INTERNATIONAL CIVIL AVIATION ORGANIZATION

AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP (APIRG) PROJECT COORDINATION COMMITTEE FIRST MEETING (APCC/1)

PROJECT: GROUND/GROUND COM PROJECT.1

Coordinator: South Africa
DOMAIN: IIM
(Infrastructure & Information Management)

AFI REGION	**PROJECT DESCRIPTION**	**REFERENCE IIMSG / Area of Routing # All**	
Sub-domain	**Title of the Project**	**Start**	**End**
Aeronautical Communication (COM) (ICAO Facilitator: *WACAF/ESAF ROs/CNS*	**GROUND/GROUND COMMUNICATION :** Implementation of Ground/ground communication aimed at ensuring traffic coordination between air traffic controllers **Project-Team Coordinator***: South Africa* **Project Team Experts (13):** *Côte d'Ivoire, Cameroon, Ghana, Seychelles, Senegal, Kenya, Mauritania, ASECNA, IATA, Nigeria, Botswana, Togo, Uganda*	Month/ Year	Month/ Year
Objectives	In the framework of the technologies Roadmap for Communication defined in the GANP and the AFI strategy, aassist States in the implementation of : a) Air Traffic Service /Direct Speech (**ATS/DS**) in accordance with the operational requirements of Annex 11, Air Traffic Service Chapter 6, Doc 4444 Procedures for air Navigation services Chapter 10 and the provision of Annex 10 Volume b) Air Traffic Service Interfacilities Data Communication (**AIDC**) in accordance with the requirements of Annexes 10 and 11 and the relevant supporting guidance documents (Doc 44, Doc 9694...) c) Voice over Internet Protocol (**VoIP**)		
Scope	The provision of coordination service between Air traffic controllers will cover all Air Traffic control Centers involved in the provision of air avigation service for international civil aviation. The implementation scheme will be in accordance with the requirements of the provision of Aeronautical fixed Service (AFS) as defined by the AFI Air Navigation Plan (AFI/RAN Abuja 1997).		

AFI REGION	PROJECT DESCRIPTION	REFERENCE IIMSG / Area of Routing # All	
Sub-domain	**Title of the Project**	**Start**	**End**
Metrics	**a) ATS/DS:** Number of ATS/DS circuits implemented: **X** - *Average availability of ATS/DS circuits : **X%*** **b) AIDC:** ▪ Number of AIDC systems installed: **X** - *% of ATS units with AIDC: **X%*** ▪ Number of AIDC interconnections implemented, - *% of ACCs with AIDC systems interconnection implemented: **X*** **c) VoIP:** ▪ Number of VoIP systems installed: **X** - *% of ATS units with* VoIP*: **X%*** ▪ Number of VoIP interconnections implemented, - *% of ACCs with* VoIP *systems interconnection implemented: **X %***		
	Ground/Ground coordination communication supporting enhanced aeronautical operational safety, capacity and efficiency		
Strategy	All tasks will be carried out by COM experts nominated by AFI States participating in the project, led by the Project-Team Coordinator and under the supervision of the Project Facilitators (ROs/CNS, Dakar and Nairobi) through the IIM SG working methodology. Upon completion of the tasks, the results will be sent to the Project Facilitators as a final document for submission to, and if necessary approval by the APIRG Projects Coordination Committee (**APCC**). For the purpose of collaborative decision-making, meetings will be held with the areas involved.		
Rationale/Justification	a) **ATS/DS**: The requirements for ATS/DS are contained in the AFI Air Navigation Plan (ANP), FASID **Table CNS 1D** (ATS/DS Plan) and ATS/DS circuits have been implemented in accordance with these AFI Rationalized Plan. Significant improvements are noted, notably with the implementation of aeronautical satellite telecommunications. However the non- availability of ATS/DS encountered from time to time results from the obsolescence of some VSAT technologies b) **AIDC**: The introduction of automated Air Traffic Management systems in the region associated with surveillance data processing systems has paved the way to the automation of the transfer and coordination of Air Traffic between air traffic centers. AIDC appears to complement ATS/DS service and will gradually play the first role in traffic coordination. c) **VoIP**: In the AFI region the ATS/DS Network is based on point to point circuits and the absence of an ATS voice switching and signaling system does not facilitate the automation of backup links for ATS/DS. The implementation of VoIP will bring more flexibility and increase the availability of vocal, coordination communication.		
Related Projects	All APIRG projects specifically related to: ✓ PIA2-Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration (B0-FICE) ✓ PIA3-Increased effectiveness of ground based safety nets (B0-SNET) ✓ PIA3- Air Traffic Situational Awareness(ATSA) (B0-ASEP)		

Project Deliverables	Relationship with the Regional Performance-Objectives (RPOs/PFFs) and ASBU Modules	KPI	Responsible	Status of Implementation[1]	Date of Delivery	Comments
Air Traffic Service Direct Speech (ATS/DS)						
Implementation/Activation of ATS/DS Circuits	**AFI B0-FICE** **AFI B0-ASEP** **AFI B0-SNET** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		December 2017	
Restauration/Improvement of the availability of ATS/DS Failing circuits	**AFI B0-FICE** **AFI B0-ASEP** **AFI B0-SNET** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		December 2017	
Air Traffic Service Interfacilities Data communication (AIDC)						
Teleconferences, Workshops/Seminars, meetings (French and English) on AIDC systems operation and their implementation scheme	**AFI B0-FICE** **AFI B0-ASEP** **AFI B0-SNET** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		TBD	
Implementation/interconnection and operation of AIDC systems	**AFI B0-FICE** **AFI B0-ASEP** **AFI B0-SNET** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		TBD	
Assessment/Reporting on the operation of AIDC systems and operation	**AFI B0-FICE** **AFI B0-ASEP** **AFI B0-SNET** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		TBD	
Voice over Internet protocol (VoIP)						

