agreement (LoA) between these units to set the appropriate parameters.

1.3.2 Prerequisites for the module, generally available before its implementation, are an ATC system with flight data processing functionality and a surveillance data processing system connected to each other.

1.4 Other remarks

1.4.1 This module is a first step towards the more sophisticated 4D trajectory exchanges between both ground/ground and air/ground according to the ICAO *Global Air Traffic Management Operational Concept* (Doc 9854).

2. Intended performance operational improvement

2.1 Metrics to determine the success of the module are proposed in the *Manual on Global Performance of the Air Navigation System* (Doc 9883).

Capacity	Reduced controller workload and increased data integrity supporting reduced separations translating directly to cross sector or boundary capacity flow increases.
Efficiency	The reduced separation can also be used to more frequently offer aircraft flight levels closer to the flight optimum; in certain cases, this also translates into reduced en-route holding.
Global interoperability	Seamlessness: the use of standardized interfaces reduces the cost of development, allows air traffic controllers to apply the same procedures at the boundaries of all participating centres and border crossing becomes more transparent to flights.
Safety	Better knowledge of more accurate flight plan information.
Cost Benefit Analysis	Increase of throughput at ATS unit boundary and reduced ATCO workload will outweigh the cost of FDPS software changes. The business case is dependent on the environment.

3. NECESSARY PROCEDURES (AIR AND GROUND)

3.1 Required procedures exist. They need local analysis of the specific flows and should be spelled out in a Letter of Agreement between ATS units; the experience from other regions can be a useful reference.

4. Necessary System capability

4.1 Avionics

4.1.1 No specific airborne requirements.

4.2 Ground systems

4.2.1 Technology is available. It consists in implementing the relevant set of AIDC messages in flight data processing and could use the ground network standard AFTN-AMHS or ATN. Europe is presently implementing it in ADEXP format over IP wide area networks.

4.2.2 The technology also includes for oceanic ATSUs a function supporting transfer of communication via data link.

5. Human Performance

5.1 Human factors considerations

5.1.1 Ground interoperability reduces voice exchange between ATCOs and decreases workload. A system supporting appropriate human-machine interface (HMI) for ATCOs is required.

5.1.2 Human factors have been taken into consideration during the development of the processes and procedures associated with this module. Where automation is to be used, the HMI has been considered from both a functional and ergonomic perspective (see Section 6 for examples). The possibility of latent failures, however, continues to exist and vigilance is required during all implementation activity. In addition it is important that human factor issues, identified during implementation, be reported to the international community through ICAO as part of any safety reporting initiative.

5.2 Training and qualification requirements

5.2.1 To make the most of the automation support, training in the operational standards and procedures will be required and can be found in the links to the documents in Section 8 to this module. Likewise, the qualifications requirements are identified in the regulatory requirements in Section 6 which are integral to the implementation of this module.

6. Regulatory/standardization needs and Approval Plan (Air AND Ground)

- Regulatory/standardization: use current published criteria that include:

  a) ICAO Doc 4444, *Procedures for Air Navigation Services — Air Traffic Management*;
  b) EU Regulation, EC No 552/2004.

- Approval plans: to be determined based on regional consideration of ATS interfacility data communications (AIDC).

7. Implementation and demonstration activities (As known at time of writing)

7.1 Although already implemented in several areas, there is a need to complete the existing SARPs to improve harmonization and interoperabiltiy. For Oceanic data link application, North Atlantic (NAT) and Asia and Pacific (APAC) (cf ISPACG PT/8- WP.02 - GOLD) have defined some common coordination procedures and messages between oceanic centres for data link application (ADS-C CPDLC).

7.2 Current use

- **Europe:** It is mandatory for exchange between ATS units.
  http://europa.eu/legislation_summaries/transport/air_transport/l24070_en.htm

  The European Commission has issued a mandate on the interoperability of the European air traffic management network, concerning the coordination and transfer (COTR) between ATS units through REG EC 1032/2006 and the exchange of flight data between ATS units in support of air-ground data link through REG EC 30/2009. This is based on the standard OLDI-Ed 4.2 and ADEXP-Ed 3.1.

- **EUROCONTROL:** Specification of interoperability and performance requirements for the flight message transfer protocol (FMTP). The available set of messages to describe and negotiate consistent transfer conditions via electronic means across centres' boundaries have been used for trials in Europe in 2010 within the scope of EUROCONTROL's FASTI initiative.

- **India:** AIDC implementation is in progress in Indian airspace for improved coordination between ATC centres. Major Indian airports and ATC centres have integrated ATS automation systems having AIDC capability. AIDC functionality is operational between Mumbai and Chennai ACCs. AIDC will be implemented within India by 2012. AIDC trials are underway between Mumbai and Karachi (Pakistan) and are planned between India and Muscat in coordination with Oman.

- **AIDC:** is in use in the Asia-Pacific Region, Australia, New-Zealand, Indonesia and others.

7.3 Planned or ongoing activities

7.3.1 To be determined.

7.4 Currently in operation

7.4.1 To be determined.

8. Reference Documents

8.1 Standards

- ICAO Doc 4444, *Procedures for Air Navigation Services - Air Traffic Management*, Appendix 6 - *ATS Interfacility Data Communications (AIDC) Messages*

- ICAO Doc 9880, *Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocols*, Part II — *Ground-Ground Applications — Air Traffic Services Message Handling Services (ATSMHS).*

8.2 Procedures

8.2.1 To be determined.

8.3 Guidance material

- ICAO Doc 9694, *Manual of Air Traffic Services Data Link Applications;* Part 6;

- GOLD Global Operational Data Link Document (APANPIRG, NAT SPG), June 2010;

- Pan Regional Interface Control Document for Oceanic ATS Interfacility Data Communications (PAN ICD) Coordination Draft Version 0.3. 31 August 2010;

- Asia/Pacific Regional Interface Control Document (ICD) for ATS Interfacility Data Communications (AIDC) available at http://www.bangkok.icao.int/edocs/icd_aidc_ver3.pdf, ICAO Asia/Pacific Regional Office.

- EUROCONTROL Standard for On-Line Data Interchange (OLDI); and EUROCONTROL Standard for ATS Data Exchange Presentation (ADEXP).

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Module N° B1-*FICE*: Increased Interoperability, Efficiency and Capacity though FF-ICE, STEP 1 application before Departure

Summary	To introduce FF-ICE, Step 1 providing ground-ground exchanges using common flight information exchange model (FIXM) and extensible markup language (XML) standard formats before departure.	
Main performance impact as per Doc 9883	KPA-02 – Capacity, KPA-04 – Efficiency, KPA-06 – Flexibility, KPA-07 – Global Interoperability, KPA-08 – Participation by the ATM community, KPA-10 – Safety.	
Operating environment/ Phases of flight	Planning phase for FF-ICE, Step 1	
Applicability considerations	Applicable between ATS units to facilitate exchange between ATM service provider (ASP), airspace user operations and airport operations.	
Global concept component(s) as per Doc 9854	DCB – demand capacity balancing CM – conflict management	
Global plan initiatives (GPI)	GPI-6: ATFM GPI-7: Dynamic and flexible route management GPI-16: Decision support systems	
Main dependencies	Successor of B*0-FICE* and B*0-DATM* Connection to B*1-DATM* and B*1-SWIM*	
Global readiness checklist		Status (ready or estimated date)
	Standards readiness	Est 2016
	Avionics availability	No requirement
	Ground systems availability	Est 2018
	Procedures available	Est 2018
	Operations approvals	Est 2018

1. Narrative

1.1 General

1.1.1 The use of FF-ICE, Step 1 permits a better sharing of flight information before departure for improved flight planning submission and amendment, and for pre-flight air traffic flow management (ATFM) by facilitating the flight information sharing between all stakeholders (airspace users, airport and ASP).

1.2 Baseline

1.2.1 The baseline for this module is the present process for submission of the flight plan (FPL) through ICAO standardized FPL/2012 messages (Amendment 1 to the PANS-ATM) and automated standard for information exchange through a set of messages and the limited need for direct speech coordination (B*0-FICE*).

1.3 Change brought by the module

1.3.1 This module implements FF-ICE, Step 1 before departure.

1.3.2 ICAO SARPs for FF-ICE, Step 1 will be developed by ICAO groups between 2012 and 2015. It will facilitate the exchange of information associated with the flight plan, allowing more flexibility for flight data submission, amendment and publishing.

1.3.3 The objective of FF-ICE, Step 1 is to establish the basis for transition towards a full FF-ICE deployment. This basis consists of the introduction of:

a) a globally unique flight identifier (GUFI);

b) a common data format, i.e. flight information eXchange model (FIXM) in the context of the overall transition to extensible markup language/geography markup language (XML/GML) for aeronautical and meteorological information; and

c) basic roles, rules and procedures for submission and maintenance of FF-ICE information including provisions for the early sharing of trajectory information.

1.3.4 The use of the new format will facilitate the evolution of the FPL contents to introduce new data and solve specific regional needs.

1.3.5 The changes included in FF-ICE, Step 1 are the following:

a) support for early provision of flight intention information;

b) support for exchange of 4D trajectory information between the AOC and the ASP;

c) a new format for flight and flow information using internet protocol and XML;

d) a globally unique flight identifier (GUFI); and

e) FF-ICE, Step 1 information elements.

1.3.6 The foreseen services related to flight information submission and management in the framework of FF-ICE, Step 1 are:

a) initial submission;

b) validation;

c) GUFI allocation (after the initial flight submission);

d) nominal trajectory generation (in absence of airspace users defined trajectory);

e) flight information negotiation (to solve conflict between airspace users' intended flight and existing constraints);

f) flight information update (to change or add to current flight information);

g) acknowledgement/rejection;

h) flight information publication;

i) flight information subscription;

j) flight information cancellation;

k) flight suspension; and

l) flight information.

1.4 Other remarks

1.4.1 This module is a first step towards the more sophisticated 4D trajectory for both ground/ground and air/ground exchanges according to the ICAO *Global Air Traffic Management Operational Concept* (Doc 9854).

2. Intended Performance Operational Improvement

2.1 Metrics to determine the success of the module are proposed in the *Manual on Global Performance of the Air Navigation System* (Doc 9883).

Capacity	Reduced air traffic controller (ATC) workload and increased data integrity supporting reduced separations translating directly to cross sector or boundary capacity flow increases.
Efficiency	Better knowledge of aircraft capabilities allows trajectories closer to airspace user preferred trajectories and better planning.
Flexibility	The use of FF-ICE, Step 1 allows a quicker adaptation on route changes.
Global Interoperability	The use of a new mechanism for FPL filing and information sharing will facilitate flight data sharing among the actors.
Participation by the ATM community	FF-ICE, Step 1 for ground-ground application will facilitate collaborative decision-making (CDM), the implementation or the systems interconnection for Information sharing, trajectory or slot negotiation before departure providing better use of capacity and better flight efficiency.
Safety	More accurate flight information.
Cost Benefit Analysis	The new services have to be balanced by the cost of software change in the ATM service provider (ASP), airline operations center (AOC) and airport ground systems.

3. Necessary Procedures (Air and Ground)

3.1 The use of FF-ICE, Step 1 will require significant change in the procedures for flight information submission from the initial intention to the full set of data before departure and the sharing and use by the actors (airports operators, air traffic services, air traffic flow management (ATFM)).

3.2 FF-ICE, Step 1 Standards and Recommended Practices (SARPs) and concept of use to be developed.

4. Necessary System Capability

4.1 Avionics

4.1.1 There are no specific airborne requirements, but use of electronic flight bag onboard with high speed connection, in particular when aircraft is on the ground, could facilitate the FF-ICE information sharing with both AOC and ASP.

4.2 Ground systems

4.2.1 Ground ATC functionalities dealing with flight information will need to be updated to cater for FF-ICE, Step 1.

4.2.2 Airspace user systems will need to be modified to support the provision of FF-ICE to air navigation service providers (ANSPs).

5. Human Performance

5.1 Human factors considerations

5.1.1 The identification of human factors considerations is an important enabler in identifying processes and procedures for this module. In particular, the human-machine interface for the automation aspects of this performance improvement will need to be considered and, where necessary, accompanied by risk mitigation strategies such as training, education and redundancy.

5.2 Training and qualification requirements

5.2.1 Training on the new procedures and change in flight data information is required for operators in charge of the provision flight data information and for the users of this information.

5.2.2 Training in the operational standards and procedures will be identified along with the standards and recommended practices necessary for this module to be implemented. Likewise the qualifications requirements will be identified and included in the regulatory readiness aspects of this module when they become available.

6. Regulatory/standardization needs and Approval Plan (Air and Ground)

- Regulatory/standardization: use current published requirements given in Section 8.4. New SARPs documentation is needed for FF-ICE at this time.

- Approval plans: to be determined based upon regional consideration of advanced AIDC and FF-ICE.

- Discussion: for advanced AIDC, ICAO material is available (PANS-ATM, ATN). Regions should consider the possible mandating of AIDC. Means of compliance are also described in EUROCONTROL OLDI standard and EU regulations: i.e. implementing rule on coordination and transfer (CE 1032/2006).

- For FF-ICE, Step 1 SARPs should be developed and validated (cf ATMRPP tasks, ref ATM001).

7. Implementation and Demonstration Activities (As known at time of writing)

7.1 Current use

7.1.1 None at this time.

7.2 Planned or ongoing trials

- SESAR: Flight object validation is taking place within the framework of the SESAR projects 10.2.5 and 4.3 and completion is planned between 2011 and 2013.

- FF-ICE/1 could be considered as part of SESAR WP/8 and WP/14 in the development of AIRM.

- United States – FIXM with full FF-ICE functionality standardized will be available by 2018.

8. Reference Documents

8.1 B*0-FICE* reference documents:

- ICAO Doc 4444, *Procedures for Air Navigation Services — Air Traffic* Management, Appendix 6 – *ATS Interfacility data communications (AIDC) messages*.

