



The European Organisation for Civil Aviation Equipment
L'Organisation Européenne pour l'Équipement de l'Aviation Civile

INTEROPERABILITY STANDARDS FOR VOIP ATM COMPONENTS

ADDENDUM 7 TO VOLUME 2: HOTLINE ACCESS CALL

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ED-137/2C-7

March 2019

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FOREWORD

1. This document forms Addendum 7 “Interoperability Standards for VoIP ATM Components – Volume 2 Addendum 7: Hotline Access Call” to ED-137C Volume 2: Telephone, and was prepared by EUROCAE Working Group 67 and was accepted by the Council of EUROCAE on 23 March 2019.
2. EUROCAE is an international non-profit making organisation. Membership is open to manufacturers and users in Europe of equipment for aeronautics, trade associations, national civil aviation administrations and non-European organisations. Its work programme is principally directed to the preparation of performance specifications and guidance documents for civil aviation equipment, for adoption and use at European and world-wide levels.
3. The findings of EUROCAE are resolved after discussion among its members and, where appropriate, in collaboration with RTCA Inc, Washington D.C. USA and/or the Society of Automotive Engineers (SAE), Warrendale, PA, USA through their appropriate committee.
4. This version of the document represents “the minimum European specification required for Manufacturers and Users to assure Interoperability from/to VoIP ATM Telephone Components to/from Legacy systems”.
5. This version is taking into account the EUROCONTROL VoIP in ATM Test Case Specification.
6. EUROCAE performance specifications are recommendations only. EUROCAE is not an official body of the European governments; its recommendations are valid statements of official policy only when adopted by a particular government or conference of governments.
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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Ground-Ground (G-G) ATM voice systems have been based upon analogue and more recently, digital Time Division Multiplexing / Pulsed Code Modulation (TDM/PCM) technologies for many years.

Nowadays, however, convergence of voice and data into one multimedia network is a popular trend with a variety of technical solutions available on the market. Following in this direction ATM communication networks are adopting, by a process of gradual evolution, a common infrastructure for voice and data services.

As the technology has developed IP Technology has now the true potential to fulfil operational and technical ATM communication requirements - including those of voice / data convergence, Quality of Services (QoS), security and safety. There is also the possibility that IP may deliver solutions that will, over time, bring about true savings in investment and operating costs.

EUROCAE Working Group 67 (WG-67) undertook the mission to assess the feasibility of using Voice over Internet Protocol (VoIP) for providing ATM voice services. The group defined criteria, requirements and guidelines based upon the following operational needs and constraints:

- Operational and Technical Air-Ground (A-G) and Ground-Ground (G-G) ATM Voice system requirements;
- Existing IP Voice protocols and signalling standards;
- IP network capabilities for Voice services;
- Security, Quality of Service (QoS), and Convergence (infrastructure, protocol, applications);
- Existing IP Voice ATM system capabilities and service interfaces.

The following tasks were identified to fulfil the WG-67 mission:

- Define ATM Systems and identify their components (Voice Communication System / VCS, Ground-based Radio Station / GRS)
- Determine possible additional operational and technical ATM requirements for new ATM voice systems, also taking into consideration A-G communications.
- Make recommendations to upgrade current standardisation documents.
- Develop a Technical Specification for a VoIP Voice ATM System including:
 - Minimum performance and safety/security requirements for the system and, if appropriate, for components;
 - Interoperability requirements between IP components of the VoIP ATM system;
 - Minimum performance requirements of an IP Network to support ATM Voice services;

Consequently the following three documents were delivered:

ED-136 - VoIP ATM System Operational and Technical Requirements

ED-137 - Interoperability Standards for VoIP ATM Components

ED-138 - Network Requirements and Performances for VoIP ATM Systems

The contents of all three documents are premised on the “**Vienna Agreement**” which defines the different components of a VoIP ATM system and their mutual interfaces as depicted in FIGURE 1.1.