AFI REGION	PROJECT DESCRIPTION				REFERENCE IIMSG / Area of Routing # All	
Sub-domain	**Title of the Project**				**Start**	**End**
Teleconferences, Workshops/Seminars, meetings (French and English) on VoIP systems operation and their implementation scheme	**AFI B0-FICE** **AFI B0-ASEP** **AFI B0-SNET** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		TBD	
Implementation/interconnection and operation of VoIP systems	**AFI B0-FICE** **AFI B0-ASEP** **AFI B0-SNET** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		TBD	
Assessment/Reporting on the operation of VoIP systems and operation	**AFI B0-FICE** **AFI B0-ASEP** **AFI B0-SNET** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		TBD	
Detailed guidance provided to States not complying with the AFI AFS Plan	**AFI B0-FICE** **AFI B0-ASEP** **AFI B0-SNET** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		TBD	
List of States with ATS/DS, AIDC and VoIP, implemented	**AFI B0-FICE** **AFI B0-ASEP** **AFI B0-SNET** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		TBD	
Resources needed	✓ Adequate Human Resource to be appointed by States ✓ Funds to conduct meetings, Workshops, Seminars Missions and to translate reports, regional guides and manuals. Likewise, participants must be given facilities to participate in teleconferences and coordination meetings. ✓ Funds for meetings with project Team Members in order to assess the results and propose corrective actions. States could use their human resources to conduct the foreseen COM tests and monitoring, and, if necessary, cover the financial costs, since the experience gained will result in an improvement of their own systems.					

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Grey *Task not started yet*
Green *Activity being implemented as scheduled*
Yellow *Activity started with some delay, but will be implemented on time*
Red *Activity not implemented on time; mitigation measures are required*

PROJECT: GROUND/GROUND COM PROJECT.2

Coordinator: South Africa
DOMAIN: IIM
(Infrastructure & Information Management)

AFI REGION	**PROJECT DESCRIPTION**	**REFERENCE IIMSG / Area of Routing # All**	
Sub-domain	**Title of the Project**	**Start**	**End**
Aeronautical Communication (COM) (ICAO Facilitator: *WACAF/ESAF ROs/CNS*	**GROUND/GROUND COMMUNICATION :** Implementation of Ground/ground communication aimed at ensuring operational traffic data flow and Information management (**FPLs, OPMETS, NOTAM**) **Project-Team Coordinator***: South Africa* **Project Team Experts (13):** *Côte d'Ivoire, Cameroon, Ghana, Seychelles, Senegal, Kenya, Mauritania, ASECNA, IATA, Nigeria, Botswana, Togo, Uganda*	Month/ Year	Month/ Year
Objectives	In the framework of the technologies Roadmap for Communication defined in the GANP and the AFI strategy assist States in the implementation of : d) Aeronautical Fixed Service Network (**AFTN**) e) Air Traffic Service Message Handling System (**AMHS**); in accordance with the operational requirements of **Annex 3** Aeronautical Meteorology, **Annex 10 Volume II** Aeronautical telecommunication, Annex 11, Air Traffic Service, **Annex 15** Aeronautical Information Service, and the relevant supporting guidance documents (**Doc 9896** Manual for the ATN using IPS Standards and Protocols, Doc **9880**, Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (**ATN**) using ISO/OSI Standards and Protocols **Doc 9694** Manuel on Air Traffic Services Data link Applications		
Scope	The exchange of aeronautical time sensitive operational data will cover all Air Traffic control Centers involved in the provision of air avigation service for international civil aviation. The implementation scheme will be in accordance with the requirements of the provision of Aeronautical fixed Service (AFS) as defined by the AFI Air Navigation Plan (AFI/RAN Abuja 1997).		
Metrics	**d) AFTN:** Number of AFTN circuits implemented: **X** - *Average availability of AFTN circuits : **X%*** **e) AMHS:** ▪ Number of AMHS systems installed: **X** - *% of ATS units with AMHS: **X%*** ▪ Number of AMHS interconnections implemented, - *% of ACCs with AMHS systems interconnection implemented: **X***		
Outcome	Ground/Ground coordination communication supporting enhanced aeronautical operational safety, capacity and efficiency		
Strategy	All tasks will be carried out by COM experts nominated by AFI States participating in the project, led by the Project-Team Coordinator and under the supervision of the Project Facilitators (ROs/CNS, Dakar and Nairobi) through the IIM SG working		

AFI REGION	PROJECT DESCRIPTION				REFERENCE IIMSG / Area of Routing # All	
Sub-domain	**Title of the Project**				**Start**	**End**
	methodology. Upon completion of the tasks, the results will be sent to the Project Facilitators as a final document for submission to, and if necessary approval by the APIRG Projects Coordination Committee (**APCC**). For the purpose of collaborative decision-making, meetings will be held with the areas involved.					
Justification	b) **AFTN**: The requirements for AFTN are contained in the AFI Air Navigation Plan (ANP), FASID **TABLE CNS 1A** (AFTN Plan) and AFTN circuits have been implemented in accordance with this AFI Rationalized Plan. Significant improvements are noted, notably with the implementation of aeronautical satellite telecommunications. However the non- availability of AFTN encountered from time to time results from the obsolescence of some VSAT technologies b) **AMHS**: The introduction of automated Air Traffic Management systems in the region associated with surveillance data processing systems with possible automation of the transfer and coordination of Air Traffic between air traffic centers require an available digital ground/ground communication system. In the other hand the requirements of aeronautical information and aeronautical meteorological data exchange rely on the availability of a bit oriented digital message handling system with enough capacity of transportation, switching and buffering. The implementation of AMHS will bring more flexibility and increase the availability aeronautical data flow in the framework of a System Wide Information Management (**SWIM**) coordination communication.					
Related Projects	All APIRG projects specifically related to: ✓ PIA2-Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration (**B0-FICE**) ✓ PIA3-Increased effectiveness of ground based safety nets (**B0-SNET**) ✓ PIA3- Air Traffic Situational Awareness(ATSA) (**B0-ASEP**)					

