

ROCKWELL-COLLINS

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ATN Working Group 2 and Working Group 3

Rockwell-Collins is concerned about what has been going on in the ATN panel and its three working groups. Currently ADI (AVPAC DUTCH INITIATIVE); AA, ARINC, Rockwell Collins, SITA, and UAL; and the ADS Europe team are developing systems based on the current ATN manual (Second Edition) and ADS (DO-212/AEEC 745-2) with IDRP as an option. As an Avionics vendor we have to meet customer needs with a cost effective solution and make a profit. In meeting the customer's needs, we need to give the customer the power to control cost. We need to define the bare minimum as mandatory PICS and let the airlines add options, if they are cost justified. Furthermore, all changes should be backward compatible! It is difficult for vendors to build to a moving target when there is no backward compatibility. For example, we are currently building ADS to use the services of TP4 and CMA (DO-223). If the applications were allomorphic and had a standard API, vendors/airlines could invest with a reasonable return on their investment. However, if the ATN panel keeps throwing out the old, with no backward compatibility and continues to define new specifications, ATN will die. Airlines/vendors will not be able to afford to invest. The specific issues we are referring to are: (1) mandatory IDRP and (2) overhaul of ADS & TWDL - with no backwards compatibility.

Mandatory IDRP will cause many extra packets to be exchanged across the RF with limited benefit/pay-back for the airlines. If we put on our "pure communication academia hat", we agree that IDRP between the airborne router makes the ATN more like a standard WAN. However, cost analysis makes the academia solution not viable to sell as a product. The cost of having the airborne router do IDRP updates over the RF is as follows: (1) airborne certified IDRP (\$\$\$) and (2) many packets exchanged over the RF for IDRP (who will pay for these packets?). If the ground BISs are a little smarter, IDRP can be kept off the aircraft. The airborne router sends a ISH hello to the attached BIS on the ground; the ISH hello allows the Ground BIS to find out the domain identifier of the airborne domain. The ground BIS updates ground routers FIB to indicate all traffic destined to the airborne domain identifier should be routed via this BIS, which has the current connection to the aircraft. If an airline wants to use IDRP and is willing to pay for it, we will be glad to supply a airborne router with IDRP. However, Rockwell-Collins feels IDRP should be optional and the ground BIS should support airborne routes with or without IDRP (i.e. as defined by ADS Europe trials).

The overhaul of ADS to use the services of A2CSE may be correct for the future; however, making ATM applications dependent on A2CSE will slow down implementation of ATN. We do not know any software vendors building or planning to build A2CSE in the near future. If development on A2CSE started today, it would be several years before a useable product would be available. We are not trying to kill A2CSE. We think the full stack implementation is a good thing because things like security/authentication and orderly initiation/termination of message exchange has to be built into every application. However, we believe we must walk before we can run. If we build an airborne end system with ADS to operate over the transport layer using the services of CMA and make it available as a product, the airlines will need to get enough service out of the product to justify the investment. The airlines will not be able to justify the investment if there is no backward compatibility. Therefore, if the airlines cannot invest in ATN for 3 years the vendors will wait. In 3 years maybe A3CSE comes out; do we wait another 3 years after that because there is no backward compatibility? We believe with the talent in WG2 & WG3 that the backward compatibility can be addressed. The end system applications should be allomorphic which allows the applications to receive ADS/TWDL messages transparent to the communication stack. This will allow airlines/vendors who invest now to make a profit on their investment and allow A2CSE to progress. We suggest a design where applications can operate with a standard API over ATN (second edition [i.e. 10 year sunset]) or ATN+ (A2CSE).

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