



# COM11.1 — Voice over Internet Protocol (VoIP) in En-Route

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This Implementation Objective aims at an efficient use of Voice over Internet Protocol (VoIP) by harmonised and coordinated implementation for ground/ground and ground part of ground/air aeronautical communications, ensuring network benefits from VoIP implementation.

The initiative covers inter-centre (encompassing all type of ATM Units) voice communication and the links with the ground radio stations. COM11.1 is applicable to 'En-Route' and 'Network' Operating Environments. Inter-centre voice communications not yet migrated to VoIP are currently performed via analogue and digital circuits.

This legacy ATM voice services will soon no longer be supported by the European telecommunication service providers, making the use of new technology necessary. At present and in order to follow the evolution of the communication technologies, ATM-VoIP is the global standard (ICAO DOC 9896 ed2, based on EUROCAE ED137) for ground telephony and ground segment of the Air-Ground voice. ATM-VoIP industrial standard (EUROCAE ED-137) is maintained and evolved over time to ensure that voice communication requirements are met. Transition towards VoIP is bringing interoperability.

Cross-border aspects need to be addressed appropriately within the network perspective. VoIP in ATM constitutes an essential part of Network Operational Excellence Programme WST13.5 – IP Services and VoIP.

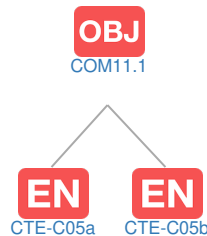
This project aims at an efficient use of Voice over Internet Protocol by harmonised and coordinated implementation for ground/ground and ground part of ground/air aeronautical communications, ensuring network benefits from VoIP implementation.

*NOTE FOR MILITARY AUTHORITIES: It is the responsibility of each military authority to review this Objective IN ITS ENTIRETY and address each of the SLoAs that the military authority considers RELEVANT for itself. This has to be done on top and above of the review of "MIL" SLoAs which identify actions EXCLUSIVE to military authorities.*

<b>Edition</b>	2022
<b>Stakeholders</b>	Air Navigation Service Provider
<b>Type</b>	SESAR
<b>Scope</b>	ECAC+
<b>Status</b>	Active

## Context

### Related Elements

















## Applicability Area(s) and Timescales

**Applicability Area:** All ECAC States except: Luxembourg. Plus: Israel, Morocco

Timescales	From	By	Applicable to
Initial operational capability	01-01-2013	-	Applicability Area
Full operational capability	-	31-12-2021	Applicability Area

## Links to ATM Master Plan Level 2

### **EN** Enablers

Code	Title	IOC	Related Elements
CTE-C05a	VoIP for ground telephony	-	      
CTE-C05b	Digital Voice / VoIP for ground segment of Air-Ground voice	-	      

### **SOL** Links to SESAR Solutions

Code	Title	Program	Related Elements
No record found			

### **PCP** Links to PCP ATM Sub-Functionalities

Code	Title	Related Elements
No record found		

**ICAO** ICAO Block Modules: No associated data

## References

#### Applicable legislation

None

#### Applicable ICAO Annexes and other references

Covers ICAO Global Plan Initiative GP-22

#### Deployment Programme 2022

-

#### Operating Environments

En-Route

Network

## Expected Performance Benefits

<b>Safety</b>	Maintained or improved by providing enhanced signalisation functions. Improved by providing a more resilient infrastructure.
<b>Capacity</b>	Maintained or improved by providing enhanced signalisation functions.
<b>Operational efficiency</b>	-
<b>Cost efficiency</b>	Reduced costs by enabling flexible and dynamic use of ANSP resources, leading to long term savings.
<b>Environment</b>	-
<b>Security</b>	-

## Stakeholder Lines of Action

Code	Title	From	By	Related Enablers
ASP01	Develop safety assessment for the changes	01-01-2012	31-12-2021	
ASP03	Upgrade and put into service Voice Communication Systems to support VoIP inter-centre telephony	01-01-2013	31-12-2021	EN
ASP04	Upgrade and put into service Voice Communication Systems to support VoIP links to the ground radio stations	01-01-2013	31-12-2021	EN

