

**NAM/CAR/SAM Workshop on the Development of the regulation for
the implementation of Automatic Dependent Surveillance – Broadcast (ADS-B)**
17-21 July 2023 / 17-21 julio de 2023

**ADS-B IMPLEMENTATION ACTION PLAN
PROJECT PLAN DEVELOPMENT**

ADS-B IMPLEMENTATION		
Why? the main purpose is that it provides a summary of the essence of the element for the operational elements, it provides information of the direct relationship of the performance.	What? description of what stakeholders can do with this element that could not be done before. This section is not intended to describe performance enhancement or benefits	How? additional information to improve the understanding of the element.
- Define Objective	- Define Stakeholders - Integrate all stakeholders in the project. - Define action plan. - Define benefits	- Case study - Technical evaluation - Risk analysis - Cost benefit - Business and Safety case - Schedule - Implementation Strategy - Others
Relationship of the performance (Key performance indicators)		
“What cannot be measured cannot be improved”		
KPI01 Departure punctuality KPI02 Taxi-out additional time KPI03 ATFM slot adherence KPI04 Filed flight plan en-route extension. KPI05 Actual en-route extension KPI06 En-route airspace capacity KPI07 En-route ATFM delay KPI08 Additional time in terminal airspace	KPI09 Airport peak capacity KPI10 Airport peak throughput KPI11 Airport throughput efficiency KPI12 Airport/Terminal ATFM delay KPI13 Taxi-in additional time KPI14 Arrival punctuality KPI15 Flight time variability KPI16 Additional fuel burn	KPI17 Level-off during climb KPI18 Level capping during cruise KPI19 Level-off during descent KPI20 Number of aircraft accidents KPI21 Number of runway incursions KPI22 Number of runway excursions KPI23 Number of airprox/TCAS alert/loss of separation/near midair collisions/midair collisions (MAC)
https://www4.icao.int/ganpportal/ASBU/KPI		

ADS-B ENABLES		
1. Infrastructure		
<i>Ground system infrastructure: The type of infrastructure to be implemented can depend on different factors (e.g., Terrain, operational requirements, coverage requirements, avionics compatibility, etc.)</i>		
Element	Technical Needs	Standards and technical information to incorporate in the analysis
ADS-B ground stations receive information from aircraft and transmit it to one or more Service	- Technical requirements - Evaluation terrain - Communication needs (main and backup needs) - Energy needs - Security - maintenance logistics - Others according with implementation	- ICAO Annex 10 Volume IV Chapter 2,3 and 5 - ICAO Doc. 9871 Technical Provisions for Mode S Services and Extended Squitter - RTCA/EUROCAE MOPS: DO-260/ED-102, DO-260A, or DO-260B/ED-102A EUROCAE ED-129, ED-129A or ED-129B - ICAO Doc. 9924 Aeronautical Surveillance Manual
Service Delivery Point(s) for ADS-B information	- Technical requirements - ATC integration protocols - Surveillance system purpose and scope - Definition of parameters contributing to quality of services - Components of an aeronautical surveillance system - Definition of parameters contributing to quality of services. - Monitoring System. - Surveillance data evaluation - ATC Alarms	- ICAO Doc. 9924 Aeronautical Surveillance Manual. - ICAO Doc. 4444 PANS ATM
Human Machine Interface (HMI) of the Air Traffic Controller Working Position (ATCo CWP)	- Integrate technical language. - Integrate in the HMI operational requirements. - Integrate HMI for technical needs.	- ICAO Doc. 9924 Aeronautical Surveillance Manual. - ICAO Doc. 4444 PANS ATM
2. Aircraft Avionics		
SSR Mode S transponder with extended squitter version 0, version 1 and version 2.	Three versions of ADS-B: - Version 0 = DO-260/ED-102 - Version 1 = DO-260A - Version 2 = DO-260B/ED-102A - Version 3= DO-260C/ED-102B	- ICAO Annex 10 Volume IV Chapter 2,3 and 5 - ICAO Doc. 9871 Technical Provisions for Mode S Services and Extended Squitter - RTCA/EUROCAE MOPS: DO-260/ED-102, DO-260A, or DO-260B/ED-102A - ICAO Doc. 9924 Aeronautical Surveillance Manual
Basic Aviation GNSS receiver with RAIM *Receiver autonomous integrity monitoring (RAIM)	Position source. Basic Aviation GNSS receiver with RAIM. RAIM. Receiver autonomous integrity monitoring (RAIM) provides integrity monitoring of GPS for aviation	- Technical performance requirements of either [E]TSO-C129, or [E]TSO-C196, or [E]TSO-C145/-C146. (Note that the US/Europe and equivalent ADS-B

	applications. In order for a GPS receiver to perform RAIM or fault detection (FD) function, a minimum of five visible satellites with satisfactory geometry must be visible to it	mandates require more – see FAA AC 20-165 or EASA CS-ACNS)
Training requirements implementation ADS-B	- Technical training - Operative training - Inspector training - Aircraft certification training - Other according with the different stakeholders and project scope. - Training basic on operational procedures - Others	ICAO Doc. 8071 Manual on Testing of Radio Navigation Aids. - Volume I - Testing of Ground-based Radio Navigation Systems - Volume II - Testing of Satellite-based Radio Navigation Systems - Volume III - Testing of Surveillance Radar Systems
Legislation/regulation	- CNS implementation Strategy - Rules - Technical information (data) - Operational procedures - Aircraft requirements	