- ICAO 9880, *Manual on Detailed Technical Specifications for the Aeronautical Telecommunications Network (ATN) using ISO/OSI Standards and Protocols*, Part II – *Ground-ground Applications – Air Traffic Services Message Handling Services (ATSMHS)*.

- ICAO 9694, *Manual of Air Traffic Services Data Link Applications*, Part 6.

- GOLD Global Operational Data Link Document (APANPIRG, NATSPG), June 2010.

8.2 Standards

- Eurocae ED-133 June 09, Flight Object Interoperability Specification.

- FF-ICE, Step 1 based on FIXM to be developed.

8.3 **Guidance material**

- ICAO Doc 9965, *Manual on Flight and Flow – Information for a Collaborative* Environment, FF-ICE concept document.

- EUROCONTROL specification for online data interchange (OLDI), V4.2.

8.4 **Approval documents**

- ICAO Doc 4444, *Procedures for Air Navigation Services — Air Traffic Management*.

- EU Regulation, EC No 552/2004.

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Module N° B*2-FICE*: Improved Coordination through multi-centre Ground-Ground Integration: (FF-ICE, Step 1 and Flight Object, SWIM)

<table>
<tr><td>Summary</td><td colspan="2">FF-ICE supporting trajectory-based operations through exchange and distribution of information for multi-centre operations using flight object implementation and interoperability (IOP) standards.

Extension of use of FF-ICE after departure supporting trajectory-based operations. New system interoperability SARPs will support the sharing of ATM services involving more than two ATSUs.</td></tr>
<tr><td>Main performance impact as per Doc 9883</td><td colspan="2">KPA-02 – Capacity, KPA-04 – Efficiency, KPA-06 – Flexibility, KPA-07 – Global Interoperability, KPA-08 – Participation by the ATM community, KPA-10 – Safety.</td></tr>
<tr><td>Operating environment/ Phases of flight</td><td colspan="2">All flight phases and all types of ground stakeholders</td></tr>
<tr><td>Applicability considerations</td><td colspan="2">Applicable to all ground stakeholders (ATS, airports, airspace users) in homogeneous areas, potentially global.</td></tr>
<tr><td>Global concept component(s) as per Doc 9854</td><td colspan="2">AUO – airspace user operations
AO – airport operations
DCB – demand and capacity balancing
CM – conflict management</td></tr>
<tr><td>Global plan initiatives (GPI)</td><td colspan="2">GPI-7: Dynamic and flexible route management
GPI-12: Functional integration of ground systems with airborne systems
GPI-16: Decision support systems</td></tr>
<tr><td>Main dependencies</td><td colspan="2">B1-FICE, B1-SWIM</td></tr>
<tr><td rowspan="6">Global readiness checklist</td><td></td><td>Status (ready now or estimated date)</td></tr>
<tr><td>Standards readiness</td><td>Est.2018</td></tr>
<tr><td>Avionics availability</td><td>No requirement</td></tr>
<tr><td>Ground systems availability</td><td>Est. 2020</td></tr>
<tr><td>Procedures available</td><td>Est. 2020</td></tr>
<tr><td>Operations approvals</td><td>Est. 2020</td></tr>
</table>

1. Narrative

1.1 General

1.1.1 The exchange and distribution of information for multi-centre operations will support the introduction of trajectory-based operations.

1.2 Baseline

1.2.1 The baseline for this module is coordination transfers and negotiation as described in B*0-FICE* and B*1-FICE* and the first step of FF-ICE, Step 1 for ground application, during the planning phase before departure.

1.3 Change brought by the module

1.3.1 Sharing of all the flight and flow information during planning and execution flight phase.

1.3.2 FF-ICE, Step 1 will be extended for a complete use of FF-ICE after departure supporting trajectory-based operations. The technical specification for FF-ICE will be implemented in the ground systems (ASP, AOC, airport) using flight object implementation and IOP standards.

1.3.3 The module makes available a protocol to support exchange and distribution of information for multi-centre operations.

1.3.4 The flight object (FO) concept has been developed to specify the information on environments, flights and flows managed by and exchanged between FDPS. FF-ICE is a subset of FO but includes, at the conceptual level, the interface with the airspace user (AOC and aircraft). FO will be deployed in the target period of FF-ICE, Step 1. FF-ICE, Step 1 standards should therefore be consistent with the evolving standards for FO and especially compliment them with standards on the ground-ground interactions with the airspace users.

1.3.5 The first implementations of SWIM (B*1-SWIM*, B*2-SWIM*) will facilitate flight information sharing.

1.4 Other remarks

1.4.1 This module is a second step towards the more sophisticated 4D trajectory exchanges between both ground/ground and air/ground according to the ICAO Global ATM Operational Concept.

2. Intended Performance Operational Improvement

2.1 Metrics to determine the success of the module are proposed in the *Manual on Global Performance of the Air Navigation System* (Doc 9883).

Capacity	Reduced air traffic controller workload and increased data integrity and improved seamlessness at borders of air traffic services units (ATSUs).
Efficiency	Through more direct route and use of required time of arrival (RTA) to upstream centres.
Flexibility	Better adaptation to user-requested change through facilitated information exchange.
Global Interoperability	Increased facility of system connection and wide exchange of the information among the actors.
Participation by the ATM community	FF-ICE will facilitate the participation of all interested parties.
Safety	More accurate and updated information.
Human performance	Positive impact of more accurate information.
Cost Benefit Analysis	Balance between cost of ground system change and improved capacity/flight efficiency to be determined.

3. Necessary Procedures (Air and Ground)

3.1 There is a need for new procedures for new set of applications related to trajectory-based operation.

4. Necessary System Capability

4.1 Avionics

4.1.1 Aircraft access to SWIM will be introduced by Module No. B*2-SWIM*.

4.2 Ground systems

4.2.1 ATM ground systems need to support the IOP and SWIM concepts. Data communication infrastructure is required to support high-speed ground-ground communication between ground systems and to be connected to air-ground data links.

5. Human Performance

5.1 Human factors considerations

5.1.1 The identification of human factors considerations is an important enabler in identifying processes and procedures for this module. In particular, the human-machine interface for the automation aspects of this performance improvement will need to be considered and, where necessary, accompanied by risk mitigation strategies such as training, education and redundancy.

5.2 Training and qualification requirements

5.2.1 This module will eventually contain a number of personnel training requirements. As and when they are developed, they will be included in the documentation supporting this module and their importance highlighted. Likewise, any qualifications requirements that are recommended will be included in the regulatory needs prior to implementation of this performance improvement.

6. Regulatory/standardization needs and Approval Plan (Air and Ground)

- Regulatory/standardization: updates required to current published requirements given in Section 8.4. Of this material ED133 addresses only civil ATSU's flight data processing system (FDP) interoperability needs. Other flight information users need will also be accommodated.

- New standards for CDM applications and flight information sharing/access are needed.
- Approval plans: to be determined.

7. Implementation and Demonstration Activities (As known at time of writing)

7.1 Current use

7.1.1 Planned or ongoing activities

7.1.1.1 In SESAR Project 10.2.5, flight object interoperability (IOP) system requirement and validation using EUROCAE ED133 first demonstration and validation activities are planned during the 2012-2014 period and first developments in industrial systems are available from 2015.

7.1.1.2 It is anticipated that the initial implementation date in Europe between two ATSUs from two system providers and two ANSPs will occur between 2018 and 2020.

7.1.1.3 SESAR research and development projects on SWIM are in WP/14, SWIM technical architecture and WP/8, Information management.

7.1.1.4 United States – Flight information exchange model will be standardized by 2018.

8. Reference Documents

8.1 Standards

- EUROCAE ED-133, Flight Object Interoperability Standards.
- FF-ICE FIXM SARPs (to be developed).

8.2 Guidance material

- ICAO Doc 9965, *Manual on Flight and Flow – Information for a Collaborative* Environment, FF-ICE concept document.

8.3 Approval documents

- ICAO Doc 4444, *Procedures for Air Navigation Services — Air Traffic Management*.
- EUROCAE ED-133, Flight Object Interoperability Standards.

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Module N° B*3-FICE* Improved Operational Performance through the introduction of Full FF-ICE

Summary	Data for all relevant flights systematically shared between the air and ground systems using SWIM in support of collaborative ATM and trajectory-based operations.	
Main performance impact as per Doc 9883	KPA-04 – Efficiency, KPA-06 – Flexibility, KPA-07 – Global Interoperability, KPA-08 – Participation by the ATM community, KPA-10 – Safety,	
Operating environment/ Phases of flight	All phases of flight from initial planning to post-flight	
Applicability considerations	Air and ground	
Global concept component(s) as per Doc 9854	ATM/SDM – ATM service delivery management	
Global plan initiatives (GPI)	GPI-7: Dynamic and flexible route management GPI-12: Functional integration of ground systems with airborne systems GPI-16: Decision support systems	
Main dependencies	B*2-FICE*, B*2-SWIM*	
Global readiness checklist		Status (ready now or estimated date)
	Standards readiness	Est. 2023
	Avionics availability	Est. 2025
	Ground systems availability	Est. 2025
	Procedures available	Est. 2025
	Operations approvals	Est. 2025

1. Narrative

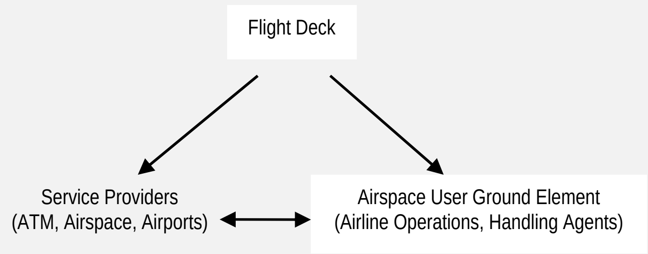
1.1 General

1.1.1 The role of FF-ICE: as a product of the ICAO Global ATM Operational Concept, FF-ICE defines information requirements for flight planning, flow management and trajectory management and aims to be a cornerstone of the performance-based air navigation system. Flight information and associated trajectories are principal mechanisms by which ATM service delivery will meet operational requirements.

1.1.2 FF-ICE will have global applicability and will support all members of the ATM community to achieve strategic, pre-tactical and tactical performance management. FF-ICE emphasizes the need for information sharing to enable significant benefits.

1.1.3 The exchange of flight/flow information will assist the construction of the best possible integrated picture of the past, present and future ATM situation. This exchange of information enables improved decision-making by the ATM actors involved in the entire duration of a flight, i.e. gate-to-gate, facilitating management of the full 4D trajectory. FF-ICE ensures that definitions of data elements are globally standardized and provides the mechanisms for their exchange. Thus, with appropriate information management a collaborative decision-making environment is created enabling the sharing of appropriate data across a wider set of participants resulting in greater coordination of the ATM community, situational awareness and the achievement of global performance targets.

1.1.4 The future collaborative and dynamic flight information process will involve the full spectrum of ATM community members as envisaged in the Global ATM Operational Concept. The cornerstone of future air traffic management is the interaction between these various parties and FF-ICE allows dynamic exchange of information.



1.1.5 The Global ATM Concept, implemented through regional programmes foresees air traffic control becoming traffic management by trajectory. The roles of the parties illustrated above will evolve to support the requirements of this concept which will:

c) entail systematic sharing of aircraft trajectory data between actors in the ATM process;

d) ensure that all actors have a common view of a flight and have access to the most accurate data available;

e) allow operations respecting the airspace users' individual business cases; and

f) improve the performance of aeronautical search and rescue service.

1.1.6 The Global ATM Operational Concept envisages an integrated, harmonized and globally interoperable system for all users in all phases of flight. The aim is to increase user flexibility and maximize operating efficiencies while increasing system capacity and improving safety levels in the future ATM system. The current system, including the flight planning process, has many limitations. FF-ICE helps to address these limitations and establishes the environment to enable improvements such as:

a) reduced reliance on voice radio communications for air/ground links;

b) increased collaborative planning amongst ATM actors;

c) provision of facilities for real time information exchange; and

d) maximized benefits of advanced equipment and encouraging deployment of improved air and/or ground systems.

1.2 Baseline

1.2.1 FF-ICE, Step 1 is implemented and initial SWIM applications are available on the ground as a result of modules B*2-FICE* and B*1-SWIM* – Flight object has been deployed as a basis of the new flight data processing (FDP) system.

1.3 Change brought by the module

1.3.1 The module brings a new way to exchange trajectory data to provide better ATM services to airspace users.

1.3.2 Flight object will be implemented in the ground systems and will support the flight information and trajectory sharing through SWIM during all phases of flight between air and ground. All messages between air and ground systems will use XML format to facilitate development and evolution.

1.3.3 The main challenge is to implement FF-ICE in airborne systems and use SWIM for airborne access to ATM information.

2. Intended Performance Operational Improvement

2.1 Metrics to determine the success of the module are proposed in the *Manual on Global Performance of the Air Navigation System* (Doc 9883).

Efficiency	Better knowledge of trajectory information will allow more optimum flight profile.
Global Interoperability	Global interoperability is facilitated by easier connection of all stakeholders.
Participation by the ATM community	Participation of all stakeholders is facilitated through real time data sharing.
Predictability	The sharing of information between aircraft and ground systems will enhance the predictability.
Safety	System wide data sharing will allow early detection of inconsistencies and updated information which will improve situation awareness.
Cost Benefit Analysis	To be demonstrated by the balance of the cost of system change with other performance improvement.

3. Necessary Procedures (Air and Ground)

3.1 Publish and subscribe mechanisms will allow real time sharing of the flight information for concerned and authorized actors.

3.2 The use of these data will be mainly for decision-making tools and further automation.

4. Necessary System Capability

4.1 Avionics

- Connection of the flight deck systems to the ground systems through a high-speed data communication system.

- Necessary distributed applications to manage the new services.