## Supporting Material

Title	Related SLoAs
EC - COMMISSION IMPLEMENTING REGULATION (EU) 2017/373 - (OJ L 62, 8.03.2017, p. 1) - COMMISSION IMPLEMENTING REGULATION (EU) 2017/373 of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight, repealing Regulation (EC) No 482/2008, Implementing Regulations (EU) No 1034/2011, (EU) No 1035/2011 and (EU) 2016/1377 and amending Regulation (EU) No 677/2011 03/2017 <a href="https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R0373&amp;from=EN">https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R0373&amp;from=EN</a>	ASP01
EUROCAE - ED-136 - Voice over Internet Protocol (VoIP) Air Traffic Management (ATM) System Operational and Technical Requirements 02/2009 <a href="https://eshop.eurocae.net/eurocae-documents-and-reports">https://eshop.eurocae.net/eurocae-documents-and-reports</a>	ASP03, ASP04
EUROCAE - ED-137/1C - Interoperability Standards for VoIP ATM Components - Volume 1: Radio 04/2017 <a href="https://eshop.eurocae.net/eurocae-documents-and-reports">https://eshop.eurocae.net/eurocae-documents-and-reports</a>	ASP04
EUROCAE - ED-137/1C Change 1 - Interoperability Standards for VoIP ATM Components - Volume 1: Radio 05/2020 <a href="https://eshop.eurocae.net/eurocae-documents-and-reports">https://eshop.eurocae.net/eurocae-documents-and-reports</a>	ASP04
EUROCAE - ED-137/2C - Interoperability Standards for VoIP ATM Components - Volume 2: Telephone 03/2019 <a href="https://eshop.eurocae.net/eurocae-documents-and-reports">https://eshop.eurocae.net/eurocae-documents-and-reports</a>	ASP03
EUROCAE - ED-137/2C Addenda 1 to 8 - Interoperability Standards for VoIP ATM Components - Volume 2 Addenda: Telephone 03/2019 <a href="https://eshop.eurocae.net/eurocae-documents-and-reports">https://eshop.eurocae.net/eurocae-documents-and-reports</a>	ASP03
EUROCAE - ED-137/2C Change 1 - Interoperability Standards for VoIP ATM Components - Volume 2: Telephone 05/2020 <a href="https://eshop.eurocae.net/eurocae-documents-and-reports">https://eshop.eurocae.net/eurocae-documents-and-reports</a>	ASP03
EUROCAE - ED-137/4C - Interoperability Standards for VoIP ATM Components - Volume 4: Recording 03/2019 <a href="https://eshop.eurocae.net/eurocae-documents-and-reports">https://eshop.eurocae.net/eurocae-documents-and-reports</a>	ASP03, ASP04
EUROCAE - ED-137/5C - Interoperability Standards for VoIP ATM Components - Volume 5: Supervision 03/2019 <a href="https://eshop.eurocae.net/eurocae-documents-and-reports">https://eshop.eurocae.net/eurocae-documents-and-reports</a>	ASP03, ASP04
EUROCAE - ED-138 - Network Requirements and Performances for Voice over Internet Protocol (VoIP) Air Traffic Management (ATM) Systems - Part 2 Network Design Guideline 02/2009 <a href="https://eshop.eurocae.net/eurocae-documents-and-reports">https://eshop.eurocae.net/eurocae-documents-and-reports</a>	ASP03, ASP04
EUROCONTROL - EAM 4 - ESARR 4 - Risk Assessment and Mitigation in ATM - Edition 1.0 / 04/2001 <a href="https://www.eurocontrol.int/publication/esarr-4-risk-assessment-and-mitigation-atm">https://www.eurocontrol.int/publication/esarr-4-risk-assessment-and-mitigation-atm</a>	ASP01
EUROCONTROL - GUID-137 - EUROCONTROL Guidelines on conformity assessment for the interoperability Regulation of the single European sky - Edition 3.0 / 02/2012 <a href="https://www.eurocontrol.int/publication/eurocontrol-guidelines-conformity-assessment-interoperability-regulation-single">https://www.eurocontrol.int/publication/eurocontrol-guidelines-conformity-assessment-interoperability-regulation-single</a>	ASP03, ASP04
EUROCONTROL - SIP v ATS-QSIG Gateway Interworking Test Specification - Edition 2 / 12/2013 <a href="https://ost.eurocontrol.int/sites/VOTE/Shared Documents/Reference Documents">https://ost.eurocontrol.int/sites/VOTE/Shared Documents/Reference Documents</a>	ASP03

