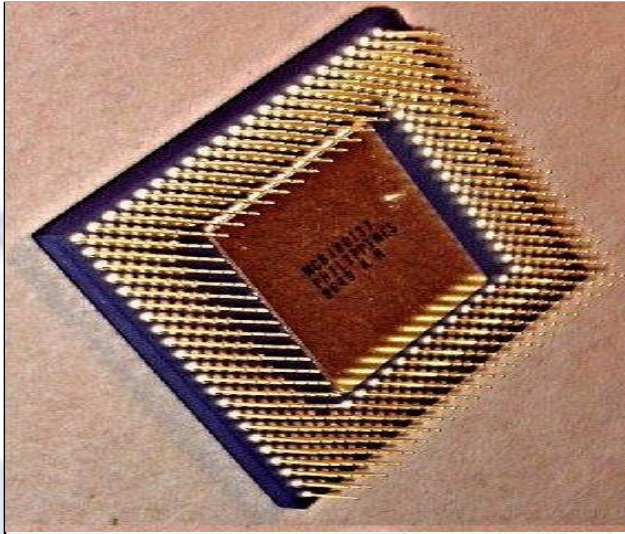# JSP Teleconsultancy profile

JSP Teleconsultancy profile

- Independent Telecommunications consultancy – started 1994, based in Marche Region of Italy;

- Associated partnership comprised of freelance consultants;

- Provides range of Telecom consultancy services to:
  - Global/National Air Navigation Service Providers responsible for Air Traffic Management;
  - Training Courses;
  - Private Industry – FPGA design
  - Documentation services;

- Specialists in Air Traffic Control Voice Communication & Signalling field;

- Support Global Air Navigation Service Providers with respect to Next generation Voice Communication Systems (VCS), Aeronautical Radios, Recording Equipment, Gateway interworking products & Network Config./ Management:

Air Traffic Management

ATM Consultancy services

- Technical requirement specifications
- Technical Calls for Tender documents
- Independent technical evaluation of Response to Tender documents
- Definition of Equipment Interoperability/Performance Test specifications
- Definition of conformance test case specifications
- EUROCAE WG67 ED Document Technical query service
- Independent studies and reports
- Migration strategies towards VoIP technology.
- Protocol Signalling Specifications
- Test activities - including on-site interoperability testing etc Factory and Site Acceptance Specifications
- ATS-QSIG Conformance Test Service

Next Generation system procurement support

- Support to ANSPs in defining technical Call for Tender (CfT) requirements for system procurement for Towers, Approaches and ACCs.

- Capture phase: all of Technical Operational and Engineering requirements;

- Following our detailed system requirement capture phase we can define draft CfT documents for your approval that include requirements for the following,

  - Architectural, Radio/Telephone Systems, System Engineering, Voice Quality, Recording, VCS Control and Monitoring System, Test and Development VCS System, Training VCS System, CWP-HMI Operational, Safety, Security, Environmental Conditions, Supplier Support Services, Quality and Qualification

Air Traffic Control-Track Record (1)

- ATC Signalling protocol and Air Traffic Services Ground Voice Network specialists;
- Supported EUROCONTROL (European Organisation for the safety of Air Navigation) in specification and testing of new digital signalling standard for Air Traffic Services Networks- nominated ATS QSIG.
- Produce Voice Communication Systems requirement specifications and Factory Acceptance Test specifications for Air Navigation Service Providers;
- **1997:** Won Eurocontrol contract to produce a survey of the current European Air Traffic Services Network;
- **1999:** Won Eurocontrol contract for expert support during ATS-QSIG field trial;
- **2000:** Became Eurocontrol approved ATS-QSIG conformance test house for network nodes;

Air Traffic Control-Track Record (2)

- **2001:** Worked in collaboration with **ENAV (Italian ANSP) & Nortel Networks** on "Asynchronous Transfer Mode" (ATM) field trial project for the application of ATM technology to Air Traffic Services Voice and Data Networks;

- **2002**: Won Eurocontrol contract to develop Eurocontrol 6-digit ATS Numbering Plan database;

- **2003**: Won Eurocontrol contract to write following documents:
  - VCS Procurement guidelines;
  - ATS Network implementation and planning guideline document;
  - ATS-QSIG v ATS-R2 & ATS No.5 interworking documents;
  - Revise current ATS-R2 signalling specification

Air Traffic Control-Track Record (3)

- **2004**: Became member of EUROCAE WG67 with scope to define VoIP signalling protocols for Telephone, Radio communications plus Recorders; Developed SIP interworking specifications;

- **2005**: Won CEATS VCS study contract to examine changes in VCS technology over next 10 years;

- **2006**: Defined EUROCAE WG67 original conformation test documents;

- **2008-2010:** Defined Interoperability Test Specifications for ETSI organised VoIP-in-ATM Plugtest events. Technical Manager for events:

Air Traffic Control-Track Record (4)

- **2009:** Developed EUROCONTROL Interoperability Test Specifications plus Test Cases for Conformance Test Suites (Tel/Radio/Rec/Gateway)

- **2010:** Won contract to Train all FAA Staff (5 courses with 25 per course).