4.2 Ground systems

- There is a need for full secure and high throughput ground-ground and air-ground communications networks supporting SWIM access for exchange of flight and flow information from planning phase to post-flight phases.

- Necessarily distributed applications to manage the new services.

5. Human Performance

5.1 Human factors considerations

5.1.1 This technological evolution does not affect directly the pilots or controllers and could be transparent (system-to-system exchange, more accurate and updated data). However, this module is still in the research and development phase so the human factors considerations are still in the process of being identified through modelling and beta testing. Future iterations of this document will become more specific about the processes and procedures necessary to take the human factors considerations into account. There will be a particular emphasis on identifying the human-machine interface issues if there are any, and providing high-risk mitigation strategies to account for them.

5.2 Training and qualification requirements

5.2.1 Training of pilots and controllers to use the new services associated with decision support tools through new procedures. This module will eventually contain a number of personnel training requirements. As and when they are developed, they will be included in the documentation supporting this module and their importance highlighted. Likewise, any qualifications requirements that are recommended will be included in the regulatory needs prior to implementation of this performance improvement

6. Regulatory/standardization needs and Approval Plan (Air and Ground)

- Regulatory/standardization: updates required to current published requirements given in Section 8.4.

- Approval plans: to be determined.

7. Implementation and Demonstration Activities (as known at time of writing)

7.1 Current use

7.1.1 None at this time.

7.2 Planned or ongoing activities

- Full FF-ICE could be considered as the ultimate goal of the trajectory-based operations and it is part of NextGen and SESAR research and development plans.

- List of SESAR Projects: WP/14 and WP/8.

8. Reference Documents

8.1 Guidance material

- ICAO Doc 9965, *Manual on Flight and Flow – Information for a Collaborative* Environment, FF-ICE concept document.

- Trajectory-based operations documents.

8.2 Approval documents

ICAO Doc 4444, *Procedures for Air Navigation Services — Air Traffic Management.*

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APPENDIX C

ACAS V7.1 Status and regulation reference

State	ACAS V7.1 requirement	Regulation Reference	Remarks
1	2	3	4
Bahrain **N**	All fixed - wing turbine - engine aircraft having maximum take - off mass in excess of 5700 KG or approved passenger seating configuration of more than 19, will be required to be equipped with ACAS II	1.5.1.5 in Bahrain AIP	Air Navigation Technical Regulations (ANTR) – will be updated to reflect Annex 10 (Volume IV)
Egypt **Y**	ACAS II mandated		Need to update regulation
Iran **Y**	4.3.5.3.1. New ACAS installations after 1 January 2014 shall monitor own aircraft's vertical rate to verify compliance with the RA sense. If non-compliance is detected, ACAS shall stop assuming compliance, and instead shall assume the observed vertical rate. 4.3.5.3.2. After 1 January 2017, all ACAS units shall comply with the requirements stated in 4.3.5.3.1.	Aeronautical Telecommunications bylaw, articles 3 and 4	According to articles 3 and 4 of Iran aeronautical telecommunications by law, ratified by board of ministers, Airborne collision avoidance systems are categorized as aeronautical telecommunications systems and should be manufactured, installed and maintained according to standards of Annex 10. -Since no difference to ICAO annex 10 is notified, ACAS V 7.1 is mandatory according to provisions of annex 10 amendment 85. -Airworthiness directives issued by FAA and EASA shall to be implemented by Iranian AOC holders.
Iraq			
Jordan **Y**	Mandated in June 2014		
Kuwait			
Lebanon **Y**	Mandated		
Libya			
Oman			
Qatar **Y**	3.5.3.1 New ACAS installations after 1 January 2014 shall monitor own aircraft's vertical rate to verify compliance with the RA sense. If non-compliance is detected, ACAS shall stop assuming compliance, and instead shall assume the observed vertical rate. Note 1.— This overcomes the retention of an RA sense that would work only if followed. The revised vertical rate assumption is more likely to allow the logic to select the opposite sense when it is	QCAR – OPS 1, Subpart K, QCAR – OPS 1.668 – Airborne collision avoidance system	References: http://www.caa.gov.qa/en/safety_regulations

State	ACAS V7.1 requirement	Regulation Reference	Remarks
1	**2**	**3**	**4**
	consistent with the non-complying aircraft' s vertical rate. Note 2.— Equipment complying with RTCA/DO-185 or DO-185A standards (also known as TCAS Version 6.04A or TCAS Version 7.0) do not comply with this requirement. Note 3.— Compliance with this requirement can be achieved through the implementation of traffic alert and collision avoidance system (TCAS) Version 7.1 as specified in RTCA/DO-185B or EUROCAE/ED143. 4.3.5.3.2 QCAR CNS Note: All ACAS shall be compliant with the requirement in 4.3.5.3.1. 4.3.5.3.3 After 1 January 2017, all ACAS units shall comply with the requirements stated in 4.3.5.3.1.	QCAR Part 10 - Volume 4 Chapter 4 Airborne Collision Avoidance System	
Saudi Arabia			
Sudan **Y**	Mandated	Amended ANNEX 10(V4)-ANNESX 6(V2)	According to adopted ANNEXEX TO SUDAN REGULATION (SUCAR 10 V4 Par. 4.3.5.3.1 AND SUCAR 6 V2 par 2.05.15)
Syria			
UAE **Y**	CAR-OPS 1.668 Airborne Collision Avoidance System (See IEM OPS 1.668) and CAAP 29 An operator shall not operate a turbine powered aeroplane: (a) Having a MCTOM (maximum certificated take-off mass) in excess of 5700 kg or a MAPSC (maximum approved passenger seating configuration) of more than 19 unless it is equipped with an airborne collision avoidance system (ACAS) II Change 7.0 . From 31 January 2015 such aeroplanes shall be equipped with ACAS II, Change 7.1. (b) Manufactured after 31 December 2012 and having a MCTOM in excess of 5700 kg or a MAPSC of more than 19 unless it is equipped with ACAS II, Change 7.1."	CAR-OPS 1.668 Airborne Collision Avoidance System (See IEM OPS 1.668) and CAAP 29 And AIP 1.5.6.6	https://www.gcaa.gov.ae/en/ePublication/Pages/CARs.aspx?CertID=CARs
Yemen **Y**	From 31 January 2015 such aeroplanes shall be equipped with ACAS II, Change 7.1		Reference need to be provided

- END -

MID Doc 006

INTERNATIONAL CIVIL AVIATION ORGANIZATION

MIDDLE EAST AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (MIDANPIRG)

MID REGION GUIDANCE FOR THE IMPLEMENTATION OF AIDC/OLDI

EDITION 1.1
JUNE, 2015

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of ICAO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontier or boundaries.

TABLE OF CONTENTS

RECORD OF AMENDMENTS

The following table records the history of the successive editions of the present document:

Edition Number	Edition Date	Description	Pages Affected
0.1	03 February 2014	Initial version	All
0.2	09 September 2014	CNS SG/6 update	All
1.0	26 November 2014	MSG/4 endorsement	All
1.1	June 2015	Deletion of the planning parts and change of title of the Document. MIDANPIRG/15 endorsement.	All

1. INTRODUCTION

1.1 Seeking to ensure continuous Safety improvement and Air Navigation modernization, the International Civil Aviation Organization (ICAO) has developed the strategic systems approach termed Aviation System Block Upgrade (ASBU). The latter, defines programmatic and flexible global systems, allows all States to advance their Air Navigation capacities based on their specific operational requirements.

1.2 The ASBU approach has four Blocks, namely Block 0, Block 1, Block 2 and Block 3. Each block is further divided into Modules. Block 0 is composed of Modules containing technologies and capabilities that are implemented currently.

1.3 Module FICE in Block 0 is introduced to improve coordination between air traffic service units (ATSUs) by using ATS inter-facility data communication (AIDC). The transfer of communication in a data link environment improves the efficiency of this process. The data link environment enhances capacity, efficiency, interoperability, safety and reduces cost.

1.4 The AIDC and the OLDI are tools to coordinate flight data between Air Traffic Service Units (ATSU) and both satisfies the requirements of basic coordination of flight notification, coordination and transfer of control.

1.5 Various items concerning MID Region Implementation of AIDC/OLDI have been detailed in this document.

2. BACKGROUND AND ASBU B0-FICE

Module B0-FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration:

Summary	To improve coordination between air traffic service units (ATSUs) by using ATS interfacility data communication (AIDC) defined by the ICAO *Manual of Air Traffic Services Data Link Applications* (Doc 9694). The transfer of communication in a data link environment improves the efficiency of this process particularly for oceanic ATSUs.	
Main performance impact as per Doc 9883	KPA-02 – Capacity, KPA-04 – Efficiency**,** KPA-07 – Global Interoperability, KPA-10 – Safety.	
Operating environment/ Phases of flight	All flight phases and all type of ATS units.	
Applicability considerations	Applicable to at least two area control centres (ACCs) dealing with en-route and/or terminal control area (TMA) airspace. A greater number of consecutive participating ACCs will increase the benefits.	
Global concept component(s) as per Doc 9854	CM – conflict management	
Global plan initiatives (GPI)	GPI-16: Decision support systems	
Main dependencies	Linkage with B*0-TBO*	
Global readiness checklist		Status (ready now or estimated date)
	Standards readiness	√
	Avionics availability	No requirement
	Ground systems availability	√
	Procedures available	√
	Operations approvals	√

2.1 General

2.1.1 Flights which are being provided with air traffic services are transferred from one air traffic services (ATS) unit to the next in a manner designed to ensure safety. In order to accomplish this objective, it is a standard procedure that the passage of each flight across the boundary of the areas of responsibility of the two units is co-ordinated between them beforehand and that the control of the flight is transferred when it is at, or adjacent to, the said boundary.

2.1.2 Where it is carried out by telephone, the passing of data on individual flights as part of the coordination process is a major support task at ATS units, particularly at area control centres (ACCs). The operational use of connections between flight data processing systems (FDPSs) at ACCs replacing phone coordination (on-line data interchange (OLDI)) is already proven in Europe.

2.1.3 This is now fully integrated into the ATS interfacility data communications (AIDC) messages in the *Procedures for Air Navigation Services — Air Traffic Management*, (PANS-ATM, Doc 4444) which describes the types of messages and their contents to be used for operational communications between ATS unit computer systems. This type of data transfer (AIDC) will be the basis for migration of data communications to the aeronautical telecommunication network (ATN).

2.1.4 The AIDC module is aimed at improving the flow of traffic by allowing neighboring air traffic services units to exchange flight data automatically in the form of coordination and transfer messages.

2.1.5 With the greater accuracy of messages based on the updated trajectory information contained in the system and where possible updated by surveillance data, controllers have more reliable information on the conditions at which aircraft will enter in their airspace of jurisdiction with a reduction of the workload associated to flight coordination and transfer. The increased accuracy and data integrity permits the safe application of reduced separations.

2.1.6 Combined with air-ground data link applications, AIDC also allows the transfer of aircraft logon information and the timely initiation of establishing controller-pilot data link communications (CPDLC) by the next air traffic control (ATC) unit with the aircraft.

2.1.7 These improvements outlined above translate directly into a combination of performance improvements.

2.1.8 Information exchanges between flight data processing systems are established between air traffic services units for the purpose of notification, coordination and transfer of flights and for the purpose of civil/military coordination. These information exchanges rely upon appropriate and harmonized communication protocols to secure their interoperability.

2.1.9 Information exchanges apply to:

a) communication systems supporting the coordination procedures between air traffic services units using a peer-to-peer communication mechanism and providing services to general air traffic; and

b) communication systems supporting the coordination procedures between air traffic services units and controlling military units, using a peer-to-peer communication mechanism.

Baseline

2.1.10 The baseline for this module is the traditional coordination by phone, and procedural and/or radar distance/time separations.

Change brought by the module

2.1.11 The module makes available a set of messages to describe consistent transfer conditions via electronic means across ATS units' boundaries. It consists of the implementation of the set of AIDC messages in the flight data processing systems (FDPS) of the different ATS units involved and the establishment of a Letter of Agreement (LoA) between these units to set the appropriate parameters.

2.1.12 Prerequisites for the module, generally available before its implementation, are an ATC system with flight data processing functionality and a surveillance data processing system connected to each other.

Other remarks

2.1.13 This module is a first step towards the more sophisticated 4D trajectory exchanges between both ground/ground and air/ground according to the ICAO *Global Air Traffic Management Operational Concept* (Doc 9854).

2.2 Intended Performance Operational Improvement

2.2.1 Metrics to determine the success of the module are proposed in the *Manual on Global Performance of the Air Navigation System* (Doc 9883).

Capacity	Reduced controller workload and increased data integrity supporting reduced separations translating directly to cross sector or boundary capacity flow increases.
Efficiency	The reduced separation can also be used to more frequently offer aircraft flight levels closer to the flight optimum; in certain cases, this also translates into reduced en-route holding.
Global interoperability	Seamlessness: the use of standardized interfaces reduces the cost of development, allows air traffic controllers to apply the same procedures at the boundaries of all participating centres and border crossing becomes more transparent to flights.
Safety	Better knowledge of more accurate flight plan information.
Cost Benefit Analysis	Increase of throughput at ATS unit boundary and reduced ATCO workload will outweigh the cost of FDPS software changes. The business case is dependent on the environment.

2.3 Necessary Procedures (Air and Ground)

2.3.1 Required procedures exist. They need local analysis of the specific flows and should be spelled out in a Letter of Agreement between ATS units; the experience from other Regions can be a useful reference.

2.4 Necessary System Capability

Avionics

2.4.1 No specific airborne requirements.

Ground systems

2.4.2 Technology is available. It consists in implementing the relevant set of AIDC messages in flight data processing and could use the ground network standard AFTN-AMHS or ATN. Europe is presently implementing it in ADEXP format over IP wide area networks.

