



International Civil Aviation Organization

AFI VSAT/1-PPT/XX

Agenda Item 1: Use of VSAT technology in the AFI Region

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**First Meeting of Africa-Indian Ocean (AFI) VSAT Networks
Managers**

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Overview

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- > VSAT Networks
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Background

- The Limited Africa-Indian Ocean Regional Air Navigation Meeting of 1988 (LIM AFI RAN/1988) recommended feasibility studies on the use of satellite very small aperture terminals (VSAT) as a means to meet the requirement for efficient and reliable communications in the AFI Region (*Recommendation 7/8*). It also acknowledged the importance of the satellite communications project developed for Central and Western Africa (*Recommendation 7/9*).

AFI VSAT Networks

- As a follow up to LIM AFI RAN 1988 recommendations, a VSAT project (known as AEROSATEL) was implemented in early 1990s and thereafter expanded to cover other Central and Western African States as well as Southern African and Indian Ocean States to form today's **AFI Satellite Telecommunications Network (AFISNET)**.
- A similar project was implemented in early 2000s by **South African Development Community States (SADC VSAT/1)**. A new generation of this network (**SADC VSAT/2**) was launched in 2008 together with the inauguration of a new VSAT network designed for **North-Eastern African States (NAFISAT)**.
- At the same time, an interregional network involving African, European and South American States, the **Central Atlantic FIRs Satellite Telecommunications Network (CAFSAT)**, was implemented to cater for communications requirements between South Atlantic area control centres.

AFI VSAT Networks

- The existing VSAT Networks having been developed by different grouping of States at different epochs are characterized by a number of conceptual and technical similarities and dissimilarities.
- Working arrangements include administrative arrangements (supervision, cost recovery mechanism), technical arrangements (personnel, maintenance), and network management (monitoring and control).
- A supervisory committee has been established for each VSAT network to oversee their performance

AFI VSAT Network Services

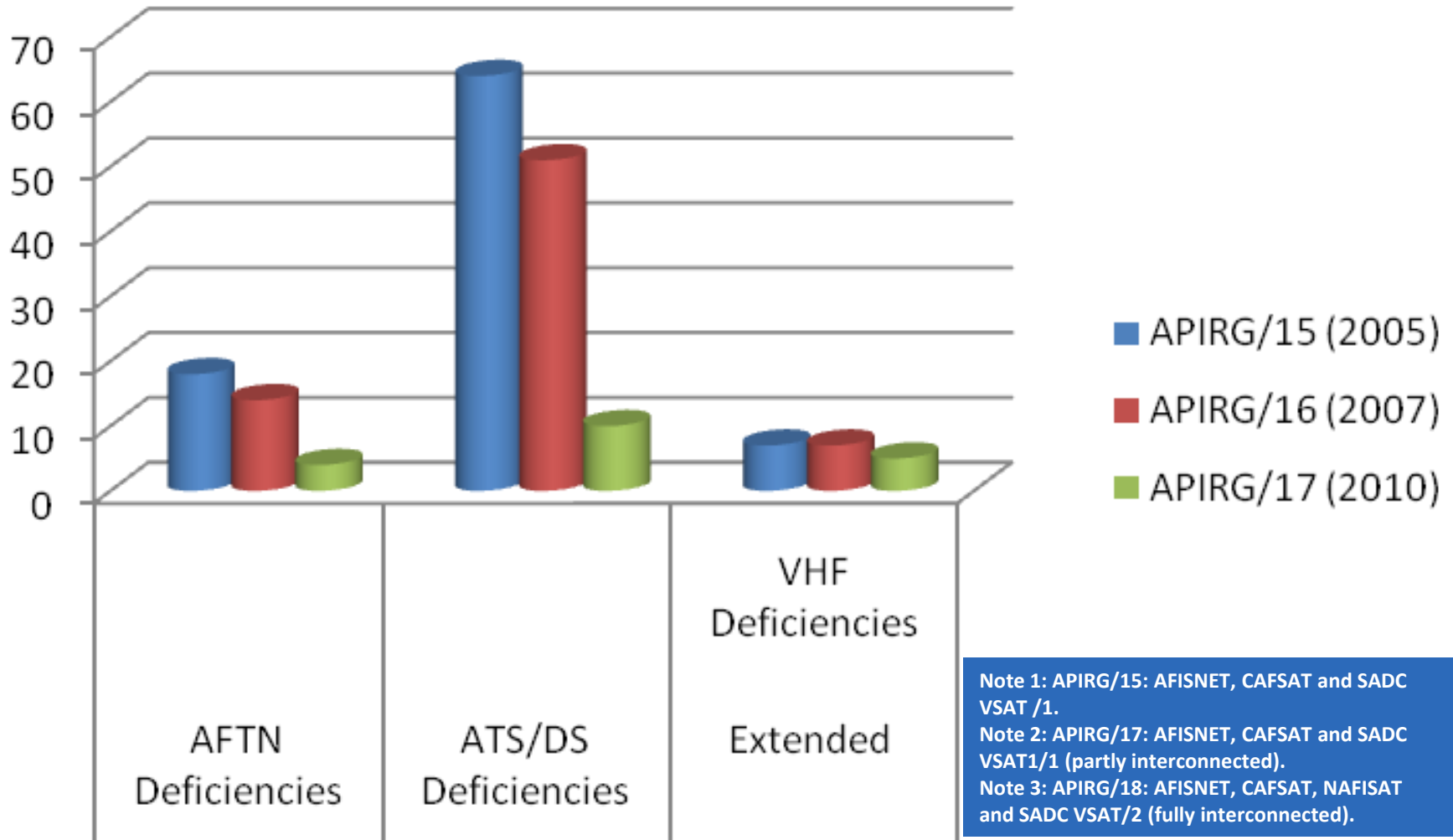
- The scope of aeronautical VSAT Networks includes a wide range of services which are intended to support safe and efficient provision of air traffic management (ATM), such as:
- Aeronautical Fixed Services [Aeronautical Fixed Telecommunications Network (AFTN),
- Air Traffic Services Direct Speech Network (ATS/DS), ATS Handling Message System (AHMS),
- ATS Inter-Facility Data Communications (AIDC)],
- Aeronautical Mobile Service (AMS) namely VHF radio coverage extension within flight information regions
- Global Navigation Satellite System (GNSS) – Satellite-Based Augmentation System (SBAS).