Project Deliverables	**Relationship with the Regional Performance-Objectives (RPOs/PFFs) and ASBU Modules**	**KPI**	**Responsible**	**Status of Implementation**[2]	**Date of Delivery**	**Comments**
Aeronautical Fixed Service (AFTN)						
Restauration/Improvement of the availability of AFTN Failing circuits	**AFI B0-FICE** **AFI B0-ASEP** **AFI B0-SNET** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		December 2017	

AFI REGION	PROJECT DESCRIPTION				REFERENCE IIMSG / Area of Routing # All	
Sub-domain	**Title of the Project**				**Start**	**End**
Implementation/Activation of AFTN Circuits	**AFI B0-FICE** **AFI B0-ASEP** **AFI B0-SNET** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		December 2017	
Air Traffic Service Message Handling System (AMHS)						
Teleconferences, Workshops/Seminars, meetings (French and English) on AMHS systems operation and their implementation scheme	**AFI B0-FICE** **AFI B0-ASEP** **AFI B0-SNET** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		TBD	
Implementation/interconnection and operation of AMHS systems	**AFI B0-FICE** **AFI B0-ASEP** **AFI B0-SNET** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		TBD	
Assessment/Reporting on the operation of AMHS systems and operation	**AFI B0-FICE** **AFI B0-ASEP** **AFI B0-SNET** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		TBD	
Detailed guidance provided to States not complying with the AFI AFS Plan	**AFI B0-FICE** **AFI B0-ASEP** **AFI B0-SNET** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		TBD	
List of States with AFTN and AMHS, implemented	**AFI B0-FICE** **AFI B0-ASEP** **AFI B0-SNET** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		TBD	

AFI REGION	PROJECT DESCRIPTION	REFERENCE IIMSG / Area of Routing # All	
Sub-domain	**Title of the Project**	**Start**	**End**
Resources needed	✓ Adequate human Resources to be appointed by States ✓ Funds to conduct meetings, Workshops, Seminars Missions and to translate reports, regional guides and manuals. Likewise, participants must be given facilities to participate in teleconferences and coordination meetings. ✓ Funds for meetings with project Team Members in order to assess the results and propose corrective actions. States could use their human resources to conduct the foreseen COIM tests and monitoring, and, if necessary, cover the financial costs, since the experience gained will result in an improvement of their own systems.		

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[1] *Grey* *Task not started yet*
Green *Activity being implemented as scheduled*
Yellow *Activity started with some delay, but will be implemented on time*
Red *Activity no*

PROJECT: AIR/GROUND COM PROJECT

Coordinator: South Africa
DOMAIN: IIM
(Infrastructure & Information Management)

AFI REGION	**PROJECT DESCRIPTION**	**REFERENCE IIMSG / Area of Routing # All**	
Sub-domain	**Title of the Project**	**Start**	**End**
Aeronautical Communication (COM) (ICAO Facilitator: *WACAF/ESAF ROs/CNS*	**GROUND/GROUND COMMUNICATION :** Implementation of Air/Ground communication aimed at ensuring Air traffic control **Project-Team Coordinator***: South Africa* **Project Team Experts (13):** *Côte d'Ivoire, Cameroon, Ghana, Seychelles, Senegal, Kenya, Mauritania, ASECNA, IATA, Nigeria, Botswana, Togo, a, Uganda*	Month/ Year	Month/ Year
Objectives	In the framework of the technologies Roadmap for Communication defined in the GANP and the AFI strategy assist States in the implementation of Aeronautical Mobile Service through : f) High Frequency/Very High Frequency (**HF**/**VHF**) voice Communication g) High Frequency/Very High Frequency Data link communication (**HF/VHF DL**) h) Controller/Pilot Data Link Communication (**CPDLC**) In accordance with the operational requirements of ICAO Annex 10 Volumes II & III Aeronautical Telecommunication, Annex 11 Air Traffic Service and the relevant supporting guidance documents (Doc 4444 Procedures for Air Navigation Service (PANS--ATM) Doc 9694 Manuel on Air Traffic Services Data link Applications, Doc **10037** Global Operational Data Link Document (**GOLD**)		
Scope	The provision of air/ground communication between Pilots and ATCOs will cover all Airspaces and Air Traffic control Centers involved in the provision of air avigation service for international civil aviation. The implementation scheme will be in accordance with the requirements of the provision of Aeronautical mobile Service (AMS) as defined by the AFI Air Navigation Plan (AFI/RAN Abuja 1997).		
Metrics	**f) HF/VHF Voice & Data Link:** Number of Routes covered by HF/VHF communication : **X** - *Average availability of HF/VHF voice : **X%*** Number of HF/VHH DL station implemented - *Average availability of HF/VHF DL : **X%*** **g) CPDLC:** ▪ Number of ATCs with CPDLC systems installed: **X** ▪ *Average availability of CPDLC Links :* **X%**		
Outcome	Air/Ground communication supporting enhanced aeronautical operational safety, capacity and efficiency		
Strategy	All tasks will be carried out by COM experts nominated by AFI States participating in the project, led by the Project-Team Coordinator and under the supervision of the Project Facilitators (ROs/CNS, Dakar and Nairobi) through the IIM SG working methodology. Upon completion of the tasks, the results will be sent to the Project		