- **2011:** Organised 8-day FAA VoIP-in-ATM Interoperability event held in Washington DC with equipment of all major players present; Chaired daily wrap-up sessions and produced the Event's final report.

- **2012:** Defined FAA Override Call, Remote Radio Control Gateway and Recording/Event logging specifications plus Conformation Test Suite specifications for this equipment- as part of FAA NVS Tender documents.

Field Programmable Gate Array design

Field Programmable Gate Array (FPGA) experts

We supply the following services:

- FPGA design service using the VHDL language, guaranteeing a completely documented "Turnkey" product.
    - Conversion of existing digital electronic circuits from "circuit diagram" format to VHDL functional description;
    - Simulation and verification of VHDL description;
    - Generation of a VHDL test bed;
    - IP core design
    - Development of FPGA in VHDL

- FPGA programming solutions and circuit integration;
- VHDL design simulation and verification and IP core design
- VHDL post-design changes and functionality enhancements

FPGA- Order of development process

- Definition/ review of product technical specifications in collaboration with client;
- Choice of most appropriate device for job (i.e. Xilinx, Altera, Actel, etc.); design of VHDL circuit;
- Simulation and functional verification of circuit (including critical timing analysis) before its actual implementation;
- Generation and supply of programming files;
- Editing and supply of component documentation: functional description, VHDL source files, instructions to run code on chosen target devices, etc;
- Guaranteed support up to full qualification of FPGA within the system;
- Activity to modify and/or add to functionality, also with feed-back via email attaching a new programming file to be loaded on to EEPROM associated with FPGA.

FPGA- Working Together

- Clients supplied with weekly status reports of their project's progress;
- Progress meetings planned especially during phase of FPGA integration on a circuit board.
- Professional, dedicated design team with many years of experience in the field.
- Each team member understands importance of a design being implemented well, promptly and cost effectively.

FPGA- Client Satisfaction

- Client satisfaction is our main goal. We provide a high quality professional FPGA design service at a very competitive price.

- Our design team can arrange to perform a detailed study of your design requirements.

- We can provide a detailed project proposal including architectural review and suggestions in order to optimize design, accompanied by our proposed development lead time and price quotation which we are sure you will find attractive.

- Our FPGA clients include Northrup Grumman Italia, the AICOM group, Interconsulting and the LITAL SpA.

Simulation Tool-MODELSIM from Modeltech

■ Allows simulation of VHDL & Verilog designs as well as perform post-route simulations to verify device timing;

