



ICAO

**INTERNATIONAL CIVIL AVIATION ORGANIZATION  
AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP (APIRG) PROJECT  
COORDINATION COMMITTEE FIRST MEETING (APCC/1)**

**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
<p align="center"><i>Aeronautical Communication (COM)</i></p> <p align="center">(ICAO Facilitator: <i>WACAF/ESAF ROs/CNS</i>)</p>	<p><b>RADO NAVIGATION AIDS &amp; GNSS</b> : Implementation of Conventional Nav' Aids and GNSS (Core and Augmented) aimed at enabling the implementation of PBN</p> <p><b>Project-Team Coordinator:</b> <i>Cameroon</i></p> <p><b>Project Team Experts (8):</b> <i>Senegal, IATA, ASECNA, Kenya, Mauritania, South Africa, Uganda, Côte d'Ivoire,</i></p>	<p align="center">Month/ Year</p>	<p align="center">Month/ Year</p>
<p align="center"><b>Objectives</b></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> <ul style="list-style-type: none"> <li>a) Aeronautical conventional Radio Navigation Systems (<b>VOR, DME, ILS</b>)</li> <li>b) Global Navigation Satellite systems (GNSS-core and augmented ),in accordance with the operational requirements of ICAO <b>Annex 10</b> Volumes I Annex 11 Air Traffic Service and the relevant supporting guidance documents (Doc <b>Doc 8071</b> Manual on Testing of Radio Navigation Aid, <b>Doc 9849</b> Global Navigation Satellite System (GNSS) Manual.</li> </ul>		
<p align="center"><b>Scope</b></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>		

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Metrics	<p>a) <b>Conventional Nav’Aids:</b></p> <p>Number of En-Route conventional radio navigation stations (VOR, DMEs) implemented : <b>X</b></p> <p>- <i>Average availability of VOR &amp; DMEs stations : X%</i></p> <p>Number of Approach and landing radio navigation stations (<b>LOC/Glide/DMEs</b>) implemented: <b>X</b></p> <p>- <i>Average availability of LOC/Glide/DMEs: X%</i></p> <p>b) <b>GNSS:</b></p> <ul style="list-style-type: none"> <li>▪ Number of FIRs with National Regulation on GNSS promulgated: <b>X</b></li> <li>▪ <i>% fleet operating GNSS En-Route</i></li> <li>▪ Number of Aerodrome with Augmented GNSS Systems (<b>ABAS/GBAS/SBAS</b>) implemented</li> <li>▪ <i>% fleet operating Augmented GNSS in Approach and landing phases</i></li> </ul>		
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 ( <b>APCC</b> ). For the purpose of collaborative decision-making, meetings will be held with the areas involved.		
Rationale/Justification	<p>a) <b>Conventional Radio Navigation:</b> The requirements for Conventional Nav’ Aids are contained in the AFI Air Navigation Plan (ANP), FASID <b>TABLE CNS 3</b> (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) <b>GNSS:</b> 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"> <li>✓ PIA 1- Optimization of Approach Procedures Including Vertical Guidance - <b>B0 – APTA</b></li> <li>✓ PIA 3-Improved Operations through Enhanced En-Route Trajectories- <b>BO-FRTO</b></li> <li>✓ PIA 4-Improved flexibility and Efficiency in Decent provides (CDO) - <b>B0-CDO.</b></li> <li>✓ PIA 4-Improved Flexibility and Efficiency Departure profiles-Continuous Climb Operations (CCO)-<b>B0-CCO</b></li> </ul>		

Project Deliverables	Relationship with the Regional Performance-Objectives (RPOs/PFFs) and ASBU Modules	KPI	Responsible	Status of Implementation <sup>1</sup>	Date of Delivery	Comments
<b>Conventional Nav'Aids &amp; GNSS</b>						
Implementation of VOR/DMEs/ILSs	<b>AFI B0 – APTA</b> <b>AFI B0-FRTO</b> <b>AFI B0-CDO</b> <b>AFI B0-CCO</b> <b>PFF-CNS</b>		✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader		December 2019	
Implementation of Augmented GNSS (ABAS/GBAS/SBAS)	<b>AFI B0 – APTA</b> <b>AFI B0-FRTO</b> <b>AFI B0-CDO</b> <b>AFI B0-CCO</b> <b>PFF-CNS</b>		✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader		December 2019	
Operation of conventional Nav'Aids and GNSS systems	<b>AFI B0 – APTA</b> <b>AFI B0-FRTO</b> <b>AFI B0-CDO</b> <b>AFI B0-CCO</b> <b>PFF-CNS</b>		✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader		TBD	
Teleconferences, Workshops/Seminars, meetings (French and English) on Nav'aids and GNSS systems operation and their implementation scheme	<b>AFI B0 – APTA</b> <b>AFI B0-FRTO</b> <b>AFI B0-CDO</b> <b>AFI B0-CCO</b> <b>PFF-CNS</b>		✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader		TBD	
Assessment/Mitigation of GNSS vulnerabilities	<b>AFI B0 – APTA</b> <b>AFI B0-FRTO</b> <b>AFI B0-CDO</b> <b>AFI B0-CCO</b> <b>PFF-CNS</b>		✓ 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	<b>AFI B0 – APTA</b> <b>AFI B0-FRTO</b> <b>AFI B0-CDO</b> <b>AFI B0-CCO</b> <b>PFF-CNS</b>		✓ AFI NAV Project Coordinators ✓ AFI NAV Project Team Leader		TBD	

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Detailed guidance provided to States not complying with the AFI Navigation Plan	<b>AFI B0-ASEP</b> <b>AFI B0-FRTO</b> <b>AFI B0-CDO</b> <b>AFI B0-CCO</b> <b>PFF-CNS</b>		<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	<b>AFI B0-ASEP</b> <b>AFI B0-FRTO</b> <b>AFI B0-CDO</b> <b>AFI B0-CCO</b> <b>PFF-CNS</b>		<input checked="" type="checkbox"/> AFI NAV Project Coordinators  <input checked="" type="checkbox"/> AFI NAV Project Team Leader		TBD	
<b>Resources needed</b>	<input checked="" type="checkbox"/> Adequate Human Resources to be appointed by States <input checked="" type="checkbox"/> 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. <input checked="" type="checkbox"/> 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*