2.4.3 The technology also includes for oceanic ATSUs a function supporting transfer of communication via data link.

2.5 Human Performance

Human Factors Considerations

2.5.1 Ground interoperability reduces voice exchange between ATCOs and decreases workload. A system supporting appropriate human-machine interface (HMI) for ATCOs is required.

2.5.2 Human factors have been taken into consideration during the development of the processes and procedures associated with this module. Where automation is to be used, the HMI has been considered from both a functional and ergonomic perspective (see Section 6 for examples). The possibility of latent failures, however, continues to exist and vigilance is required during all implementation activity. In addition it is important that human factor issues, identified during implementation, be reported to the international community through ICAO as part of any safety reporting initiative.

Training and Qualification Requirements

2.5.3 To make the most of the automation support, training in the operational standards and procedures will be required and can be found in the links to the documents in Section 8 to this module. Likewise, the qualifications requirements are identified in the regulatory requirements in Section 6 which are integral to the implementation of this module**.**

2.6 Regulatory/Standardization Needs and Approval Plan (Air and Ground)

- ☐ Regulatory/standardization: use current published criteria that include:

  a) ICAO Doc 4444, *Procedures for Air Navigation Services — Air Traffic Management*;
  b) EU Regulation, EC No 552/2004.

- ☐ Approval plans: to be determined based on regional consideration of ATS interfacility data communications (AIDC).

2.7 Implementation and Demonstration Activities (As known at time of writing)

2.7.1 Although already implemented in several areas, there is a need to complete the existing SARPs to improve harmonization and interoperabiltiy. For Oceanic data link application, North Atlantic (NAT) and Asia and Pacific (APAC) (cf ISPACG PT/8- WP.02 - GOLD) have defined some common coordination procedures and messages between oceanic centres for data link application (ADS-C CPDLC).

2.7.2 Current use

- ☐ **Europe:** It is mandatory for exchange between ATS units.
  http://europa.eu/legislation_summaries/transport/air_transport/l24070en.htm

  The European Commission has issued a mandate on the interoperability of the European air traffic management network, concerning the coordination and transfer (COTR) between ATS units through REG EC 1032/2006 and the exchange of flight data between ATS units in support of air-ground data link through REG EC 30/2009. This is based on the standard OLDI-Ed 4.2 and ADEXP-Ed 3.1.

- ☐ **EUROCONTROL:** Specification of interoperability and performance requirements for the flight message transfer protocol (FMTP). The available set of messages to describe and negotiate consistent transfer conditions via electronic means across centres' boundaries have been used for trials in Europe in 2010 within the scope of EUROCONTROL's FASTI initiative.

- **India:** AIDC implementation is in progress in Indian airspace for improved coordination between ATC centres. Major Indian airports and ATC centres have integrated ATS automation systems having AIDC capability. AIDC functionality is operational between Mumbai and Chennai ACCs. AIDC will be implemented within India by 2012. AIDC trials are underway between Mumbai and Karachi (Pakistan) and are planned between India and Muscat in coordination with Oman.

- **AIDC:** is in use in the Asia-Pacific Region, Australia, New-Zealand, Indonesia and others.

2.7.3 Planned or Ongoing Activities

To be determined.

2.7.4 Currently in Operation

To be determined.

2.8 Reference Documents

2.8.1 Standards

- ICAO Doc 4444, *Procedures for Air Navigation Services - Air Traffic Management,* Appendix 6 - *ATS Interfacility Data Communications (AIDC) Messages.*

- ICAO Doc 9880, *Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocols,* Part II — *Ground-Ground Applications — Air Traffic Services Message Handling Services (ATSMHS).*

2.8.2 Procedures

To be determined.

2.8.3 Guidance material ☐ ICAO Doc 9694, Manual of Air Traffic Services Data Link Applications; Part 6; ☐ GOLD Global Operational Data Link Document (APANPIRG, NAT SPG), June 2010; ☐ Pan Regional Interface C

Communications (PAN ICD) Coordination Draft Version 0.3. 31 August 2010; ☐ Asia/Pacific Regional Interface Control Document (ICD) for ATS Interfacility Data Communications (AIDC) available at http://www.bangkok.icao.int/edocs/icd_aidc_ver3.pdf, ICAO Asia/Pacific Regional Office. ☐ EUROCONTROL Standard for On-Line Data Interchange (OLDI); and EUROCONTROL Standard for ATS Data Exchange Presentation (ADEXP).

- ASSEMBLY — 38TH SESSION A38-WP/266.

3. ICAO GENERAL ASSEMBLY 38 WP-266

International Civil Aviation Organization

WORKING PAPER

A38-WP/266
TE/120
12/09/13

ASSEMBLY — 38TH SESSION

TECHNICAL COMMISSION

Agenda Item 33: Air Navigation — Standardization

OLDI as AIDC realisation in the MID Region

(Presented by the United Arab Emirates)

EXECUTIVE SUMMARY	
The Aviation System Block Upgrade (ASBU) B0-25 recommends "Increased interoperability, efficiency and capacity through ground-ground integration". To this end ATS inter-facility data communication (AIDC) is presumed by many States. The EUROCONTROL uses a different tool called On Line Data Interchange (OLDI) satisfying all AIDC requirements. The AIDC and the OLDI are tools to coordinate flight data between Air Traffic Service Units (ATSU) and both satisfies the basic coordination of flight notification, coordination and transfer of control. Additional options like pre-departure coordination, Civil-Military coordination and air-ground data link for forwarding log-on parameters are available in the OLDI. The majority of States in the MID Region has either implemented or is planning to implement OLDI and have no intention of using only AIDC. **Action:** The Assembly is invited to: a) Recommend that OLDI implementation be accepted as MID regional variation of AIDC implementation. b) Urge States to capitalise opportunities provided by OLDI and wherever both AIDC and OLDI are implemented, choose the suitable option satisfying the requirements of the partnering States.	
Strategic Objectives:	This working paper relates to Strategic Objective B
Financial implications:	Not applicable
References:	1. Manual of Air Traffic Services Data Link Applications (Doc 9694) 2. MID Region ATN-IPS WG5 meeting report, 3. MID Region ATN-IPS WG5 WP4 Appendix A

1. INTRODUCTION

1.1 Seeking to ensure continuous Safety improvement and Air Navigation modernization, the International Civil Aviation Organization (ICAO) has developed the strategic systems approach termed Aviation System Block Upgrade (ASBU). The latter, which defines programmatic and flexible global systems, allows all States to advance their Air Navigation capacities based on their specific operational requirements.

1.2 The ASBU approach has four Blocks, namely Block 0, Block 1, Block 2 and Block 3. Each block is further divided into Modules. Block 0 is composed of Modules containing technologies and capabilities that are implemented to date.

1.3 Module 25 in Block 0 is introduced to improve coordination between air traffic service units (ATSUs) by using ATS inter-facility data communication (AIDC). The transfer of communication in a data link environment improves the efficiency of this process. The data link environment enhances capacity, efficiency, interoperability, safety and reduces cost.

2. DISCUSSION

2.1 EUROCONTROL uses a different tool called On Line Data Interchange (OLDI) satisfying all AIDC requirements. The AIDC and the OLDI are tools to coordinate flight data between Air Traffic Service Units (ATSU) and both satisfies the basic coordination of flight notification, coordination and transfer of control. Additional options like pre-departure coordination, Civil-Military coordination and air-ground data link for forwarding log-on parameters are available in the OLDI.

2.2 The OLDI is a proven technology and is in operational use for more than twenty years in the European Region and for more than four years in the United Arab Emirates. This technology meets all the AIDC requirements and is kept up to date to cope with the new developments in the industry. An example is the release of OLDI version 4.2 to accommodate INFPL requirements.

2.3 Based on the analysis carried out during the MID Region ATN-IPS WG5 meeting it was noted that the majority of States in the MID Region have either implemented OLDI or are planning to implement OLDI and have no intention of using only AIDC. Therefore, the meeting agreed that OLDI implementation should be considered and accepted as Regional variation of AIDC implementation as was the case in the European Region.

2.4 The MID Region ATN-IPS WG5 meeting further agreed that if both AIDC and OLDI are implemented, then it will be a bilateral issue and some States that are interfacing with adjacent Regions may require to support and implement dual capabilities (AIDC and OLDI).

2.5 The MID Region is monitoring the work of the joint taskforce harmonization of AIDC and OLDI in NAT and ASIA PAC as it is important to harmonize AIDC and OLDI in order that States in the interface areas have smooth operations.

3. CONCLUSION

3.1 The implementation of OLDI in the MID Region should be accepted as variation AIDC implementation. Wherever both AIDC and OLDI are implemented then States should choose the suitable one satisfying the requirements of the partnering State.

4. DETAILS OF THE ATM SYSTEMS TO SUPPORT IMPLEMENTATION

State	ATM System	Protocol and Version used	Number of adjacent ATSUs	Number of adjacent ATSUs connected by AIDC/ OLDI and type of connection	ATM System Capability		Current use		Planned Use		Intention of using AIDC only	Reasons and Remarks
					AIDC	OLDI	AIDC	OLDI	AIDC	OLDI		
Bahrain	Thales TopSky-C	OLDI 2.3 FMTP 2.0	7	None	☐	☐			☐	☐	No	OLDI to connect to neighbouring ATSUs
Egypt	TOPSKY (THALES) Support X25 Protocol only	OLDI V2.3 AIDC V2.0	7	1 OLDI	☐	☐		☐	☐	☐	No	OLDI in use to connect to EUR (Athens)
Iran	Thales	OLDI	11	None		☐						OLDI messages are sent to Ankara
Iraq	Raytheon pack2		5	none								

Jordan	Aircon 2100 Indra	OLDI 4.1 AIDC 2.0	5	none	☐	☐			☐	☐	No	Planned with Jeddah Q2 2015
Kuwait	Aircon 2100 INDRA	OLDI v4.2 AIDC v3.0	3	none	☐	☐				☐	No	OLDI to connect to Bahrain and Riyadh
Lebanon			3	- 1 OLDI with Cyprus		☐				☐	No	OLDI in use to connect to EUR
Libya	Aircon 2000 Indra	OLDI 2.3 AIDC 2.0	7	None	☐	☐					No	Can connect with Sudan Chad and Egypt AIDC. OLDI Tunis Malta and Egypt
Oman	Indra Itec	OLDI 4.1 AIDC 2.3	5	none	☐	☐					No	UAE Q1 2015 Jeddah Q2 2015 Mumbai Q1 2015
Qatar	Selex	OLDI V4.2 FMTP 2.0 AIDC 2.0	3	1	☐	☐		☐		☐		OLDI in use with UAE and planned for use with Bahrain

Saudi Arabia	PRISMA from COMSOFT	OLDI V4.2 FMTP 2.0 AIDC xx	11	- None - AIDC Connected between Riyadh and Jeddah	☐	☐	☐		☐	☐	No	AIDC for internal and OLDI for neighbouring units requests
Sudan	TopSky	OLDI 4.3 AIDC 2.0	5	2	☐	☐	☐	☐	☐	☐	No	Both AIDC and OLDI to cater to neighbouring units requests
Syria			5	none								
UAE	PRISMA from COMSOFT	OLDI V4.2 FMTP 2.0	10	-3 two-way integrated OLDI connections -2 two-way standalone OLDI -1 one-way Standalone OLDI connection Total 6 OLDI connections		☐		☐		☐	No	OLDI already in use with 6 partners and all neighbouring ATSUs are OLDI capable
Yemen			3	none								

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5. MESSAGE TYPES – PHASE 1

These are the initial messages that were agreed during the MID AIDC/OLDI Seminar Mar 2014

I. <u>Basic Procedure Messages</u>

1.	Advance Boundary Information	ABI
2.	Activate	ACT
3.	Revision	REV
4.	Preliminary Activation	PAC
5.	Abrogation of Co-ordination	MAC
6.	SSR Code Assignment	COD
7.	Arrival Management	AMA
8.	Logical Acknowledgement Message	LAM

II. <u>Advance Boundary Information ABI</u>

1. Purpose of the ABI Message

   The ABI message satisfies the following operational requirements:
   - Provide for acquisition of missing flight plan data;
   - Provide advance boundary information and revisions thereto for the next ATC unit;
   - Update the basic flight plan data;
   - Facilitate early correlation of radar tracks;
   - Facilitate accurate short-term sector load assessment;
   - Request the assignment of an SSR code from the unit to which the above notification is sent, if required.

   The ABI is a notification message.

2. Message Contents

   The ABI message shall contain the following items of data:
   - Message Type;
   - Message Number;
   - Aircraft Identification;
   - SSR Mode and Code (if available);
   - Departure Aerodrome;
   - Estimate Data;
   - Destination Aerodrome;
   - Number and Type of Aircraft;
   - Type of Flight;
   - Equipment Capability and Status.

   If bilaterally agreed, the ABI message shall contain any of the following items of data:
   - Route;
   - Other Flight Plan Data.

3. Example
   - (ABIOMAE/OMSJ578-ABY464/A5476-VIDP-MAXMO/0032F100-OMSJ-9/A320/M-15/N0457F360 OBDAG LUN G333 TIGER/N0454F380 G452 RK G214 PG G665 ASVIB M561 MOBET/N0409F260 A419 DARAX -80/S-81/W/EQ Y/EQ U/NO R/EQ/A1B1C1D1L1O1S1)

III. Activate ACT

1. Purpose of the ABI Message

   The ACT message satisfies the following operational requirements:
   - Replace the verbal boundary estimate by transmitting automatically details of a flight from one ATC unit to the next prior to the transfer of control;
   - Update the basic flight plan data in the receiving ATC unit with the most recent information;
   - Facilitate distribution and display of flight plan data within the receiving ATC unit to the working positions involved;
   - Enable display of correlation in the receiving ATC unit;
   - Provide transfer conditions to the receiving ATC unit.