■ Uses HDL testbenches in simulation & verifiy processes. Allows designers to behaviourally describe stimulus for their design & allows stimulus to vary based on response received by device. Allows concurrent stimulation to different parts of design. Comparison of device results with expected results.
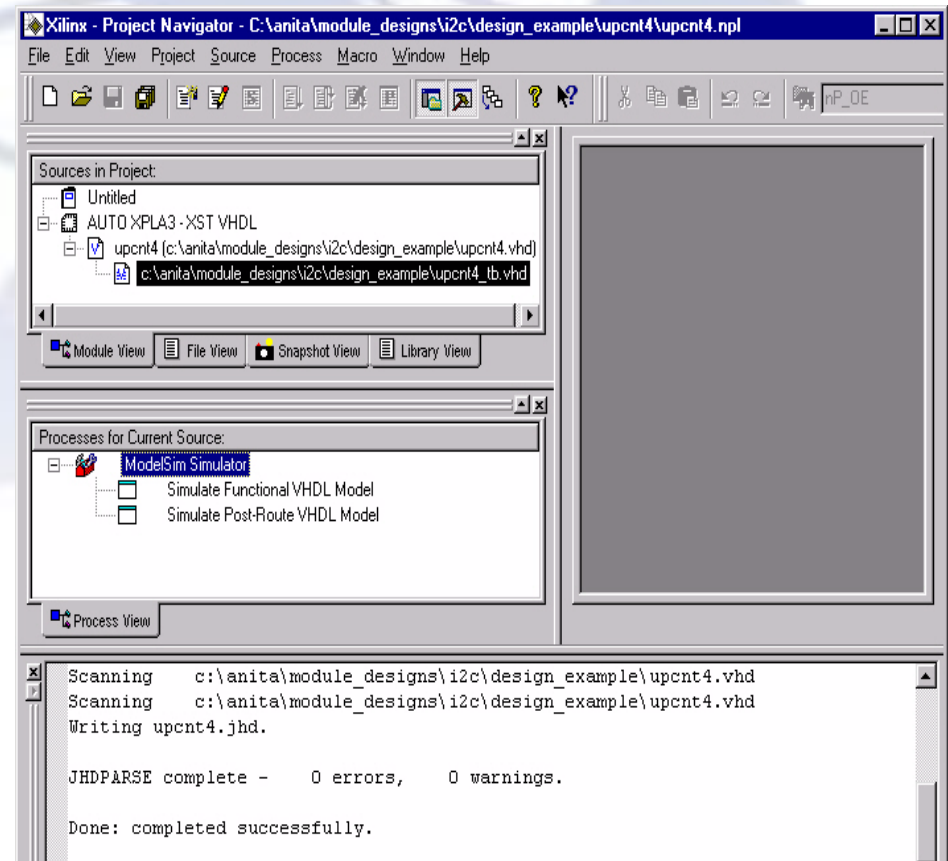
Simulation Tool-MODELSIM from Modeltech

- ModelSim Simulator allows selection of windows to be displayed during the simulation (e.g. *Signal, Structure* & *Wave* windows).
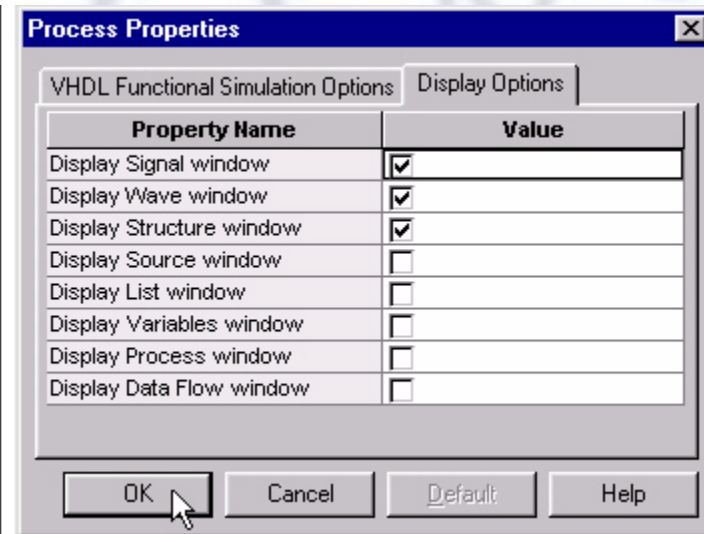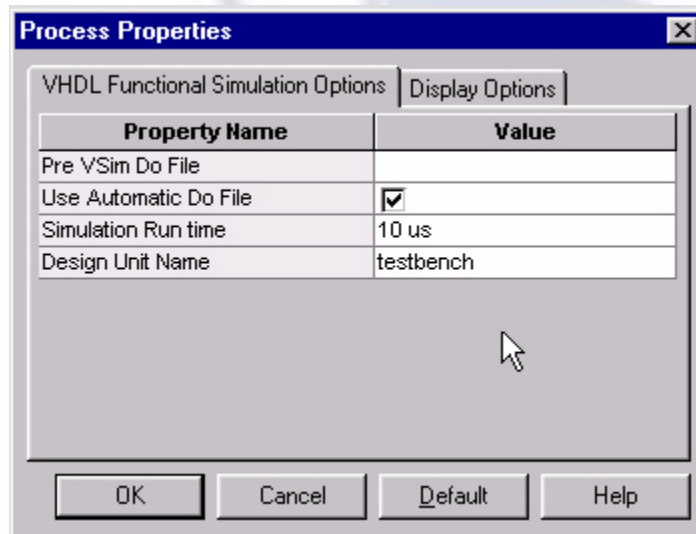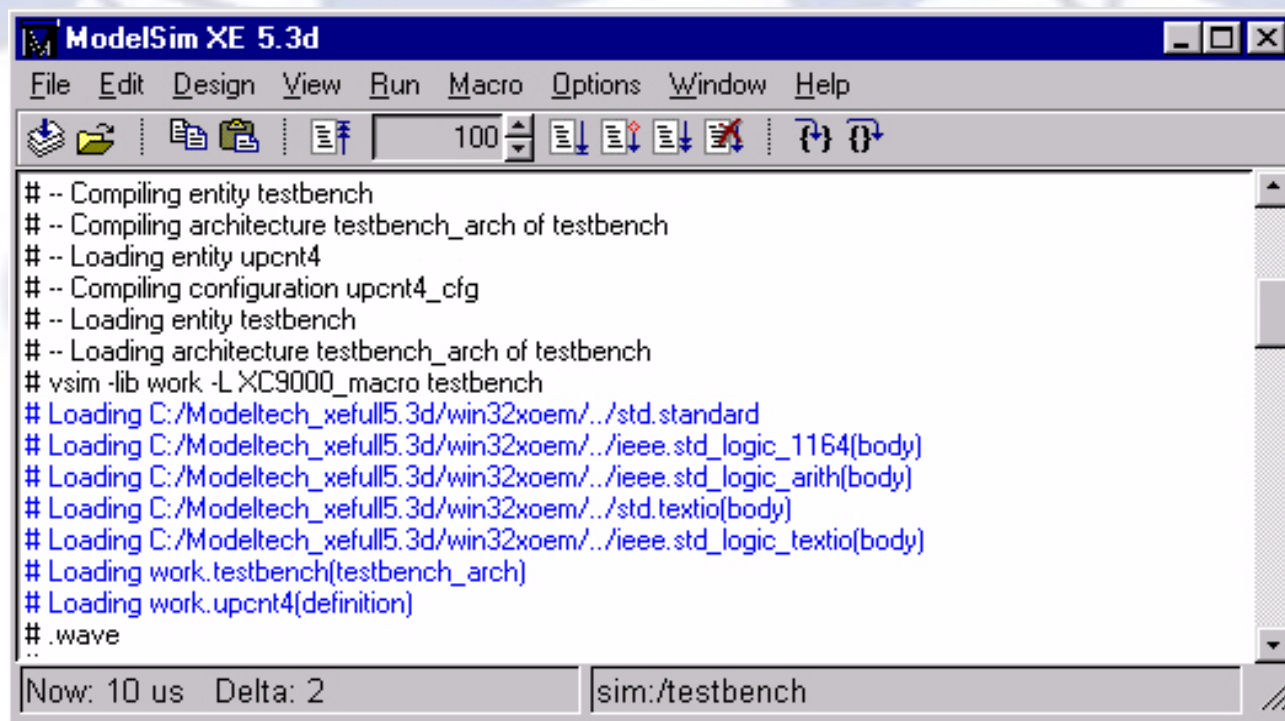
Simulation Tool-MODELSIM from Modeltech