AFI REGION	PROJECT DESCRIPTION	REFERENCE IIMSG / Area of Routing # All	
Sub-domain	**Title of the Project**	**Start**	**End**
	Facilitators as a final document for submission to, and if necessary approval by the APIRG Projects Coordination Committee (**APCC**). For the purpose of collaborative decision-making, meetings will be held with the areas involved.		
Rationale/Justification	a) **HF/VHF Voice**: The requirements for HF/VHF are contained in the AFI Air Navigation Plan (ANP), FASID **TABLE CNS 2A** (**Aeronautical Mobile Service and Aeronautical Mobile Satellite service-AMS &AMSS** and Stations circuits have been implemented in accordance with this AFI Air Navigation Plan. Significant improvements are noted, notably with the implementation of aeronautical satellite telecommunications. However the non- availability of Remote VHF encountered from time to time results from the obsolescence of some VSAT technologies. b) **HF/VHF and Data Link:** The regional requirements for HF/VHF Data Link remain to be updated by the project Team c) **CPDLC:** The introduction of datalink communication in the region associated with surveillance data processing systems with possible automation of the transfer and coordination of Air Traffic between air traffic centers require an available digital air/ground communication system. The implementation of CPDLC will bring more accuracy in the exchanged messages and increase the availability of message exchanges between ATCOs and pilots.		
Related Projects	All APIRG projects specifically related to: ✓ PIA1-Improve Traffic flow through Runway Sequencing (AMAN/DMAN)- **B0-RSEQ** ✓ PIA1-Increased Runway Throughput through optimized Wake Turbulence Separation **- B0-WAKE** ✓ PIA1- Improved Airport Operations through Airport – **B0-ACDM** ✓ PIA2- Service Improvement through Digital Aeronautical Information Management- **B0-DIAM** ✓ PIA2-Meteorological information supporting enhanced operational efficiency and safety- **B0- MET** ✓ PIA3-Air Traffic Situational Awareness(ATSA)- **B0- ASEP** ✓ PIA3-Improved Operations through Enhanced En-Route Trajectories- **BO-FRTO** ✓ PIA3-Improved flow performance through planning based on Network-wide view- **B0-NOPS**. ✓ PIA3- Improved access to optimum Flight levels through Climb/Descent Procedures using ADS-B- **B0-OPF** ✓ PIA4- Improved Safety and Efficiency through the initial application of Data Link En-Route- **B0-TBO**. ✓ PIA4-Improved flexibility and Efficiency in Decent provides (CDO) - **B0-CDO.** ✓ PIA4-Improved Flexibility and Efficiency Departure profiles-Continuous Climb Operations (CCO)-**B0-CCO**		

Project Deliverables	Relationship with the Regional Performance-Objectives (RPOs/PFFs) and ASBU Modules	KPI	Responsible	Status of Implementation[3]	Date of Delivery	Comments
HF/VHF/CPDLC						
Implementation of HF &VHF stations (Voice & data Link)	**AFI B0-ASEP** **AFI B0-FRTO** **AFI B0-CDO** **AFI B0-CCO** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		December 2019	
Implementation/Operation of CPDLC Circuits	**AFI B0-ASEP** **AFI B0-FRTO** **AFI B0-CDO** **AFI B0-CCO.** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		December 2019	
Teleconferences, Workshops/Seminars, meetings (French and English) on VHF/CPDLC systems operation and their implementation scheme	**AFI B0-ASEP** **AFI B0-FRTO** **AFI B0-CDO** **AFI B0-CCO** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		TBD	
Implementation/sharing and operation of Remote VHF systems	**AFI B0-ASEP** **AFI B0-FRTO** **AFI B0-CDO** **AFI B0-CCO** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		TBD	
Assessment/Reporting on the operation of Air ground communication systems and operation	**AFI B0-ASEP** **AFI B0-FRTO** **AFI B0-CDO** **AFI B0-CCO** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		TBD	
Detailed guidance provided to States not complying with the AFI AMS Plan	**AFI B0-ASEP** **AFI B0-FRTO** **AFI B0-CDO** **AFI B0-CCO** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		TBD	

AFI REGION	PROJECT DESCRIPTION				REFERENCE IIMSG / Area of Routing # All	
Sub-domain	**Title of the Project**				**Start**	**End**
List of States with VHF and CPDLC , implemented	**AFI B0-ASEP** **AFI B0-FRTO** **AFI B0-CDO** **AFI B0-CCO** **PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI COM Project Team Leader		TBD	
Resources needed	✓ Adequate human resources to be appointed by States ✓ Funds to conduct meetings, Workshops, Seminars Missions and to translate reports, regional guides and manuals. Likewise, participants must be given facilities to participate in teleconferences and coordination meetings. ✓ Funds for meetings with project Team Members in order to assess the results and propose corrective actions. States could use their human resources to conduct the foreseen COIM tests and monitoring, and, if necessary, cover the financial costs, since the experience gained will result in an improvement of their own systems.					