Title	Related SLoAs
EUROCONTROL - SIP v ATS-R2 Gateway Interworking Test Specification - Edition 2 / 12/2013 <a href="https://ost.eurocontrol.int/sites/VOTE/Shared Documents/Reference Documents">https://ost.eurocontrol.int/sites/VOTE/Shared Documents/Reference Documents</a>	ASP03
EUROCONTROL - VOTER 4.0.x Test Description - VOL 5 - Interoperability - Edition 3.1 / 12/2021 <a href="https://ost.eurocontrol.int/sites/VOTE/Shared Documents/Reference Documents">https://ost.eurocontrol.int/sites/VOTE/Shared Documents/Reference Documents</a>	ASP03, ASP04
EUROCONTROL - VOTER 4.0.x Test Description - VOL 6 - Performance for GRS-VCS Interfaces - Edition 3.1 / 01/2020 <a href="https://ost.eurocontrol.int/sites/VOTE/Shared Documents/Reference Documents">https://ost.eurocontrol.int/sites/VOTE/Shared Documents/Reference Documents</a>	ASP03, ASP04
EUROCONTROL - VOTER 4.0.x Test Description - VOL 7 - Supervision - Edition 3.2 / 01/2020 <a href="https://ost.eurocontrol.int/sites/VOTE/Shared Documents/Reference Documents">https://ost.eurocontrol.int/sites/VOTE/Shared Documents/Reference Documents</a>	ASP03, ASP04
EUROCONTROL - VOTER 4.1.x Test Description - VOL 2 - VCS Radio Interface - Edition 3.7 / 10/2021 <a href="https://ost.eurocontrol.int/sites/VOTE/Shared Documents/Reference Documents">https://ost.eurocontrol.int/sites/VOTE/Shared Documents/Reference Documents</a>	ASP04
EUROCONTROL - VOTER 4.1.x Test Description - VOL 3 - VCS Telephone Interface - Edition 3.9 / 10/2021 <a href="https://ost.eurocontrol.int/sites/VOTE/Shared Documents/Reference Documents">https://ost.eurocontrol.int/sites/VOTE/Shared Documents/Reference Documents</a>	ASP03, ASP04
EUROCONTROL - VOTER 4.1.x Test Description - VOL 4 - Recorder Interface - Edition 3.6 / 12/2014 <a href="https://ost.eurocontrol.int/sites/VOTE/Shared Documents/Reference Documents">https://ost.eurocontrol.int/sites/VOTE/Shared Documents/Reference Documents</a>	ASP03, ASP04
EUROCONTROL - VOTER 4.1.x Test Description -VOL 1- GRS Radio Interface - Edition 3.9 / 10/2021 <a href="https://ost.eurocontrol.int/sites/VOTE/Shared Documents/Reference Documents">https://ost.eurocontrol.int/sites/VOTE/Shared Documents/Reference Documents</a>	ASP04
EUROCONTROL - VOTER Test Tool - version 4.x.x (ED-137C) -	ASP03, ASP04
EUROCONTROL - VoIP in ATM Cross-Reference Matrix for ED-137C – VOTER 4.x.x 12/2021 <a href="https://ost.eurocontrol.int/sites/VOTE/Shared Documents/Reference Documents">https://ost.eurocontrol.int/sites/VOTE/Shared Documents/Reference Documents</a>	ASP03, ASP04
ICAO - Doc 9896 - Manual for the ATN using IPS Standards and Protocols - Edition 2.0 / 2015 <a href="https://store1.icao.int/">https://store1.icao.int/</a>	ASP03, ASP04

## Consultation & Approval

<b>Working Arrangement in charge</b>	CNS / COM SG
<b>Outline description approved in</b>	02/2009
<b>Latest objective review at expert level</b>	12/2018
<b>Commitment Decision Body</b>	Provisional Council (PC)
<b>Objective approved/endorsed in</b>	08/2011
<b>Latest change to objective approved/endorsed in</b>	06/2019