■ ModelSim command window shows progress of design simulation.

Simulation Tool-MODELSIM from Modeltech

■ Correct design operation verified by selecting between windows and zooming in on active sections in Wave
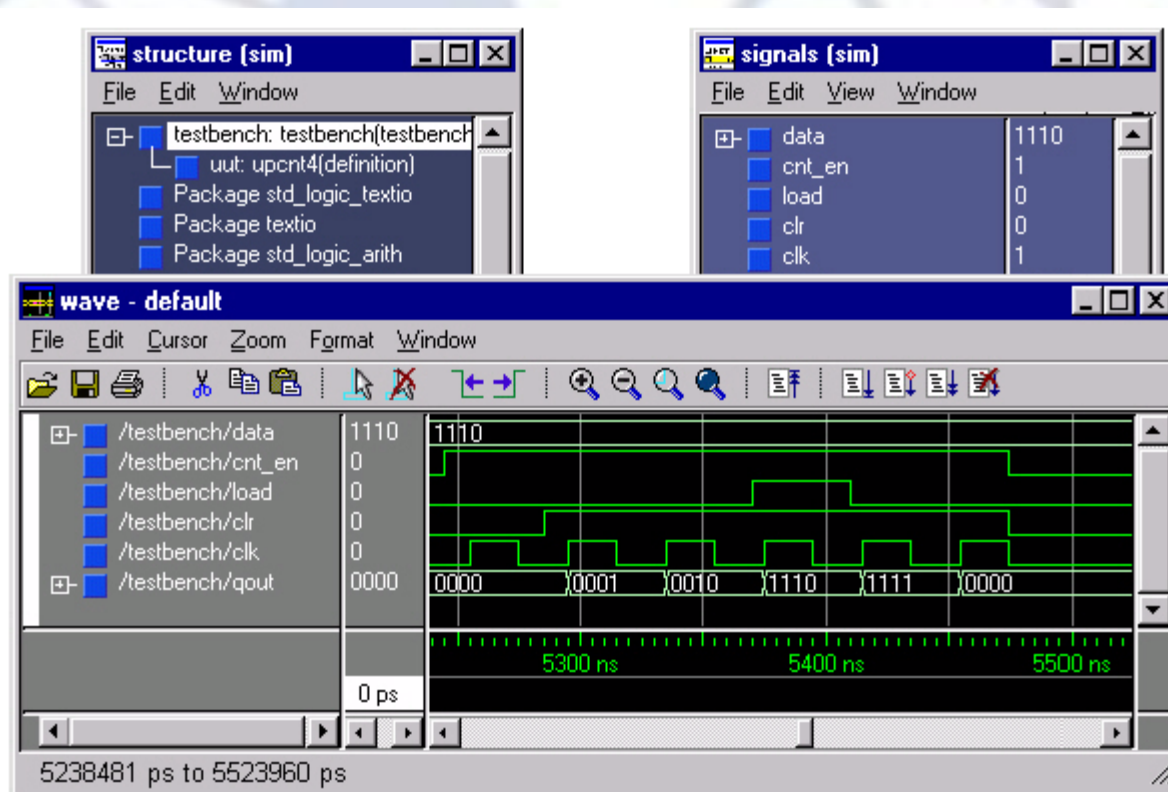
FPGA synthesis product –Synplify Pro

