International Civil Aviation Organization
North American, Central American and Caribbean Office
Special Eastern Caribbean CNS Meeting (S-E/CAR CNS)
Port of Spain, Trinidad and Tobago, 20 to 22 October 2004

Agenda Item 2: Communications Development
2.2 Development of air-ground communications by voice and data link in Piarco FIR

DATALINK IMPLEMENTATION OPTIONS

(Presented by SITA)

SUMMARY
This paper briefly describes alternative datalink implementation options.

References:
- Report of the Eleventh Air Navigation Conference
- Montreal (22 September to 3 October 2003).
- Report of the 3rd CNS/ATM SG Meeting.
- Report of the GREPECAS 12 Meeting.
- Report of the 28th E-CARWG Meeting.

1. Introduction

1.1 The 28th Eastern Caribbean Working Group Meeting discussed the operational applications of Data Link technology for the Aeronautical Terminal Information Service – Data Link (ATIS-D) and Data Link Service of pre-departure clearance (PDC) in Air Traffic Services and the operational benefits derived from the available avionics technology ACARS HF, VDL and Mode S for ATS applications of CPDLC. The Decision 28/11 established that an action plan should be developed by Trinidad and Tobago to describe the strategy for implementation of D-ATIS and PDC services in the Eastern Caribbean international aerodromes.

1.2 The E/CAR States, in the CNS/ATM Transition Plan presented in the Third CNS/ATM Subgroup Meeting Subgroup, confirmed that the implementation of a new air navigation environment concept would require regional coordination and planning.

1.3 Based on this, in order to better develop the CNS/ATM concept in the E-CAR region, the analysis of a proposed solution for ATS data link systems and services should take into consideration how it can optimize resources and provide proven benefits for airlines and aeronautical authorities in a cost effective way.

1.4 There are different datalink implementation approaches that can be taken for some datalink applications. These approaches include centralized implementations that serve multiple Air Traffic Service Providers (ATSPs) and implementations dedicated to a specific ATSP.

2. CENTRALIZED IMPLEMENTATION APPROACH

2.1 Centralized implementations may be considered for multiple reasons. Such reasons include a way for initial introduction of ATS datalink services with minimal impact to existing infrastructure and/or a way of providing a regional solution.

2.2 ATS applications that are the most feasible for a centralized implementation include digital-ATIS (d-ATIS), Flight Management Computer (FMC) Waypoint Position Reports (WPRs) (also referred to as AOC WPRs), and FANS-1/A Automatic Dependent Surveillance (ADS). Associated existing centralized system implementations include Centralized ATS Server (CATS), Centralized FMC Waypoint Reporting System (CFRS), and Centralized FANS-1/A ADS System (CADS). See also S-E/CAR CNS-IP/XX, titled "Air Traffic Services use of Datalink" and associated presentation for additional information on some of the existing centralized implementations.

2.3 Benefits of a centralized implementation include cost reduction reflecting on logistics, human resources training, and operational procedures harmonization. Such centralized implementations can serve multiple airports in the case of CATS, and multiple ATSPs and meteorological offices in the cases of CFRS and CADS resulting in minimizing associated implementation and infrastructure costs over that of implementing standalone ATS systems. In addition, a centralized implementation can result in reduced operational costs. However, an assessment of whether or not a centralized implementation will meet the desired operational requirements for a given location and/or region should be performed.

2.4 While there are benefits to such an implementation, the downside of such implementations are that, in the case of FANS-1/A ADS, the full benefits of FANS-1/A are achieved through a dedicated implementation.

3. DEDICATED IMPLEMENTATION APPROACH

3.1 There are dedicated ATS implementations around the world implemented by many ATSPs. These include d-ATIS, Departure Clearance (DCL), pre-departure Clearance (PDC), oceanic clearance, FANS-1/A CPDLC, FANS-1/A ADS, and Aeronautical Telecommunication Network (ATN) CPDLC. See also S-E/CAR CNS-IP/XX, titled "Air Traffic Services use of Datalink" and associated presentation for additional information on some of the existing implementations.

> (NOTE: DCL is sometimes referred to as PDC, but is different than the PDC implementation such as done in the US, among a few others. The difference is that in the US, the PDCs are sent from the tower system to the airline host. The airline host then takes responsibility for delivery to the aircraft. DCL is directly between the system providing the clearance and the aircraft via datalink.)

3.2 The primary benefit of a dedicated implementation is that it can provide an ATSP with ATS end systems such that can achieve all of the operational benefits achievable for the associated services.

3.3 The primary downside of dedicated implementations is that for the applications in which it may be feasible to use a centralized approach, it is likely more costly to implement than a dedicated

implementation. However, an assessment of whether or not operationally, a dedicated system may be required should be performed for each location and/or region.

4. Suggested Action

4.1 The meeting is invited to:

a) Note the information contained in this working paper;

b) Assess whether or not a centralized or dedicated approach is most suitable for this region for implementing d-ATIS.

c) Assess operational requirements in order to identify if different data link approaches such as ADS-B or SATCOM Voice should also be considered for Eastern Caribbean region.

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