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Grey *Task not started yet*
Green *Activity being implemented as scheduled*
Yellow *Activity started with some delay, but will be implemented on time*
Red *Activity not implement*

PROJECT: RADIONAVIGATION & GNSS PROJECT

Coordinator: Cameroon
DOMAIN: IIM
(Infrastructure & Information Management)

AFI REGION	**PROJECT DESCRIPTION**	**REFERENCE IIMSG / Area of Routing # All**	
Sub-domain	**Title of the Project**	**Start**	**End**
Aeronautical Communication (COM) (ICAO Facilitator: *WACAF/ESAF ROs/CNS*	**RADO NAVIGATION AIDS & GNSS :** Implementation of Conventional Nav'Aids and GNSS (Core and Augmented) aimed at enabling the implementation of PBN **Project-Team Coordinator***: Cameroon* **Project Team Experts (8):** *Senegal, IATA, ASECNA, Kenya, Mauritania, South Africa, Uganda, Côte d'Ivoire,*	Month/ Year	Month/ Year
Objectives	In the framework of the technologies Roadmap for Navigation defined in the GANP and the AFI strategy assist States in the implementation of Aeronautical Navigation Service by the effective implementation of : i) Aeronautical conventional Radio Navigation Systems (**VOR, DME, ILS**) j) Global Navigation Satellite systems (GNSS-core and augmented),in accordance with the operational requirements of ICAO **Annex 10** Volumes I Annex 11 Air Traffic Service and the relevant supporting guidance documents (Doc **Doc 8071** Manual on Testing of Radio Navigation Aid, **Doc 9849** Global Navigation Satellite System (GNSS) Manual.		
Scope	The provision of aeronautical Radio Navigation and Global Navigation Satellite Systems to aircraft will cover all Airspaces and all phases of flights. The implementation scheme will be in accordance with the requirements of the provision of Aeronautical Radio Navigation Service (ARNS) as defined by the AFI Air Navigation Plan (AFI/RAN Abuja 1997).		
Metrics	**h) Conventional Nav'Aids:** Number of En-Route conventional radio navigation stations (VOR, DMEs) implemented : **X** - *Average availability of VOR & DMEs stations : **X%*** Number of Approach and landing radio navigation stations (**LOC/Glide/DMEs**) implemented: X - *Average availability of LOC/Glide/DMEs: **X%*** **i) GNSS:** ▪ Number of FIRs with National Regulation on GNSS promulgated: **X** ▪ *% fleet operating GNSS En-Route* ▪ Number of Aerodrome with Augmented GNSS Systems (**ABAS/GBAS/SBAS**) implemented ▪ *% fleet operating Augmented GNSS in Approach and landing phases*		
Outcome	Radio navigation and Global Navigation Satellite system supporting enhanced aeronautical operational safety, capacity and efficiency in particular the operation of PBN		
Strategy	All tasks will be carried out by NAV experts nominated by AFI States participating in the project, led by the Project-Team Coordinator and under the supervision of the Project Facilitators (ROs/CNS, Dakar and Nairobi) through the IIM SG working methodology. Upon completion of the tasks, the results will be sent to the Project		

AFI REGION	PROJECT DESCRIPTION		REFERENCE IIMSG / Area of Routing # All	
Sub-domain	**Title of the Project**		**Start**	**End**
	Facilitators as a final document for submission to, and if necessary approval by the APIRG Projects Coordination Committee (**APCC**). For the purpose of collaborative decision-making, meetings will be held with the areas involved.			
Rationale/Justification	d) **Conventional Radio Navigation**: The requirements for Conventional Nav'Aids are contained in the AFI Air Navigation Plan (ANP), FASID **TABLE CNS 3** (Radio Navigation Aids and GNSS in support of the PBN Implementation); conventional Radionavigation stations have been implemented in accordance with this AFI Air Navigation Plan. e) **GNSS:** The operation of core GNSS En-route in continental remote and oceanic airspaces will enable the implementation of Air Nav and RNP and facilitated the implementation of PBN with all its expected benefits. The implementation of augmented GNSS in coordination with user requirements will bring more opportunity of landing systems and increase availability, accuracy and flexibility for approach and landing operation.			
Related Projects	All APIRG projects specifically related to: ✓ PIA 1- Optimization of Approach Procedures Including Vertical Guidance - **B0 – APTA** ✓ PIA 3-Improved Operations through Enhanced En-Route Trajectories- **BO-FRTO** ✓ PIA 4-Improved flexibility and Efficiency in Decent provides (CDO) - **B0-CDO.** ✓ PIA 4-Improved Flexibility and Efficiency Departure profiles-Continuous Climb Operations (CCO)-**B0-CCO**			

Project Deliverables	**Relationship with the Regional Performance-Objectives (RPOs/PFFs) and ASBU Modules**	**KPI**	**Responsible**	**Status of Implementation**[4]	**Date of Delivery**	**Comments**
Conventional Nav'Aids & GNSS						
Implementation of VOR/DMEs/ILSs	**AFI B0 – APTA** **AFI B0-FRTO** **AFI B0-CDO** **AFI B0-CCO** **PFF-CNS**		✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader		December 20179	
Implementation of Augmented GNSS (ABAS/GBAS/SBAS)	**AFI B0 – APTA** **AFI B0-FRTO** **AFI B0-CDO** **AFI B0-CCO** **PFF-CNS**		✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader		December 20179	