- Provides fast runtimes & automatic optimization selection;
- Offers flexibility- designers can target any FPGA vendor from same RTL source code & quickly determine most cost effective device;
- Uses advanced optimization techniques including Synplicity's proprietary Behavior Extracting Synthesis Technology;
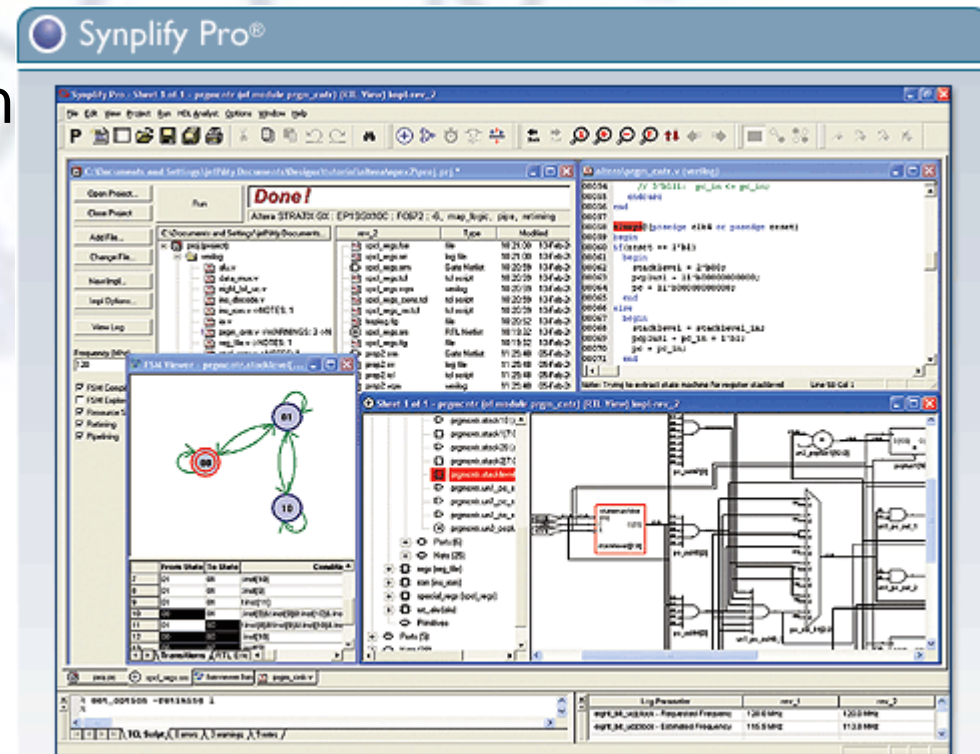
FPGA synthesis product –Synplify Pro

- Globally optimized designs;
- Supports Verilog, VHDL, System Verilog and mixed-language designs.
- Bypasses tedious hand instantiation of RAM.
- Synthesizes large design in minutes.
- Moves registers automatically within combinatorial logic to balance delay and improve performance.
- Automatic register balancing of pipelined Multipliers & ROMs for faster circuit performance.
- Finds & selects best coding style option for fastest performance.
- Fast debugging & documentation for all state machines in design.
- Instantly generates an RTL block diagram from HDL code; helps identify critical paths.
- Allows any signal to be tied to an external pin for testing without HDL code changes.
- Enables point-to-point timing analysis without re-synthesis.
- Compatible with popular formal verification tools.

