



ICAO

DOMAIN: IIM (Infrastructure & Information Management)

PROJECT: RADIONAVIGATION & GNSS PROJECT

Coordinator: Cameroon

AFI REGION	PROJECT DESCRIPTION	REFERENCE IIMSG / Area of Routing # All	
Sub-domain	Title of the Project	Start	End
<p><i>Aeronautical Communication (COM)</i></p> <p>(ICAO Facilitator: WACAF/ESAF ROs/CNS)</p>	<p>RADO NAVIGATION AIDS & GNSS : Implementation of Conventional Nav' Aids and GNSS (Core and Augmented) aimed at enabling the implementation of PBN</p> <p>Project-Team Coordinator: <i>Cameroon</i></p> <p>Project Team Experts: <i>Cameroon, Senegal, IATA, ASECNA, Kenya, Mauritania, South Africa, Uganda, Côte d'Ivoire,</i></p>	<p>Month/ Year</p>	<p>Month/ Year</p>
<p>Objectives</p>	<p>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 :</p> <p>a) Aeronautical conventional Radio Navigation Systems (VOR, DME, ILS)</p> <p>b) 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.</p>		
<p>Scope</p>	<p>The provision of aeronautical Radio Navigation and Global Navigation Satellite Systems to aircraft will cover all Airspaces and all phases of flights.</p> <p>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).</p>		
<p>Metrics</p>	<p>a) Conventional Nav'Aids:</p> <p>Number of En-Route conventional radio navigation stations (VOR, DMEs) implemented : X</p> <p>- Average availability of VOR & DMEs stations : X%</p> <p>Number of Approach and landing radio navigation stations (LOC/Glide/DMEs) implemented: X</p> <p>- Average availability of LOC/Glide/DMEs: X%</p> <p>b) GNSS:</p> <ul style="list-style-type: none"> ▪ 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 		

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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 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	<p>a) 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.</p> <p>b) 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.</p>					
Related Projects	<p>All APIRG projects specifically related to:</p> <ul style="list-style-type: none"> ✓ 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 ¹	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		<ul style="list-style-type: none"> ✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader 		December 20179	

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Implementation of Augmented GNSS (ABAS/GBAS/SBAS)	AFI B0 – APTA AFI B0-FRTO AFI B0-CDO AFI B0-CCO PFF-CNS		<input checked="" type="checkbox"/> AFI NAV Project Coordinators <input checked="" type="checkbox"/> AFI NAV Project Team Leader		December 20179	
Operation of conventional Nav'Aids and GNSS systems	AFI B0 – APTA AFI B0-FRTO AFI B0-CDO AFI B0-CCO PFF-CNS		<input checked="" type="checkbox"/> AFI NAV Project Coordinators <input checked="" type="checkbox"/> AFI NAV Project Team Leader		TBD	
Teleconferences, Workshops/Seminars, meetings (French and English) on Nav'aids and GNSS systems operation and their implementation scheme	AFI B0 – APTA AFI B0-FRTO AFI B0-CDO AFI B0-CCO PFF-CNS		<input checked="" type="checkbox"/> AFI NAV Project Coordinators <input checked="" type="checkbox"/> 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		<input checked="" type="checkbox"/> AFI NAV Project Coordinators <input checked="" type="checkbox"/> 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		<input checked="" type="checkbox"/> AFI NAV Project Coordinators <input checked="" type="checkbox"/> 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		<input checked="" type="checkbox"/> AFI NAV Project Coordinators <input checked="" type="checkbox"/> 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		<input checked="" type="checkbox"/> AFI NAV Project Coordinators <input checked="" type="checkbox"/> AFI NAV Project Team Leader		TBD	

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Resources needed	<ul style="list-style-type: none"> ✓ 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. 		

- 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*