2. Message Contents

   The ACT message shall contain the following items of data:
   - Message Type;
   - Message Number;
   - Aircraft Identification;
   - SSR Mode and Code;
   - Departure Aerodrome;
   - Estimate Data;
   - Destination Aerodrome;
   - Number and Type of Aircraft;
   - Type of Flight;
   - Equipment Capability and Status.

   If bilaterally agreed, the ACT message shall contain any of the following items of data:
   - Route;
   - Other Flight Plan Data;
   - Actual Take-Off Time.

   Note: The Actual Take-Off Time is normally used in the cases where the ACT follows a PAC message that included the Estimated Take-Off Time.

3. Example
   - (ACTOMAE/OMSJ727-ABY604/A7306-HEBA-ALRAR/0130F110-OMSJ-9/A320/M-15/N0428F250 DCT NOZ A727 CVO/N0461F350 UL677 MENLI UN697 NWB W733 METSA UB411 ASH G669 TOKLU UP559 ASPAK/N0438F290 UP559 NALPO P559 ITGIB/N0409F230 P559 -80/S-81/W/EQ Y/EQ U/NO R/EQ/A1B1C1D1L1O1S1)

IV. Revision Message REV

1. Purpose of the REV Message

   The REV message is used to transmit revisions to co-ordination data previously sent in an ACT message provided that the accepting unit does not change as a result of the modification.

2. Message Contents

   The REV message shall contain the following items of data:

   - Message Type;
   - Message Number;
   - Aircraft Identification;
   - Departure Aerodrome;
   - Estimate Data and/or Co-ordination point;
   - Destination Aerodrome;

   Note: The Estimate Data contained in the REV has to include complete data in the Estimate Data field in order to eliminate any ambiguity regarding the transfer elements. If the ACT message included the supplementary flight level, the following REV message will include the supplementary flight level if still applicable.

   The REV message shall contain the following items of data if they have changed:

   - SSR Mode and Code;
   - Equipment Capability and Status.

     If bilaterally agreed, the REV message shall contain any of the following items of data, if they have changed:
   - Route.

     If bilaterally agreed, the REV message shall contain any of the following items of data:
   - Message Reference.

3. Example

   - (REVBC/P873-UAE4486-OMDB-TUMAK/2201F360-LERT-81/Y/NO U/EQ)

V. Preliminary Activation PAC

1. Purpose of the PAC Message

   The PAC message satisfies the following operational requirements:

   - Notification and pre-departure co-ordination of a flight where the time of flight from departure to the COP is less than that which would be required to comply with the agreed time parameters for ACT message transmission;
   - Notification and pre-departure co-ordination of a flight by a local (aerodrome /approach control) unit to the next unit that will take control of the flight;
   - Provide for acquisition of missing flight plan data in case of discrepancies in the initial distribution of flight plan data;
   - Request the assignment of an SSR code from the unit to which the above notification/coordination is sent.

2. Message Contents

   The PAC message shall contain the following items of data:

   - Message Type;
   - Message Number;
   - Aircraft Identification;
   - SSR Mode and Code;
   - Departure Aerodrome;
   - Estimated Take-Off Time or Estimate Data;
   - Destination Aerodrome;
   - Number and Type of Aircraft;

   A PAC message sent from a TMA control unit or an ACC shall contain the following items of data:

   - Type of Flight;
   - Equipment Capability and Status.

     If bilaterally agreed, the PAC message shall contain any of the following items of data:

   - Route;
   - Other Flight Plan Data;
   - Message Reference.

3. Example

   - (PACOMSJ/OMAE292-SQC7365/A9999-OMSJ0020-WSSS-9/B744/H-15/N0505F310 DCT RIKET B525 LALDO B505 NADSO A777 VAXIM P307 PARAR N571 VIRAM/N0505F330 N571 LAGOG/M084F330 N571 IGOGU/M084F350 N571 GUNIP/N0500F350 R467 -80/S-81/W/EQ Y/EQ U/NO R/EQ/)

VI. Message for the Abrogation of Co-ordination MAC

1. Purpose of the MAC Message

   A MAC message is used to indicate to the receiving unit that the co-ordination or notification previously effected for a flight is being abrogated. The MAC is not a replacement for a Cancellation (CNL) message, as defined by ICAO, and therefore, shall not be used to erase the basic flight plan data.

2. Message Contents

   The MAC message shall contain the following items of data:

   - Message Type;
   - Message Number;
   - Aircraft Identification;
   - Departure Aerodrome;
   - Co-ordination point;
   - Destination Aerodrome;

     If bilaterally agreed, the MAC message shall contain any of the following items of data:
   - Message Reference;
   - Co-ordination Status and Reason

3. Example

   - (MACAM/BC112 AM/BC105-HOZ3188-EHAM-NIK-LFPG-18/STA/INITFL)

VII. SSR Code Assignment Message COD

1. Purpose of the COD Message

   The Originating Region Code Allocation Method (ORCAM) is provided to permit a flight to respond on the same code to successive units within a participating area. Unless code allocation is performed centrally, e.g. by an ACC, airports may need to be individually allocated a set of discrete SSR codes. Such allocations are very wasteful of codes.

   The COD message satisfies the operational requirement for the issue of a Mode A SSR code by one Air Traffic Service Unit to another for a specified flight when requested.

   The COD message also satisfies the operational requirement to inform the transferring Air Traffic Service Unit of the next Mode A SSR code when the code assigned cannot be retained by the accepting Air Traffic Service Unit.

2. Message Contents

   The COD message shall contain the following items of data:

   - Message Type;
   - Message Number;
   - Aircraft Identification;
   - SSR Mode and Code;
   - Departure Aerodrome;
   - Destination Aerodrome;

If bilaterally agreed, the COD message shall contain any of the following items of data:

- Message Reference.

3. Example
   - (CODOMAE/OMSJ720-ABY567/A3450-OMSJ-OAKB)

VIII. Arrival Management Message AMA

1. Purpose of the AMA Message

   Arrival management requires the capability for an accepting unit to pass to the transferring unit information on the time that a flight is required to delay (lose) or gain in order to optimise the approach sequence.

   The AMA message satisfies the following operational requirements in order to alleviate ATC workload in co-ordinating arriving flights:
   - Provide the transferring ATC unit with the time that the flight is to delay/gain at the arrival management metering fix;
   - Where procedures have been bilaterally agreed between the units concerned, provide the transferring ATC unit with a target time for the flight to be at the COP;
   - When bilaterally agreed, provide the transferring unit with a speed advisory. The speed advisory needs to be communicated to the flight, prior to transfer.

2. Message Contents

   The AMA message shall contain the following items of data:
   - Message Type;
   - Message Number;
   - Aircraft Identification;
   - Departure Aerodrome;
   - Destination Aerodrome;

     and based on bilateral agreement, contain one or more of the following items of data:
     - Metering Fix and Time over Metering Fix;
     - Total Time to Lose or Gain;
     - Time at COP;
     - Assigned speed;
     - Application point;
     - Route;
     - Arrival sequence number

   Note: The item Route contains the requested routing

3. Example
   - (AMAM/BN112-AZA354-LIRF-CLS/0956-LEMD-18/MFX/PRADO TOM/1022 TTL/12)

IX. Logical Acknowledgement Message LAM

4. Purpose of the LAM Message

   The LAM is the means by which the receipt and safeguarding of a transmitted message is indicated to the sending unit by the receiving unit.

   The LAM processing provides the ATC staff at the transferring unit with the following:

   - A warning when no acknowledgement has been received;
   - An indication that the message being acknowledged has been received, processed successfully, found free of errors, stored and, where relevant, is available for presentation to the appropriate working position(s).

5. Message Contents

   The LAM message shall contain the following items of data:

   - Message Type;
   - Message Number;
   - Message Reference.

6. Example

   - (LAMOMSJ/OMAE939OMAE/OMSJ718)

The Pan Regional (NAT and APAC) Interface Control Document for ATS Interfacility Data Communications (PAN AIDC ICD) Version1.0 has defined the specific AIDC messages to be used between ATSUs should be included in bilateral agreements as in the below table which is number as table 4-3

AIDC Messages

Core	Non-core	Message Class	Message
X		Notification	ABI (Advance Boundary Information)
X		Coordination	CPL (Current Flight Plan)
X		Coordination	EST (Coordination Estimate)
	X	Coordination	PAC (Preliminary Activate)
X		Coordination	MAC (Coordination Cancellation)
X		Coordination	CDN (Coordination Negotiation)
X		Coordination	ACP (Acceptance)
X		Coordination	REJ (Rejection)
	X	Coordination	PCM (Profile Confirmation Message)
	X	Coordination	PCA (Profile Confirmation Acceptance)
	X	Coordination	TRU (Track Update)
X		Transfer of Control	TOC (Transfer of Control)
X		Transfer of Control	AOC (Acceptance of Control)
X		General Information	EMG (Emergency)
X		General Information	MIS (Miscellaneous)
X		Application Management	LAM (Logical Acknowledgement Message)
X		Application Management	LRM (Logical Rejection Message)
	X	Application Management	ASM (Application Status Monitor)
	X	Application Management	FAN (FANS Application Message)
	X	Application Management	FCN (FANS Completion Notification)
	X	Surveillance Data Transfer	ADS (Surveillance ADS-C)

6. D – MESSAGE TYPES – PHASE 2

The messages during this phase will be the advance messages covering all phases of flight

Intentionally left blank

7. TEST OBJECTIVES

Test Objectives		
No	**Test step**	**Test Description**
01	Connectivity between FDPSs	Check connectivity between FDPSs.
02	FPL Processing	Check FPLs are correctly received and processed.
Preliminary Activation Message (PAC)		
03	PAC Message association	Check PAC messages are correctly sent, received, processed and associated with the correct FPL. If the system is unable to process a message that is syntactically and semantically correct, it should be referred for Manual intervention.
04	Coordination of Changes to previous PAC message	Check changes to previous PAC messages such as Change in SSR code, Aircraft type, Coordination point, Flight level and Destination aerodrome are correctly sent, received and associated with the correct FPL.
Advance Boundary Information (ABI)		
05	ABI Message association	Check ABI messages are correctly sent, received, processed and associated with the correct FPL. If the system is unable to process a message that is syntactically and semantically correct, it should be referred for Manual intervention.
06	Coordination of Changes to previous ABI message	Check changes to previous ABI messages such as Change in SSR code, Aircraft type, Coordination point, Flight level and Destination aerodrome are correctly sent, received and associated with the correct FPL.
Activate (ACT)		
07	ACT Message association	Check ACT messages are correctly sent, received, processed and associated with the correct FPL. If the system is unable to process a message that is syntactically and semantically correct, it should be referred for Manual intervention.
Logical Acknowledgement Messages (LAM)		
08	LAM Message generation	Check LAM messages are generated for messages that are syntactically and semantically correct.
SSR Code Request Messages (COD)		
09	COD Message association	Check COD messages are sent with correct SSR Code, received, processed and associated with the correct FPL. If the system is unable to process a message that is syntactically and semantically correct, it should be referred for Manual intervention.

8. SAMPLE TEST SCRIPTS

NOTE: All the samples are provided by UAE

1. Test 001 Connectivity:

Test 001 – Connectivity				
No	***Test description***	***UAE ACC FDPS***	***Doha FDPS***	***Remarks***
01	Ping Doha FDPS from RDS FDPS	OK / Not OK	OK / Not OK	
02	Ping RDS FDPS from Doha FDPS	OK / Not OK	OK / Not OK	
03	Check the link	Log in as root in rds fdps Type in netstat –tnap, should show the link "established" OK / Not OK	Check the link "established" OK / Not OK	

2. Test 002 Flight plan:

Test 002 – Flight Plan – *sent from UAE ACC*				
No	***Test description***	***UAE ACC FDPS***	***Doha FDPS***	***Remarks***
01	Send TST001 (OMAA-OTBD)	OK / Not OK	OK / Not OK	
02	Send TST002 (OMAM-OTBH)	OK / Not OK	OK / Not OK	

03	Send TST003 (OMAA-OEJN)	OK / Not OK	OK / Not OK	
04	Send TST004 (OOMS – OTBD)	OK / Not OK	OK / Not OK	
05	Send TST005 (OTBD – OMDB)	OK / Not OK	OK / Not OK	
06	Send TST006 (OTBH – OMDM)	OK / Not OK	OK / Not OK	
07	Send TST007 (OEJN-OMAD)	OK / Not OK	OK / Not OK	
08	Send TST008 (OTBD – OOMS)	OK / Not OK	OK / Not OK	

3. Test 003 Preliminary Activation Message (PAC):

Test 003 – Preliminary Activation Message (PAC) ***Doha FDPS to UAE ACC FDPS***				
No	***Test description***	***UAE ACC FDPS***	***Doha FDPS***	***Remarks***
01	Activate start up TST005 (OTBD – OMDB) SSR code:0001 RFL : FPL level	SFPL moves from Pending to Workqueue with SSR code, check CFL field OK / Not OK	OK / Not OK	
02	Change SSR of TST005 New SSR Code:0002	SFPL colour changes to Green in Workqueue OK / Not OK	OK / Not OK	
03	Change ATYP of TST005 New ATYP: A332	SFPL colour changes to Green in Workqueue OK / Not OK	OK / Not OK	
04	Change ADES of TST005 New ADES: VOMM	New FPL is created by OLDI with new ADES	OK / Not OK	

		OK / Not OK		
05	Change RFL of TST005 New RFL: 370	Manual coordination requires OK / Not OK	OK / Not OK	
06	Change COP of TST005 New COP : NADAM	SFPL colour changes to Green in Workqueue OK / Not OK	OK / Not OK	
07	Check LAM messages	OK / Not OK	OK / Not OK	