Automatic Testing of Systems

- Our company specializes in automated test solutions for instruments and systems.
- Our methodology allows our clients to:
  - Reduce test cycle time;
  - Increase coverage;
  - Improve test accuracy;
  - Improve product quality;
  - Accelerate to market.

Automatic Testing of Systems

In particular we are able to supply:

- PC based studies, design, development and turnkey solutions for automation and system testing
- Test Tool development
- Study and feasibility analysis activities and choice of the best suited architecture for the application
- Design of processing, control, sampling, display and recording of analogue or digital signals from the I/O lines
- Design of test bed for system/sub-system test
- Software development for data processing, control functions and user interfaces
- Firmware development for embedded systems

Technical Courses

Courses for you

- Next generation ICAO 9896 Voice over IP interfaces for the Air Traffic Service Ground Voice Networks + Practical demonstrations (3-days)
- Procuring the Next Generation Voice Communication System for an ATS network (3-days)
- Communications course for Air Traffic Safety Electronics Personnel (ATSEP) (5 days)
- ATS-QSIG and its application to ATS Ground Voice networks -(2 days)
- Analogue signalling -application to ATS Ground Voice networks (1-day)
- Digital Voice signalling and networks (1-day)
- Courses can be customized to suit client's requirements

Course Information (1)

- On-site or residential courses offered.
- In order to reduce your costs & help solve logistic problems we are available to provide courses in any location chosen by our clients or arrange residential courses in Italy.
- Courses start at 9.00am & finish at 5.00pm each day (start times can be modified to suite preferences of participants).
- Course delivery time (i.e. lecturing time) is 6 hours per day with 10 or 20 minutes breaks every hour with a one hour timeslot for lunch (not included in 6 hours delivery time).
- In order to keep each course up-to-date its contents are updated every 3 months and so minor variations to descriptions are possible.
- Full course time table is sent on course confirmation.

HOUR 1	09.00 - 10.00
BREAK	10.00 - 10.20
HOUR 2	10.20 - 11.20
BREAK	11.20 - 11.30
HOUR 3	11.30 - 12.30
LUNCH	12.30 - 13.30
HOUR 4	13.30 - 14.30
BREAK	14.30 - 14.40
HOUR 5	14.40 - 15.40
BREAK	15.40 - 16.00
HOUR 6	16.00 - 17.00

Course Information (2)

- Course includes some practical demonstrations of VoIP using Soft Phones, WAN emulator and Wireshark, plus demo of VoIP Interface validation tool running Test suites;

- Course delivered by an experienced instructor who has worked in particular field and is familiar with current issues.

- Course language is English and Course Book accompanying course is written in English.

- Minimum number of 5 participants (recommend that max not exceed 20 to ensure active group involvement).

- Participants invited to asked questions when ever necessary as Course progresses.

- Availability to customize course to satisfy client's specific requirements.

- At your disposition to combine relevant modules from individual courses to suit particular requirements.

Course Material

- Each course participant will be supplied with:
  - Set of Course books containing colour slides for each module and accompanying detailed notes;
  - Notepad and Pen;
  - Lanyard with USB memory key (containing course books)
  - Personalised Desk nameplate;
  - Course material will arrive on site 2 days before the course commences;
  - Demonstration system arrives with lecturer;
  - Following successful and full completion of course, all participants receive a personalized course participation certificate;
- JSP-Teleconsultancy organises attendance lists to be signed by each participant in both morning and afternoon sessions:

Required On-site course facilities provided by client

- **Classroom** or Lecture Theatre with **enough capacity** to comfortably sit all participants;
- **Table space** for each participant to allow each of them to rest their **course workbooks**;
- The room should have a **video projector** (beamer) and **Projection Screen** available;
- The room should allow all participants a **good view** of the **projection screen**;
- The room should have a **Whiteboard or Flipchart** with pens.
- Ideally ambient **room temperature** should be **22 deg C**;
- A 2 metre long, 1 metre wide table for the practical demonstration positioned in front of room;
- Water or beverages available to participants during breaks.

