

Voice over IP technology *and its application to* Air Traffic Service Ground Voice Networks



18 - 19 May 2010

The Castle Hotel, Windsor UK



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From chatting over the internet to replacing whole telecommunications networks, VoIP means different things to different people. In general, VoIP involves changes to many aspects of how audio is transferred between points, which brings with it certain advantages and certain disadvantages.

EUROCAE documents specifying VoIP interface requirements, interoperable functionality, network aspects and testing have now been released. Work has begun to develop compliant Telephone, Radio and Recorder Voice over IP interfaces.

The introduction of Voice over IP for ATS Ground Voice Telephone and Radio Networks is starting to cause a gradual evolution with the migration from the circuit switched and TDM based VCS communication infrastructures in operation today towards a future converged common multimedia IP network infrastructure for both voice and data services. IP Technology now has the true potential to fulfil operational and technical ATM communication requirements.

Day 1 of this two day course will look at what VoIP is and how it differs from traditional voice connections. Though the adoption of VoIP for aeronautical communications is a relatively new idea, the telecommunications industry has embraced the principles for many years, indeed many telecommunications operators are moving towards a wholly IP based infrastructure. In general, end users will see little real difference in this change to IP, however for some users the adoption of IP will introduce significant changes. Aeronautical communications can be affected by this change-over and the course explores the activities taking place in the wider arena and the implications for end-users.

What you will learn:

- IP and VoIP in the wide international context
- The benefits and challenges of VoIP infrastructure
- Work performed by EUROCAE Working Group 67

Day 2 follows on with an in depth assessment of all technical aspects relating to Ground Telephone, Ground Radio Stations, Voice Recorders and 'in the field' issues relating to VoIP technology.

What you will learn:

- ATM-VoIP network architecture
- Ongoing ETSI Interoperability Plug Tests work and SESAR JU defined validation activities
- Added benefits VoIP technology brings to Telephone, Radio and Voice Recording functionality with a private IP network
- Radio/Telephone/Recorder Functional requirements and solutions
- Interworking with legacy systems
- Network Aspects and Performance

Location

The Castle Hotel (pictured) is in the centre of Windsor, which has much to offer. A world famous 1000 year old castle, with all the pomp



and ceremony of the royal household, the changing of the guard and state visits of foreign dignitaries. The great park, with the world famous Savill Gardens are a must-visit for nature lovers. The historic town also has a thriving theatre and many restaurants and bars.

Windsor is just 30 miles west of London with Heathrow Airport just 15 minutes' drive away. Luton and Gatwick airports are within an hour's drive. It is easily accessible via the major motorway networks of the M3, M4, M25 and M40 and is well served by public transport.

Course fees include

- All lunches, refreshments, handouts and full colour workbooks
- Delegate dinner on Tuesday 18th May at the Castle Hotel.

Please note accommodation is NOT included in the price. However we have arranged preferential rates at the hotel, valid for bookings received by 15 April 2010; we can also advise on alternative accommodation.

Who should attend?

Professionals within various sectors of the aeronautical industry who need to develop a greater understanding of the implications of, and requirements placed on the next generation of Voice Communication System, Ground Radio Stations and Voice Recorders. *The course is suited to participants with a general aeronautical or telecommunications background.*

Course objectives

- Gain a deeper understanding of VoIP within the context of ATS and of EUROCAE requirements.
- Find out about solutions relating to the next generation of Voice Communication Systems, Radios and Recorders.
- Operation within a European wide IP network.

About your trainers



John Palmer has been a communications consultant to EUROCONTROL for more than 6 years followed by 6 years as an external consultant. He also has over 15 years of experience in the public telecoms industry working for a number of large and medium sized telecoms companies in the UK, Italy and Belgium.

As a participant in the EUROCAE WORKING GROUP 67 that defined Voice over IP specifications for the future ATS

Ground Voice Network, he has contributed to the documents defined by the Telephone Interoperability and the Qualification and Validation Test Sub-groups, while also assisting the Requirements Sub-group.



Richard Womersley has over 15 years commercial, regulatory and technical experience in the telecommunications industry working for regulators, operators and end users. He is also an experienced trainer having given courses on spectrum regulation and next generation telecommunications networks. He has experience both as an expert advisor and directly in the operation of telecommunication and broadcast networks for organisations in Europe, Asia, Africa and the Americas.

Richard has recently been considering the impact of spectrum regulation on the aeronautical industry and has a strong understanding of the relationship between the industry and the wider telecommunications environment.