AFI REGION	PROJECT DESCRIPTION				REFERENCE IIMSG / Area of Routing # All	
Sub-domain	**Title of the Project**				**Start**	**End**
Operation of conventional Nav'Aids and GNSS systems	**AFI B0 – APTA** **AFI B0-FRTO** **AFI B0-CDO** **AFI B0-CCO** **PFF-CNS**		✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader		TBD	
Teleconferences, Workshops/Seminars, meetings (French and English) on Nav'aids and GNSSS systems operation and their implementation scheme	**AFI B0 – APTA** **AFI B0-FRTO** **AFI B0-CDO** **AFI B0-CCO** **PFF-CNS**		✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader		TBD	
Assessment/Mitigation of GNSS vulnerabilities	**AFI B0 – APTA** **AFI B0-FRTO** **AFI B0-CDO** **AFI B0-CCO** **PFF-CNS**		✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader		continuous	
Assessment/Reporting on the operation of Air ground communication systems and operation of Nav'Aids and GNSS systems	**AFI B0 – APTA** **AFI B0-FRTO** **AFI B0-CDO** **AFI B0-CCO** **PFF-CNS**		✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader		TBD	
Detailed guidance provided to States not complying with the AFI Navigation Plan	**AFI B0-ASEP** **AFI B0-FRTO** **AFI B0-CDO** **AFI B0-CCO** **PFF-CNS**		✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader		TBD	
List of States with Conventional Nav'aids and GNSS systems , implemented	**AFI B0-ASEP** **AFI B0-FRTO** **AFI B0-CDO** **AFI B0-CCO** **PFF-CNS**		✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader		TBD	

AFI REGION	PROJECT DESCRIPTION	REFERENCE IIMSG / Area of Routing # All	
Sub-domain	**Title of the Project**	**Start**	**End**
Resources needed	✓ Adequate Human Resources to be appointed by States ✓ Funds to conduct meetings, Workshops, Seminars Missions and to translate reports, regional guides and manuals. Likewise, participants must be given facilities to participate in teleconferences and coordination meetings. ✓ Funds for meetings with project Team Members in order to assess the results and propose corrective actions. States could use their human resources to conduct the foreseen COIM tests and monitoring, and, if necessary, cover the financial costs, since the experience gained will result in an improvement of their own systems.		

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Grey *Task not started yet*
Green *Activity being implemented as scheduled*
Yellow *Activity started with some delay, but will be implemented on time*
Red *Activity not implemented on time; mitigation measures are required*

PROJECT: PROTECTION OF SPECTRUM & CNS INFRASTRUCTURE PROJECT

Coordinator: Cameroon
DOMAIN: IIM
(Infrastructure & Information Management)

AFI REGION	**PROJECT DESCRIPTION**	**REFERENCE IIMSG / Area of Routing # All**	
Sub-domain	**Title of the Project**	**Start**	**End**
Aeronautical Communication (COM) (ICAO Facilitator: *WACAF/ESAF ROs/CNS*	**PROTECTION OF SPECTRUM AND CNS/ATM INFRSTRUCTURE:** Development of policies, systems to protect Aeronautical spectrum and CNS infrastructures **Project-Team Coordinator***: Cameroon* **Project Team Experts (8):** *Senegal, IATA, ASECNA, Kenya, Mauritania, South Africa, Uganda, Côte d'Ivoire,*	Month/ Year	Month/ Year
Objectives	In the framework of the technologies Roadmap for Spectrum defined in the GANP and the AFI strategy, assist States sustain adequate resources for CNS &ATM systems operations by the effective development and implementation of relevant policies for the protection of : k) The Aeronautical Radio Frequency spectrum l) Aeronautical Communication, Navigation, Surveillance and Air Traffic Management systems and infrastructures, in accordance with the operational requirements of ICAO **Annex 10** Volumes V Telecommunication, Annex 11 Air Traffic Service and the relevant supporting guidance documents (Doc. 9718Handbook on Radio Frequency Spectrum Requirements for Civil Aviation Volumes I & II).		
Scope	The provision of adequate spectrum to aeronautical CNS and ATM services will cover all airspaces involve all phases of flights and all ATCs. The insurance of the electronic protection of CNS/ATM systems is currently a big subject challenging all the security of the ATM community. The implementation schemes will be in accordance with the requirements of the provision of Aeronautical) spectrum as defined in the Handbook on Radio Frequency Spectrum Requirements for Civil Aviation (Doc. 9718), the forthcoming relevant document under development by the ICAO Communication Panel and the provision of the AFI Air Navigation Plan (AFI/RAN Abuja 1997).		
Metrics	**j) Provision and protection of Adequate frequency band:** ▪ Number of State having submitted ICAO position to ITU WRC to their National Authority of Regulation of Telecommunication for support: **X** - *% of States with effective support of the National Authority of Regulation of Telecommunication to ICAO Position for ITU WRC : **X%*** **k) Security of CNS/ATM systems** ▪ Number of ATCs with security system implemented: **X** ▪ *% ATM/CNS infrastructure with protection policies and systems defined and implemented:* **X%**		
Outcome	Protected Radio Frequency Spectrum and CNS/ATM infrastructure supporting enhanced aeronautical operational safety, capacity and efficiency		
Strategy	All tasks will be carried out by NAV experts nominated by AFI States participating in the project, led by the Project-Team Coordinator and under the supervision of the		

AFI REGION	PROJECT DESCRIPTION					REFERENCE IIMSG / Area of Routing # All	
Sub-domain	**Title of the Project**					**Start**	**End**
	Project Facilitators (ROs/CNS, Dakar and Nairobi) through the IIM SG working methodology. Upon completion of the tasks, the results will be sent to the Project Facilitators as a final document for submission to, and if necessary approval by the APIRG Projects Coordination Committee (**APCC**). For the purpose of collaborative decision-making, meetings will be held with the areas involved.						
Rationale/Justification	f) **Protection of Radio frequency Spectrum**: The requirements for the protection of aeronautical radio frequency spectrum are currently challenged by non-aeronautical user resulting in case of severe interferences that can jeopardize the safe provision of air navigation safety g) **Protection of CNS/ATM Infrastructures:** The emerging technologies widely introduced in the Aeronautical CNS/ATM safety of life related infrastructure are challenging risk of hacking that must be properly and continuously assessed and mitigated.						
Related Projects	All APIRG PIAs and projects						
Project Deliverables	**Relationship with the Regional Performance-Objectives (RPOs/PFFs) and ASBU Modules**	**KPI**	**Responsible**	**Status of Implementation[5]**	**Date of Delivery**	**Comments**	
Protection of Spectrum and CNS/ATM Infrastructure							
Submission of ICAO Position to WRC-19 to National Authority of Regulation of Telecommunication	**All Modules PFF-CNS**		✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader		As soon as available		
Development of policies for the Protection of CNS & ATM Infrastructure	**All Modules PFF-CNS**		✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader		December 2017		
Teleconferences, Workshops/Seminars, meetings (French and English) on Spectrum and systems protection	**All Modules PFF-CNS**		✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader		TBD		