Next generation ICAO 9896 Voice over IP interfaces for the Air Traffic Service Ground Voice Networks Course modules

1	ATS Ground Voice Network Overview	2	EUROCAE Working Group 67	3	Voice over IP functionality	4	VoIP in aeronautical communications overview
	60 minutes		20 minutes		70 minutes		120 minutes
5	Eurocontrol VoIP initiatives	6	Network Overview	7	SESAR 15.2.10 VoIP validation work		
	30 minutes		30 minutes		30 minutes		

8	Added benefits VoIP brings to ATS Ground Telephone Network	9	Added benefits VoIP brings to ATS Ground Radio Network
	150 minutes		210 minutes

In 2 years: 500 participants globally have attended this course, making it one of the most popular courses in the field being delivered today.

10	Added benefits VoIP brings to Recording equipment	11	Network Performance aspects	12	ATM – VoIP network architecture	13	VoIP in ATM network security
	60 minutes		30 minutes		30 minutes		30 minutes
14	Eurocontrol Test tool	15	Interoperability Events overview	16	Network emulator /Performance measurements		
	75 minutes		60 minutes		60 minutes		

Course description (DAY 1)

- *Day 1: provides broad picture of VoIP technology and its application to ATS Ground Voice Networks;*
  - *Technology and functionality overview of today's operational telephone & radio networks*
  - *Work performed by EUROCAE Working Group 67 in the definition of documents for VoIP in ATM.*
  - *The basics of Voice over IP functionality*
  - *High level description of how VoIP will be used in aeronautical ground telephone and radio communications*
  - *EUROCONTROL and FAA VoIP initiatives*
  - *Overview of Network and SESAR WP15.2.10 work for VoIP validation are then reported.*

Course description (DAYS 2 & 3)

- *Day 2: provide in-depth details about the Added benefits and functionality that VoIP brings to ATS Ground Telephone/ Radio network*

- *Day 3: examine added benefits VoIP brings to Recorder equipment, network performance aspects, VoIP network architecture and security.*

- *An overview of the EUROCONTROL Test Tool (Conformance +Performance measurements) and Interoperability Event activities completes the course.*

- *Practical demonstration used throughout course with SIP Telephone calls using Soft phones through a WAN emulator, allow network impairments to be introduced, while examining SIP signalling and RTP audio using a wireshark*

Animated Graphic Slides

- In order to aid understanding of the course participants there are many animated graphic slides included as part of the presentation.
- The following two slides provide an example of this.

Communication between VCS's

DA call with Voice Activity Detection disabled

VCS A

VCS B

SIP signalling used to terminate session
SIP signalling used to establish session

B

A

CR

CR

DA Panel

DA Panel

Two-way speech

IA call with Voice Activity Detection disabled

VCS A

VCS B

SIP signalling used to establish IA session

B

A

IA Panel

IA Panel

One-way speech

Monitoring- Radio & Tel. Speech at B

SIP signalling used to establish IA session

One-way speech

Monitoring- Radio & Tel. Speech at A
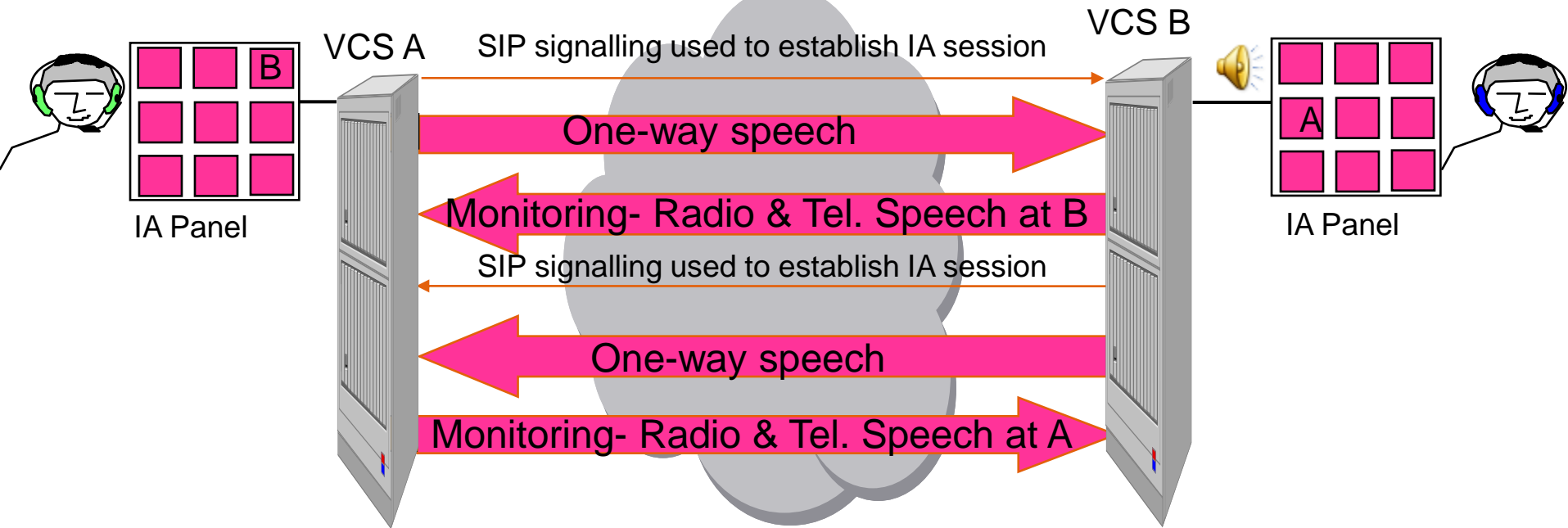
Real Time Session Supervision Operation