4. Test 004 ABI & ACT messages:

Test 004 – Advance Boundary Information Message (ABI), Activate Message (ACT) ***Doha FDPS to UAE ACC FDPS***				
No	***Test description***	***UAE ACC FDPS***	***Doha FDPS***	***Remarks***
01	Enter estimate for TST007 (OEJN – OMAD) SSR code:0003 Exit level : 190 ETX : Current time	SFPL moves from Pending to Work queue with SSR code, check ETN and CFL field OK / Not OK	OK / Not OK	
02	Change SSR of TST007 New SSR code: 0004	SFPL colour changes to Green if in Workqueue OK / Not OK	OK / Not OK	
03	Change ATYP of TST007 New ATYP: C130	SFPL colour changes to Green if in Workqueue OK / Not OK	OK / Not OK	

04	Change ADES of TST007 New ADES: OMAL	New FPL is created by OLDI with new ADES OK / Not OK	OK / Not OK	
05	Change XFL of TST007 New XFL: 170	SFPL colour changes to Green if in Workqueue OK / Not OK	OK / Not OK	
06	Change COP of TST007 New COP: NAMLA	SFPL colour changes to Green if in Workqueue OK / Not OK	OK / Not OK	
07	when ETX is Current time + 5 minutes the ACT should be automatically generated	No change, SFPL already in active. OK / Not OK	OK / Not OK	
08	Change ATYP of TST007 New ATYP:C30J	No change, SFPL already in active Expect manual coordination. OK / Not OK	Flag to notify ATCA that ATYP change is not communicated OK / Not OK	
09	Check LAM messages	OK / Not OK	OK / Not OK	

5. <u>Test 005 ABI & ACT messages:</u>

Test 005 – Advance Boundary Information Message (ABI), Activate Message (ACT) *UAE ACC FDPS to Doha FDPS*				
No	***Test description***	***UAE ACC FDPS***	***Doha FDPS***	***Remarks***
01	Enter estimate for TST004 (OOMS – OTBD) SSR code:0005 Exit level : 180 ETN : Current time COPX: MEKMA	SFPL moves from Pending to Active with SSR code A new ABI wiil be generated OK / Not OK	SSR, ETN and Entry level and entry point should be automatically updated for the concerned flight and flagged for ATCA OK / Not OK	

02	Change SSR of TST004 New SSR code: 0006	A new ABI wiil be generated OK / Not OK	SSR should be automatically updated for the concerned flight and flagged for ATCA OK / Not OK	
03	Change ATYP of TST004 New ATYP: AT45	A new ABI wiil be generated OK / Not OK	ATYP should be automatically updated for the concerned flight and flagged for ATCA OK / Not OK	
04	Change ADES of TST004 New ADES: OTBH	A new ABI wiil be generated OK / Not OK	ADES should be automatically updated for the concerned flight and flagged for ATCA OK / Not OK	
05	Change XFL of TST004 New XFL: 160	A new ABI wiil be generated OK / Not OK	Entry level should be automatically updated for the concerned flight and flagged for ATCA OK / Not OK	
06	Change COP of TST004 New COP: BUNDU	A new ABI wiil be generated OK / Not OK	COP should be automatically updated for the concerned flight and flagged for ATCA OK / Not OK	
07	when ETX is Current time + 5 minutes the ACT should be automatically generated	ACT will be generated OK / Not OK	OK / Not OK	
08	Change ATYP of TST004 New ATYP: B738	An indication to ATCO to show that this change needs to be manually coordinated	Expect manual coordination OK / Not OK	
09	Check LAM messages	OK / Not OK	OK / Not OK	

6. <u>Test 006 PAC, ABI, ACT without FPL for UAE:</u>

Test 006 – PAC, ABI, ACT – No FPL for UAE ***Doha FDPS to UAE ACC FDPS***				
No	***Test description***	***UAE ACC FDPS***	***Doha FDPS***	***Remarks***
01	Activate start up TST009 (OTBD – OMAA) SSR code:0007 ATYP:A320 XFL: 210 COP: NAMLA	SFPL is created by PAC. OLDI window pops up. OK / Not OK	Automatically generates PAC message OK / Not OK	
02	Enter estimate for TST010, (OEJN – OOMS) SSR Code: 0010 ATYP: B738 XFL: 230 COP: BUNDU ETX: Current time	SFPL is created by ABI. OLDI window pops up. OK / Not OK	Automatically generates ABI message OK / Not OK	
03	Enter estimate for TST011, (OEJN – OOMS) SSR Code: 0011 ATYP: B738 XFL: 230 COP: BUNDU ETX: Current time + 3 mins	SFPL is created by ACT. OLDI window pops up. OK / Not OK	Automatically generates ACT message OK / Not OK	
04	Check LAM messages	OK / Not OK	OK / Not OK	

7. Test 007 ABI, ACT without FPL for Doha:

Test 007 – ABI, ACT – No FPL for Doha FDPS ***UAE ACC FDPS to Doha FDPS***				
No	***Test description***	***UAE ACC FDPS***	***Doha FDPS***	***Remarks***
01	Enter estimate for TST012, (TACT – OTBH) SSR Code: 0012 ATYP: K35R XFL: 220 COP: TOSNA ETN: Current time	Automatically generates ABI message OK / Not OK	FPL created by ABI and flags for ATCA attention. OK / Not OK	
02	Enter estimate for TST013, (OOMS – OTBD) SSR Code: 0013 ATYP: A321 XFL: 180 COP: MEKMA ETN: Current time -20 mins	Automatically generates ACT message OK / Not OK	FPL created by ACT and flags for ATCA attention. OK / Not OK	
03	Check LAM messages	OK / Not OK	OK / Not OK	

8. Test 008 Duplicate SSR:

Test 008 – Duplicate SSR				
No	***Test description***	***UAE ACC FDPS***	***Doha FDPS***	***Remarks***
01	Create a FPL TST020 at Doha with SSR 0014 to block SSR code Enter estimate data for TST002 at UAE RDS (OMAM – OTBH) SSR Code : 0014 ETN: Current time XFL: 180	OLDI message window pops up with a question mark on TST002 OK / Not OK	Duplicate SSR should be duly flagged to operator OK / Not OK	
02	Create a FPL TST030 at UAE RDS with SSR 0015 to block SSR code Enter estimate data for TST008 at Doha (OTBD – OOMS) SSR Code : 0015 ETN: Current time XFL: 230	OLDI message window pops up with a question mark on TST008 OK / Not OK	Duplicate SSR should be duly flagged to operator OK / Not OK	

9. Test 009 Communication failure:

Test 009 – Communication failure				
No	***Test description***	***UAE ACC FDPS***	***Doha FDPS***	***Remarks***
01	Simulated link failure	OLDI messages that are not coordinated will move from Active to Workqueue OK / Not OK	Failures should be duly flagged to operator OK / Not OK	

10. Test Flight plans:

a. TST001 (OMAA – OTBD)

(FPL-TST001-IS
-A320/M-SDFHIJLOPRVWY/SD
-OMAA0655
-N0415F220 TOXIG Z994 VEBAT P899 MEKMA DCT NAJMA DCT DOH
-OTBD0030 OEDF
-PBN/A1B1C1D1L1O1S1 NAV/GPSRNAV DOF/13???? REG/A6TST
EET/OMAE0008 OBBB0020 SEL/ARKQ OPR/TST RMK/TEST FPL)

b. TST002 (OMAM – OTBH)

(FPL-TST002-IM
-C17/H-SGHJPRWXYZ/SD
-OMAM0820
-N0454F280 DCT MA270020 DCT MA285032 DCT DASLA Z994 BUNDU B415 DOH
DCT
-OTBH0032 OMAM
-PBN/A1B1C1D1L1O1S1 NAV/GPSRNAV DOF/13???? REG/A6TST
EET/OBBB0019 SEL/CFPR NAV/RNP10 RNAV1 RNAV5 RNVD1E2A1
RMK/TEST FPL)

c. TST003 (OMAA – OEJN)

(FPL-TST003-IS
-A320/M-SDGHIJLPRWXY/S
-OMAA0800
-N0467F220 TOXIG Z994 BUNDU B415 DOH A415 KIA G782 RGB/N0461F360
UM309 RABTO G782 ASLAT DCT
-OEJN0201 OEMA
-PBN/A1B1C1D1L1O1S1 NAV/GPSRNAV DAT/SV DOF/13???? REG/A6TST
EET/OMAE0009 OBBB0021 OEJD0044 SEL/BMAR RMK/TCAS
EQUIPPED RMK/TEST FPL)

d. TST004 (OOMS – OTBD)

(FPL-TST004-IS
-A320/M-SDFHIJLOPRVWY/SD
-OOMS0655
-N0458F320 MCT L764 PAXIM P899 ITRAX ALN P899 DASLA/N0440F260 Z994
VEBAT/N0424F220 P899 MEKMA DCT NAJMA DCT DOH
-OTBD0057 OMAA
-PBN/A1B1C1D1L1O1S1 DAT/V NAV/TCAS DOF/13???? REG/A6TST
EET/OMAE0023 OBBB0047 SEL/GLEH RMK/TEST FPL)

e. TST005 (OTBD – OMDB)

(FPL-TST005-IS

-B738/M-SHPRWXYIGZ/S
-OTBD1230
-N0390F210 DOH L305 ITITA L308 DESDI DESDI4T
-OMDB0049 OMRK OMAL
-PBN/A1B1C1D1L1O1S1 NAV/RNAV1 RNAV5 RNP4 RNP10 RNP5
RNVD1E2A1 DOF/13???? REG/A6TST
EET/OMAE0015 SEL/HQER RMK/TEST FPL)

f. TST006 (OTBH – OMDM)

(FPL-TST006-IM
-C130/M-SHITUY/S
-OTBH1000
-N0311F150 UL305 ALSEM L305 ITITA L308 SHJ DCT
-OMDM0059 OBBI
-PBN/A1B1C1D1L1O1S1 NAV/RNAV1 RNAV5 RNP4 RNP10 RNP5
RNVD1E2A1 DOF/13???? REG/A6TST
EET/OMAE0020 RMK/TEST FPL)

g. TST007 (OEJN – OMAD)

(FPL-TST007-IN
-GLF4/M-SDGHIRVWXY/S
-OEJN0600
-N0458F210 JDW T532 KIA B418 ASPAN N318 XAKUM Q666 BOXAK DCT
-OMAD0212 OMAL
-PBN/A1B1C1D1L1O1S1 NAV/RNAV1 RNAV5 RNP4 RNP10 RNP5
RNVD1E2A1 DOF/13???? REG/A6TST EET/OBBB0113 OMAE0151
RMK/TEST FPL)

h. TST008 (OTBD – OOMS)

(FPL-TST008-IS
-A320/M-SDFHIJLOPRVWY/SD
-OTBD0630
-N0466F310 B415 AFNAN B415 ADV N685 LAKLU G216 MCT DCT
-OOMS0103 OMAL
-PBN/A1B1C1D1L1O1S1 NAV/RNAV1 RNAV5 RNP4 RNP10 RNP5
RNVD1E2A1 DOF/13???? REG/A6TST EET/OBBB0007 OMAE0012
OOMM0038 SEL/GLEH RMK/TEST FPL)

9. BILATERAL AGREEMENT TEMPLATE

Bilateral Agreement Template to be appended to the main Letter of Agreement (LoA) Template
Please choose the appropriate OLDI or AIDC.

NOTE:
This part of the LOA only to be used as guidance it is related to the Automatic data exchange either OLDI or AIDC which are attachments 1 and 2 respectively to Appendix C of the complete letter of agreement.

Appendix C (1)

Exchange of Flight Data

(With automatic data exchange)

Unit 1 **Unit 2**

Revision: xxxx

Effective: xx xxxx xxxx

Revised: xxx

C.1 General

C.1.1 **Basic Flight Plans**

Basic flight plan data should normally be available at both ATS Units.

C.1.2 **Current Flight Plan Data**

Messages, including current flight plan data, shall be forwarded by the transferring ATS unit to the accepting ATS unit either by automatic data exchange or by telephone to the appropriate sector/position.

C.1.2.1 Automatic Data Exchange.

The messages (List agreed message for OLD e.g. ABI/ACT/LAM/PAC/REV/MAC messages are exchanged between the two ATS units in accordance with Attachment 1 or Attachment 2 to Appendix C.

C.1.2.2 Verbal Estimates.

For conditions that are not supported by the automatic data exchange, verbal estimates will be exchanged.

A verbal estimate shall be passed to the appropriate sector at the accepting ATS unit at least value minutes prior, but not earlier than 30 minutes before the aircraft is estimated to pass the transfer of control point.

A verbal estimate shall contain:

a) Callsign.

Note: To indicate that the flight plan is available, the accepting ATS unit should state aircraft type and destination after having received the callsign.

b) SSR code:

Note: Normally, the notification of a SSR code indicates that the selection of that code by the aircraft was verified.

c) ETO for the appropriate COP as laid down in Appendix D to this LoA.

d) Cleared level, specifying climb or descent conditions if applicable, at the transfer of control point.

Requested level if different from cleared level.

e) Other information, if applicable.

Normally, verbal estimates will not be passed in parallel with ACT messages.

In all cases, verbally passed data shall take precedence over data exchanged automatically.

C.1.2.3 Failure of Automatic Data Exchange.

In the event of a failure which prevents the automatic transfer of data, the Supervisors shall immediately decide to revert to the verbal exchange of estimates.

After recovery from a system failure, the Supervisors shall agree as to when they will revert to automatic data exchange.

C.1.3 **Non-availability of Basic Flight Plan Data**

If the accepting ATS unit does not have basic flight plan data available, additional information may be requested from the transferring ATS unit to supplement the ACT message or a verbal estimate.

Within the context of RVSM, such additional information should include:

a. the RVSM approval status of the aircraft; and

b. whether or not a non-RVSM approved aircraft is a State aircraft.

C.1.4 **Revisions**

Any significant revisions to the flight data are to be transmitted to the accepting ATS unit. Time differences of value minutes or more are to be exchanged.