DAY ONE

Module 1: Understanding VoIP

- The mechanics of traditional voice connections
- Packet switched data and the internet
- Packet switched voice
- The key benefits of VoIP
- New problems presented by VoIP

Module 2: How VoIP is affecting communications

- What are Next Generation Networks (NGN)?
- Why are operators adopting NGN?
- How will it affect the services they provide?
- What are the implications for aeronautical users?
- How moving to VoIP can take advantage of these changes

Module 3: Today's ATS Ground Voice Network

- Telephone network infrastructure overview
- Radio network infrastructure overview

Module 4: VoIP in aeronautical communications

- What is Voice over IP?
- VoIP deployed in corporate networks
- The migration from circuit to packet switching
- Impacts of VoIP on Voice Communication Systems
- IP network impacts for Telephone calls
- Impacts of VoIP on Radios
- IP network impacts for Radio Calls
- Advantages/Disadvantages of converged networks
- Working towards end-to-end VoIP
- Internet Multimedia Protocol Stack
- How is Voice transported over an IP network?
- Why IP version 6?
- IPv6 Packet Header fields
- User Datagram Protocol (UDP)
- Real-time Transport of Voice using RTP
- RTP media stream
- What is Session Initiation Protocol (SIP)?
- SIP History
- Why SIP signalling?
- Use of Session Description Protocol (SDP)

Module 5: EUROCAE Working Group 67

- What is EUROCAE?
- EUROCAE Working Group 67 background
- Bodies involved
- Why the move towards VoIP?
- The Vienna Agreement
- Sub-groups and tasks
- ED deliverables
- Development approval and planning process
- EUROCAE council approval & ICAO ACP WG-I consideration

Summary of first day - Questions and Answers session

DAY TWO

Module 1: ATM-VoIP network architecture

- VoIP network architecture elements and their functionality
- Why IP version 6?
- Why Session Initiation Protocol (SIP) signalling?
- Use of Session Description Protocol
- Real Time Transport of Voice (RTP)
- Network Quality of Service issues
- Precedence level assignment of voice services and precedence scheme example
- Voice Encryption aspects

Module 2: ETSI PlugTest events for VoIP

- What are Plugtests?
- Industry driven SIP interface interoperability testing
- Pure SIP-SIP interoperability event
- Telephone and Radio interoperability tests
- Ground Telephone Interop. configuration
- Ground Radio Interop. configuration
- Gateway Interoperability Plugtests event
- Telephone Gateway Interop. configuration

Module 3: ATM-VoIP validation initiatives

- SESAR Master Plan for VoIP activities
- SESAR Joint Undertaking Description of Work version 4, WP 15.2.10 – VoIP validation activities
- Validating Wide Area Network performance issues for VoIP
- ATM Master Plan on ICAO Global Plan initiative
- EUROCONTROL initiative for VoIP validation
- Proposed European Single Sky Implementation (ESSI) Objective 2010-2014

Module 4: Added benefits VoIP brings to ATS Ground Telephone network

- Example of SIP telephone technology today
- Call types (IA, Priority/Tactical/Strategic/General Purpose DA, IDA calls, Positioning Monitoring)
- New network wide Supplementary Services
- Address schemes and their operation
- Media session attribute negotiation
- Moving Sector Suites/Airspace block control between ACCs
- Improved access to real time information (Subscriptions)
- New services – Presence, event packages, Status info etc
- Legacy v SIP interworking specifications
- Foreseen stepped migration towards SIP interfaces for end-to-end VoIP

Module 5: Added benefits VoIP brings to ATS Ground Radio network

- Radio Access Modes of operation overview
- SIP session establishment and pre-emption procedure
- SDP Media session attribute negotiation (Codecs, BSS etc)
- Real Time Session Supervision (R2S) operation
- PTT lockout/summation
- Proposed GRS Address scheme
- RTP Header extension structure
- PTT-types and PTT-id echo back method
- PTT ON/OFF examples
- GRS Locked-on condition prevention
- Aircraft Call ON/OFF examples
- Cross-coupled group implementation
- A/C call detection by multiple GRS Transceivers & Best Signal Selection
- Simultaneous Aircraft Call Transmission detection by GRS Receiver
- Stepped on transmissions-A/C call +Normal PTT activation
- Off-air Squelch detection
- Climax operation
- Climax Time-Delay –Compensation mechanism
- Improved Access to Real Time Information (Subscriptions)
- Access to Radio Stations in Functional Airspace Blocks
- Access to Radio Stations for Last Resort Communications
- Cross Coupling implementation (Duplex and Simplex)
- Prevention of Cross-coupling chains between VCS's
- Foreseen migration towards SIP Radio interfaces