LOCAL HOLD TIME =2S

VCS

RADIO TRANSCEIVER

- **LOCAL HOLD TIME =0.2s**
- **LOCAL HOLD TIME =0.6s**
- **LOCAL HOLD TIME =1.2s**
- **LOCAL HOLD TIME =2s**

INVITE (F1)

100 Trying (F2)

200OK (F3)

SIP Session Connected

Call is automarically answered

ACK (F4)

RTP KEEP-ALIVE-PACKETS exchanged every 200ms
Activate PTT – Voice packets sent every 20ms
Activate Aircraft call – Voice packets sent every 20ms

Voice | **RTPTx HE**

WAN

RTPRx HE | **Voice**

BYE (F5)

LocalHoldTime Expires Radio closes session

200 OK (F4)

LOCAL HOLD TIME (2s) =R2S KEEP-ALIVE PERIOD (200ms) x R2S-KEEP-ALIVE-MULTIPLIER (10)

Quality Management

- *Our Quality programme follows the Excellence Reference Model;*

- *We ensure that all courses are updated every 3-months;*

- *Course Quality Management programme ask each participant to complete Quality evaluation form at end of course,*

- *This Feedback is used to measure participate satisfaction, generate course statistics to improve future courses.*

Training course clients

- Some of the establishments that have used our Training courses over the years:
  - FAA, NAVCanada, Airservices Australia, Airways New Zealand, General Dynamics C4i systems, INDRA NAVIA, Frequentis AG, Schmid Telecom AG, Rohde & Schwarz, C4i, Harris, Maastricht Upper Air Control Centre, National Air Traffic Services (NATS) Ltd, DFS (Deutsche Flugsicherung GmBH), Skyguide, AVINOR, NAVIAIR, Austrocontrol, Bulgarian Air Traffic Services Authority (BULATSA);- Polish Air Navigation Service Agency (PANSA); LPS-Slovakia, Ukrainian State Air Traffic Service Enterprise (ukSATSE),- EUROCONTROL Institute of Air Navigation Services (IANS)

Course Financial Offer

Financial Offer

- A financial offer for course delivery available on request;

- Total course delivery cost =**Fixed costs + Variable costs.**

- **Fixed costs:**
  - Return Economy Class Air Ticket from Rome to Destination;
  - All Return Economy class air ticket to other course destinations within country of delivery;
  - 4 nights in Hotel per course (Recommended by Host and close to the course location);
  - Cost of sending course material by DHL courier to location.

- **Variable costs:** (relate to no. of participants & courses)
  - (Includes Instructor delivery time, 500 page course Book divided in 3 volumes, Course USB, notepads, pens, certificates etc.):

Purchase Order

- On receipt of Purchase order it will be possible to organise course material, print books, book flights, book hotel, send material via courier.
- It is requested that Purchase orders are received by email attachment as soon as possible in order to allow sufficient time to organise material and book flights/hotels.

Documentation Services

- Creation and printing of specialist technical documentation and graphics according to customer requirements;

- We produce high quality technical manuals, user manuals, service manuals, product data sheets, publicity flyers and price schedules using Adobe Framemaker and other Desk-top publishing packages;

- Web-documentation;

- Data base service;

- Technical course books published using EduKator software product;

Contact us

- For further information on any of our services or courses our company is based in Ascoli Piceno, Italy.
- Our contact details are as follows:
- Phone/Fax: +39 0736 399056
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- Sms: +39 348 6912926
- E-mail: info@jsp-teleconsultancy.com

Thank you for your attention