Any levels which different than describe in Appendix D of this LOA are subject to an Approval Request.

C.1.5 **Expedite Clearance and Approval Requests**

Whenever the minimum time of value minutes for a verbal estimate, or those prescribed in Attachment 1 to Appendix C for ACT messages, cannot be met, either an expedite clearance request, an approval request (*or a PAC)*, as appropriate, shall be initiated.

C.2 Means of Communications and their Use

C.2.1 **Equipment**

The following lines are available between Unit 1 and Unit 2:

Line Type	Amount	Additional Information
Data Line		
Telephone Lines		

"Additional Information" column should indicate if telephone lines meet the requirements for Direct Controller-Controller Voice Communication (DCCVC) or Instantaneous Direct Controller-Controller Voice Communication (ICCVC)

C.2.2 **Verbal Co-ordination**

All verbal communications between non-physically adjacent controllers should be terminated with the initials of both parties concerned.

Exchange of flight plan data, estimates and control messages by voice shall be carried out in accordance with the following tables:

C.2.2.1 Messages from Unit 1 to Unit 2.

Receiving Sector/COPs	Message	Position
Sector Name COPs	Flight Plan Data and Estimates	
	Control Messages, Expedite Clearances, Approval Requests and Revisions	
	Surveillance Co-ordination	

C.2.2.2 Messages from Unit 2 to Unit 1.

Receiving Sector/COPs	Message	Position
Sector Name COPs	Flight Plan Data and Estimates	
	Control Messages, Expedite Clearances, Approval Requests and Revisions	
	Surveillance Co-ordination	

C.3 Failure of Ground/Ground Voice Communications

C.3.1 Fall-Back Procedures for Co-ordination

To mitigate the effects of failures of direct speech circuits, both parties will establish and maintain dial-up facilities via PABX and ATC Voice Communications Systems (VCS) as follows:

Sector Name	Tel Number (For Both Units)

Stand-alone telephones with auto-dial facilities will be maintained as a second level of fall-back to cover the event of failure of PABX or VCS:

Sector Name	Tel Number (For Both Units)

C.3.2 Alternate Fall-Back Procedures for Co-ordination

In case of communications failure where the alternatives described in paragraph C.3.1 above are not available or practicable, pilots shall be instructed, at least 5 minutes prior to the transfer of control point, to pass flight data on the appropriate frequency of the accepting ATS unit for the purpose of obtaining an ATC entry clearance from the accepting ATS unit.

If the accepting ATS unit cannot issue an entry clearance to the pilot upon his initial contact, the pilot shall be instructed to inform the transferring ATS unit accordingly via RTF.

The transferring ATS unit shall hold the aircraft within its AoR and after a minimum of 10 minutes instruct the pilot to re-establish RTF contact with the accepting ATS unit.

This procedure shall be repeated until an onward clearance has been obtained from the accepting ATS unit.

C.4 Validity

This Appendix to the LoA takes effect on xxx xxxx xxxx and supersedes previous Appendix to Letter of arrangements between the Unit 1 and Unit 2.

Date:	Date:
______________________________	______________________________
Name	Name
Title	Title
Authority 1	Authority 2

Attachment 1 to Appendix C

Automatic Data Exchange related to OLDI

ABI/ACT/LAM messages are exchanged between the two ATS units in accordance with the table below:

Messages	COPs	Time and/or Distance Parameters	
		Messages from Unit 1 To Unit 2	Messages from Unit 1 To Unit 2
ABI			
ACT			
LAM			
REV			
PAC			
MAC			
LOF			
NAN			

Attachment 2 to Appendix C

Automatic Data Exchange related to AIDC

This is the Generic Template available in the PAN which also contain real sample agreement Auckland Oceanic – Brisbane ATS Centre and Auckland Oceanic – Nadi ATM Operations Centre

AIDC Procedures

1. The format of AIDC messages (*List messages used e.g. ABI, PAC, CDN, CPL, ACP, REJ, MAC, LAM and LRM)* are as defined by the Pan Regional (NAT and APAC) AIDC Interface Control Document (ICD) as amended from time to time, unless described otherwise in this LOA.
2. List messages not supported (*e.g. "EST, TOC, AOC* messages are not supported").
3. Acceptance of CPL or CDN message is approval of the flight's profile and requires no further voice communication (i.e. Non-Standard Altitudes, Block Altitudes, and Deviations).
4. (*Describe other procedures applicable to the use of AIDC for this LOA. Some examples are listed below)*
    a. *Example only. If there is any doubt with regard to the final coordination data, voice coordination should be used for confirmation.*
    b. *Example only. Receipt of a MAC message must not be interpreted as meaning that the flight plan has been cancelled. Voice coordination must be conducted by the transferring controller to confirm the status of the flight.*
    c. *Example only. Each facility should advise the other facility of any known equipment outage that affects AIDC. In the event of AIDC outage, voice communication procedures will apply.*
    d. *Example only. Truncation. Where route amendment outside the FIR is unavoidable.*
        i. *Terminate the route details at the farthest possible flight plan significant point of the flight and enter "T" immediately following this.*
        ii. *Without amending the originally received details, every effort is to be made to truncate the route at a minimum of one significant point beyond the adjacent FIR to provide an entry track in that FIR.*

AIDC Messages

(For each message used describe when it will be sent by each ATSU under the parameter column and use the Notes column to describe other applicable information for the message use by each ATSU. The data below provides an example of the type of information that could be incorporated.)

Messages	Parameter	Notes
ABI	***ATSU1*****:** Sends ABI approx. 80 minutes prior to boundary (73 minutes prior to the 50 nm expanded sector boundary). ***ATSU2:*** Sends ABI approx. 87 minutes prior to boundary (80 minutes prior to the 50 nm expanded sector boundary). (*Note: An updated ABI will not be sent once a CPL has been sent.)*	***ATSU1 : ATSU2*** *Updated ABI's will be sent automatically if there is any change to profile. ABI is sent automatically and is transparent to the controller. ABI automatically updates the receiving unit's flight data record.*

CPL	***ATSU1 : ATSU2*** *Send CPL messages approx. 37 minutes prior to the boundary (30 minutes prior to the 50 nm expanded sector boundary).*	***ATSU1 : ATSU2*** *CPL messages should be sent by the transferring controller in sufficient time to allow the completion of coordination at least 30 minutes prior to the boundary or 30 minutes prior to the aircraft passing within 50nmof the FIR boundary for information transfers.*
CDN	***ATSU1 : ATSU2*** *CDN messages are sent by either the transferring or receiving facility to propose a change once the coordination process has been completed, i.e., CPL sent and ACP received. CDN's must contain all applicable profile restrictions (e.g. weather deviations, speed assignment, block altitude). If the use of a CDN does not support this requirement, then verbal coordination is required.*	***ATSU1 : ATSU2*** *The APS will display a flashing "DIA" until receipt of ACP. If ACPJ not received within ten (10) minutes, controller is alerted with a message to the queue.* *CDN messages are not normally used for coordination of reroutes; however, with the receiving facilities approval a CDN may be used to coordinate a reroute on a critical status aircraft such as in an emergency.*
PAC	***ATSU1 : ATSU2*** *PAC messages will normally be sent when the time criteria from the departure point to the boundary is less than that stipulated in the CPL.*	***ATSU1 : ATSU2*** *Will respond to a PAC message with an ACP. PAC messages should be verbally verified with receiving facility.*
ACP	***ATSU1 : ATSU2***	***ATSU1 : ATSU2*** *The APS will display a flashing "DIA" until receipt of ACP. If ACP not received within ten (10) minutes, controller is alerted with a message to the queue.*
TOC	***ATSU1 : ATSU2*** *Not supported. Implicit hand in/off.*	
AOC	***ATSU1 : ATSU2*** *Not supported. Implicit hand in/off.*	
MAC	***ATSU1 : ATSU2*** *MAC messages are sent when a change to the route makes the other facility no longer the "next" responsible unit.*	***ATSU1 : ATSU2*** *Receipt of a MAC message must not be interpreted as meaning that the flight plan has been cancelled. Voice coordination must be conducted by the transferring controller to confirm the status of the flight.*
REJ	***ATSU1 : ATSU2*** *REJ messages are sent in reply to a CDN message when the request change is unacceptable*	***ATSU1 : ATSU2*** *REJ messages are sent only as a response to a CDN message.*

AIDC Messages

(For each message used describe when it will be sent by each ATSU under the parameter column and use the Notes column to describe other applicable information for the message use by each ATSU. The data below provides an example of the type of information that could be incorporated.)

Messages	Parameter	Notes
ABI	***ATSU1*:** Sends ABI approx. 80 minutes prior to boundary (73 min prior to the 50 nm expanded sector boundary). ***ATSU2:*** Sends ABI approx. 87 minutes prior to boundary (80 min prior to the 50 nm expanded sector boundary). (*Note: An updated ABI will not be sent once a CPL has been sent.)*	***ATSU1 : ATSU2*** *Updated ABI's will be sent automatically if there is any change to profile. ABI is sent automatically and is transparent to the controller. ABI automatically updates the receiving unit's flight data record.*
CPL	***ATSU1 : ATSU2*** *Send CPL messages approx 37 minutes prior to the boundary (30 minutes prior to the 50 nm expanded sector boundary).*	***ATSU1 : ATSU2*** *CPL messages should be sent by the transferring controller in sufficient time to allow the completion of coordination at least 30 minutes prior to the boundary or 30 minutes prior to the aircraft passing within 50nmof the FIR boundary for information transfers.*
CDN	***ATSU1 : ATSU2*** *CDN messages are sent by either the transferring or receiving facility to propose a change once the coordination process has been completed, i.e., CPL sent and ACP received. CDN's must contain all applicable profile restrictions (e.g. weather deviations, speed assignment, block altitude). If the use of a CDN does not support this requirement, then verbal coordination is required.*	***ATSU1 : ATSU2*** *The APS will display a flashing "DIA" until receipt of ACP. If ACPJ not received within ten (10) minutes, controller is alerted with a message to the queue.* *CDN messages are not normally used for coordination of reroutes; however, with the receiving facilities approval a CDN may be used to coordinate a reroute on a critical status aircraft such as in an emergency.*

PAC	***ATSU1 : ATSU2*** *PAC messages will normally be sent when the time criteria from the departure point to the boundary is less than that stipulated in the CPL.*	***ATSU1 : ATSU2*** *Will respond to a PAC message with an ACP. PAC messages should be verbally verified with receiving facility.*
ACP	***ATSU1 : ATSU2***	***ATSU1 : ATSU2*** *The APS will display a flashing "DIA" until receipt of ACP. If ACP not received within ten (10) minutes, controller is alerted with a message to the queue.*
TOC	***ATSU1 : ATSU2*** *Not supported. Implicit hand in/off.*	***ATSU1 : ATSU2***
AOC	***ATSU1 : ATSU2*** *Not supported. Implicit hand in/off.*	
MAC	***ATSU1 : ATSU2*** *MAC messages are sent when a change to the route makes the other facility no longer the "next" responsible unit.*	***ATSU1 : ATSU2*** *Receipt of a MAC message must not be interpreted as meaning that the flight plan has been cancelled. Voice coordination must be conducted by the transferring controller to confirm the status of the flight.*
REJ	***ATSU1 : ATSU2*** *REJ messages are sent in reply to a CDN message when the request change is unacceptable*	***ATSU1 : ATSU2*** *REJ messages are sent only as a response to a CDN message.*

10. IMPLEMENTATION PHASES

In line with ASBU Block 0 time lines, the AIDC/OLDI implementation shall be completed as per the MID Air Navigation Plan. In order to support and assist, the implementation could be accomplished in phases listed below. The actual targets set for the MID Region are in the MID Air Navigation Strategy.

<table>
<tr><td>Phase 1</td><td>OLDI/AIDC capable ATSUs should start implementation activities.
The activity should cover the following:
test activities
operator training
Revision of LoA
transition activities
implementation
post-implementation reviews
The ATSUs not capable of OLDI/AIDC should avail the facility of Standalone terminals with a planned implementation asap, and budget for full Integration with a planned implementation date of the MID Air Navigation Strategy.</td></tr>
<tr><td>Phase 2</td><td>The ATSUs using OLDI/AIDC in an Operational environment should assist other ATSUs to implement OLDI/AIDC
The OLDI/AIDC software is readily available therefore the ATSUs waiting for software upgrade should expect a software package asap. On receipt of it they should start implementation activities. The activity should cover the following:
test activities
operator training
Revision of LoA
transition activities
implementation
post-implementation reviews</td></tr>
<tr><td>Phase 3</td><td>All ATSUs are connected by Integrated OLDI/AIDC or Standalone terminals</td></tr>
</table>

- END -

State/Administration	Location of AIDC/OLDI end system	AIDC/OLDI Pair		AIDC/OLDI standard used	Target date of Implementation	Remarks
		Correspondent Location	Correspondent State/Administration			
1	2	3		4	5	6
Bahrain	Bahrain ACC	Jeddah ACC	Saudi Arabia	OLDI	Q2 2015	
	Bahrain ACC	Riyadh ACC	Saudi Arabia	OLDI	Q2 2015	
	Bahrain ACC	Dammam ACC	Saudi Arabia	OLDI	Q2 2015	
	Bahrain ACC	Doha ACC	Qatar	OLDI	Q2 2015	
	Bahrain ACC	Kuwait ACC	Kuwait	OLDI	Q2 2015	
	Bahrain ACC	SZC Abu Dhabi ACC	UAE	OLDI	Q4 2014	
	Bahrain ACC	Tehran ACC	Iran	OLDI	TBD	
Egypt	Cairo ACC Cairo Air Navigation Center (CANC)	Athens ACC	Greece	OLDI	Implemented	
	Cairo ACC	Jeddah ACC	Saudi Arabia	OLDI	Q2 2015	Implemented then suspended
	Cairo ACC	Khartoum ACC	Sudan	OLDI	Q4 2014	
	CAIRO ACC	Tripoli ACC	Libya	OLDI	Q2 2015	
	CAIRO ACC	Nicosia ACC	Cyprus	OLDI	TBD	
	CAIRO ACC	Amman ACC	Jordan	OLDI	TBD	