VIENNA AGREEMENT

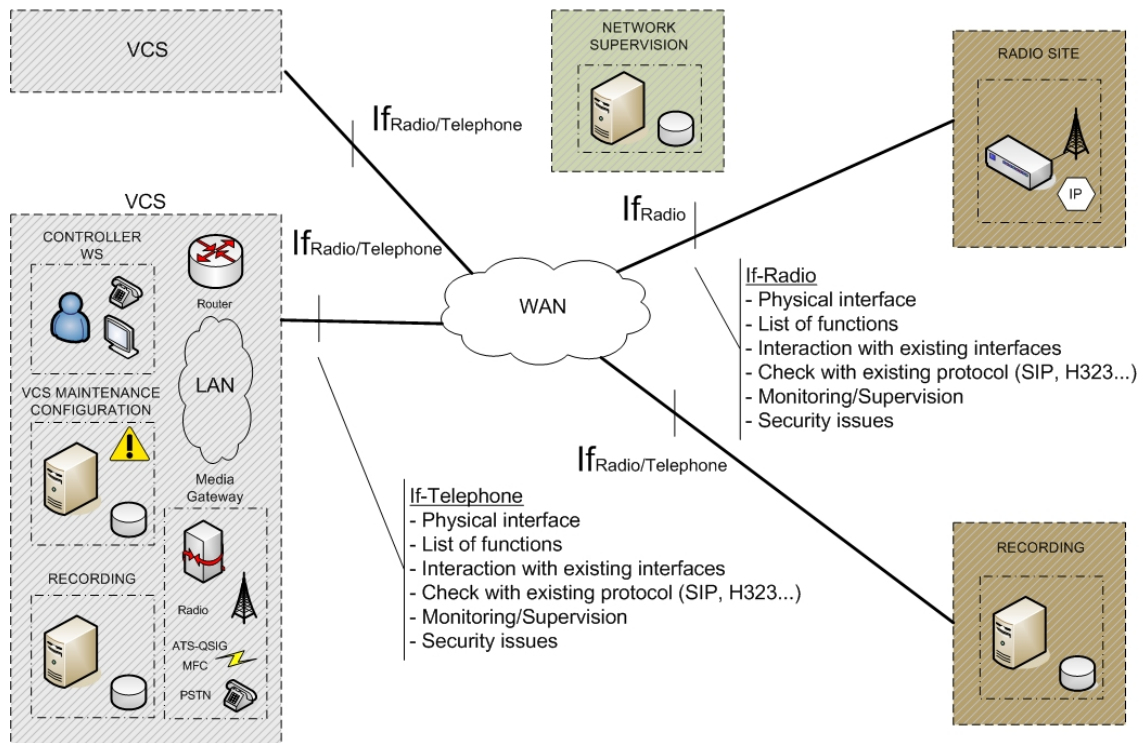


FIGURE 1.1: VIENNA AGREEMENT

VoIP components are interconnected through an IP network and suppliers are free to define their internal architecture (IP/Ethernet, TDM/PCM - Time Division Multiplexing/Pulsed Code Modulation, etc.) Between VoIP components, required interfaces are defined to guarantee their functional and technical interoperability.

Therefore, VoIP ATM Systems are composed of:

- **VoIP VCS Components** performing Radio and / or Telephone functions, including:
 1. Controller Working Positions, assuring HMI including voice devices (microphone and loudspeaker);
 2. Possible local VCS Maintenance and Configuration stations;
 3. Possible local Recording devices;
 4. Possible LAN for local interconnection;
 5. Possible Media Gateways to legacy systems (ATS-QSIG, ATS-R2, ATS-No.5, PSTN, Radio analogue lines, etc.)
- **VoIP Ground Radio Station Components** performing DSB-AM VHF and UHF Radio functions.
- **VoIP Supervision System Components** performing monitoring and control functions.
- **VoIP Recording Components** performing recording functions.
- **IP WAN Components** performing interconnection services between two or more different