Impact of VSAT Networks States compliance with Air Navigation Plan requirements



- The ICAO Special AFI Regional Air Navigation Meeting of 2008 (SP AFI RAN/08) acknowledged that ground-ground networks based on VSAT technology offered the best means of providing Aeronautical Fixed Services (AFS) connectivity as well as relaying air/ground communications between ATS centres and remote ground stations.
- VSAT Networks have significantly contributed to the reduction of major deficiencies affecting AFTN circuits, ATS/DS circuits and Extended VHF radio coverage in the AFI Region.

Communications Deficiencies from APIRG/15 (2005) to APIRG/17 (2010)



Sustainability issues

- However, there are still a number of issues to be addressed to ensure that consistent and sustainable performance continues to be achieved through VSAT Networks. These include maintenance capabilities, modernization of network components, as well as funding arrangements together with associated cost recovery mechanisms.

Integration of AFI VSAT Networks

- As there are many different ways a VSAT network could be implemented and because VSAT vendors used proprietary signal protocols, providing interconnectivity between nodes belonging to different VSAT networks was often difficult, costly, and sub-optimum in terms of performance.
- On this basis, the ICAO SP AFI RAN/08 agreed that all VSAT plans should be coordinated, and consideration should be given to, integrating existing VSAT networks.
- These points were already addressed under Conclusion 5/18 of the Fifth meeting of All Planning and Implementation Regional Groups (ALLPIRG/5, 2006) which requested PIRGs to work towards integrated regional/interregional digital communication networks, with a centralized operational control and preferably based on the Internet Protocol (IP).

Need for a CNS Technology Roadmap

- The Fourth Meeting of Directors-General of Civil Aviation (DGCA/4, Matsapha, Swaziland, 8-9 November 2010) supported the **development of a CNS Technology Roadmap**, and of an **integrated regional CNS infrastructure** in order to overcome fragmentation, and help provider States to fully comply with ICAO relevant provisions.
- It accordingly requested the African Commission for Civil Aviation (AFCAC), ICAO and other relevant institutions to support the implementation of integrated programmes aimed at enhancing the regional air navigation infrastructure.

Conclusion

- The First Meeting of AFI VSAT Networks Managers is expected to discuss key issues related to aeronautical VSAT networks, including the development of a roadmap towards a modernized, interoperable, sustainable and integrated network.

Questions?

- Thank you