State/Administration	Location of AIDC/OLDI end system	AIDC/OLDI Pair		AIDC/OLDI standard used	Target date of Implementation	Remarks
		Correspondent Location	Correspondent State/Administration			
1	2	3		4	5	6
Iran	Tehran ACC	Bahrain ACC	Bahrain	OLDI	TBD	
	Tehran ACC	SZC Abu Dhabi ACC	UAE	OLDI	TBD	
	Tehran ACC	Ankara ACC	Turkey	OLDI	TBD	
	Tehran ACC	Kabul ACC	Afghanistan	TBD	TBD	
	Tehran ACC	Kuwait ACC	Kuwait	TBD	TBD	
	Tehran ACC	Baghdad ACC	Iraq	TBD	TBD	
	Tehran ACC	Turkmenistan ACC	Turkmenistan	TBD	TBD	
Iraq	Baghdad ACC	Kuwait ACC	Kuwait	OLDI	TBD	
	Baghdad ACC	Tehran ACC	Iran	OLDI	TBD	
	Baghdad ACC	Amman ACC	Jordan	OLDI	TBD	
	Baghdad ACC	Ankara ACC	Turkey	OLDI	TBD	
	Baghdad ACC			OLDI	TBD	
Jordan	Amman ACC	Jeddah ACC	Saudi Arabia	OLDI	Q2 2015	
	Amman ACC	Baghdad ACC	Iraq	OLDI	TBD	
	Amman ACC	Damascus ACC	Syria	OLDI	TBD	
	Amman ACC	Cairo ACC (CANC)	Egypt	OLDI	Q2 2015	
Kuwait	Kuwait ACC	Bahrain ACC	Bahrain	OLDI	Q2 2015	
	Kuwait ACC	Riyadh ACC	Saudi Arabia	OLDI	Q2 2015	

State/Administration	Location of AIDC/OLDI end system	AIDC/OLDI Pair		AIDC/OLDI standard used	Target date of Implementation	Remarks
		Correspondent Location	Correspondent State/Administration			
1	2	3		4	5	6
Lebanon	Beirut ACC Rafic Hariri Intl Airport	Cyprus ACC	Cyprus	OLDI	Implemented	
	Beirut ACC Rafic Hariri Intl Airport	Damascus ACC	Syria	OLDI	TBD	
Libya	Tripoli ACC	Tunis ACC	Tunis	OLDI/AIDC	TBD	
	Tripoli ACC	Malta ACC	Malta	OLDI/AIDC	TBD	
	Tripoli ACC	Cairo ACC	Egypt	OLDI/AIDC	TBD	
	Tripoli ACC	Khartoum ACC	Sudan	OLDI/AIDC	TBD	
	Tripoli ACC	Chad ACC	Chad	OLDI/AIDC	TBD	
	Benghazi ACC	Malta ACC	Malta	OLDI/AIDC	TBD	
	Benghazi ACC	Tripoli ACC	Libya	OLDI/AIDC	TBD	
Oman	Muscat ACC Muscat Intl AP	SZC Abu Dhabi ACC	UAE	OLDI	Q1 2015	
	Muscat ACC Muscat Intl AP	Jeddah ACC	Saudi Arabia	OLDI	Q2 2015	
	Muscat ACC Muscat Intl AP	Mumbai ACC	India	AIDC	Q2 2015	
	Muscat ACC Muscat Intl AP	Bahrain ACC	Bahrain	OLDI	Q2 2015	
	Muscat ACC Muscat Intl AP	Sanaa ACC	Yemen	TBD	TBD	

State/Administration	Location of AIDC/OLDI end system	AIDC/OLDI Pair		AIDC/OLDI standard used	Target date of Implementation	Remarks
		Correspondent Location	Correspondent State/Administration			
1	2	3		4	5	6
Qatar	Doha ACC	SZC Abu Dhabi ACC	UAE	OLDI	Implemented 2010	
	Doha ACC	Bahrain ACC	Bahrain	OLDI	TBD	
Saudi Arabia	Riyadh ACC	Jeddah ACC	Saudi Arabia	AIDC	Implemented 2012	
	Riyadh ACC	Dammam ACC	Saudi Arabia	AIDC	Implemented 2012	
	Jeddah ACC	Cairo ACC (CANC)	Egypt	OLDI	Q2 2015	
	Jeddah ACC	Amman ACC	Jordan	OLDI	Q2 2015	
	Jeddah ACC	SZC Abu Dhabi ACC	UAE	OLDI	Q2 2015	
	Jeddah ACC	Muscat	Oman	OLDI	Q2 2015	
	Jeddah ACC	Khartoum ACC	Sudan	OLDI	Q2 2015	
	Jeddah ACC	Sanaa ACC	Yemen	OLDI	TBD	
	Jeddah ACC					
	Jeddah ACC					
	Jeddah ACC					
Sudan	Khartoum ACC	Cairo ACC (CANC)	Egypt	AIDC/OLDI	Q3 2015	
	Khartoum ACC	Jeddah ACC	Saudi Arabia	AIDC/OLDI	Q2 2015	
	Khartoum ACC	N'Djamena ACC	Chad	AIDC	Implemented 2012	No Daily operations
	Khartoum ACC	Kigali ACC	Congo	AIDC	Implemented 2012	No Daily operations
	Khartoum ACC	Tripoli ACC	Libya	AIDC/OLDI	Q3 2015	

State/Administration	Location of AIDC/OLDI end system	AIDC/OLDI Pair		AIDC/OLDI standard used	Target date of Implementation	Remarks
		Correspondent Location	Correspondent State/Administration			
1	2	3		4	5	6
Syria	Damascus ACC	Beirut ACC	Lebanon			
	Damascus ACC	Amman ACC	Jordan			
	Damascus ACC	Baghdad ACC	Iraq			
UAE	SZC Abu Dhabi ACC	Abu Dhabi Int'l Airport	ADAC	OLDI V4.2	Implemented Apr2009	FMTP 2.0
	SZC Abu Dhabi ACC	Dubai Int'l Airport	DANS	OLDI V4.2	Implemented Jun 2012	FMTP 2.0
	SZC Abu Dhabi ACC	Sharjah Int'l Airport	Sharjah DCA	OLDI V4.2	Implemented Feb 2011	FMTP 2.0
	SZC Abu Dhabi ACC	Ras al Khaimah Int'l Airport	Ras al Khaimah DCA	OLDI V4.2	Implemented Mar 2011	FMTP 2.0
	SZC Abu Dhabi ACC	Al Ain Int'l Airport	ADAC	OLDI V4.2	Implemented Oct 2010	FMTP 2.0
	SZC Abu Dhabi ACC	Doha ACC	Qatar	OLDI V4.2	Implemented Jan 2010	FMTP 2.0
	SZC Abu Dhabi ACC	Jeddah ACC	Saudi Arabia	OLDI		
	SZC Abu Dhabi	Tehran ACC	Iran	OLDI		
	SZC Abu Dhabi	Muscat ACC	Oman	OLDI		
Yemen	Sanaa ACC	Jeddah ACC	Saudi Arabia		TBD	
	Sanaa ACC	Muscat ACC	Oman		TBD	
	Sanaa ACC	Djibouti ACC	Djibouti ACC		TBD	
	Sanaa ACC	Mogadishu ACC	Somalia		TBD	

Details of the ATM systems to support implementation

State	Focal point contact for AIDC/ OLDI	ATM System	Protocol and Version used	Number of adjacent ATSUs	Number of adjacent ATSUs connected by AIDC/ OLDI and type of connection	ATM System Capability		Current use		Planned Use		Intention of using AIDC only	Reasons and Remarks
						AIDC	**OLDI**	**AIDC**	**OLDI**	**AIDC**	**OLDI**		
Bahrain	Mr. Mohamed Ali Saleh masaleh@caa.gov.bh	Thales TopSky-C	OLDI 2.3 FMTP 2.0	7	None	☐	☐			☐	☐	No	OLDI to connect to neighbouring ATSUs
Egypt	Ahmed Abdel Rasoul raad_mourad@yahoo.com	TOPSKY (THALES) Support X25 Protocol only	OLDI V2.3 AIDC V2.0	7	1 OLDI	☐	☐		☐	☐	☐	No	OLDI in use to connect to EUR (Athens)
Iran	Mr. Sayed Mahmood & Mr. A. Khodaei mirsaeed@airport.ir, a-khodaei@cao.ir	Thales	OLDI	11	None		☐						OLDI messages are sent to Ankara

Iraq				5	none								
Jordan	Mr.Mohammad Al Rousan m.rousan@carc.gov.jo	Aircon 2100 Indra	OLDI 4.1 AIDC 2.0	5	none	☐	☐			☐	☐	No	Planned with Jeddah Q2 2015
Kuwait	HAMAD ALNASER And Naser Alhubail ha.alnaser@dgca.gov.kw , nj.alhubail@dgca.gov.kw	Aircon 2100 INDRA	OLDI v4.2 AIDC v3.0	3	none	☐	☐				☐	No	OLDI to connect to Bahrain and Riyadh
Lebanon				3	- 1 OLDI with Cyprus		☐				☐	No	OLDI in use to connect to EUR
Libya		Aircon 2000 Indra	OLDI 2.3 AIDC 2.0	7	None	☐	☐					No	Can connect with Sudan Chad and Egypt AIDC. OLDI Tunis Malta and Egypt

Oman	Mr. Ali Al Ajmi alihassan@caa.gov.om	Indra Itec	OLDI 4.1 AIDC 2.3	5	none	☐	☐					No	UAE Q1 2015 Jeddah Q2 2015 Mumbai Q1 2015
Qatar	Mr. Ahmed Al Eshaq ahmed@caa.gov.qa	Selex	OLDI V4.2 FMTP 2.0 AIDC 2.0	3	1	☐	☐		☐		☐		OLDI in use with UAE and planned for use with Bahrain
Saudi Arabia	Khaled Khodari kkhodari@gaca.gov.sa	PRISMA from COMSOFT	OLDI V4.2 FMTP 2.0 AIDC xx	11	- None - AIDC Connected between Riyadh and Jeddah	☐	☐	☐		☐	☐	No	AIDC for internal and OLDI for neighbouring units requests
Sudan	Mr. Abdulmonem Alshkaieh	TopSky	OLDI 4.3 AIDC 2.0	5	2	☐	☐	☐	☐	☐	☐	No	Both AIDC and OLDI to cater to neighbouring units requests
Syria				5	none								
UAE	Mr. Hamad Al Belushi	PRISMA from	OLDI V4.2	10	-3 two-way integrated		☐		☐		☐	No	OLDI already in use with 6 partners and all neighbouring

	hbelushi@szc.gcaa.ae	COMSOFT	FMTP 2.0		OLDI connections -2 two-way standalone OLDI -1 one-way Standalone OLDI connection Total 6 OLDI connections								ATSUs are OLDI capable
Yemen				3	none								

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1. Implementation Plan

In line with ASBU Block 0 time lines, the AIDC/OLDI implementation shall be completed by 2017. The implementation should be accomplished in phases. The actual targets set for the MID Regional are in the MID Air Navigation Strategy.

Phase 1 2014 - 2015	• OLDI/AIDC capable ATSUs should start implementation activities with a planned implementation date of Q4 2014. The activity should cover the following: ➢ test activities ➢ operator training ➢ Revision of LoA ➢ transition activities ➢ implementation ➢ post-implementation reviews • The ATSUs not capable of OLDI/AIDC should avail the facility of Standalone OLDI terminals with a planned implementation date of Q1 2015 , and budget full OLDI Integration for FY2015 with a planned implementation date of Q2 2016.
Phase 2 2015 - 2016	• The ATSUs using OLDI/AIDC in an Operational environment should assist other ATSUs to implement OLDI/AIDC • The OLDI/AIDC software is readily available therefore the ATSUs waiting for software upgrade should expect a software package by Q4 2015. On receipt of it they should start implementation activities with a planned implementation date of Q2 2016. The activity should cover the following: ➢ test activities ➢ operator training ➢ Revision of LoA ➢ transition activities ➢ implementation ➢ post-implementation reviews
Phase 3 2017	• All ATSUs are connected by Integrated OLDI/AIDC or Standalone OLDI terminals

- END -

In line with ASBU Block 0 time lines, the AIDC/OLDI implementation shall be completed by 2017. The implementation should be accomplished in phases. The actual targets set for the MID Regional are in the MID Air Navigation Strategy.

<table>
<tr><td>Phase 1

2014 - 2015</td><td>OLDI/AIDC capable ATSUs should start implementation activities with a planned implementation date of Q4 2014. The activity should cover the following:
➢ test activities
➢ operator training
➢ Revision of LoA
➢ transition activities
➢ implementation
➢ post-implementation reviews
The ATSUs not capable of OLDI/AIDC should avail the facility of Standalone OLDI terminals with a planned implementation date of Q1 2015 , and budget full OLDI Integration for FY2015 with a planned implementation date of Q2 2016.</td></tr>
<tr><td>Phase 2

2015 - 2016</td><td>The ATSUs using OLDI/AIDC in an Operational environment should assist other ATSUs to implement OLDI/AIDC
The OLDI/AIDC software is readily available therefore the ATSUs waiting for software upgrade should expect a software package by Q4 2015. On receipt of it they should start implementation activities with a planned implementation date of Q2 2016. The activity should cover the following:
➢ test activities
➢ operator training
➢ Revision of LoA
➢ transition activities
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2017</td><td>All ATSUs are connected by Integrated OLDI/AIDC or Standalone OLDI terminals</td></tr>
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