AFI REGION	PROJECT DESCRIPTION				REFERENCE IIMSG / Area of Routing # All	
Sub-domain	**Title of the Project**				**Start**	**End**
Assessment/Mitigation of systems vulnerabilities	**All Modules PFF-CNS**		✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader		continuous	
Assessment/Reporting on the protection of spectrum and CNS/ATM Infrastructure	**All Modules PFF-CNS**		✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader		TBD	
Detailed guidance provided to States not complying with the AFI Navigation Plan	**All Modules PFF-CNS**		✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader		TBD	
List of States with Protection measures , implemented	**All Modules PFF-CNS**		✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader		TBD	
Resources needed	✓ Adequate Human Resources to be appointed by States ✓ Funds to conduct meetings, Workshops, Seminars Missions and to translate reports, regional guides and manuals. Likewise, participants must be given facilities to participate in teleconferences and coordination meetings. ✓ Funds for meetings with project Team Members in order to assess the results and propose corrective actions. States could use their human resources to conduct the foreseen NAV tests and monitoring, and, if necessary, cover the financial costs, since the experience gained will result in an improvement of their own systems.					

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PROJECT: SURVEILLANCE PROJECT

Coordinator:
DOMAIN: IIM
(Infrastructure & Information Management)

AFI REGION	**PROJECT DESCRIPTION**	**REFERENCE IIMSG / Area of Routing # All**	
Sub-domain	**Title of the Project**	**Start**	**End**
Aeronautical Communication (COM) (ICAO Facilitator: *WACAF/ESAF ROs/CNS*	**GROUND/GROUND COMMUNICATION :** Implementation of Surveillance systems aimed at improving air traffic situational awareness **Project-Team Coordinator***: Cote d'Ivoire* **Project Team Experts (11): S***outh Africa, Ghana, Cameroon, Ghana, Senegal, Nigeria, Mauritania, Seychelles, IATA, ASECNA, Uganda*	Month/ Year	Month/ Year
Objectives	In the framework of the technologies Roadmap for Surveillance defined in the GANP and the AFI strategy, assist States in the implementation of : a) Secondary Surveillance Radar Mode S (**SSR**) in accordance with the operational requirements of Annex 11, Air Traffic Service, Doc 4444 Procedures for air Navigation services and the provision of Annex 10 Volume IV and its supporting Documents b) Automatic Dependent Surveillance Contract (**ADS-C**) c) Automatic Dependent Surveillance Broadcast (**ADS-B**) ground and space based d) Multilateration (**Mlat**)		
Scope	The provision of air traffic surveillance will cover all areas of routing and homogeneous traffic flow in the AFI Region and will adress all Centers involved in the provision of air avigation service for international civil aviation. The implementation scheme will be in accordance with the requirements of the provision of Aeronautical surveillance as defined by the AFI Air Navigation Plan (AFI/RAN Abuja 1997).		

AFI REGION	PROJECT DESCRIPTION	REFERENCE IIMSG / Area of Routing # All	
Sub-domain	**Title of the Project**	**Start**	**End**
Metrics	**l) SSR:** Number of SSR stations installed: **X** - *Average availability of SSR stations : **X%*** **m) ADS-C:** ▪ Number of ADS-C systems installed: **X** - *% of ATS units with ADS-C: **X%*** ▪ Number of ADS-C interconnections implemented, - *% of ACCs with ADS-C systems interconnection implemented: **X*** **n) ADS-B:** ▪ Number of ADS-B stations installed: **X** - *% of ATS units with* ADS-B*: **X%*** **o) Mlat:** ▪ Number of Mlat systems installed: **X** - *% of ATS units with Mlat: **X%*** ▪ Number of Mlat interconnections implemented, - *% of ACCs with Mlat systems interconnection implemented: X*		
Outcome	Surveillance service supporting enhanced aeronautical operational safety, capacity and efficiency		
Strategy	All tasks will be carried out by SUR experts nominated by AFI States participating in the project, led by the Project-Team Coordinator and under the supervision of the Project Facilitators (ROs/CNS, Dakar and Nairobi) through the IIM SG working methodology. Upon completion of the tasks, the results will be sent to the Project Facilitators as a final document for submission to, and if necessary approval by the APIRG Projects Coordination Committee (**APCC**). For the purpose of collaborative decision-making, meetings will be held with the areas involved.		
Justification	The requirements for surveillance systems (**SSR Mode S, ADS-C, ADS-B, Mlat)** are contained in the strategy of implementation of the surveillance systems in the AFI Region c) **SSR Mode S**: In continental airspace the provision of SSR Mode S will give the Air Traffic Centers the capacity to increase the surveillance of air traffic enhancing safety, capacity and efficiency d) **ADS-C:** The introduction of ADS-C in oceanic and continental remote airspaces will improve air navigation service by enabling the improvement of the space organization, the flexibility of routing. e) **ADS-B**: The introduction of ADS-B in continental airspace will provide the same level of service as given by SSR with cost effectiveness. ADS-B Space will combine the advantage of both ADS-C and SSR. f) **Mlat**: The introduction of Mlat will in the terminal areas supplement with cost effectiveness SSR Mode S		