Module 6: Added benefits VoIP brings to Recording equipment

- Recording Requirements
- Recording Telephone Speech
- Recording Radio Speech
- Methodology for Voice recording
- Voice Recorder channel establishment examples
- Voice Recording equipment requirements
- Call detail records

Module 7: Network aspects and performance

- Guaranteeing Real time Voice- Differentiated Services
- Network Connectivity, Quality and Performance, Availability issues
- Precedence level assignment of voice services
- IP security (IPsec) & Voice encryption aspects
- Voice Quality of A/G and G/G communications
- Call performance criteria for DA and IA calls
- One way Voice Delay for Radio/telephone
- Echo compensation and Clipping of Speech segments
- Voice transmission/frequency response /crosstalk/distortion and noise characteristics
- End-to-End delay budget for Real time voice with IPsec
- Transmitter Activation Delay – A/C call indication delay
- Guaranteeing IP network availability – Built-in redundancy
- Security aspects

Summary of second day - Questions and Answers session

Booking Form for VoIP Training

HOW TO BOOK

Please photocopy this form and complete one form per delegate. Please scan and email completed forms to training@askhelios.com or fax back to +44 (0)1252 451 652 or post to: Helios, 29 Hercules Way, Aerospace Boulevard, AeroPark, Farnborough, Hampshire, GU14 6UU, UK. You can also book online at www.askhelios.com/events/viewEvents.php

Title (Mr/Mrs/Dr etc) First name	Postcode	Country
Last name	Telephone	
Job title	Fax	
Company name	Email	
Address	<p><i>If you have 10 or more people to train, talk to us about delivering this event for you at your own venue. Call Helena Vernon on +44 1252 451 673 or email: training@askhelios.com</i></p> <p><i>Course fees include lunch, refreshments and all course materials; plus a delegate dinner at the Castle Hotel on the evening of Tuesday 18 May.</i></p> <p><i>Course fees do not include accommodation.</i></p>	

TWO DAYS : 18-19 May 2010		Please insert promotion code here	€ Euro Price	£ Sterling Price	Total Fee: Please indicate £ or €
VoIP technology	18-19 May		1110	895	
			(17.5%) VAT		
			Total		

Payments made by credit card will be charged in £ Sterling. Otherwise delegates may pay in € Euros, or £ Sterling at the rates given in the adjacent table. US \$ prices available on request.

PREFERRED PAYMENT METHOD

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Full payment plus VAT is required prior to the event.

Terms and Conditions

Payment: Full payment must be received 14 days before the start of the event/training course. If you are booking a course now that is due to start within 14 days you should choose to pay by debit/credit card. Our staff will call you to take your credit card details, or you can book and pay online. Payment cannot be made by delegates on the day. Payment may be made by VISA, Mastercard or AMEX*, cheques drawn on UK banks, or International Funds Transfer (details will be provided on request). Please note that delegates must pay their own bank charges when making payments.

Confirmation: All bookings are provisional and will only be confirmed once full payment has been received. Helios reserves the right to reallocate places if full payment has not been received.

Cancellations: Cancellations received in writing at least 14 days prior to the first day of the event will be refunded in full less an administration charge of £100 + VAT, or €150 + VAT where the event occurs outside of the UK. Notice of cancellation must be received in writing and submitted by either emailing training@askhelios.com or by writing to Helios, 29 Hercules Way, Aerospace Boulevard, Aeropark, Farnborough, Hampshire, GU14 6UU, United Kingdom. We recommend using a method of recorded delivery to ensure notice of cancellation is received. Should you need to cancel your registration less than 14 days before the first day of the training course, the registration fee remains payable in its entirety. Delegate substitutions may be made at any time, though confirmation of any changes must be received by email, fax or post prior to the start of the event. In the event of non-attendance, full course fees will remain payable and no refunds will be made. It may be necessary for reasons beyond the control of the event organisers to alter the venue, content or the timing of the programme. We will endeavour to keep you abreast of such changes but any reasonable change to the event format will not constitute a reason to refund the fee. Should the event be postponed, we will endeavour to reschedule it. If, for reasons beyond the control of Helios, an event is cancelled, a full refund will be made. We are not liable to pay any incurred costs resulting from any postponement or cancellation.

VAT: EC delegates can reclaim VAT. Non EC delegates should seek specific advice. These terms and conditions are governed by English Law.

*Payments by AMEX will incur a 4.6% surcharge and can only be made by completing the hard copy booking form or over the phone.

If you have any queries, please email training@askhelios.com or phone +44 1252 451 673