AFI REGION	PROJECT DESCRIPTION					REFERENCE IIMSG / Area of Routing # All	
Sub-domain	**Title of the Project**					**Start**	**End**
Related Projects	All APIRG projects specifically related to: ✓ PIA3-Increased effectiveness of ground based safety nets (**B0-ASUR, B0 – SNET, B0-ASEP**) ✓ PIA4- Efficient Flight Path – Through Trajectory-based Operations (**B0- TBO**)						
Project Deliverables	**Relationship with the Regional Performance-Objectives (RPOs/PFFs) and ASBU Modules**	**KPI**	**Responsible**	**Status of Implementation[6]**		**Date of Delivery**	**Comments**
Secondary Surveillance Radar Mode S (SSR)							
Implementation of SSR Mode S	**AFI B0-ASUR, AFI B0 -SNET, AFI B0-ASEP AFI B0-ASEP AFI B0-SNET PFF-CNS**		✓ AFI SUR Project Coordinators ✓ AFI SUR Project Team Leader			December 2017	
Restauration/Improvement of the availability of SSR Systems	**AFI B0-ASUR, AFI B0 -SNET, AFI B0-ASEP AFI B0-ASEP AFI B0-SNET PFF-CNS**		✓ AFI SUR Project Coordinators ✓ AFI SUR Project Team Leader			December 2017	
Automatic Dependant Surveillance Contract (ADS-C)							
Implementation of ADS-C	**AFI B0-ASUR, AFI B0 -SNET, AFI B0-ASEP AFI B0-ASEP AFI B0-SNET PFF-CNS**		✓ AFI SUR Project Coordinators ✓ AFI SUR Project Team Leader				
Improvement of the availability of ADS-C Systems	**AFI B0-ASUR, AFI B0 -SNET, AFI B0-ASEP AFI B0-ASEP AFI B0-SNET PFF-CNS**		✓ AFI SUR Project Coordinators ✓ AFI SUR Project Team Leader				
Automatic Dependant Surveillance Broadcast (ADS-B)							

AFI REGION	PROJECT DESCRIPTION				REFERENCE IIMSG / Area of Routing # All	
Sub-domain	**Title of the Project**				**Start**	**End**
Implementation of ADS-B	**AFI B0-ASUR, AFI B0 -SNET, AFI B0-ASEP AFI B0-ASEP AFI B0-SNET PFF-CNS**		✓ AFI SUR Project Coordinators ✓ AFI SUR Project Team Leader			
Multilatération						
Implementation of Mlat	**AFI B0-ASUR, AFI B0 -SNET, AFI B0-ASEP AFI B0-ASEP AFI B0-SNET PFF-CNS**		✓ AFI SUR Project Coordinators ✓ AFI SUR Project Team Leader			
General SUR						
Implement Performance Based Surveillance (PBS) based on the Required Surveillance Performance (RSP)	**AFI B0-ASUR, AFI B0 -SNET, AFI B0-ASEP AFI B0-ASEP AFI B0-SNET PFF-CNS**		✓ AFI SUR Project Coordinators ✓ AFI SUR Project Team Leader			
Implementation of Surveillance Data Fusion (data sharing)	**AFI B0-ASUR, AFI B0 -SNET, AFI B0-ASEP AFI B0-ASEP AFI B0-SNET PFF-CNS**		✓ AFI SUR Project Coordinators ✓ AFI SUR Project Team Leader			
Teleconferences, Workshops/Seminars, meetings (French and English) on surveillance systems operation and their implementation scheme	**AFI B0-ASUR, AFI B0 -SNET, AFI B0-ASEP AFI B0-ASEP AFI B0-SNET PFF-CNS**		✓ AFI SUR Project Coordinators ✓ AFI SUR Project Team Leader		TBD	
Assessment/Reporting on the operation of Surveillance systems and operation	**AFI B0-ASUR, AFI B0 -SNET, AFI B0-ASEP AFI B0-ASEP AFI B0-SNET PFF-CNS**		✓ AFI COM Project Coordinators ✓ AFI SUR Project Team Leader		TBD	

AFI REGION	PROJECT DESCRIPTION				REFERENCE IIMSG / Area of Routing # All	
Sub-domain	**Title of the Project**				**Start**	**End**
Detailed guidance provided to States not complying with the AFI SUR Strategy	**AFI B0-ASUR, AFI B0 -SNET, AFI B0-ASEP AFI B0-ASEP AFI B0-SNET PFF-CNS**		✓ AFI SUR Project Coordinators ✓ AFI SUR Project Team Leader		TBD	
List of States with Surveillance systems implemented	**AFI B0-ASUR, AFI B0 -SNET, AFI B0-ASEP AFI B0-ASEP AFI B0-SNET PFF-CNS**		✓ AFI SUR Project Coordinators ✓ AFI SUR Project Team Leader		TBD	
Resources needed	✓ Adequate human ressouces to be appointed by States ✓ Funds to conduct meetings, Workshops, Seminars Missions and to translate reports, regional guides and manuals. Likewise, participants must be given facilities to participate in teleconferences and coordination meetings. ✓ Funds for meetings with project Team Members in order to assess the results and propose corrective actions. States could use their human resources to conduct the foreseen SUR tests and monitoring, and, if necessary, cover the financial costs, since the experience gained will result in an improvement of their own systems.					

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